Observation of Meteors for the Years 1935-1938 in New Zealand.

FOURTH REPORT OF THE METEOR SECTION OF THE N.Z. ASTRONOMICAL SOCIETY, INC.

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This report, covering the work performed in the four-year period 1935–38, is the fourth published by the Meteor Section of the New Zealand Astronomical Society, Inc., the earlier reports having been published in *Transactions of the New Zealand Institute*, vol. 60, p. 448, and vol. 63, p. 443, and *Transactions of the Royal Society of New Zealand*, vol. 66, p. 60. These reports have been reprinted and distributed as Bulletins nos. 5, 21 and 24 of the New Zealand Astronomical Society.

The attention of members of the Meteor Section has been concentrated mainly on the ordinary routine of recording meteors in extended watches for the purpose of determining centres of radiation and rates of activity. The work has proceeded very slowly, because the personnel has always been small, but the experience gained by members over the years has resulted in a very satisfactory standard of accuracy being attained.

As a result of this steady endeavour on the part of a few, the total meteors recorded by the section during the twelve years of its existence is 13,126, from which over one thousand radiants have been deduced. While this figure is no more than other meteor groups can produce in a single year, it must be remembered that the New Zealand work is being performed in the southern celestial hemisphere, where no other group or individual has observed for more than a short period. The data we are collecting are therefore of particular value in many ways.

A stage has now been reached when the section must gain fresh observers if the valuable work is to continue. One of our most energetic members, Mr. M. Geddes, has now become Director of the new Carter Observatory, upon which his friends in the Meteor Section most heartily congratulate him. This appointment robs the section of a very active worker. Similarly, our work has now reached a stage where the writer must concentrate more upon the production of articles covering many phases of the work achieved, together with theoretical papers, and will probably in the next year or so be able to find time only for special researches as the need arises. It is to be hoped, therefore, that members of the Society who are not actively observing will step into the breach and help to continue the work.

The following table summarises the work performed during the period covered by the report:—

Observer.	Nights.	Time.	Meteors.
		h. m.	
Bateson (B)	1	2 35	18
Geddes (G)	39	74 4	1,162
Fairbrother (F)	34	73 44	874
McIntosh (M)	33	40 15	940
Total	107	190 38	2,994

Reports of telescopic meteors were received from members of the New Zealand Astronomical Society during the period as follows:—Bateson, 3; Bryce, 1; Geddes, 22; McIntosh, 14; Morshead, 5; Smith, 15; Sofield, 1. Total, 61.

Details of fourteen bright fireballs have been collected from the public, most of which await investigation. (Unfortunately, although they contain several very interesting objects, publication cannot be achieved while more important meteoric topics are awaiting attention.) Large numbers of observations of isolated fireballs are also in hand, and my thanks are due to the Dominion Observatory, the Carter Observatory, and many individuals too numerous to mention, for making these reports available.

The seven papers published during the period by the Director are indicative of the results achieved by the Meteor Section to date. The Ephemeris of the Eta Aquarid Radiant (*Monthly Notices Royal Astron. Soc.*, 95, 7, 601; 1935, May), while tracing the day-to-day motion of this radiant, also demonstrated the accuracy which can be attained in visual meteor work, and is especially valuable at the present time while mathematicians are attempting to disparage the amateur meteor worker. The Index to Southern Meteor Showers (*Monthly Notices Royal Astron. Soc.*, 95, 8, 709; 1935, June) is particularly valuable to members of our Section in that it provides the first indication of what minor radiants may be expected at any time.

The Velocities of Meteor Streams (*Monthly Notices Royal Astron. Soc.*, 96, 7, 704; 1936, May), The Telescopic Determination of Meteor Radiants (*Journal Brit. Astron. Assoc.*, 46, 2, 73; 1935, Dec.), and Meteor Static (*Journal Brit. Astron. Assoc.*, 44, 3, 123; 1937, Jan.) open up new ground. In The Determination of the Real Paths of Fireballs (*Journ. R.A.S. Canada*, 32, 1, 1; 1938, Jan.) a complete method of dealing with large numbers of reports by inexperienced observers is published, I believe, for the first time in English. Finally, the first indication of the variation in the numbers of meteors throughout the year was given in a paper read at the Auckland sessions of the Australian and New Zealand Association for the Advancement of Science and later published in America (*Popular Astronomy*, 46, 9, 516; 1938, Nov.).

In the preparation of this report the existence of some radiants additional to those listed in the *Index to Southern Meteor Radiants* was disclosed. These are given in the following table:—

NEW RADIANTS.

