

The author is not aware of the solution coefficients for sea water used by A. Krogh to give the stated figure which appears to be far too high. It must be remembered that less than $1/1000$ of the sea volume would be replaced at the surface in one year, and the annual increase of CO_2 pressure in the air is less than $1/10^6$ atmosphere. About 98% of the CO_2 used by vegetation appears to be returned by decay oxidation and respiration.

The author thought that very accurate temperatures were taken last century; if there was any doubt on this point the introduction to the long period tables from the Radcliffe Observatory (*Met. Obs.*, Vol. 55, 1930), should set this at rest.

551.511

The effect of vertical motion on the "geostrophic departure" of the wind

In section 7 of our paper "The importance of vertical motion in the development of tropical revolving storms," published in the *Journal* of January, 1938, a general proposition is enunciated, which reads as follows:

"If vertical motion occurs in the atmosphere in a region of horizontal temperature gradient, then ascending motion gives a component of wind from warm to cold, and descending motion a component from cold to warm."

We are indebted to Prof. Brunt for pointing out that the brief argument given in the paper does not stress at all adequately the type of air motion to which the proposition is intended to apply, and that it certainly does not apply to the case of a convection current rising by instability through an environment. By not realising this natural application of the proposition, we failed fully to appreciate Prof. Brunt's contribution to the discussion of the paper, and in order to avoid further misunderstanding we should like to amend the statement to read:

"If there is general vertical motion in a region where the winds are quasi-geostrophic, then the departure of the wind velocity from the geostrophic value has a component directed along the horizontal gradient of temperature, from warm to cold with ascending motion, and from cold to warm with descending motion."

The proposition is believed to have an important bearing on general meteorological developments, where gradual ascending motion, as, for example, in a frontal zone, is associated with convergence or divergence, and with departures of the wind velocity from the geostrophic value. Although the departures are generally small compared with the geostrophic velocities (so that the whole motion may be described as quasi-geostrophic) they are of fundamental dynamical significance.

A further paper will shortly be presented, in which the mathematical and physical basis of the proposition will receive a more adequate treatment.

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