

HENRY CHAMBERLAIN RUSSELL'S *PHOTOGRAPHS OF THE MILKY WAY & NUBECULAE*

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Henry Chamberlain Russell (1836-1907) published in 1891 "*Photographs of the Milky Way & Nubeculae*" a collection of 16 prints¹ (Ilford gelatine photographic plates)².

Russell joined the Sydney Observatory in 1859 as a *computer* and later (1870) became the Observatory Director, a post he would occupy until his retirement in 1905. Russell was interested in astronomy and meteorology (Figure 1).

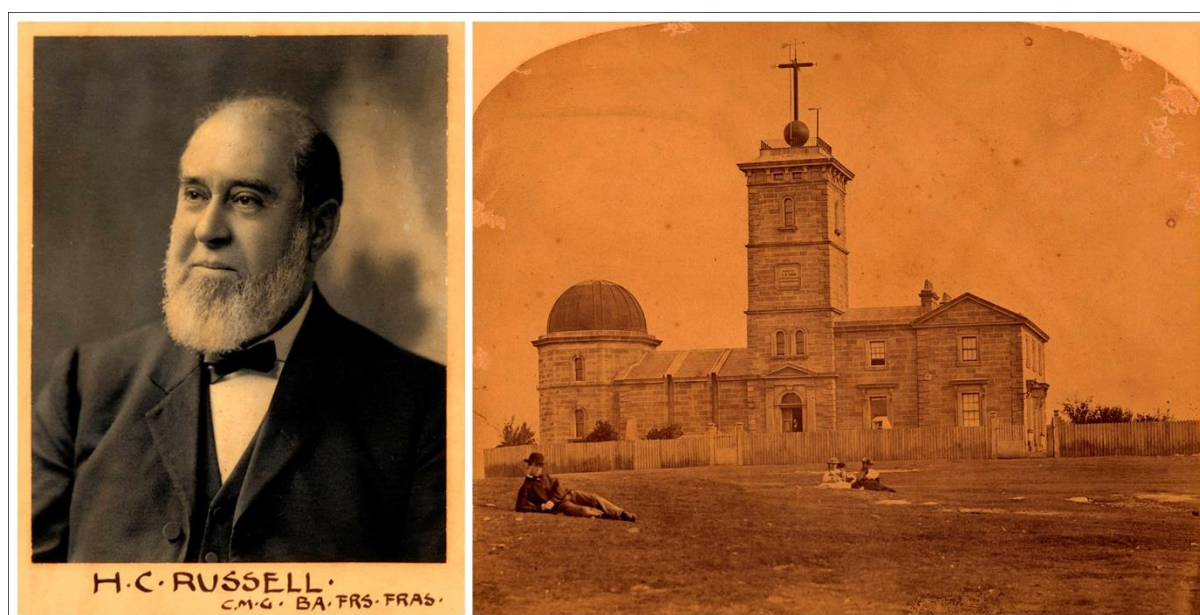


Figure 1 - Henry Chamberlain Russell and the Sydney Observatory (c1860).

Russell was responsible for the instrumentation of the Sydney Observatory. The Observatory housed several instruments: 18.4 cm Merz refractor; 29.2 cm Schroeder refractor; 15.2 cm Troughton & Sims transit telescope and a 33 cm astrograph with a 26 cm guide telescope. H.C. Russell was a firm supporter of the International Astrographic (*Carte du Ciel*) Project, attending the 1887 *kick of meeting*.

Unlike other participating observatories, Russell bought the Grubb optics for the astrographic telescope and supervised the construction of the instrument in Sydney. This project took much of Russell's research time in the last ten years of his career.

Russell was also responsible for the observation of 1874 and 19882 Transits of Venus from Sydney. In 1874 the event was observed at four different stations. In 1882 cloudy weather prevented successful

¹ 14 prints taken from glass negatives on Ilford gelatine photographic plates of the Southern Milky-Way and two additional plates of the Orion constellation for comparison purposes.

² Russell was assisted by James Walter Short (18656-1943)

observations of the transit. Sydney Observatory played an important role in the calculation of the solar parallax. Double stars were also studied by Russell³.

Russell was a pioneer of astronomical photography. During the second half of the 1880s, Russell obtained a series of excellent photographs of the Magellanic Clouds and several regions of the Southern Milky Way as well. Some of the Photographs were published in *Monthly Notices of the Royal Astronomical Society*.

These astrophotographs were the first obtained of the Southern Skies. *Photographs of the Milky-Way & Nubeculae* was published in 1890 (Sydney Observatory) and includes 16 mounted original photographs. Each photograph is accompanied by a leaf of explanatory text (Figure 2).

These astrophotographs were taken from 23 July to 19 October 1890 with exposures from 2h 30min to 8h (Figures 3, and 4). In 1890 the equatorial mount was complete, but the objective lens had not arrived from Ireland. Russell photographs were obtained with a 6-inch Dallmeyer Portrait Lens of 32-inch focal length, which gave sharp definition over a field of about 4.5-inches on the 6.5 x 8.5-inch plates.

