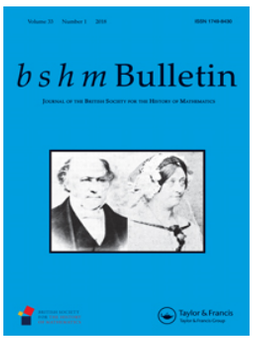

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A most gossiped about genius: Sir William Rowan Hamilton

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The Irish mathematician Sir William Rowan Hamilton (1805–65) is often portrayed as an unhappily married alcoholic. We show how this image originated in the 1840s, caused by a combination of the strict social rules of the Victorian era and the then changing drinking habits in Ireland. In the 1880s Hamilton's biographer Graves tried to restore Hamilton's reputation by blaming Lady Hamilton for her husband's habits. This unintentionally caused his biography to become the basis of Hamilton's overall negative image. We argue for a far more positive description of Hamilton's private life. Thereafter we trace the evolution of the negative image using an anecdote about Hamilton's work habits and its increasingly distorted representations.

Introduction

The general view on the private life of Sir William Rowan Hamilton (1805–65) can be summarized into the notion that he had an unhappy marriage because he had lost the love of his life, and that later in life he drank too much. In order to understand how the view on Hamilton's life became so negative, we will first discuss the early gossip as it appeared in his first main biography, written in the 1880s by Robert Perceval Graves.

In 1980 Thomas Leroy Hankins published a second main biography. He showed that Graves, bound by the very strict rules of the Victorian era, had concealed Hamilton's feelings for his first love Catherine Disney, whom he had lost to a forced and very unhappy marriage. Losing her profoundly influenced Hamilton's life, and through Hankins' biography also his later remembrance; we therefore deem it necessary to give a summary of what happened with regards to her. Thereafter we will trace the evolution of an anecdote about Hamilton's study which Hamilton's eldest son William Edwin sent to Peter Guthrie Tait in 1866. It will be seen how this initially innocuous anecdote contributed heavily to both Hamilton's and his wife's negative reputation.

The marriage

William Rowan Hamilton and Helen Maria Bayly married in April 1833, and Hamilton being Astronomer Royal for Ireland, they lived at Dunsink Observatory near Dublin.[1] The first years of the marriage have generally been acknowledged as happy ones, although for two periods of time, lasting for nine and ten months respectively, Lady Hamilton did not live at the observatory. During these periods she lived with

[1]In 1827 Hamilton became Andrews professor of astronomy at Trinity College Dublin, and therewith Astronomer Royal. He moved into the observatory that same year.

Figure 1. Sir William Rowan Hamilton (1805–65) and Lady Helen Maria Hamilton Bayly (1804–69). Reproduced from P A Wayman, *Dunsink Observatory, 1785–1985: a bicentennial history*, Dublin: The Royal Dublin Society and The Dublin Institute for Advanced Studies, 1987. The photographs were taken around 1855.

the children in Nenagh, both times taking care of her ailing mother. Hamilton found his wife's absences from the observatory very difficult, yet he was in Nenagh with his wife and children[2] for periods of months, feeling very happy there (Graves 1885, 120, 188–189; 1889, 232).

The early gossip about the marriage started when Lady Hamilton left the observatory again, this time for a period lasting from spring 1840 until January 1842. This absence was different from the former two since it had to do with the first of Lady Hamilton's two so-called 'nervous illnesses'.[3] Pregnant and in 'delicate health', she had become very afraid of living at the observatory, due to the combination of its remoteness and the unrest in the country.[4] In spring 1840 lodgings were taken for her in Dublin, where Hamilton seems to have visited her regularly (Graves 1885, 320–321). She came back to the observatory in August to give birth to their daughter Helen Eliza Amelia, and after some months during which she lived with a neighbouring sister, presumably to breastfeed her baby, from early 1841 until January 1842 she lived with another sister in England, without her husband and children (Graves 1885, 333, 361).

[2]William Edwin was born in 1834, Archibald Henry in 1835.
[3]The second 'nervous illness' occurred in 1856.
[4]The observatory was situated at a dark and elevated place about eight kilometers from Dublin, and according to Hankins, around the 1840s there had been a 'sharp increase in agrarian crime and terrorism in the countryside' (Hankins 1980, 124).

The illness forcing her away from the observatory was diagnosed as being 'of a nervous kind', yet that does not seem to have evoked much sympathy in Dublin. Hamilton worried about her and became very depressed, and since in the Victorian era women were expected to stay at home and be by nature gentle and caring mothers and wives, in 1841 'unfavourable comments' were made about Lady Hamilton's absence from home (Graves 1885, 354).

In Graves' biography Lady Hamilton's weak health is mentioned regularly. She was often ill, sometimes with diagnosable, contagious diseases, and sometimes from undiagnosed causes. That was not unusual since in those days hardly anything was known about diseases;[5] the biography is filled with diseases and deaths. Hamilton had known about Helen Bayly's illnesses long before their marriage. She had often visited her two sisters who lived with their families in the vicinity of the observatory, and having been 'dangerously' ill in the summer of 1832 Hamilton had been very worried about her. She could fall very ill within a day, and when in November 1832 Hamilton asked her to marry him she hesitated, whereupon he tried to persuade her by assuring her that her weak health had not prevented him from believing that she could make him happy (Graves 1885, 11–13).

Helen Bayly was not afraid to speak her mind (Van Weerden 2015, 150), and she apparently made Hamilton promise that they would lead 'a retired life at the Observatory' (Hankins 1980, 118). This marriage condition will have been directly connected to Hamilton's then fast growing fame and the social consequences thereof; she did not ask for an overall quiet or even reclusive life as this might seem to indicate. Throughout Graves' biography indications can be found of visits from and to family and private friends, by both Hamiltons, either apart or together (Van Weerden 2015, 171). But Hamilton's fame entailed being expected, as a couple, to visit and receive many eminent men and members of the upper class, and although their motives for planning a 'retired life' are unknown, it has been surmised that they both knew that her weak health would render making and regularly organizing such visits far too burdensome for her (Van Weerden 2015, 387).

