

# ASTRONOMISCHE NACHRICHTEN.

N<sup>o</sup> 2660.

## Observations of Variable Stars in 1884.

By *Edwin F. Sawyer.*

The following observations of variable stars were made during the year 1884, at Cambridgeport, Mass. U. S. A. Argelander's method was used as usual, in making the observations.

The light values of the comparison stars were determined from my observations and the corresponding light of the variables deduced from these.

The light values were plotted upon squared paper and the times of max. and min. were determined by Pogson's method of intersecting curves.

In making the observations, an opera-glass magnifying  $2\frac{1}{2}$  diameters, a field-glass magnifying 4 diameters, and occasionally a  $4\frac{3}{8}$  inch. Clacey, equ. refractor, with power of 40, were used. A majority of the stars were observed slightly out of focus, this method after repeated trials appearing to give the best results, and especially in cases where the stars are of decided color. The preliminary results given below are derived from some 1300 observations.

### 1. R Leonis.

This star was under observation from Jan. 26 to June 20. The observations were much interfered with by cloudy weather, and the time of max. appears rather uncertain. From the mean of equal lights recorded on Jan. 26 and Febr. 15, the max. occurred not far from Febr. 5. The star at its brightest phase was 3 or 4 steps  $>$  DM.  $+12^{\circ}2095$  and 5 + steps  $<$  DM.  $+12^{\circ}2090$  or about 6.7 mag. From May 26 until June 20, R was observed with the refractor, and when last observed was 2 steps  $>$  DM.  $+12^{\circ}2094$  and 4 steps  $<$  DM.  $+12^{\circ}2093$  or 9.5 mag.

At its max. in 1883, the star was a mag. brighter, than at its max. this year or 5.7 mag.

33 observations were obtained this year.

### 2. R Leonis Minoris.

Observations on this star were commenced on May 24 and terminated on July 20, the low altitude of the star preventing further observations. The star was undoubtedly at its max. when the observations ended. Its brightness was 4 steps  $>$  DM.  $+35^{\circ}2046$  and  $=$  DM.  $+33^{\circ}1907$  or 7.4 mag., about the same brightness as last year.

20 observations were obtained.

### 3. R Virginis.

Observed from March 15 to May 26 (27 observations) and again from July 21 to Aug. 15 (6 observations). When

Bd. III.

first seen on March 15, it was  $=$  DM.  $+8^{\circ}2626$  and 3 steps  $<$  DM.  $+8^{\circ}2634$  or 8.4 mag. The increase of light was rapid and a max. was passed on April 11. Max. brightness 3 steps  $>$  DM.  $+8^{\circ}2619$  and 4 or 5 steps  $<$  DM.  $+9^{\circ}2648$  or 7.1 mag.

The near approach of the star to the sunset horizon prevented a second max. being observed. When last observed on Aug. 15, R was 2 steps  $>$  DM.  $+8^{\circ}2617$  and 1 step  $<$  DM.  $+8^{\circ}2619$  or 7.0 mag.

### 4. U Virginis.

Only a few observations (7 in number) were obtained of this star from July 20 to Aug. 15. It was evidently approaching max. but the low altitude of the star prevented this phase being observed.

On Aug. 15, U was 5 steps  $>$  DM.  $+7^{\circ}2588$  and 3 steps  $<$  DM.  $+6^{\circ}2673$  or 8.0 mag.

### 5. R Coronae Borealis.

This interesting variable was observed from March 16 to Nov. 20, 87 observations being obtained. The fluctuations of light were not very marked during the year, R was unusually bright from June 14 to 18 and  $=$  DM.  $+32^{\circ}2621$  or 6.2 mag. and also about the same brightness from July 20 to 28. During the remainder of the time R appeared about half a mag. fainter.

### 6. S Coronae Borealis.

Observed from March 25 to July 30, a fine series of observations, 45 in number, being obtained. The increase of light was remarkably rapid, while the decrease was as remarkably slow. The max. occurred on May 5. Max. brightness 5 steps  $>$  DM.  $+32^{\circ}2578$  and 3 steps  $<$  DM.  $+31^{\circ}2719$  or about 7.3 mag., the same as last year. The dates of equal brightness with DM.  $+32^{\circ}2575$ , 8.1 mag., were March 31 before max., June 30, after max., so that the times of increase from and decrease to that point were 35 days and 56 days.

