Observations of Nova Aquilae No. 3.

By

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Introduction.

The Nova Aquilae, No. 3, was found by the first two of the writers on the occasion of the Solar Eclipse Expedition at Torisima (St. Peter's Island) in the Northwest Pacific Ocean, at about 2^h Greenw. Mean Time on June 11, 1918. At that time, however, no suitable instrumental equipment being available only magnitude estimations, visually, were made, and that thru broken cloud. They returned to Kyoto a few days later, arriving there on June 16, when they learnt that Mr. Kudara had also noticed the Nova and begun observations. Since then, a constant watch has been kept by us three. To our deepest regret, the rainy season had already begun, so that we were very often troubled by meteorological irregularities.

(i) Estimations of Magnitudes.

Magnitudes were estimated usually by the method of interpolation, comparisons being made with neighbouring stars, and the Harvard system of scale adopted. Most of the reductions were made by Kudara.

1) I. Yamamoto's Estimations.

Observations were made at Kyoto with the naked eye, unless otherwise stated, during the first half of the series; but, for the remaining period, more precisely, after August 3, the Observer made an excursion to the Kasumi-ga-ura Region, east of Tokyo for Gravity Measurements, during which the observations were made with a pair of binoculars, the names of daily stations will be found in the column of Remarks.

Date Gr. M. T.		h	Estimation	Magnitude	Remarks
			M	M	
1918 June	11,	1.8	0.1>Vega	0.0	at Torisima
	15,	2.0	(roughly compared w. Altair)	1.8	in Tokaido Line
	18,	2.0	N=α Ophiuchi	2.14	
	19,	2.0	(rough estimation)	2.3	
	28,	1.5	N=72 Ophiuchi	3.73	
			N a little <λ Aquilae	3.60	
			η Serpentis 5 N 5 72 Ophiuchi	3.58	
	29,	1.2	η Serpentis 5 N 5 θ Serpentis	3.76	
	30,	0.5	N=η Serpentis	3.42	
July	1,	0.0	0.2 (M) >η Serpentis	3.22	
		3.0	N=λ Aquilae	3.55	
			N=η Serpentis	3.42	
		5.0	ζ Aquilae 5 N 5 η Serpentis	3.22	
	2,	0.0	N=ζ Aquilae	3.02	
		0.3	β Ophiuchi 2 N 1 η Serpentis	3.26	
		0.5	ζ Aquilae 5 N 5 η Serpentis	3.22	
	3,	0.0	0.2 (M) <ζ Aquilae	3.20	(?)
	7,	0.0	ζ Aquilae 5 N 5 η Serpentis	3.22	
		2.0	=η Serpentis	3.42	
	8,	0.0	η Serpentis 1 N 2 θ Serpentis	3.65	
			=δ Aquilae	3.44	
		0.5	λ Aquilae 2 N 2 θ Serpentis	3.83	
	9,	0.5	η Serpentis 4 N 6 θ Serpentis	3.69	
			λ Aquilae 5 N 5 θ Serpentis	3.83	
			δ Aquilae 5 N 5 θ Serpentis	3.77	
	12,	1.0	=θ Serpentis	4.10	
	26,	0.0	λ Aquilae 7 N 3 θ Serpentis	3.94	
			η Serpentis 2 N 1 θ Serpentis	3.87	
	29,	0.5	λ Aquilae 2 N 1 θ Serpentis	3.92	
			δ Aquilae 1 N 1 θ Serpentis	3.77	
	30,	1.0	λ Aquilae 1 N 1 θ Serpentis	3.83	
	31,	1.0	η Serpentis 5 N 5 θ Serpentis	3.76	
Aug.	1,	1.0	=θ Serpentis	4.10	
	2,	0.0	fainter! (rapid)		
	5,	0.5	θ Serpentis 1 N 2 4 Aquilae	4.41	Kumagaya
			N 1 4 Aquilae 2 e Serpentis	4.66	
	8,	0.5	=θ Serpentis	4.10	Oomiya
			η Serpentis 2 N 1 θ Serpentis	3.87	
	9,	2.0	δ Aquilae 5 N 5 θ Serpentis	3.77	Tatebayasi
			η Serpentis 6 N 4 θ Serpentis	3.83	
	11,	0.7	0.2 (M) >θ Serpentis	3.90	Tomonuma
			η Serpentis 4 N 1 θ Serpentis	3.96	
			δ Aquilae 3 N 1 θ Serpentis	3.93	
			12 Aquilae 2 N 2 θ Serpentis	4.13	
			N 1 θ Serpentis 3 4 Aquilae	3.79	
		23.3	N 2 θ Serpentis 2 4 Aquilae	3.17	Hiratuka
			δ Aquilae 2 N 2 θ Serpentis	3.77	
			η Serpentis 3 N 2 θ Serpentis	3.83	
			λ Aquilae 2 N 2 12 Aquilae	3.85	

	h		M	
Aug. 13,	3.5	θ Serpentis 1 N 3 4 Aquilae	4.34	Kugeta
		N 1 4 Aquilae 2 *e* Serpentis	4.66	
		λ Aquilae 3 N 1 12 Aquilae	4.00	
15,	2.8	4 Aquilae 2 N 7 *e* Serpentis	5.21	Isige
		θ Serpentis 4 4 Aquilae 2 N	5.51	
		12 Aquilae 4 N 2 4 Aquilae	4.74	
		=β Scuti	4.47	
16,	2.5	θ Serpentis 5 N 1 4 Aquilae	4.88	Yosinuma
		=12 Aquilae	4.15	
20,	0.5	δ Aquilae 1 N 3 θ Serpentis	3.61	Suganoya
		=12 Aquilae	4.15	
23,	23.7	θ Serpentis 1 N 2 4 Aquilae	4.41	Hadori
		12 Aquilae 1 N 2 4 Aquilae	4.45	
24,	22.5	θ Serpentis 1 N 2 4 Aquilae	4.41	Ami
		=12 Aquilae	4.15	
		=β Scuti	4.47	
31,	0.0	θ Serpentis 2 N 3 4 Aquilae	4.48	Motosu
		12 Aquilae 2 N 2 4 Aquilae	4.60	
		β Scuti 2 N 2 4 Aquilae	4.76	
	23.0	=4 Aquilae	5.04	Katoozu
		θ Serpentis 2 N 1 4 Aquilae	4.73	
Sept. 2,	23.5	=4 Aquilae	5.04	Simohataki
		β Scuti 3 N 1 4 Aquilae	4.90	
4,	0.5	θ Serpentis 4 4 Aquilae 1 N	5.28	Ikisu
		β Scuti 2 4 Aquilae 2 N	5.61	
	22.5	θ Serpentis 2 N 2 4 Aquilae	4.57	Karuno-Takahama
		=β Scuti	4.47	
		12 Aquilae 2 N 2 4 Aquilae	4.60	
5,	22.0	θ Serpentis 2 N 3 4 Aquilae	4.48	Iside
		=12 Aquilae	4.15	
10,	22.0	θ Serpentis 2 N 6 4 Aquilae	4.34	Tokusima
		=12 Aquilae	4.15	
		12 Aquilae 2 N 10 4 Aquilae	4.30	

2) Y. Ueta's Estimations.

