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CHAPTER THREE

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METEOROLOGY

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The various climatic parameters like rainfall, temperature, day length, hours of sunshine, percentage humidity etc. are known to play an important role in the behaviour of the roosting birds.

Rainfall :

Kolhapur comes in the rain shadow zone of the Western Ghats on the eastern side of the Sahyadri mountain range. This physical feature has profound impact on the nature and magnitude of the precipitation which in turn determines the faunal diversity of the region. The main source of rainfall in the region is the south west monsoon which normally lasts for four months from June to September. There is moderate to heavy rainfall on the Western Ghats which is about 6000 mm per year.

The annual average rainfall of Kolhapur city is around 1140 mm. However, during the investigations i.e. in 1987 the total annual rainfall was only 781.5 mm due to the country wide drought conditions. Table 1 gives the monthly values of rainfall in the city during the investigations, from November 1986 to March 1988. There are premonsoon thunder storms often experienced in the early monsoon season in April-May. Also after November there may be a couple of showers due to the north east monsoon phenomenon but towards the end rains are scanty.

The total number of days of rainfall varies from 110 to 120 days depending on the strength of monsoon and weather conditions. During the study period it lasted for 131 days (Table 1). This means there were more days of scanty rainfall

Table 1 : The monthly average values of important climatic factors and the number of Pariah kite (Milvus migrans) and Whitebacked Vulture (Gyps bengalensis) in Kolhapur city.

Year	Month	Temperature °C		Relative Humidity %	Hours of Sunshine h	Wind Speed km/h	Rainfall mm	Number of Rainy Days	Radiation (1957-1968) Cal/cm <sup>2</sup>	Average No. of Kite	Average No. of Vultures	
1986	Nov.	31.1	18.7	24.9	51	8.0	3.0	0	0	208	-	
	Dec.	31.2	15.6	23.4	42	8.7	3.45	0	0	175	-	
1987	Jan.	30.6	16.2	23.4	37	10.0	3.44	0	0	445	147	36
	Feb.	32.5	18.0	25.2	29	9.7	4.97	0	0	524	134	41
	Mar.	34.9	19.4	27.1	29	9.7	5.77	10.3	2	578	170	50
	April	37.4	22.0	29.7	39	10.3	8.44	3.9	3	611	181	58
	May	36.7	22.2	29.4	45	9.2	6.92	49.7	9	620	226	80
	June	31.0	22.3	26.6	70	4.9	8.17	130.1	18	514	270	92
	July	27.3	21.8	24.5	80	4.1	8.18	223.8	29	388	294	114
	Aug.	27.7	21.7	24.7	81	3.2	8.72	139.9	29	392	368	02
	Sept.	30.6	21.8	26.2	74	6.8	5.45	90.5	22	448	330	88
	Oct.	31.6	20.6	26.1	53	7.5	3.56	38.6	10	487	276	96
	Nov.	30.6	19.1	24.8	51	7.3	2.95	41.3	5	435	258	50
	Dec.	29.3	16.8	23.0	50	8.6	3.35	53.4	4	409	245	50
1988	Jan.	30.7	15.5	23.1	37	9.7	2.94	0	0	235	38	
	Feb.	32.4	17.3	24.8	29	10.2	4.47	0	0	199	40	
	Mar.	36.0	13.5	24.7	26	9.5	5.6	0	0	218	42	

in 1987. Figure 4 gives the monthly average rainfall and the number of rainy days from November 1986 to March 1988 in Kolhapur city.

#### Cloud Conditions :

In the post monsoon season from December to February the sky was clear with practically no clouds. From February onwards the mornings were cloudless, but in the evenings clouds used to gather and traces of rains were observed as a result of premonsoon thunders storms and the nights were again cloudless. In the rainy season from July to September cloud conditions were uncertain but mainly overcast. In late monsoon scattered clouds were seen on occasions. Cloud conditions were studied on the basis of the standard cloud condition chart at 14.00 h local mean time.

