

The Great Nebula of ψ Eridani. By Dr. Max Wolf, Assoc. R.A.S.

I have had much difficulty in securing a photograph of this large nebula. It is situated somewhat too far south for our latitude, and between very bright stars, so that the sky here has never yet been sufficiently clear for me to obtain a perfect image. I do not know if the nebula is known elsewhere—it is not in the N.G.C. nor in the Index Catalogue. The small nebulae 398 and 402 in the Index Catalogue seem to be included in this enormous nebula, as well as N.G.C. 1779, 1797, 1799, but they are all relatively small and difficult objects. Perhaps Professor Barnard has also photographed this object.

The nebula now reproduced is situated between λ *Orionis* and ψ *Eridani*, not far from the first-magnitude star β *Orionis*.

The first traces of this nebula were found on a plate taken on 1891 January 16 with a 4-inch Millet portrait lens and with 1^h exposure. It appears on many plates, including those of 1894 November 24 (in the centre of the plate); 1896 February 3, 7; 1899 February 3, 4, 10; 1900 March 1, &c., till 1904 November 16—all taken with smaller lenses up to 6 inches.

The accompanying plate (15, Fig. 1) is from a photograph taken with the 16-inch Brashear lens on 1905 January 8, with 4^h 21^m exposure. It was not wholly satisfactory on account of haze, to which is due the large halos round the bright stars. But the weather has since been too unfavourable for me to repeat the exposure, and now it is too late in the spring for this latitude.

The bright star on the right is ψ *Eridani*. The denser parts of the nebula extend along the boundaries of *Orion* and *Eridanus*. There is no doubt that it is attached to the *Orion* nebulae, all plates showing numerous traces of connexion. The nebula is composed of several streams of nebulosity, and has the appearance of foggy clouds driven by a fresh breeze. It belongs to the same class as Barnard's great nebula near ξ *Persei*, and in many features these two objects singularly agree. The scale of the reproduction is about 4 cm. to 1°.

To illustrate its position in reference to the *Orion* nebulae I give (plate 16) a sketch of the southern part of *Orion*, in which I have outlined from my plates the principal nebulous branches.

A is the great *Orion* nebula, B its well-known northern branch around c *Orionis*, C is the beautiful nebula following ζ *Orionis*, D its southern branch, &c. K, L, M, O, Q are especially bright clouds of the large spiral; E is a denser stream near ϵ *Orionis*; the exceedingly interesting wisps U, V, W are placed around and west of η *Orionis*; T and Q₁ are especially strong clouds. Dense diffused nebulosity extends for some distance round S. The central part of southern *Orion* between P, T, R, E is relatively without nebulosity.

The ψ *Eridani* nebula is marked Z on the chart. It is not far from β *Orionis*, and nearly midway between λ *Orionis* and

FIG. 1.

