III.

Of the Relation between the Denſity of the Planets and their Celerity.

IN p. 75. I ſaid, that *according to this relation between the celerity and denſity of the planets, the denſity of the earth ought not to exceed* $206\frac{7}{178}$, *inſtead of* 400, *which is its real denſity.* The denſity here aſcribed to the earth is too great with relation to the quickneſs of its motion round the ſun, and ought to be a little diminiſhed for a reaſon which had formerly eſcaped me. The moon, which, in this computation, ſhould be regarded as forming a part of the earth, is leſs denſe in the ratio of 702 to 1000, and the lunar globe is $\frac{1}{49}$th of the bulk of the terreſtrial. Hence, if the moon were as large as the earth, we ſhould diminiſh the denſity of the latter 400 in the ratio of 1000 to 702, which produces 281, *i. e.* 119 of diminution in the denſity 400. But, as the moon is only $\frac{1}{49}$th part of the bulk of the earth, it will produce only $\frac{119}{49}$, or $2\frac{3}{7}$ths of diminution. Conſequently, the denſity of our globe, with relation to its celerity, inſtead of $206\frac{7}{178}$, ought to be eſtimated at $206\frac{7}{178}+2\frac{7}{3}$, *i. e.* nearly 209. Beſides, we may ſuppoſe that our globe, at the beginning, was leſs denſe than it is at preſent, and that it is become much more compact both by

by cooling, and by the ſinking of vaſt caverns with which its interior parts abounded. This opinion accords with thoſe revolutions which happened, and ſtill continue to happen, both on the ſurface of the earth, and even at conſiderable depths. By the aid of this fact, we are enabled to explain the poſſibility that the waters of the ſea were formerly 2000 fathoms above thoſe parts of the globe which are now inhabited; for theſe waters would ſtill cover the whole ſurface of the earth, if, by immenſe depreſſions, different parts had not ſunk, and formed thoſe receptacles for the waters which at preſent exiſt.

If we ſuppoſe the diameter of the globe to be 2863 leagues, it would be two leagues more when covered with 2000 fathoms of water. This difference in the bulk of the earth, produced by the ſinking of the waters, gives an augmentation of a $\frac{1}{477}$th part of its denſity. This augmentation of the denſity, or diminution of the bulk of the globe, may be doubled, and perhaps tripled, by the ſinking and overturning of mountains, and the conſequent filling up of valleys; ſo that, ſince the waters fell upon the earth, its denſity may be ſuppoſed to have increaſed one hundredth part.