#### Temperature :

The temperature at the time of observations was recorded which ranged from a minimum of  $17.2^{\circ}\text{C}$  to a maximum of  $32.3^{\circ}\text{C}$  on 22-12-87 and 7-4-87 respectively. The monthly average, minimum and maximum temperatures recorded during the investigations are given in (Table 1) They were  $25.3^{\circ}\text{C}$  average,  $18.9^{\circ}\text{C}$  minimum and  $31.8^{\circ}\text{C}$  maximum respectively for the entire study period. There was almost uniform pattern observed in all the three values of temperature (Fig. 5). The average temperature pattern in the study area revealed the moderate climatic conditions without any extremes.

The daily temperatures showed that they remained fairly uniform from September to December with a sudden drop in the

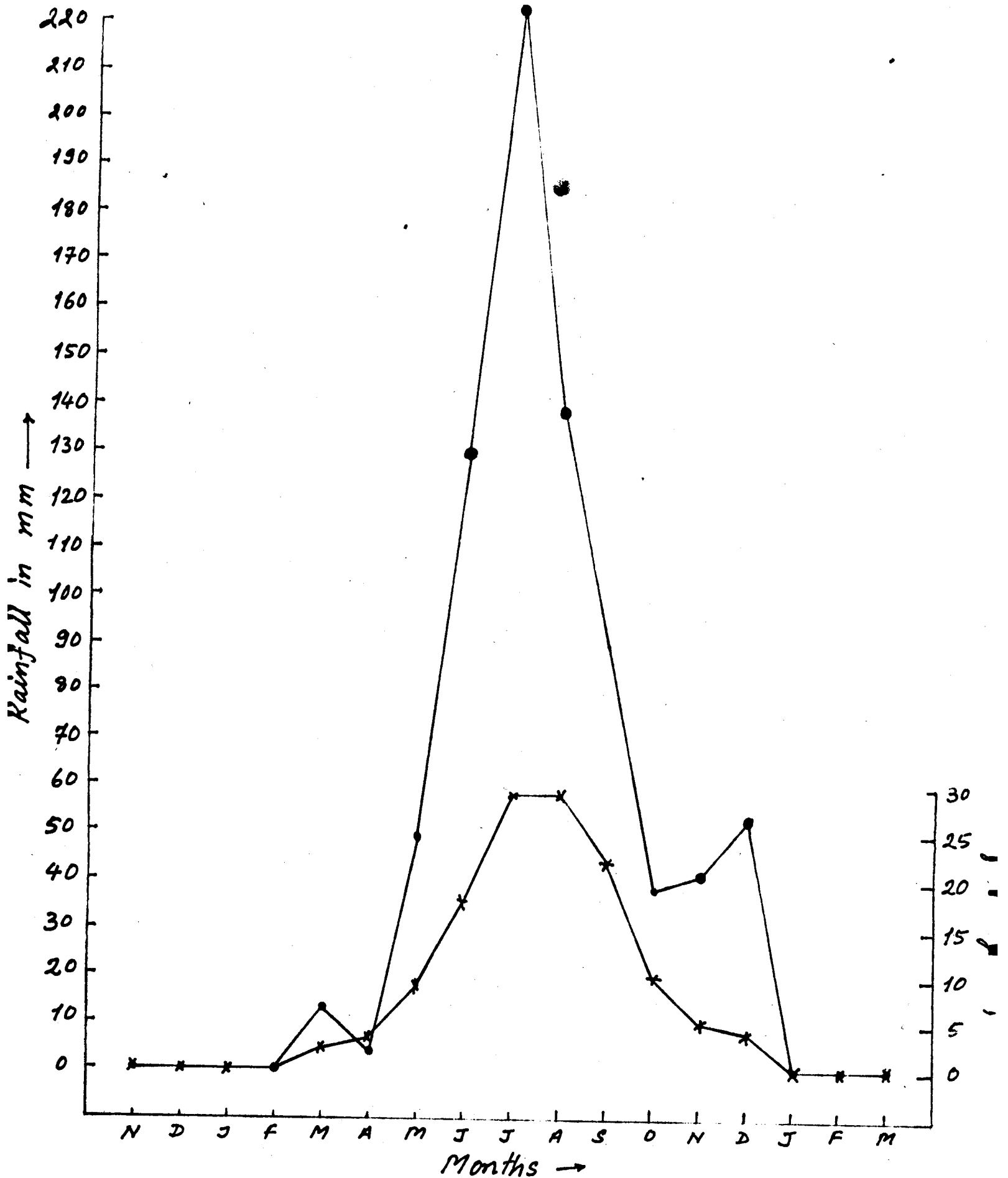
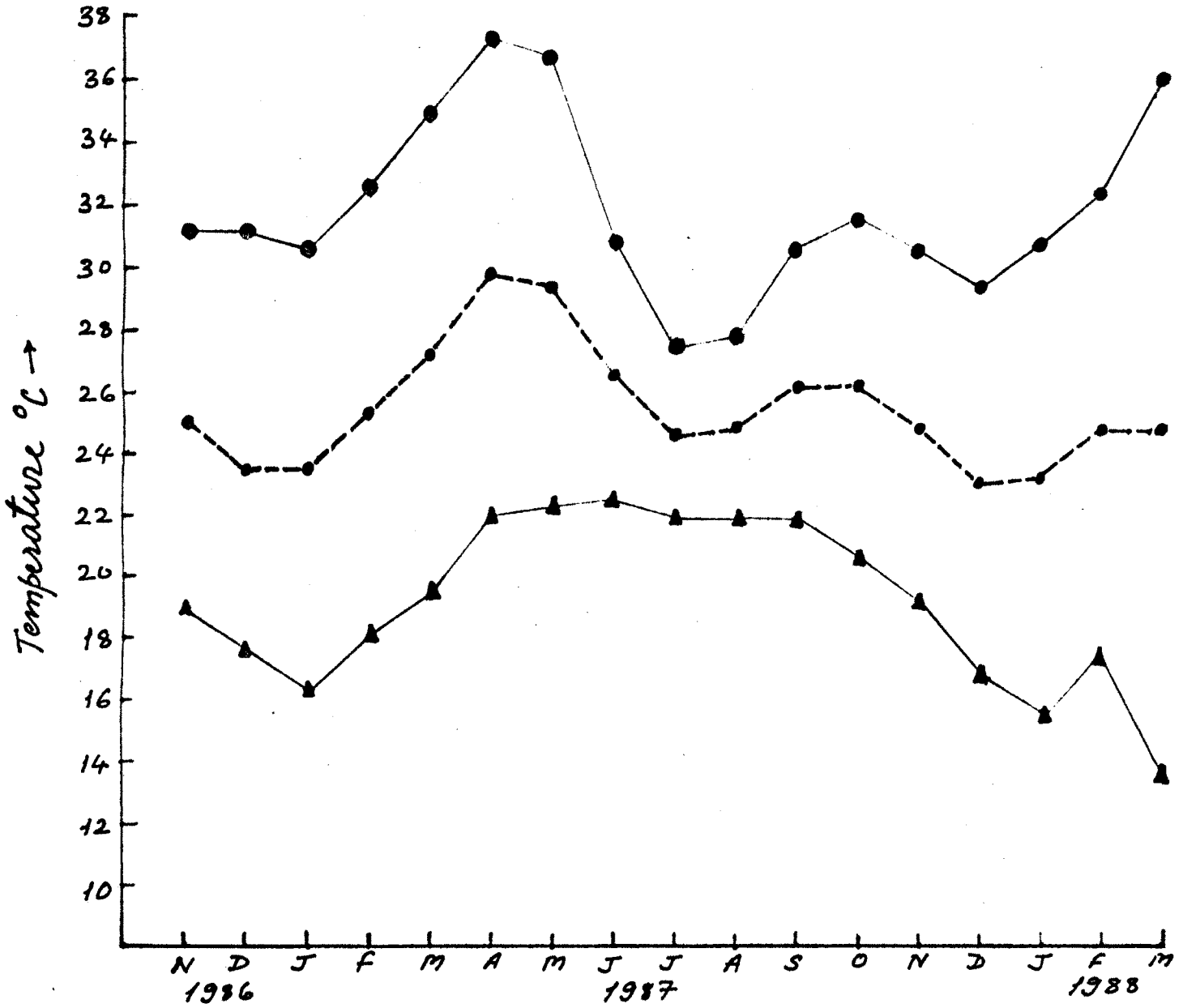