No.	Duration.	Radiant.	No. of Radiants.	Name.
321	Aug. 30–Sept. 6 ..	13°— 9°	5	
		19 — 6		21 Cet.
322	Aug. 2–4	39 —16	3	Pi Cet.
323	April 17–25	200 —24	4	— Vir.
324	May 7	257 —13	2	Omricon Ser.
325	May 19–31	252 —20	7	Eta Oph.
		257 —24		
326	April 10–15	253 —53	4	Beta Ara.
		260 —50		
327	June 10–16	262 —35	2	Lambda Ser.
328	June 2–14	269 —33	7	Delta Sgr. ii.
		277 —35		
329	May 30–June 4 ..	285 —18	2	U Sgr.
330	June 2–16	284 —23	7	Lambda Sgr. i.
331	June 4–8	296 —25	3	Omega Sgr.
332	June 14–21	296 —36	2	— Sgr.
333	July 1–11	324 —15	4	Iota Aqr. i.
		330 —14		
334	July 10–11	332 —32	2	Mu PsA.
335	Aug. 13–20	330 — 9	3	Rho Aqr.
		338 — 4		
336	August 2	330 — 4	3	30 Aqr.
337	July 22–Aug. 1 ..	342 —32	6	Delta PsA.
		347 —32		
338	Aug. 2–10	344 —15	7	94 Aqr.
		356 —15		

In listing two accordances of observed radiants with the predicted radiants of periodic comets the remarks in the second report must be borne in mind. The publication of such agreements does not necessarily indicate that the meteors are definitely debris of the comets particularly named.

COMET ACCORDANCES.

Object.	Date.	Radiant.	Remarks.
Comet Schaumasse ..	Mar. 30	298.5°— 9.6°	Davidson.
Radiant 859	Apl. 3	294 —99	4/6 meteors.
Comet 1877 ii ..	Aug. 9	32.0 —18.5	Weiss.
Comet 1852 ii ..	Aug. 10	40.5 —13.5	Weiss.
Radiant 1000	Aug. 2	39.0 —17.5	4 meteors.

In the following table the details concerning the various observations are given in the manner usual to these reports. Apart from the date and time spent observing, from which the hourly rate is derived, a factor is estimated by each observer allowing for any hindrances to observing such as clouds or haze. With this factor the observed rate is corrected to a theoretical rate (column 8) for perfect observing conditions. The estimation of rates is not attempted in very short watches or where the factor is so small as to cast doubts upon the reliability of the corrected rate deduced.

Some interesting points can be gleaned from a perusal of this table, which can only be indicated here. Take, for example, the date, 1935, May 6. Observing about the same time, Fairbrother saw 14 meteors an hour in a clear sky, while McIntosh saw 26 an hour, also in clear sky. The difference between the rates can safely be ascribed to the inexperience of the former observer, who had just commenced working for the Section, and who apparently missed a number of the fainter meteors. The higher rates obtained by Geddes, on the other hand, when compared with those of McIntosh (both experienced observers) is an index to the difference between country and town observations.

DETAILS OF OBSERVATIONS.