All observations were made at Kyoto, unless otherwise remarked, with the naked eye.

Date Gr. M. T.		Estimation	Magnitude	Remarks
	h		M	
1918 June 15,	2.0	(rough estimation)	1.3	at Tokyo
28,	1.5	N>θ Serpentis	4.0	
29,	1.2	η Serpentis 5 N 5 β Scuti	3.95	
30,	0.0	N 3 θ Serpentis 4 64 Serpentis	2.94	
July 1,	3.0	ζ Aquilae 3 N 1 η Serpentis	3.32	
	7.0	N 1 δ Aquilae 2 θ Serpentis	3.11	
2,	3.0	γ Aquilae 2 N 1 η Serpentis	3.21	
3,	0.0	ζ Aquilae 1 N 1 γ Aquilae	2.91	
		γ Aquilae 3 N 2 η Serpentis	3.17	
5,	1.0	N=η Serpentis	3.42	

		h		M
July	7,	2.0	η Serpentis 1 N 1 δ Aquilae	3.43
	9,	1.0	η Serpentis 5 N 5 θ Serpentis	3.76
	11,	0.1	N=θ Serpentis	4.10
	16,		N>θ Serpentis	<4.10
	21,		N=θ Serpentis	4.10
	27,		θ Serpentis 3 N 7 η Serpentis	3.90
	28,		θ Serpentis 3.5 N 6.5 η Serpentis	3.86
	29,		θ Serpentis 4 N 6 η Serpentis	3.83
			θ Serpentis 5 N 5 λ Aquilae	3.83
Aug.	1,		N 2 θ Serpentis 8 η Serpentis	4.27
	2,		N 2 θ Serpentis 8 η Serpentis	4.27
	3,		N 3.5 θ Serpentis 6.5 η Serpentis	4.47
	4,		N 4 θ Serpentis 6 η Serpentis	4.55
	8,	23.3	η Serpentis 4 N 6 4 Aquilae	4.07
			N 0.5 θ Serpentis 9.5 η Serpentis	4.14
			0.1 (M) <θ Serpentis	4.2
	11,	1.0	η Serpentis 9 θ Serpentis 1 N	4.18
	12,		η Serpentis 9.5 θ Serpentis 0.5 N	4.14
			4 Aquilae 8 N 2 λ Aquilae	3.85
	23,	23.0	η Serpentis 7 θ Serpentis 3 N	4.39
			θ Serpentis 8 N 2 4 Aquilae	4.85
	25,	23.0	η Serpentis 8 θ Serpentis 2 N	4.27
	26,	23.0	η Serpentis 9 θ Serpentis 1 N	4.18
			θ Serpentis 4 N 6 4 Aquilae	4.48
Sept.	4,	23.5	4 Aquilae 2 N 8 θ Serpentis	4.85
	6,	2.5	4 Aquilae 4 N 6 θ Serpentis	4.66
		23.0	4 Aquilae 3 N 7 θ Serpentis	4.76
	9,	0.5	θ Serpentis 9 N 1 4 Aquilae	4.95
	10,		a little>4 Aquilae	5.0
	11,	2.0	=4 Aquilae	5.04
	24,	22.5	=4 Aquilae	5.04
	25,	23.0	=4 Aquilae	5.04
Oct.	9,	0.0	=4 Aquilae	5.04

3) K. Kudara's Estimations.

Until the beginning of August, the observations were made with the naked eye, while on and after August 2, a pair of binoculars was used throughout. The site of the Observer was usually at Kyoto, but between July 28 and September 14 he was at Osaka; on three other occasions, which are specially remarked below, he was in Osaka.

Date		Gr. M. T.	Estimation	Magnitude	Remarks
		h		M	
1918 June	13,	5.3	Altair 1 N 9 α Ophiuchi	1.02	Bluish
	14,	2.9	Altair 1.4 N 8.6 α Ophiuchi	1.07	Yellowish
		3.2	Altair 6 N 4 α Cygni	1.15	Yellowish
	19,	0.5	α Ophiuchi 5 N 5 η Ophiuchi	2.39	Reddish

		h		M	
June	21,	2.3	α Ophiuchi 6 N 4 ζ Aquilae	2.67	Moon
			N 6 β Ophiuchi 4 ζ Aquilae	2.82	
			α Ophiuchi 7.5 N 2.5 β Ophiuchi	2.74	
			N 5 γ Aqulae 5 ζ Aquilae	2.58	
			α Ophiuchi 7 N 3 β Ophiuchi	2.70	
	24,	0.5	≦β Cygni	3.10	Full Moon ; cloudy.
	28,	1.5	η Serpentis 7 N 2 θ Serpentis	3.95	
			λ Aquilae 5 N 4 θ Serpentis	3.86	
			N=δ Aquilae	3.44	
			N 4 θ Serpentis 6 4 Aquilae	3.47	
	29,	1.2	N 5 θ Serpentis 5 4 Aquilae	3.16	(?)
			η Serpentis 6 N 4 θ Serpentis	3.83	
	30,	0.0	=η Serpentis	3.42	
		0.5	η Serpentis 5 N 5 δ Aquilae	3.43	
			N 6 θ Serpentis 4 4 Aquilae	2.69	
			η Serpentis 3 N 7 θ Serpentis	3.62	
			N>α Scuti	<4.06	
			λ Aquilae>N	>3.55	
July	1,	3.0	α Ophiuchi 9 N 1 λ Aquilae	3.41	
			β Ophiuchi 6 N 4 72 Ophiuchi	3.41	
			N 3 θ Serpentis 7 4 Aquilae	3.70	
			β Ophiuchi 5.5 N 4.5 λ Aquilae	3.28	
		5.0	ζ Aquilae 4 N 6 δ Aquilae	3.19	
		23.0	β Ophiuchi 7 N 3 ζ Aquilae	3.00	
	2,	4.5	β Ophiuchi 4 N 6 δ Aquilae	3.14	
			ζ Aquilae 2 N 8 δ Aquilae	3.10	
			β Ophiuchi 4 N 6 η Serpentis	3.13	
		23.0	=ζ Aquilae	3.02	
	5,	1.0	ζ Aquilae 9 N 1 η Serpentis	3.38	
	7,	2.5	η Serpentis 3 N 7 δ Aquilae	3.43	
	8,	4.0	=η Serpentis	3.42	
	9,	1.0	η Serpentis 6 N 4 θ Serpentis	3.83	
			λ Aquilae 6 N 4 θ Serpentis	3.88	
	11,	0.3	η Serpentis 9 N 1 θ Serpentis	4.03	
	12,	0.5	η Serpentis 9 N 1 θ Serpentis	4.03	
	16,		>θ Serpentis	<4.10	
	19,	1.5	η Serpentis 8 N 2 θ Serpentis	3.96	
			λ Aquilae 8 N 2 α Scuti	3.96	
			N 2 θ Serpentis 8 4 Aquilae	3.86	Moon light
			λ Aquilae 5 N 5 β Scuti	4.01	
			λ Aquilae 6 N 4 θ Serpentis	3.88	
			η Serpentis 6 N 4 α Scuti	3.80	
	20,	0.0	N=θ Serpentis	4.10	Moon
	24,	0.0	θ Serpentis 2 N 8 4 Aquilae	4.29	Moon
			λ Aquilae 7 N 3 4 Aquilae	4.59	
			β Scuti 2 N 8 η Scuti	4.58	
	25,	23.5	η Serpentis 8 N 2 θ Serpentis	3.96	Before moon-rise
			η Serpentis 9 N 1 α Scuti	4.00	