### 7. R Bootis.

Observed from Febr. 21 to April 1 (13 observations) and also from Aug. 16 to Nov. 9 (33 observations). The observations were commenced too late to obtain an increase of light for the first max., which occurred about the time they were begun. Light 5 steps  $>$  DM.  $+26^{\circ}2592$  and

3 or 4 steps  $<$  DM.  $+28^{\circ}2348$  or 7.4 mag. A fair series of observations was obtained for the determination of the second max., which occurred on Oct. 5. Max. brightness 5 steps  $>$  DM.  $+29^{\circ}2555$ , and 4 or 5 steps  $<$  DM.  $+28^{\circ}2348$  or 7.5 mag.

#### 8. R Ursae Majoris.

32 observations were obtained on this star from Aug. 11 to Nov. 6. The max. occurred on Aug. 29. Max. brightness 3 steps  $>$  DM.  $+69^{\circ}569$  and 1 step  $<$  DM.  $+69^{\circ}561$  or 7.1 mag. R was about half a mag. brighter at its max. this year than last.

The increase of light was rapid, but the decrease was very slow and irregular.

#### 9. S Ursae Majoris.

This star was observed on 31 evenings from Aug. 11 to Oct. 24. A serious break occurs in the observations from Aug. 27 to Sept. 9. A careful inspection of the light curve, however, assigns a max. on Sept. 17, possibly one day earlier or later. Max. brightness 4 steps  $>$  DM.  $+60^{\circ}1416$ , 1 step  $<$  DM.  $+62^{\circ}1257$  or 7.7 mag. When last observed in Oct. 24, S was 4 steps  $>$  DM.  $+61^{\circ}1311$  and 3 steps  $<$  DM.  $+61^{\circ}1310$  or 8.9 mag.

#### 10. T Ursae Majoris.

Observed from Aug. 24 to Nov. 12, 26 observations. The value of the series is, however, much impaired by serious breaks in the observations from Sept. 29 to Oct. 6, and from Oct. 24 to Nov. 6. A max. occurred about Oct. 17. Max. brightness 4 steps  $>$  DM.  $+60^{\circ}1416$  and = DM.  $+61^{\circ}1319$ , or 7.8 mag. about half a mag. fainter than the max. last year. The increase and decrease of light appeared quite rapid.

#### 11. R Andromedae.

This star was observed from 1883 Nov. 1 to 1884 Febr. 15, 32 observations being obtained. The increase of light was very rapid while the decrease was slow. A max. occurred on Dec. 1. Max. brightness 3 steps  $>$  DM.  $+37^{\circ}54$  and 3 steps  $<$  DM.  $+36^{\circ}12$  or 6.9 mag. When last observed on Febr. 15, R was 4 or 5 steps  $>$  DM.  $+38^{\circ}46$  and 3 or 4 steps  $<$  DM.  $+37^{\circ}68$  or 8.1 mag.

#### 12. R Scuti.

A very fine series of observations was obtained on this interesting variable from May 14 to Dec. 19, 89 evenings. The star was subject to decided fluctuations of light, and 7 well marked max. and min. were observed. The first max. occurred on June 7. Light = 20.0 of my scale (A. N. 2438). From June 7, the light slowly decreased and a bright min. was passed on July 11.5, Light = 14.1. After a rapid increase in light, a second max. occurred on Aug. 3, Light = 21.6. A second and very faint min. occurred on Sept. 15, Light = 6.3. A third max. was reached on Oct. 17, Light = 19.9 and the third min., a bright one, occurred on Nov. 11.0, Light = 15.7. The fourth max. was passed about Nov. 30, Light = 22.6. The interval from first to second max. = 57 days and from the second

to the third max. = 74, while from the third to the fourth max. the interval is only 44 days. From first to second min. the interval =  $65\frac{1}{2}$  days, and from second to third min. = 57 days.

