

Humphrey Lloyd, 1800-1881

by *T. D. Spearman**

One would have to admit that the name of Humphrey Lloyd does not strike a strong chord of recognition today. Bartholomew Lloyd, Humphrey's father, who became Provost one hundred and fifty years ago this year in 1831, is better remembered; some will vaguely recollect that there were two Lloyds, father and son, who were both Provosts. But who was Humphrey Lloyd and why should we remember him?¹

Humphrey Lloyd was born in Dublin in 1800. His father Bartholomew was a Junior Fellow at that time, having been elected in 1796; his mother Eleanor was the daughter of Patrick McLaughlin, an alderman of the city, who had been High Sheriff of Dublin in 1779. The Lloyds were a branch of a Welsh family which had settled in Wexford in the 1680s while the McLaughlins came from an old Gaelic family. Humphrey attended Mr White's school in Dublin and entered College in 1815. In 1818 he was elected a Scholar — the scholarship examination at that time being entirely in classics — and in the following year he graduated with the science medal, which was awarded for the first place on the science side, essentially in mathematics. In 1824 he was successful in the examination for Fellowship and, as a Fellow, was ordained. Seven years later Lloyd was appointed to the Erasmus Smith Chair of Natural and Experimental Philosophy vacated by his father on becoming Provost. He held that chair until 1843 when he was co-opted a Senior Fellow and was Vice-Provost for five years prior to his election as Provost in 1867. He died in the Provost's House in 1881.

Starting with a strong background in mathematics Humphrey Lloyd's compelling scientific interests were in physics and geophysics. He made major contributions and was recognized internationally as an authority in two main fields, optics and geomagnetism, both of which at that time were mainstream areas of research in which exciting developments were taking place. He was a skilled experimentalist and devised sophisticated and ingenious instruments for his magnetic measurements. He was a Fellow of the Royal Society, President of the British Association for the Advance-

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ment of Science in 1857, and President of the Royal Irish Academy, in succession to Hamilton, from 1846 to 1851.

Although a distinguished scientist Lloyd was not of course the equal of Hamilton and as a reforming provost his achievement could not match that of his father Bartholomew. Salmon was a much more impressive public figure and McCullagh by his brilliant but tragically brief career found a tenacious hold on the romantic imagination of the time. Yet there can be no doubt that Humphrey Lloyd was a key figure in the history of this College, who exercised a profound influence on its development during the half century from his appointment to the chair of natural philosophy to the end of his provostship. His memorials are there if we look for them. The Engineering School was founded in 1841 at his instigation — his scheme included the creation of the chairs of geology and mineralogy² and of applied chemistry. He was the man primarily responsible for the introduction of the first science moderatorship, in experimental physics, in 1850. Perhaps most important, Humphrey Lloyd in a very real sense was the founder of a tradition of scientific research and particularly of research in physics within this university. One can trace the continuity. In the year that Lloyd died Fitzgerald was appointed to the Erasmus Smith chair. Optics has remained a source of fascination and is still one of our most exciting areas of research; the interest in geo-magnetism, started by Lloyd, has also continued to the present time in Trinity and in recent years in the Institute for Advanced Studies.

Of material reminders, many of us remember the elegant magnetic laboratory which used to stand in the Fellows' garden and was used later as a manuscript room until it was removed to make way for the new Arts and Social Sciences Building. This was Lloyd's laboratory; happily it has been preserved and re-erected at Belfield. We have just come from the College chapel — the encaustic tiles of the aisle on which we walked were a gift from Humphrey Lloyd who also presented the communion rail which was recently removed for liturgical and aesthetic reasons and the marble chancel steps which are still there. An attractive bust — given by Mrs Lloyd after his death — stands in the Long Room and two less impressive portraits also belong to the College.³

Humphrey Lloyd was repeatedly fortunate in the opportunities that presented themselves to him. He could not have entered College at a more propitious moment. Through the eighteenth century there was little development in mathematical studies in Trinity. Here, as in England, the shadow of Newton imposed an orthodoxy which