		h		M	
July	25,	23.5	η Serpentis 4 N 6 β Scuti	3.84	
			λ Aquilae 5 N 5 12 Aquilae	3.85	
			λ Aquilae 6 72 Ophiuchi 4 N	3.85	
		23.8	N>α Scuti	<4.05	
	26,	4.7	N 2 θ Serpentis 8 4 Aquilae	3.86	Moon
			λ Aquilae 5 N 5 β Scuti	4.01	
	27,	1.6	η Serpentis 8 N 2 θ Serpentis	3.96	Moon
	28,	4.2	λ Aquilae 8 N 2 θ Serpentis	3.99	Moon
	31,	1.5	η Serpentis 8 N 2 θ Serpentis	3.96	
			λ Aquilae 4 N 6 12 Aquilae	3.79	
			67 Ophiuchi 5 N 5 70 Ophiuchi	4.00	
			λ Aquilae 4 N 6 η Scuti	4.15	
			λ Aquilae 5 N 5 12 Aquilae	3.85	
Aug.	1,	1.0	θ Serpentis 1 N 9 4 Aquilae	4.19	
			λ Aquilae 6 N 4 12 Aquilae	3.91	
		3.2	α Scuti 2 N 8 β Scuti	4.14	
			λ Aquilae 6 N 4 4 Aquilae	4.44	
			θ Serpentis 1 N 9 4 Aquilae	4.19	
	2,	1.1	θ Serpentis 2 N 8 4 Aquilae	4.29	
	3,	1.9	θ Serpentis 6 N 4 4 Aquilae	4.66	
			β Scuti 7 N 3 4 Aquilae	4.87	
			70 Ophiuchi 4 N 6 27 Aquilae	4.63	
			N 3 4 Aquilae 7 64 Serpentis	4.78	
	4.	1.6	θ Serpentis 8 N 2 4 Aquilae	4.85	
			β Scuti 5 N 5 η Scuti	4.76	
			12 Aquilae 5 N 5 η Scuti	4.60	
			N 1 4 Aquilae 9 P.G.C. 4719	4.96	
			β Scuti 3 N 7 21 Aquilae	4.66	
		23.6	θ Serpentis 6 N 4 4 Aquilae	4.66	
			β Scuti 3 N 7 η Scuti	4.64	
			α Scuti 4 N 6 21 Aquilae	4.48	
	5,	2.5	β Scuti 2 N 8 η Scuti	4.58	
	8,	23.0	N 2 θ Serpentis 8 4 Aquilae	3.86	
			η Serpentis 9 N 1 θ Serpentis	4.03	
			η Serpentis 7 N 3 β Scuti	4.16	
			η Serpentis 9 N 1 α Scuti	4.00	
			λ Aquilae 7 N 3 12 Aquilae	3.97	
	9,	1.2	η Serpentis 8 N 2 α Scuti	3.93	
	10,	23.0	N 2 θ Serpentis 8 4 Aquilae	3.86	
			α Scuti 2 N 8 β Scuti	4.14	
			λ Aquilae 7 N 3 12 Aquilae	3.97	
	11,	2.3	α Scuti 4 N 6 β Scuti	4.22	
			λ Aquilae 7 N 3 12 Aquilae	3.97	
	12,	0.3	N 1 θ Serpentis 9 4 Aquilae	4.00	
			λ Aquilae 9 N 1 12 Aquilae	4.09	
			α Scuti 4 N 6 β Scuti	4.22	
	13,	3.1	θ Serpentis 2 N 8 4 Aquilae	4.29	Cloudy
	14,	23.2	θ Serpentis 7 N 3 4 Aquilae	4.76	Moon

		h		M	
Aug.	15,	23.3	θ Serpentis 7 N 3 4 Aquilae	4.76	
			β Scuti 4 N 6 η Scuti	4.70	
			12 Aquilae 6 N 4 η Scuti	4.68	
			β Scuti 6 N 4 4 Aquilae	4.81	
	16,	23.6	N 2 θ Serpentis 8 4 Aquliae	3.86	Moon
			α Scuti 3 N 7 β Scuti	4.18	
		23.8	α Scuti 9 N 1 β Scuti	4.43	
	19,	0.3	N 3 θ Serpentis 7 4 Aquilae	3.70	Cloudy
	22,	22.9	θ Serpentis 6 N 4 4 Aquilae	4.66	
			β Scuti 4 N 6 η Scuti	4.70	
		23.8	θ Serpentis 7 N 3 4 Aquilae	4.76	
			β Scuti 5 N 5 η Scuti	4.75	
	23,	22.9	θ Serpentis 7 N 3 4 Aquilae	4.76	
	24.	23.6	θ Serpentis 6 N 4 4 Aquilae	4.66	
			β Scuti 4 N 6 η Scuti	4.70	
	25,	23.1	θ Serpentis 6 N 4 4 Aquilae	4.66	
			θ Serpentis 5 N 5 4 Aquilae	4.57	
			β Scuti 3 N 7 η Scuti	4.64	
			12 Aquilae 4 N 6 η Scuti	4.51	
	26,	23.8	N=θ Serpentis	4.10	
			α Scuti 4 N 6 β Scuti	4.22	
			N 1 θ Serpentis 9 4 Aquilae	4.00	
	27,	23.2	N=θ Serpentis	4.10	
			α Scuti 5 N 5 β Scuti	4.27	
	29,	23.0	N=θ Serpentis	4.10	
			α Scuti 7 N 3 β Scuti	4.35	
		23.2	θ Serpentis 1 N 9 4 Aquilae	4.19	
			α Scuti 6 N 4 β Scuti	4.31	
	30,	23.8	θ Serpentis 8 N 2 4 Aquilae	4.85	
			β Scuti 6 N 4 η Scuti	4.81	
			β Scuti 7 N 3 4 Aquilae	4.87	
	31,	22.6	θ S rpentis 9 N 1 4 Aquilae	4.95	
			β Scuti 8 N 2 η Scuti	4.93	
			θ Serpentis 4 N 6 5 Aquilae	4.73	
Sept.	1,	1.3	θ Serpentis 9 4 Aquilae 1 N	5.14	
			β Scuti 9 N 1 η Scuti	4.98	
		23.2	θ Serpentis 9 N 1 4 Aquilae	4.95	
			β Scuti 7 N 3 η Scuti	4.87	
	2,	23.4	θ Serpentis 9 N 1 4 Aquilae	4.95	
			β Scuti 6 N 4 η Scuti	4.81	
	3,	22.5	θ Serpentis 8 N 2 4 Aquilae	4.85	
			β Scuti 5 N 5 η Scuti	4.76	
			θ Serpentis 2 N 8 5 Aquilae	4.41	
	4,	0.0	θ Serpentis 9 N 1 4 Aquilae	4.95	
		22.7	θ Serpentis 8 N 2 4 Aquilae	4.85	
			β Scuti 5 N 5 η Scuti	4.76	
			12 Aquilae 5 N 5 η Scuti	4.60	
	5	22.5	θ Serpentis 4 N 6 4 Aquilae	4.48	