Fig 4 : Monthly average rainfall in mm and number of rainy days from November 1986 to March 1988

Maximum Temp ●—●  
 Minimum Temp ▲—▲  
 Average Temp - - - ●



Figs : Monthly average values of Maximum, Minimum and Average values of Air temperature during November 1986 to March 1988.

values from December to January. The months of April and May were the hottest months in the year.

#### Percentage Humidity :

The monthly average values of percentage humidity shows an interesting picture (Fig.6). There is a sudden drop in the humidity values from November 1986 till March 1987, with an ascend in August the peak values are recorded. However, the drop in the values continued till March 1988. The maximum relative humidity of 81 % was recorded in August, 1987, while minimum relative humidity of 26 % was reached in March 1988 (Table 1, Fig. 6). Because of rainfall maximum humidity was noticed in the monsoon months and the minimum values in the dry weather in summer months.

#### Wind speed :

The readings of wind speed were taken at the Agrometeorological Department at 14.54 hrs. The table 1 gives the monthly averages of wind speed which are expressed graphically in figure 6. The data on the monthly average of wind speed reveals that strong winds with a speed of 8 km/hr were observed during the monsoon period i.e. in June and July. The average maximum of 9 km/hr was recorded in the month of August. After monsoon the wind speed gradually subsided to the lowest values of 3 km/hr in November. During November-January the wind speed is relatively calm and steady but it started becoming windy again in April (8 km/hr). The highest wind speed was recorded during the observations was on 26-2-1988 when it was 9.8 km/hr.

