THE TRUE DOCTRINE OF ORBITS: AN ORIGINAL TREATISE ON CENTRAL FORCES, PP. 1-132

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TRUE DOCTRINE OF ORBITS,

AN ORIGINAL

TREATISE ON CENTRAL FORCES.

By H. G. RUSH,
OF NEW DANVILLE, PENN'A.

"I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."
—SIR ISAAC NEWTON.

LANCASTER, PA.
DAILY INTELLIGENCER PRINT.
1887.

PREFACE.

THE creation of this little book is owing to a chain of those fortuitous circumstances to which science and art are indebted for so many of their treasures.

The treasures of art and the baubles of folly, like a wise man and a fool, may readily be mistaken for each other; and it is difficult to devise whether the wise are wise and fools fools, because those of assumed competence pronounce them so.

Agassiz has said, that the first remark about a scientific discovery which conflicts with existing notions is "that it is not true"; next it is branded as "anti-Christian"; and finally, every body "knew it long ago."

In the face of existing prejudices, the author has vividly pictured to himself the ridicule which will be his portion if he fails to establish his propositions. Were he to come in conflict with authority so well fathered, and so long, and so ably sustained, in any other than an exact science, nerve would fail him to face the reproaches and criticisms of professionals. Confident, however, that the correctness of his conclusions must soon be admitted, that his investigations will popularize, simplify, and enlarge one of the most interesting and valuable departments open to mathematical research, he feels assured that there is but little need to apologize for the intrusion of this unwelcome novelty.

An original investigation of the "problem of lights" conducted by the author some seventeen years ago resulted in a series of conclusions which, together with certain inconsistencies associated with the elliptical theory, first suggested the "true doctrine of orbits."

For want of time and courage, (as the task appeared too presumptuous in his youth), the problem was dismissed from his mind and remained closeted while the engagements of an active farm life occupied his time. Meanwhile, the author's dissatisfaction

with the elliptical theory kept alive the desire "some day" to continue his investigations. In the winter of 1885-86, a period of convalescence afforded an opportunity to review and extend his work —somewhat at a disadvantage for want of exercise. The humble circumstances under which this work was executed is offered as an apology for its appearing less attractively and less logically than the author would desire. Herein he asks for charity, desiring none for the incorrectness of his theory or any of his conclusions.

In the developments of the True Doctrine of Orbits, the author has used no debatable premises, unless we choose to question the correctness of the law of gravitation, the verifications of which are so commendable to the understanding as to excite no dispute. This same law which furnishes the fundamental proposition in the new theory is also of vital import to the old.

The objection raised by our confident critics "that the existing theory of orbits so well satisfies astronomical phenomena as to leave no doubt of its correctness" is but a repetition of the obstacles which confronted every revolutionary scientific movement.

The system of the Astrologer of ancient times was all sufficient in its day. The advocates of Ptolemy thought they had accounted for all the puzzles open to their view.

The true lover of science takes no delight in the perpetuation of error however ably supported, nor will he refuse to hear a better solution. The incontestable truths of science, (of which exact science alone can boast) are, many of them, developed by gradation from utter darkness to noon-day light; then why should we stand aghast to hear of another step of advance in the direction of "the true."

That Newton erred in his conclusion, framed as a preconception and sustained by ingenious demonstration, need not be greatly wondered at, nor that the talent of the ripest centuries was satisfied to account him correct; but that any one should persistently refuse to see when new light beams full in the face is unworthy of a better name than bigot. Newton himself would take no delight in the perpetuation of the errors which find protection in his garner of truth. He would not hesitate to acknowledge the finer symmetry of a newly found pebble, though picked up by other hands. He was not proud of his discoveries, knowing that if he saw

farther than his predecessors it was because he had their shoulders to stand upon; and has he scanned the horizon to so great a depth that none other may gain advantage by perching upon his lofty brow? But I am growing too presumptuous.

Kind reader, we ask of you an unbiased perusal of this work, knowing that no prefatory remarks of defense can possibly help to impress you otherwise than unfavorably.

H. G. RUSH.

New Danville, Jan. 1887.

NOTICE.

IT was found after this work had gone partly through the press that an indiscretion had been committed in a minor proposition, the correction of which is found in the last article of the appendix. The error referred to is in Theorem VII, and some of its effect is transmitted to Theorems XII and XIV, of which the reader please make note at once to save confusion.

In Theorem IX the words "of equal eccentricity" should be omitted, since the demonstration is general, independent of eccentricity.

Should any find exception to our criticism on Newton's demonstration of force as related to the ellipse, we ask them to consult lemma 1 of the Principia and find that the equality of Qx and Qv is not warranted. He says:—"*Quantities, and the ratios of quantities, which, in any finite time, tend constantly to equality, and which, before the end of that time, approach nearer to each other than by any assigned difference, become ultimately equal.* The quantities of which Newton asserts equality are not of the kind here referred to.

The reason for confining our comments mainly to Newton is that we have not succeeded in securing a copy of the demonstrations by La Place.

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