KODAIKANAL SOLAR, GEOMAGNETIC AND IONOSPHERIC DATA (JULY—SEPTEMBER 1958)

Curves showing (a) Kodaikanal daily relative sunspot numbers, (b) daily areas of calcium prominences and (c) daily areas of H-alpha dark markings are given on page 96. Tables 1 to 4 below summarise the data on solar and geomagnetic phenomena. The hourly median values of critical frequency and virtual height for the ionospheric layers are given in Table 5. A diagram showing the times of rising and setting of the sun and planets at Kodaikanal for 1959 is given in plate facing page 96.

TABLE 1

Prominent sunspot groups

Kodaikanal serial No. of spotgroup	Mean latitude	Date of central meridian passage	Total area (millionths of the Sun's visible hemisphere at central meridian passage)
11063	08° N	Jul 18	1109*
11076	15° S	Jul 27	2487**
11100	14° S	Aug 12	997†
11123	08° S	Aug 31	909‡
11155	17° S	Sep 19	1386

*As measured on 17 July

** As measured on 28 July

†As measured on 14 August

‡The spot increased in area after central meridian passage

TABLE 2

Solar Flares

Date	Time in GMT						Co-ordinates		Importance	H-alpha line width	Remarks
	Beg.		Max.		End.		Mean latitude	Mean longitude			
	h	*m*	*h*	*m*	*h*	*m*				Å	
July 26	02	05	02	09	02	22	15° S	04° W	1	1·6	Observed in spectro-helioscope

TABLE 3

Sudden disappearance of prominences of H-alpha dark markings

No sudden disappearance of prominences or H-alpha dark marking was observed

TABLE 4

Principal magnetic storms

Greenwich date 1958	Storm-time GMT of beginning		GMT of ending[1]		Sudden commencement Type[2]	Amplitude[3]			C-figure degree of activity[4]	Maximal activity Greenwich day	Ranges		
						D	*H*	*Z*			*D*	*H*	*Z*
	h	*m*	*d*	*h*		′	γ	γ			′	γ	γ
Jul 8	07	51	9	18	s.c.	4	176	58	s	8	17	710	131
Jul 21	16	36	22	14	s.c.	1	66	29	m	21	8	132	40
Aug 17	06	18	18	13	s.c.	2	90	31	ms	17	13	382	104
Aug 22	02	29	22	20	s.c.	2	68	25	m	22	4	163	69
Aug 24	01	38	25	15	s.c.	1	52	23	ms	24	8	348	75
Aug 27	03	01	27	22	s.c.	1	46	12	m	27	8	187	115
Sep 3	08	38	5	17	s.c.	2	61	24	s	4	11	532	92
Sep 16	09	25	17	10	s.c.	2	80	27	m	16	8	237	52
Sep 25	04	09	26	10	s.c.	2	76	25	ms	25	8	373	58

The following symbols and conventions have been used according to recognised practice—

1. Approximate time of ending of storm construed as the time of cessation of reasonably marked disturbance movements in the traces

2. s.c. = sudden commencement ... = gradual commencement

3. Signs of amplitudes of *D* and *Z* taken algebraically;
   (*D* — reckoned negative being westerly)
   (*Z* — reckoned positive being vertically downwards)

4. Storm described by three degrees of activity;
   m — for moderate (when range is less than 250 γ)
   ms — for moderately severe (when range is between 251 γ and 400 γ)
   s — for severe (when range is above 400 γ)

TABLE 5

Beginning from January 1952, systematic ionospheric observations are being made at Kodaikanal with the Automatic Multi-frequency Ionosphere Recorder (Type C-3) made by the National Bureau of Standards, U.S.A. The general electrical characteristics of the instruments are given below—

(*a*) Supply voltage—90 to 260 volts AC single phase

(*b*) Supply frequency—50 to 60 cps

(*c*) Power load—approximately 30 amperes at 115 volts

(*d*) Pulse recurrence frequency—from 10 to 90 pps

(*e*) Frequency sweep time—7½, 15 or 30 seconds and 30, 60 or 120 seconds

(*f*) Frequency sweep range—1 to 25 megacycles

(*g*) Frequency sweep interval—5, 15, 30 or 60 minutes

(*h*) Height ranges—0-500, 0-1000, 0-4000 kilometres

(*i*) Peak-pulse power—approximately 10 kilowatts

Ionospheric data (Median values)

Kodaikanal (10·2°N, 77·5°E) July 1958

Time (hrs)	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000) F2
00		8·3	340				4·0	2·60
01		8·4	320				4·0	2·60
02		7·4	305				3·2	2·65
03		6·8	265				..	2·85
04		7·4	240				..	3·15
05		5·6	220				..	3·20
06		7·6	270		120	2·2	2·1	2·95
07	..	10·3	240	..	110	2·9	7·0	2·85
08	..	11·3	230	..	105	3·5	9·2	2·60
09	..	11·8	220	..	105	..	10·0	2·30
10	..	11·6	210	..	..	..	11·2	2·15
11	..	11·0	205	..	..	..	11·4	2·15
12	..	10·5	200	..	..	..	11·5	2·10
13	..	10·5	200	..	..	..	11·2	2·10
14	..	10·8	210	..	110	..	11·1	2·10
15	..	11·1	220	..	110	..	11·0	2·15
16	..	11·3	230	..	110	3·4	8·7	2·20
17	..	11·6	255	..	115	2·9	7·8	2·25
18		11·6	285				6·0	2·25
19		10·9	365				3·6	2·20
20		9·6	400				4·4	2·15
21		U9·4	400				3·6	U2·20
22		9·4	390				3·6	2·45
23		U9·3	375				4·2	U2·50