		h		M	
Sept.	5,	22.5	β Scuti 1 N 9 η Scuti	4.53	
			α Scuti 5 N 5 η Scuti	4.55	
			β Scuti 3 N 7 4 Aquilae	4.64	
	6,	22.4	θ Serpentis 1 N 9 4 Aquilae	4.19	
			α Scuti 4 N 6 η Scuti	4.45	
			β Scuti 2 N 8 η Scuti	4.58	
	8,	23.1	θ Serpentis 8 N 2 4 Aquilae	4.85	
			β Scuti 6 N 4 η Scuti	4.81	
			12 Aquilae 6 N 4 15 Aquilae	4.98	
	10,	0.0	θ Serpentis 9 4 Aquilae 1 N	5.14	
			β Scuti 8 N 2 η Scuti	4.93	
			θ Serpentis 9 N 1 4 Aquilae	4.95	2.6 cm Telescope
		22.4	θ Serpentis 8 N 2 4 Aquilae	4.85	
			β Scuti 6 N 4 η Scuti	4.81	
			N=4 Aquilae	5.04	
	11,	23.8	N=4 Aquilae	5.04	Cloudy
			β Scuti 7 N 3 η Scuti	4.87	
	14,	22.3	N=4 Aquilae	5.04	Moon
			β Scuti 7 N 3 η Scuti	4.87	
	15,	23.2	N=4 Aquilae	5.04	Moon
			β Scuti 7 N 3 η Scuti	4.87	
	19,	23.4	θ Serpentis 8 4 Aquilae 2 N	5.27	Full Moon
			β Scuti 9 N 1 η Scuti	4.98	
	21,	22.1	β Scuti 7 N 3 η Scuti	4.87	} at Osaka
			θ Serpentis 9 N 1 4 Aquilae	4.95	
	23,	23.8	θ Serpentis 8 4 Aquilae 2 N	5.27	
			β Scuti 9 N 1 η Scuti	4.98	
			4 Aquilae 3 N 7 P.G.C. 4719	5.27	
			4 Aquilae 3 N 7 5 Aquilae	5.23	
	24,	22.2	θ Serpentis 8 4 Aquilae 2 N	5.27	
			β Scuti 8 N 2 η Scuti	4.93	
			4 Aqutlae 2 N 8 P.G.C. 4719	5.19	
	25,	22.3	θ Serpentis 7 4 Aquilae 3 N	5.44	
			N=η Scuti	5.04	
			4 Aquilae 3 N 7 P.G.C. 4719	5.27	
			4 Aquilae 4 N 6 5 Aquilae	5.30	
Oct.	1,	22.8	θ Serpentis 8 N 2 4 Aquilae	4.85	
	8,	22.2	θ Serpentis 7 4 Aquilae 3 N	5.44	
			4 Aquilae 5 N 5 5 Aquilae	5.36	
			4 Aquilae 4 N 6 P.G.C. 4719	5.34	
			β Scuti 9 η Scuti 1 N	5.10	
			4 Aquilae 3 N 7 64 Serpentis	5.22	
	10,	22.3	θ Serpentis 9 4 Aquilae 1 N	5.14	Moon
			4 Aquilae 5 N 5 5 Aquilae	5.36	
			4 Aquilae 4 N 6 P.G.C. 4719	5.34	
			N=4 Aquilae	5.04	
	12,	0.8	θ Serpentis 9 4 Aquilae 1 N	5.14	(?)
		21.6	4 Aquilae 2 N 8 5 Aquilae	5.17	Moon

		h		M	
Oct.	12,	21.6	4 Aquilae 3 N 7 P.G.C. 4719	5.27	
			β Scuti 8 η Scuti 2 N	5.18	
	13,	21.8	4 Aquilae 7 N 3 P.G.C. 4719	5.57	Moon
			4 Aquilae 4 N 6 5 Aquilae	5.30	
			θ Serpentis 7 4 Aquilae 3 N	5.44	
			4 Aquilae 5 N 5 P.G.C. 4719	5.42	
	16,	21.4	θ Serpentis 7 4 Aquilae 3 N	5.44	Moon
			4 Aquilae 6 N 4 P.G.C. 4719	5.50	
			4 Aquilae 4 N 6 5 Aquilae	5.30	
			4 Aquilae 2 N 8 64 Serpentis	5.16	
		21.8	4 Aquilae 3 N 7 64 Serpentis	5.22	
	17,	22.4	θ Serpentis 7 4 Aquilae 3 N	5.44	
			4 Aquilae 6 N 4 P.G.C. 4719	5.50	
			4 Aquilae 4 N 6 5 Aquilae	5.30	
	18,	23.2	θ Serpentis 7 4 Aquilae 3 N	5.44	} at Osaka
			4 Aquilae 6 N 4 P.G.C. 4719	5.50	
	19,	22.7	θ Serpentis 6 4 Aquilae 4 N	5.67	at Osaka
	20,	21.6	θ Serpentis 6 4 Aquilae 4 N	5.67	
			4 Aquilae 6 N 4 P.G.C. 4719	5.50	
			4 Aquilae 5 N 5 5 Aquilae	5.36	
	21,	22.0	4 Aquilae 6 N 4 5 Aquilae	5.42	
			4 Aquilae 5 N 5 P.G.C. 4719	5.42	
			4 Aquilae 3 N 7 64 Serpentis	5.22	
	24,	21.5	4 Aquilae 7 N 3 5 Aquilae	5.49	
			4 Aquilae 8 N 2 P.G.C. 4719	5.65	
	26,	21.5	4 Aquilae 9 N 1 P.G.C. 4719	5.72	
			4 Aquilae 8 N 2 5 Aquilae	5.55	
			4 Aquilae 7 N 3 64 Serpentis	5.47	
	27,	21.4	4 Aquilae 9 N 1 P.G.C. 4719	5.72	
			4 Aquilae 9 N 1 5 Aquilae	5.62	
			4 Aquilae 8 N 2 64 Serpentis	5.53	
		22.0	N=P.G.C. 4719	5.80	(?)
	30,	21.8	N=P.G.C. 4719	5.80	
			4 Aquilae 9 N 1 5 Aquilae	5.62	
			4 Aquilae 8 N 2 64 Serpentis	5.53	
Nov.	2,	21.5	N=P.G.C. 4719	5.80	
			N=5 Aquilae	5.68	
			4 Aquilae 9 N 1 5 Aquilae	5.62	
	5,	23.2	4 Aquilae 9 P.G.C. 4719 1 N	5.88	
			N=P.G.C. 4719	5.80	
			4 Aquilae 9 N 1 64 Serpentis	5.59	
			4 Aquilae 9 N 1 5 Aquilae	5.62	
	6,	22.0	4 Aquilae 9 N 1 P.G.C. 4719	5.72	
			N=5 Aquilae	5.68	
	7,	22.0	4 Aquilae 9 P.G.C. 4719 1 N	5.88	Moon
			N=64 Serpentis	5.65	
			4 Aquilae 9 5 Aquilae 1 N	5.75	
	9,	21.5	4 Aquilae 8 P.G.C. 4719 2 N	5.99	