N.Z.M.T.	Began. h. m.	Ended. h. m.	Total. m.	Meteors.	Rate.	Factor.	Cor. Rate.	Observer.	Station.	Remarks.
1935										
Jan. 5	22 23	23 33	60	2	2	1.0	2	G	NP	Clear; 10 m. gap.
26	20 40	22 16	61	7	7	0.6	12	G	NP	Passing cloud; 25 m. gap.
28	21 15	21 20	5	1	—	—	—	G	NP	Stopped by clouds.
29	20 46	23 35	229	53	14	1.0	14	G	NP	Clear.
Feb. 1-2	23 00	02 05	185	23	7	1.0	7	F	T	Clouds in south.
3	00 00	02 15	135	24	11	0.9	12	F	T	Clouds after 1.30.
4	00 00	01 05	65	7	7	0.9	12	F	T	Misty horizon.
Mar. 1-2	23 25	02 25	180	27	9	0.9	10	F	T	Haze in N.E.
30	01 30	02 31	61	5	5	1.0	5	F	T	Clear; moon 2½d.
31	00 00	02 00	120	21	10	1.0	10	F	T	Clear.
Apl. 4	02 20	04 20	120	33	16	1.0	16	M	A	Clear.
11-12	23 25	00 15	50	8	9	1.0	9	G	O	Clear.
12-13	23 40	02 00	140	25	11	1.0	11	F	T	Clear.
14	02 30	04 05	95	18	12	1.0	12	F	T	Clear.
May 1	(01 20	02 24)								
	(02 58	03 45)	179	24	8	—	—	G	O	Much cloud.
3	01 44	02 00	16	8	31	—	—	G	O	Passing cloud.
4	02 20	04 15	115	26	13	0.9	14	F	T	Slight haze.
4	02 48	04 20	92	32	22	0.8	28	M	A	Totally clouded 50 m.
6	01 00	04 45	225	53	14	1.0	14	F	T	Clear.
6	02 45	04 20	95	44	26	1.0	26	M	A	Clear.
7	03 31	05 10	120	62	31	1.0	31	M	A	Clear.
8	02 45	05 15	150	58	23	1.0	23	M	A	Clear.
9	03 58	04 43	45	25	33	1.0	33	M	A	Clear.
30-31	22 32	00 39	127	28	14	1.0	14	G	O	Clear.
June 2	01 15	03 16	121	26	13	1.0	13	F	T	Clear.
8	01 53	03 17	84	30	21	1.0	21	G	O	Clear.
July 4	02 55	04 30	95	20	12	1.0	12	M	A	Clear.
6	03 12	03 48	31	13	25	1.0	25	M	A	Misty; 5 m. gap.
7	00 15	03 00	165	39	14	1.0	14	F	T	Clear.
11	03 07	04 53	106	40	23	1.0	23	M	A	Clear.
11	22 05	24 00	115	7	3	0.6	5	F	T	Moon 10d.
12	03 16	04 40	84	26	22	1.0	22	M	A	Clear.
25	22 51	23 23	22	4	12	—	—	G	O	Half cloud; 10 m. gap.
27	02 00	03 06	66	21	19	0.8	24	F	T	Intermittent cloud.
27	03 30	03 56	26	23	30	—	—	M	A	Clear.
28	00 00	02 35	155	71	28	1.0	28	F	T	Clear.
28	01 12	02 36	84	40	28	1.0	28	M	A	Clear.
29	00 06	03 00	174	89	30	1.0	30	G	O	Clear.
30-31	23 40	01 35	115	53	28	1.0	28	F	T	Clear.

N.Z.M.T.	Began. h. m.	Ended. h. m.	Total. m.	Meteors.	Rate.	Factor.	Cor. Rate.	Observer.	Station.	Remarks.
Aug. 1	02 27	04 27	120	81	40	1.0	40	G	O	Clear.
1	02 30	03 31	61	33	33	1.0	33	M	A	Clear.
1	04 02	04 32	30	17	34	1.0	34	M	A	Clear.
2	22 30	23 50	80	27	20	1.0	20	F	T	Clear.
