

ON THE HEAT-WAVE OVER NORTHERN INDIA IN APRIL-MAY, 1941

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THE outstanding feature of Indian weather in the second half of April and the first week of May of this year was the extremely high temperatures over a large part of Northern India. For nearly a fortnight during this period, the temperatures were generally 8° to 15° F. above normal in the North-West Frontier Province and the whole of the Punjab, while in the west United Provinces, east Central India, the northeast Central Provinces and the adjoining districts of the east United Provinces they were 6° to 10° F. above normal continuously for more than three weeks. On account of the heat-wave, a number of deaths due to sun-stroke are reported to have occurred in the Punjab and the United Provinces.

High temperatures were first recorded in the region extending from the Punjab to the northeast Central Provinces on the 8th April in the front of a western disturbance.

With the eastward movement of the disturbance, the temperatures decreased slightly, but still remained above normal in the west United Provinces, east Central India and the northeast Central Provinces. Thereafter, the temperatures gradually rose in the North-West Frontier Province also and became above normal on the 13th. The high temperatures then extended eastwards and southwards into the Punjab, upper Sind, the United Provinces and Central India. The heat-wave was at its maximum on the 4th May when most of the stations in the Punjab and a number of stations in the United Provinces recorded 115° F. and above. The spell of high temperatures continued till the 7th or 8th and was finally broken by two active western disturbances which took a fairly southerly course and produced extensive dust and thunderstorms in the Punjab and the United Provinces between the 9th and 13th.

The departures from normal of the mean maximum temperatures during the period 14th April to the 7th May and of the actual maximum temperatures on the 4th May are shown in Figs. 1 and 2 respectively.

The following table gives the highest temperatures recorded this year in April and those ever recorded in the same month in previous years. It will be seen that the maximum temperatures this year in April broke all previous records for the month in the North-West Frontier Province, while, in the southwest Punjab, they touched the highest temperatures so far recorded.

It is interesting to note that the high temperatures produced a "heat low" over the Punjab with a pressure