		h		M	
Nov.	9,	21.5	4 Aquilae 9 5 Aquilae 1 N	5.75	
	10,	21.7	4 Aquilae 9 P.G.C. 4719 1 N	5.88	
			4 Aquilae 9 5 Aquilae 1 N	5.75	
	11,	21.8	4 Aquilae 9 P.G.C. 4719 1 N	5.88	
			4 Aquilae 9 5 Aquilae 1 N	5.75	
	18,	22.0	4 Aquilae 9 P.G.C. 4719 1 N	5.88	
	19,	21.2	4 Aquilae 9 5 Aquilae 1 N	5.75	
			N=P.G.C. 4719	5.80	
Dec.	6,	21.4	N=*e* Serpentis	5.80	
			5 Aquilae 1 N 9 BD+0° 4027	5.74	
1919 Feb.	5,	8.3	5 Aquilae 4 N 6 BD+0° 4027	5.91	Clear
			e Serpentis 1 N 9 BD+0° 4027	5.85	
			4 Aquilae 8 *e* Serpentis 2 N	5.99	
			e Serpentis 3 N 7 61 Serpentis	5.80	
Mar.	5,	8.3	5 Aquilae 8 N 2 BD+0° 4027	6.14	
			61 Serpentis 5 N 5 BD+0° 4027	6.04	
Apr.	12,	7.2	N=or a little>BD+0° 4027	6.20	Clear
	25,	7.1	a little<BD+0° 4027	6.3	Clear; 2.6 cm Telescope
	26,	4.7	BD+0° 4027 2 N 8 BD−0° 3543	6.37	

It is with very great gratitude that we introduce here two more observers, Messrs. T. Sasaki and R. Furukawa, who have each been keeping the Nova under observation during the same period, and each have kindly communicated to us valuable data.

4) T. Sasaki's Estimations.

Mr. Sasaki is a school teacher living in Iwate Prefecture, (the International Latitude Observatory of Mizusawa is in the same region). His observations were made, generally, with a pair of binoculars, except in the early part which have been with the naked eye. The reductions were made by Kudara in the Harvard system.

Date Gr. M. T.			Estimation	Magnitude	Remarks
		h		M	
1918 June	18,	2.0	α Ophiuchi 1 N 3 α Aquilae	1.83	
	26,	1.2	β Ophiuchi 1 N 1 δ Aquilae	3.19	Moon
		23.7	θ Serpentis 1 N 1 η Serpentis	3.76	
July	1,	23.3	ζ Aquilae 1 N 1 η Serpentis	3.22	
	2,	23.7	α Ophiuchi 2.5 N 1 η Serpentis	3.05	thru Stratus
	8,	23.8	θ Serpentis 2 N 1 η Serpentis	3.65	
	9,	1.4	θ Serpentis 1.5 N 1 δ Aquilae	3.70	
	10,	2.3	θ Serpentis 1 N 1 η Serpentis	3.76	
	24,	1.0	θ Serpentis 1 N 2 η Serpentis	3.87	thru Cirrus
		23.2	θ Serpentis 1 N 2 η Serpentis	3.87	
	26,	23.2	θ Serpentis 1 N 1.5 η Serpentis	3.83	
	27,	23.0	θ Serpentis 1 N 2 η Serpentis	3.87	

		h		M	
July	27,	23.0	4 Aquilae 3 N 1 λ Aquilae	3.92	
	28,	0.5	θ Serpentis 1 N 1.5 η Serpentis	3.83	
			4 Aquilae 3 N 1 δ Aquilae	3.84	
		1.5	θ Serpentis 1 N 2 η Serpentis	3.87	Moon
			θ Serpentis 1 N 1 λ Aquilae	3.83	
		23.3	θ Serpentis 1 N 1 η Serpentis	3.76	
	29,	0.1	θ Serpentis 1 N 1 δ Aquilae	3.77	
			α Scuti 1 N 2 ζ Aquilae	3.71	
			4 Aquilae 3 N 1 λ Aquilae	3.92	
		1.5	α Scuti 1 N 1.5 η Serpentis	3.80	Binoculars hereafter
		23.1	θ Serpentis 1 N 2 η Serpentis	3.87	
			4 Aquilae 3 N 1 δ Aquilae	3.84	
			4 Aquilae 2.5 N 1 λ Aquilae	3.98	
	30,	0.5	4 Aquilae 2.5 N 1 λ Aquilae	3.98	
			θ Serpentis 1 N 2.5 η Serpentis	3.91	
			δ Aquilae 1 N 1 β Scuti	3.96	
Aug.	30,	22.4	6 Scuti 1 N 1 4 Aquilae	4.75	
			θ Serpentis 1 N 1.5 5 Aquilae	4.73	
	31,	0.3	6 Scuti 1.5 N 1 4 Aquilae	4.81	
			12 Aquilae 1 N 1 5 Aquilae	4.91	
			ι Aquilae 1 N 1.5 5 Aquilae	4.84	
Sept.	4,	23.1	12 Aquilae 1 N 2 4 Aquilae	4.45	
			6 Scuti 1 N 2.5 5 Aquilae	4.82	
	9,	22.8	6 Scuti 2 N 1 4 Aquilae	4.85	
			δ Aquilae 2.5 N 1 5 Aquilae	5.04	
	11,	0.8	4 Aquilae 1 N 1.5 6 Scuti	4.81	
			4 Aquilae 1 N 2.5 12 Aquilae	4.79	
			5 Aquilae 1 N 3 δ Aquilae	5.12	
		23.7	4 Aquilae 1 N 2 6 Scuti	4.85	
			5 Aquilae 1 N 1.5 12 Aquilae	5.07	
Oct.	1,	23.8	5 Aquilae 1 N 2 12 Aquilae	5.17	
			4 Aquilae 1 N 2 6 Scuti	4.85	
	3,	23.4	4 Aquilae 1 N 2 6 Scuti	4.85	
			5 Aquilae 1 N 2.5 12 Aquilae	5.24	
	7,	22.4	5 Aquilae 1.5 N 1 4 Aquilae	5.30	
			5 Aquilae 1 N 3 6 Scuti	5.38	
	8,	22.4	4 Aquilae = N	5.04	
			5 Aquilae 1 N 2.5 6 Scuti	5.33	
	9,	23.0	4 Aquilae 1 N 3 8 Aquilae	5.29	
Nov.	3,	21.8	4 Aquilae 1 N 2 P.G.C. 4845	5.27	
	28,	21.6	5 Aquilae 1 N 2 H.R. 7245	5.93	

5) R. Furukawa's Estimations.

