

## HISTORY OF THE DISCOVERY OF URANUS

## WILLIAM HERSCHEL, BATH, and the PHILOSOPHICAL SOCIETY

by

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Richard Brinsley Sheridan, a Bathonian, opens his comedy, *The Rivals*, with a social sneer. Fag, the stylish apostle of *bon ton*, meets his fellow servant Thomas, a clod-hopping yokel, and exclaims: "Why Thomas ... But who the deuce thought of seeing *you* in Bath?". One might ask the same of William Herschel, the Hanoverian bandsman's son, who, having discovered Uranus, was to pass the last forty years of his life as a Crown pensionary, living just outside Windsor. How did Herschel come to spend his formative scientific years in Bath, resort of the giddy and the gay? How did he come to discover Uranus there?

It was not as an astronomer that Herschel moved to Bath. He earned his living as a musician. Son of a German regimental bandmaster, William came to England in 1757 with his oboe to try to make his fortune through his musical talents. Finding London overstocked with musicians, he migrated to the North East, where, in towns such as Richmond, Newcastle, Leeds and Pontefract, he pieced together a livelihood by playing in public concerts, conducting and composing, and by giving lessons and recitals to the gentry in their own homes. Appointed in 1766 to the choice post of organist to the fashionable Octagon Chapel, he set up in Bath. Bath concentrated in one place the opportunities which had been geographically scattered in the North, and Herschel flourished there as a player, organist, composer, concert-master and music teacher. By the early 1770's he could harvest over £400 p.a. from musical performances and teaching: the income of a respectable gentleman.<sup>1</sup>

For Bath was a good cradle for a career in the arts. Admittedly, it was provincial, and no provincial town could hold a candle to London. At the turn of the eighteenth century as many as forty percent of all townswellers in England lived in the capital. London had a population of close on 600,000; the next largest city was Norwich with 30,000 inhabitants; Bath had about 2,000.<sup>2</sup> As late as 1700 England possessed only one fashionable, polite, prestigious culture in the arts and sciences, the metropolitan, the home of the Court, of coffee-house culture, of the Royal Society. Outside London, culture merely glimmered with a few reflected beams; outside London, there seemed a wasteland of rusticity.

Oliver Goldsmith vividly recreated this scene in 1762, looking back to the beginning of the century:

At this time, *London* was the only theatre in *England*, for pleasure, or intrigue. A spirit of gaming, had been introduced in the licentious age of *Charles* II and had by this time thriven surprizingly. Yet all its devastations were confined to *London* alone .... *Bath*, *Tunbridge*, *Scarborough* and other places of the same kind here, were then frequented only by such as really went for relief; the pleasures they afforded were merely rural, the company splenetic, rustic and vulgar.<sup>3</sup>

Bath was symptomatic of this provincial urban neglect.

Francis Fleming was to write with some exaggeration:

Bath, in the year 1670, was one of the poorest towns in England; so that four or five families residing here at one time rejoiced the inhabitants: the houses were very indifferent, there being only one that had a sash window .... There was neither ball-rooms, or places of amusement

.... Accommodations were but indifferent,  
few houses were capable of receiving a  
family of condition.<sup>4</sup>