In 1856 Lady Hamilton suffered from her second 'nervous illness'. Graves seems to have regarded these illnesses as a token of a 'weakness of mind' (Graves 1889, 233), but they can be seen quite differently. Combining Hamilton's letters with information from Hankins' biography, it has been argued that both times Lady Hamilton had become trapped in her marriage (Van Weerden 2015, 381, ff). Previous to the first 'nervous illness' Hamilton had started to neglect his antenuptial promise to live a retired life with her (Van Weerden 2015, 386–390), and previous to the second one he had given less attention than usual to the part of his wedding vows which were phrased in *The Book of Common Prayer* as: 'to comfort her, honour and keep her' (Van Weerden 2015, 391–398). Having vowed obedience to their husbands before God, in those days married women were almost completely dependent on whether their husbands paid attention to their needs, and Lady Hamilton was very pious indeed.

From Graves' biography it can be seen that both times Hamilton became very worried about her, the second time he even 'nursed' her for months (Graves 1889, 51); he must have been very afraid to lose her since he was hardly able to work without her by his side (Graves 1885, 328). It can also be seen that after each illness

[5]Also the fact that Lady Hamilton went to England without her children can be seen in the context of their time, in which sending mothers in distress away from their families to find their peace again was a common treatment (Van Weerden 2015, 207 footnote 110).

Hamilton changed his behaviour and the marriage became stable again; it can therefore easily be surmised that they talked about her problems and his role in them.

Alcohol

Not only Lady Hamilton was gossiped about, Hamilton himself also had a rather bad reputation in Dublin, in his case connected to alcohol. In the preface to the first volume of his biography Graves laments that he had wished that Hamilton's 'memory' 'had been more fortunate' (Graves 1882, v), and throughout the biography it can be seen that he completely focused on restoring Hamilton's reputation. Next to praising Hamilton into an almost superhuman genius, who was 'aiming at every virtue and thinking nothing but high thoughts' (Graves 1885, 335), Graves blamed Lady Hamilton for her husband's troubles.

According to Graves things started to go wrong after she came home from England. Although the biography is chronologically ordered, at the end of the chapter describing 1840 Graves very unexpectedly bursts out that after her homecoming in January 1842 she let the 'order' in the household 'relax';

> [Hamilton] had now no regular times for his meals; frequently had no regular meals at all, merely resorting to some cold meat on the sideboard, when hunger obliged him to intermit his scientific labours; and the fire and hot coffee, which in his earlier experience used to await him at night, when in the small hours he desisted from the work of observing,[6] were succeeded by a provision of porter, which dissipated chill by a stimulus less effective, and fraught with inevitable danger. The danger was long unfelt and unrecognised; but the insidious habit gradually gained firmer possession, and produced that relentless craving which in a few years from this time exercised over him an occasional mastery; by which he must himself have felt humiliated, and which his friends could not but notice with a deep sadness. No one ever needed a capable wife more than Hamilton, and this blessing he now ceased to possess. Though he remained to the end of his life an attached husband, as Lady Hamilton remained an attached wife, as well as a good woman, yet from this time her power of influencing him and regulating his habits ceased to operate. That power probably never had been great, but now it had entirely passed away (Graves 1885, 334–335).

Graves continues by describing how in a slow process which he calls the 'obscuration', which according to him took some years and was hardly noticed at first, Hamilton's personality changed; that he became 'a solitary worker'. Graves was very certain about his views on the matter although it can also be seen that this was not a state of fact: 'I believe that I have correctly dated the coming on of the obscuration [the return of Lady Hamilton], and assigned its originating cause [the Relaxation of Domestic Order]' (Graves 1885, 335).

Graves' views on Lady Hamilton's alleged inability to keep her household and her husband under control can easily be challenged though; it is not difficult to see why Lady Hamilton may not have wanted to force her husband to come to dinner. Hamilton once called his periods of intensely working on his mathematics 'trances'

[6]Mentioning the 'work of observing' is curious: Hamilton only observed regularly during his early years at the observatory.

(Graves 1882, 517), and already during their betrothal he had told her about the 'pains or pleasures of thought-birth', causing him sometimes to work through the night (Graves 1885, 22). Knowing how intensely Hamilton enjoyed doing his mathematics (Tait 1866, 38) she apparently accepted her husband's ways of working; there is no sign of complaints from her about it.

Also the slow process of 'obscuration', which according to Graves set in after Lady Hamilton's return from England, can be regarded differently. While Lady Hamilton was in England Hamilton's sister Sydney had run the household, which she apparently did very well. But since Hamilton had hardly been able to work without his wife (Graves 1885, 354) there will have been no mathematical 'trances', and therefore no reason to skip dinners or work through the night. That changed again when in January 1842 Lady Hamilton returned: 'with renewed cheerfulness [Hamilton] resumed his mathematical studies' (Graves 1885, 361), and therewith also his irregular daily life.

In spring 1843 the Board of Trinity seemed dissatisfied with the work done at the observatory, and for a while Hamilton was afraid that he had to give up pure mathematics (Graves 1885, 410–411), obviously a very distressing idea. Hamilton felt 'languid and dispirited' (Graves 1885, 414), but in the summer he visited meetings and friends, and finally regained his energy. He used this energy for a renewed search for the extension to three dimensions of the complex numbers, and in October he found the quaternions (Graves 1885, 432). Immediately after the discovery he became very focused on them, and no one being able to keep up with him, he indeed became a 'solitary worker'. He apparently even more often skipped meals, just eating some meat which was brought into his study, see page 10. Moreover, he started to sip porter, a dark, sweet beer, when feeling tired in the midst of an investigation yet trying to finish it,[7] and not even his friends were able to stop him from working so hard (Graves 1885, 477).