#### 13. R Draconis.

A very fair series of observations of this star was obtained from July 28 to Nov. 5. A max. occurred on Sept. 5, max. brightness 3 steps  $>$  DM.  $+68^{\circ}882$  and 2 steps  $>$  DM.  $+68^{\circ}879$  or 7.3 mag. R was considerably brighter at its max. this year than last.

On Nov. 5, the date of the last observation, R was 3 steps  $<$  DM.  $+67^{\circ}943$  or about 9.5 mag.

#### 14. R Aquarii.

Observed from 1883 Dec. 21 to 1884 Jan. 26, 7 observations. The observations are too few in number and were begun too late, to obtain a good determination of max. which apparently occurred about Dec. 25? Max. brightness 3 steps  $>$  266 (U.A.) Aqu., 2 or 3 steps  $<$  269 (U.A.) Aqu., 4 or 5 steps  $<$  258 (U.A.) Aquarii, or about 6.3 mag.

#### 15. g Herculis.

A very good series of observations was obtained on this star extending from April 13 to Dec. 5, 83 in number. The fluctuations of light were very decided during the year and 7 well determined max. and min. were observed. The light curve formed from the observations exhibits conclusive evidence that a uniform period does not exist. The three max. occurred on June 27, Sept. 8 and Oct. 22, showing an interval between the first and second max. of 73 days, while between the second and third max., the interval is only 44 days. The star is now Dec. 5, again, near max. The four min. occurred on May 30, Aug. 4, Sept. 23 and Nov. 14. The interval between the first and second min. is 66 days, while the intervals between the second and third and third and fourth min. are somewhat shorter or 50, and 52 days respectively.

#### 16. o Ceti.

This interesting variable was observed from Febr. 15 to March 18, the low altitude of the star preventing further observations. The time of max. appears very uncertain; but the observations indicate that this phase was reached about March 6? Max. brightness 1 or 2 steps  $>$   $\lambda$  Ceti, 2 steps  $<$   $\xi^2$  Ceti, 5 steps  $<$   $\delta$  Ceti, or 4.6 mag. This would represent a faint maximum.

#### 17. R Hydrae.

This star was under observation from April 15 to July 30, 26 observations being obtained. The increase of light was well observed, but the near approach of the star to the sunset horizon, prevented an observation of the decrease. R was undoubtedly at max. when the observations terminated, its brightness remaining stationary from July 10 to 30. When brightest R was 3 steps  $>$   $\eta$  Corvi, and 5 + steps  $<$   $\pi$  Hydrae or about 4.2 mag., this being about half a mag. brighter than at its max. last year.

## 18. R Leporis.

11 observations were obtained of this star extending from Febr. 1 to April 1. R was slowly approaching max., and when the observations terminated on April 1 (owing to the low altitude of the star) R was 3 steps  $> d = 4^h 52^m 55^s - 14^\circ 59' 0''$  (1875) and 2 steps  $< 9$  (U.A.) Leporis  $4^h 58^m 14^s - 14^\circ 44' 0''$  (1875) or about 7.1 mag.

19.  $\epsilon$  Aurigae.

Observed from 1883 Nov. 27 to 1884 May 9, 34 observations being obtained. The fluctuations of light amounted to about half a magnitude. A max. is indicated about Febr. 27, and two min. for Jan. 18 and March 28 respectively.

20.  $\gamma$  (U.A.) Ceti.

Observations were commenced on this star Sept. 13, and have been continued up to the present time (1885 Febr. 3). The star was evidently decreasing in light when the observations began. From Nov. 13 to Dec. 23 the star remained in very faint light. A min. was passed on Dec. 4. Since Dec. 23 the star has been slowly increasing in light and is now (1885 Febr. 3) 5 + steps  $> 28$  (U.A.) Ceti, 1 step  $> 7$  (U.A.) Ceti, and 4 steps  $< 18$  (U.A.) Ceti or 5.9 mag.