Aspects of this imbalance of course persisted. Yet many provincial towns, and Bath more than most, were transformed during the Georgian century. They mushroomed in size. Bristol for instance went up from about 20,000 in 1700 to about 80,000 in 1800; Manchester from about 10,000 to about 84,000; Bath from its 2,000 to 34,000. More or less the whole of Bath was rebuilt - "Bath shoots out into new crescents, circuses, squares every year", exclaimed Horace Walpole.<sup>5</sup> Growth in size mirrored growth in wealth - the product of agrarian prosperity, booming trade, particularly with the expanding empire, and, especially later in the century, industrialization. And, in consequence, opulent townsmen wished to baptize their new-found wealth with culture and style. Burghers in the localities did not want to feel like *provincials*, rustics, hicks; they wanted to pass as refined, polite, civilized, urbane.<sup>6</sup> To be precise, aided by the new invention of the newspaper<sup>7</sup> (which told provincials what was going on at the nerve-centre of fashion), and by the improvement to roads which turnpiking brought (the journey from London to Bath was reduced from three days to one), provincials clamoured to imitate London.<sup>8</sup> Corporations and speculators built London-style theatres (often naming them Drury Lane, or the Haymarket), and opened pleasure gardens which they called Ranelagh or Vauxhall. In Bath the architect John Wood the Elder laid out grounds "in imitation of the Ring, in Hyde Park, near London".<sup>9</sup> Metropolitan performers, such as the actress Mrs Siddons, came down to give seasons. Performances of "Mr Shuter's London raree show" were advertised in the *Bath Chronicle* for 16th December, 1762. The first fashionable theatre in Bath was floated by the London actor and impresario, Hippisley.<sup>10</sup> Philip Astley, London's equestrian virtuoso, toured the West

country early in his career.

In short, converting yourself from rudeness to refinement meant making the mental journey from provincial to metropolitan culture. In 1761 it was claimed that two generations back the inhabitants of counties distant from London had been "a species almost as different from those of the metropolis as the natives of the Cape of Good Hope". Now, at least the more "respectable" provincials had been improved by the percolation of London styles and *mores*:

the several great cities, and we might add  
many poor county towns, seem to be uni-  
versally inspired with an ambition of  
becoming the little *Londons* of the part of  
the kingdom wherein they are situated.<sup>11</sup>

No wonder a Newcastle address to the metropolitan rulers had flattered:

Our eyes are upon you; we ... imitate your  
fashions, good or evil, and from you we  
fetch and frame our customs.<sup>12</sup>

Of these towns which donned an elegant tone, Bath was the most Londonized. "The Bath theatre", wrote the Rev. John Nightingale in 1819, "is little inferior, in elegance and attraction, to those of the metropolis".<sup>13</sup> Even the Bath Penitentiary for Reformed Prostitutes was proud to model itself on the London original - as presumably were the prostitutes themselves. Some objected to this servile mimicry. As Pierce Egan complained:

And London fashions rattling down  
To make ye yet more overgrown,....  
In short, thou art so LONDONIZ'D  
So *over-built*, and *over-siz'd*,  
That, my old friend, I scarcely knew,  
Since last I said, dear BATH, adieu.<sup>14</sup>

But most inhabitants basked in the newly-achieved class and elegance.

Bath won her eminence through being not just an expanding provincial centre, close to opulent Bristol, but by being a spa, a resort - in fact, in Horace Walpole's words, the choicest of the "watering places that mimic a capital".<sup>15</sup> That the waters had therapeutic properties had of course been well-known at least since Roman times, and throughout Tudor and Stuart times invalids came to take the waters - internally and externally. But it was in Georgian times that Bath became what Defoe puritanically called the resort "of the sound rather than the sick". In the days before the invention of the seaside, Bath was the nation's leading resort, England's Las Vegas.<sup>16</sup> Visitors flooded in, from gouty peers and politicians down to the newest *nouveaux riches* tradespeople. They came above all for gambling, for fashion, for the marriage market, for society, and some for *amours* (though, despite Charles Wesley's dubbing Bath "the headquarters of Satan", the town never became sexually notorious like Charles II's Tunbridge Wells). "The goddess of pleasure", it was said, "has selected this city as the place of her principal residence". Amusement, not the Muses, was Bath's business. The success of the Master of ceremonies, Beau Nash, as Bath's Godfather lay in orchestrating the idle into a genteel clockwork round. Tea-table frivolity and the circulating library set the tone. Aside from architecture, perhaps only in music did the demands of fashion stimulate an inventive artistic tradition, deploying the talents of Herschel, Linley, and then, *par excellence*, Rauzzini.