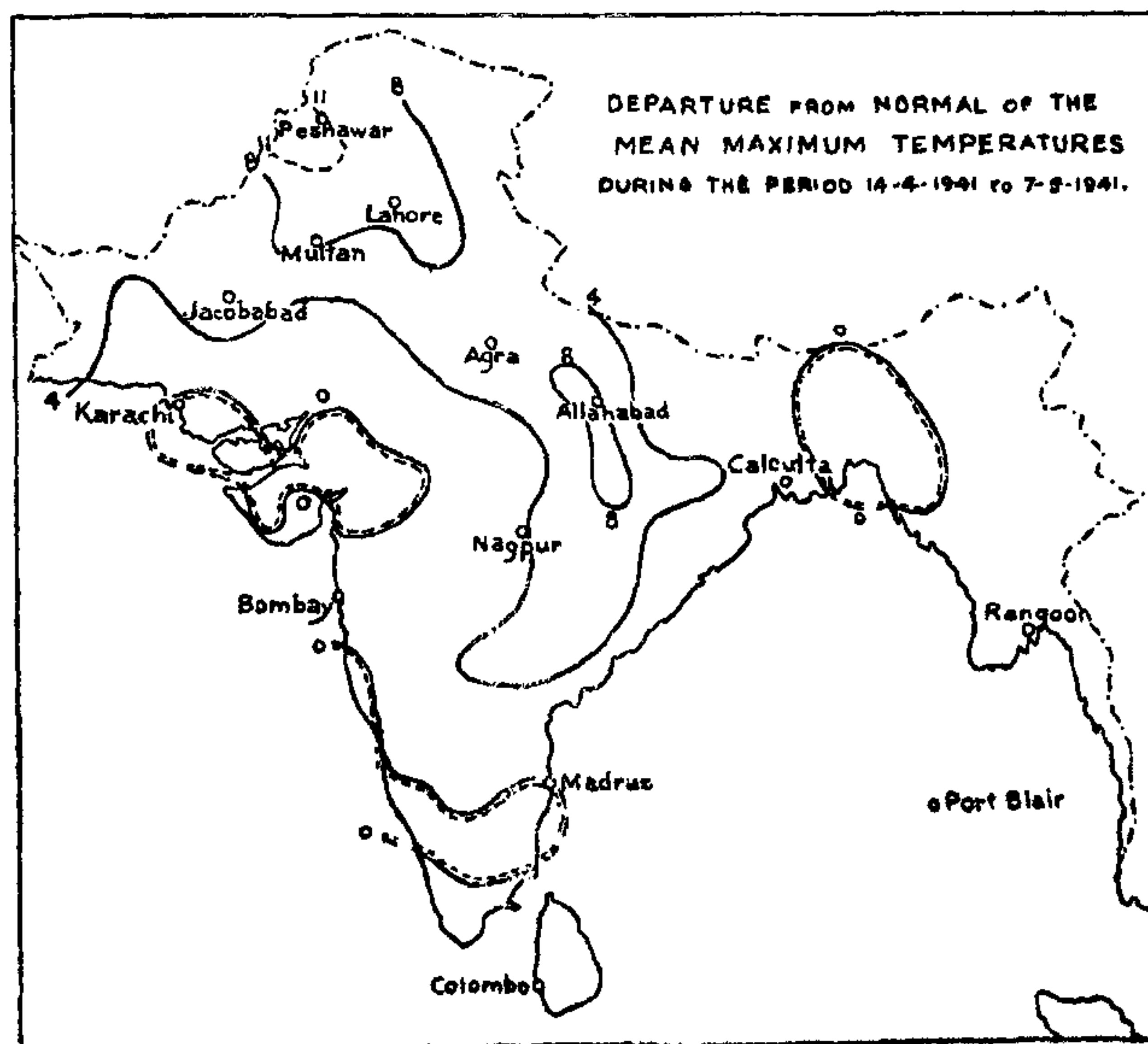


FIG. 1

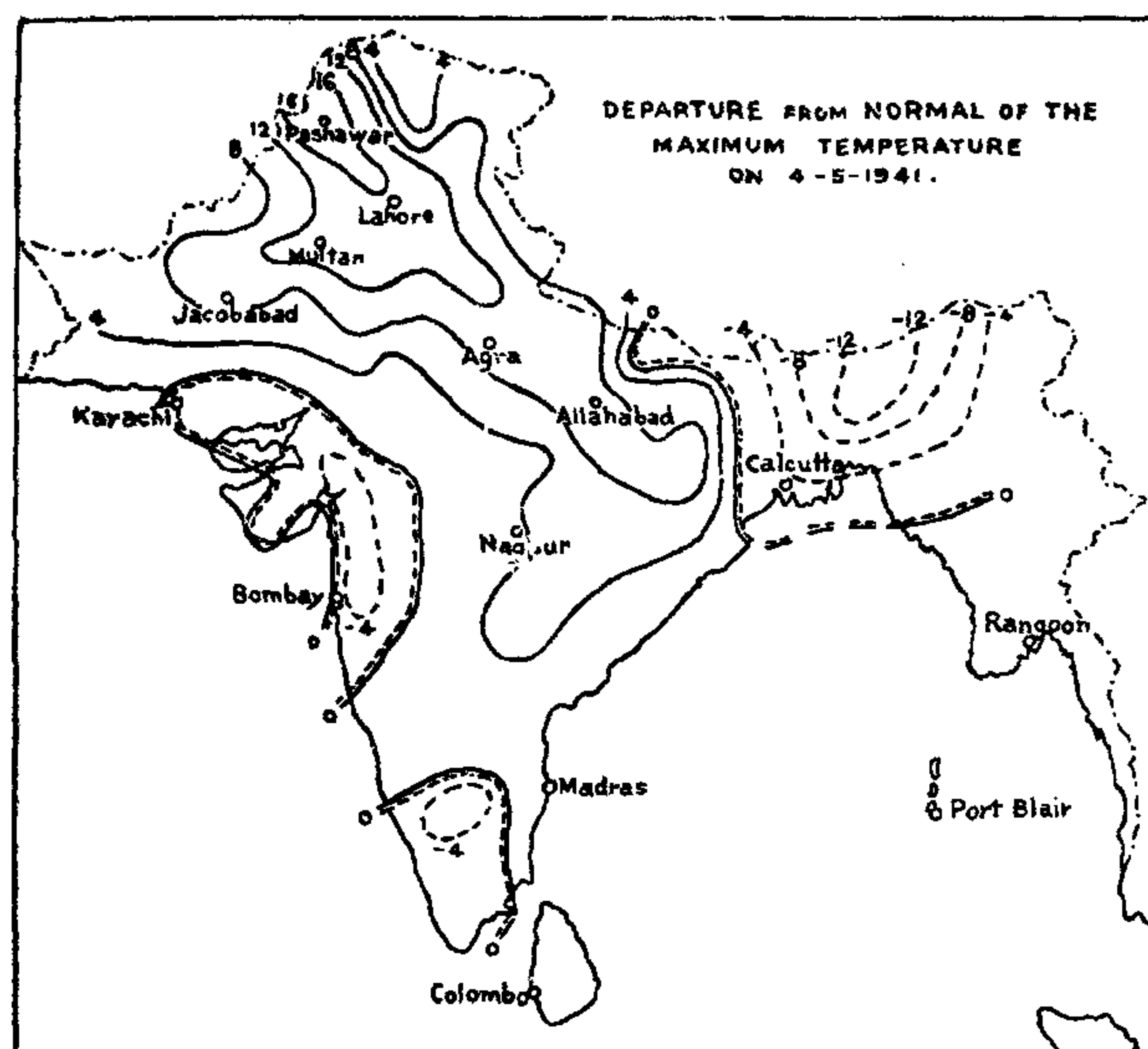


FIG. 2

TABLE I

Province	Highest temperature recorded in April this year	Highest temperature ever recorded in April in the past
North-West Frontier Province	116° F. at Dera Ismail Khan on the 28th	113° F. at Dera Ismail Khan on the 18th April 1892
Punjab Southwest	116° F. at Leiah and Multan on the 27th and 28th and at Khushab on the 28th	116° F. at Khushab on the 22nd April 1892
Punjab, East and North	115° F. at Ludhiana on the 27th and 28th and at Lahore on the 28th	117° F. at Sirsa on the 18th April 1892
United Provinces, West	113° F. at Agra on the 27th and 28th	114° F. at Jhansi on the 28th April 1914.
United Provinces, East	113° F. at Cawnpore on the 27th	114° F. at Allahabad on the 28th April 1879

Another noteworthy feature in the history of this heat-wave was that although, as many as seven western disturbances affected the country from the middle of April to the end of the first week of May, none of them produced appreciable precipitation in the North-West Frontier Province, the Punjab and the United Provinces. All of them were feeble and took a more northerly course than usual. Thus the above Provinces were deprived of the cooling caused by dust or thunder-storm or by the movement of the cold fronts of western disturbances. This would account for the persistence of the high temperatures for such a long period.

