

**AN ELEMENTARY
TREATISE ON CURVATURE:
ALSO, A FRAGMENTARY
ESSAY ON CURVES**

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An Elementary Treatise on Curvature: Also, a Fragmentary Essay on Curves by Thomas Hill

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THOMAS HILL

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AN ELEMENTARY TREATISE

ON

CURVATURE.

ALSO,

A FRAGMENTARY ESSAY ON CURVES.

BY THOMAS HILL.

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P R E F A C E.

A TRUE system of classification is attainable only when a high degree of knowledge has been attained, because the true system must be based upon the essential laws of formation in the objects classified. Convenience demands some classification, which at first is necessarily arbitrary; and this arbitrary system may, in one sense, be called natural, since the mind, in its craving for order, and its ignorance of aught beyond what it has seen, is naturally led to form artificial order. But when, through the use of the arbitrary classification, a fuller understanding of the subject is arrived at, then the objects are newly arranged according to what appears to us to have been the law in their creation. It has been thus in botany, zoölogy, nosology, and other sciences, and will probably be thus in mathematics. The classification of curves, according to the degree of their equation in rectangular and in polar co-ordinates, is natural to us, from our modes of inquiry and measurement; but it may not be natural to the curves; that is, it may not class them according to their laws of continuity and direction, which are the laws of their formation.

The following Treatise and Essay make, as I am well aware, very slight advances towards a better classification;

yet they will have, I think, some value. But, whatever there is of apparent novelty or real value in these speculations, they are simply the development of ideas long since published by Prof. Peirce, and frequently used by him in his investigations. Should a second and third book follow this, they will treat of "Curvature upon Curved Surfaces," and "The Curvature of Surfaces."

For her sake, through whose generosity these papers see the light, I could wish they were more valuable, and more worthy of publication.

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ELEMENTARY TREATISE.