Ionospheric data (Median values)

Kodaikanal (10·2°N, 77·5°E) August 1958

Time (hrs)	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000) F2
00		10·8	280				5·0	2·75
01		10·1	260				4·6	2·85
02		9·6	255				..	2·85
03		9·4	240				..	2·90
04		8·4	225				..	3·10
05		6·8	220				..	3·25
06	..	7·8	270	..	..	..	3·3	2·90
07	..	10·6	245	..	110	3·1	8·2	2·75
08	..	11·7	225	..	110	..	10·0	2·50
09	..	12·0	220	..	110	..	10·8	2·25
10	..	11·2	210	..	..	..	11·4	2·15
11	..	11·0	210	..	..	..	11·5	2·15
12	..	10·8	210	..	..	..	11·4	2·05
13	..	10·8	205	..	..	..	11·4	2·05
14	..	10·9	210	..	110	..	11·4	2·05
15	..	10·8	220	..	110	..	11·0	2·05
16	..	10·8	235	..	110	..	9·2	2·10
17	..	11·0	250	..	115	..	8·0	2·15
18		11·1	295				7·0	2·20
19		10·0	400				4·0	2·05
20		U 9·0	420				..	U2·05
21		9·8	380				3·4	2·25
22		10·3	355				3·6	2·35
23		U10·6	305				4·6	U2·60

Kodaikanal (10·2°N, 77·5°E) September 1958

00		11·6	260				..	2·85
01		U11·1	240				2·8	U2·85
02		9·8	240				..	2·90
03		8·7	230				..	3·00
04		8·0	230				..	3·10
05		5·8	220				..	3·15
06	..	7·9	265	..	..	..	5·7	2·95
07	..	11·3	240	..	115	3·0	5·0	2·85
08	..	13·0	230	..	110	..	9·7	2·50
09	..	13·3	220	..	110	..	10·8	2·20
10	..	12·6	220	..	..	..	11·6	2·15
11	..	12·2	215	..	..	..	11·8	2·15
12	..	12·0	215	..	..	..	11·4	2·10
13	..	12·5	215	..	..	..	11·4	2·05
14	..	12·8	220	..	110	..	11·0	2·10
15	..	12·9	225	..	115	..	10·6	2·10
16	..	12·8	245	..	115	..	8·6	2·15
17	..	12·6	265	..	120	..	7·6	2·10
18		12·0	320				..	2·05
19		U10·6	465				..	U2·00
20		U10·5	U430				..	2·05
21		..	U360				..	..
22		U12·7	320				..	U2·60
23		12·8	285				4·3	2·80

Time : 75·0°E
Sweep : 1·0 Mc. to 25·0 Mc. in 27 seconds

Kodaikanal Observatory, Kodaikanal
31 October 1958

A. K. DAS
Deputy Director General of Observatories

The symbols and terminology used are in accordance with the recommendations of the Special Committee on World-wide Ionospheric Soundings to the U.R.S.I./A.G.I. in its first report (Brussels, 2 September 1956)