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stifled innovation and cut us off from the remarkable developments in mathematics and in theoretical physics which were taking place on the Continent and particularly in France.⁴ The foundation of the Ecole Polytechnique in 1794 gave a major stimulus to the teaching of mathematics. The decisive reforms in Trinity date from Bartholomew Lloyd's appointment to the Erasmus Smith Chair of Mathematics in 1813. Although he did not make any substantial original contribution to research, Bartholomew was familiar with the developments which had taken place and almost immediately he succeeded in having the syllabus transformed and in introducing the new ideas. Candidates for the science medal now read Laplace, Poisson and Lacroix. Lloyd himself wrote an important textbook *Mechanical philosophy* and in the decades ahead there was something of an industry in writing textbooks and translating from the French. We can sense the magnitude of the change from the preface to Dionysius Lardner's book *Elements of the theory of central forces* which was published in 1820. According to Lardner ' . . . the study of mathematics has leaped a chasm of a hundred years, and men who, according to the system pursued two years before the advancement of Dr Lloyd to the professorship of mathematics, would be employed in fathoming the mysteries of Decimal Fractions, are rather more respectably employed with the *Mécanique Céleste*'. From 1790 until 1827, John Brinkley held the chair of astronomy. A good mathematician as well as an astronomer he too must have contributed significantly to creating this new climate.⁵

So when Humphrey Lloyd became a Fellow in 1824 he was well grounded in mathematics and physics, with an awareness of the current areas of research. For the next seven years as a Fellow he must have been heavily occupied in teaching — in particular, and of special significance in relation to the opportunity which was shortly to present itself to him, he lectured on optics and published *A treatise on light and vision* in 1831.⁶ This was a particularly exciting time in the development of optics following the publication of Fresnel's two memoirs on double refraction during the early 1820s. Lloyd also published some papers on topics in geometry and in mechanics.

In 1822 Bartholomew Lloyd had moved from the Chair of Mathematics to that of Natural and Experimental Philosophy and when he became Provost in 1831 the latter chair was vacant. Bartholomew's commitment to reform was as strong as ever and he was determined to radically change the role of the major chairs. Until then the main chairs such as Mathematics, Natural Philosophy and

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Greek, were held by Fellows, almost always Senior Fellows. There were some modest lecturing and examining duties but the holders would not necessarily have felt a serious responsibility to promote their subject. The Regius Professorship of Divinity was an exception. Appointment to that chair was made from among the Fellows but the person appointed had to resign his Fellowship on election. We have already seen that Bartholomew took his professorship very seriously; he was now determined, starting with Natural Philosophy, to make the chairs into full time appointments. His idea was that Junior Fellows would be appointed into chairs strictly on the basis of their academic competence in the subject concerned and that on appointment they would cease to be tutors so that they could devote themselves to their subject and to the responsibilities of their chairs. The professorial salary would be set at a level to compensate in large part for the loss of tutorial revenue. The natural candidate for the Erasmus Smith chair, under these new arrangements, was of course the Provost's son. At this stage Humphrey had a small amount of original work to his credit but the case for his appointment was more a matter of future promise than of substantial achievement to date. However, among the Junior Fellows there was certainly no other candidate with a stronger or even comparable academic case. There was a certain amount of criticism at the Provost's son being promoted and indeed the whole project was nearly placed in jeopardy when Bartholomew Lloyd overplayed his hand by proposing that the incumbent of the chair should be exempt from the celibacy rule which at that time lay so heavily on the shoulders of the Fellows.⁷ Pragmatist and skilful politician that he was, the Provost had the sense to withdraw this aspect of his proposal and Humphrey was duly appointed as full time Professor of Natural and Experimental Philosophy. The celibacy rule was eventually repealed by Queen's Letter dated May 1840 and Humphrey Lloyd in July of that year married Dorothea, the daughter of the Reverend James Bulwer from Norfolk. We do not know if Miss Bulwer was already in the wings when Bartholomew tried to facilitate his son in 1831.