It is generally recognised by medical men that the discomfort to the human body during heat-waves depends considerably upon the wet bulb temperature of the air: the higher the wet bulb temperature, the greater the discomfort. A temperature of 80° F. is taken to indicate the danger point for the occurrence of heat strokes. According to Dr. Haldane, "if the wet bulb temperature exceeds 78° F., continuous hard work becomes impracticable and beyond 88° F., it becomes impracticable for ordinary persons even to stay for long periods in such air". An examination of the wet bulb temperatures recorded at the various stations in northwest India during the heat-wave under discussion shows that during the period 29th April to the 5th May, the wet bulb readings at 8 hours at many of the stations in the United Provinces and the Punjab exceeded 75° F., while at some stations they touched 80° F. and above. The temperatures must have been still higher at the time of the maximum in the afternoon. Some of the noteworthy wet bulb readings actually recorded at 8 hours during the heat-wave were Lucknow 81° on the 2nd May, Hissar 84° on the 3rd, Fort Abbas 80° on the 2nd and 85° on the 3rd, Multan 81° on the 4th and 5th and Jacobabad 86° on the 2nd. These high temperatures must have contributed in no small measure to the sun-strokes reported during the heat-wave.

deficiency of nearly one-third of an inch of mercury, when the heat-wave was at its peak. Had such a defect in pressure been associated with a western disturbance, there might have been a deluge in the Punjab!