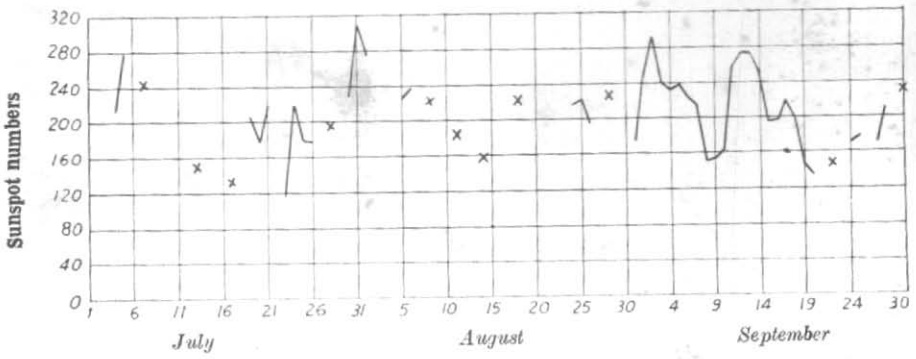


Fig. 1 (a). Kodaikanal daily relative sunspot numbers

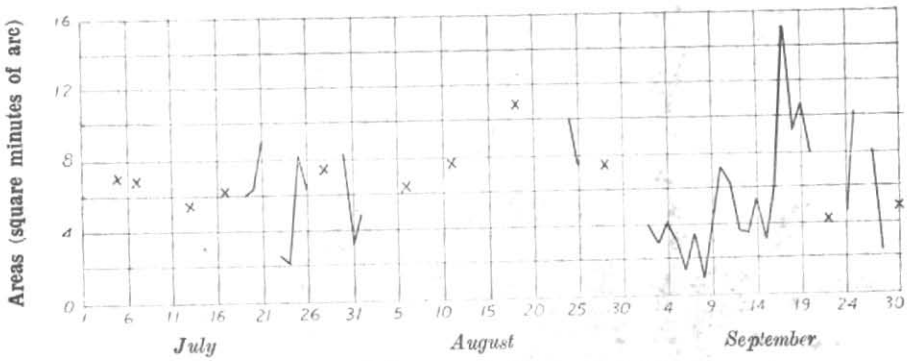


Fig. 1 (b). Daily areas of calcium prominences

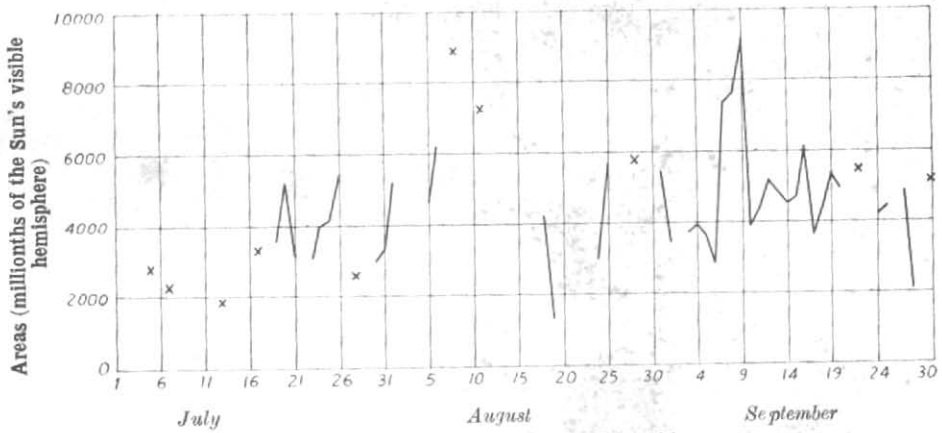
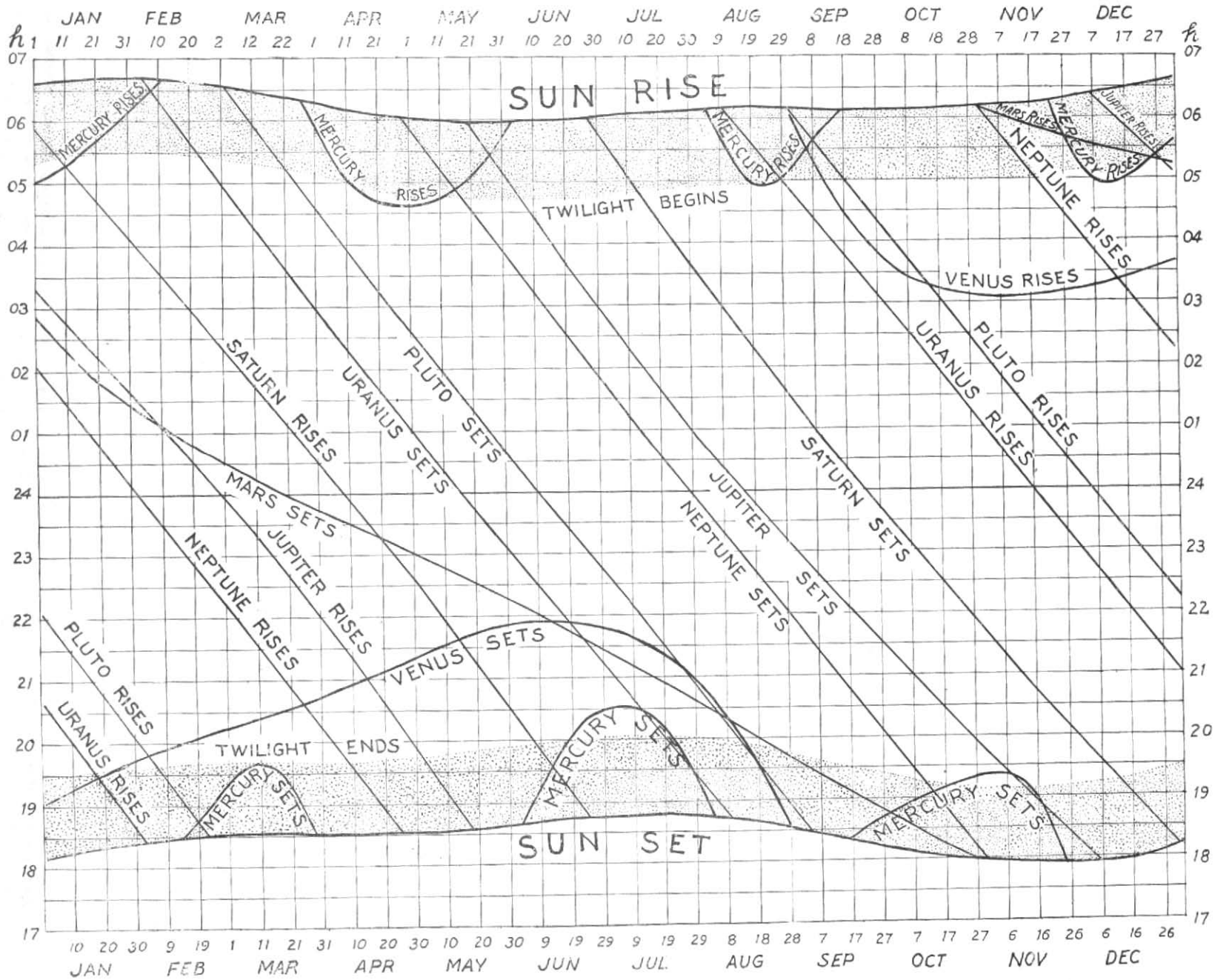


