Writing to his sister Anne Viscountess Conway in May 1658, John Finch, a former student of Henry More at Christ's College Cambridge, made the following observation: "As to Descartes my Dear I would with all my heart that I could think his Philosophy as true as coherent; but coherency is no argument, for he must be a man of mean parts, that forgets himself so far as to make one deduction contradict another..." (Malloch 1917, p. 13). Most of us would agree that Finch, like the young More, was somewhat sanguine about the degree of coherency in Descartes' metaphysics and natural philosophy, but the intriguing point about his remark is the assumption that internal coherence in a philosophical system is a matter of vigilance in its construction, of being continually alert to impending logical solecism. Finch was assuming that it is possible for a philosophical system to be wholly coherent. Whether or not he was right is an engaging meta-philosophical problem that cannot detain us here, yet our historical experience suggests that he was being unduly naive. Every intellectual system in the history of thought has been saddled with its share of inconsistency and incoherence, of antinomies, of problematic conceptual situations, of simple contradiction. A fortiori, the same holds for that unmanageably complex shoal of ideas, hypotheses, procedures, theories and systems, that shelters under the umbrella of "The Mechanical Philosophy". Of the numerous conceptual burdens the Mechanical Philosophy had to bear, the two or three I shall examine were not examples of forgetfulness or loose thinking in the protagonists, or obstacles that we might have expected such a progressive philosophy of nature to remove as a normal part of its brief. They illustrate rather conceptual difficulties that seem inherent in the mechanical program, or more precisely in versions of that program.

1. MECHANICAL EXPLANATIONS

To begin, I should like to comment on explanations in the mechanical philosophy, one major aim of which was to dis-
place Peripatetic explanations of natural phenomena. What I have to say here repeats to some extent familiar features of mechanism,¹ yet I think it important to present them within a framework that promises a fresh approach to the analysis of mechanical explanations. The framework I have in mind is that provided by the notion of structural explanation, recently explored by McMullin (1978b). Noting the distinction between structural, nomothetic, and genetic explanations, McMullin characterizes the first as obtaining when "the properties or behavior of a complex entity are explained by alluding to the structure of that entity", where the term "structure" "refers to a set of constituent entities or processes and the relationships between them". Structural explanations are causal, "since the structure invoked to explain can also be called the cause of the feature being explained" (McMullin 1978b, p. 139). Furthermore, McMullin argues that structural explanations are more satisfactory than nomothetic explanations, in that they make potentially fruitful ontological claims about the causal nexus with which the explananda are associated, and in that they involve retroductive inference, which (suitably modified) entails the possibility of explanatory resourcefulness in domains other than those delimited by the explananda for which the structural explanations were originally devised (McMullin 1978b, pp. 145-147).

Clearly, explanations in the Mechanical Philosophy are typical examples of structural explanations. The salient features of structural explanation, as outlined by McMullin, hold for the mechanical explanations of a Galileo, a Descartes, a Gassendi, a Boyle, or a Newton. Natural phenomena are given causal explanations by retroductively linking them to bodies with position and motion structured in an appropriate way, and (except in the case of the simplest mechanical effects) it is the structure, together perhaps with nomothetic causal relationships, that causes the phenomena, rather than any individual body, motion or disposition.² Since the number of possible structures is unlimited, even for a small number of component bodies, as Boyle noted (Boyle 1979, pp. 105-110), mechanical explanations promise a potentially large range of new explanatory tasks, and offer the hope of deductive testing and new predictive domains.

The structural explanations of the mechanical philosophers were particularly successful for those phenomena that could be reproduced, or represented in some respect, by