The new arrangements had changed the Chair of Natural Philosophy so that it now assumed more of the characteristics associated with a modern headship of department. The Professor, relieved from tutorial duties, was responsible for the lecturing and examining in his subject; he might reasonably be expected to take initiatives in promoting the development and organization of his subject within the university; and he was expected to maintain an active commitment to research. On each of these counts Lloyd was

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an exemplary Professor. We shall return later to some of his organizational initiatives but first we should consider the development of his research which was soon to achieve a dramatic success. At some stage, possibly immediately following his appointment as Professor, Lloyd's interests moved towards experiment. One of the duties of the Professor of Natural and Experimental Philosophy at the time was to lecture and give practical demonstrations to the Junior Sophister Class. It is quite possible that this obligation of giving practical demonstrations helped to develop his interest in experimental work — he must have soon realised that he had a natural flair for this. His scientific philosophy was firmly Baconian: he was totally committed to the scientific method and the central role of experiment. This is clear from his introductory undergraduate lectures in Natural Philosophy which were published in 1834 and which in this emphasis would scarcely differ from what his successors might preach today. An aspect which now would usually not be emphasized is the confident reference to natural religion — understandable, of course, for a clergyman in the 1830s. There is no evidence that Lloyd had been influenced by Hume or Kant. Kant had made a powerful impression however on the young William Rowan Hamilton, and some distinctly implausible arguments based on Kantian notions about the nature of time undoubtedly influenced Hamilton in his invention of quaternions. But quaternions were still some years in the future and at this time Hamilton was preoccupied with optics. Here, in order to set the stage for Humphrey Lloyd's first major scientific success, we must digress briefly to say something about Hamilton and also about the state of knowledge in optics at the time. William Rowan Hamilton, undoubtedly the greatest scientist that Ireland has produced, was five years younger than Humphrey Lloyd. The story of his appointment to the Andrews Chair of Astronomy in 1827 is well known — Hamilton's prodigious talent was recognized and the decision to appoint him to the chair, vacated by Brinkley on his election as Bishop of Cloyne, was made before his B.A. had been awarded. By his acceptance of the chair Hamilton had to step out of the normal promotional path so that he never became a Fellow. This meant that his involvement within the College was limited to giving lectures. There is no doubt that the Dunsink job with its light duties was ideal for Hamilton, leaving him free to devote himself to his research. His first major work was in optics, to which he brought a strikingly original approach and wrote a remarkable memoir entitled *A theory of rays*.

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Optics had recently moved back into the centre of the scientific stage following the discovery of the phenomenon of interference by Young and subsequently the publication of two highly significant memoirs by Fresnel in the early 1820s. For over a century the conflict between the wave and corpuscular theories of light had remained unresolved. Newton had been led to reject the wave theory because the type of wave which would be required was transverse rather than longitudinal and he could not conceive of a mechanism whereby transverse light waves could propagate. He concluded that light must be corpuscular in nature. When Young demonstrated the phenomenon of interference for light this pointed strongly towards a wave interpretation, as interference effects were already familiar features in wave systems — in sound, for example, or in water waves.

Among the various observed phenomena which any theory of light would have to encompass was that known as double refraction. This remarkable phenomenon had been discovered in 1669 by Bartholinus. Certain crystals — in particular that known as Iceland spar — gave a double image. This meant that a single ray of light entering the crystal produced two refracted rays, and the phenomenon was known as double refraction.

Huyghens, as early as 1690, had invented an elegant and clever procedure for describing wave propagation which could also allow for the simpler cases of double refraction. But the more complicated phenomenon in so-called biaxial crystals could not be described by this method. Fresnel's remarkable achievement was to devise a model for the propagation of transverse light waves in crystals, which led to Huyghens' construction where that was applicable but which could also describe the more complicated phenomena involving biaxial crystals. Fresnel's method was mathematically rather involved — it led to wave surfaces which were geometrically quite complicated and whose properties were not immediately obvious from their equations. In fact the study of these surfaces was to provide a major stimulus to the development of geometry.

