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Volume 18, Issue 2, June 1987, Pages 133-175

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*PETER DEAR**

JOURNAL OF MATHEMATICAL SCIENCE AND PHYSICS

JESUIT MATHEMATICAL SCIENCE AND THE RECONSTITUTION OF EXPERIENCE IN THE EARLY SEVENTEENTH CENTURY

I

AN 'EXPERIMENT' in modern science is often contrasted with simple 'experience' by claiming that the former involves the posing of a specific question about nature which its outcome is to answer, whereas the latter does nothing more than supply items of fact regarding phenomena, and is not designed to judge matters of theory or interpretation. Thus it has been pointed out that pre-modern, scholastic uses of 'experience' in natural philosophy tend to take the form of selective presentation of instances which illustrate conclusions generated by abstract philosophizing, and not the employment of such material as a basis for testing these conclusions. 'Experiment' became a characteristic feature of natural philosophy only in the seventeenth century.¹

In its broadest terms this picture must be accepted, but enough is left out in the analysis of the nature of 'experiment' to obscure understanding of its historical emergence. The science-textbook definition of experiment fails to capture the reality of the new conceptions of the seventeenth century: Robert Hooke's term 'experimentum crucis', so signally adopted by Newton, was certainly intended to pick out an aspect of Bacon's teaching suitable to the notion of 'experiment' as a test of hypotheses, but Boyle's 'experimental histories', also indebted to Bacon, had no immediate purpose beyond the mere collection of facts.² The 'experiments' of the Accademia del Cimento were frequently designed to test hypotheses or decide between alternatives,³ but the empirical work of the Accademia's Florentine forebear, Galileo, seems at

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Received 12 January 1986.

¹See, for instance, Charles B. Schmitt, 'Experience and Experiment: A Comparison of Zabarella's View with Galileo's in *De motu*', *Studies in the Renaissance* 16 (1969), 80-138; Paolo Rossi, 'The Aristotelians and the Moderns: Hypothesis and Nature', *Annali dell'Istituto e Museo di Storia della Scienza di Firenze* 7 (1982), fasc.1, 3-27, both of which look particularly at Zabarella as a representative Aristotelian.

²Robert Hooke, *Micrographia* (London, 1665; facsimile edn. New York: Dover, 1962), p. 54; the term seems to derive from Bacon's 'instantia crucis'.

³See W. E. Knowles Middleton, *The Experimenters: A Study of the Accademia del Cimento* (Baltimore: Johns Hopkins University Press, 1971).

Stud. Hist. Phil. Sci., Vol. 18, No. 2, pp. 133-175, 1987.
Printed in Great Britain.

0039-3681/87 \$3.00 + 0.00
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