So William Herschel the budding musician made a wise choice in coming to this vast pleasure dome. Yet he also had longstanding mathematical, philosophical and optical interests, and these began to claim a larger share in his life from the early 1770's as he started buying optical equipment and grinding lenses for telescopes, beginning to sweep the skies with the aid of his sister Caroline. It is just possible that he offered scientific tuition, but it is more likely that he was scientifically isolated at Bath, for

all his scientific contacts in this early period were with men outside Bath, e.g. Thomas Hornsby, Savilian Professor in Oxford. Herschel almost certainly was not famed in Bath for his scientific bent, for his countryman the philosopher Lichtenberg, visited the town in 1775 without even discovering Herschel lived there:

"Good heavens! Had I but known, when I spent some days in Bath in October 1775, that such a man was living there! Being no friend of tea-rooms and card-playing, I was very much bored there."<sup>17</sup>

But does this mean that Herschel's Bath was utterly indifferent to science? Barbeau, the greatest historian of Georgian Bath, inclined to think so: "there was", he wrote, "little desire for literary or scientific knowledge".<sup>18</sup> But this verdict is too austere. Bath may not have been Athens, but it was at least Corinth. It was not a powerhouse of profound researches, but there was a lively and widespread taste for scientific knowledge. From quite early in the century, itinerant lecturers, armed with chemical apparatus and orreries to explain the Newtonian heavens, had paid their calls at Bath and Bristol. William Whiston lectured at Bristol in 1724. James Ferguson - a typical Scot who had taken the high road South to London and become a foremost text-book popularizer of science - lectured in Bath and Bristol in the 1760's and 70's - Herschel may have attended. Benjamin Martin, James Arden, Henry Moyes, John Warltire and others brought science down to Avon.<sup>19</sup>

Certainly, such men aimed to delight as much as to instruct, and science became another mode of elite entertainment. As Goldsmith noted somewhat primly, "people of fashion, when so disposed, attend lectures on the arts and sciences, which are frequently taught there in a pretty superficial manner, so as not to teize the understanding, while they afford the imagination some amusement".<sup>20</sup> Nevertheless, a

general buzz of interest existed.

And it was supplemented by knots of active participation. In 1777 the Bath and West Agricultural Society was founded and housed in Bath.<sup>21</sup> Local gentry flocked to join, willing to support its scientific experiments on soil, fertilizers and stockbreeding, since they thought that science in turn would support husbandry. It was to become a leader amongst Britain's agricultural societies, publishing its own *Transactions*.

In addition, Bath and its environs had a good sprinkling of enthusiasts for the natural history sciences, men such as Ralph Schomberg, William Watson, Jr, Thomas Haviland, Caleb Parry and John Walcott, collectors of plants and fossils, some of them keen to develop a systematic natural history of the West Country.<sup>22</sup> Bath has been claimed as the "cradle of British geology", for it was partly through the encouragement of the Bathonian Benjamin Richardson, and Joseph Townsend, the rector of nearby Pewsey, that William Smith (so-called "father of British stratigraphy") was launched on his geological career. Smith later repaid the debt by using his geological expertise to solve a major problem of seepage from the springs that supply Bath's waters. Not least, the Bath medical community - men such as William Oliver, William Falconer, William Moses, Archibald Cleland and Charles Lucas - comprising probably the biggest concentration of physicians, surgeons, and quacks outside London - stimulated a certain level of scientific controversy, partly through the endless stream of acrimonious pamphlets they produced, disputing the chemical, physical and mineralogical content and therapeutic efficacy of the waters.<sup>23</sup>

These disparate and fluid groupings came together - albeit briefly - in the Bath Philosophical Society, founded in 1779.<sup>24</sup> This Society was remarkable perhaps less for what it accomplished than for its existence and since we have no minute books or published *Transactions* it is not very easy to



say just what it did. Discounting the Lunar Society of Birmingham, which was an informal club of friends, the Bath Society was the first properly constituted provincial scientific society founded in Georgian England, antedating the Manchester Literary and Philosophical Society by two years.<sup>25</sup> It came into existence on 28th December 1779 following a suggestion from the Quaker botanist, Thomas Curtis, that there be set up a "Select literary society for the purpose of discussing scientific and phylosophical subjects and making experiments to illustrate them". His Quaker friend, Edmund Rack, became the first secretary; there were thirteen founding members - amongst whom were William Herschel (described as "optical instrument maker and mathematician") and his friend William Watson, Jr, F.R.S. - and meetings were to be held weekly in winter and fortnightly in summer.

