

**THE CLIMATE AND
RESOURCES OF UPPER
INDIA, AND SUGGESTIONS
FOR THEIR IMPROVEMENT**

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The Climate and Resources of Upper India, and Suggestions for Their Improvement by A. F. Corbett

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PREFACE.

THIS book treats more particularly of the British possessions in Upper India, and is an attempt to show how the climate may be improved and the resources developed. If the suggestions here made are effectual in Upper India, they may also be of use in many other parts of the world where the climate is divided into dry and wet seasons, or which are liable to periods of drought.

A. F. CORBETT.

CLIMATE AND RESOURCES

OF

UPPER INDIA.

UPPER INDIA, or the Provinces under the Governments of the North-Western Provinces, the Punjab, and Oude, lies chiefly between the parallels of 25° and 33° of North Latitude, and between 70° and 80° of East Longitude, which limits it crosses diagonally from south-east to north-west.

The climate is divided into three well-defined seasons,—the rains, the cold weather, and the hot weather. The rains commence about the 15th or 20th of June, and last for about three months, till the 15th or 20th of September; commencing earlier and ending somewhat later in the south-eastern districts than in those more to the north-west. The temperature in the shade in the daytime during the rains may range from 85° to 90° or 95° Fahrenheit. The rainfall varies much in different localities; there is a greater precipitation about Benares and the eastern districts than the average, but the greatest occurs in the Terree, or forest, at the foot of the Himalayas, and on the southern slopes of the Himalayas. The rainfall at Nynee Tal often exceeds one hundred inches in the year; and the rainfall at the foot of the hills under that station is about equal to, and sometimes exceeds, the rainfall at Nynee Tal. The annual average rainfall in the Doab, or

country between the Ganges and the Jumna, may be about twenty-four inches, a greater precipitation occurring in those districts nearer the hills. There is also a greater rainfall in Oude and Rohilcund, lying north of the Ganges, than in the Doob. The least rainfall is about Mooltan, in the Punjab, where sometimes not more than five or six inches fall in the year.

For a month after the cessation of the rains the atmosphere is clear, and there is a bright hot sun, which quickly dries up much of the moisture left in the surface-soil, which was deposited in the rains.

About the commencement of November the cold weather may be considered to set in, when the plains of Upper India are favoured with about four months of clear, bracing weather, with often sharp frosts in the mornings, particularly pleasant and well suited to Europeans; but these frosts, which are more severe and frequent than formerly, are injurious to the country agriculturally; as various food-plants, particularly the arhar, are now more frequently killed by the frost than was formerly the case. The usual winds during the cold weather, *i.e.* from November to the end of February, are west, or from a few points north of west; and east winds are rare, except with a cloudy sky. It is generally said, the east winds in Upper India bring clouds; but it seems doubtful whether the clouds are the effect or the cause of the east winds. To this I will hereafter refer.

During the cold weather some rain generally falls, mostly in the months of December and January; the average cold-weather rainfall being from two to four or five inches, more usually falling in the Punjab, and to the west, than in the eastern parts of Upper India.

In the more southern parts the cold-weather crops sown in October and November are harvested; and in the more

northern parts are ripening in the month of March. The winds then set in more steadily and with greater force from the west; and camp-life, enjoyable through the cold weather, begins to be unpleasant from heat and its accompanying wind and dust. This description of weather lasts, the wind steadily day by day increasing in force, throughout the month.

Towards the end of March the heat, wind, and dust have increased, and punkahs and tatties are required in the southern parts of Upper India, but are not generally in use in Rohilkund and further to the north-west till the middle or end of April, by which time we have the hot weather, or season of the hot winds, which lasts through May and June, till the commencement of the rains.

The utility of tatties, that is their cooling power, depends on the evaporation, caused by the hot dry winds, of water thrown on them; and as they are only used when the heat is unbearable without them, the hot weather, or season of the hot winds, may be considered well commenced from the time tatties are brought into use.

The chief characteristic of the hot winds is that they are westerly, that they mostly get up from about 8 to 10 A.M., some three or four hours after sunrise, when the surface of the country has become heated by the rays of the sun; they are at their greatest force about 2 or 3 P.M., after which they gradually decrease, as the direct incidence of solar heat on the surface of the country decreases, and generally die away about or shortly after sunset.

The nights during the season of the hot winds are generally calm, and it is not uncommon to have a slightly clouded sky and light east winds in the mornings. This, however, is more frequent in the more eastern parts, while further to the north-west the hot west wind sometimes continues through the night.