Mr. Furukawa is an assistant in the Kamigamo Geophysical Observatory (some 4 kilometers to the north) of Kyoto University. His observations were made with the naked eye.

Date Gr. M. T.			Estimation	Magnitude	Remarks
		h		M	
1918 June	14,	4.0	Vega 4 N 6 Ophiuchi	0.94	
			Altair 1 N 9 α Ophiuchi	1.02	
	21,	24	Vega 7 N 3 β Cygni	2.21	
			Altair 5 N 5 δ Aquilae	2.17	
			α Ophiuchi 9 N 1 ε Cygni	2.59	
			γ Cygni 5 N 5 ε Cygni	2.48	
			Altair 6 N 4 ζ Aquilae	2.17	
July	1,	3	N=η Serpentis	3.42	
		4.7	ζ Aquilae 3 N 7 λ Aquilae	3.18	
			β Ophiuchi 7 N 3 η Serpentis	3.28	
	9,	0.5	η Serpentis 3 N 7 θ Serpentis	3.62	
			ζ Aquilae 4 N 6 ε Aquilae	3.50	
	27,	23.5	η Serpentis 4 N 6 θ Serpentis	3.69	
			γ Aquilae 8 N 2 β Aquilae	3.68	
Aug.	1,	0.0	δ Aquilae 5 N 5 4 Aquilae	4.24	
			ζ Aquilae 8 N 2 θ Serpentis	3.88	
	2,	0.0	δ Aquilae 6 N 4 4 Aquilae	4.40	
			ι Aquilae 2 N 8 β Scuti	4.32	
	3,	0.0	δ Aquilae 7 N 3 4 Aquilae	4.56	
			θ Serpentis 1 N 9 64 Serpentis	4.26	
		23.8	ι Aquilae 2 N 8 4 Aquilae	4.43	
			θ Serpentis 1 N 9 64 Serpentis	4.26	
	8,	23.7	ι Aquilae 1 N 9 64 Serpentis	4.42	
			ι Aquilae 6 N 4 θ Serpentis	4.17	
			β Aquilae 4 N 6 4 Aquilae	4.36	

In a former paper in these Memoirs,[1] one of the writers (I.Y.) obtained a provisional light-curve of the Nova, to which the observational data of the first four persons were contributed, while those of Mr. Furukawa were received too late.

A more or less definite light-curve will shortly be published, in which all materials of foreign and home observers, available to us, are to be used.

(ii) Mean Place of Nova Aquilae, No. 3.

The meridian observations of the Nova to obtain accurate positions were made, exclusively, by Kudara, who made the laborious computations and reductions, too.

Right Ascension. The right ascensions were determined by transit observations with a portable instrument (aperture 6 cm.) relative to the neighboring fundamental stars as mentioned below, whose mean places were obtained from the Washington Ephemeris. The results are as follows:

1 Vol. IV, No. 1, pp. 13–22. (1919).

Date of observation	Epoch	Observed R. A. at (1918.0)	Weight	Fundamental Stars, &c.
1918 June 13	1918.45	$18^h\ 44^m\ 43^s.59$	1	Vega, ε Aquilae, π Sagittarii, δ Draconis, δ Aquilae.
„ „ 21	1918.47	43.32	$\frac{1}{3}$	c Serpentis, Vega. (thru passing clouds.)
Mean:	1918.454	$18^h\ 43^m\ 43^s.52$	(1918.0)	

Declination. The Declinations were determined differentially with the micrometer of another portable transit instrument (aperture 6.5 cm.) belonging to the National Geodetic Committee, relative to the near stars. The results are:

Date of observation	Epoch	Observed Decl. for (1918.0)	Weight	Comparison-stars, &c.
1918 June 30	1918.49	$+0^\circ\ 29'\ 30''.34$	$\frac{2}{5}$	Brad. 2431, Boss P.G.C. Place.
„ July 1	.50	30.68	1	„ „ „ „ „
„ „ 2	.50	30.47	$\frac{4}{5}$	η Aquilae, Am. Eph. Place.
Mean:	1918.497	$+0^\circ\ 29'\ 30''.54$	(1918.0)	

Another series of declinations were obtained by Kudara, who observed the differential zenith-distances of σ Draconis and the Nova, reversing the Horrebow-Talcott Method, and using the latter instrument above mentioned. These observations, also with the former series of declination, were made in a room whose main part was specially designed to be easily removed, if necessary, to a distance, instead of opening the roof as usual, so that the actual observation could be made *in the open air*, the instrument standing on a pillar in the centre of the floor remaining unaccompanied by the removed parts. In these observations and reductions the observer provisionarily assumed the latitude of the pillar obtained by triangulation between it and the Meridian Room, whose latitude was known, and finally obtained:

Date of observation	Epoch	Observed Decl. for (1918.0)	Weight	Remarks
1918 June 30	1918.49	$+0^\circ\ 29'\ 30''.98$	$\frac{2}{5}$	Boss P.G.C. Place, cloudy.
„ July 1	1918.50	30.89	1	„ „ „ , fine.
Mean:	1918.50	$+0^\circ\ 29'\ 30''.92$	(1918.0)	

The systematic difference between the above two series of declinations is of some significance. Four kinds of causes are here to be considered, i. e.:

(1) Adopted mean place of σ Draconis, which is, in fact, one of the nearest stars and has a very large Proper Motion;

(2) Latitude Variation, the amount of which is now unknown, but may be small even in full amplitude in these days;

(3) Error in the differential latitude obtained by triangulations, which may, however, be of no considerable amount;

(4) Anomalies in the atmospheric refraction affecting in different manners each of the two rooms.

Of these, the combined effect of (1) and (3) might not amount to $0''.1$. The effective amplitude of the Latitude Variation is unknown; it is, however, probable, judging from an exterpolation of the variation-curve known up to these days, that this amount may be about $0''.10$, almost certainly not exceeding $0''.2$. The last effect will be promising to a certain extent, and a special programme of observational examinations is in the course of execution. Prof. S. Shinjo, some years ago, discussed a similar problem from the theoretical standpoint in a paper on the "z"-term of the Latitude Variations, and reached a conclusion with which the above obtained difference of declinations and its sense should agree. (See Memoirs Coll. Sc. & Eng. Kyoto Imp. Univ., vol. IV, No, 2, 1912.)

(iii) Spectra of the Nova.