Hamilton of course knew and was deeply interested in Fresnel's results. By one of those strokes which probably lie between luck and genius Hamilton noticed a remarkable feature of the wave-surface which meant that for a particular direction of the incident ray on a biaxial crystal, instead of double refraction there should be a quite new effect: instead of a double image, of each incident ray producing two refracted rays, in this special case each incident ray should give rise to a complete cone of refracted rays.⁸ Hamilton immediately

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described his discovery to Lloyd and suggested that he should perform the experiment to see if this phenomenon, predicted from the Fresnel wave surface, did in fact occur. It was not an easy experiment, the effect was easily obscured and the quality of the crystals available to Lloyd was relatively poor, so the positive outcome was a tribute to Lloyd's considerable skill, as well as his patience and persistence. The correspondence between Lloyd and Hamilton has been preserved and gives a fascinating account of the collaboration.⁹ Hamilton's prediction and his proposal to Lloyd, were made on 22 October 1832. In mid-November Lloyd nearly despaired and wrote to Hamilton that he should ask Airy in London, who would have access to much better crystals, to try the experiment: fortunately Hamilton took no action, and a few weeks later, on 14 December, using a fine new specimen of arragonite which he had just received from Dolland in London, Lloyd observed the new phenomenon.

The observation of conical refraction was generally seen as a powerful confirmation of the wave theory — the evidence for which was by now hard to reject, despite the reservations about the hypotheses underlying Fresnel's theory and the problems posed by the newly observed absorption phenomena. It was of course a remarkable discovery, one of the classical vindications of the scientific method. Fresnel's theory had been constructed to accommodate known experimental results. Following fairly elaborate mathematical argument a new prediction was extracted from the theory, a prediction which was quite unanticipated and indeed must have seemed rather improbable. Recognition followed swiftly. At the 1834 meeting of the British Association in Edinburgh Lloyd was invited to give the main review talk on Physical Optics and in 1836 he was elected to the Royal Society. The year following the Edinburgh meeting at which Lloyd presented his report the British Association met in Dublin and on this occasion Hamilton, now at the age of thirty a famous man, was knighted by the Lord Lieutenant.

There was a third person in Dublin who was actively working in optical theory at that time. James McCullagh, who in 1832 was only 23 years old and who was elected to Fellowship in that year, was an extremely talented geometer. He also had studied Fresnel's wave surface and in 1830 had submitted a paper to the Academy which showed how Fresnel's results could be expressed in a significantly simpler form. When Hamilton predicted conical refraction McCullagh reacted angrily on the grounds that this result was an

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obvious and immediate consequence of his own published work and sent a note to the *Philosophical Magazine* to this effect. McCullagh had good reason to be disappointed not to have taken that further step which now seemed so obvious, but he had no valid grievance. Hamilton of course was furious. It was very much in character for Humphrey Lloyd, the eldest of the three and certainly the most sensible, to act as mediator. A further note from McCullagh was published in the next issue explaining that he had written in some haste, and peace was restored.

Lloyd maintained his interest in optics over the years but his main effort shortly switched elsewhere. He was soon to become a key figure in the most elaborate and widely based scientific collaboration that had ever been and that even by today's standards seems remarkable. This was a systematic study of the Earth's magnetic field. It involved the construction of a network of observatories which spanned the globe, from Peking to Toronto, from Van Diemen's Land to Siberia. East India-men were equipped to make observations and naval frigates carried instruments to the Zambesi river, the Antarctic and the North West Passage. Standard schedules were introduced for observation; by 1840 Lloyd and his three assistants in Dublin were taking observations every alternate hour, day and night — although Sabbath observance caused some difficulties and revealed some differences of outlook! Part of the fascination of the programme was the fact that the magnetic properties being observed reflected the deep interior structure of the earth. The great mathematician Gauss, who was actively involved in the programme as director of the Göttingen observatory, had developed a mathematical description which allowed data to be related to a model of the Earth's internal magnetic structure. The variations in time were related to extra-terrestrial phenomena. Further motivation for the programme came from the fundamental developments in the theory of electro-magnetism due to the work of Oersted, Ampère and Faraday. The practical importance of the compass in navigation was, of course, in the early period sufficient reason for supporting a research programme but later this became a classic exercise in Baconian science in which an unprecedented quantity of data was compiled — out of which, it was confidently expected, a theory would be extracted.

