

Foreword to
Dana Densmore's *Newton's Principia*
The Central Argument
by Curtis Wilson

Newton's *Principia* must surely be the most unread famous book in the Western World. Even in the seventeenth century few essayed to read it, and one such, the philosopher John Locke, had to ask Newton for help in finding his way through the main argument. In the eighteenth century, the foremost mathematicians of Europe adopted the Leibnizian symbolism for the calculus, and proceeded to translate basic propositions from Newton's book into an algebraic form. Mathematical physics became algorithmic and, to the uninitiate, an unapproachable mystery, for high priests only.

To be sure, mathematical physics is in fact a wonder. Real education has more to do with learning to recognize the wonderful than with dispelling wonder. For physicists as for nonphysicists, there is a special gain in coming to be educatedly present at the moment in which, as Ernst Mach put it, "the uncommon incomprehensibility [of universal gravitation] became a common incomprehensibility." For this, one must follow Newton's central argument questioningly; appreciate its force, its strangeness for his contemporaries, its potentiality for the future. A new method here emerges. Willynilly, despite Newton's expressed wish, it was to prove persuasible independent of metaphysical or theological persuasion. What we call *science*, independent of philosophy, here came into existence.

Dana Densmore has provided the guide that is needed if one is to follow the central argument of Newton's *Principia* with comprehension and assurance. Putting students on their mettle, she engages them in their own reading of the text, but provides detailed help wherever need for it may be felt. The study is demanding, but open to all with an elementary background in Euclidean geometry. In restatements of and comments on the propositions, Densmore probes the implications of Newton's often cryptic formulations. Some lapses in Newton's argumentation there are, and she does not blink at pointing them out. Among them, Newton's tacit assumption of attraction in III.7, which ostensibly establishes universal gravitation, is worth dwelling on. It shows why the argument for universal gravitation must be open-ended: truths about the real world cannot be proved but only tested or verified.

To dwell long enough and understandingly enough with Newton's text to gain a genuine sense of where the author is coming from and whither he is going: that is what the liberal artist will want to do. Dana Densmore's guide makes it possible.