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Meteoric Dust and Rainfall

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In a recent communication Bowen (1953) has drawn attention to the fact that on certain days heavy falls of rain occur year after year in different parts of the world and if total daily rainfall values of one of these places for a fairly long number of years are plotted on a graph then one would get peaks of heavy rain on those days.

2. As no climatological factors can account for heavy falls of rain to occur on the same days in different parts, Bowen came to the conclusion that this phenomenon cannot have a terrestrial origin. On the other hand, he was certain that it was due to some extra-terrestrial phenomena which work simultaneously all over the world on some fixed days. He found that only meteoric showers possessed these characteristics and they alone could produce these results.

3. During the course of its movement round the Sun, the earth passes through several meteoric showers on certain known dates. Bowen found that the days of heavy rainfall followed about 30 days after the meteoric shower. The time lag of about 30 days was explained by him to be due to time taken by the meteoric dust from these showers to reach the lower layers of earth's atmosphere where clouds form. When this dust settles over the clouds, it provides rain forming nuclei and helps in the formation of more rain.

4. There are two specific periods in a year during which earth receives these meteoric showers, *viz.*, May to July and October to December. As Bowen observed, during the period May to July it is difficult to judge the effect of individual showers as they follow each other in quick succession and consequently their effects get merged. That is not the case with the period October to December. There is sufficient interval of time between individual showers to enable us to watch their effect.

5. Here in this note an attempt has been made to apply Bowen's ideas to Indian conditions. In order to allow for 30 days period of time lag, the corresponding months of November to January were taken into account for rainfall analysis. Northeast monsoon is fairly active during this period over the southeastern part of the Indian peninsula. In this area Pamban and Madras stations were selected for this study because their normal monthly rainfall during this period is sufficient enough to show daily variations. Total daily rainfall data from 1900 to 1952 in respect of these two stations have been plotted in Figs. 1 and 2.

6. In these figures the days when the meteoric showers occur have been shown displaced by 30 days. It is found that the rainfall peaks on the whole show a total displacement of 30 ± 2 days which was also noticed by Bowen in the course of his investigation.

7. The rainfall curves of both Pamban and Madras show a general decrease of rain from November to January conforming to the seasonal pattern. In addition to the peaks found out by Bowen, these curves also show some other peaks which appear to have no relation with the meteoric showers. These peaks may be due to sporadic falls of heavy rain which occur in association with cyclonic storms and depressions whose frequency is

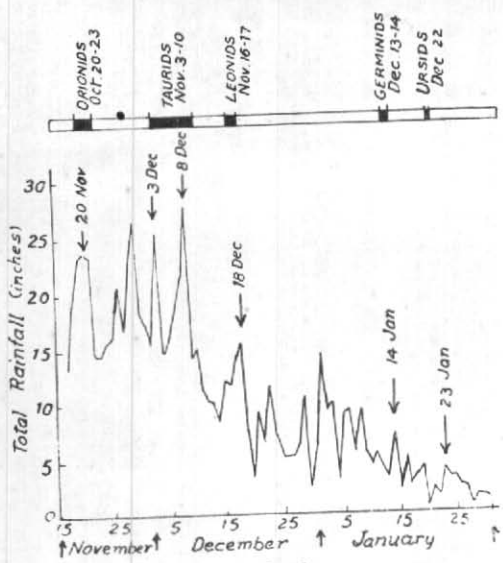

Fig. 1. Pamban

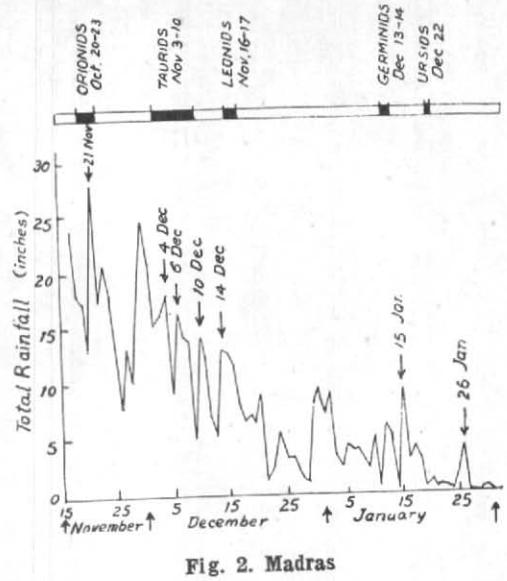

Fig. 2. Madras

Figs. 1 and 2. Daily rainfall for November, December and January for the period 1900-1952 together with dates of main meteor showers (displaced by 30 days) and corresponding dates on which the rainfall peaks occur

quite high in this part of the year. Although the peaks do not stand out as prominently as in the case of Bowen's study, there appears to be some association with the meteoric showers.

8. I am grateful to Dr. P. K. Sen Gupta for encouragement and guidance.

REFERENCE

Bowen, E.G. (1953). *Austr. J. Phys.*, 6, 4, pp. 490-97.