Although Graves had been searching for ways to restore Hamilton's reputation, it is slightly puzzling why he chose to blame Lady Hamilton instead of linking the process of 'obscuration', which according to him started in 1842 and even took some years, to Hamilton's intensified focus after the discovery of the quaternions. Also puzzling is Graves' decision to include the emotional outburst already when describing the year 1840; the subsequent account of the years 1840 until 1846, taking up 170 pages and including the discovery of the quaternions, are darkened by these forebodings of doom. Only when reaching the year 1846 does it become clear that Graves did not intend to suggest that Hamilton became an alcoholic; with the 'occasional mastery' he was alluding to one specific incident, obviously painful enough, in February that year.

In the morning Hamilton had received the confirmation from another observatory of a geological-astronomical idea which had occurred to him (Graves 1885, 506). Still very excited, in the evening he visited the meeting of the Geological Society and dined there. Graves paraphrases the account of the event Hamilton gave him in a letter:

[7]See page 11. Sipping porter may of course not have been the wisest way to fight tiredness, yet it can be imagined that the sugars it contained indeed provided the energy needed to stay awake and finish the investigation at hand. Moreover, in those days only the social and acute physical effects of drinking heavily were known; nothing was known about long term effects of moderately drinking alcohol.

> The unusual intellectual excitement at the table, in addition to his taking what he was told was only a moderate quantity of wine, had a peculiar effect upon him. At the top of a high flight of stairs he was seized with giddiness, accompanied by a rush of blood to the head, and became conscious that he could not keep his ideas under control, that in fact his reason was disturbed for a time. The result was that he became violent, and had to be restrained (Graves 1885, 506).

Graves does not give any further clue about the cause of the violence, yet he seems to have believed that Hamilton had drunk more than was socially accepted then. Hamilton did not believe that himself; he suggested that it might have been connected to the fact that he had not been used to drinking anymore, for some months previous having lived 'in a very quiet and abstemious manner, working very hard'. Whoever may have been right, 'this painful event became generally known, and was much talked of in society' (Graves 1885, 507).

What finally ruined Hamilton's Dublin reputation was that, during a period of some years starting in 1848, see page 7, he 'occasionally exposed himself to the charge of excess' (Graves 1885, 632). Although it is not known what exactly Graves meant by that, it is again clear that he did not think that Hamilton was an alcoholic since he continued: 'a most exaggerated notion of his weakness, of the degree to which he yielded to it, and of the number of his lapses, became prevalent'. Reacting to the gossip, Graves' brother Charles, who was himself a Dublin mathematician and regularly worked with Hamilton, warned Hamilton about his reputation (Graves 1885, 632). Graves does not give the date of this warning, yet it must have been between 1851 and the beginning of 1854 (Van Weerden 2015, 424–426). The warning was 'not without good effect' and indeed, although Hamilton did not become an abstainer, thereafter Graves does not mention alcohol anymore.[8] Yet not being clear at all about when the warning was given, Graves allows for the idea that after 1848 Hamilton was drinking too much for many years, which profoundly added to the alcoholic image emerging from his biography.

Not drinking 'to excess' anymore also did not restore Hamilton's contemporary reputation. In his youth drinking alcohol had been widely accepted, but in 1829 the Temperance Movement had been formed. Already in 1838 a number of anti-alcohol associations had been founded in Dublin, indicating that views on drinking alcohol were changing (Van Weerden 2015, 433). Following the 1846 event Hamilton had completely abstained until 1848, and in accordance with the new, stricter views on drinking alcohol the fact that he thereafter started to drink again, and that after Charles Graves' warning he did not stop drinking alcohol altogether, could only be attributed to 'cravings for such stimulus' (Graves 1885, 506), and to the incapability of his wife to influence him.[9]

Yet, in contrast with the now widely accepted negative view of this marriage, Hamilton's description of the moment he discovered the quaternions sounds surpris-

[8]Only after having described Hamilton's death, Graves once more repeats his ideas about Hamilton's alleged 'weakness': see page 11.

[9]Graves never mentioned the Temperance Movement in his biography. Yet there are strong indications that around the time of the publication of the biography Graves did not drink alcohol anymore, or at the most very temperately (Graves 1885, 505).

ingly peaceful; as he wrote to his second son Archibald in 1865, less than a month before his death, the idea came to him when he was walking to Dublin,

> and your mother was walking with me, along the Royal Canal, to which she had perhaps driven; and although she talked with me now and then, yet an undercurrent of thought was going on in my mind (Graves 1885, 434).

In retelling the story of his discovery Hamilton thus explicitly mentioned his wife, and he also did that in an 1858 letter to Tait (Graves 1885, 435–436). Clearly and openly recognizing her presence at the moment of discovery indicates an at least harmonious marriage. Indeed, Graves was very harsh and critical about the marriage because Lady Hamilton had not been able to prevent her husband's public humiliation, not because he thought it was unhappy. Next to all his criticisms Graves wrote that she 'had brought calm to [Hamilton's] affections; she won the good opinion of his friends; and she became to him the centre round which the pleasures, the duties, and the hopes of home were gathered' (Graves 1885, 61).

Graves' biography was received very well, but from the contemporary negative views on Hamilton's private life it can be concluded that not many people read Graves' enormous biography from cover to cover; all Graves' carefully noted nuances soon melted away. His most dark and foreboding sentences, all coming from only about six pages out of the two-thousand the biography consists of, were to be the most well-remembered.

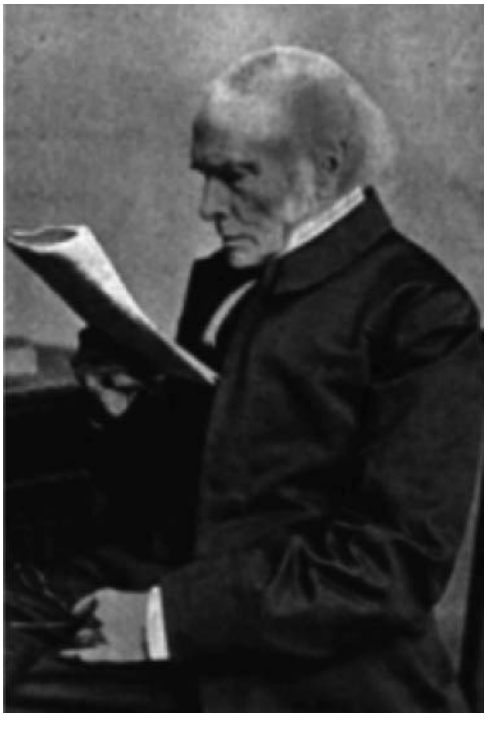

Figure 2. Robert Perceval Graves (1810–93). Reproduced from *The Graves Family of Yorkshire and Mickleton Manor, Gloucestershire, England*. http://www.gravesfa.org/gen068.htm (accessed on 21 February 2017).