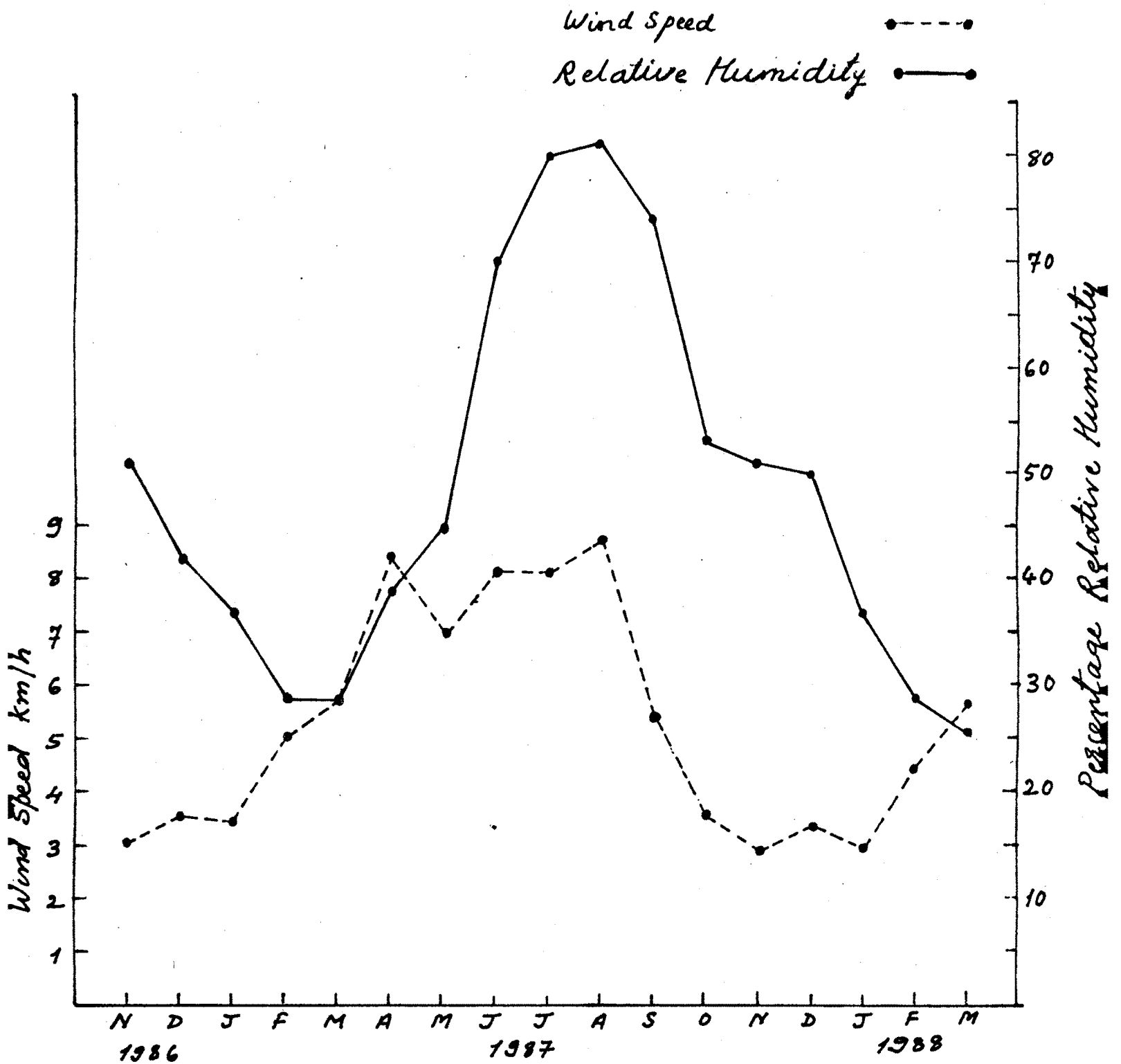


Fig 6 : Monthly average values of percentage of Relative Humidity and Wind Speed during November 1986-to March 1988.



Since the observations were taken at 2.54 PM in the afternoon records of premonsoon, late evening high velocity thunders storms were not covered. At times they were known to be as high as 20 km/hr.

The direction of the wind changed in opposite direction afternoon. During the period, between October-February i.e. in winter there were mild North-West winds in the evenings. In the months from February-October, the evening winds were from West or South west to east while the morning winds were always from east to west.

#### Solar Radiation :

The monthly average figures for solar radiation for Kolhapur city were taken from earlier work (Samant, 1978), of 11 years averages. The annual peak values of  $620 \text{ cal/cm}^2$  were recorded in the month of May and the annual lowest values of  $388 \text{ cal/cm}^2$  were noticed in July, during heavy precipitation (Fig.7). The monthly average value was worked out to be  $487 \text{ Cal/cm}^2$  for Kolhapur city. There was a gradual increase in the radiation values from January onwards till May, which recorded annual highest. The stup drop in radiation met annual lowest in July-August and the values again increased to have the second peak in September-October which is know as the characteristic 'October heat' in this region.

#### Hours of Sunshine :

The data of hours of Sunshine was collected on each day of field observations. The parameter fluctuated drastically