## 21. W Sagittarii.

The series of observations on this star extends from June 17 to Oct. 15; but owing to the low altitude of the star and the prevalence of clouds near the southern horizon, the series is much broken. The star was near max. on the following dates: July 16.4, 22.4 and 30.3, Aug. 14.3, Sept. 13.3 and 21.3, and Oct. 6.3 and 13.3, and near min. June 26.4, July 20.4 and 27.4, Aug. 19.3 and 27.3 and Oct. 10.2, 35 observations were obtained.

## 22. X Sagittarii.

This star was observed from June 17 to Oct. 6 (28 observations). The star was near max. on the following dates: June 18.4 and 26.4, July 16.4 and 30.3, Aug. 15.3, 20.3 and 27.3, and Sept. 12.3, and near min. June 22.4, July 13.4, 21.4 and 28.3, Aug. 19.3 and 26.3, Sept. 13.3 and 21.3, and Oct. 6.3. As soon as practicable, a new and more exact determination of the times of max. and min. of this and the preceding star, will be made, using a mean light curve formed from the last three years observations.

23.  $\beta$  Persei.

Only one complete determination of a minimum could be obtained during the year, and this occurred on Nov. 29 at  $8^h 54^m$  Cambr. M. T. The observations were interfered with at times by flying clouds, and a strong moonlight prevailed. Duration of observation  $4^h 35^m$ .

24.  $\rho$  Persei.

The observations on this star were continued (from the series published in A.N. 2591 and extending to March 16) until April 14, and also from Sept. 13 to 1885 Jan. 1. The light has remained nearly constant, fluctuating a couple of steps, perhaps, but no decided phases have been observed.

## 25. R Geminorum.

Only 3 observations were obtained on this star from May 12 to 25, the near approach of the star to the sunset horizon preventing further observations. R was rapidly approaching max. and when last observed on May 25, was 5 steps  $> DM. +23^\circ 15' 89''$ , 2 steps  $> DM. +22^\circ 15' 96''$ , 3 steps  $< DM. +22^\circ 16' 09''$  or about 8.2 mag.

26.  $\eta$  Geminorum.

21 observations have been obtained of this star from 1884 Nov. 20 to 1885 Febr. 3. The light has, apparently, remained nearly constant, 4 or 5 steps  $> DM. +20^\circ 14' 41''$  and 4 steps  $< DM. +22^\circ 16' 45''$  or 3.9 mag.

27.  $\beta$  Pegasi.

The observations on this star extend from 1884 Aug. 1 to 1885 Jan. 1 and are 28 in number. The fluctuations of light have been very slight, not more than a couple of steps.

28.  $\chi$  Cygni.

This interesting star has been under observation from 1884 Oct. 15 to 1885 Jan. 19, 47 observations. When first seen on Oct. 15,  $\chi$  was 2 steps  $< DM. +32^\circ 35' 89''$  or about 8.2 mag. The increase of light was rapid and uniform, and a max. was reached on Nov. 23. Max. brightness 5 steps  $> DM. +32^\circ 35' 31''$  and 1 or 2 steps  $< DM. +33^\circ 35' 87''$  or 5.5 mag., this being about half a mag. fainter than at its max. last year. The star is now (Jan. 19) 5 + steps  $< DM. +32^\circ 35' 58''$  and  $= DM. +33^\circ 36' 02''$  or about 6.9 mag.

29.  $\alpha$  Cassiopeiae.

Observed from Aug. 1 to Dec. 30, 27 observations. The light has apparently remained constant.

30.  $\delta$  Orionis.

26 observations have been obtained of this star extending from 1884 Nov. 10 to 1885 Febr. 3, but not the least sign of variation has been detected.

## 31. T Herculis.

A few observations were obtained of this star from Nov. 10 to Dec. 4, T was evidently at max. when the observations began, as the light remained constant from Nov. 14 to 21. Max. brightness 4 steps  $> DM. +30^\circ 31' 42''$ , 3 steps  $< DM. +30^\circ 31' 33''$  or 7.7 mag.

On Dec. 4, the date of the last observation, T was 5 steps  $< DM. +30^\circ 31' 42''$  or about 8.5 mag.

