Malkus and Stern, however, have concentrated on this lower layer introducing into the equations of motion eddy conductivity terms and arriving at a final vertical velocity field over a matter of kilometres where even the position of individual cumulus clouds came out of the mathematics.

To defend my choice of the same heating function in the two cases, except for the variation in the vertical, I would make the following comments :

(a) The main difference between the two cases is the horizontal advection of the heated air and this is accounted for by the term $U\frac{\partial \tau}{\partial x}$.

(b) In Part II, the heating function is not in phase with the rate of change of potential temperature in the heated layer, since this is dependent on x, but is in phase with the rate of change of potential temperature when there is no initial wind. Thus the heating is assumed to be independent of the larger-scale motion – a reasonable first approximation.

(c) Some confusion has arisen, I think, from my calculation of rates of change of surface temperature by introducing $w = 0$ into the equation of added heat. This is a weak point, for it is in this layer close to the surface that the theory becomes weakest. Here the friction and small-scale eddying become important just where the magnitudes of some of the neglected terms in the theory become too large to ignore. Thus the evaluations were only a rough pointer with a large tolerance in time.

Finally I would like to disagree with the deductions by the authors above from the paper by Charnock, Francis and Sheppard. In their work these latter authors do show downward velocity below a height of 1 km over the island during the day-time.

Meteorological Office,
Air Ministry,
Dunstable, Beds.
21 August 1957.

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NOMENCLATURE OF PHASE TRANSITIONS

By JAMES E. MCDONALD

The ambiguity surrounding the meteorologist's use of the term, ' sublimation ' is familiar to all who work or read in the field of cloud physics. After recently completing a paper in which I had to struggle repeatedly with this ambiguity, I resolved to examine the problem systematically and to seek some solution to this annoying nomenclatural problem. The outcome of the latter effort has been summarized by me in some detail elsewhere (' deposition ' – a proposed antonym for ' sublimation,' *J. Met.* (in press)). I wish in this note to reiterate briefly, for the readers of this journal, the recommendation made there : it seems desirable that the meteorologist should follow the physicist in restricting use of ' sublimation ' *solely* to the solid-to-vapour transition, thereby abandoning the long-standing double meaning whereby this term also denoted (in fact, almost more frequently denoted) the inverse transition from vapour to solid. Since physics terminology now embraces only five terms for the six possible phase transitions between the three ordinary states of matter, a sixth term is needed and I urge that the term, ' deposition ' be adopted as specifying the vapour-to-solid transition. In the reference cited, I have given what

I regard as an adequate number of quotations from the literature of meteorology, physics, and chemistry to show that the proposed meaning will not clash with current informal usage and will, in fact, only formalize present loose usage of ' deposition.'

This recommendation is being made by letter to several journals of physics and chemistry in the hope that a uniform terminology for the vapour-solid transitions can be adopted.

In the proposed terminology, the currently used phrase, ' sublimation nucleus ' (which is a direct contradiction in terms to the physicist), would be replaced by the term, ' deposition nucleus,' and one would speak of the ' depositional growth ' of ice crystals as part of the Bergeron-Findeisen process, etc. The circumlocution now required to achieve clarity in discussing the multiphase processes commonly occurring within active rainclouds would be obviated, and the logical goal of having six distinct terms for six distinct phase transitions would be achieved. It is most regrettable that the confusion and ambiguity inherent in what has come to be the meteorologist's use of ' sublimation ' was not avoided years ago when Wegener first coined the now widely used but inappropriate ' sublimation nucleus,' and it is at least odd that it was not corrected long ago by physicists who instead have accepted the confusing practice of using ' condensation ' for transitions from vapour to solid as well as from vapour to liquid.

The proposed change of terminology will belatedly correct this curious difficulty in the nomenclature of phase transitions, and I urge that readers of this journal adopt it.

Institute of Atmospheric Physics,
University of Arizona,
Tucson, Arizona.
18 September 1957.

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Early meteorological journals; some further notes

By Gordon Manley

The Society's Librarian has had notice of three more journals, each of which may prove to be of some interest to meteorological historians. The Society gratefully acknowledges the loan of these journals for inspection. Comments follow.

(*a*) *Warwickshire*

Samuel Winter (1703-1787) was a corn merchant of Stratford-on-Avon. In a manuscript notebook, now in the possession of Mrs. L. Merriman, of Reigate, Surrey, he wrote ' a chronicle by way of remembrance of some remarkable things that have happened in my short pilgrimage on earth.' These include a good many descriptive notes on the character of the seasons. For the earlier years 1703-1720 there are a few entries based on such sources as Derham's papers in the *Philosophical Transactions*. From 1739 onward the notes on each year's occurrences become more detailed. Winter appears to have had a considerable correspondence, part of which may have related to his business. One of his most noteworthy remarks concerns the famous frost of 1740; ' the Lake of Windermere is frozen over with so strong an Ice that droves of Cattle and the heaviest Carriages may go safely over.' He mentions such events as the heavy snowfall in the Peak at the beginning of October 1767, the intense heat in July 1750, the very cold May of 1756. Some of his entries refer to events abroad and may well have been culled from one of the well-known monthly magazines. For the most part the floods, thunderstorms, auroras and similar happenings are those of the Midlands, and serve to corroborate or to emphasize the knowledge we already possess based on contemporary instrumental observations. A typescript copy of the entries of meteorological interest has been made for the Society's Library.

(*b*) *Aberdeenshire*

Two further MS records of daily meteorological observations come from Scotland. The first refers to the uplands of Aberdeenshire and is complete for the years 1790 and 1791. It has been handed down in the family of the present owner, Miss M. Usher of Auchnagathle,