Following earlier work in France and Germany led by such people as von Humboldt and Arago,¹⁰ the British Association took an active interest in geo-magnetism from its first meeting in 1831. In 1838, with the full backing of the Royal Society, the Association proposed

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that stations should be established on a worldwide basis to make simultaneous measurements and a committee consisting of Herschel, Whewell, Peacock and Lloyd was given the task of implementing this programme. In practice Sabine (who was later to become President of the Royal Society) and Lloyd were the main activists. In the ensuing years these two were to travel widely, to negotiate with the Government, to arrange training programmes, to devise schedules and to assemble the data. Lloyd already had his own observatory which without any apparent difficulty he had persuaded the Board to provide. Writing to Herschel he said 'the heads of the college have most liberally granted everything that the state of science demanded, to render it (the laboratory) complete'. We have already noted Lloyd's skill as an experimentalist — one of his most important contributions to the study of earth magnetism was in the design of improved types of instrument which became standard equipment.

There is not time to say more about this work, which took up the larger part of Lloyd's scientific career. Apart from the work in geo-magnetism Lloyd also had a general interest in geology, and he was actively involved in meteorology. Meteorological measurements were made at his observatory and he also was involved in an Academy sponsored project for meteorological observations in 1851. He wrote papers on such topics as 'the atmospheric wave which passed over Dublin in February 1849', 'the storm which visited Dublin on the 18th April 1850', 'the cyclone of the 19th November 1850' — a disturbing progression!

In 1841, Lloyd, with McCullagh, who was now Professor of Mathematics, and Luby, another of the Junior Fellows who was the Donegall Lecturer in Mathematics, proposed to the Board the establishment of the School of Civil Engineering. They argued that the existing pattern of training through apprenticeship was not enough. 'There is a great deficiency of theoretical knowledge which is necessary in meeting new emergencies or in giving maturity and perfection to the creation of original thought. For these reasons we conceive it to be of the utmost importance to the public, that part, at least, of the training of these professions should be conducted by the universities — both on the ground of great national importance and on account of the close connection of the knowledge which they require with the sciences already taught within the walls of these institutions.' The subjects to be taught were 'the principles of mathematics, mechanics, chemistry and geology, and the application of these principles to the arts of construction: practical engi-

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neering and architecture'. Two new appointments would be needed — a Professor of Chemistry and Geology in relation to the arts of construction, and a Professor of Practical Engineering and Architecture. The rest of the work could be done by the existing staff in Mathematics and Natural Philosophy.¹¹ It is likely that discussions had already been going on for some time and that some consensus had been reached before the formal submission was made. In any event the Board's acceptance was prompt and apart from minor modifications — the reference to architecture was removed — the terms were as had been proposed. That summer Lloyd, with his wife, went to Paris and he studied the pattern of training for engineers in France. English engineering education was too practical, the French too abstract — in Dublin we wanted to strike a proper balance between theory and practice. The new School was opened in November 1841 with a praelection by Lloyd entitled 'the applied sciences and the mode of teaching them'.

When Humphrey Lloyd became Provost in 1867 he was an internationally respected scientist. In 1857 he had held the presidency of the British Association, he had been President of the Royal Irish Academy and was an active member of the Royal Society. He set a new pattern for the office in terms of high scholarly attainment.

Lloyd was a man of firm principle, he knew where he stood and could hold his ground. But he was no reactionary — he had followed his father's path of reform and innovation, and was a realist who knew when one had to respond to changed circumstances. His approach was first to establish the principles at stake and then in a rational way to see how, within the constraints of principle, one could best respond to the real situation. Lloyd was an effective organizer, he was scrupulously fair, and commanded general respect. Perhaps as a leader he was not sufficiently forceful; a balanced judgement would probably describe his Provostship as creditable without being outstanding.