## 32. T Cygni.

This star was under observation from June 16 to Dec. 30. The light apparently remained constant until Nov. 8, from which date to Nov. 16 a decrease of two or three steps took place. From Nov. 16 the light increased to its normal brightness and has remained constant since.

## 33. U Ophiuchi.

The observations of this interesting star were, unfortunately, much interfered with by cloudy weather during the year and in consequence only 5 minima were observed, and of these only two (June 17 and 22) are considered

good determinations. The observed times (1<sup>st</sup> column) have been deduced by Argelander's method, using the mean light curve formed from the 1883 observations. Besides the observed times of min. so found, and given in the following table, a comparison is shown between the observed min. and the elements given by Mr. S. C. Chandler jr. in A. N. 2448.

Observed Minimum Cambridge M. T.	Light Equation	Heliocentric Observed Time	Epoch	Comp. Time from Elements of Chandler	O—C
1884 June 17 <sup>d</sup> 9 <sup>h</sup> 37 <sup>m</sup> 2	+ 7 <sup>m</sup> 6	June 17 <sup>d</sup> 9 <sup>h</sup> 44 <sup>m</sup> 8	1271	June 17 <sup>d</sup> 9 <sup>h</sup> 47 <sup>m</sup> 2	— 2 <sup>m</sup> 8
» 22 10 29.4	+ 7.5	» 22 10 36.9	1277	» 22 10 33.3	+ 3.6
July 13 9 43.1	+ 6.4	July 13 9 49.5	1302	July 13 9 45.7	+ 3.8
Sept. 19 8 16.7	— 1.3	Sept. 19 8 15.4	1383	Sept. 19 8 8.9	+ 6.5
Oct. 10 7 22.1	— 3.8	Oct. 10 7 18.3	1408	Oct. 10 7 21.2	— 2.9

Mean correction of Chandler's elements indicated by these observations + 1<sup>m</sup>6 corresponding to the mean epoch 1328.

## 34. R Lyrae.

This star was under observation from 1884 May 16 to 1885 Jan. 18, 66 observations being obtained. The observations were discontinued from Aug. 1 to Sept. 13. While the fluctuations of R Lyrae are usually very slight, not more than 3 or 4 steps, they were this year much more marked, and particularly bright phases were observed from Nov. 7 to 12 and from Nov. 21 to 30. The increase of light from its normal brightness at max. amounted to about half a magnitude.

## 35. S Monocerotis.

Observed from 1884 Nov. 13 to 1885 Jan. 21, 20 observations. The fluctuations of light amounted, apparently, to half a magnitude. Particularly bright phases were noted on Nov. 14 and 24, Dec. 11 and 19, and Jan. 12, 14, 17, 18 and 21.

The star appeared in faint light on Nov. 20 and 26, Dec. 9, and Jan. 2 and 10.

## 36. T Monocerotis.

The period of this interesting variable was determined by Dr. Gould, from observations made at Cordoba by the discoverer, Mr. Davis, and others to be 27.0054 days and the minimum (from less accurate observations) as falling some 8½ days before max. Prof. Schönfeld, from his observations 74 in number, made in 1873-74, found the period 26.76 days with a min. 7<sup>d</sup> 17<sup>h</sup> preceding max. He found the largest and smallest light to oscillate a couple of steps, and the star to vary from about 6.2 to 7.6 mag. My own observations were begun in 1881 and have been continued up to the present time. A discussion of the observations made in 1881-82 and 1883 furnishes the value of the period 26.97 days. This value is slightly greater than Prof. Schönfeld's 26.76 days, and very nearly agrees with the 27.0054 days as determined by Dr. Gould. Referring all my observations to one epoch of max. using the period 26.97 days, a mean light curve has been formed. From this it appears that the increase from min. to max.

occupies 8¼ days, and is quite uniform. The star remains at max. about one day. From max. to min. the interval is 18¾ days. The general rate of decrease in light is a little less than one half as rapid as that of increase, but is not uniform, being interrupted in its course by two distinct bends which appear in the light curve about 4 and 13 days after max. respectively. Prof. Schönfeld has stated that his observations show one such point of inflection, but that in drawing his light curve he disregarded it as he considered the phenomenon an apparent one only arising from the near coincidence of the period with the true lunar month. I am led to believe, however, by a careful inspection of my observations that these bends in the light curve actually exist, although further observations made under varying conditions will be necessary to fully establish this interesting point. This peculiarity is noticeable in variables of this type, notably δ Cephei, η Aquilae and others. My observations (as do Prof. Schönfeld's) show an oscillation of a step or two in the light at max. and min. brightness, but, in the latter case as shown by my observations it appears much more marked.

