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978-1-107-61644-8 - Lord Balfour: In his Relation to Science

Lord Rayleigh

Excerpt

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LORD BALFOUR  
IN HIS RELATION  
TO SCIENCE

ARTHUR JAMES BALFOUR was born in 1848. He was the son of James Maitland Balfour of Whittingehame, Haddingtonshire (died 1856), and of Lady Blanche Gascoyne Cecil, second daughter of the second Marquess of Salisbury. The father was a country gentleman of fortune and of some ability, but in no sense a philosopher or a thinker, or even a reader. He served in Parliament, organised a regiment of yeomanry and was chairman of the North British Railway. His career, however, was cut off at an early stage by consumption. The mother, Lady Blanche Balfour, came of an able stock. Although the influence of the great Lord Burghley must be considered to have been long since exhausted, the abilities of that branch of the Cecil family had been recently recuperated by two marriages: the first with Lady Mary Amelia Hill, first Marchioness of Salisbury; and the second with Frances Mary, daughter of Bamber Gascoyne, and mother of

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the third Marquess, Prime Minister to Queen Victoria, and of Lady Blanche Balfour. Lady Blanche shared to a marked extent her brother's ability. She directed the education of her children, and found means of stimulating their intellectual interests, with the greatest tact and judgment. She was particularly judicious in the choice of the books which she read to them. On occasion she would cut out passages which were tedious or unsuitable, and substitute connecting links rewritten by herself.

Her lessons in arithmetic are remembered for the clear way in which the subject was presented. The reasons for the operation of 'carrying', *e.g.*, were lucidly explained, in contrast to the usual dogmatic method.

Although Lady Blanche's own tastes were literary rather than scientific, she successfully directed the attention of her children to various branches of natural history, and, in the case of some of them, the interests thus aroused bore no inconsiderable fruit. Thus Gerald and Francis Balfour wrote an account of the local geology of East Lothian, which has permanent value as a contribution to the subject. Francis Balfour, it is hardly necessary to remind the reader,

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eventually became Professor of Animal Morphology at Cambridge, a chair specially created for him. Those best qualified to judge held that his early death represented an irreparable loss to science.<sup>1</sup> His youngest sister, Alice Balfour, assisted him to some extent in his studies, and has ardently continued the pursuit of local entomology up to the present. Arthur Balfour's eldest sister had a distinct gift for mathematics and physics, and in later years was able to render valued assistance to her brother-in-law, Lord Rayleigh, during his tenure of the Cavendish Professorship of Experimental Physics at Cambridge. She appears as joint author of some of his papers on Absolute Electrical Measurements.

It will be seen then that there was a marked scientific tone in the family of which Balfour was a member. The same was traceable in his uncle, Lord Salisbury, who to some extent occupied his leisure with botanising, and with

<sup>1</sup> It has sometimes been imagined that Arthur Balfour derived his knowledge of science and his interest in it at second hand from his brother Frank. I am sure that no one with inside knowledge would share this view. The taste was innate in both of them, and came out in both, though in widely different forms.

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experiments in electricity and magnetism, which he carried on in a private laboratory at Hatfield. Balfour seems to have taken less part than some of the others in these natural history studies. He had, for instance, no inclination for the hard work of a systematic search for fossils. But, no doubt, what was going on had its influence upon him.

In later life he took some practical interest in forestry on his estate, but he had no knowledge of horticulture, and no eye for bird life. On one occasion, well remembered in the family, he remarked that he had been disturbed by a bird which had flown into his study. His youngest sister, alive with the instincts of a naturalist, wished to know to what species it was to be referred. But the only description he could give was: "Oh, I don't know; average small bird". Although he had not this kind of knowledge himself, he respected it in others. As a young man, he had shooting, deer stalking and salmon fishing at his disposal, but he soon abandoned them in favour of lawn tennis and golf.<sup>1</sup>

<sup>1</sup> A fishing exploit at a very early age is remembered, however. He had succeeded in landing an eel, and was executing a dance in celebration of his victory with such

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Balfour first went to school at the Rev. C. G. Chittenden's at Hoddesdon. His opinion of the school was expressed to the parents of another small boy in the words, "Send him to Chittenden's. It is the only place where I ever learnt anything". Mr Chittenden, when asked who was the ablest pupil he had had, replied "Arthur Balfour", and, although this judgment was given after his quondam pupil had made a public reputation, no doubt he had been of the same opinion throughout. Mr Chittenden was a man of wide general information, and an interesting talker, though a stern disciplinarian in school hours. Master and pupil seem to have had a warm regard for one another, and after the latter had left for Eton, it was Mr Chittenden's favourite relaxation to visit him there. While at the school, Mr Chittenden often took him out for walks. An interest in music was one that they had in common, and it is probable too that they discussed scientific topics, with which Mr Chittenden had some acquaintance. It is certain at least that Balfour dipped into various scientific vigour that he danced into a bed of stinging nettles. His yells of triumph soon gave place to yells attributable to a very different emotion.

