

LETTERS TO THE EDITOR.

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On a Method of reproducing Astronomical Photographs.

PROF. MAX WÖLF, in his excellent article on the "Reflector and Portrait Lens in Celestial Photography," published in your issue of April 22 last, mentions a method of "reproducing nebulous masses" from original negatives, and refers to my reproduction of a photograph of the nebula M.8, done in collaboration with Mr. Lunt.

I have since tried the method on a number of other clusters and nebulae with uniform success.

My practice now is to use a very slow plate capable of giving good contrast, and to give it the least possible exposure during contact-printing from the original negative. I use the ordinary Pyro-ammonia developer with half of the normal quantity of

reproduced copies of M.8 and the Orion nebula, and shall be glad if you can make use of them.

K. D. NAEGAMVALA.

June 8.

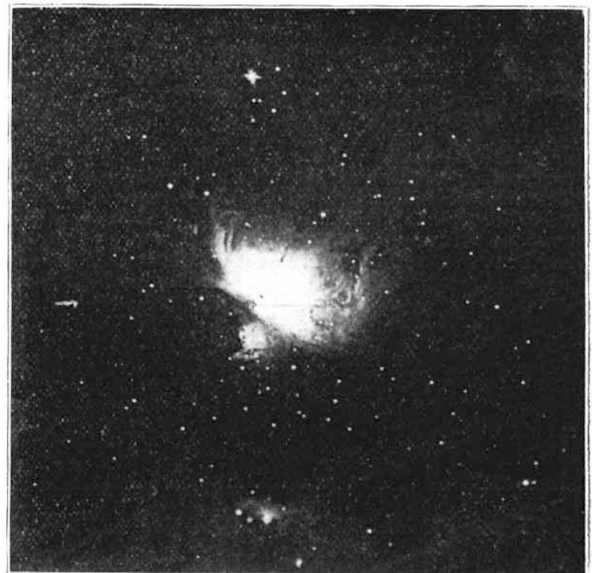
On Mimicry.

DURING the discussion on Mimicry at the last meeting of the Entomological Society, the fact that so many mimetic species are scarce, in comparison with the non-mimetic allies and the models, was brought forward as an argument against the efficiency of mimetic resemblance. Amongst the Indo-Australian *Papilio alcidinus* and *caunus*, which resemble their models to a surprising degree. As both these rare species deviate widely from their nearest relatives, it occurs to me that the theory of Mimicry, which says that Homöochromatism and Homöomorphism between imitating and imitated species are the outcome of selection, can give a satisfactory explanation of the scarcity of individuals of mimetic forms. If we concede for the sake of argument that, for instance, *Papilio alcidinus* has acquired that wonderful similarity in colour and form to its model, an Uraniid moth, in consequence of a continued selection in the one direction, it is obvious that

THE GREAT NEBULA IN ORION.



Original negative.



Negative twice re-copied.

ammonia indicated, and with an excess of bromide. If there is the slightest indication of an image within five minutes, the plate is rejected as too much exposed. The development is continued for about forty-five minutes, with an occasional addition of a little more ammonia; the plate is, of course, kept rocking all the time in the dark. From the positive thus obtained a second negative is secured, and from it a second positive, and from the last a third negative, which is used for final printing on paper. The method of development is throughout the same as mentioned above.

Faint details in outlying portions, for instance, in the photographs of the corona can be very easily brought out in this manner.

No intensification by mercury or otherwise is employed by me, and I consider it absolutely inadmissible, as it is liable to affect the grains in the neighbourhood of the image, and thus to give a false extension of nebulous matter. The pure process of successive copying and bringing out contrast is perfectly legitimate; Scheiner and others having shown that the image does not spread thereby.

I beg to forward for your inspection the original negatives and

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the result of such a one-sided selection will not only be similarity to the immune model, but also physiological one-sidedness. The more rigorous the selection is, the better will the mimetic species become adapted to its model, and the more will it lose its adaptability to new biological factors. Therefore, when changes in the biological conditions of the area inhabited by the mimetic form take place, such ever-occurring changes as have been described by Wallace in "Natural Selection," the mimetic species, best adapted in one direction, will be at a disadvantage to its relatives which have not been subjected to rigorous, one-sided selection. Consequently, the most striking "mimics," in spite of, or rather in consequence of, the resemblance to immune species, are, in the long run, the less favoured in the struggle for existence, which means that they will become relatively scarce. From this consideration it is apparent to me that the selection of those specimens which are the very fittest in any special direction is in itself a danger to the species, and can lead to destruction. The peculiar bearing which this suggestion has on the theory of Natural Selection, especially on the principle of utility, is evident.

Zoological Museum, Tring, June 7.

KARL JORDAN.