

### CHAPTER III

*[A phenomenon solved by modern philosophy and astronomy. The Laputians' great improvements in the latter. The king's method of suppressing insurrections.]*

I desired leave of this prince to see the curiosities of the island, which he was graciously pleased to grant, and ordered my tutor to attend me. I chiefly wanted to know, to what cause, in art or in nature, it owed its several motions, whereof I will now give a philosophical account to the reader.

The flying or floating island is exactly circular, its diameter 7837 yards, or about four miles and a half, and consequently contains ten thousand acres. It is three hundred yards thick. The bottom, or under surface, which appears to those who view it below, is one even regular plate of adamant, shooting up to the height of about two hundred yards. Above it lie the several minerals in their usual order, and over all is a coat of rich mould, ten or twelve feet deep. The declivity of the upper surface, from the circumference to the centre, is the natural cause why all the dews and rains, which fall upon the island, are conveyed in small rivulets toward the middle, where they are emptied into four large basins, each of about half a mile in circuit, and two hundred yards distant from the centre. From these basins the water is continually exhaled

by the sun in the daytime, which effectually prevents their overflowing. Besides, as it is in the power of the monarch to raise the island above the region of clouds and vapours, he can prevent the falling of dews and rain whenever he pleases. For the highest clouds cannot rise above two miles, as naturalists agree, at least they were never known to do so in that country.

At the centre of the island there is a chasm about fifty yards in diameter, whence the astronomers descend into a large dome, which is therefore called FLANDONA GAGNOLE, or the astronomer's cave, situated at the depth of a hundred yards beneath the upper surface of the adamant. In this cave are twenty lamps continually burning, which, from the reflection of the adamant, cast a strong light into every part. The place is stored with great variety of sextants, quadrants, telescopes, astrolabes, and other astronomical instruments. But the greatest curiosity, upon which the fate of the island depends, is a loadstone of a prodigious size, in shape resembling a weaver's shuttle. It is in length six yards, and in the thickest part at least three yards over. This magnet is sustained by a very strong axle of adamant passing through its middle, upon which it plays, and is poised so exactly that the weakest hand can turn it. It is hooped round with a hollow cylinder of adamant, four feet yards in diameter, placed horizontally, and supported by eight adamantine feet, each six yards high. In the middle of the concave side, there is a groove twelve inches deep, in which the extremities of the axle are lodged, and turned round as there is occasion.

The stone cannot be removed from its place by any force, because the hoop and its feet are one continued piece with that body of adamant which constitutes the bottom of the island.

By means of this loadstone, the island is made to rise and fall, and move from one place to another. For, with respect to that part of the earth over which the monarch presides, the stone is endued at one of its sides with an attractive power, and at the other with a repulsive. Upon placing the magnet erect, with its attracting end towards the earth, the island descends; but when the repelling extremity points downwards, the island mounts directly upwards. When the position of the stone is oblique, the motion of the island is so too: for in this magnet, the forces always act in lines parallel to its direction.

By this oblique motion, the island is conveyed to different parts of the monarch's dominions. To explain the manner of its progress, let A B represent a line drawn across the dominions of Balnibarbi, let the line C D represent the loadstone, of which let D be the repelling end, and C the attracting end, the island being over C: let the stone be placed in position C D, with its repelling end downwards; then the island will be driven upwards obliquely towards D. When it is arrived at D, let the stone be turned upon its axle, till its attracting end points towards E, and then the island will be carried obliquely towards E; where, if the stone be again turned upon its axle till it stands in the position E F, with its repelling point downwards, the island will rise obliquely towards F, where, by directing the attracting end towards G, the island may be carried to G, and from G to H, by turning the stone, so as to make its repelling extremity to point directly downward. And thus, by changing the situation of the stone, as often as there is occasion, the island is made to rise and fall by turns in an oblique direction, and by those alternate risings and fallings (the obliquity being not considerable) is conveyed from one part of the dominions to the other.

