

This edition published by Thoemmes Press, 2000

Thoemmes Press
11 Great George Street
Bristol BS1 5RR, England

Thoemmes Press US Office
22883 Quicksilver Drive
Sterling, Virginia 20166, USA

<http://www.thoemmes.com>

Vestiges and the Debate before Darwin
7 Volumes : ISBN 1 85506 862 1

Introductions and editorial selection © John M. Lynch, 2000

British Library Cataloguing-in-Publication Data
A CIP record of this title is available from the British Library

Publisher's Note

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This book is printed on acid-free paper, sewn, and cased in a durable buckram cloth.

INTRODUCTION

Seeking Another Audience:
William Whewell and *Indications of the Creator*.

I do not expect that any word of praise which the work may elicit shall ever be responded to by me; or that any word of censure shall ever be parried or depreciated. It goes forth to take its chance of instant oblivion, or of a long and active course of usefulness in the world.

So wrote Robert Chambers in his 'Note Concluding' to *Vestiges of the Natural History of Creation* (Chambers 1844, p. 387), thus ushering in forty years of responses to the controversial work and counter-responses from Chambers himself. Far from meeting 'instant oblivion', the work received attention from some of the leading thinkers of the period. Yet the very act of responding to *Vestiges* seemed to present problems for many of the Victorian intelligentsia – should one ignore the work, hoping that it would just disappear over time, or should the book be critically reviewed, thus potentially drawing attention to the author's claims for universal transmutation and perhaps leading to further editions of the work? Clearly, Adam Sedgwick felt a response was in order (see Lynch 2000) whereas the Swiss geologist Louis Agassiz felt that *Vestiges* was 'not worthy of a critical examination by a serious scientific man' being, as it was, 'supported only by antiquated assertions, and by no means by facts scientifically ascertained' (Agassiz 1847, p. 25).

Macvey Napier, editor of the *Edinburgh Review*, having asked Sedgwick to review *Vestiges*, noted to William Whewell that a philosophical examination of the work was also warranted (Yeo 1993, p. 113). Whewell eventually replied to the anonymous Vestigenarian by culling sections from earlier works into a volume entitled *Indications of the Creator*, the first edition of which appeared in 1845 and deftly avoided mentioning the target of its argument.¹ He

¹ It has been suggested that Whewell was the author of the anonymous review

Ruse 1977, p. 247), and he refused to entertain the idea that the form and magnitude of the laws was necessary – i.e. that the universe and the apparently designed creations existed not because a Designer fashioned them, but because they had to exist.

While Whewell is known for work in political economy, mineralogy, crystallography, astronomy, mechanics and dynamics, he is best remembered as the author of two works in the history and philosophy of science, *History of the Inductive Sciences* (three volumes, 1837) and *The Philosophy of the Inductive Sciences* (two volumes, 1840), both of which provided source material for *Indications*. In these works Whewell set out a neo-Kantian analysis of the scientific method that drew a reply from John Stuart Mill in his *System of Logic* (1843). In these two works, Whewell attempted to derive a philosophy of science from observation of the history of science. He felt that science exhibited a progressive trend, with theories becoming more and more general as time passed. Major advances occurred during what Whewell termed 'Inductive Epochs' – periods during which a given theory came into its own and exhibited great explanatory power.

Whewell, like many of his fellow countrymen, saw induction as the basic method for 'good' scientific practice. However, induction was understood not as a movement from particulars to generalizations, but as the act of conceptualizing how data can best be organized. Pure Baconian induction had, by this time, fallen into a certain amount of disrepute. The 'new' scientific method allowed for imagination, speculation and creativity, while stressing the utility of hypothesis testing (a method that Whewell believed both Newton and Bacon employed). The old methods were seen as too sterile and mechanical to reflect the human enterprise of science, and it was 'much better that [the scientist] should be too ready in contriving, too eager in pursuing systems ... than that he should be barren of such inventions' (Whewell, quoted in Smith 1994, p. 29). Yet hypotheses should be expressed with clarity, grounded in fact and, most importantly perhaps, carefully tested. Under the influence of German Idealism, Whewell rejected empiricist claims about science, claiming instead that 'Fundamental Ideas' like causation were necessary truths essential in interpreting the data derived from the senses (Smith 1994, p. 16). He acknowledged that he was reviving the Platonic theory of Ideas, contending that for the first time this philosophical construction now rested on scientific evidence. (This eventually led Whewell to accept Owen's theory of Archetypes.)

believed that no 'really philosophical' work could have the success of *Vestiges*, and he considered *Indications* to be a theological work (Todhunter 1876, vol. 2, p. 326).

The great anatomist Richard Owen initially wanted to have little to do with the *Vestiges* controversy. In a letter to Whewell he stated his 'desire not to appear as having directly or personally aided in any thing that may be regarded as a refutation or antidote to *Vestiges*'. He believed that 'to expose every fallacy and error would demand a work that would give *Vestiges* an importance calculated to add greatly to its mischief' (quoted in Brooke 1977, p. 138). Following Whewell's use of his findings on the suckling mechanism in kangaroos in *Indications*, Owen would mellow somewhat, stating that '[t]he form and title of your Work entirely removes any objections to the introduction of my remarks in this Work' (quoted in Brooke 1977, p. 140).