Catherine Disney

One of the misconceptions about Hamilton is that he married Helen Bayly just to be married; that if he could not marry his first love Catherine Disney, he did not care whom he married. This idea originates in the fact that in 1825, while deeply in love, Hamilton became very depressed after unexpectedly learning from her mother that Catherine was going to marry an older reverend named William Barlow, while after Catherine's death in 1853 Hamilton was very disturbed for some months, writing very many letters about her. It seemed to imply that, despite his marriage, during his entire life he had only loved Catherine.

This story however has far more nuances than this. Losing Catherine in 1825 had indeed been very difficult; it took Hamilton almost seven years to come to terms with his loss. In the autumn of 1831 he fell in love with Ellen de Vere, and from a letter to a friend it is clear that his feelings were as deep as those for Catherine had been (Graves 1882, 601). After also losing Ellen de Vere, for about half a year Hamilton was periodically very depressed and melancholic, until in the summer of 1832 he made a remarkable discovery; that his way of coping with his grief had given him a 'passion-wasted life' (Graves 1882, 595). He found a way to resolutely change that: he decided to completely stop reminiscing about the past and concentrate on his work. He did not just hide his feelings: in October he wrote to a friend that he felt as if his 'health of mind and even of body were greatly improved' (Graves 1882, 619).

The discovery had a profound and lasting influence on his life; Hamilton still referred to it many years later (Graves 1885, 611–612). The immediate influence was twofold: that October he discovered conical refraction for which he would be knighted in 1835, and in the second week of November Hamilton wrote to a friend that through his discovery the 'power of hope' had revived, and that he 'lately' had 'begun again to associate Hope with Love, in the case of a person whom I have long known and deeply respected for eminent truth of character' (Graves 1885, 3); he had fallen in love with Helen Bayly.

Hamilton indeed never showed any regret about having married Helen Bayly, but he was very clear about his conviction that he would not forget his former two loves. He was just as clear however that his feelings for Helen Bayly were as deep as those for his former loves. And just as having found the loss of his former two loves very difficult, from the moment he fell in love with Helen Bayly he felt forlorn if she was not around (Van Weerden 2015, 142, 333–334).

As regards Catherine; from Hamilton's poems it can be derived that, although he had heard from her mother that Catherine had been 'claimed as a bride' (Graves 1882, 182), around the time of her marriage in 1825 he assumed that she was happy to get married (Van Weerden 2015, 274).[10] The first time Hamilton visited Catherine after her marriage was in 1830; he was staying at Armagh Observatory and she lived nearby. He noticed that she was not happy, and Graves mentions that after the visit Hamilton became almost 'morbidly despondent' (Graves 1882, 360). When Catherine visited him back at Armagh Observatory, Hamilton wanted to show her the use of the telescope, and then 'broke the wires of the eyepiece' (Hankins 1980, 106). It has been argued that not her marriage per se, but the realization that in the end her marriage had not made her happy was what so deeply upset him (Van Weerden

[10]Arranged marriages were quite common; many parents made attempts to ensure that their daughters would be well provided for and that their sons would marry women who would support their careers, which made marriages more contract-like than they are nowadays.

2015, 116–117); for Ellen de Vere, who did marry happily, Hamilton kept 'cherished remembrances' (Graves 1889, 23).

In 1845 Catherine visited Hamilton at Dunsink Observatory (Hankins 1980, 348). Hardly anything is known about this visit, but it led Hankins to conclude that the stress caused by that visit worsened Hamilton's 'drinking problems', culminating in the 1846 event at the Geological Society (Hankins 1980, 348). However, next to the doubts whether Hamilton had really been drunk during that event, it can be argued that a direct link between Catherine's 1845 visit and the event in February 1846 is very unlikely; the second half of 1845 was the most intense period of Hamilton's so-called high-church days (Graves 1885, 305–306; Hankins 1980, 229–244; Van Weerden 2015, 408, 409), in which he was more observant in his religious duties than ever before or after. Drinking alcohol to forget emotional pain, even to such a level that he would lose his grip on his drinking, does not fit in with such strictness, and is inconsistent with Hamilton's own claim, that for some months previous to the event he had lived 'in a very quiet and abstemious manner'.

In July 1848 Catherine wrote Hamilton a letter in which she thanked him for tutoring her eldest son. This letter started a correspondence during which both Hamilton and Catherine seem to have become more and more distressed until after six weeks Catherine decided that she had to tell her husband. As mentioned before, in those days women had to vow at their wedding to obey their husbands, and Barlow had refused allowing her to contact Hamilton (Hankins 1980, 348). The 1848 correspondence does not exist anymore. Graves only gives extracts (Graves 1885, 610–612), and Hankins surmises that Graves destroyed it (Hankins 1980, 449 note 9). Hamilton's distress seems to have been due mainly to learning that Catherine's marriage had been unhappy from the start; until then he apparently still believed that the marriage had started out as a happy one, but now he knew that he had lost her to an intrinsically unhappy one (Van Weerden 2015, 274–275).

