

tant result of the publication of these charts has been that they have greatly facilitated the discovery of the small planets or asteroids between the orbits of Mars and Jupiter. Since 1859 no fewer than twenty of these remarkable bodies have been discovered, so that their number at the close of last year was seventy-six.

The investigations of the motion of Sirius by Bessel and Peters had revealed some irregularities in right ascension, and Bessel had surmised that they were due to the influence of some unknown body in the vicinity of the star. This companion, whose existence had not been ascertained by sight, was discovered on Jan. 31, by Mr. Clark of the U. S., with his new achromatic glass, and was subsequently observed by Prof. Bond at the Observatory of Harvard College. We have thus another most interesting example of the wondrous power of mathematical research to reveal that latent cause of perturbation, which the keenest vision, aided by the most powerful instruments, had previously failed to detect. It is proper, however, that I should add that Dr. Peters does not accept the identity of this stranger with that which he had computed.

In accordance with the suggestion of Sir John Herschel, made about eight years ago, relative to the advantages of taking daily photographs of the sun, a new and valuable instrument was invented, the Photoheliograph, or rather, as the name has been emended, the Heli-autograph. At the last meeting of the British Association for the advancement of Science, Prof. Selwyn exhibited a series of those wonderful portraits taken by the sun of himself. They represent the progress of the spots with their *penumbrae* as the sun revolves on his axis, and the *faculae* or bright streaks which accompany those spots. On the same subject Mr. Nasmyth stated his observations relative to the three luminous strata—which envelope the sun—the mist envelope—the penumbral stratum—and the external, in which the lenticular, or, as they are called, the willow leaf structures are found. Photography has also been successfully applied to the moon, and Mr. De la Rue's skilful manipulation has produced most accurate representations.

At the same meeting, Prof. Challis communicated a paper on the terrestrial atmosphere, which he regarded as definitely limited, and balloon ascents were noticed as a probable mode of furnishing approximations for its actual height. Previously to this the most remarkable ascent on record had been made by Messrs. Glaisher and Coxwell, in which the astonishing altitude of 35,000 or 36,000 feet