In the interval of a little less than a month from the first outburst of the Nova, we obtained 24 plates of the spectra with an objective-prism of aperture 18 cm. attached to an equatorial. The dispersion was such that the distance between $H\beta$ and $H\delta$ was 6.0 mm. The first four plates Nos. 301 to 304 were secured by Prof. M. Matuyama and Kudara during the absence of two of the writers, while the other plates were obtained mainly by Yamamoto and Ueta. The measurements and reductions were, however, done, exclusively, by Yamamoto. Most of the plates used in this work were the Ilford Special Rapid plates, but several times those which were sensitive to red light were used through the kindness of Prof. M. Kimura of the Physical Institute. Approximate wave-lengths were obtained by the Hartmann-Cornu formula, assuming the centres of bright $H\alpha$, $H\beta$, $H\gamma$, and $H\delta$ as standards.

June 14, Plate	301,	taken	at	$11^{h}.6$	(Local Mean Time[1])
,,	302,	,,	,,	12.3	,,
,,	303,	,,	,,	12.9	,,
,,	304,	,,	,,	13,2	,,

In these plates the guidings and the focus were not very good, which are much to be regretted in view of the great activity of the Nova. Yet, we may, to some extent, get a general idea of the apparition through these plates. The continuous spectrum is fairly strong and extends very far to the ultraviolet: the total lengths of the spectra on the plates are some 11 mm. long, the least refrangible limit being at about 5030 A. On these grounds, the bright hydrogen lines (bands) are most intense, of which four lines are clearly seen, each having a trace of dark absorption on its violet side. Plate 301 is faint, but in Plates 302–304 we see many other complexities of brightenings and darkenings. Beyond $H\beta$, two maxima λ 5016 and λ 4920 are seen, while between $H\beta$ and $H\gamma$ there are at least two brightenings, of which the less refrangible one corresponds to λ 463 which is sharply bordered by an absorption on its violet side, the other is a little broad and diffuse and might correspond to Helium λ 4472. Two more brightenings are suspected between $H\gamma$ and $H\delta$.

June 28, at 10^{h} (Local Mean Time), only one plate, No. 305, was taken, which was, however, very ill guided and several exposures were superposed upon each other; hence a very rough survey only can be allowed. In this the continuous spectrum is not strong relatively to line-emissions, of which only four are visible, each being very strong and sharp This appearance just corresponds and, at the same time, justifies the minimum phase in the light-curve. Of emissions, the three are $H\beta$, $H\gamma$, and $H\delta$, while the remaining one is λ 4639 whose sharpness is just like the other members; this should rather be a peculiar fact, for its usual appearances are particularly broad as may be seen in the following. The intensity of λ 4639 is almost equal to that of $H\gamma$. $H\varepsilon$ is faintly glimpsed probably because of being out of focus. One more emission λ 4485 is suspected.

1 $9^{h}\ 3^{m}$ earlier than Greenw. M.T.

July 1, Plate 306,	at 14ʰ (L.M.T.)			
„ 307,	„ „	„		
„ 308,	„ „	„		
„ 309,	„ „	„	Wratten-W. Panchrom.	Plate.
„ 310,	„ 15	„	Ilford Red-Sensitive	Plate.
„ 311,	„ „	„	„ „ „	„
„ 312,	„ „	„		

On four ordinary (Ilford Special Rapid) plates, we see a well-developed spectrum of Nova. Now the bright lines are most characteristic in their broadness and intensity. Not a dark absorption is perceptible, which was an indispensable accompaniment to each of the line-emissions on our first day. Five members of hydrogen are seen, $H\beta$ being the most strong. The structure of λ 4635 is interesting: its maximum intensity is a little stronger than $H\delta$, but its width is quite astonishing. There are double grades of blackening on the plates: the widest limits include an interval of about 154 Å, on which a more intense band of the width of ca. 55 Å is centrally placed, the maximum intensity being on their common center. See the accompanying diagram. Other emissions in Plate 306 are:

λ 5016	Helium line, intensity equals $H\delta$.
492	very weak, weaker than $H\varepsilon$.
470	only suspected, broad.
4471	Helium line, broad and diffuse.
428	broad and faint.

An absorption at 4059 is glimpsed.

General features of the Plates 307, 308, and 312 are the same as in the preceding, except that an emission at λ 441 is suspected on Pl. 307.

Panchromatic and Red-Sensitive plates were equally under-exposed, on which, therefore, only six spots are impressed corresponding to $H\alpha$, $H\beta$, λ 463, λ 447, $H\gamma$, and $H\delta$.

July 2, Plate 313, at 14ʰ (L.M.T.)
„ 314. „ „ „

The continuous background is a little more intense, and considerably developed toward the ultraviolet. Hydrogen lines are bright and strong, of which five members, $H\beta$ to $H\zeta$ are seen

(Hβ being the brightest), and *not* appended by dark components. Beyond Hδ is generally diffuse, probably because of λ 4059. And a definite absorption is found between Hε and Hζ, corresponding to the wave-length λ 394.

Following emissions are found, besides,

λ 5016	Helium line, clear and definite.
4910	faint.
483	faint and diffuse.
4636	very broad and peculiar, see below.
4519	very faint.
4471	Helium line, diffuse.
4254	diffuse.

The band 4636 is again peculiar. Its extraordinary broad range, amounting to about 159 Å, occupies more than a quarter of the space between Hβ and Hγ. The central part of condensation is pretty sharp and strong.

July 3, 13^h $30.^m$ An Ilford Red-sensitive Plate, (No. 315), was exposed, but unfortunately the exposure was somewhat over-estimated. But a careful examination shows the following eight emission lines:

Hα,	Hβ,	λ 479,	λ 470,	λ 463,	λ 447,	Hγ,	and Hδ.
100	30	4	3	10	3	25	4

the second row being the respective intensities.

July 7, Plate 316, at $12.^h5$ (L.M T.) Fair Spectrum!

„	317,	„ 14.4	„
„	318,	„ 14.4	„
„	319,	„ 14.5	„

Moderate continuous spectrum upon which many bright and *dark* lines are clearly shown, Hδ being at the best focus. Ultraviolet extensions are again well demonstrated.

The intensities of the hydrogen lines are strong in general, of which Hβ is the most intense, gradually becoming weakened toward the violet; six in all, from Hβ to Hη, are easily visible. Amongst others, the Hδ shows the most delicate and complex structure in that the double grade brightenings are the typical kind of appearance: the wider, and therefore the weaker, emission extends for a range of about 90 Å, while the narrower and stronger portion takes 45 Å in just the central part of the former kind. Every boundary is always sharp.

Other emission lines are:

λ 5016 faint, } weak because of out of focus.
4920 suspected, }

4633 very broad and diffuse, intensity almost equals that of Hδ, attended by an absorption on its violet side. Width is about 151 Å, showing a central intensification probably due to the effect of the double-grade peculiarity.

455 diffuse.

4472 faint and diffuse.

400 fine emission.

299 weak and broad.

Moreover, at least the following three absorption lines are seen:

λ 4609 clear, this has been already mentioned in the notes on the emission λ 4633.

4059 very fine and strong, sharp on both sides.

3869 darkening between Hζ and Hη.

