

## Kepler's 'War on Mars'

What Johannes Kepler described as his “war” with Mars was crucial to his discovery of the ellipticity of the planetary orbits and the principle of universal gravitation. Why Mars? Partly because it was the planet for which Kepler’s employer, the late Tycho Brahe, had left him the most data. This was especially fortuitous, since it turns out that the orbit of Mars has the greatest ellipticity of any of the planets for which Tycho had data, and therefore it was the most likely to confront Kepler with the paradox that the orbit of Mars *did not quite fit* predictions based on the Copernican model of the time, without piling on epicycles (fudge factors).

Kepler elaborates his war with the planet—which is named, of course, after the Roman god of War—in his *New Astronomy: Based upon causes or celestial physics, treated by means of commentaries on the motions of the star Mars* (William H. Donahue, trans., Cambridge University Press, 1992).

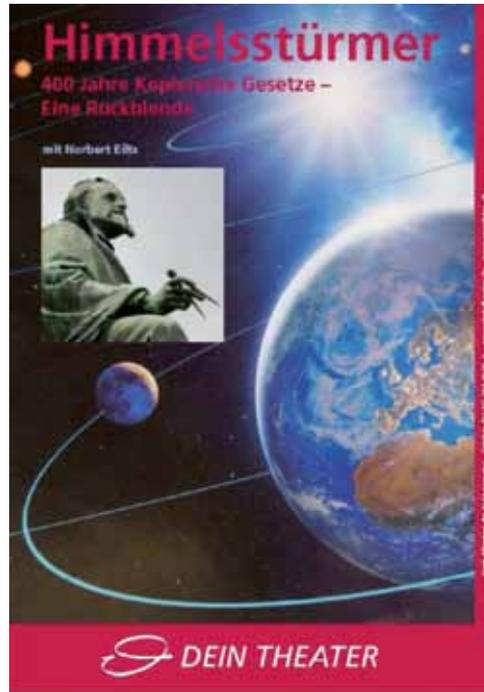
In his dedication to his patron, Emperor Rudolph II, he writes: “In order that Your Holy Imperial Majesty, as well as the entire House of Austria, might be happy and prosperous in most serene renown, I am now at last exhibiting for the view of the public a most Noble Captive [Mars—ed.], who has been taken for a long

time now through a difficult and strenuous war waged by me under the auspices of Your Majesty.”

Describing astronomers’ struggles with Mars over millennia, Kepler emphasizes his own rejection of received wisdom: “[H]ere too, as in other kingdoms, the ruling influence of our enemy has been sustained and supported, more than any other thing, by the persuasion and confusion of the multitude of people, the defiance of which I have always considered the path to victory....”

In an Author’s Introduction, addressing those who would shy away from his work because it does not apparently coincide with Holy Scripture, Kepler draws a sharp distinction between sense certainty and the creative mind: “But whoever is too stupid to understand astronomical science, or too weak to believe Copernicus without affecting his faith, I would advise him that, having dismissed astronomical studies and having damned whatever

philosophical opinions he pleases, he mind his own business and betake himself home to scratch in his own dirt patch.... He should raise his eyes (his only means of vision) to this visible heaven and with his whole heart burst forth in giving thanks and praising God the Creator. He can be sure that he worships God no less than the astronomer, to whom God has granted the more penetrating vision of the mind’s eye, and ability and desire to celebrate his God above those things he has discovered.”—*Susan Welsh*



*The German Kepler Society celebrated the 400th anniversary of the New Astronomy with, among other things, a theatrical performance in Weil der Stadt, Kepler’s birthplace. The poster describes him as a man who “stormed the heavens.”*