Fig. 1 (c). Daily areas of H-alpha dark markings

NOTE—Breaks in the graphs are due to lack of observations



Times (IST) of rising and setting of the sun and planets at Kodaikanal (10°14′N, 77°28′E) for 1959

(Plate to face page 96 of Vol. 10, No. 1)

MAGNETIC OBSERVATORY, ALIBAG (BOMBAY)
Three-hourly indices of Geomagnetic Activity

(Scale values of variometers in γ/mm : D = 11·3; H = 4·4; Z = 2·5)

(K9 = 300 γ)

Greenwich day	JULY 1958				AUGUST 1958				SEPTEMBER 1958			
	K-indices		Sum	Character of the day*	K-indices		Sum	Character of the day*	K-indices		Sum	Character of the day*
1	3222	2222	17	Ca	2225	3222	20	Sa	0112	2111	9	Ca
2	0112	1111	8	Ca	2222	3222	17	S	1211	1101	8	Ca
3	2223	2321	17	S	2222	2211	14	Ca	1346	6555	35	G
4	1233	2332	19	S	1222	2111	12	Ca	5544	7766	44	VG
5	3122	1124	16	S	1112	1211	10	Ca	5654	2342	31	Ma
6	2223	2121	15	Ca	2222	2112	14	Ca	2322	1221	15	Ca
7	2234	4342	24	Sa	2224	3221	18	Sa	2323	3343	23	S
8	2268	6876	45	VG	1211	2201	10	Ca	3222	1214	17	S
9	4233	4523	26	Ma	1221	1222	13	Ca	3332	4323	23	S
10	4323	2123	20	S	2235	3222	21	Sa	2222	2222	16	Ca
11	3243	2223	21	Sa	2223	1132	16	S	2222	1211	13	Ca
12	4442	2331	23	Sa	2222	2122	15	Ca	2232	1111	13	Ca
13	1333	2314	20	Sa	2334	2211	18	S	1111	1111	8	Ca
14	2232	2211	15	Ca	2221	1222	14	Ca	1222	2111	12	Ca
15	2111	2112	11	Ca	1322	2222	16	Ca	2111	1122	11	Ca
16	1111	1112	9	Ca	1432	2322	19	S	2334	4544	29	Ma
17	4434	1110	18	Sa	2262	4455	30	G	3322	3221	18	S
18	3444	3333	27	Sa	4433	3222	23	Sa	1211	1131	11	Ca
19	2242	1143	19	S	2222	1221	14	Ca	1111	2121	10	Ca
20	3442	2212	20	Sa	1222	2211	13	Ca	1221	2212	13	Ca
21	2332	2565	28	G	1112	2222	13	Ca	2111	2221	12	Ca
22	4333	4222	23	Sa	5443	3222	25	M	1112	1211	10	Ca
23	3212	1111	12	Ca	1222	2112	13	Ca	2222	2211	14	Ca
24	2222	3332	19	S	6645	5332	34	M	2123	2221	15	Ca
25	2234	2233	21	M	3332	3121	18	Ca	3565	5554	38	G
26	3222	1121	14	Ca	2223	3222	18	Ca	3232	2332	20	S
27	2444	3323	25	M	3665	3242	31	G	2112	2223	15	S
28	2432	2122	18	S	1222	2233	17	S	3222	2211	15	Ca
29	2222	2242	18	S	1222	2121	13	Ca	1222	1101	10	Ca
30	2221	1222	14	Ca	2232	2121	15	Ca	1124	3444	23	Ma
31	2222	1422	17	Sa	2211	1210	10	Ca				

* At Bombay, since 1883, a day is classed as (1) a quiet day, or a day of (2) small, (3) moderate, (4) great or (5) very great disturbance, the letters distinguishing the respective classes being C, S, M, G and VG. For representing intermediate conditions of activity of the smaller period movements, sub-classification Ca, Sa and Ma are used. Roughly speaking a storm having a range over 225 γ in the variations of the horizontal force during the first twentyfour hours after its commencement is classed as 'Very Great'. It is 'Great' if the range is between 150 γ and 225 γ, 'Moderate' if the range is between 65 γ and 150 γ, 'Small' if the range is less than 65γ. The range is however not the only criterion used in assigning the character of a storm. The oscillations in the magnetograms are duly taken into account in determining the class to which a particular storm should belong.