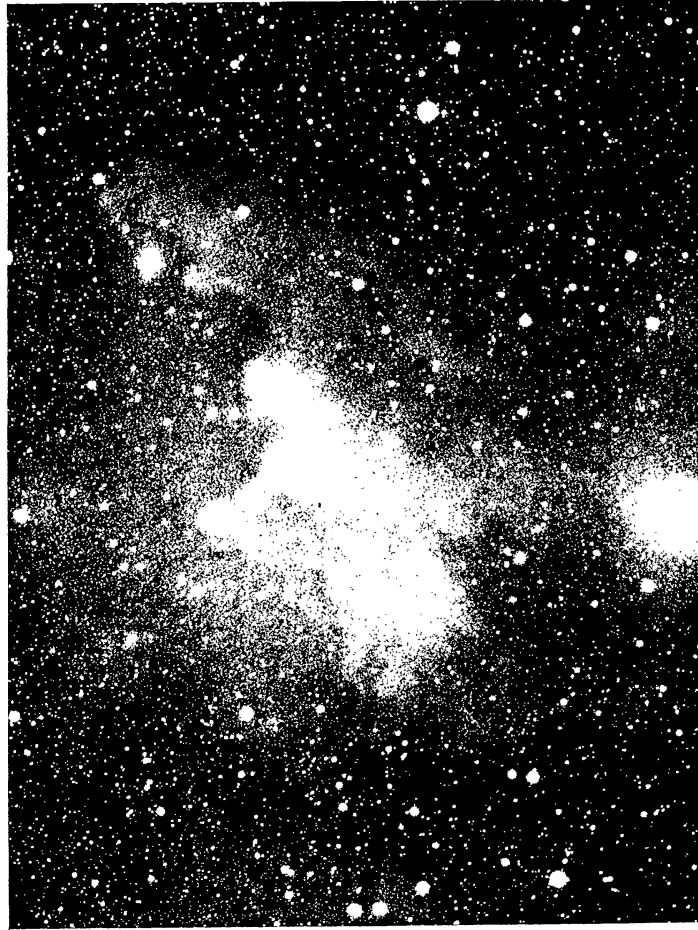
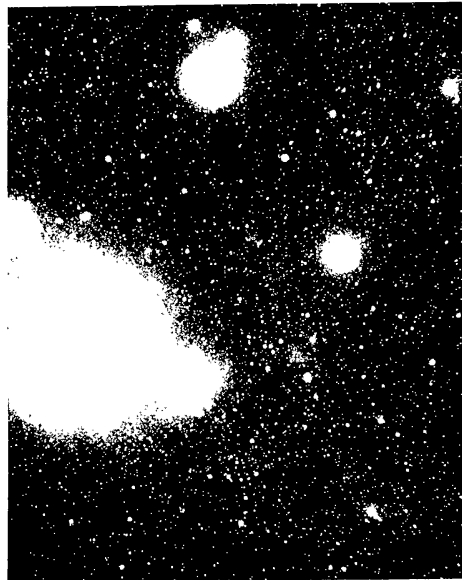
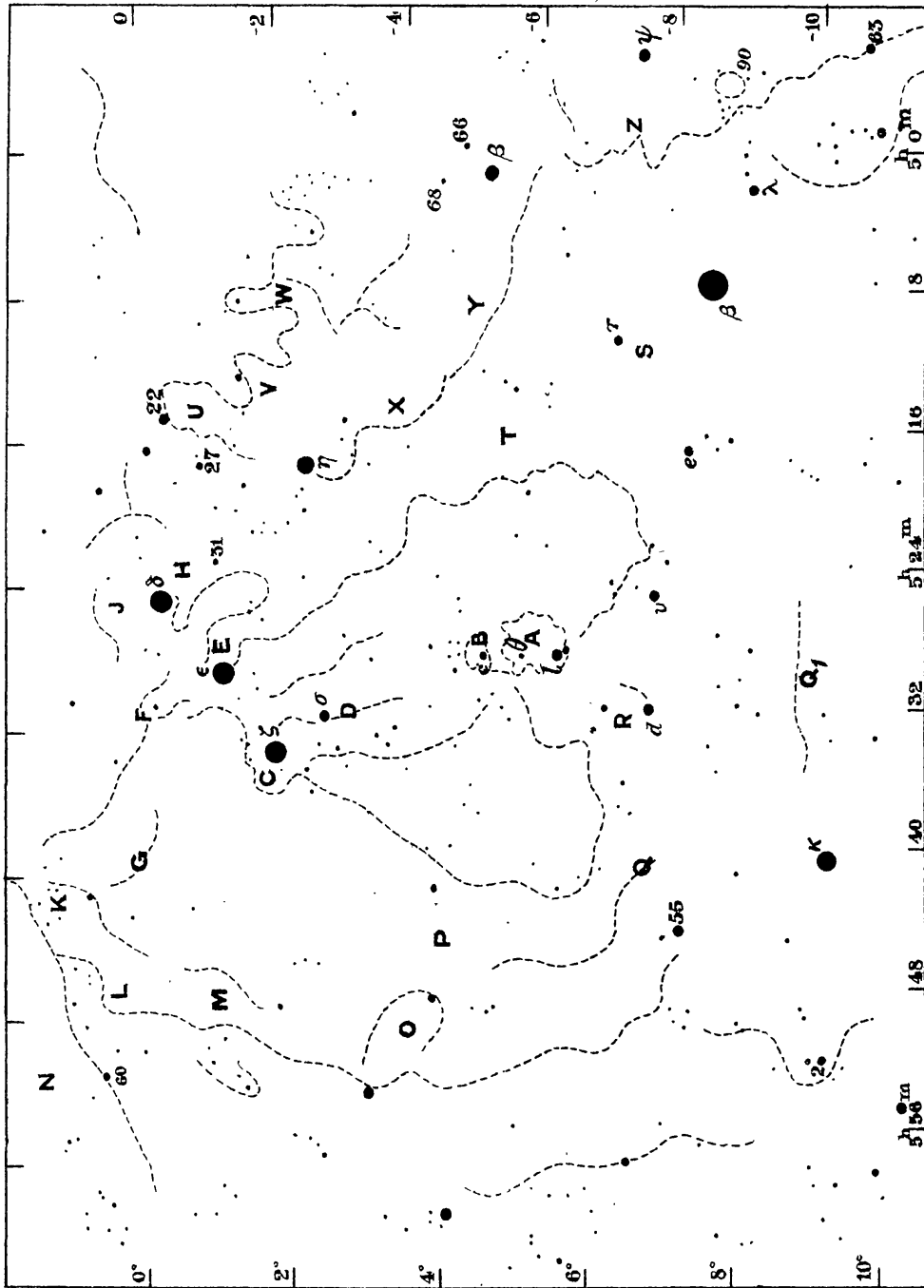