The biggest issue which Humphrey Lloyd had to face as Provost was the external political pressure for change in the status of the College, particularly in the years immediately following disestablishment. His judgement of the situation was clearly set out in a letter¹² to Lord Cairns, who was Chancellor of the University as well as Lord Chancellor of England. He reminds the Chancellor that

the University had consistently acted on the policy of removing religious disabilities as far as its statutes allowed, further that it had

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offered to open the Body Corporate itself in the case of Scholars to Roman Catholics and to Protestant Dissenters. If this had been done but one step further would have remained to remove all religious restrictions — that is the restriction relating to Fellowship — and in view of the progress of opinion in England upon this question, it had been felt that this last step, with us, was merely a question of time. That time seemed to have arrived when the Irish Church bill became law. It was evident that the educational advantages possessed by the members of the 'Irish Church' could no longer remain exclusively theirs; and that either these advantages should be shared equally by all — or the endowments of Trinity College be partitioned among several denominational Colleges, and its university powers transferred to a nominated Senate. I believe that this latter course (which is thought to be that in favour with some members of the present government), would be fatal also to Freedom, as it would subject Roman Catholics of the upper classes, as well as those of the lower, to the Dominion of an Ultramontane priesthood, whose ultimate designs in this matter of education are now happily revealed.

The Provost advocated the following steps:¹³ obtaining an Act of Parliament, which would open Fellowship and Scholarship to all, and the removal of any remaining discriminatory causes from the statutes. He also emphasised the need for establishing a new Academic Council. This was essential in order to allow for the admission of non-Anglicans to the government of the College without delay. Although Fellowships would no longer be restricted it would take many years before those elected under the new order could reach the Board. Lloyd realised perfectly well that Gladstone had different ideas and that he might well be able to prevent the passage of such legislation, but he was convinced that it was right to try.

In 1873 Fawcett's Act became law, abolishing religious tests within the University, and in the same year Gladstone's dreaded bill was defeated. The Letters Patent which followed the passing of Fawcett's Act established the University Council with power to nominate to Professorships. So the outcome was as Lloyd had advocated and one could say that the College's strategy and the Provost's judgement had been vindicated.

Shortly after becoming Provost, Lloyd wrote a pamphlet addressed to the Fellows of Trinity College, which he published anonymously.¹⁴ In it he set out his views about the undergraduate curriculum. He states four principles which should guide a university in the choice of its curriculum:

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1. The subjects taught should be those best adapted to the purposes of mental training.
2. Subject to the condition just named, the materials of instruction should include those branches of knowledge which are most needful generally as furniture of the mind or in preparing the student for professional life.
3. The subjects should be sufficiently varied to attract minds of all different classes and to bring the greatest possible number under the legitimate influence of study.
4. In the earlier part of the course, the subjects of study should be the same for all students. In the latter part, a large freedom of choice should be given, especially to the Honor student, in the selection of his studies; and their subjects should be more special.

Keeping these principles in mind he goes on to advocate that the language and literature of our own country (but here he means English!) and the sciences should both occupy a more prominent place at the expense of mathematics and classics which at that time dominated the undergraduate curriculum.

It will be admitted that, for a large body of students, the study of classics fails in both its objects — it serves the purpose neither of mental discipline nor of mental culture the experiment has been sufficiently prolonged for every purpose, when the student has reached the middle of his academic career; and nothing can be hoped for from its continuance, if then unsuccessful. And the same course should be adopted in relation to mathematics, and in some respects even upon stronger grounds. There are minds, even of a high order, which seem incapable of Mathematical reasoning; and a University has much to answer for, which allows any such to go to waste from want of suitable provision.

Lloyd also had this to say:

A University has a double office to discharge. Its more immediate duty is, doubtless, that of training those committed to its care, and of imparting the knowledge which is to fit them for their several spheres of life. But it has another, and even a higher duty to perform. It is part of its office to raise the standard of knowledge in the country, and to extend its boundaries; . . . it must have men the main object of whose life is the pursuit of truth — the advancement of human knowledge.

During the 1870s, following disestablishment, the Church of Ireland carried out the exercise of revising its prayer-book. The

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debate extended over several years and has been described as 'an extended seminar on the nature of Anglicanism'.¹⁵ Lloyd participated in these debates on one particular issue — that of absolution. His views on this topic, already published in a pamphlet¹⁶ entitled *The power of the keys*, coincided with those of the evangelical, anti-sacerdotal wing of the church and he was, probably without complete justification, identified with that party. Had he been a committed partisan one would have expected Lloyd to contribute to the debate on baptismal regeneration, a subject on which the evangelicals held particularly strong views, but I can find no record of his having done so. The absolution question was one that he had studied in some depth and having formed his own firm conclusion it was natural that he should stand over this in the synod.