The light curve is as follows:

## Interval before Maximum.

Light	Light
— ½ day = 18.8	— 5 days = 8.2
— 1 » = 18.3	— 5½ » = 7.2
— 1½ » = 17.2	— 6 » = 6.0
— 2 » = 15.8	— 6½ » = 4.8
— 2½ » = 14.6	— 7 » = 3.8
— 3 » = 13.0	— 7½ » = 3.0
— 3½ » = 11.6	— 8 » = 2.8
— 4 » = 10.3	— 8½ » = 2.9
— 4½ » = 9.2	

## Interval after Maximum.

Light	Light
+ ½ day = 18.8	+ 2½ days = 16.8
+ 1 » = 18.2	+ 3 » = 16.4
+ 1½ » = 17.7	+ 3½ » = 16.3
+ 2 » = 17.2	+ 4 » = 16.1

Light	Light
+ 4 $\frac{1}{2}$ days = 15.8	+ 12 days = 8.5
+ 5 » = 15.4	+ 12 $\frac{1}{2}$ » = 8.4
+ 5 $\frac{1}{2}$ » = 14.7	+ 13 » = 8.2
+ 6 » = 12.8	+ 13 $\frac{1}{2}$ » = 8.0
+ 6 $\frac{1}{2}$ » = 11.4	+ 14 » = 7.7
+ 7 » = 10.8	+ 14 $\frac{1}{2}$ » = 7.3
+ 7 $\frac{1}{2}$ » = 10.5	+ 15 » = 6.8
+ 8 » = 10.2	+ 15 $\frac{1}{2}$ » = 6.4
+ 8 $\frac{1}{2}$ » = 9.9	+ 16 » = 5.8
+ 9 » = 9.6	+ 16 $\frac{1}{2}$ » = 5.2
+ 9 $\frac{1}{2}$ » = 9.4	+ 17 » = 4.4
+ 10 » = 9.2	+ 17 $\frac{1}{2}$ » = 3.8
+ 10 $\frac{1}{2}$ » = 9.0	+ 18 » = 3.2
+ 11 » = 8.8	+ 18 $\frac{1}{2}$ » = 2.8
+ 11 $\frac{1}{2}$ » = 8.6	+ 19 » = 2.9

The comparison stars and the light scale adopted are as follows:

	Light
$a = \text{DM. } +5^{\circ} 1168 \quad 6^h \quad 9^m 36^s 1 \quad +5^{\circ} \quad 8.6 \quad (1855) = 20.4$	
$b = \text{» } +6^{\circ} 1172 \quad 6 \quad 7 \quad 54.0 \quad +6 \quad 6.4 \quad \text{»} = 17.6$	
$c = \text{» } +6^{\circ} 1309 \quad 6 \quad 29 \quad 38.1 \quad +6 \quad 15.5 \quad \text{»} = 14.0$	
$d = \text{» } +7^{\circ} 1216 \quad 6 \quad 9 \quad 9.2 \quad +7 \quad 6.2 \quad \text{»} = 8.2$	
$e^* = \text{» } \left\{ +7^{\circ} 1312 \quad 6 \quad 22 \quad 0.2 \quad +7 \quad 13.7 \right\} \text{»} = 5.4$	
$f = \text{» } \left\{ +7^{\circ} 1314 \quad 6 \quad 22 \quad 7.0 \quad +7 \quad 12.1 \right\} \text{»} = 5.4$	
$f = \text{» } +8^{\circ} 1367 \quad 6 \quad 22 \quad 10.1 \quad +8 \quad 0.5 \quad \text{»} = 1.0$	

\* Combined light.

