

THE CENTENNIAL OF THE DISCOVERY OF SS CYGNI

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Presented at the 85th AAVSO Annual Meeting, November 2, 1996

Abstract

The variability of SS Cygni was discovered 100 years ago by Miss L. D. Wells at the Harvard College Observatory. Details of its discovery cannot be found; early plates indicate a discovery date shortly before September 23, 1896.

1. Introduction

The year 1996 marks the 100th anniversary of the discovery at the Harvard College Observatory of the variability of SS Cygni, arguably one of the most studied variable stars in the sky. Director Janet Mattei of the AAVSO asked if the discovery plates could be identified and located for display at the annual meeting of the AAVSO.

The announcement of the variability of SS Cygni appeared in *Harvard College Observatory Circular* No. 12, signed by Edward C. Pickering and dated November 2, 1896 (100 years to the very day before this paper was presented orally!). There was a listing “New Variable Stars in Crux and Cygnus,” and the last paragraph reads:

In addition to the above objects a star in the constellation Cygnus, whose approximate position for 1900 is R.A. = $21^{\text{h}}38^{\text{m}}.8$, Dec. $+43^{\circ}8$ has been found to be variable by Miss Louisa D. Wells. Its period appears to be about 40 days and its photographic brightness varies from 7.2 to fainter than 11.2, an unusually large range for a variable having so short a period. (Pickering 1896a)

It is interesting to note that the *Annual Report of the Director* of the Harvard College Observatory for the year ending September 30, 1896, states, “Five new variables have been found by Miss L. D. Wells from a comparison of chart plates. The most important of these is W Delphini, a star of the Algol class...” (Pickering 1896b). The Director, E. C. Pickering, could not have known at the time how important one of the other variables would become.

The new variable was given its name, SS Cygni, in early 1897 in the *Astronomical Journal* (Anon. 1897), and was very quickly placed on lists for visual observations at Harvard and elsewhere. Searches have turned up no published values for the photographic magnitudes derived from the Harvard plates.

2. The search

Miss Louisa D. Wells was one of the women “computers” hired by E. C. Pickering to work with the Harvard photographic plates under supervision by Mrs. Williamina P. Fleming. The original research notebooks kept by these “computers,” numbering in the hundreds, are largely stored at the Harvard University Deposit Library, and a complete list of these notebooks is available at the Plate Stacks of the Harvard Observatory. Curiously enough, with one exception not of the time period in question,

Miss Wells's notebooks, which she certainly had to have used, are not in that collection. Mrs. Fleming's notebook from 1896 makes no mention of the discovery.

To determine the approximate date of the actual finding of variation in SS Cygni, one can turn to the telescope record books to find when the earliest plate intentionally taken of this star was made. This appears to be plate I 15990, taken with the 8-inch Draper refractor located on the grounds of the Observatory in Cambridge, on September 23, 1896. The entry in the "Object" column says "Susp. var." and the first word is crossed out and "L.D.W.'s" written above.

The only other place where a discovery might have been recorded is on the plate jackets themselves. A search of plates (all taken with the 8-inch Draper) of the field before the date above revealed no notes of significance to the discovery. The earliest extant plate of SS Cygni is I 1849, taken on September 24, 1890; an enlargement of the area of the variable appears in Figure 1a, and the variable is near or at minimum. The field from a second early plate, I 2095, taken on October 30, 1890, with the star in outburst, appears in Figure 1b.

3. Conclusions

It is possible that the details of the discovery of the variation of SS Cygni may never be known. We can only say that it was discovered by Miss Louisa D. Wells, probably shortly before September 23, 1896, from plates taken with the 8-inch Draper refractor. And, with its discovery, began a long period of visual observations of SS Cygni so complete that an outburst of this famous star has never been missed.

References

- Anon. 1897, *Astron. J.*, **17**, No. 8, 64.
Pickering, E. C. 1896a, *Circ. Harvard Coll. Obs.*, No. 12.
Pickering, E. C. 1896b, *Annual Report of the Director of the Astronomical Observatory of Harvard College*, Harvard Univ., Cambridge, MA.