The Society prospered for a while, hearing papers across a wide range of the physical and natural history sciences (though taking little interest in practical and technological matters). But after the death of prominent members, particularly the secretary Rack, and the removal of Herschel to London, it lost its energies, and had collapsed by about 1785. A second Bath Philosophical Society was formed in 1799, but seems to have had a similarly brief existence.<sup>26</sup>

Why did the precocious fire of organized science in Bath burn itself out so quickly? It is partly because the leading intelligentsia in Bath tended either to be visitors, or at least footloose - men who, like Herschel, would move away when opportunity offered (unlike the manufacturers such as Wedgwood and Boulton who made up the core of the Lunar Society, rooted in Midlands industries). Bath physicians contributed surprisingly little. Whereas in Manchester and Sheffield doctors invested their energies heavily into science to win status for themselves as the guardians of

polite and rational values, in Bath physicians had social position and status already; they directed their leisure into poetry and letters.<sup>27</sup> This meant that the promoters of the Bath Philosophical Society were in fact rather small beer. It had no grandee patron, no elder statesman of science. Its dynamic secretary, Edmund Rack, was a *petit bourgeois* Quaker, a Uriah Heapish sycophant dedicated to getting on socially while despising the very tinsel society he clawed to join, a natural underling but commanding little authority or *éclat* of his own - a man, in fact, much ridiculed in his day.<sup>28</sup>

Yet, for all its ups-and-downs, the Philosophical Society may have been precisely the *stimulus* needed to launch the obscure William Herschel onto a public stage and career in science. Finding an outlet at last, Herschel proved an irrepressible contributor to the Society. Within a month of its foundation he gave his first paper, on Corallines; over the next two years, he delivered thirty more, on subjects ranging from metaphysics to natural history, electricity, optics and of course astronomical observation. Some of these were then communicated to the Royal Society and published in *Phil. trans.*<sup>29</sup> The last was an "Account of a comet" - Herschel's announcement of the discovery of Uranus read March 1781. Was the Bath Philosophical Society midwife to Herschel's astronomical revolution?