The corresponding international character figures can be determined from the following:—

Bombay Character	International Character	Bombay Character	International Character
C, Ca	0	M, Ma	2
S, Sa	1	G, VG	2

Colaba, Bombay
12 November 1958

S. L. MALURKAR
Director, Colaba and Alibag Observatories

DAILY OZONE DATA — INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1·233 and α' (3323) = 0·071

NEW DELHI

(Lat. 28°35′N, Long. 77°12′E)

Date	JULY 1958			AUGUST 1958			SEPTEMBER 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	17	0·247	*Cu* 2, *Ac* 2	No observation		Bad weather	08	0·235	(*Sc*, *Cu*) 6, (*Ac*, *As*) 2
2	08	0·246	*Ac* 1	17	0·250		17	0·234	*Cu* 4, *Ac* 2
3	07	0·227	*Cu* 2, *Ac* 2, *Cc* 1	No observation		Bad weather	16	0·241	*Sc* 3, *Ac* 3
4	No observation		Bad weather	17	0·250	(*Sc*, *Cu*) 3, *Ac* 3	17	0·246	*Cu* 4, *Ac* 3
5	17	0·254	*Sc* 2, *Ac* 3	No observation		Bad weather	17	0·234	*Cu* 2, *Ac* 3
6	17	0·241	*Cu* 1, *Ci* 2	,,		,,	16	0·238	*Sc* 2, *As* 3, *Ci* 2
7	No observation		Bad weather	07	0·242	(*Sc*, *Cu*) 5, (*Ac*, *As*) 3	No observation		Overcast
8	17	0·250	(*Sc*, *Cu*) 2, *Ci* 2	17	0·229	*Cu* 4, *Ac* 3	16	0·257	(*Sc*, *Cu*) 5, *Ac* 3
9	17	0·251	(*Sc*, *Cu*) 2, *As* 4	08	0·241	(*Sc*, *Cu*) 4, (*Ac*, *As*) 4	No observation		Overcast
10	17	0·242	(*Sc*, *Cu*) 4, gusty winds	17	0·249	*Cu* 1, *As* 2, (*Cs*, *Cc*) 3	08	0·239	(*Sc*, *Cu*) 6, (*Ac*, *As*) 2
11	17	0·263	(*Sc*, *Cu*) 4, *As* 1, dust haze and gusty winds	12	0·241	(*Sc*, *Cu*) 5, (*Ac*, *As*) 3	07	0·235	,,
12	08	0·243	*Cu* 1, *Ci* 1, strong winds	17	0·237	*Ci* 1	16	0·233	(*Sc*, *Cu*) 4, (*Ci*, *Cs*) 2
13	08	0·246	*Ac* 6	17	0·235	*Cs* 3	17	0·230	(*Sc*, *Cu*) 3
14	No observation		Bad weather	17	0·254	Hazy	No observation		Bad weather
15	,,		,,	17	0·241	,,	17	0·238	*Cu* 3
16	,,		,,	17	0·257	(*Ci*, *Cc*) 6	16	0·235	*Cu* 2
17	,,		,,	17	0·271	(*Ci*, *Cs*) 8	16	0·245	*Cu* 2
18	08	0·237	*Cu* 1 (*Ac*, *As*) 5	17	0·247	*Cu* 4, *Ac* 2	16	0·241	(*Sc*, *Cu*) 4
19	08	0·246	(*Sc*, *Cu*) 3, *Ac* 4	17	0·233	(*Sc*, *Cu*) 6, *As* 2	16	0·234	*Sc* 1
20	No observation		Bad weather	17	0·227	*Cu* 5, *As* 2	16	0·235	Clear
21	,,		,,	No observation, trolley		Instrument under repairs	16	0·245	*Cu* T, *Ac* 1
22	17	0·255	*Cu* 2, *Ac* 2, *Cc* 1	,,		,,	16	0·246	*Cu* 4
23	07	0·235	*Cu* 3, *Ac* 1, *Ci* 1	,,		,,	16	0·250	*Ac* 2, (*Ci*, *Cs*) 3
24	No observation		Overcast	,,		,,	08	0·241	(*Sc*, *Cu*) 6, *Ac* 2
25	17	0·259	*Cu* 4, *Ac* 3	16	0·249	(*Ci*, *Cs*) 5	17	0·227	(*Sc*, *Cu*,) 4, (*Ci*, *Cc*) T
26	12	0·269	(*Sc*, *Cu*) 6, (*Ac*, *As*) 2	08	0·250	(*Sc*, *Cu*) 5, (*Ac*, *As*) 3	09	0·243	(*Ac*, *As*) 8
27	17	0·249	*Sc* 3, *Ac* 3	17	0·250	*Cu* 3	17	0·234	(*Sc*, *Cu*) 5, *Ac* 2
28	08	0·263	*As* 2	17	0·230	Hazy	No observation		Bad weather
29	12	0·255	*St* 8	17	0·247	,,	,,		,,
30	No observation		Bad weather	16	0·237	*Ac* 2	13	0·259	(*Sc*, *Cu*, *St*) 7, *As* 1
31	17	0·265	*Sc* 2, *As* 5	08	0·242	(*Sc*, *Cu*) 4, (*Ac*, *As*) 4			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA — INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323Å)

Assumed α (3112)=1·233 and α'(3323) = 0·071

MT. ABU

(Lat. 24°36'N, Long. 72°43'E)