Very soon after Catherine's last letter, towards the end of August 1848, Hamilton was invited to visit Parsonstown, to see Lord Rosse's new telescope. During the first days Hamilton slowly calmed down, and enjoying the astronomy and the company he started to feel better again (Van Weerden 2015, 280–284). After the 1846 event Hamilton had abstained totally for more than two years, but in the second week of his stay in Parsonstown he was persuaded to drink a glass of champagne. It is not known why Hamilton ended his period of abstemiousness, but it is known that he consciously had not vowed for abstinence (Graves 1885, 507). Since he also did not believe that he had been drunk at the 1846 event at the Geological Society, his motivation for abstinence may have been to avoid the risk that a possible second attack of 'giddiness' and subsequent violence could be blamed on alcohol again (Van Weerden 2015, 420, 439). Not having had a second attack, there was no need anymore not to 'enjoy the pleasures of the table' (Graves 1885, 527). It is also not known whether he drank more than that one glass; as regards to alcohol there is no record of anything out of the ordinary during the visit to Parsonstown. Graves however sounds very displeased (Graves 1885, 632); he clearly wished that Hamilton had never drunk again.

Graves does not mention anything with respect to Catherine during Hamilton's visit to Parsonstown, but Hankins discovered that while being there Hamilton received a letter from Catherine,

> written in open defiance of her husband. The letter contained a stamped envelope and instructions to Hamilton to mail the letter to her husband in the envelope

> provided. The contents of the letter and the handwriting showed signs of a complete emotional breakdown (Hankins 1980, 349).

Hamilton did not send the letter to Barlow, perhaps because he saw it as a 'terrible attack of mental disease' (Hankins 1980, 449 note 8), but in the meantime Catherine tried to commit suicide. Her life was saved although she seems to have been physically weakened by the attempt. Thereafter she did not live with her husband anymore; she lived with family members instead (Hankins 1980, 350).

In letters to friends in later years, Hamilton mentioned that Catherine's letter was written early in October 1848, and that he had received the letter while in Parsonstown. However, from the fact that Hamilton had planned to leave Parsonstown in the second week of September Hankins concludes that 'Hamilton must have confused the two months in his remembrances' (Hankins 1980, 449 note 8). Thus assuming that Catherine wrote her letter early in September, and connecting Hamilton's ending of the period of abstemiousness to his receipt of the letter, Hankins concludes that 'the internal torture of Catherine's suicide attempt must have been the real culprit—if a culprit was needed' (Hankins 1980, 350). This view on Hamilton's motives for breaking the period of abstemiousness obviously had a profound influence on the later image of Hamilton as an alcoholic: drinking due to 'internal torture' was taken as a sign of alcoholism.

The idea that Catherine's letter arrived early in September instead of October, and thus before Hamilton broke his period of abstemiousness instead of thereafter, has been extensively challenged in Van Weerden (2015, 284–288, 419–421); several instances indicate that Hamilton stayed longer in Parsonstown than planned, making it possible that he received the letter in October indeed. A more direct argument against the idea that Hamilton broke the period of abstinence due to distress over Catherine's letter is that drinking to forget acute distress often ends in drama; yet there is no indication that anything like that happened. There is also no evidence that Hamilton drank to change mood on any other occasion; rather on the contrary. At the times at which he apparently was publicly drinking much he seems to have been enjoying himself between periods of intense study, or he was excited about something, as he had been during the event at the Geological Society.

During the five years between Catherine's suicide attempt and her death Hamilton and Catherine did not see each other; that would have been impossible in those socially very strict times (Graves 1885, 616–617). Still, every now and then they sent gifts to each other through one of Catherine's brothers. In October 1853 Catherine sent Hamilton a pencil case and an inscription from which he understood that she was dying and wanted to meet him once more (Hankins 1980, 351). They were allowed two 'parting interviews' which were very emotional indeed; they kissed for the first and the last time (Hankins 1980, 352), and from Graves' comments it can be inferred that only then Hamilton understood that Catherine had also loved him but had been forced to marry Barlow (Graves 1885, 691–692).

That would of course completely explain why he was so extremely upset around the time of her death; it will have been less about her death[11] than about feeling devastated because he now knew that he had lost a marriage they both had wanted. But he must also have felt betrayed; after Catherine's marriage to Barlow in 1825 he had stayed with the Disney family, and he had felt much comfort in that (Graves 1882,

[11]Hamilton was a very religious man, and from his letters it is known that he was not afraid of death.

188–190). He had not known then that Catherine's father had had an 'iron will', and that despite Catherine's desperate pleadings she was 'led as a victim to the altar' (Hankins 1980, 39).

After Catherine's death, in November 1853, Hamilton again did not drink alcohol to change his mood; there is no sign that during these very difficult months he drank more than usual, and at the latest after the beginning of 1854 he did not drink 'to excess' anymore. As a married man living in Victorian Ireland talking about Catherine was impossible; trying to relieve his distress Hamilton wrote very many letters. Hankins remarks that 'unburdening himself before so many correspondents seemed to have salutary effects' (Hankins 1980, 357).

Catherine Disney clearly was an extremely unhappy woman. The saddest part of Hamilton's story however seems to be that the social and moral boundaries of his time were so very strict that he could not show openly that he loved two women at the same time; Catherine as the love he had lost but who died having finally been able to tell him that she had also loved him, and his wife Helen as the woman he trusted with his life, and whom he remained attached to until his death. There is indeed not any sign that Hamilton ever gave any rank to the importance of the three women in his life (Graves 1889, 37). But Ellen de Vere had married happily and there thus was no reason to get upset over her; that was what had been so completely different with Catherine.

An 1866 anecdote

We will now show how the negative views of Hamilton evolved using an anecdote from Hamilton's eldest son William Edwin, as retold by Tait in 1866. Since many books and articles discussing Hamilton's work came accompanied by biographical sketches, it is possible to follow the evolution of the 1866 anecdote through the years, and to show how Hamilton's image became ever more caricature-like.