July 9, Plate 320, at $13^{h}.1$ (L.M.T.)
" 321, " 13.4 "
" 322, " " "
" 323, " 13.6 "
" 324, " " "

Good adjustments of the mechanical parts of the instrument furnished here the richest harvest of these spectroscopic results. The following descriptions are not sufficient for full details, which might be supplemented, to some extent, by the accompanying intensity-curves.

The continuous spectrum is moderate, whose most radiative efficiency lies in the region of Hγ. Hydrogen emissions are as intense as the preceding, intensities being highest in Hβ and gradually weakening toward the violet. The peculiar complexities in Hδ are generally the same as those on July 7; besides, a similar characteristic can be observed in each of the other members, Hβ and Hγ, in which, however, a close reproduction of Hδ cannot be expected, but the one-sided wings are seen.

Among other emissions are the following:

λ 5016, 4924 } somewhat obscure.

4772 faint.

4635 very complex, showing several grades toward the central concentration; the widest limits include a range of about 163 Å; the central maximum scarcely exceeds Hδ in intensity.

4535

4471 broad and diffuse.

4385 faint

4286 faint

420 faint

4144 faint

4040 faint

Dark absorptions are:

4570 clear

4501

4470

4372

4305

421

4134

4060 strong and clear

General Remarks on Spectra.

It is clearly shown in these plates that the period covered by them is the "Bright-Line Stage" of the Nova, and that the Hydrogen emissions especially are the most active factors among others. Not only the intensities, but their widths are very great: the following values are the most probable means throughout the whole period, except the first day,

Hβ,	width	83 Å
Hγ,	,,	52 ,,
Hδ,	,,	46 ,,

These great values may, possibly, not be explained, even if they should be real, unless we do not assume an extraordinary density and pressure prevailing in the stellar atmosphere.

The most enigmatical behavior of the broad emission band λ 4635 is, rather, to be considered as "usual" in historical Novae, though its origin and the mechanism have not yet been delineated by any laboratory method. It seems, however, to us that some physical relations, or so to speak, analogies, would exist between it and the Wolf-Rayet blue bands λ 4688 and λ 4652, which were partly treated, some time ago, by A. Fowler to a great success of spectroscopy in its extraordinary instrumental arrangements. Helium and Hydrogen which play solely the active rôle in these stages of Novae must here also be connected with in a sense.

Helium shows a gradual development toward emission in this period of our observations, but always decidedly more weak and diffuse than Hydrogen, which suggests a transition to a more nebular stage.

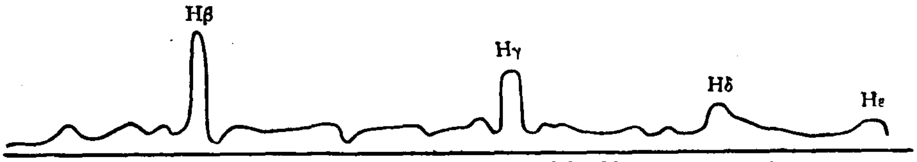
The peculiar absorption 4059 gradually attained a well marked development toward our later dates, which have not yet been sufficient, however, to show its daily changes in full, owing to our lack of instrumental and meteorological conditions.

NOTES *to the accompanying Plate of Spectrographic Intensity-Curves of Nova Aquilae No. 3.*——The first of these were drawn by Prof. Matuyama and Kudara in the night of June 14, 1918, who looked through the telescope at the visual appearances of the objective-prism spectrum. The others were drawn by Yamamoto who examined carefully the photographic spectra on each plate and roughly estimated their relative intensities of blackening affected.

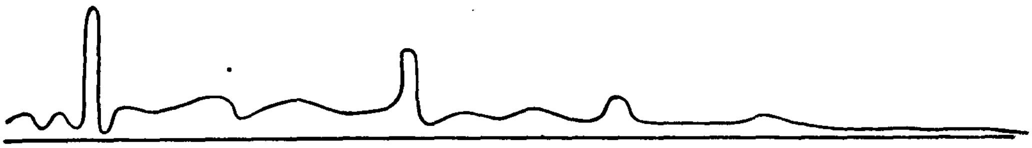
Hearty thanks are due to Prof. M. Matuyama, by whose collaboration our partial data were obtained; to Prof. M. Kimura, by whose kindness our spectroscopic work was enriched to a wider range; and to Professors S. Shinjo and T. Shida, under whose constant supervision the above results were freely reached.

Imperial University Observatory, Kyoto.
April 28, 1919.

Plate I.

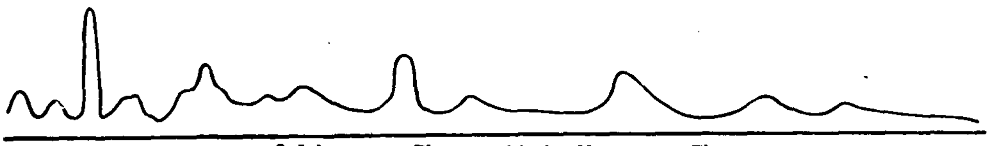


1918 June 14. Visual, by Matsuyama & Kudara.



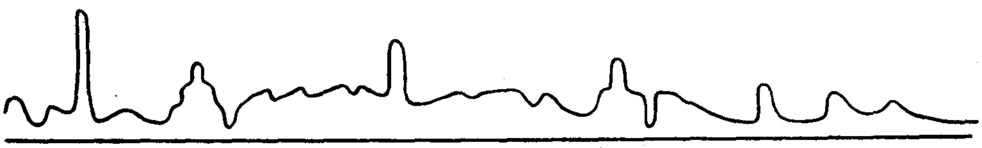
1918 June 14. Photographic, by Yamamoto, Pl. 302.

1918 July 1. Photographic, by Yamamoto, Pl. 306.



1918 July 2. Photographic, by Yamamoto, Pl. 313.

1918 July 7. Photographic, by Yamamoto, Pl. 316.



1918 July 9. Photographic, by Yamamoto, Pl. 324.

Plate II.

Spectra of the Nova Aquilae No. 3, taken with a 7-in Objective-Prism. (Enlarged to 5–6 times.)

Fig. 1. June 14th. Pl. 302.

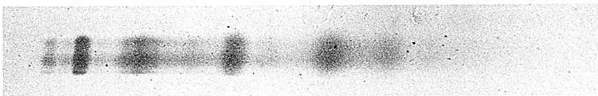


Fig. 2. July 2nd. Pl. 313.

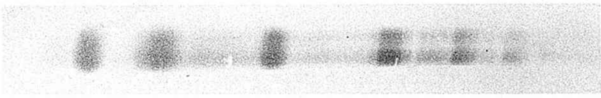


Fig. 3. July 7th. Pl. 318.

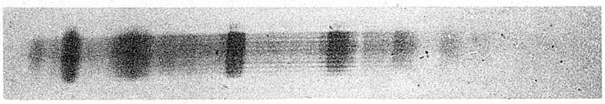


Fig. 4. July 9th. Pl. 324.