

Corrections to the New General Catalogue resulting from the Revision of Sir William Herschel's three Catalogues of Nebulæ.
By J. L. E. Dreyer, Ph.D.

The following list has been put together for the convenience of observers, and contains only such corrections as materially alter the places or identification of nebulæ found by W. Herschel. Full particulars about these and many other objects will be found in the notes added to the three catalogues in the recently published edition of Herschel's *Scientific Papers*.*

N.G.C.

- 171 to be struck out; III. 223 = 175.
 867. The place of III. 2 is extremely uncertain.
 937 may be = III. 198 (given under 1003).
 1331 to be struck out. III. 959 = I.C. 324, $11^{\text{h}} 1^{\text{m}} 1^{\text{s}}$, $1^{\circ} 2' 8''$ of I. 60.
 The place given by H. no doubt refers to I. 60.
 1442. The identity with 1440 is certain.
 1551 to be struck out, II. 464 = 1550.
 1611 is probably = 1613.
 1794 is = III. 268, R.A. $5^{\text{h}} 1^{\text{m}} 45^{\text{s}}$.
 1961. The place of III. 747 is wrong, it is = I.C. 2133.
 2139. The identity with I.C. 2154 is certain.
 2167. IV. 44 cannot be = h. 378 but is probably a star of the 11th mag. 70^{s} following it on the parallel.
 2319 = VIII. 1 (B.) R.A. $6^{\text{h}} 52^{\text{m}} \pm$, P.D. anything between $87^{\circ} 48'$ and $86^{\circ} 33'$.
 2332. II. 862. In the sweep it is $2^{\text{s}} p$, $2' n$ of II. 736. Is probably identical with one of Kobold's nebulæ in the I.C.
 2641. III. 983. Minute of R.A. is 32 (H. was right).
 2677. Delete "II. 48?"
 2704. III. 625 is probably = I.C. 2424.
 2722. III. 264. R.A. should be $8^{\text{h}} 51^{\text{m}} 46^{\text{s}}$.
 2774. III. 61 is a different object, a S irr. cl., $56'$ south.
 2938 is not III. 963 (only a star on Greenwich plate). The place of III. 963 is $9^{\text{h}} 23^{\text{m}} 17^{\text{s}}$, $13^{\circ} 3' 6''$.
 2977. I. 282. The place according to Greenwich plate is $9^{\text{h}} 29^{\text{m}} 42^{\text{s}}$, $14^{\circ} 30' 5''$.
 3061. The place of II. 903 (Greenwich) is $9^{\text{h}} 42^{\text{m}} 10^{\text{s}}$, $13^{\circ} 28' 7''$. Nothing in the place of h. 653 (h. says "very doubtful, moon and haze").
 3063 is II. 333.
 3065 is II. 334.
 3066 is II. 909.

* A very few of the errors might have been found without the aid of the manuscripts. They had previously escaped my attention, because I assumed that Sir John Herschel had compared his positions throughout with those found by Auwers from W. Herschel's published observations (compare *Phil. Trans.*, 1864, pp. 4, 5). It appears now that this comparison cannot have been an exhaustive one.

N.G.C.

- 3110 is = II. 305.
 3122 to be struck out (= 3110).
 3144 is = III. 964.
 3155 is = III. 965.
 3174 to be struck out (= 3144).
 3183 is = I. 283
 3194 to be struck out (= 3155).
 3197. III. 966. Greenwich place is $10^{\text{h}} 10^{\text{m}} 16^{\text{s}}$, $11^{\circ} 29' 6''$.
 3210. Minute of R.A. is 13.
 3218 to be struck out (= 3183).
 3284. III. 912 is no doubt identical either with III. 917 or 918,
 as H. did not see more than two nebulae here.
 3329 is = I. 284.
 3342. The place of III. 5 is extremely doubtful.
 3345. I. 26 is probably M. 95, as the latter was not mentioned
 by H.
 3381. Delete "1st of 3," which words belong to 3379.
 3397. To be struck out (= 3329).
 3401. III. 88 only seen once, $1^{\text{m}} 9^{\text{p}}$, 3^{p} of II. 131.
 3465 is = III. 967.
 3484 h. 802. No trace of this on Greenwich plate.
 3497. To be struck out, III. 824 is = 3528 (error of reduction
 of 6^{m}).
 3500. III. 967 is = 3465, place of III. 968 is $10^{\text{h}} 51^{\text{m}} 23^{\text{s}}$, $14^{\circ} 2' 9''$.
 3523. II. 904. Place is $10^{\text{h}} 52^{\text{m}} 43^{\text{s}}$, $14^{\circ} 8' 0''$ (Greenwich).
 3528. is III. 824.
 3577. III. 723 observed only once, while there are two observations
 of II. 728.
 3604. II. 626. Only one observation in thick fog.
 3632. II. 30 is = 3626.
 3747. The place of III. 969 is $11^{\text{h}} 23^{\text{m}} 46^{\text{s}}$, $14^{\circ} 51' 0''$ (Greenwich
 plate).
 3752. The place of II. 905 is $11^{\text{h}} 23^{\text{m}} 46^{\text{s}}$, $14^{\circ} 36' 0''$ (Greenwich
 plate; h. 917 was eF on the plate).
 3794. To be struck out (= 3804).
 3804. II. 830 and III. 773 are identical.
 3837 is = III. 377.
 3842 is = III. 378.
 3851 is not = III. 378.
 3852. III. 36, the R.A. is possibly 1^{m} too great (not found by
 Bigourdan).
 3890. III. 940 = III. 971. Minute of R.A. is 41, not 40.
 3901. Place of III. 970 is $11^{\text{h}} 34^{\text{m}} 19^{\text{s}}$, $11^{\circ} 51' 0''$ (Greenwich).
 3922. III. 716 is = II. 825.
 3924 to be struck out (= 3922).
 3987 = III. 323.
 3993 = III. 324.
 4005 = III. 325.
 4007 to be struck out (= 4005, P.D. $64^{\circ} 6'$).

