

The Nebula H IV 74 Cephei. By Dr. Max Wolf. (Plate 4.)

I have pointed out elsewhere that, as a rule, the nebulae in the Milky Way are encircled by a ring which is void of faint stars, and that this lacuna is the end of a long starless hole, apparently showing the direction of some unknown cosmic motion. I have given a number of examples of this,* the best specimen being the nebula 2 degrees south of π^2 Cygni.

On photographing the Nebula H IV 74 Cephei (= N.G.C. 7023 : $\alpha = 21^{\text{h}} 0^{\text{m}} 30^{\text{s}}$ $\delta = +67^{\circ} 46' 2''$ (1900.0)) with the 28-inch reflector of the Königstuhl Astrophysical Observatory, I was surprised to find a striking specimen of this phenomenon, the nebula being surrounded by a lacuna absolutely empty of faint stars. In spite of the small field of the reflector-plate, there was evidence that the cavity was the end of a channel entering the picture almost exactly from the south.

This nebula was photographed by the late Dr. Roberts (vol. ii., plate 24). He says: "The nebula appears in a region almost void of stars" (p. 157).

I then endeavoured to photograph the channel with the large field of my 16-inch cameras. But the weather was very unfavourable during this spring and summer, and the sky always so hazy, that three nights were lost in these attempts. The last of these trials, on July 7 (exposure 3 hours 22 minutes), gave relatively the best picture, a reproduction of which is given on Plate 4, fig. 1. The scale is about 70 mm.† for 1 degree. As may be seen, the channel is directed in its first part almost exactly from south to north. At a distance of about 1 degree from the centre of the nebula the channel is divided into two branches. The eastern branch is perhaps shorter, and the western longer, ending at a distance of about $1\frac{3}{4}$ degrees from the nebula by becoming gradually filled up with stars. The somewhat round cavity encircling the nebula has a diameter of about half a degree.

We have therefore a further example of the rule that a nebula is encircled by a lacuna void of stars, which lacuna is the end of an empty channel.

The nebula itself is a very remarkable object. In many respects it resembles in form the π^2 Cygni nebula. On the other hand, the faint bands of nebulosity parallel with the brighter bands are very much like those in the Orion nebula. This parallelism gives an indication of some kind of wave formation in the nebulous material. These are especially visible at the north-west side, three parallel waves, each nearly half the brightness of the inner preceding wave. I am especially struck by the gradual fading of the light of the nebulous matter from the centre, producing the impression that nebulous matter is spread all over

* *Astron. Nachr.*, 3848; *M.N., R.A.S.*, lxiv., No. 9; *Public. Astrophys. Inst., Königstuhl, Heidelberg*, vols. i. and ii., etc.

† In the reproduction 48 mm. = 1°.

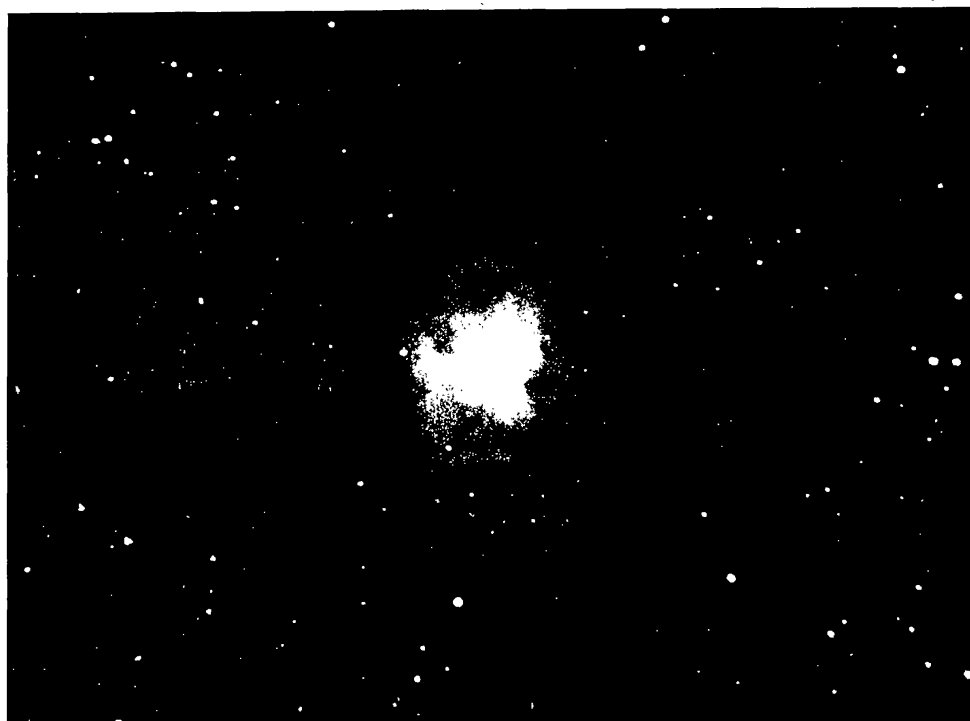


FIG. 2

NEBULA H IV. 74 CEPHEI. MAX WOLF.