FIG. 2.



GREAT NEBULA OF ψ ERIDANI. DR. MAX WOLF, HEIDELBERG.



SKETCH MAP OF NEBULÆ IN SOUTHERN PART OF ORION.

ψ Eridani, extending from S.S.W. to N.N.E. The clouds become dense near β Eridani, and reach to about 1° south of β Eridani. I give some coordinates taken from the *B.D. Atlas*—

R.A.		N.P.D.		
h	m	°	'	
4	53.3	100	17	Cloud.
	56.7	98	37	Elliptical cloud.
	59.5	97	23	Fan-shaped end near the middle of the plate.
	57.0	96	53	Long wisp.
	58.9	97	14	Cloud.
	59.0	97	0	"
5	0.8	96	30	Fan-shaped cloud.
	0.3	96	20	" "

The star-like spot $5^h 0^m.3$, $96^\circ 40'$ seems on comparison with other plates not to be real.

To show more clearly the position of this nebula I give on plate 15, Fig. 2, a portion of a photograph taken with the 6-inch lens on 1904 November 16 by my assistant, Mr. Goetz. This plate was only exposed for $1^h 20^m$, yet by suitable printing the features of the nebula can be brought out without too much halo round the bright stars.

The large white spot on the left of the plate is the glare from β Orionis; at the top is β Eridani, at right of the centre ψ Eridani. We here see very well between the bright stars the long track of the nebula extending from β Eridani to β Eridani. This reproduction shows that the stream of nebulosity forms in its northern parts the brighter boundary of an extended nebulous region involving ψ Eridani. The southern portion spreads around β Eridani, and is divided by complicated channels. The denser spot north-east near the star 90 of the chart is on all plates taken with the Voigtländer lens, but not well shown on those taken with the 16-inch—perhaps because too near the edge of the plate.

It is seen that nebulous patches are spread over several parts of the plate, forming connexions with the S and Y districts of the Orion system. The scale of the plate is about 9 cm. to 1° .

The intensity of the Z nebulæ is relatively great. They come out with less than an hour's exposure. The brighter parts east of ψ Eridani are almost equal in intensity to the D nebulæ in their parts east of σ Orionis.

The ψ Eridani nebula would be a beautiful object for a reflector, especially in more southern latitudes.

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