3	00 16	04 16	240	132	33	1.0	33	G	O	Clear.
3	02 40	04 15	93	46	30	1.0	30	M	A	Clear.
7	01 33	02 45	72	32	27	0.9	30	G	O	Passing cloud.
8	00 45	02 45	120	27	13	0.8	17	F	T	Passing cloud.
10	02 30	04 00	90	27	18	1.0	18	F	T	Clear.
31	00 25	02 35	130	27	13	1.0	13	F	T	Clear.
Sept. 1	00 00	02 00	120	26	13	1.0	13	F	T	Clear.
1-2	23 00	01 10	130	26	12	1.0	12	F	T	Clear.
3	00 00	02 20	140	28	12	1.0	12	F	T	Clear.
29	00 20	02 00	100	17	10	1.0	10	F	T	Clear.
Oct. 18-19	23 12	00 55	103	11	7	0.8	9	F	T	Passing cloud.
21	(02 35	03 06)								
	(03 22	03 30)	39	12	18	0.7	26	M	A	Clear; moon 22d.
Nov. 22-23	22 50	01 30	160	15	6	1.0	6	F	T	Clear.
27	00 00	02 15	135	24	11	1.0	11	F	T	Clear.
Dec. 22	22 20	23 20	60	11	11	1.0	11	G	NP	Clear.
26	02 25	02 57	32	10	19	0.7	27	G	NP	Dawn.
1936										
Feb. 26-27	23 07	00 33	86	18	12	1.0	12	G	O	Clear.
28-29	22 00	01 05	185	27	9	1.0	9	F	CI	Clear.
Ap. 17-18	(23 47	00 05)								
	(00 25	01 02)	55	11	12	1.0	12	G	E	Clear.
25	20 20	23 35	195	21	7	0.9	8	F	CI	Haze on horizon.
27	02 30	04 00	90	11	7	0.7	10	G	E	Fog and haze.
27	02 37	03 45	68	9	9	1.0	9	M	A	Clear.
28	02 30	04 35	125	26	13	1.0	13	G	E	Clear.
29	02 30	03 35	65	5	5	0.4	12	G	E	Very foggy.
June 16-17	23 04	00 44	100	33	20	1.0	20	G	E	Clear.
21-22	22 20	00 20	120	36	18	1.0	18	G	E	Clear.
22	22 23	22 57	34	3	6	0.9	6	G	E	Hazy.
Jul. 10-11	23 00	01 00	120	17	8	0.5	16	F	CI	Moon last quarter.
15	02 32	03 42	70	14	12	1.0	12	M	A	Clear.
16	02 30	02 50	20	3	6	—	—	M	A	Misty, then clouded.
16	21 45	23 52	127	27	13	1.0	13	F	CI	Clear.
16-17	23 00	00 09	69	19	17	1.0	17	G	E	Clear.
22-23	22 29	00 29	120	36	18	1.0	18	G	E	Clear.
23	03 07	04 45	98	30	18	1.0	18	M	A	Clear.
24	02 37	04 37	120	44	22	0.9	24	M	A	Fog ¼ time.
24-25	22 30	00 16	106	27	15	0.9	17	F	CI	Few passing clouds.
25	02 35	04 44	123	60	30	1.0	30	M	A	Clear.
29	02 31	04 41	130	73	34	1.0	34	M	A	Clear.
Oct. 17	02 20	02 54	34	11	19	0.9	21	M	A	Misty.
20	02 05	03 50	105	46	26	0.9	29	M	A	Misty cloud.
21	02 00	03 28	88	44	30	1.0	30	M	A	Clear.
1937										
May 28	17 53	19 08	75	14	11	0.6	18	G	C	Intermittent watch; cloud.
29	18 42	20 04	82	16	12	0.7	17	G	C	Passing cloud.
30	18 23	20 25	122	14	—	—	—	G	C	Considerable cloud.
31	20 10	21 40	90	19	12	0.9	13	G	C	Slight cloud.

