## EXISTENCE AND DEITY.

tion of the various planets is also exhibited, as well as the eclipses and occultations of Jupiter's satellites, and many similar tables which are useful to the navigator in ascertaining his position, as well as to the astronomer. The reason of its early publication is in order that captains about to set sail on long voyages may have it to take with them.

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Though this observatory was thus founded by the British Government it was some time before it was provided with instruments worthy of the place; Flamstead having to use his own for a considerable period. This astronomer was a very painstaking observer; and it appears to have been to his accurate observations that Newton was greatly indebted in many of his investigations.

Halley succeeded Flamstead in his position at the Observatory. He was for some time an intimate friend of Newton, and made several long journeys in the interests of science. An expedition was fitted out under his charge to observe and catalogue those stars in the southern hemisphere which are invisible with us; and a list of nearly 400 was compiled. This, however, was by no means a complete one, as the station chosen for observation, St. Helena, was in many respects unfavorable. After Newton had made the discovery that bodies under the joint influence of a centrifugal force and the attraction of a central body might revolve in a hyperbola or parabola, as well as in an ellipse, the appearance of a comet was anxiously awaited in order that, if possible, it might be ascertained whether these bodies moved in fixed orbits of either of these forms, or whether they were merely stray wanderers dashing swiftly past our system, and then forever lost in the deep abyss of space. In the year 1680, this desire was gratified by the appearance of a very remarkable comet, which attracted great attention, both by its brilliancy and the rapidity with which it travelled. Halley gave his earnest attention to the observation of this body; he accurately noticed and recorded its motion, and he discovered that a parabolic orbit could be constructed which would account for all its movements. Its eccentricity was, however, so great that a period of 600 years must elapse before it could again return to the sun.

After this comet had passed away Halley still devoted his attention to the subject, carefully enquiring into the recorded appearance of different comets, with a view to ascertain whether the intervals between the appearances of any of the most noticeable ones appeared in any way uniform. Shortly after this, in the year 1682, another large comet appeared, and Halley now with the information he already acquired was in a better position to enquire into its motion. He accordingly did this, and after a time announced that he had calculated its orbit, and found that it moved in an ellipse, its aphelion distance being nearly 3,500,000,000 miles; also that its period was about seventy-five years. He then looked back through his list of comets, and found that he could distinctly trace it back for a considerable period. This so far confirmed his calculations that he distinctly