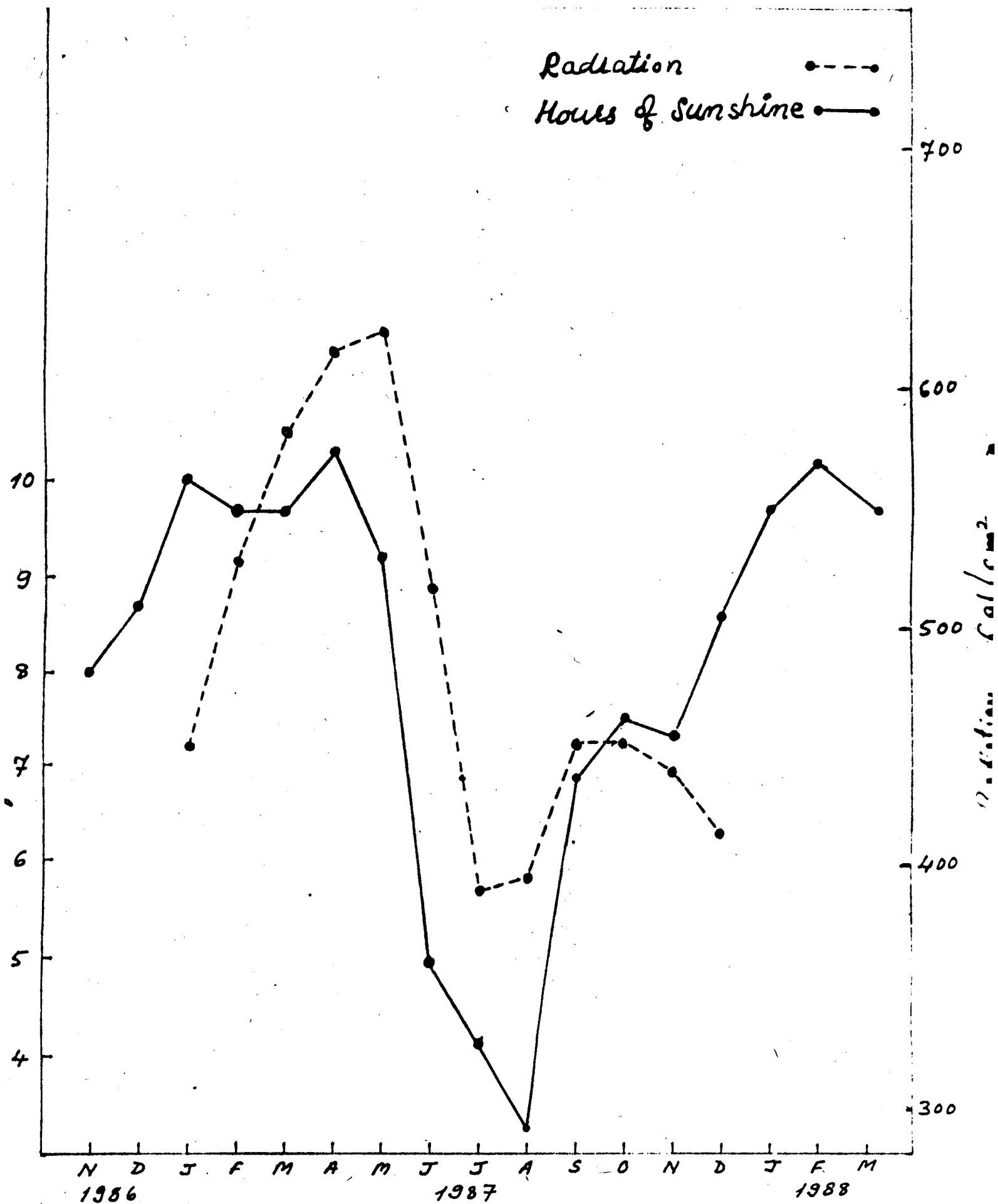


Fig 7 : Monthly average values of Hours of Sunshine and Radiation. ( November 1986 - March 1988 ).

depending the weather conditions, particularly cloud conditions. The values of hours of Sunshine ranged from a maximum of 11.2 hr/day on 10-3-1987 to a minimum of 0.7 hr/day on 9-6-1987, the average being 8 hr/day.

The table 1 gives the monthly averages of the hours of Sunshine values during the period of investigations which are expressed graphically in(Figure 7). The values were moderate i.e. 8 hours/day in November 1986 and gradually increased to the first peak of 10.3 hr/day in April 1987, there was a stup fall in the values due to monsoon and the lowest of 3.2 hr/day was recorded in August. The values ascended to meet the another highest level of 10.2 hr/day in March 1988. There was direct and negative correlation between the hours of Sunshine and cloud conditions during rainy season. In Summer months due to clear skies proportionally the length of the days was longer.