N.Z.M.T.	Began. h. m.	Ended. h. m.	Total. m.	Meteors.	Rate.	Factor.	Cor. Rate.	Observer.	Station.	Remarks.
June 1	19 50	22 10	140	23	8	0.8	10	G	C	Passing cloud.
2	18 37	23 05	268	47	10	0.9	11	G	C	Passing cloud.
3-4	20 00	00 15	255	56	12	0.9	13	G	C	Passing cloud.
4	20 00	23 55	235	45	12	0.8	15	G	C	Passing cloud.
5-6	21 30	01 00	210	53	14	0.8	17	G	C	Passing cloud.
9	00 10	03 10	180	53	18	0.9	20	G	C	Passing cloud.
13-14	23 00	00 25	85	26	18	1.0	18	G	Ap	Clear.
June 14-15	22 15	00 35	140	35	15	0.9	17	G	Ap	Clear.
July 28 1938	20 33	21 40	67	7	6	0.2	—	G	SH	Through cloud gaps.
Feb. 9	02 53	03 53	60	13	13	1.0	13	M	A	Clear.
Mar. 2	02 00	03 30	90	14	9	1.0	9	M	A	Clear.
9	01 57	02 15	18	4	13	—	—	M	A	Clear.
May 7	00 25	02 55	150	27	10	1.0	10	F	Td	Clear.
7	03 15	05 00	105	27	15	1.0	15	F	Td	Clear.
8	02 40	04 50	130	41	19	1.0	19	M	A	Clear.
June 3	02 42	03 52	70	13	12	1.0	12	M	A	Clear.
Oct. 19	01 50	02 00	10	2	—	—	—	M	A	Clear, then clouded.
20	01 50	02 00	10	2	—	—	—	M	A	Clear, then clouded.
Dec. 17-18	23 15	01 50	155	18	7	0.8	9	B	W	Some cloud.

In the column "Observer" the various observers are denoted as follows: Bateson (B), Fairbrother (F), Geddes (G), and McIntosh (M). The observing stations also are abbreviated: Auckland (A), Apia, Samoa (Ap), Canton Island, N.Z. Solar Eclipse Expedition's site (C), Chatham Island (CI), Ermedale, Southland (E), New Plymouth, Taranaki (NP), Otekura, Southland (O), South Hillend, Southland (SH), Tadmor, Nelson (T), Taradale, Hawke's Bay (Td), Wellington (W).

The list of radiants which follows is in the same form as that used in the previous reports, being arranged in order of date (irrespective of year), at least four meteors observed on one night and intersecting within a circle 2 degrees in diameter, or five meteors on adjacent nights, or one stationary meteor, being required to form a radiant.