But it must be observed, that this island cannot move beyond the extent of the dominions below, nor can it rise above the height of four miles. For which the astronomers (who have written large systems concerning the stone) assign the following reason: that the magnetic virtue does not extend beyond the distance of four miles, and that the mineral, which acts

upon the stone in the bowels of the earth, and in the sea about six leagues distant from the shore, is not diffused through the whole globe, but terminated with the limits of the king's dominions; and it was easy, from the great advantage of such a superior situation, for a prince to bring under his obedience whatever country lay within the attraction of that magnet.

When the stone is put parallel to the plane of the horizon, the island stands still; for in that case the extremities of it, being at equal distance from the earth, act with equal force, the one in drawing downwards, the other in pushing upwards, and consequently no motion can ensue.

This loadstone is under the care of certain astronomers, who, from time to time, give it such positions as the monarch directs.

They spend the greatest part of their lives in observing the celestial bodies, which they do by the assistance of glasses, far excelling ours in goodness. For, although their largest telescopes do not exceed three feet, they magnify much more than those of a hundred with us, and show the stars with greater clearness. This advantage has enabled them to extend their discoveries much further than our astronomers in Europe; for they have made a catalogue of ten thousand fixed stars, whereas the largest of ours do not contain above one third part of that number. They have likewise discovered two lesser stars, or satellites, which revolve about Mars; whereof the innermost is distant from the centre of the primary planet exactly three of his diameters, and the outermost, five; the former revolves in the space of ten hours, and the latter in twenty-one and a half; so that the squares of their periodical times are very near in the same proportion with the cubes of their distance from the centre of Mars; which evidently shows them to be governed by the same law of gravitation that influences the other heavenly bodies.

They have observed ninety-three different comets, and settled their periods with great exactness. If this be true (and they affirm it with great confidence) it is much to be wished, that their observations were made public, whereby the theory of comets, which at present is very lame and defective, might be brought to the same perfection with other arts of astronomy.

The king would be the most absolute prince in the universe, if he could but prevail on a ministry to join with him; but these having their estates below on the continent, and considering that the office of a favourite has a very uncertain tenure, would never consent to the enslaving of their country.

If any town should engage in rebellion or mutiny, fall into violent factions, or refuse to pay the usual tribute, the king has two methods of reducing them to obedience. The first and the mildest course is, by keeping the island hovering over such a town, and the lands about it, whereby he can deprive them of the benefit of the sun and the rain, and consequently afflict the inhabitants with dearth and diseases: and if the crime deserve it, they are at the same time pelted from above with great stones, against which they have no defence but by creeping into cellars or caves, while the roofs of their houses are beaten to pieces. But if they still continue obstinate, or offer to raise insurrections, he proceeds to the last remedy, by letting the island drop directly upon their heads, which makes a universal destruction both of houses and men. However, this is an extremity to which the prince is seldom driven, neither indeed is he willing to put it in execution; nor dare his ministers advise him to an action, which, as it would render them odious to the people, so it would be a great damage to their own estates, which all lie below; for the island is the king's demesne.

But there is still indeed a more weighty reason, why the kings of this country have been always averse from executing so terrible an action, unless upon the utmost necessity. For, if the town intended to be destroyed should have in it any tall rocks, as it generally falls out in the larger cities, a situation probably chosen at first with a view to prevent such a catastrophe; or if it abound in high spires, or pillars of stone, a sudden fall might endanger the bottom or under surface of the island, which, although it consist, as I have said, of one entire adamant, two hundred yards thick, might happen to crack by too great a shock, or burst by approaching too near the fires from the houses below, as the backs, both of iron and stone, will often do in our chimneys. Of all this the people are well apprised, and understand how far to carry their obstinacy, where their liberty or property is concerned. And the king, when he is highest provoked, and most determined to press a city to rubbish, orders the island to descend with great gentleness, out of a pretence of tenderness to his people, but, indeed, for fear of breaking the adamantine bottom; in which case, it is the opinion of all their philosophers, that the loadstone could no longer hold it up, and the whole mass would fall to the ground.

By a fundamental law of this realm, neither the king, nor the queen, nor either of his two eldest sons, are permitted to leave the island.