Date	JULY 1958			AUGUST 1958			SEPTEMBER 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	10	0·228	(*Cu, Ci*) 4, hazy	No observation		Rain	No observation		Heavy rain and clouds
2	10	0·235	*Cs* T, hazy	,,		,,	,,		,,
3	No observation		Heavy clouds and rain	,,		,,	,,		,,
4	,,		,,	,,		,,	,,		,,
5	,,		,,	,,		,,	,,		,,
6	,,		,,	,,		,,	,,		,,
7	,,		,,	,,		,,	,,		,,
8	,,		,,	10	0·246	(*Cu, Ci*) 4, observation through cloud	,,		,,
9	,,		,,	No observation		Overcast	,,		,,
10	,,		,,	11	0·231	(*Cu, Ci*) 5, observation through cloud	17	0·242	Nearly overcast
11	,,		,,	17	0·237	*Cu* 5, *Ci* 4, hazy	No observation		Cloudy
12	,,		,,	17	0·238	*Cu* 4, *Ci* 3, hazy	,,		,,
13	,,		,,	No observation		Overcast	,,		,,
14	,,		,,	17	0·246	*Ac* 3, *Ci* 2, hazy	,,		,,
15	,,		,,	No observation		Overcast, rain	,,		,,
16	,,		,,	,,		,,	,,		,,
17	,,		,,	17	0·242	(*Cu, Ac, Ci*) 3, hazy	17	0·255	(*Cu, Ci*) 5, hazy
18	,,		,,	10	0·234	(*Cu, Ci*) 4, hazy	No observation		Rain
19	,,		,,	10	0·239	(*Ac, Ci*) 4, hazy	,,		,,
20	,,		,,	No observation		Overcast	10	0·250	(*Cu, Ci*) 3, observation through cloud
21	17	0·262	(*Ac, Ci*) 3, hazy	10	0·226	(*Ci, Cs*) 4, observation through cloud	17	0·246	*Cu* 4, *Ci* 3, hazy
22	17	0·257	,,	No observation		Overcast	17	0·245	*Cu* 2, *Ci* 2, hazy
23	No observation		Heavy rain	17	0·227	(*Cu, Ci, Cs*) 3, hazy	11	0·234	*Cu* 4, (*Ac, Ci*) 3, hazy
24	,,		,,	No observation		Rain	No observation		Rain
25	,,		,,	,,		,,	,,		Overcast, rain
26	,,		,,	17	0·243	*Cu* 2, hazy	,,		,,
27	,,		,,	17	0·245	(*Cu, Ci, Cs*) 3	,,		,,
28	,,		,,	10	0·238	(*Ac, Ci*) 4, hazy	10	0·235	(*Cu, Ci*) 4, hazy
29	,,		,,	10	0·242	Nearly overcast	17	0·246	*Cu* 2, slightly hazy
30	,,		,,	17	0·245	(*Cu, Ci*) 4	16	0·235	Nearly overcast
31	,,		,,	10	0·238	*Cu* 2, *Ci* 4			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA — INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1·23 and α' (3323) = 0·08

KODAIKANAL

(Lat. 10° 14′N, Long. 77°28′E)

Date	JANUARY 1958			FEBRUARY 1958			MARCH 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	09	0·219	*Ci* 5, *Cs* 1	No observation		*Cu* 3, *Ac* 3, *Cs* 2	09	0·229	*Ci* 3
2	No observation		Fog (drizzle)	08	0·222	*Ci* 5	09	0·225	*Cu* 1, *Ci* 5
3	,,		Raining	09	0·224	*Sc* 2, *Ci* 2	09	0·229	*Ci* 5
4	09	0·211	*Ac* T, *Ci* 2	No observation		Fog	09	0·228	*Cc* 1, *Ci* 2
5	09	0·230	*Cu* T, *Ci* 2	,,		*St* 8, drizzling	17	0·226	*Cu* T, *Ci* 1
6	No observation		Overcast	,,		*Sc* 4, *Cs* 4	09	0·229	Clear
7	09	0·230	*Ci* 2, *Cs* 4	,,		Thick *Ci*	09	0·226	*Ci* 4
8	09	0·229	Clear	,,		Practically overcast	No observation		*As* 5, thick *Cs* 3
9	08	0·239	*Ac* 1	,,		*Cu* 6, *Ci* 2	10	0·229	Clear
10	08	0·227	Clear	09	0·213	Clear	09	0·230	*Ci* 1, *Cs* 3
11	09	0·230	*Ci* 4	09	0·216	,,	09	0·231	*Ci* 1
12	09	0·229	Clear	08	0·216	*Ac* 1, *Ci* 1	08	0·224	(*Sc*, *Cu*, *Ac*)3
13	09	0·228	*Ci* 4, *Cs* 1	09	0·221	Clear	12	0·232	(*Sc*, *Ac*, *Ci*) 4
14	12	0·222	*Sc* 3, *Ac* 2	09	0·226	,,	09	0·232	*Cu* T
15	09	0·224	*Ci* 5	09	0·226	*Ac* T	No observation		*Cu* 5, *As* 2
16	09	0·229	*Ci* 4	09	0·224	*Ci* 1	17	0·241	*Cu* T
17	09	0·229	Clear	12	0·226	*Cu* 3, *Sc* 2	08	0·237	*Ac* 4, *Ci* 1
18	09	0·229	*Ci* 1	09	0·221	*Ac* 1, *Ci* 4	09	0·238	*Cu* 2, *Cs* 3
19	09	0·228	Clear	11	0·228	*Cu* 1, *Ci* 5	09	0·239	*Ci* T
20	09	0·231	,,	09	0·225	*Cu* T, *Ci* 3	08	0·242	,,
21	No observation		Overcast	09	0·212	*Sc* 2, hazy	09	0·239	*Ci* 8
22	09	0·225	Clear	09	0·221	*Cu* 1, *Cs* 3	09	0·233	*Cu* 1, *St* 2
23	09	0·221	,,	08	0·220	*Ci* 4	09	0·235	*Cu* 1, *Ci* 1
24	09	0·225	*Cu* 2	09	0·232	*Ci* 4, hazy	09	0·235	*Cu* T, *Ac* 1, *Ci* 1
25	16	0·223	(*Cu*, *Sc*) 5	09	0·222	*Sc* 3, *Ci* 2	09	0·236	Clear
26	No observation		Overcast	09	0·242	*Cs* 5	08	0·231	*Ci* 1, hazy
27	09	0·224	*Cu* 1, *Ci* 5	09	0·222	*Sc* 3, *Ci* 4	09	0·238	*Cu* T, *Ci* T
28	09	0·217	Hazy	09	0·233	Clear	No observation		*Cu* 3, *Cs* 3
29	No observation		*Sc* 6, *Ac* 1				11	0·246	*Cu* 2, *Ci* 5
30	09	0·225	Clear				08	0·250	*Ci* 5
31	09	0·216	*Ci* 5				08	0·249	*Sc* 2, *Ci* 2