Criticism has been levelled at the number of radiants in earlier reports based on very few meteors. The Director is reluctant to abandon these, in a practically virgin field such as we are working in. Some consolation can be derived from the fact that 75 per cent. of the present list find confirmation in other radiants observed in New Zealand or elsewhere, which is indicated by naming the radiant in the "Remarks" column. Actually a portion of any radiant list must be erroneous, and the same faith cannot be placed in a list such as the present one as can be given to the *Index Catalogue* previously mentioned.

List of Radiant Points Observed.

No.	Date G.M.T.	Radiant. R.A.	Dec.	Mets.	Wt.	Obs.	L.	Remarks.
		°	°				°	
846	1935 Jan. 29.47	120.0	—63.8	5/6	G	G	219.3	
847	„ „ „	126.7	—15.0	4	G	G	„	
848	„ „ „	144.7	—23.0	4	G	G	„	Inc. 2 stationary
849	„ „ „	147.0	—57.0	4	G	G	„	NZ 853.
850	„ „ „	167.5	—42.0	8	G	G	„	
851	„ „ „	189.0	—35.5	5	G	G	„	NZ 611.
852	1935 Feb. 1-3c	206.0	—44.0	8	F	F	222.3	Diffuse. Mu Cen.

No	Date G.M.T.	Radiant. R.A. °	Dec. °	Mets.	Wt.	Obs.	L. °	Remarks.
853	1935 Feb. 3.57	144.5	—56.7	4/7	G	F	223.3	1 meteor Feb. 2. NZ 849;
854	1936 Feb. 26.51	242.0	—45.3	6	G	G	245.9	[BAA 153.
855	1938 Mar. 1.63	180.0	—18.5	5	G	M	249.7	Eta Cra.
856	1935 Apl. 3.66	190.0	— 6.0	3/5	F	M	282.1	D. 147, 3.
857	„ „ „	241.0	—41.5	4/5	G	M	„	
858	„ „ „	279.3	—34.5	4	G	M	„	Delta Sgr.
859	„ „ „	294	— 9	4/6	F	M	„	Comet Schaumasse.
860	1935 Apl. 12-13c	235.0	—34.5	4	G	F	291.0	NZ 269.
861	„ „ „	253.0	—53.5	4/6	F	F	„	Beta Ara.
862	„ „ „	282.5	—17.3	5	G	F	„	D. 226, 3.
863	1936 Apl. 17.37	201.5	—28.0	4	G	G	296.3	— Vir.
864	1936 Apl. 25.44	200.0	—15.5	5/6	G	F	304.1	? Alpha Vir.
865	„ „ „	201.0	—27.5	3/4	G	F	„	— Vir.
866	1936 Apl. 27.67	256.7	—20.3	3/4	F	G	306.3	1 meteor Apl. 26. NZ 632.
867	„ „ „	310.0	—31.5	5/7	G	G	„	? NZ 666.
868	„ „ „	333.5	—29.7	6	G	G	„	? NZ 663. Zeta PsA.
869	1935 Apl. 30.63	280.5	—64.0	4/5	G	G	308.5	
870	„ „ „	299.5	—53.0	4	G	G	„	
871	1935 May 3.66	262	—24	5	F	F	311.5	
872	„ „ „	284.5	—22.0	4/5	F	F	„	NZ 633, 639b.
873	„ „ „	340	— 3	3/4	P	F	„	
874	1935 May 3.67	335.0	— 2.0	13	G	M	„	Eta Aqr.
875	1935 May 5.64	251.0	—33.0	5	G	F	313.5	
876	„ „ „	336.5	— 1.0	10	G	F	„	Eta Aqr.
877	1935 May 5.67	279.5	—43.8	3/4	G	M	„	
878	„ „ „	292.5	+ 2.0	4	G	M	„	NZ 347; D. 230, 5.
879	„ „ „	336.5	— 0.6	12	G	M	„	Eta Aqr.
880	1938 May 6.63	319.5	—10.0	4/5	G	F	314.8	
881	„ „ „	321.0	+ 6.0	3/4	G	F	„	
882	„ „ „	338.0	— 2.0	9	G	F	„	Eta Aqr.
883	1935 May 6.69	239.0	—34.8	4/5	G	M	314.5	— Scr.
884	„ „ „	307.0	+11.5	4	G	M	„	1 meteor May 5. D. 236, 4.
885	„ „ „	338.0	0.0	32	G	M	„	Eta Aqr.
886	1938 May 7.68	337.5	— 1.0	21	G	M	315.8	Eta Aqr.
887	1935 May 7.69	268.0	—11.5	3/4	F	M	315.5	
888	„ „ „	339.0	+ 0.5	27	G	M	„	Eta Aqr.
889	1935 May 7-8c	325.0	—19.0	5/6	G	M	315.9	Gamma Cap.
890	1935 May 8.73	340.0	+ 1.0	14	G	M	316.4	Eta Aqr.
891	1935 May 30.50	245.5	—36.0	4/6	F	G	337 8	NZ 688.
892	„ „ „	283.7	—43.0	4	G	G	„	
893	„ „ „	285.0	—18.0	4/5	G	G	„	U Sgr.
894	„ „ „	336.5	—65.5	2	G	G	„	Inc. 1 stationary.
895	1937 May 31.39	234.5	+ 2.5	4	G	G	339.0	? Mu Ser. ii.
896	„ „ „	240.0	—24.3	5	G	G	„	Omega 2 Scr.
897	1937 June 1.40	267.5	—21.3	6	F	G	340.0	2 meteors May 31. 4 Sgr.
898	1935 June 1.61	330.3	—21.5	4	F	F	339.6	Poor in dec.
899	„ „ „	336.4	—37.5	5	G	F	„	NZ 930?
900	1937 June 2.39	244.5	—29.6	5	G	G	341.0	1 meteor June 1. 13 Scr.
901	„ „ „	252.5	—14.0	10	G	G	„	1 meteor June 1. Xi Oph.
902	„ „ „	254.5	+14.8	6	G	G	„	2 meteors June 1.
903	„ „ „	269.0	—33.5	4/6	F	G	„	Delta Sgr. ii.
904	„ „ „	269.5	—22.5	4/7	G	G	„	? Phi Sgr.
905	„ „ „	284.0	—29.0	5	F	G	„	3 meteors June 1. Lambda
906	1937 June 3.44	210.0	—26.5	6	F	G	341.9	[Sgr. i.
907	„ „ „	227.7	+10.7	4/6	P	G	„	
908	„ „ „	239.0	—12.7	6	G	G	„	Omega 2 Scr.?
909	„ „ „	253.5	—27.5	6	G	G	„	? Xi Oph. ii.
910	„ „ „	262.3	—11.0	4	G	G	„	Omicron Ser. i.
911	„ „ „	269.0	—32.5	6	G	G	„	Delta Sgr. ii.
912	„ „ „	293.5	—32.7	3	G	G	„	Meteors close to rad.
913	1937 June 4.44	244.5	—28.4	5	G	G	342.8	2 meteors June 3. 13 Scr.
914	„ „ „	248.5	—23.0	4	P	G	„	Omega 2 Scr.

