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The Centenary of the Discovery of Benzene.

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A FEW weeks ago we published a special supplement in connexion with the centenary of the birth of Huxley: this week we are presenting a supplement containing the principal addresses which were delivered in the Royal Institution during the celebration of Faraday's discovery of benzene. Whereas Huxley's reputation is based as much upon his championship of evolution, of freedom of thought, and of enlightened education, as upon his researches in biology, the fame of Faraday rests almost entirely upon his striking contributions to scientific knowledge. His ambit was thus more circumscribed than that of Huxley, but his discoveries were more revolutionary, both in their effects on the development of theory and in their subsequent practical applications. In the latter connexion we refer more particularly to his discoveries of magneto-electric induction and of benzene. The electrical industries, together with the industries based upon benzene, constitute overwhelming proof—if proof be needed—of the value of research in pure science.

In attempting to estimate the place of Faraday among the world's great men, one is at a loss whether to value highest his superb skill as an experimenter, the originality and perspicacity of his thought, or his greatness as a man. Comparisons are no less difficult than they are odious, but few would gainsay that in view of the scanty material means he had at his disposal, and of the fact that he did not rely upon pupils or assistants, Faraday has had few, if any, equals as an experimenter. In the sphere of thought, he was not only a master of deductive and inductive reasoning, but also he possessed the priceless gift of a vivid and disciplined imagination. Much of his work was far in advance of his time, and hence we find his ideas still inspiring scientific research, his experimental discoveries still being transformed into great and growing industries. His views on the nature of electricity and magnetism, and on the correlation of the different forms of energy, foreshadowed in a remarkable way the results of later investigations; but, as Helmholtz said, "New

ideas need the more time for gaining general assent the more original they are, and the more power they have to change the broad path of human knowledge."

Faraday's gift of original thought was most conspicuous in his purely physical work, and except in the border-line region of electro-chemistry, his chemical discoveries were mainly the outcome of great experimental skill. Thus his discovery of benzene did not result from any previous train of reasoning or concatenation of ideas, but from brilliant technique. Though chemists and physicists may dispute possession of his scientific soul, we believe that he was a physicist *au fond*; his chemistry was not, however, the "dirty part of physics," in the words of Prof. Cohen's amusing quotation. It is quite probable that our successors will cease to regard chemistry and physics as separate sciences, and if they do, Faraday, before all others, will rank as the artificer of the union. "Talent may frolic and juggle, genius realises and adds," said Emerson, and Faraday's supernormal gifts of insight and experimental skill will always mark him out as one of the greatest master-builders of physical science.

To Faraday's character as a man, we have most eloquent tributes from Tyndall, Bence Jones, Gladstone, Dumas, and others. Actuated by a laudable if unscientific motive, biographers are apt to discard material which reflects adversely upon those whose lives they describe. In the case of Faraday they cannot lay themselves open to this imputation; his failings were extraordinarily few, and his real life was quite as beautiful as any romantic or hero-worshipping biographer could imagine it to have been. Except in the sphere of religious belief, Faraday and Huxley had many common traits. Each had a very strong sense of justice, and an unswerving respect for truth, to which was added an unquenchable enthusiasm for the verities of science. The lives of both were permeated by the highest moral purpose, and no one who tries to follow in their footsteps can but feel that great as were their contributions to natural knowledge, even greater were their characters as men.