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA — INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1·23 and α' (3323) = 0·08

KODAIKANAL

(Lat. 10° 14′ N, Long. 77° 28′E)

Date	APRIL 1958			MAY 1958			JUNE 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	09	0·250	*Cu* T, *Ci* 6	08	0·238	*Ac* T, *Cc* 3	No observation		*Sc* 2, *Ac* 2, thick *Ci* 3
2	08	0·238	*Ac* 2, *Ci* 1	No observation		*Cu* 4, *Sc* 2, *As* 2	08	0·249	*Ci* 6, hazy
3	No observation		*Ac* 3, thick *Ci* 4	,,		*Cu* 3, *Sc* 5	10	0·246	*Ci* 7
4	11	0·251	*Ci* 2, *Cs* 5	,,		*Sc* 3, *Cu* 4, *As* 1, raining	09	0·254	*Ci* 4, *Cs* 4
5	08	0·242	*Ci* 3, *Cs* 4	,,		*Sc* 4, *As* 4, raining	No observation		*As* 3, thick *Ci* 3
6	08	0·237	*Cu* 1, *Sc* 2, *Ac* 1, *Cs* 2	,,		*Sc* 3, *As* 5, drizzling	,,		*Ac* 2, thick *Cs* 5
7	09	0·249	*Cu* T, *Ci* 4	,,		*Cu* 4, *As* 2, *Ci* 2	08	0·255	*Cs* 4, hazy
8	08	0·239	*Ci* 3	11	0·238	*Ci* 6	No observation		*Sc* 1, *As* 6
9	08	0·246	*Ci* T	11	0·229	(*Ci*, *Cs*) 6	08	0·247	Clear
10	08	0·250	*Ci* 4, *Cs* 4	No observation		Overcast	08	0·253	*Ci* 3
11	No observation		*Sc* 4, *Cu* 4	,,		,,	09	0·250	*Ci* 4
12	08	0·249	*Sc* T, *Ci* 5	,,		,,	No observation		*Sc* 4, *Ac* 3
13	08	0·243	*Ci* 2	,,		,,	08	0·249	*Sc* 1, *Ac* 1, (*Ci*, *Cs*)5
14	08	0·254	Clear	08	0·245	*Ac* 2, *Ci* 1	08	0·253	*Ci* 4, *Cs* 4
15	No observation		*Sc* 3, *As* 5	No observation		Overcast	No observation		Overcast
16	,,		*Sc* 6, *Cu* 2	10	0·237	*As* 2, (*Ci*, *Cs*)3	,,		,,
17	08	0·254	*Ci* 3	09	0·241	*Ac* 5, *Cs* 1	,,		,,
18	08	0·246	*Ci* 2, hazy	09	0·239	Overcast	,,		*Sc* 3, *Ac* 5
19	07	0·249	Very thick *Cs* 8	08	0·237	*Ac* 2, (*Ci*,*Cs*)4	08	0·248	(*Ci*, *Cs*) 8
20	No observation		*Cu* 3, *Sc* 2, *As* 3	08	0·245	(*Ci*, *Cs*) 5	No observation		*Sc* 5, *Cu* 3
21	,,		*Sc* 4, *As* 4, raining	09	0·251	*Ci* 4, *Cs* 4	17	0·241	*Cu* 2,*Ci* 6
22	08	0·243	*Ci* 3	No observation		*Cu* 2, *Sc* 2, *Ci* 3	08	0·246	*Cs* 4, hazy
23	08	0·241	*Ac* T, hazy	,,		*Sc* 6, *Ac* 2	No observation		*Sc* 1, *Cu* 1, *Ci* 6
24	09	0·254	*Ci* 7, hazy	,,		Overcast	,,		Overcast
25	No observation		Fog	08	0·236	*Ci* 1, *Cs* 3	,,		,,
26	07	0·248	*Ac* 1, *Ci* 3	07	0·227	*Ci* 3, *Cs* 5	,,		Drizzle, overcast
27	08	0·250	*Cs* 5	10	0·228	*Cu* 2, *Ci* 4	,,		Overcast
28	No observation		*Sc* 6, *As* 2	08	0·243	*Ci* 2, *Cs* 3	09	0·240	(*Cs*, *Ci*) 8
29	,,		*Cu* 2, *Sc* 2, *Ci* 3	08	0·243	*Ac* 1, *Ci* 3, *Cs* 2	No observation		Raining, overcast
30	,,		*Cb* 5, *Cu* 2, *Sc* 1	08	0·243	Clear	,,		Overcast
31				08	0·245	*Ci* T			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA — INDIA

