

the sun on his axis, before the invention of the telescope, and his opinion that the obliquity of the ecliptic was decreasing, but would, after a long-continued diminution, stop, and then increase again.<sup>2</sup> Nothing can be more just, as well as more poetically happy, than Kepler's picture of the philosopher's pursuit of scientific truth, conveyed by means of an allusion to Virgil's shepherd and shepherdess :

Malo me Galatea petit, lasciva puella  
Et fugit ad salices et se cupit ante videri.  
Coy yet inviting, Galatea loves  
To sport in sight, then plunge into the groves ;  
The challenge given, she darts along the green,  
Will not be caught, yet would not run unseen.

We may notice as another peculiarity of Kepler's reasonings, the length and laboriousness of the processes by which he discovered the errors of his first guesses. One of the most important talents requisite for a discoverer, is the ingenuity and skill which devises means for rapidly testing false suppositions as they offer themselves. This talent Kepler did not possess : he was not even a good arithmetical calculator, often making mistakes, some of which he detected and laments, while others escaped him to the last. But his defects in this respect were compensated by his courage and perseverance in undertaking and executing such tasks ; and, what was still more admirable, he never allowed the labor he had spent upon any conjecture to produce any reluctance in abandoning the hypothesis, as soon as he had evidence of its inaccuracy. The only way in which he rewarded himself for his trouble, was by describing to the world, in his lively manner, his schemes, exertions, and feelings.

The *mystical* parts of Kepler's opinions, as his belief in astrology, his persuasion that the earth was an animal, and many of the loose moral and spiritual as well as sensible analyses by which he represented to himself the powers which he supposed to prevail in the universe, do not appear to have interfered with his discovery, but rather to have stimulated his invention, and animated his exertions. Indeed, where there are clear scientific ideas on one subject in the mind, it does not appear that mysticism on others is at all unfavorable to the successful prosecution of research.

I conceive, then, that we may consider Kepler's character as containing the general features of the character of a scientific discoverer,

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<sup>2</sup> Bailly, *A. M.* iii. 175.