William Edwin's memoranda

After Hamilton's death in 1865 William Edwin sent memoranda about his father to both Graves and Tait. Graves used them in his biography (Graves 1889, 239–243); Tait retold a memorandum in 1866 (Tait 1866, 37–38). The tone of William Edwin's original notes seems to have been different in both cases; the anecdotes as given by Graves paint a picture of a totally unworldly mathematician, almost oblivious to the world,[12] while Tait's account emphasizes Hamilton as a mathematician. The 1866 anecdote as given by Tait reads:

> '[Hamilton] used to carry on,' says his elder son, 'long trains of algebraical and arithmetical calculation in his mind, during which he was unconscious of the earthly necessity of eating: we used to bring in a 'snack' and leave it in his study, but a brief nod of recognition of the intrusion of the chop or cutlet was often the only result, and his thoughts went on soaring upwards. I have been much with him in his periods of mathematical incubation, and would divide them into three,

[12]There are good reasons to doubt the literal truth of William Edwin's stories as told to Graves. Arguments for interpreting them as colourful compositions of little events and striking traits have been discussed in (Van Weerden 2015, 350–354, 428–429).

> thus: —First, that of contemplation, above indicated. Second, that of construction. In this he committed to paper [...] the skeleton, afterwards to be clothed with flesh and blood, of the results arrived at. Third, the didactic stage. [...] He proceeded to consider how to teach it, and this by experiment. [...] The audience generally consisted of the Observatory assistant and myself' (Tait 1866, 37–38).

From this memorandum it can be seen that Graves was exaggerating when he claimed that Hamilton did not have regular times for his meals or no regular meals at all; Hamilton only skipped meals when deep in an investigation. William Edwin does not say anything about the rest of the household; if chops were being brought in, they were obviously freshly cooked.

In 1915 Sir Robert Stawell Ball, a successor of Hamilton at Dunsink Observatory, combined the 1866 anecdote with a description of the chaos in Hamilton's study. Hamilton was fully aware of it; in 1845 he wrote to a friend: 'Have you one to spare of your first Paper on the Foundation of Algebra? I know you sent me one [...]; but it is buried, I am sorry to say, among piles of pamphlets and papers, and is, for the present, lost' (Graves 1889, 258). The situation became even worse in 1852:

> Ten days (or nights) ago, I wrote to you a double-sheeted note, but laid it aside with the purpose of adding to it, and now [...] there seems but a poor prospect of its ever turning up again. For you must know that I gave a sort of official dinner in my Library on Wednesday last [...], and was obliged to allow housemaids to use pretty freely their discretion in clearing out the room. Orders were given, no doubt, to abstain from destroying papers; but to all practical purposes, many, indeed most, of those which were lying about are hopelessly hidden from my view (Graves 1889, 377–378).

Apparently describing the situation thereafter Ball writes:

> In the study where [Hamilton] worked, books, papers, and letters were heaped together in indescribable confusion. They overflowed from the bookcases and the shelves on to the floor. They were not only piled in corners, but they spread over the room in an ever-deepening mass, until his study (as I was told by a nephew of the great man) presented a most extraordinary appearance. There was a kind of laneway from the door to his writing-table, on either side of which papers, books, letters, and mathematical manuscripts were heaped together to a depth of two or three feet. Visits of the housemaid to this sanctum were rigidly interdicted. Soaring aloft in mathematical speculation, Sir William was utterly oblivious of the sound of the dinner-bell. When at last Nature did make some food necessary, a chop would be handed in on a plate at the door. The nephew above mentioned declared to me that when he visited the room he saw many of these plates, with the chop bones on them, thrown about on the piles of manuscripts! (Ball 1915, 97).

The eye-witness report of the nephew about the plates is in complete accordance with William Edwin's anecdote; a new detail is that, since he saw bones on the plates, Hamilton did eat the chops.

1882, 1885, 1889, Graves

In his emotional outburst, Graves wrote about the skipped meals in a way which strongly suggests that he had seen it all from close-by. Yet Graves never witnessed Hamilton skipping meals; for almost the entire duration of Hamilton's marriage he lived in Windermere, England, and during his rare visits as one of the 'eminent guests', Hamilton dined and spent time with him (Graves 1889, 548). Graves gives William Edwin's memoranda in the third volume of his biography, and one of them is about Hamilton's habit of sipping porter; it is the only indication as to how Graves knew about it. The original memorandum is not given, but since it is known that William Edwin had no objections against drinking alcohol (Van Weerden 2015, 453–456), Graves seems to have mixed it completely with his own opinion, which suggests that he could not allow any remotely logical reason to drink alcohol to go without warning:

> To continue to the end a task, in which good progress had been made, required, as [Hamilton] was convinced, support and stimulus for the brain, and this he administered to himself in the injurious form of porter taken in small sips as he felt fatigued. The need thus experienced, connected as it was, with his disinclination to be disturbed at his work by regular meals, was, according to his son's testimony, the principal cause of his recourse to alcoholic stimulant (Graves 1889, 239).

From this quote it appears again that Graves was exaggerating; his earlier suggestion that Hamilton drank porter after work to get warm again is completely absent here.

Graves was an erudite man, and preparing for the biography it is very likely that he read Tait's 1866 article, which he seems to have combined with William Edwin's memoranda as given to himself. Due to Graves' attempts to clear Hamilton's name by blaming his wife for his bad reputation, this 1866 anecdote, which had started out as a description of Hamilton's working habits, thus evolved into the notion that because Lady Hamilton was incapable of 'regulating' her husband's 'habits' he had no regular meals, causing him to just eat some cold meat and to drink porter. As Graves saw it, the regularity thereof caused 'cravings' (Graves 1885, 506), which in turn led to the humiliating event at the Geological Society in 1846 and the occasional drinking to excess after 1848. But mentioning that the gossip was most exaggerated, Graves never claimed that Hamilton was an alcoholic, and mentioning that the Hamiltons remained attached to each other to the end of their lives, he never claimed that Hamilton was unhappily married.

1901, Macfarlane

In the early 1900s Alexander Macfarlane lived in Canada. In 1901 he lectured about Hamilton; this lecture was incorporated in his 1916 book *Lectures on ten British mathematicians of the nineteenth century* (Macfarlane 1916). Macfarlane extended Graves' critical view on Hamilton's marriage:

> The kind of wife which Hamilton needed was one who could govern him and efficiently supervise all domestic matters; but the wife he chose was, from weakness of body and mind, incapable of doing it. As a consequence, Hamilton worked for the rest of his life under domestic difficulties of no ordinary kind (Macfarlane 1916, 41).

