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Introduction

ALAN Q. MORTON*

This and the following numbers of the *Journal* publish some of the papers presented at a conference on science lecturing in the eighteenth century held by the British Society for the History of Science in conjunction with the Science Museum. The conference was held in November 1993 to mark the opening of a new gallery, 'Science in the 18th Century: The King George III Collection', and the publication of a detailed study of that collection.[1] Given the nature of the King George III Collection, the role of the Science Museum in promulgating science to a wide audience, and the recent upsurge of interest in the public science of the eighteenth century, the topic of the conference was both appropriate and timely.

The King George III Collection epitomizes natural philosophy in the eighteenth century, for contained within it are both the demonstration apparatus of an itinerant lecturer, S. C. T. Demainbray, and more elaborate versions of the same standard equipment made for King George III by George Adams, the prominent London instrument maker. By comparison with other contemporary collections, the King's is remarkable not so much for its contents but more for its size and cost. In so far as his interests in natural philosophy are concerned, the King followed – rather than made – fashion. Furthermore, it has not suffered the common fate of such collections – that of being dispersed.[2] Thus a great deal of the historical interest of the collection lies in the information it provides about the business of science lecturing and the clues it yields about audiences – audiences ranging from the King to the 'middling sorts of people'.

The conference provided an opportunity for the participants to hear about recent work on the public science of the eighteenth century, work which builds on earlier researches. The pioneering studies by Hans, Inkster and Millburn have provided detailed information about and insights into the widespread activities of the individuals who lectured.[3] The

* Science Museum, South Kensington, London SW7 2DD.

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1 A. Q. Morton and J. A. Wess, *Public and Private Science: The King George III Collection*, Oxford, 1993.

2 For details of surviving contemporary collections, see Mary Holbrook, with additions by R. G. W. Anderson and D. J. Bryden, *Science Preserved*, London, 1992. For a comparison of the King George III Collection with others, see A. Q. Morton and J. A. Wess, 'The models of Stephen Demainbray in the King George III Collection', *Journal of the History of Collections*, forthcoming.

3 See N. Hans, *New Trends in Education in the Eighteenth Century*, London, 1951, and I. Inkster, 'The public lecture as an instrument of science education for adults – the case of Great Britain, *c.* 1750–1850', *Paedagogica Historica* (1980), **20**, 80–107. For the numerous works of John R. Millburn, see the bibliography in Morton and Wess, op. cit. (1).

development of public lecturing has also been connected with the history of institutions. These links have been examined from the time of early Royal Society of the mid-seventeenth century through to the beginning of the nineteenth century, when a plethora of new institutions, such as the Royal Institution, to the mechanics institutes and the British Association for the Advancement of Science, catered for different social groups.[4]

One distinctive new feature of natural philosophy in the eighteenth century was the use of working demonstrations.[5] Though we can be sure there was an audience viewing these demonstrations, exactly who attended and what they learnt of natural philosophy is frequently beyond our historical grasp. However, two recent studies by Larry Stewart and Jan Golinski have made major and complementary contributions to our understanding about the growth of science as public culture.[6] Stewart describes the development of natural philosophy as public science in the first half of the century, whereas Golinski shows how later in the century those giving lectures on chemistry accommodated the interests of their audience.

Where a far greater knowledge of the audience would help is in discussions of the connection between the spread of science lecturing and industrialization later in the century. Some of these issues have been considered by Musson and Robinson, Cardwell, and Jacob.[7] But these studies, while suggestive, are not yet at a stage where we can be clear about what particular qualities of natural philosophy were important for the development of industry.

The five papers presented here touch directly on these concerns. Natural philosophy, for example, did not come to the market-place only in the form of lectures. There was a burgeoning trade in scientific instruments too, revealing just how far natural philosophy dovetailed with other well-known aspects of eighteenth-century life. In Patricia Fara's study of the commercial aspects of magnetism, she examines Gowin Knight's improved magnets in the context of recent work on the growth of a public both willing and able to purchase science. She shows how the development of a body of consumers – and consumption – during the period is very relevant to the case she examines, and for Knight, how natural philosophy led to social advancement.[8]

If polite discourse about science could be turned to commercial advantage, practical

4 See John L. Heilbron, *Physics at the Royal Society during Newton's Presidency*, Los Angeles, 1983; Michael Hunter, *Establishing the New Science: The Experience of the Early Royal Society*, Woodbridge, 1989. For the later period see Ian Inkster and Jack Morrell (eds.), *Metropolis and Province. Science in British Culture 1780–1850*, London, 1983; Ian Inkster, 'The social context of an educational movement: a revisionist approach to the English mechanics' institutes, 1820–50', *Oxford Review of Education* (1976), **2**, 277–307.

5 See Simon Schaffer, 'Natural philosophy and public spectacle in the eighteenth century', *History of Science* (1983), **21**, 1–43 and his 'Machine philosophy: demonstration devices in Georgian mechanics', *Osiris* (1994), **9**, 157–82.

6 J. C. Golinski, *Science as Public Culture: Chemistry and Enlightenment in Britain, 1760–1820*, Cambridge, 1992; Larry Stewart, *The Rise of Public Science: Rhetoric, Technology and Natural Philosophy in Newtonian Britain, 1660–1750*, Cambridge, 1992.

7 A. E. Musson and E. Robinson, *Science and Technology in the Industrial Revolution*, Manchester, 1969; D. S. L. Cardwell, *Technology, Science and History*, London, 1972; M. C. Jacob, *The Cultural Meaning of the Scientific Revolution*, New York, 1988; Ian Inkster, *Science and Technology in History: An Approach to Industrial Development*, London, 1991.

8 See John Brewer and Roy Porter (eds.), *Consumption and the World of Goods*, London, 1993.

matters were converted into polite discourse by the reverse process. The problems of carts moving along roads were extensively discussed by lecturers on natural philosophy and Jane Wess investigates their contribution to resolving the difficulties encountered during the period of turnpike mania. Such concerns led to the idea of improvement becoming more pervasive around mid-century. In my own paper I seek to show how changing ideas about the power of machines and human labour in natural philosophy can be related to industrial disputes and changes in the law.

To draw conclusions about the longer-term effects of the growth of public science, we have great need of detailed information about the reaction of different social groups. In this respect the work of Larry Stewart and Paul Weindling on the Spitalfields Mathematical Society is a significant achievement. While the interest of the Society has been widely acknowledged, the lack of information about its membership and activities has been particularly unfortunate. Without a doubt, in time, many will be able to build on their secure foundation and follow their intriguing leads.

Roy Porter's paper similarly reminds us of the broader context of lecturing. Lecturing on natural philosophy was only one strand of the development of lecturing on technical subjects, including mathematics, medicine and chemistry. He covers medical lecturing and illustrates how it can be connected with many other facets of eighteenth-century life.

For the future, the cultural significance of the development of science should become clearer. For with more studies about the public science of the lectures, comparisons between countries, or between province and metropolis, can be drawn, In turn, these comparisons will help our understanding of the connections between this science and the spread of industry or the growth of institutions, in short the distinctive features of modern technoscience. They will be a challenging and rewarding set of issues to consider.