From the above light curve, the following times of max. and min. have been deduced:

Cambridgeport, Mass., U. S. A., 1885 Febr. 23.

Observed Max. Cambr. M. T.	Observed Min. Cambr. M. T.
1883 Jan. 13 <sup>d</sup> 18 <sup>h</sup> 59 <sup>m</sup>	1883 Jan. 3 <sup>d</sup> 13 <sup>h</sup> 1 <sup>m</sup>
Febr. 8 0 1	Febr. 1 21 19
Mar. 7 17 59	Mar. 1 7 37
April 4 7 51	» 26 16 50
» 30 15 25	April 22 13 30
Dec. 1 22 15	Dec. 21 6 25
» 29 20 39	1884 Jan. 18 7 37
1884 Jan. 27 2 10	Febr. 13 18 10
Febr. 21 9 33	Mar. 12 4 43
Mar. 20 12 23	April 7 6 50
April 16 1 10	

### 37. U Monocerotis.

This star was observed from 1883 Dec. 28 to 1884 April 28, 39 observations being obtained. Serious breaks occur in the series, notably from Jan. 6-16, Febr. 2-15, April 1-11 and 14-22, occasioned by cloudy weather, and from this cause may possibly be due the apparent irregularity of the light changes as shown by the light curve, which in 1882-83 appeared quite regular and uniform. The following times of max. and min. are determined: Max. = Febr. 3 and March 11, Min. = Jan. 5, Febr. 24 and April 9. The interval between the 1<sup>st</sup> and 2<sup>nd</sup> max. = 37 days, while the intervals between the 1<sup>st</sup> and 2<sup>nd</sup> min. = 50 days, and between the 2<sup>nd</sup> and 3<sup>rd</sup> min. = 45 days.

### 38. V Monocerotis.

This star was under observation from 1884 Nov. 20 to 1885 Jan. 18, 21 observations were obtained. The max. occurred on Dec. 10? Max. brightness 2 or 3 steps < DM. —1° 1231 or about 7.4 mag. The decrease of light appeared somewhat more rapid than the increase.

Edwin F. Sawyer.

## On a new variable star in the Constellation Cetus.

While examining the stars in the Constellation Cetus, on the evening of 1884 Dec. 16, I observed one of the 7 mag., about 1° S. of 262 (U.A.) Ceti, and not contained in Dr. Gould's Uranometria Argentina. By carefully comparing its light with the two neighboring stars 262 and 253 (U.A.) Ceti, of the 6.7 and 6.9 mags. respectively, the star was estimated to be not fainter than the 7.0 mag. The star was plotted on the chart for future examination. On the evening of 1885 Jan. 10 this region was again under observation, and on looking for the star, I was surprised to find it had decreased in light and was at least one mag. fainter than it was on Dec. 16. These facts appeared to give good evidence of the star's variability and watch was accordingly

kept upon the star. On Febr. 10, the star was barely visible in the field-glass, hence it must have been about 9.0 mag. The star appears but slightly colored. An observation of the star on the evening of March 5, by Mr. S. C. Chandler jr. and myself, using the 6 inch. Clacey refractor, found it still decreasing in light and about 10 $\frac{1}{2}$  mag. The star is rapidly approaching the sunset horizon, and will soon be invisible for several months, consequently its period and extent of fluctuation must remain for future determination. The star is not contained in any catalogue accessible to me. Its position for 1855.0 is about:

$$2^h 27^m 0^s \pm -13^{\circ} 45' \pm.$$

Cambridgeport, Mass., U. S. A., 1885 March 12.

Edwin F. Sawyer.

Zusatz. Geh. Rath Schönfeld theilt aus den Papieren der Südl. Durchmusterung Folgendes mit:

Der Catalog der Südl. DM. enthält in der Gegend, in welcher der Veränderliche stehen soll, die beiden Sterne:

$$\begin{array}{rcccl} -13^{\circ} 47' 9 & 8^m 5 & 2^h 26^m 45^s 1 & -13^{\circ} 47' 2 & \\ 481 & 8.5 & 27 & 1.1 & -13 \quad 35.2. \end{array}$$