Macfarlane thus turns Graves' suggestion that the complete household was affected by Lady Hamilton's incapabilities into a fact. He follows Graves' notion that

Hamilton 'craved for alcohol' without saying that he was an alcoholic, and adds to Ball's combination of the anecdote with the chaos in Hamilton's study the notion that Hamilton had also flooded the dining-room with his papers. This mix up between the library and the dining-room seems to have been caused by the story about the clearing out of the library for an official dinner, and may have been enhanced by William Edwin's use of the word 'study' for the room which Hamilton almost invariably called his 'library'.

> [Hamilton] had no regular times for his meals; frequently had no regular meals at all, but resorted to the sideboard when hunger compelled him. What more natural in such condition than that he should refresh himself with a quaff of that beverage for which Dublin is famous—porter labelled X^3? After Hamilton's death the dining-room was found covered with huge piles of manuscript, with convenient walks between the piles; when these literary remains were wheeled out and examined, china plates with the relics of food upon them were found between the sheets of manuscript, plates sufficient in number to furnish a kitchen'.[13] (Macfarlane 1916, 46).

1937, Bell

In 1937 Eric Temple Bell wrote a chapter about Hamilton in his *Men of mathematics*, called 'An Irish Tragedy'. With this chapter Bell was the first to depict Hamilton as an alcoholic, having given in to his alleged cravings:

> Hamilton [...] was properly hooked by an ailing female who was to become a semi-invalid for the rest of her life and who, either through incompetence or ill-health, let her husband's slovenly servants run his house as they chose, which at least in some quarters—especially his study—came to resemble a pigsty. [...] After his marriage, irregular meals or no meals at all [...] were compensated for by taking nourishment from a bottle. [...] [Hamilton] got drunk at a scientific dinner. Realizing what had overtaken him, he resolved never to touch alcohol again, and for two years he kept his resolution. Then, during a scientific meeting [...] [he was jeered at] for drinking nothing but water. Hamilton gave in, and thereafter he took all he wanted—which was more than enough (Bell 1937, 352–353).

In this version the house was also dirty; new here are the slovenly servants. Alluding to the anecdote and introducing a very lonely picture of Hamilton's last years,[14] Bell concludes his chapter, introducing as another new ingredient that Hamilton did not eat the chops:

> Innumerable dinner plates with the remains of desiccated, unviolated chops were found buried in the mountainous piles of papers, and dishes enough to supply a large household were dug out from the confusion. During his last period Hamilton lived as a recluse, ignoring the meals shoved at him while he worked,

[13]Ball's book was published in 1915, two years after Macfarlane's death, yet Ball and Macfarlane knew each other well, and Macfarlane may have heard the story earlier.

[14]Although Hamilton clearly had a full family life and many 'local friends', Graves' focus on Hamilton's connections with upper class friends and eminent scientists makes it difficult to gain an idea about the day-to-day worries of the Hamilton household. The superficial picture of Hamilton's daily life which emerges from Graves' biography is indeed overall very quiet or even lonely.

> obsessed by the dream that the last tremendous effort of his magnificent genius would immortalize both himself and his beloved Ireland (Bell 1937, 361).

1954, Whittaker

Sir Edmund Whittaker was another one of Hamilton's successors at Dunsink Observatory. The following quotations are taken from his book *Lives in science*; although the book was printed in 1957, the chapter about Hamilton was written in 1954. Whittaker repeated Macfarlane's idea that Hamilton worked in the dining-room, and extended Bell's lonely picture of Hamilton.

> Lady Hamilton bore two sons and a daughter in six years, but she found herself unequal to the work of home administration and left Dunsink for two years to live with a married sister in England. She returned in 1842, but things became no better. Hamilton henceforth had no regular times for his meals, and he began to use alcoholic stimulants to a dangerous extent. [...] From [1843] until his death 22 years later, Hamilton's chief interest was to develop the new calculus [of quaternions]. They were mostly sad and lonely years, owing to the frequent illnesses and absences of his wife. He worked all day in the large dining room of the Observatory house, into which from time to time his cook passed a mutton chop. (After his death scores of mutton chop bones on plates were found sandwiched among his papers.) (Whittaker 1957, 67, 72).

It can be seen how Hamilton's alcoholic image is worsening; Hamilton is now drinking to a 'dangerous extent'. Whittaker further seems to have assumed that even after 1843 Lady Hamilton was often absent from the observatory, which is incorrect; after 1842 she did not leave the observatory for longer periods anymore.

1980, Hankins

Thomas Hankins was far less negative about the marriage and about Lady Hamilton than Graves was. That does not mean however that he looked at the marriage very positively; he called Lady Hamilton 'a shadowy figure in Hamilton's life' (Hankins 1980, 114). Following Graves in the idea that Hamilton drank porter to get warm again, in Hankins' version the 1866 anecdote is completely taken over by Graves' additions. Hankins remarks that after Lady Hamilton returned in 1842

> Hamilton had no regular meals, sometimes missed meals altogether, and dispersed the chill of the night with glasses of porter, when he should have had a warm fire and hot coffee. Yet Hamilton's problems could not have been caused entirely by Helen's lack of good management, because he was happier with her than without her. (Hankins 1980, 126).

As regards Hamilton's chaos Hankins vividly sketches the clearing out of the library, the description whereof he found in Hamilton's letters and notebooks. Yet apparently following Bell, in his version Hamilton's papers had also reached the bedrooms:

> The papers flowed over the tables, onto the floor, and under the beds. On one occasion, when [Hamilton] was giving a large formal dinner, he had to clear the

> library. It took two days of solid effort, and even then the task was accomplished only by resorting to bags and baskets to contain all the papers. Tradition has it that when Hamilton's son sorted this mass after his father's death he found plates of desiccated chops interleaved with the manuscripts, creating a true archeological midden for his literary executor (Hankins 1980, xx).

Hankins thus also follows Bell in the notion that the chops were desiccated. Still, probably due to his less negative opinion about Lady Hamilton, Hankins does not connect this story so directly to her as the other writers did.