N.G.C.

- 4099 is probably to be struck out. H saw three, probably 4093, 95, 98.
- 4208 to be struck out (= 4212).
4209. Place perhaps doubtful.
- 4212 is also = II. 107.
- 4223 to be struck out (= 4241).
- 4241 is = II. 137, while III. 480 = I.C. 3115.
- 4263 III. 535 = 4265.
4277. For II. 571 read II. 570.
4281. For II. 570 read II. 571.
- 4341, 42, 43 = III. 94, 95, 96. All three observed by Kobold.
- 4362 } III. 800-801. Very probably the word "two" in H.'s
4364 } description refers to III. 799 and 800, as nobody seems to have seen three nebulae about this place.
4368. III. 38 R.A. possibly 1^m too great (not found by Bigourdan).
- 4381 probably = 4357.
- 4472 is also = I. 7.
- 4520 is III. 757, not II. 757.
4588. III. 98 may be either I.C. 3591 or I.C. 3617, as H. did not observe the P.D. Nothing on Wolf's plate in the place of 4588.
- 4610 to be struck out; II. 19 = II. 498.
- 4646 has been numbered II. 910.
- 4664 and 4665 are identical.
- 4669 is = III. 778.
- 4675 is = II. 795.
- 4686 is = II. 796.
- 4695 is = III. 985.
4794. For II. 538 read III. 538.
- 4894 is not = III. 363, the latter is I.C. 4051.
- 4899 in the description, for eL read cL.
- 4954 is = III. 937.
4962. Identity of III. 303 is very doubtful.
- 4972 to be struck out (= 4954).
4979. III. 346 must be = I.C. 4198, as Wolf's ninth list has only one object there (No. 105).
5106. II. 22 must be = 5100.
- 5113 to be struck out; III. 808 = II. 826 (5109), each observed only once and in different sweeps.
5201. II. 797. Minute of R.A. is 23, not 24.
5255. III. 803. The R.A. given is the mean of two observations differing 1^m.
5396. III. 125, probably = 5375.
5484. III. 791 should probably be struck out. There is not any nebula close p I. 232.
5594. III. 135. The P.D. should be 63° 8'.
5640. III. 949. A star nearer to it in the sweep gives R.A. = 14^h 25^m 17^s.
5699. To be struck out, is = 5706.

N.G.C.

5703. To be struck out, is = 5709.

5706 is = III. 127.

5709 is = III. 128.

5836. III. 312. R.A. is 15^h 0^m 5^s (Bigourdan).

5865 to be struck out; II. 684 = 5868.

5881. II. 818. Minute of R.A. is 4, not 6. Is probably = I.C.

1100.

5897 is not = VI. 8. The latter cannot be identified with certainty.

6064. III. 140. The identity with 6052 is certain.

6125. II. 810 is no doubt = 6127.

6526. Degree of P.D. of V. 9 is 114, and it is = I.C. 1271.

A Suggested Application of Mr. R. T. A. Innes' Formula for the Magnitude of Double Stars to the Observation of certain Variable Stars. By M. E. J. Gheury.

If A be the principal star of a pair A B sufficiently close to appear as a single source of light C, if a , b , c are the numerical magnitudes of A, B, C and L_A , L_B , L_C are their luminous intensities respectively, then, if $b - a = d$ (1) and $a - c = x$ (2), one has

$$L_B = \frac{L_A}{2.512^d} \quad \text{and} \quad L_C = L_A \times 2.512^x.$$

As $L_C = L_A + L_B$, this gives

$$L_A \times 2.512^x = L_A \left(1 + \frac{1}{2.512^d} \right),$$

hence

$$x = \frac{\log \left(1 + \frac{1}{2.512^d} \right)}{0.4},$$

which is the formula proposed by Mr. R. T. A. Innes for the correction to apply to the magnitude of the principal star of the pair to obtain the "combined magnitude" (Reference Catalogue of Southern Double Stars, Annals of the Royal Observatory, Cape of Good Hope).

Mr. Innes gives a table of computed values of x to facilitate the use of the above formula, and shows its application to two different cases.

Although, as a rule, if one component of a binary be variable the other is also subject to variations of brightness, it is suggested that this formula may become particularly useful in the case of a variable star A having a close companion B of known constant magnitude. The observation gives in this case the value of c , and b is known, so that, since $c = a - x$ and $a = b - d$, $b - c = (d + x)$.