

of the higher hydrate, the function of which may possibly be filled by other solids, isomorphous or otherwise, furnished by dust, promotes the reaction. Dust may even furnish particles of salts that are deliquescent under the conditions of the experiment, thus making possible hydration of the salt studied by water in the liquid phase. One could not, therefore, hope to observe, nor does one observe, the behaviour mentioned above if starting nuclei, furnished by dust, were thickly spread over the surfaces of the crystals of the lower hydrate. In such a case, the induction period would be lacking and the rate of reaction a steadily diminishing one as the zone of reaction progressed, with diminishing area, toward the centres of the crystals; and this has been the common observation in the past. The induction period observed, under suitable conditions, prior to combination with water, and the initial slowness of the process, may well explain the experimental findings reported in the literature concerning the unexpected inefficiency of such substances as anhydrous cupric sulphate or calcium oxide when used for the drying of gases.

With reference to the effect of intensive desiccation on the boiling points of liquids, F. O. Rice has very properly considered the presence of dust as affecting superheating, although without illuminative result; and he pointed out further that dust particles present, if they also must be dried, will delay the drying of a system containing a liquid. It may be added that certain substances contributed by dust particles may promote the changes under observation just as effectively as does water itself.

One should recall, also, the independent and concordant findings of Wolski and of Kenrick that ordinary distilled water contains about 20,000 motes per cubic centimetre. Other distilled liquids may be in like case. Moteless water shaken in ordinary 'clean' glass apparatus rapidly acquires many motes. Even dismissing from consideration the motes suspended in the liquid, one is able to bring forward additional reasons, beyond the mere sealing of capillaries, for timeously heating to the fusion point all glass apparatus designed for work on the effects of intensive desiccation. For example, this fusion of the glass may flux and fix the loose scale that yields the motes, and will certainly enormously diminish the area of the quasi-porous internal surface of glass that has been cleaned and roughened by cleaning solution. Again, the fusion process may engulf and incorporate beneath a relatively plane glass surface dust particles of such ubiquitous salts as sodium chloride, as well as the ash of those organic particles which, in using Baker's air current technique rather than the vacuum technique for drying apparatus, have been burned to ash.

Fuller reports of studies of these matters will appear elsewhere.

ALAN W. C. MENZIES.

Princeton University,  
New Jersey, U.S.A.  
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#### The Green Flash in Southern California.

SINCE my earlier letter on this subject (NATURE, Aug. 4, 1928) was written, I have made many more observations of the flash at sunset and many of the flash at sunrise. Most of the flashes at sunset have been seen from our former residence on a hill near the old campus of the University, from our present residence and the new campus itself in Westwood Hills, from the streets of Los Angeles, and from the beaches near Los Angeles, as the sun has set over the Santa Monica Mountains, Santa Catalina Island, the ocean,

or clouds lying low above the ocean or mountains. All but one of the flashes at sunrise have been seen from Westwood Hills as the sun has risen over the Baldwin Hills and other elevations east and south-east; while one of the most beautiful was seen from a peak on the eastern rim of Death Valley.

The observations of these beautiful but variable phenomena have been very numerous. Usually no record has been kept; but in the 32-day interval Aug. 20-Sept. 20, 1928, I witnessed the flash at sunset 13 times; and I am confident that I have since seen a greater number of sunset and sunrise flashes in an interval no greater. In the 32 days referred to, fogs and clouds interfered on 9 days; the background of sky was too bright on 3 days; observations could not be made on 5 days, although it is practically certain that the flash would have been seen on some of these days if it could have been looked for; and on 2 days the flash was not seen when conditions were judged favourable for its appearance. It is probable that the flash was seen also on one of the days mentioned above as having too bright a sky. On this occasion three observers in Tujunga watched the sun set over the Verdugo Hills, which were too close and too high for satisfactory observation, and two out of the three reported that they saw the flash. On account of the numerous fogs and cloudy horizons at the beaches here, it is usually easier to get the flash over the mountains or hills than over the ocean, since the elevations are likely to be high enough to be out of the fog and low enough and remote enough to give sufficient dispersion.

I have repeatedly witnessed the transition between the blue and the green of the flash, and also the yellowish green of the upper portion of the sun which often precedes the flash at sunset and follows it at sunrise.

Contrary to what appears to be the usual impression, the green flash is at least as easy to observe when the sun is considerably reddened as when it is bright. I have sometimes been surprised that the sun could be so red and yet have sufficient green left to show the flash. The blue, of course, does not appear in such circumstances.

Many of the observations referred to, including one of the most brilliant, have been over low-lying clouds. On one occasion I saw the sun flash green first over the top of a cloud, and then, a little later, through a hole in the cloud.

On a number of occasions I have seen double flashes as the sun has set, first over a low-lying cloud and shortly afterward over the ocean beneath; and on one occasion I witnessed what I believe to have been a triple flash, as follows: The sun first set over a low cloud and flashed green; then it set over the sea beneath and flashed green; and finally the light reflected from the lower surface of the cloud to the sea turned green before it disappeared.

S. J. BARNETT.

University of California at Los Angeles and  
California Institute of Technology, Feb. 3.

#### Taxonomic Importance of the Terminal Segments of Psychodid Larvæ.

ALTHOUGH in the last quarter of a century a considerable amount of advance has been made in various parts of the world towards the classification and morphology of the imago of the family Psychodidæ, our systematic knowledge of the immature stages of the group is surprisingly scanty. This is perhaps due in the first place to the secluded nature of the breeding places of the members of this family, and secondly to the fact that, unless and until the complete life-history of each species is studied thoroughly in the laboratory,