

On Some Astronomical Paradoxes

Astronomy

Though these words were published just half a century ago the paradoxer, in astronomy as in other sciences, is still with us, but unfortunately we have no De Morgan or Proctor either, to keep them in their places.

RICHARD A. PROCTOR, in *Myths and Marvels of Astronomy* (Chatto and Windus. 1878):

For many years the late Professor De Morgan contributed to the columns of the *Athenæum* a series of papers in which he dealt with the strange treatises in which the earth is flattened, the circle squared, the angle divided into three, the cube doubled (the famous problem which the Delphic oracle set astronomers), and the whole of modern astronomy shown to be a delusion and a snare. He treated these works in a quaint fashion: not unkindly, for his was a kindly nature; not even earnestly, though he was thoroughly in earnest; yet in such sort as to rouse the indignation of the unfortunate paradoxists. He was abused roundly for what he said, but much more roundly when he declined further controversy. Paradoxists of the ignorant sort (for it must be remembered that not all are ignorant) are, indeed, well practised in abuse, and have long learned to call mathematicians and astronomers cheats and charlatans. They freely used their vocabulary for the benefit of De Morgan, whom they denounced as a scurrilous scribbler, a defamatory, dishonest, abusive, ungentlemanly, and libellous trickster.

He bore this shower of abuse with exceeding patience and good nature. He had not been wholly unprepared for it, in fact; and, as he had a purpose in dealing with the paradoxists, he was satisfied to continue that quiet analysis of their work which so roused their indignation. He found in them a curious subject of study; and he found an equally curious subject of study in their disciples. The simpler—not to say more foolish—paradoxists, whose wonderful discoveries are merely amazing misapprehensions, were even more interesting to De Morgan than the craftier sort who make a living, or try to make a living, out of their pretended theories. Indeed, these last he treated, as they deserved, with a scathing satire quite different from his humorous and not ungenial comments on the wonderful theories of the honest paradoxists.

There is one special use to which the study of paradox-literature may be applied, which—so far as I know—has not hitherto been much attended

to. It may be questioned whether half the strange notions into which paradoxists fall must not be ascribed to the vagueness of too many of our scientific treatises. A half-understood explanation, or a carelessly worded account of some natural phenomenon, leads the paradoxist, whose nature is compounded of conceit and simplicity, to originate a theory of his own on the subject. Once such a theory has been devised, it takes complete possession of the paradoxist's mind. All the facts of which he thenceforward hears which bear in the least on his favourite craze, appear to give evidence in its favour, even though in reality they are most obviously opposed to it. He learns to look upon himself as an unappreciated Newton, and to see the bitterest malevolence in those who venture to question his preposterous notions. He is fortunate if he do not suffer his theories to withdraw him from his means of earning a livelihood, or if he do not waste his substance in propounding and defending them.

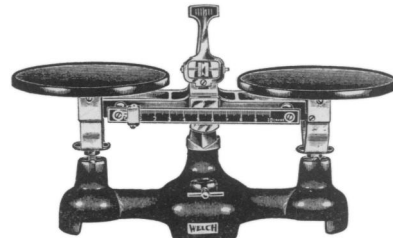
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It has often seemed to me that a large part of the mischief—for let it be remembered that the published errors of the paradoxist are indicative of much unpublished misapprehension—arises from the undeserved contempt with which our books of astronomy too often treat the labours of Ptolemy, Tycho Brahe, and others who advocated erroneous theories. If the simple truth were told, that the theory of Ptolemy was a masterpiece of ingenuity and that it was worked out by his followers in a way which merits the highest possible praise, while the theory of Tycho Brahe was placed in reality on a sounder basis than that of Copernicus, and accounted as well and as simply for observed appearances, the student would begin to realise the noble nature of the problem which those great astronomers dealt with. And again, if stress were laid upon the fact that Tycho Brahe devoted years upon years of his life to secure such observations of the planets as might settle the questions at issue, the student would learn something of the spirit in which the true lover of science proceeds.

It seems to me, also, that far too little is said about the kind of work by which Kepler and Newton finally established the accepted theories. There is a strange charm in the his-

tory of those twenty years of Kepler's life during which he was analysing the observations made by Tycho Brahe. Surrounded with domestic trials and anxieties, which might well have claimed his whole attention, tried grievously by ill-health and bodily anguish, he laboured all those years upon erroneous theories. The very worst of these had infinitely more evidence in its favour than the best which the paradoxists have brought forth. There was not one of those theories which nine out of ten of his scientific contemporaries would not have accepted ungrudgingly. Yet he wrought these theories one after another to their own disproof. *Nineteen* of them he tried and rejected—the twentieth was the true theory of the solar system. Perhaps nothing in the whole history of astronomy affords a nobler lesson to the student of science—unless, indeed, it be the calm philosophy with which Newton for eighteen years suffered the theory of the universe to remain in abeyance, because faulty measurements of the earth prevented his calculations from agreeing with observed facts.

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