No.	Date G.M.T.	Radiant. R.A. °	Dec. °	Mets.	Wt.	Obs.	L. °	Remarks.
915	„ „ „	258	—27	4	G	G	„	Xi Oph. ii.
916	„ „ „	271.5	—32.0	6/7	G	G	„	Delta Sgr. ii.
917	„ „ „	284.0	—19.0	4	P	G	„	U Sgr.
918	„ „ „	296.0	—26.5	5	G	G	„	Omega Sgr.
919	1937 June 5.49	230.0	—37.6	6	G	G	343.8	
920	„ „ „	245.5	—12.5	3/4	P	G	„	Omega 2 Scr.
921	„ „ „	250.5	—52.0	5/6	G	G	„	? Rho 2 Ara ii.
922	„ „ „	267.3	—11.4	5/8	F	G	„	Omicron Ser. i.
923	„ „ „	272.0	—47.5	5	G	G	„	
924	1935 June 7.63	267.5	—24.5	4	F	G	345.4	? Phi Sgr.
925	„ „ „	290.0	—25.0	4	G	G	„	Omega Sgr.
926	„ „ „	326.0	—42.5	4/6	G	G	„	
927	1937 June 8.59	296.5	—21.3	9	G	G	346.8	Inc. 1 stat'n'ry. Omega Sgr.
928	„ „ „	310.0	— 9.0	4	P	G	„	
929	„ „ „	323.0	—20.5	4/5	G	G	„	
930	„ „ „	335.5	—32.0	4	G	G	„	NZ 899?
931	1937 June 13.51	279.5	—21.0	3/5	P	G	351.7	Diffuse. Lambda Sgr. ii.
932	„ „ „	286.5	—17.5	5	G	G	„	? Rho 1 Sgr.
933	„ „ „	294.0	+ 4.0	4	G	G	„	NZ 937; D. 230, 7.
934	1937 June 14.50	266.0	—13.0	8	G	G	352.7	Omicron Ser. i.
935	„ „ „	283.5	—21.5	6	G	G	„	Lambda Sgr. i.
936	„ „ „	295.0	—36.5	5/6	G	G	„	— Sgr.
937	„ „ „	296.0	+ 4.0	4	G	G	„	NZ 933; D. 230, 7.
938	1936 June 16.52	57.0	—64.0	1	G	G	354.8	Stationary meteor.
939	„ „ „	256.0	—45.3	5/6	G	G	„	
940	„ „ „	263.0	—33.5	4/6	F	G	„	Lambda Scr.
941	„ „ „	290.0	—26.5	4	G	G	„	Chi 1 Sgr.
942	1936 June 21.49	273.0	—34.0	6/7	G	G	359.7	? Lambda Sgr. iii.
943	„ „ „	297.0	—35.0	5	G	G	„	— Sgr.
944	1935 July 3.67	312.3	—10.5	3/4	F	M	10.8	Tau 2 Cap.
945	1935 July 5.67	322.0	—17.5	3/4	F	M	12.8	Iota Aqr.
946	„ „ „	338.0	—61.0	4	G	M	„	
947	1935 July 6.59	284.0	—26.0	4	F	F	13.7	Psi Sgr. ii.
948	„ „ „	302.7	—10.5	5	G	F	„	— Aql (S.I.C. 237).
949	„ „ „	310.5	— 4.5	3/4	G	F	„	? Alpha Cap. i.
950	„ „ „	336.0	—33.5	5	G	F	„	— PsA (S.I.C. 282).
951	1935 July 10.69	331.5	—32.5	7/9	G	M	17.6	Mu PsA.
952	1935 July 11.69	332.0	—31.5	12	G	M	18.6	Mu PsA.
953	1936 July 16.47	298.7	—24.2	5	G	F	23.9	53 Sgr.
954	1936 July 22.47	307.6	—30.0	4/6	G	G	29.8	? — Cap. (S.I.C. 250).
955	„ „ „	317.0	—23.0	4	G	G	„	Eta Cap.
956	1936 July 22.69	321.7	— 4.3	4/5	G	M	30.0	— Aqr. (S.I.C. 262).
957	„ „ „	342.3	—32.4	5/6	G	M	„	Alpha PsA.
958	„ „ „	347.6	+ 4.0	3/4	F	M	„	D. 268, 5.
959	1936 July 23.67	23.0	—30.0	5/6	G	M	31.0	Inc. 1 meteor July 24.
960	„ „ „	267.0	—64.4	2/3	G	M	„	2 meteors close rad.
961	„ „ „	338.5	—32.0	6/7	G	M	„	3 meteors July 24. Beta
962	1936 July 24.67	33.8	+ 7.7	4	G	M	32.0	[PsA. ii.
963	„ „ „	309.0	— 9.5	3/4	G	M	„	Beta Cap. ii.
964	„ „ „	325.0	—24.0	3/4	P	M	„	— PsA. (S.I.C. 266).
965	„ „ „	330.0	—16.5	6/8	G	M	„	2 meteors July 23. Iota
966	„ „ „	338.4	—17.1	5/6	G	M	„	Delta Aqr. [Aqr. ii.
967	„ „ „	351.5	—11.5	6/7	G	M	„	Beta Cet. iv.
968	1935 July 26.68	339.3	—17.3	9	G	M	33.0	Delta Aqr.
969	1935 July 27.66	311.5	—10.0	3/4	P	M	34.0	Beta Cap. ii.
970	„ „ „	340.0	—17.0	15	G	M	„	Delta Aqr.
971	1935 July 27.57	314.5	—20.5	4/5	G	F	33.9	Eta Cap.
972	„ „ „	337.0	— 9.0	5	G	F	„	Doubtful. 70 Aqr.
973	„ „ „	342.7	—18.0	4	F	F	„	Delta Aqr.
974	„ „ „	343	—32	4/5	P	F	„	Diffuse. Alpha PsA.
975	1935 July 28.59	24	—65	4/5	F	G	34.9	
976	„ „ „	330.0	—19.5	6	G	G	„	Iota Aqr. ii.