To understand Whewell's opposition to *Vestiges*, one must first come to terms with his belief in universal design. He was born in Lancaster in 1794. Graduating from Trinity College, Cambridge, he became a Fellow (and eventually Master) of the College. Whewell, like Sedgwick, was a teacher, administrator and writer who remained involved with Trinity until his death in 1866.² It was Whewell who gave us many of the terms that modern science uses today: 'anode', 'ion', 'Miocene' and of course 'scientist' itself are all Whewellisms.

Whewell's *Bridgewater Treatise* of 1833, like all contributions to the series endowed by the eighth Earl of Bridgewater, was concerned with the issue of Design. In it he begins by pointing out that the universe is governed by laws. From here, he distinguishes two aspects of these laws: their 'form' (syntactical structure), and their 'magnitude' (with differing magnitudes leading to different effects, Ruse 1977, p. 246). Whewell argued that we can detect Design within both the form and magnitude of these laws, and thus a Designer who wisely and benevolently put them in place. Dismissive of alternative explanations, he considered the hypothesis of evolution as 'gratuitous and extravagant' (quoted in

of *Vestiges* in *Fraser's Magazine* (Raub 1988), a view which is not supported by everyone (Hodge 1991, p. 280).

² A complete discussion of Whewell's life and work is given in Fisch & Schaffer 1991. Yeo (1993) provides a useful examination of Whewell's life and work within Victorian debates regarding epistemology, while Todhunter (1876) and Douglas (1882) both provide the standard 'Life and Letters'.

As mentioned previously, *Indications* largely consists of extracts from previously published works. Whewell's direct argument against the contents of *Vestiges* occurs within the first forty-four pages, which provide a preface to the work. Within these pages, he accuses Chambers of not allowing facts to speak for themselves and thus disprove his hypothesis of universal development. Chambers is faulted for bringing his 'dogmatic' ideas to the public before they could be examined and refuted by scientists; 'hypotheses which have thus been advantageous to science have been *tentative* hypotheses admitted *into the mind* for trial and rejected if the facts were found to contradict them; not *dogmatic* hypotheses published *to the world*, and defended by an appeal from men of science to 'another tribunal'" (Whewell 1846, p. 25). Whewell emphatically argued that science could not answer questions of ultimate origins, as 'an impassable abyss separates us from the origin of things' (*ibid.*, p. 9). Thus, he believed that humility was the preferred stance by an investigator who must face the fact that 'the chain of existing causes does not, in any case, conduct us back to its origin' (*ibid.*, p. 23). He felt that 'we cannot obtain from science a complete view of the history of the universe' (*ibid.*, p. 23), and as such 'doubt and delay are better than headlong haste and baseless confidence, on questions so large and so deep' (*ibid.*, p. 29). Unlike Chambers, Whewell as a scientist felt that there were questions that science alone could not answer. For these issues, it was faith, and therefore the Gospel, that provided guidance and insight.

Nonetheless, Whewell still felt that it was possible to infer something about the past from the present. In his earlier works, he had coined the phrase 'palaetiological sciences' to refer to those sciences which have as their object the reconstruction of the past based on the evidence of the present. Whewell's two exemplary palaetiological sciences were geology and comparative philology, but he recognized that many different disciplines had palaetiological divisions, and argued that the palaetiological sciences were particularly suitable for undergraduates to study as a component of a general liberal curriculum. (Like his lifelong colleague, Adam Sedgwick, Whewell was a Fellow of Trinity and took part in the university reform movement.)

In a letter to his brother-in-law Fredrick Myers, dated 16 March 1845, Whewell proclaimed:

If the mere combining chemistry, geology, physiology, and the like, into a nominal system, while you violate the principles of each at every step of your hypothesis, be held a philosophical merit, because the speculator is seeking a wider law than gravitation, I do not see what we, whose admiration of the discovery of gravitation arises from its truth, and the soundness of every step to the truth, have to do, except seek another audience. (quoted in Yeo 1993, p. 114)

Herein lies the heart of Whewell's unease with *Vestiges*. He believed that the public's acceptance of the ideas put forth in the work did not reflect well on the readership's state of mind regarding the nature of scientific thought. He saw the success of *Vestiges* as 'an indication of the failure of scientific commentators...at explaining good science to wider audiences' (Yeo 1993, p. 113), and it was precisely because of the readers' 'want of the apprehension of the difference of the nature of truth and falsehood in science and philosophy' that the work was successful (letter to Myers; quoted in Douglas 1882, p. 318). In short, he clearly felt that a comprehensive refutation would be impossible due to the nature of those who are attracted to such works. The problem was thus not with Chambers but with his audience. This perhaps explains the secondary nature of *Indications*, which suggests that Whewell felt it was not worth his time to address properly the audience that Chambers actively courted.

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