THE LOCAL DISTRIBUTION OF MONSOON RAINFALL.

By GILBERT T. WALKER.

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Experience of the past 13 years shows that the formula of 1908 for forecasting the whole monsoon rainfall of India affords a useful indication in years when the calculated departure is 1″ or over, which, on the average, form about half of the number of years. Investigation of the geographical distribution of rainfall leads to a subdivision of India into large homogeneous areas such as northwest India and the Peninsula, for which formulæ have been worked out, giving the total monsoon rainfall and that of August and September. The correlation coefficients range from 0.57 to 0.73. Similar formulæ have also been developed for Upper Burma, Mysore, and Malabar.

THE CALCULATION OF THE DEGREE OF CONTINENTALITY.[1]

By LADISLAS GORCZYŃSKI.

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The degree of continentality of a given station may be computed by means of the formula

$$k = 1.7\ (A - 12 \sin\phi)/\sin\phi$$
$$= (1.7\ A/\sin\phi) - 20.4$$

in which k is the thermal degree of continentality in per cent, A the amplitude of the mean annual temperature fluctuation and ϕ the latitude. The expression $A = 12 \sin \phi$ is found to be in good accord with observations over the oceans. The constant, 1.7, is derived from the assumption that Werchojansk, in eastern Siberia, is representative of 100 per cent continentality. The amplitude of the annual temperature variation is 65.9° C., and the latitude is 67° 33′ N.

Upon the basis of this formula, the author presents the geographical distribution of continentality, of which three degrees are distinguished:

(1) Transitional maritime, in which $k = 0$ to 33 per cent.
(2) Continental, in which $k = 34$ to 66 per cent.
(3) Extreme continental, in which $k = 67$ to 100 per cent.

One advantage of discussing continentality from the point of view of this formula, as opposed to the direct use of the amplitude of the annual variation of temperature, is shown by an illustration. Considering only amplitude of temperature variation, the Sahara Desert would fall in the same class as western Europe; whereas, computing continentality from this equation, the Sahara lies in groups (2) and (3) above, while western Europe lies in (1).

The values thus calculated show resemblances both to the "isocontinentals" of Zenker and the "equidistants" of Rohrbach, but possess certain advantages over these earlier attempts at discussing continentality.

The mean values of k (per cent) for the several continents are:

Europe	30 (max. 50, Oural).
Asia	58 (max. 100, Werchojansk).
Africa	36 (max. 75, Sahara).
North America with Greenland	44 (max. 70, $\phi = 66°$ N.).
South America	18 (max. 31, $\phi = 30°$ S.).
Australia	32 (max. 55, interior).
Artic Zone	40 (North Pole, 48).
Antarctic Zone	20 (South Pole, 26).

For the Northern Hemisphere (continents and oceans) the value is 20 per cent; for the Southern Hemisphere, 3 per cent.

A comparison of the relation $A = 12 \sin \phi$ with observed values over extensive ocean areas shows computed values in close agreement with observation. In the Southern Hemisphere, $A = 9 \sin \phi$ seems to give better agreement. This, of course, would lead to a somewhat different value of k, but a series of comparisons demonstrates that the differences would not exceed 3 per cent, which is considered sufficiently small.

The author presents world maps of the distribution of continentality as computed by this formula and of the distribution of amplitude of annual temperature variation.—*C. L. M.*

[1] *Sur le calcul du degré du continentalisme et son application dans la climatologie.*

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