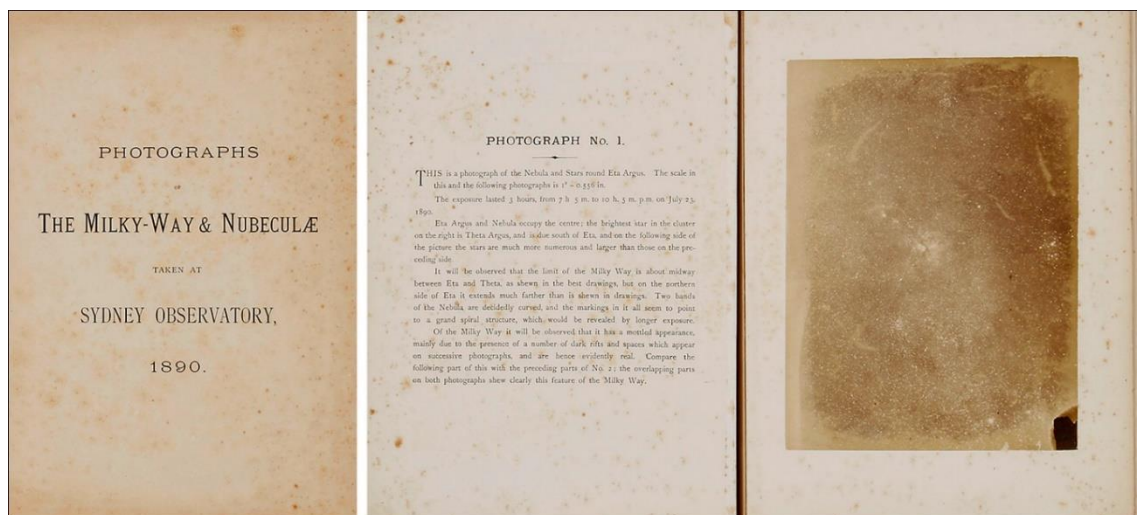


Figure 2- *Photographs of the Milky-Way & Nubeculae*.

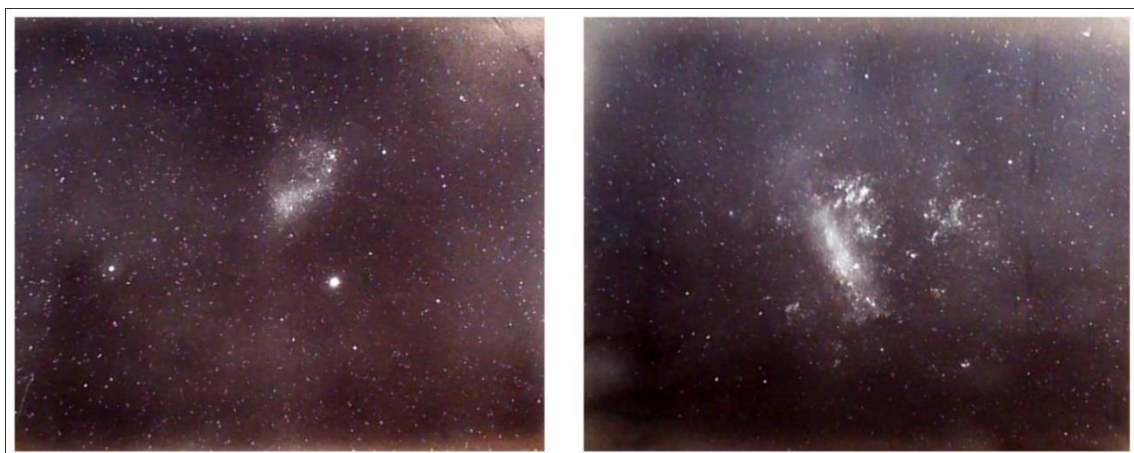


Figure 3- Photograph of the Small Magellanic Cloud, 8 h exposure – 14 October 1890 (left). Photograph of the Large Magellanic Cloud, 7h and 3 min – 17 October 1890.

³ In 1870 Russell discovered more than 500 new double stars.

Astrophotophs descriptions by H.C. Russell (Large and Small Magellanic Clouds):

Large Magellanic Cloud: The photograph shows the nubecula majorr after 7 hours 30 minutes exposure – from 8.57 p.m. October 17, 1890, to 4 p.m. on 18th. The night was fine and clear throughout, and the photograph was very successful, marred only by a stain on the plate, which fortunately in not serious... On the preceding side may be seen three spiral groupings of stars, on the north side another, and on the following side, a little below the middle line, is a circular patch of nebulous light, very faint here, but visible in three negatives, and may therefore be assumed to be a fact, while about the main mass are numbers of clustering stars arranged in a way that is very suggestive of spiral structure... Altogether so much is revealed by this photograph and so much suggested that I regret exceedingly the want to more powerful camera, by means of which additional detail could be brought out of the most complex object which photography has yet revealed to us.

Small Magellanic Cloud: Photograph No. 11 shows the Nubecula Minor after eight hours of exposure, and it is obviously under exposed, but no longer period of darkness or more powerful lens could be obtained. Enough is, however, recorded to show its general form and character, and it is remarkably similar in this respect to Nubecula major, and there is not wanting near its indication that the more powerful camera would reveal spiral groupings of stars like those about the larger cloud. We have on the preceding size of it one of the finest globular clusters in the heavens, and north of it a second globular cluster of the same character but smaller, and closely falling it a group in which the a strong likeness to spiral structure is evident; and on the north following side of the cloud it is great curve we have the most striking nebula it contains, situated in the same relative position with regard to general outline that is occupied by 30 Doradus in Nubecula major. One cannot compare the photographs of the two clouds without being struck by the strong family likeness between them. This photograph was taken on October 14, 1890, from 7h 40m p.m. to 3h 40m a.m. of the 15th, or 8 hours.



Figure 4- Photograph of the Orion Nebula, 3 h exposure, 17 December 1890.

Sources:

Andropoulos, J.I. (2014). *Astronomical publications of Melbourne Observatory*. PhD Thesis, James Cook University

Hughes, S. (2016). *The ages of Astrophotography 1839-2015. Celebrating Edwin P. Hubble (1889-1953)*. eBook

Orchiston, W. (2014). Russell, Henry Chamberlain. T. Hockey (ed). *Biographical Encyclopaedia of Astronomers*.