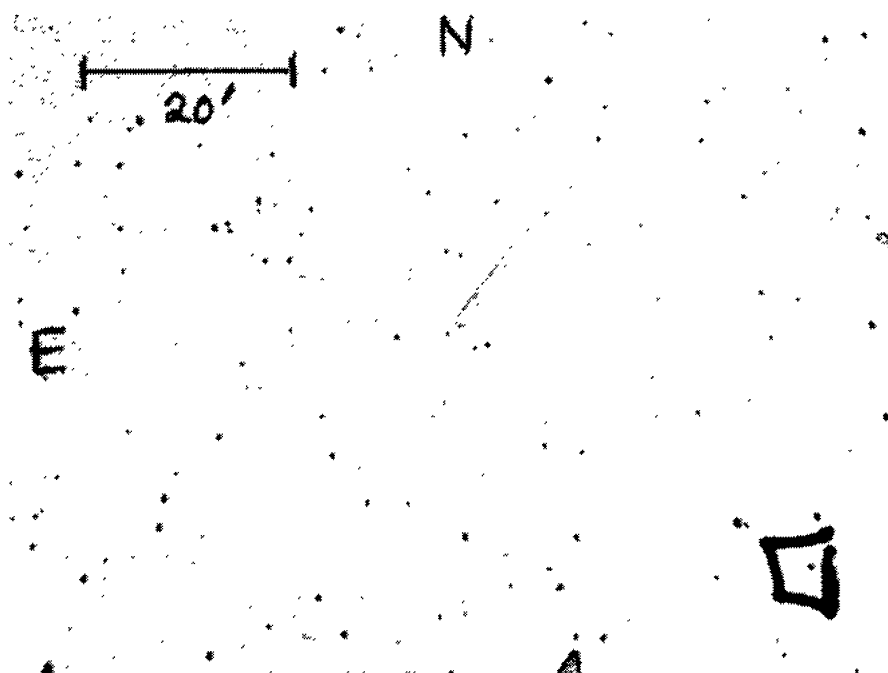


Figure 1a. Print from I 1849, the earliest plate of SS Cygni located in the collection. The arrow at the center (inked on the glass side of the plate) shows the location of the variable. Other variables were also marked. Date: 1890 September 24. Taken with the 8-inch Draper refractor at the Harvard College Observatory, Cambridge, Massachusetts.

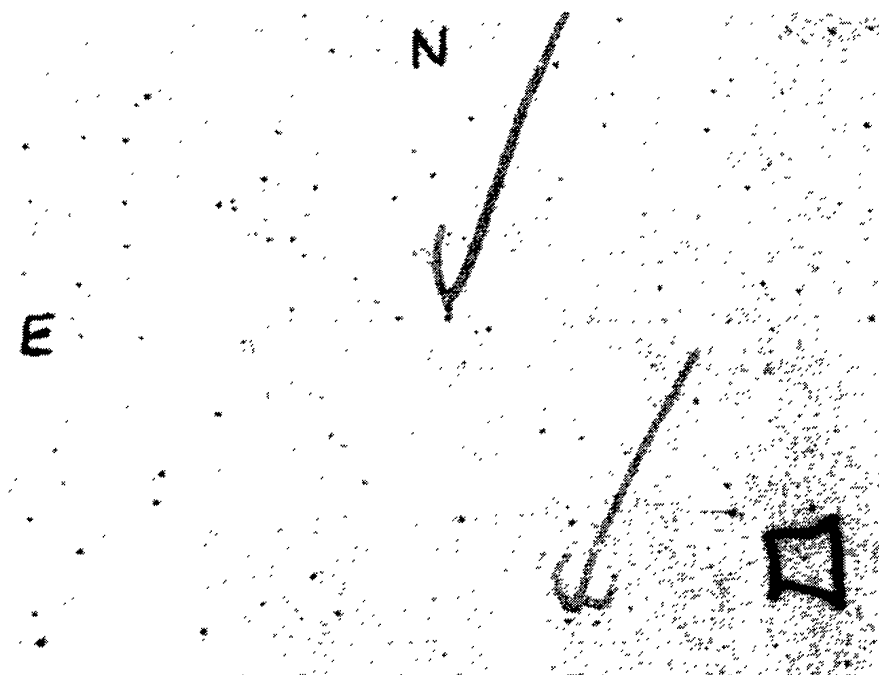


Figure 1b. Print from I 2095, a very early plate of SS Cygni, showing the star in outburst. Date: 1890 October 30. Telescope data as in Figure 1a.