

OUR ASTRONOMICAL COLUMN

THE DOUBLE-STAR B.A.C. 1972.—Capt. Jacob, reviewing the measures of this object, first registered double by Dunlop with his 9-foot reflector at Paramatta (No. 23 of the Catalogue of 253 stars), remarked of it in 1858: "the angle is, on the whole, evidently advancing, and the distance decreasing, but the measures are strangely wild, considering the easiness of the object, and seem to indicate the presence of some perturbing body." For comparison the following may be selected:—

Observer	Date	Position	Distance
Dunlop	1826.00	329.0	3.00
Herschel	1835.02	342.5	3.86
Jacob	1846.94	348.5	3.22
"	1852.73	350.7	2.81
"	1858.17	354.7	2.18

Jacob's measures of 1858 are the last we find; he considered an appulse would take place about 1875.

Dunlop says of the results in his catalogue similar to the above, the "positions and distances are only estimations while passing through the field of the 9-foot telescope," and no great stress, therefore, need be placed upon them. If we assume that the change of angle and distance is the effect of proper motion, a comparison of Sir John Herschel's measures of 1835, with the later ones at Madras, leads to the following formulæ:—

$$\Delta \alpha = -0.7876 + [8.80975](t - 1850)$$

$$\Delta \delta = +2.6926 - [8.81900](t - 1850)$$

Whence we find for 1876.75, position 34°.4, distance 1".13, showing a considerable change since the last published measures, which should render it easy for one of our southern readers to decide upon the cause of the apparent motion. In the case of rectilinear motion the nearest approach would fall in 1881 or 1882, on an angle of from 50°-55°, and in 1891 the component which we are taking for the companion (though the stars appear of equal magnitude—the seventh) would be upon the parallel following 1".2. So much is to be gathered from the data at present in our possession. The position of the star for 1876 is in R.A. 6h. 1m. 35s., N.P.D. 138° 27'.—It should be added that the above formulæ give an angle of position for 1826.0, differing 11' from Dunlop's estimation and the distance greater by 2½ seconds.

THE SECOND COMET OF 1844.—The period of revolution assigned to this comet by Prof. Plantamour, of Geneva, after a most minute discussion of the observations, is upwards of a thousand centuries, with a probable error of about thirty centuries! Such a result may be regarded with suspicion by many, but let us see upon what grounds it has been founded.

The second comet of 1844 was independently discovered by Mauvais, at Paris, on July 7, and two nights later by D'Arrest, at Berlin. It was observed before the conjunction with the sun and perihelion passage until September 7, and was found at the Royal Observatory, Cape of Good Hope, on October 27, and observed with great precision on forty-eight days at that establishment until March 10, 1845, when it was distant from the earth 2.9, and from the sun 2.4. The later European observations are those taken at the Royal Observatory, Greenwich, on March 4, and at Berlin on March 6. 545 observations of position were available for the determination of the orbit, and are discussed in the *Mémoire sur la Comète Mauvais de l'année, 1844*, by Prof. Plantamour. He started with the parabolic elements of Nicolai, which had led to the re-discovery of the comet in Europe after the perihelion passage, on January 27, 1845. The perturbations due to the action of Venus, the Earth, Jupiter, and Saturn, during the whole interval of observation, were rigorously determined and taken into account, and after a double solution of equations of condition founded upon normal positions, thus freed from the slight distortions due to planetary attraction, the devia-

tion of the eccentricity from unity was found, with a probable error of only 1/10th part of the amount of this deviation. The resulting definitive orbit is an ellipse with a semi-axis major = 2183.8; the corresponding period is 102,050 years ± 3,090. This value of the time of revolution is founded upon an arc of the comet's orbit, extending to 204°, described in eight months.

The aphelion distance of the comet is 4,366 times the earth's mean distance from the sun, a space which light would require twenty-five days to traverse, and yet little more than a fiftieth part of that of the nearest fixed star according to our present knowledge, a suggestive fact when the visits of comets to other systems are under discussion.

NEW NEBULÆ.—M. Stéphan, Director of the Observatory at Marseilles, has communicated to the Paris Academy a list of twenty-three new nebulae detected with the Foucault telescope of 0.80 m. aperture, which raises the number of such discoveries, so far published, to 120; but M. Stéphan mentions that he has approximate positions of about 400 new nebulae, between 45° and 100° N.P.D., and hopes yet to considerably increase this number. As might be expected, the twenty-three new nebulae are mostly very faint; one only is called "pretty bright—very small—round" in R.A., 17h. 6m. 47s.; N.P.D., 48° 11'7, for 1876.0.

THE NORWEGIAN NORTH ATLANTIC EXPEDITION

Reikiavik, July 27

IN continuation of our last account we hear that the expedition has been not at all favoured by the weather. Since it left Christiansund, June 27, it has met with no less than five storms (wind velocity, forty-five miles an hour); two in the "Lightning" Channel early in July, one at Thorshaven, one north of Färöe, and one at the Westman Islands (off the south coast of Iceland). It has been only in the short intervals between these storms that any deep-sea work has been done. The last days of June were fine, so the expedition sounded, dredged, and trawled off Christiansund on the bank called "Storeggen." Here the fauna was quite Atlantic; on the outer edge of the bank the water deepened to 300, 400, and 500 fathoms, and the ice-cold water was met with, yielding an Arctic fauna. Two large specimens of *Umbellularia* (the same as earlier) were found, with a new star-fish and an animal which is quite new to the naturalists on board. Of smaller organisms there were also several new ones.

In lat. 63° 10' N., long. 1° 30' W., a sounding in 1,050 fathoms gave a temperature under 32° below 300 fathoms. The *Vöringen* had to leave this station to refit, as a sea had carried away the two fore-hatches. The course was shaped for Thorshaven, where the expedition stayed eight days to refit (July 8-15). The stay there was very interesting, especially for the geologists. The formation of caverns at sea-level was an operation visible in all stages of progress. In the zoolite caverns of Naalsö a rich harvest of minerals was secured.

The inhabitants of Thorshaven received the expedition very hospitably, and remembered, with great pleasure, the stay of the *Lightning* and *Porcupine*.

After a trip round the main island to Westmanhaven, the *Vöringen* left Färöe, July 16, and steered for its last station. Bad weather brought work here to a speedy conclusion; however, a series of temperatures were obtained, indicating ice-cold water at a depth of 300 or 400 fathoms. On the north-eastern corner of the Färöe bank the depth increases very rapidly. In lat. 63° 22' N., long. 3° 30' W., soundings gave 1,180 fathoms. A series of temperatures gave 32.4 in 400 fathoms, 31.8 in 500 fathoms, and the bottom temperature was 29.8. In lat. 63° 55' N., long 7° 10' W., 30.2 in 677 fathoms; in lat. 63° 3' N., long. 10° 15' W., 37.2 in 256 fathoms. Further