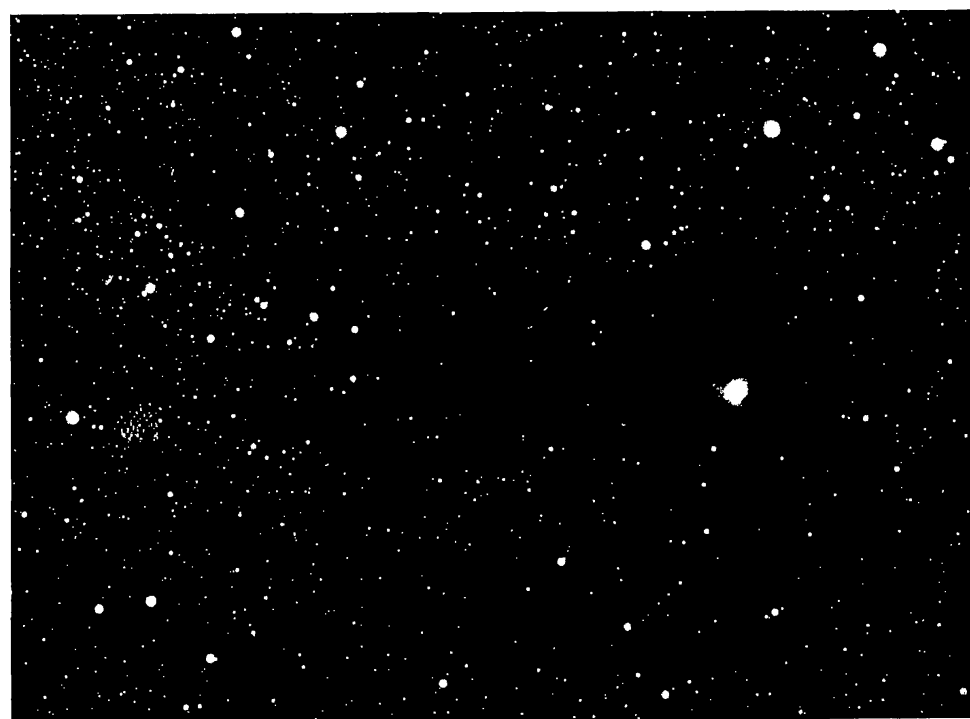


FIG. 1.

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the lacuna, but has insufficient luminosity to be visible. I do not know any nebula in the sky which shows this more clearly.

I also give a somewhat enlarged reproduction of a picture of the nebula itself, taken with the 28-inch reflector (Plate 4, fig. 2). The photograph was taken April 18, 1907, with an exposure of 40 minutes. The scale on the reproduction is about 1 mm. to 21 seconds of arc.*

I may perhaps mention two peculiarities common to this nebula, to the π^2 Cygni nebula, and to perhaps all other similarly surrounded by lacunæ. First: the long channels are all nearly straight and clean in the vicinity of the nebula, and become curved and partly filled up with stars at a greater distance from it. Secondly: the channel is simple at the end nearest the nebula, and divided into two or three complicated arms at the end further removed.

* In the reproduction 1 mm. = about $30''\cdot6$.

Heidelberg, Astrophysical Observatory:
1907 July 27.

Occultation of the Hyades. By Walter Heath, M.A.

In order to determine the longitude of my observatory I have recently compared twenty-three occultation observations made by me with the corresponding Greenwich observations, and I find a discordance in the case of the reappearance of two stars of the Hyades on 19th September 1905. I have therefore compared the results with some observations published in *A.N.*, 4088; the following are the particulars. The results in brackets are derived from observations at the bright limb.

1905 Sept. 18	Utrecht	ζ Tauri	$\cdot95\Delta\alpha + \cdot41\Delta\delta = (10\cdot20)$
" "	"	"	$\cdot99$,, + $\cdot27$,, = 8 \cdot 44
" "	Jena	"	$\cdot95$,, + $\cdot39$,, = 8 \cdot 26
" 19	"	γ Tauri	$\cdot42$,, + $\cdot95$,, = (5 \cdot 78)
" "	"	"	$\cdot84$,, - $\cdot57$,, = 3 \cdot 97
" "	Greenwich	θ_1 Tauri	$\cdot94$,, + $\cdot37$,, = 1 \cdot 71
" "	"	D.M. 15°, 633	$\cdot94$,, - $\cdot35$,, = 1 \cdot 36
" "	Cobham	θ_1 Tauri	$\cdot94$,, + $\cdot38$,, = 5 \cdot 12
" "	"	D.M. 15°, 633	$\cdot95$,, - $\cdot35$,, = 6 \cdot 22

Note.—For Cobham the longitude assumed was $23'\cdot6''$ W., latitude $51^\circ\cdot19' 39''$, height above sea 180 feet. The sidereal times observed were $4^h 27^m 22^s\cdot49$ and $4^h 45^m 2^s\cdot02$ after correction.

Uplands, Cobham, Surrey:
1907 October 18.