

he held as a kind of corresponding centre of European astronomy, and as the leader of a large school of German astronomers of this century.<sup>1</sup> Olbers was a practising physician at Bremen,<sup>2</sup> where he followed astronomical studies as a recreation, making himself eminent by great services to science, among them by his method of calculating the orbit of a comet: as the greatest of his services he counted the fact of having discovered, trained, and appreciated the rising genius of Bessel.<sup>3</sup>

<sup>1</sup> Franz Xaver von Zach (1754-1832) was a native of Pesth. After having served in the Austrian artillery, and taken to astronomy as a favourite study, he spent some time in Paris and London, and became acquainted with Lalande, Laplace, Herschel, Maskelyne, Ramsden, and others. He was engaged by Duke Ernest II. of Gotha in 1786 to erect an observatory on the Seeburg near Gotha. This was completed in 1791. Here he trained a number of younger astronomers, and was the first to establish and maintain a periodical specially devoted to astronomy. It was first (1798) published under the title 'Geographische Ephemeriden,' then (1800-13) as 'Monatliche Correspondenz zur Beförderung der Erd- und Himmelskunde.' Lalande and Gauss both testified to the usefulness of this international publication, without which Piazzi's discovery (see p. 182, note 1) would probably have been lost. See Wolf, 'Gesch. d. Astronomie,' p. 764.

<sup>2</sup> Heinr. Wilh. Mat. Olbers (1758-1840) was born near Bremen. He followed astronomy as a private study. He is mainly known by his rediscovery of the first of the smaller planets (see p. 182, note 1), by his theory, once generally accepted, of the origin of the smaller

planets through the disruption of a primitive large planet, and by his 'Abhandlung über die leichteste und bequemste Methode die Bahn eines Cometen aus einigen Beobachtungen zu berechnen' (1797). In this work, by using Lambert's equation, he succeeded in perfecting the methods of Newton and his successors so as actually to calculate the elements of several comets. This method is still in general use (see Wolf, *loc. cit.*, p. 519).

<sup>3</sup> Friedr. Wilh. Bessel (1784-1846) attracted the attention of Olbers by his mathematical abilities whilst employed as clerk in a shipping office at Bremen. If Tobias Mayer's lunar tables were remunerated and published with English money, Germany repaid the debt by the industry of Bessel, who calculated and reduced the observations made by Bradley (1692-1762, Astronomer Royal from 1742) at Greenwich during the years 1750 to 1761. They had been neglected and remained unpublished till 1798, when Olbers induced Bessel to make them useful to science. This he did by calculating from them some of the most important and fundamental data of astronomy. After many years of labour he brought out his 'Fundamenta Astronomiæ pro A. 1755 deducta ex observationibus viri incomparabilis James