A single example will suffice. Kepler had a theory that the ratio of the period of rotation of the Earth to the period of revolution of the Moon about the Earth was the same as the ratio of the period of rotation of the Sun to the period of revolution of Mercury about the Sun. According to this theory the period of rotation of the Sun worked out at about three days. With his telescope Galileo found that the Sun in fact rotates not in three days, but in about twenty-seven days. This he did by observing sunspots, which appear to move from the western limb of the Sun to its eastern limb as the Sun turns on its axis of rotation.

(The discovery of sunspots, by the way, was first announced not by Galileo but by Father Scheiner. The reason for this was that Galileo held back the announcement of his observation of sunspots for about two years, probably because he wished to make absolutely sure that the spots really were associated with the Sun and were not simply small bodies that had interposed themselves between the Sun and the Earth. From time immemorial, very large spots must have been seen on the disk of the Sun by naked eye, so the telescopic discovery of sunspots was not really their first discovery; but the naked-eye observations had always been attributed to the passage of bodies in front of the Sun. In one Mercury had come between the Earth and the Sun.)

The use that Galileo made of his observations of sunspots easily surpasses that of all his contemporaries. Not only did he use them to determine the period of rotation of the Sun, but he also noticed that they are not absolutely dark. They only appear dark in comparison with the brightness of surrounding regions of the solar disk. He also noticed that the spots are confined to an equatorial zone of the Sun, being rarely found at latitudes greater than 30°. Galileo even noticed that the axis of rotation of the Sun is not exactly perpendicular to the plane of the Earth’s orbit.

Galileo’s life’s work and his personal character can perhaps best be exemplified by describing one of his experiments. According to Aristotelian physics bodies that fall down possess weight, and those that do not fall down do not possess weight. Since the air does not fall down it therefore has no weight. Galileo dealt with this matter in an extremely simple way. He pumped air into a bladder, sealed the bladder and weighed it. Then he punctured it, so that air escaped, and weighed it again. The weight at the second reading was less than at the first, thus proving that the air which had escaped possessed weight.

Throughout his life Galileo was a puncturer of mental balloons and bladders. It seems clear that