ART. XIII.—*New and Brilliant Variable Star;* by B. A. GOULD.
(In a letter to the Editors dated Cambridge, June 9, 1866.)

ON Monday evening, May 14, Mr. S. C. Chandler, Jr., of the U. S. Coast Survey, while engaged in observing the magnitudes of fixed stars, by comparison without optical aid, perceived a brilliant star not a degree from ε Coronæ. At 11 P. M. he estimated its light as between that of β and γ Herculis, rather nearer to the latter; it was decidedly brighter than δ Boötis, and at least two-thirds of a magnitude brighter than β or γ Coronæ.

The sky had been obscured for several successive nights, but Mr. Chandler is confident that, three weeks previous (at which date he had examined the region with care), no star of sufficient brilliancy to attract attention was visible in this place.

On the ensuing evening, May 15, at 9 P. M., Mr. Chandler and myself examined the star together, and agreed in regarding its brilliancy as not essentially different from that of β Coronæ or γ Herculis, and as intermediate between the two. It was very manifestly fainter than δ Boötis.

The weather precluded further observations until May 19, on which evening the star had decreased by considerably more than two magnitudes, and was very near the limit of visibility to the naked eye. It was compared with several neighboring stars of similar brightness in Hercules and Serpens, both at 9^h and at 13^h; and in the interval between these comparisons it had diminished by not less than a tenth of a magnitude.

On the 20th, it was no longer perceptible by the unaided eye, but was easily seen and compared by means of an opera glass.

Subsequent observations have been made by Mr. Chandler and myself on the 24th, 28th, 31st May, and this evening, June 9; these being the only nights when the exceedingly unfavor-

able weather has permitted. Its magnitude this evening seems to be almost exactly the ninth.

The position of the variable was at once seen to correspond very nearly with that of a star, No. 2765 of 26°, given by Argelander in his "Durchmusterung des südlichen Himmels." An observation of position, by means of a transit-instrument belonging to the Coast Survey, and temporarily in my possession, corroborated the impression that these stars were identical; and now that the variable has waned to the 9th magnitude, and no other small star is found to have been obscured by its excess of brilliancy, it is manifest that the original suspicion was correct. There seems to be no regular observation of the star's place on record.

The determinations of magnitude during the time of visibility to the naked eye are rendered easy by means of a yet unpublished uranometry of the region between the declinations +45° and −2°, prepared at the Dudley Observatory in Albany during the year 1858, in which the brightness of every star visible to the naked eye is given to the nearest tenth of a magnitude. This, however, affords the numerical values for no date subsequent to May 19; and the comparison-stars for later observations are still subject to some uncertainty, which may affect the determination for the variable by a tenth or possibly by two-tenths of a magnitude. These will, however, be carefully determined before long by Mr. Chandler.

The Albany values for the brightness of the comparison-stars are these:

	M.		M.		M.
α Coronæ,	2·0	γ Herculis,	3·5	π Serpentis,	4·6
β Herculis,	2·3	β Coronæ,	3·5	B. A. C. 5399,	5·9
δ Boötis,	3·1	γ Coronæ,	3·6	Bessel Z. 296,3,	6·0
ε Herculis,	3·4	ε Coronæ,	3·9	B. A. C. 5452,	6·1

For the variable, the magnitudes, as thus far determined by us, are

		M.			M.
1866, May 14,	11^h	2·9	1866, May 24,	$9\frac{1}{2}^h$	7·8
15,	9	3·5	28,	10	8·9
19,	9	5·8	31,	10	8·9
"	13	5·9	June 9,	10	9·0
20,	$9\frac{1}{2}$	6·3			

Mr. Chas. A. Schott in Washington observed the star May 24 and 31, and estimated the magnitudes on those dates as 8·1 and 8·7 respectively.

Since first calling public attention to the sudden appearance of this remarkable star, I have received from many quarters information of its independent and, in several instances, previous detection; but only in a few cases do trustworthy determinations of its magnitude appear to have been made.

Mr. Wm. M. Davis, Jr., of Philadelphia, saw the star on the evening of May 12, called the attention of his family and friends to the phenomenon, and noted in his journal that the star was as bright as α Coronæ.

Mr. Ferguson, of the Washington Observatory, writes that the star was seen on Sunday evening, May 13, by Mr. Farquhar of Washington, assistant to Prof. Schaeffer, who communicated the fact to Admiral Davis, superintendent of the observatory. Mr. Farquhar estimated the magnitude on the 13th inst. as the second; Mr. Ferguson observed the star on the 15th, and estimated it as then of the fourth magnitude.

Prof. Watson, of the Ann-Arbor Observatory, sends me word that Mr. Barker, a gentleman in London, Canada, perceived the star about May 1, and described it as equal to ε Coronæ in brilliancy at that time.

Prof. Henry Tutwiler, of Greene Springs, Ala., also detected the star on the 12th of May. For letters from him I am indebted to Robert Patterson, Esq., of Philadelphia, and to Prof. Henry of the Smithsonian Institution. He states that on that evening, it was somewhat superior in brilliancy to α Coronæ; and on other dates he observed or estimated it as follows: May 14th, 3d mag., somewhat brighter than β Coronæ; May 17th, less bright than ε Coronæ; May 19th, barely visible to the naked eye; May 20th, only perceptible through a small spy-glass, 8th mag.; May 24th, 10th mag. This last estimate must have been an extreme one, very possibly in hazy sky and without comparison-stars.

At an early day the star was also noted by Mr. Hallowell of Alexandria, who has very recently communicated his observations to a Philadelphia daily paper, but I have not yet been able to see them. Indirectly I have been informed that Mr. Hallowell has seen the star on previous occasions during the winter, which would imply that it has been fluctuating in short periods, since Mr. Chandler is positive that when he examined the region toward the close of April, the star was, to say the least, not conspicuous.

Mr. R. L. Knight, of Philadelphia, writes me that on the 23d of September last he saw, in the constellation of the Crown, a brilliant star, not laid down upon the maps, and that it was then equal to Gemma in brilliancy.

From these various data it would seem probable that the new variable which should, following Argelander's notation, receive the name *T Coronæ*, must have reached a magnitude of at least $1\frac{3}{4}$ at maximum, and that this maximum, perhaps only one of a series, occurred between the 5th and 12th of May.

P. S. June 12. The Astronomische Nachrichten of May 26, this day received, brings information of the detection of this star

in Ireland on the 12th, and in Rochefort, France, on the 13th of May.

On the 16th, Mr. Huggins and Prof. Miller made a careful observation of its spectrum,—the star being then a little below the 4th magnitude. Their inference was that the spectrum was double, consisting of one principal system of lines analogous to that of the sun; and, superposed upon this, a second one, apparently due to light emanating from intensely heated gaseous matter,—containing, among other bands, two bright ones in the positions of the lines F and C, which correspond to hydrogen lines.

Mr. Courbebaisse, who observed the star at Rochefort on the 13th, states that he had seen no such star there on the 11th.