One of the most controversial political issues of the time was the matter of the National Education Board and the organization of primary education in Ireland. The majority view within the Church of Ireland was one of firm opposition to the Government's scheme and Lloyd almost certainly shared that view initially. However in 1860 he wrote a pamphlet¹⁷ in which he argued that it was not wrong in principle for the Church of Ireland to participate in the scheme and that in many cases participation would be the lesser of two evils. In the same year he was invited to join the National Board. Archbishop Beresford, the Primate, pressed him to accept the invitation. After serious thought Lloyd declined, using the excuse of his other heavy commitments. His real reservation was that the Government would compromise with the Roman Catholic bishops and that, in his own words¹⁸, there would be 'a recurrence of the encroachments on the integrity of the system, and the consequent necessity which would be imposed on the Commissioners connected with the Established Church of resigning'.

In 1874 Humphrey Lloyd was awarded the Prussian Order of Merit. This was a highly regarded honour — Carlyle, who was normally reluctant to receive honours and refused a knighthood, accepted this award in the same year as Lloyd.

The year before he died Lloyd attempted to retire. He succeeded in introducing statutory provision for the retirement of Fellows or of the Provost but unfortunately in this case the step from the general to the particular did not succeed and the Board refused his individual request¹⁹. The matter leaked to the papers where it was reported that a plot to have the Provost retire and be replaced by Traill had been unsuccessful. Traill, although politically well connected, was a rather junior Fellow and could scarcely have hoped

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to be appointed. The Provost, who had previously been assured by the government that in the event of his retirement they would elect his successor from among the Seniors, wrote to the press to dismiss the suggestion — although, showing a glint of steel, he went on to say that he realised that the idea would appeal to Mr Traill and his political friends. Well, Mr Traill and his political friends would have their day, but they had a quarter of a century to wait. The Provost had only one more year.

Humphrey Lloyd died on 17 January 1881. Charles D'Arcy, later to become Archbishop, remembered that day.²⁰ He was taking an examination when suddenly a deep sonorous voice interrupted their work. It was Jellett, the Senior Lecturer, who would succeed Lloyd as Provost. 'Gentlemen', he said, 'I am sorry to have to inform you that the Provost is dead. The examination cannot go on. In the circumstances you will all be allowed the examination.' D'Arcy's neighbour turned to him and said solemnly, 'I am sorry the Provost is dead. But as it had to happen, it was well it happened at this moment.' Jellett wrote the obituary notice for the Royal Society. Having described Lloyd's scientific career he ended with the following words: 'as Head of the University of Dublin, Dr Lloyd won golden opinions from all those who came into relation with him. His policy was pure and liberal, guided by broad principles and ever mindful of the institution which he ruled. His University — his country — the world of science, will remember him long.'

Well, memories are not so long, but it is fitting today one hundred years later that we recall, if only for a moment, the life and work of Humphrey Lloyd.

Notes

1. The main published sources of biographical material on Humphrey Lloyd are the DNB, the obituary notices in the Proceedings of the Royal Society and of the Royal Irish Academy, and the College Calendar and Record Volumes. An unpublished Ph.D thesis, 'Humphrey Lloyd and the Dublin Mathematical School of the nineteenth century' (Manchester, 1979) by James G. O'Hara is a valuable source of information. There are various notebooks and letterbooks of Humphrey Lloyd in the College Manuscript Room. I am grateful to Dr D.A. Webb and Dr R.B. McDowell for discussions and advice on source material and to Mr William O'Sullivan and his staff for their assistance.

2. An interesting account of the first appointment to the Chair of Geology and Mineralogy is given by G.L. Davies, 'The University of Dublin and two pioneers of English Geology', *Hermathena* 119 (1969), 24. Lloyd's hand in the appointment of his friend John Phillips is clearly seen.

