

SYMPOSIUM INTRODUCTION

Michael Faraday: Chemist and Popular Lecturer

1991 was a bicentennial year for both Michael Faraday and for Wolfgang Amadeus Mozart and at times there seemed to be almost as many celebrations of Faraday's Jovian talents as there were performances of the Jupiter symphony. The two men are alike only in their genius and the sense that on occasion both of them appeared to be taking dictation directly from God. Faraday's first biographer, Henry Bence Jones, put it more reverently:

... his second great characteristic was his imagination. It rose at times to divination, or scientific second sight, and led him to anticipate results that he or others afterwards proved to be true.

During the course of 1991 the physicists celebrated their Faraday, the electrochemists theirs, while the platinum, colloid and catalysis chemists also paid their respects. The British Royal Mint honored Faraday with a handsome guest appearance

on the new £20 note in which he is depicted lecturing at the Royal Institution. By contrast, the British Post Office dishonored him with an execrable commemorative stamp in which he appears to be undergoing some kind of electrical lobotomy.

At the Spring meeting of the American Chemical Society in Atlanta it was the turn of the chemists, chemical educators and chemical historians. Faraday himself would, of course, have been appalled by such parochial distinctions but we seem to have lost his gift of seeing Nature whole. As the title of the present symposium suggests, it was our intent to concentrate on Faraday-the-chemist and Faraday-the-popular-lecturer. Faraday served his apprenticeship under a chemist, grew to maturity as one of the first professional chemists in England, and held the Fullerman Professorship of Chemistry at the Royal Institution from 1834 until his retirement in 1861. In spite of this his current reputation lies chiefly in what we now choose to call physics (his electrochemistry is happily ambivalent) and it is not surprising that most historical scholarship has been concentrated in that area. It was our hope in Atlanta to cast a little more light in the ill-lit if not exactly dark chemical places.

The first paper is by Sir John Thomas, inheritor of the Faraday mantle at the Royal Institution. As in his similarly titled recent book, *Michael Faraday and the Royal Institution*, we are treated to an eloquent reminder of the inseparability of the man and the place and to the first full-length account since John Tyndall of living with the almost palpable ghost of a great predecessor. Sir John's is the latest in a long line of Faraday biographies going back to Tyndall and Bence Jones. L. Pearce Williams is the author of the standard "Life" and in "Faraday and his Biographers" he gives a critical assessment of the competition. Faraday also had to live with his predecessor, the far from ghostly Humphry Davy, and the relationship was not always an easy one as Usselman and Fullmer show in "Faraday's Election to the Royal Society: A Reputation in Jeopardy". Faraday's legendary skills as a lecturer are addressed in

Geoffrey Cantor's "Educating the Judgment: Faraday as a Lecturer" and in part in Frank James' "The Military Context of Chemistry: The Case of Michael Faraday". James' paper also illustrates that the balancing act involving research, teaching, service and financial security is by no means of recent origin.



Faraday's appearance on the new £20 note.

Herbert Pratt's "Michael Faraday's Bibles as Mirrors of his Faith" addresses Faraday's Sandemanian beliefs, a subject treated at much greater length in Geoffrey Cantor's recently published book *Michael Faraday: Sandemanian and Scientist*. Faraday was dogged by ill health for much of his life, some of it no doubt brought about by his almost superhuman work habits. James O'Brien describes these problems in "Faraday's Health Problems".

The paper "Faraday's 1822 'Chemical Hints' Notebook and the Semantics of Chemical Discourse" by Ryan Tweney discusses an early, unpublished manuscript in which Faraday meditates on his current and future chemical interests. One of these interests is described in Harold Goldwhite's "Faraday's Search for Fluorine". Like Davy before him and many another after him, Faraday failed in his attempt to isolate fluorine and it was not until 50 years later that Moissan was to succeed. Though not given in the present form in Atlanta, Derek Davenport's "Observations on Faraday as Organic Chemist Manqué" takes a retrospective look at the remarkable body of work in the emerging field of organic chemistry that Faraday

had completed by 1826.

With the exception of *Chemical Manipulation*, all of Faraday's books had previously appeared in the periodical literature or else were transcriptions of public lectures. Like many another text, it arose out of a course, this one given at the Royal Institution as William Jensen describes in his "Michael Faraday and the Art and Science of Chemical Manipulation". Faraday had plans for a new edition of *Chemical Manipulation* and as a former bookbinder he prepared an interleaved copy that he annotated with new material. This copy is now the proud possession of Sydney Ross who describes his treasure in "The Chemical Manipulator". Ross is also the author of "Unpublished Letters of Faraday and Others to Edward Daniel Clarke", interesting examples of the minutiae, then as now, of scientific life. For chemists Faraday's crowning achievement was the enunciation of the law(s) of electrolysis, as described in John Stock's "The Pathway to the Laws of Electrolysis". The final paper, "From Electrochemical Equivalency to a Mole of Electrons: The Evolution of the Faraday" by Marcy Hamby Towns and Derek Davenport, was first presented at a Workshop for Teachers held during the Great Lakes Regional Meeting of the American Chemical Society in Indianapolis in late May. It is directed more at teachers of chemistry than at historians of chemistry but it may serve to illustrate a firmly held belief that history is too important to be left entirely to the historians.

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THE ROYAL INSTITUTION & MICHAEL FARADAY: A PERSONAL VIEW

John Meurig Thomas, *Royal Institution of Great Britain*

Having lived and worked for five years in Michael Faraday's home and laboratory, my initial interest in, and curiosity about, the great scientist has developed into a passionate admiration for all that he stood for and achieved (1). His scientific and spiritual presence at the Royal Institution confers a unique aura that pervades the whole place. One cannot escape it. Whenever I stand at the lecturer's desk, where Faraday stood on more



Young Michael Faraday

than a 1000 occasions, and where Davy, Dewar, Young, Rayleigh, Rutherford, Arrhenius, Cannizzaro, Mendeleev, Hoffmann, Bridgman, Lawrence and William Bragg, and Pauling have also stood, Wordsworth's reference to "the spiritual presence of absent friends" comes to mind.

No chemist (organic, physical, analytical, surface or electro-), no physicist, no engineer or materials scientist is unaware of Faraday's towering contributions to their subject. No experimentalist has ever bequeathed to posterity a greater body of pure scientific achievement than Faraday and the practical consequences of his discoveries have profoundly influenced the very nature of civilized life. Yet he was self-taught: he left school at the age of 12, and started his career as an errand boy, then as a bookbinder. He rose to be one of the greatest scientists of the age. At the same time, he remained morally incorruptible and throughout his life retained his boyish sense of awe and humility. In reading his work, just as in contemplating his astonishing range of accomplishments, we are conscious of the presence of a unique human being (2):

Nothing is too wonderful to be true, if it be consistent with the laws of nature and, in such things as these, experiment is the best test of such consistency.

In none of his 450 publications is there a single differential equation, for he knew no mathematics. But, according to Albert Einstein, Faraday was responsible, along with Clerk