Describing the years before Hamilton's marriage Graves had written rather openly about Catherine and about how hard Hamilton had found it to cope with her loss, but after the marriage Graves was very cautious about anything concerning her. Hankins' introduction of Catherine as a very important person both before and after the marriage therefore showed a completely new aspect of Hamilton's life; and stating that in his whole life Hamilton only loved Catherine (Hankins 1980, 113, 358), Hankins profoundly influenced later views of Hamilton.

1998, O'Connor and Robertson

In their sketch of Hamilton on the *MacTutor* website (O'Connor and Robertson 1998),[15] John O'Connor and Edmund Robertson write:

> Catherine aside, Hamilton seemed quite fickle when it came to relationships with women. Perhaps this was because he thought that he ought to marry and so, if he could not have Catherine, then it did not really matter whom he married. In the end he married Helen Maria Bayly who lived just across the fields from the observatory. [...] Unfortunately, the marriage was fated from the start. They spent their honeymoon at Bayly Farm and Hamilton worked on his [mathematics] for the duration. Then at the observatory Helen did not have much of an idea of housekeeping and was so often ill that the household became extremely disorganised. In the years to come she spent most of her time away from the observatory as she was looking after her ailing mother or was indisposed herself (O'Connor and Robertson 2003, 64).

Both William Edwin's anecdote and the additions to it have disappeared; what is left is the derailed household. New here is that the marriage was 'fated from the start'.

2008, Stewart

Ian Stewart's book *Why beauty is truth* contains a chapter entitled 'A Drunken Vandal', in which Hamilton is described as 'a brilliant linguist, a mathematical genius, and an alcoholic'. Stewart surmises that after having fallen in love with Catherine Disney, Hamilton

> confined his attentions to writing poems, and his would-be love promptly married a wealthy clergyman, fifteen years her senior, who had a less literary approach to fair damsels (Stewart 2008, 139).

[15]The 1998 sketch about Hamilton was published as a chapter in the book *Physicists of Ireland: passion and precision* (O'Connor and Robertson 2003).

Nothing is left of the heartbreaking stories which were introduced by Hankins, about Catherine's forced marriage and the distress and utter unhappiness it caused over the years.

Stewart follows O'Connor and Robertson in the idea that Hamilton's marriage was 'fated from the start', yet he interprets that rather general remark as a fact:

> Eventually, [Hamilton] married Helen Bayly, a local lass who lived near the observatory. [...] The honeymoon was a disaster [...]. In 1834 they had a son, William Edwin. Then Helen went away for most of a year. A second son, Archibald Henry, followed in 1835, but the marriage was falling apart (Stewart 2008, 142).

These statements are very extreme indeed; so far no-one had suggested that the marriage was falling apart. William Edwin's 1866 anecdote does not appear anymore, but Macfarlane's version of the plates between the papers can be recognized when Stewart writes about the time after Catherine's death. New here is that Hamilton's disorder was due to his grief about Catherine:

> Hamilton was grief-stricken. His life became more and more disorderly; uneaten food was found mixed with his mathematical papers after his death, which occurred in 1865—attributed to gout, a common disease of heavy drinkers (Stewart 2008, 154).

The fact that Hamilton died mainly from gout, which is often believed to 'prove' that someone was drinking heavily, further added to his alcoholic image. However, from a doctor's report given by Hankins it is certain that Hamilton was not drinking alcohol during the last months of his life. The report also shows how persistent the gossip already was during Hamilton's lifetime; alluding to Hamilton's mathematical work the doctor had added to it:

> I am of the opinion the human mind would be rendered quite incapable of executing such a mighty task if the functions of the human brain were tainted by intemperate habits, to which it has been alleged Sir William was subject (Hankins 1980, 378–379).

It did not counteract Graves' emotional remarks about Hamilton's 'cravings' however; his dark sentences, such as that 'no-one needed a capable wife more than Hamilton', far more easily lingered in the mind.

The evolution of William Edwin's 1866 anecdote eventually led to the short biographical sketches which nowadays are scattered around the internet, in which for instance 'in his cabinets, rows of dry lamb chops alternated with heaps of precious manuscripts',[16] and Hamilton found the quaternions 'after a period of emotional distress and alcohol abuse'.[17]

[16] *Encyclopedia of world biography*, Sir William Rowan Hamilton. http://www.encyclopedia.com/people/science-and-technology/mathematics-biographies/sir-william-rowan-hamilton. Accessed on 15 September 2017.

[17] *The official string theory web site*, A timeline of mathematics and theoretical physics. http://www.superstringtheory.com/history/history2.html. Accessed on 15 September 2017.

Conclusion

Hamilton deserves a much more positive portrayal of his private life than is usual nowadays. We have shown that the negative image is based mainly on contemporary gossip about Hamilton's drinking habits, which however must be interpreted within the context of the stricter social norms of the time. Graves, trying to restore Hamilton's bad reputation, blamed Lady Hamilton for it, which led to the negative view of this marriage. We refuted Graves' idea of a 'process of obscuration', which according to him was induced by Lady Hamilton's incapability to keep her husband under control. It led to the notion that she was unable to run the household; however, we have shown that it is far more likely that she adjusted well to a husband who needed more than usual freedom to be able to work out his quaternion theory.

Hankins' more recent discovery that Catherine also deeply influenced Hamilton's emotions in later years has been interpreted as a further confirmation of Hamilton's alleged loveless family life. We have argued that, although hearing about Catherine's unhappiness was periodically very difficult, Hamilton found positive ways to handle his feelings and keep his marriage safe.

Finally, we have traced the evolution of a first-hand anecdote about Hamilton's working habits. Various authors reshaped the story by adding new 'facts' and deleting or reinterpreting others, in a fashion that is more reminiscent of the amusing children's game where a story is passed on by whispering it in the next child's ear, than of solid historiographical practice. This can be taken as an example of what may happen when facts are not checked carefully with the sources. Let Hamilton's case serve as a warning to us all.

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