

The constant navigation of the Indian Ocean, washing the shores of Eastern Africa, was the earliest means—especially since the time of the Lagides and the Monsun-navigation—of making mariners acquainted with the stars near the Southern Pole. As early as the middle of the tenth century, we find, as already observed, that the Arabs had given a name to the larger of the Magellanic Clouds. This designation is, according to Ideler's researches, identical with that of the *White Ox*, *el-bakar*, of the celebrated astronomer Derwisch Abdurrahman Sufi of Rai, a city in the Persian province of Irak. In his *Introduction to the Knowledge of the Starry Heavens*, which he composed at the court of the sultans of the dynasty of the Buyides, he says that "below the feet of the *Suhel* (by which he expressly means the *Suhel* of Ptolemy, Canopus, although the Arabian astronomers named many other large stars of Argo, *el-sefina*, *Suhel*) there is a 'white spot,' which is invisible both in Irak (in the district of Bagdad and in Nedsch, 'Nedjed') and in the more northern and mountainous part of Arabia, but may be seen in the Southern Tehama, between Mecca and the extremity of Yemen, along the coast of the Red Sea."* The relative position of the *White Ox* to Canopus is here indicated with sufficient accuracy for the naked eye; for the Right Ascension of Canopus is 6h. 20m., and the eastern margin of the larger Magellanic Clouds lies in Right Ascension 6h. The visibility of the *Nubecula major* in northern latitudes can not have been appreciably affected by the precession of the equinoxes since the tenth century, for the maximum distance from the north had already been attained long before that period. If we follow the recent determination of position for the larger cloud by Sir John Herschel, we shall find that it was perfectly visible as far north as 17° in the time of Abdurrahman Sufi; at the present time it is seen in about 18° north latitude. The southern clouds must therefore have been visible throughout the whole of southwestern Arabia, in Hadhramaut (noted for its frankincense) as well as in Yemen, the ancient seat of civilization of Saba, and the long-established colony of the Joctanides. The southernmost extremity of Arabia, at Aden, on

* Ideler, *Untersuchungen über den Ursprung und die Bedeutung der Sternnamen*, 1809, p. xlix., 262. The name Abdurrahman Sufi was contracted by Ulugh Beg from Abdurrahman Ebn-Omar Ebn-Mohammed Ebn-Sahl Abu'l-Hassan el-Sufi el-Razi. Ulugh Beg, who, like Nassir-eddin, amended the Ptolemaic star-positions from his own observations (1437), admits that he borrowed from Abdurrahman Sufi's work the positions of 27 southern stars, not visible at Samarcand.