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3. The bust, a photograph of which appears as frontispiece, is by Albert Bruce Joy. In 1884, according to Strickland's catalogue of the College pictures, the College had acquired a portrait of Humphrey Lloyd by M.J. Loevis for 35 guineas. Mrs Lloyd was not satisfied with the likeness and the portrait was destroyed when she presented the bust in its stead. In 1916 the Very Revd. C.J. Ovenden, the Dean of St Patrick's, presented a portrait which he had painted from a photograph of Lloyd; the other portrait owned by the College, presented in 1947 by Brigadier F.E. Lloyd, a nephew of Humphrey Lloyd, appears to be a copy of that by Dean Ovenden, or else to have been painted from the same photograph.

The Royal Irish Academy owns a death mask which is not labelled or recorded but which I believe, from the likeness, to be that of Humphrey Lloyd. I am grateful to Miss Joan Jennings for drawing my attention to this mask.

4. This is, of course, no criticism of Newton's genius. In fact Humphrey Lloyd presented a portrait of Newton to the Royal Irish Academy.

5. An interesting account of the development of the Dublin Mathematical School of the time is given by A.J. McConnell, 'The Dublin Mathematical School in the first half of the nineteenth century', Proc. Roy. Irish Acad. 50A (1945), 75.

6. In the preface to *A treatise on light and vision* we read the author's *cri de coeur*: 'The laborious duties of the profession to which he belongs may conspire with other causes, over which he has no control, to withhold him from again appearing before the public . . .'

7. One might wonder, given the celibacy rule, how Bartholomew Lloyd came to marry and have a son. Fortunately for our story (and for the College) a convenient convention was observed in the decades preceding 1811. Although the statutes quite clearly and explicitly enjoined celibacy, the onus for enforcing the rule was possibly less clearly defined. The convention adopted was that Fellows who married did not feel obliged to declare the fact and provided that reasonable discretion was observed the Board, some of its own members incriminated in this matter, did not feel obliged to take any disciplinary action. In 1811 this practice was stopped and the celibacy rule was firmly enforced until its abolition in 1840.

8. A clear account of the Fresnel theory and of conical refraction is given in *The theory of light* by Thomas Preston, published in Dublin in 1890.

9. A selection from this correspondence is published in the biography of Hamilton by R.P. Graves (3 volumes Dublin 1882-1889). Original letters, or in some cases xerox copies, are to be found in the College manuscript room.

10. A survey of the earlier French and German work is given by John Cawood, 'Terrestrial magnetism and the development of international collaboration in the early nineteenth century' *Annals of Science* 34 (1977) 551. A detailed history of the development of geomagnetism is given in S. Chapman and J. Bartels, 'Terrestrial magnetism' (2 vols, 1940, Oxford).

11. A copy of the 'Submission to the Board concerning the establishment of the School of Civil Engineering' is to be found in the Frank Wright collection in the archives of the Royal Greenwich Observatory.

12. Lloyd kept a copy of this letter in his notebook, T.C.D.Ms.1798.

13. It would be wrong to suppose that these proposals represented a radical initiative by the Provost — the College had gradually moved in the direction of accepting the necessity of change along some such lines.

14. 'Brief suggestions in reference to the undergraduate curriculum in Trinity College', published anonymously, Dublin 1869.

15. Gabriel Daly, 'Church Renewal: 1869-1877' p.29, in 'Irish Anglicanism' (Dublin, 1970), edited by Michael Hurley. Archdeacon William Sherlock, who observed the Revision Debates, wrote a readable and informative account in *The story of the revision of the Irish Prayer Book* (Dublin, 1910). There are many pamphlets written at the time and detailed newspaper reports of the debates.

T.D. Spearman

16. *The power of the keys, or the authority to bind and to loose, to remit and to retain sins, committed by Christ to His Church*, by H. Lloyd (Dublin, 1873). This was an enlarged version of a pamphlet published anonymously in 1871 entitled 'Doctrine of absolution'.

17. *Is it a sin? An inquiry into the lawfulness of complying with the rule of the national board relative to religious instruction*, published anonymously (Dublin, 1860).

18. T.C.D. Ms. 1798.

19. Lloyd was undoubtedly disappointed—and was surprised at what he regarded as inconsistency on the part of the Board. One might guess that the general election, which was taking place while this matter was being decided (April 1880) and which was to bring Gladstone back to power, was a factor influencing the Board.

20. 'The adventures of a bishop', C.F. D'Arcy (London, 1934).