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4. Quoted in V.J. Kite, *Libraries in Bath, 1618-1964* (thesis for fellowship of the Library Association, 1966), 12, from F. Fleming, *Life and adventures of Timothy Ginnadrake* (3 vols, Bath, 1771), iii, 15. For a necessary corrective, bringing out the genuine vitality of seventeenth century Bath, see P. Rowland James, *The baths of Bath in the sixteenth and early seventeenth centuries* (London, 1938). Nevertheless it is important to note how impressed were eighteenth century commentators with the rate, extent, and glory of Bath's current development. For introductions to the Georgian municipal growth of Bath see B. Little, *Bath portrait* (2nd ed., Bristol, 1968), and Sylvia MacIntyre, "Towns as health and pleasure resorts: Bath, Scarborough and Weymouth, 1770-1815" (D.Phil. thesis, Oxford University, 1973).
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6. These beliefs were well articulated by John Wood the Elder, the Bath architect; for which see Ron Neale, "Society, belief, and the building of Bath, 1700-1793", in C.W. Chalklin and M.A. Havinden (eds), *Rural change and urban growth, 1500-1800* (London, 1974), 252-80. For Enlightenment respect for urban culture, see C.E. Schorske, "The idea of the city in European thought, Voltaire to Spengler", in O. Handlin and J. Burchard (eds), *The historian and the city* (Cambridge, Mass., 1966), 95-114.
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  12. Quoted in Clark and Slack, *op.cit.* (ref. 9), 156.
  13. Rev. J. Nightingale, *The beauties of England and Wales*, xii (London, 1813), 427.
  14. Pierce Egan, *Walks through Bath* (Bath, 1819), 58.
  15. Quoted in *The book of Bath*, written for the 93rd annual meeting of the British Medical Association (Bath, 1925), 79. Spas developed as a pioneer form of leisure resort, since they already had long existed as medical centres. W. Addison, *English spas* (London, 1951); D. Gadd, *Georgian summer: Bath in the eighteenth century* (London, 1970).
  16. See for instance, J.A.R. Pinlott, *The Englishman's holiday* (London, 1947); and J.A. Patmore, "The spa towns of Britain", in R.P. Beckinsale and J.M. Houston (eds), *Urbanization and its problems* (Oxford, 1968), 47-55.
  17. Quoted in M.L. Mare and W.H. Quarrell, *Lichtenberg's visits to England* (Oxford, 1938), 95.
  18. Barbeau, *op.cit.* (ref. 10), 111.
  19. For itinerant scientific lecturers see F.W. Gibbs, "Itinerant lecturers in natural philosophy", *Ambix*, vi (1960), 111-17; A.E. Musson and E. Robinson, *Science and technology in the Industrial Revolution* (Manchester, 1969), which *inter alia* charts the movement of science from London into the provinces. See also M. Rowbottom, "The teaching of experimental philosophy in England, 1700-1730", *Actes du XI<sup>e</sup> congrès internationale d'histoire des sciences*, iv (Warsaw, 1968), 46-53. See E. Henderson, *Life of James Ferguson, F.R.S.* (Edinburgh, 1867), 268, 278, 338, 407. Ferguson's *Astronomy* may have been the first astronomy text Herschel purchased. See Lubbock, *op.cit.* (ref. 1), 60. See also J.R. Millburn, *Benjamin Martin: author, instrument-maker, and 'country showman'* (Leyden, 1976).
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24. A.J. Turner, *Catalogue to an exhibition, "Science and Music in eighteenth century Bath"* (Bath, 1977); J. Hunter, *The connexion of Bath with the literature and science of England* (Bath, 1853), 81-83.
25. Roy Porter, "Science, provincial culture and public opinion in Enlightenment England", *The British journal for eighteenth century studies*, iii (1980), 20-46.
26. See Hunter, *op.cit.* (ref. 24). Of course, other fashionable centres like York and Norwich could not boast scientific societies at all. But my point is that such societies when founded in Birmingham, Manchester, Edinburgh, etc. went from strength to strength whereas in Bath they languished.
27. See above all A.W. Thackray, "Natural knowledge in cultural context: the Manchester model", *American historical review*, lxxix (1974), 672-709, p.685: "the medical profession as guardian of the polite virtues in an industrializing world". For an important exploration of the interface between the medical and literary worlds see G.S. Rousseau, "Matt Bramble and the sulphur controversy in the XVIIIth century", *Journal of the history of ideas*, xxviii (1967), 577-89.
28. Edmund Rack's "A disultory journal of events &c. at Bath" (Bath Reference Library R69/12675) for 1779 well expresses his own envy and disgust towards fashionable Bath society. For published expression of Rack's views and values see his *Poems on several subjects* (Bath and London, 1775), and his *Mentor's letters* (Bath and London, 1778), 23f. For a contemporary characterization of Rack as a *petit bourgeois* social climber see [?P. Thicknesse], *Edmund: an eclogue* (n.p., n.d.), 8:  
 When from the land of Essex first I came,  
 Propell'd by vanity and thirst of fame,  
 Eager I strove in wild ambition's fits,  
 To elbow in, and shine among the wits.  
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29. Herschel's papers to the Society are listed in J.L.E. Dreyer, *The scientific papers of Sir William Herschel*, 2 vols (London, 1912), i, pp.lxv-lxvi.