

light on two mutually dependent problems; namely, the motion of the solar system,* and the position of the center of gravity in the heaven of the fixed stars. That which can only be reduced in so very incomplete a manner to numerical relations, must for that very reason be ill calculated to throw any clear light on such causal connection. Of the two problems just mentioned, the first alone (especially since Arge-lander's admirable investigation) admits of being solved with a certain degree of satisfactory precision; the latter has been considered with much acuteness by Mädler, but, according to the confession of this astronomer himself,† his attempted solution is, in consequence of the many mutually compensating forces which enter into it, devoid "of any thing like evidence amounting to a complete and scientifically certain proof."

After carefully allowing for all that is due to the precession of the equinoxes, the nutation of the earth's axis, the aberration of light, and the change of parallax caused by the earth's revolution round the sun, the remaining annual motion of the fixed stars comprises at once that which is the consequence of *the translation in space of the whole solar system*, and that also which is the result of the actual proper motion of the fixed stars. In Bradley's masterly labors on nutation, contained in his great treatise of the year 1748, we meet with the first hint of a translation of the solar system, and in a certain sense, also, with suggestions for the most desirable methods of observing it.‡ "For if our own solar system be conceived to change its place with respect to absolute space, this might, in process of time, occasion an apparent change in the angular distances of the fixed stars; and in such a case, the places of the nearest stars being more affected than of those that are very remote, their relative positions might seem to alter, though the stars themselves were really immovable. And, on the other hand, if our own system be at rest, and any of the stars really in motion, this might likewise vary their apparent positions, and the more so, the nearer they are to us, or the swifter their motions are, or the more proper the direction of the motion is, to be rendered perceptible by us. Since, then, the relative places of

* *Cosmos*, vol. i., p. 146.

† Mädler, *Astronomie*, s. 414.

‡ Arago, in his *Annuaire pour 1842*, p. 383, was the first to call attention to this remarkable passage of Bradley's. See, in the same *Annuaire*, the section on the translation of the entire solar system, p. 389-399.