(From direct observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1·23 and α' (3323) = 0·08

KODAIKANAL

(Lat. 10°14′N, Long. 77° 28′E)

Date	JULY 1958			AUGUST 1958			SEPTEMBER 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	No observation		Overcast, occasional drizzle	08	0·245	*Ac* 2, *Ci* 1, *Cs* 4	No observation		Drizzling
2	,,		Overcast	No observation		Overcast	09	0·251	*Sc* 6, *Ci* 2
3	,,		Overcast, raining	,,		,,	09	0·246	*Cu* T, *Ac* 1, *Ci* 3
4	,,		Overcast, drizzling	,,		*St* 8, drizzling	08	0·242	*Ac* 2, *Ci* 4
5	08	0·239	*Cs* 2, passing *Sc*	,,		*Sc* 4, *As* 3, *Ci* 1	08	0·239	*Ci* 4
6	No observation		Overcast	08	0·250	*Cu* T, *Ac* 2, *Ci* 4	No observation		*Sc* 3, *Cu* 4
7	08	0·242	*Ac* 2, *Ci* 2, *Cc* 2, hazy	No observation		Overcast	,,		Overcast
8	No observation		Overcast	,,		,,	,,		,,
9	,,		Overcast and drizzling	,,		*Sc* 8	09	0·246	*Cu* T, *Ci* 3
10	,,		Mainly overcast with *Sc*	,,		*St* 8	08	0·246	*Cs* 3
11	,,		Overcast, occasional drizzle	11	0·246	Passing *Sc*	08	0·239	*Cs* 4
12	,,		*Sc* 3, *As* 5	No observation		Overcast	08	0·233	*Sc* 1, *Cu* 3, *Ci* 4, hazy
13	09	0·243	Clear	,,		*St* 8	09	0·242	*Ci* 4
14	No observation		*Sc* 8	,,		Raining	No observation		Overcast
15	,,		Overcast	,,		*Sc* 6, *Ac* 1	08	0·242	*Cu* 2, *Cs* 5
16	,,		,,	,,		Overcast	09	0·239	*Cu* 3, *Sc* 2
17	09	0·240	*Sc* 1, *Ci* 3, *Cs* 4	,,		,,	09	0·237	*Cu* 2, *Cs* 3
18	17	0·241	*Sc* 2, *Ci* 3, *Cc* 3	10	0·237	*Sc* 2, *Ac* 2, *Ci* 4	08	0·233	*As* 2, *Ac* 2, *Cs* 2
19	No observation		Overcast, drizzling	No observation		Overcast	No observation		*Sc* 4, *Cu* 2, *Ci* 2
20	11	0·250	(*Cs*, *Ci*) 8	,,		,,	09	0·241	*Cu* 3, *Ci* 2
21	08	0·246	*Cu* T, *Ac* T, *Ci* 4	,,		,,	No observation		Overcast
22	No observation		*Sc* 3, *Ac* 2, *Ci* 2	,,		,,	08	0·242	*Ci* 6
23	08	0·242	*Sc* 4, *Ci* 2, *Cs* 2	,,		,,	No observation		Overcast
24	16	0·252	(*Ci*, *Cs*) 8	,, (Power shut down)		*Cu* 3, *Sc* 2, *Ac* 1	11	0·247	*Sc* 2, *Ci* 5
25	08	0·249	*Ci* 1, *Cs* 4, hazy	No observation		*Sc* 4, *Ac* 2	09	0·237	*Ci* 4, *Cs* 4
26	09	0·253	*Sc* 1, *Ci* 3, *Cs* 4	,,		Overcast	No observation		Overcast
27	No observation		*Sc* 4, *As* 4	,,		,,	08	0·233	*Ci* 3, *Cs* 3
28	,,		Overcast with low clouds	,,		*Ac* 4, *Ci* 3	09	0·243	*Ci* 2, *Cs* 3
29	,,		,,	,,		*Sc* 3, *St* 5, drizzling	No observation		Overcast
30	09	0·243	*Sc* 6, hazy	,,		Overcast	08	0·237	*Ci* 3
31	09	0·247	*Cu* 2, *Ac* 1, *Ci* 4	,,		,,			

NOTE—The cloud amounts are in oktas