No.	Date G.M.T.			Radiant. R.A. °	Dec. °	Mets.	Wt.	Obs.	L. °	Remarks.
977	„	„	„	342.0	—17.0	12	P	G	„	Diffuse. Delta Aqr.
978	„	„	„	343.0	—31.0	17	G	G	„	Diffuse. Alpha PsA.
979	1936	July	28.67	15.0	—50.0	4/5	G	M	35.9	
980	„	„	„	31.5	—49.5	3/4	F	M	„	
981	„	„	„	319.8	—20.7	3/6	F	M	„	Eta Cap.
982	„	„	„	339.0	—17.0	14	G	M	„	Delta Aqr.
983	„	„	„	346.0	—58.0	7	F	M	„	Gamma Tuc.
984	1935	July	30.55	343.5	—15.0	12	F	F	36.8	Diffuse. Delta Aqr.
985	1935	July	31.66	9.0	—19.0	5/7	F	G	37.9	Beta Cet. iii.
986	„	„	„	20.0	+ 5.0	5	G	G	„	D. 19, 1.
987	„	„	„	33.0	—31.0	4	G	G	„	— Phe (S.I.C. 22).
988	„	„	„	342.7	—15.5	20	G	G	„	Delta Aqr.
989	„	„	„	344.0	—29.5	8	P	G	„	Alpha PsA.
990	1935	July	31.67	34.0	— 2.5	6/8	G	M	37.9	75 Cet.
991	„	„	„	50.0	—34.0	4	F	M	„	— For. (S.I.C. 36).
992	„	„	„	344.0	—15.0	6/8	G	M	„	Delta Aqr.
993	„	„	„	352.0	—15.5	5	G	M	„	Beta Cet. iv.
994	1935	Aug.	2.49	344.0	—15.0	4	P	F	39.7	? Delta Aqr.
995	1935	Aug.	2.62	6.5	—19.5	7	P	G	39.8	Beta Cet. iii.
996	„	„	„	45.0	—69.0	8	G	G	„	
997	„	„	„	324.0	—17.5	5/6	G	G	„	Delta Cap.
998	„	„	„	343.5	—30.5	11	G	G	„	Alpha PsA.
999	„	„	„	345.5	—15.0	24	G	G	„	Delta Aqr.
1000	1935	Aug.	2.67	39.0	—17.5	4	P	M	39.9	Diffuse. Pi Cet.
1001	„	„	„	66.0	—30.0	3/4	P	M	„	[Comet 1877. ii.
1002	„	„	„	303.0	—15.5	4	G	M	„	? Alpha Cap. ii.
1003	„	„	„	337.5	—29.0	5	F	M	„	Diffuse. Alpha PsA.
1004	„	„	„	345.6	—15.0	8	G	M	„	Delta Aqr.
1005	1935	Aug.	6.61	6.5	—28.5	5/6	G	G	43.7	Alpha Scl.
1006	„	„	„	28.0	—29.5	4	G	G	„	
1007	„	„	„	332.0	—32.0	4/6	G	G	„	? Alpha PsA.
1008	„	„	„	351.0	— 4.5	4	G	G	„	14 Psc.
1009	1935	Aug.	30.59	13.5	— 9.5	4	G	F	67.1	1 meteor Aug. 31. 21 Cet.
1010	„	„	„	339.0	— 5.5	5	G	F	„	Ditto. ? Zeta Aqr. ii.
1011	1935	Aug.	31.56	5.0	— 4.3	4	G	F	68.1	Cet.
1012	1935	Sept.	1-2c	13.5	— 9.5	5/6	G	F	69.6	21 Cet.
1013	„	„	„	16.5	—17.7	4	G	F	„	
1014	„	„	„	27.0	— 5.0	7/8	G	F	„	
1015	1936	Oct.	19.64	80.0	+17.5	3/4	F	M	116.9	D. 69, 11.
1016	„	„	„	91.5	+14.6	13	G	M	„	Ori.
1017	„	„	„	97.0	+17.0	6	G	M	„	D. 79, 6.
1018	1936	Oct.	20.63	92.6	+14.5	22	G	M	117.9	Ori.
1019	1935	Oct.	20.65	86.7	+15.0	5/6	G	M	117.1	Ori.
1020	1935	Nov.	26.57	132.0	—58.0	5/6	F	F	153.8	
1021	1938	Dec.	17.54	97.0	+21.0	1	F	B	175.3	Stationary meteor.

In the "Remarks" column, D refers to Denning's *General Catalogue of Meteor Radiants*, the first figures to the group, the final ones to the radiant number; BAA to the radiants of the British Astronomical Association; numbers with the initials NZ prefixed refer to radiants in reports of the Meteor Section already published, while S.I.C. refers to centres of radiation published in the *Southern Index Catalogue*. In all cases where the radiants are named, other radiants have been found confirming those now published.

The Director wishes to express his thanks to all the observers mentioned in this and preceding reports, by whose assistance the Meteor Section has accumulated an important mass of data, and looks forward to their continued co-operation in the future.

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