

Letters to the Editor

Remarks on »Electron Microscope Study of Cloud and Fog Nuclei«

Dear Sir,

We have read with considerable interest the paper by S. Ogiwara and T. Okita on an »Electron Microscope Study of Cloud and Fog Nuclei« in the August 1952 issue of this Journal, and feel obliged to write this letter because of questions concerning certain observations and conclusions made by the authors.

A. Because the studies were made on only 75 fog droplets, we feel that any results are inconclusive because of the difficulties in obtaining a representative sample from so few droplets.

B. The conclusions on changes in form drawn from the electron microphotographs shown in the paper are questionable. The authors state that particles in Figures 1, 2, 3, 4, 6, and 7 did not change their form after electron bombardment and wetting, while 10, 11, 12, and 13 changed. Inspection of the pictures shows no appreciable change in any of the particles. The slight differences seen in comparing the microphotographs appear due to a change in the focus of the already poorly focussed electron microscope and perhaps slight aging of the collodian film. These apparent changes appear just as noticeable in the »unchanged« pictures.

C. Because of the growth of a droplet which had no visible nucleus in its center, and the fact that hygroscopicity changed when external particle shape did not; it is felt that the particles investigated were not the nuclei concerned with droplet for-

mation and the true nuclei were too small to be observed with these optical-electron microscope techniques.

D. The investigation of a so-called sulfuric acid droplet in the electron microscope and the finding that it did not change after electron bombardment is improbable. Sulfuric acid, in spite of its low vapor pressure, will evaporate quite rapidly at the low pressures in the electron microscope. Even if it were possible to focus an electron beam on the droplet, the increased temperature due to bombardment with the electron beam would hasten its evaporation.

E. The statement that sea salt does not change after bombardment with the electron beam in the microscope is contrary to our finding, using the RCA electron microscope. When we observed sea salt crystals in our electron microscope the change from a contrasting opaque material to a transparent crystal was quite spectacular.

We feel that these discrepancies between our findings and those of the authors should be brought before the public so that other interested readers can help clarify some of these disputed points.

Cambridge, March 26th 1953

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