power of gravitation, that its intensity—the energy of its pull—is less and less as the distance of the thing pulled is greater: and *that* in a higher proportion. At double the distance, the force of the pull is not halved, but quartered: at triple, it is not a third part, but a ninth. There are mountains in the world five miles high; that is to say, whose summits are five miles farther from the centre of the earth than the sea-level. If a ton of lead were carried up to the top of such a mountain, though it would still balance another ton, or 2240 weights of a pound each on the scales, then and there; yet it would not require so great an effort, such an exertion of muscular force, to raise and sustain it by five pounds and a half. Now, fancy it removed to a height of 94,900,000 miles from the earth's surface, and estimating by the same rule its apparent weight, you will find, if you make the calculation, that it would not require more effort to sustain it from falling, than would suffice to lift one thirty-seventh part of a grain from the surface of the earth.

(17.) This, then, one thirty-seventh part of a grain, is the force which the earth, placed where the sun is, would exert on our lump of lead. But we have seen that to retain such a lump in such an orbit requires a pull of 1 lb. 6 oz. 51 grs. Of course, then, the earth, so placed, would be quite inadequate to retain it from flying off. To do this would require as many earths to pull it as there are thirty-seventh parts of a grain in 1 lb. 6 oz. 51 grs.: that is to say, by an easy sum in arithmetic, 356,929; or in round numbers, 360,000. Now, this is equivalent to saying, that to do the work which the sun