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subjects at this time, though perhaps no more deeply than many boys do. The present writer possesses a copy of *Carpenter on the Microscope*, with the inscription "A. J. Balfour, April, 1860, Eton College".<sup>1</sup> Balfour is remembered to have brought home a frictional electrical machine, and to have made some attempts, though apparently without special tenacity or success, to carry out experiments in electrostatics, with home-made accessories.

As we have seen, he had impressed Mr Chittenden, and at Eton he similarly impressed William Johnson,<sup>2</sup> who seems to have shown more discernment than most of Balfour's masters or contemporaries at this stage. His intellectual development was not precocious, but, in the event, it went on much longer than that of some of his early friends, who had, for a time, seemed to stand on a level with him. Indeed, it may be said that he went on developing almost to the end.

It has sometimes been thought that Balfour, like his uncle, Salisbury, found the atmosphere

<sup>1</sup> *Sic*. It is stated in his autobiography that he went to Eton in September 1861.

<sup>2</sup> Later known as Cory.

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of Eton uncongenial. I am sure that he never said anything of the kind in my hearing: on the contrary he pressed strongly for some of his nephews to be sent there with the words "Much the best school". Nor was he disposed at all definitely to condemn the classical system of school education, though he was himself included in that large majority who, after spending years under the system, fail to acquire a working knowledge of the classical languages.

During the Lancashire cotton famine of 1862-3, Lady Blanche Balfour conceived the idea of saving money for the help of the distressed artisans, and incidentally providing a valuable practical experience for her young family by domestic economies. A projected trip to the continent was abandoned, and the household at Whittingehame was much reduced, the family helping with the housework. During the summer holidays Arthur Balfour and his brothers made the beds and blacked the boots, while his sisters did the cooking.

The time approached for him to go to the university. He had not made much progress in, or shown aptitude for, mathematics and it was necessary to make up for lost time. His sister,

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Eleanor (Mrs Henry Sidgwick), remembers reading elementary trigonometry with him for the 'Little-go'. They had to make it out from a book as best they could without the help of a tutor, getting up early in the morning, and fortifying themselves with bread and milk for the effort. When they came to the point that  $\sin \theta/\theta$  has the limiting value unity as  $\theta$  is indefinitely diminished, Arthur Balfour was dissatisfied with the demonstration in the book (probably not without reason according to modern standards of mathematical rigour). But he thought the point would be interesting if one could fully understand it.

In later life he was deeply interested in the philosophical foundations of mathematics, particularly in connection with the theory of probability, and deplored that he had not the technical knowledge to follow current developments either in that direction or in mathematical physics. He often regretfully commented, "I expect it is too mathematical for me".

Within the family circle, he took his place as the leader in intellectual interests. He it was who usually discovered to the others new avenues in literature. For instance, he came back from



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school on one occasion brimming over with interest in 'Goëthe'.

The social tact which distinguished him in later life was innate, and already apparent in his boyhood. He was somewhat careless in the matter of dress, and very much detached from the smaller anxieties of everyday life. For example, he was driving with his eldest sister to a dinner. She expressed doubts as to whether the coachman was going the right way. "That", said Balfour, "is his affair."

He went up to Trinity College, Cambridge, in the October term of 1866, as a fellow-commoner, according to the custom of those days, as his father had done before him. This gave him the doubtful privilege of wearing a gown embroidered with silver,<sup>1</sup> and the valued one of sitting at the High Table with the dons. Here he was brought into contact with Henry Sidgwick and John Strutt (afterwards Lord Rayleigh), who were a few years senior to himself and fellows of the college. With them he formed an enduring friendship, which in each case developed into something more. For the former eventually

<sup>1</sup> He is said to have been the last, or almost the last, fellow-commoner.

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married his eldest sister, Eleanor (1876), and the latter his second sister, Evelyn (1871).

It does not appear that Arthur Balfour impressed his individuality very strongly on the High Table at Trinity. Rayleigh remembered a discussion there, a few years later, as to which of the Balfour brothers had the most ability. Some were for Gerald, others for Frank. When he himself put in a claim for Arthur, the general opinion seemed to be that he was propounding a paradox. There were no doubt substantial reasons for awarding the palm to his younger brothers at that time. They had achieved high academic success, whereas Arthur Balfour did not rise above the level of a second class in moral science. His tutor, Henry Sidgwick, who, with Rayleigh and Rayleigh's younger brother, Charles Strutt, had formed the highest opinion of him, was disappointed, but not altogether surprised by this result. Balfour was also somewhat disappointed himself, though academic success had not been a prominent aim in his mind. The explanation seems to have been that he had paid too much attention to the current problems of philosophy, and not enough to its literature and history.

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