R/D-tw
8-10-49

AN ATTEMPT TO COLLECT AIRBORNE PARTICLES ASSOCIATED WITH THE FIREBALL OF JULY 24, 1949

By

W. D. Crozier
and
Ben K. Seely

NEW MEXICO SCHOOL OF MINES

METHOD

A fireball was reported to have passed over the general neighborhood of Socorro, New Mexico, at 8:26 p.m., July 24, 1949. Impactment equipment, developed in connection with the aerosol research project of the New Mexico School of Mines, was available, and it was decided to make systematic collections of airborne material in the hope of obtaining material that could be associated with the fireball. For the present report it is sufficient to state that the equipment processed air at the rate of about 34 liters per minute, the particles being separated from the air by impactment against an adhesive-coated plate in an air jet. Approximately ninety per cent of airborne particles with diameters greater than one micron are collected.

The adhesive used on the collecting plates (microscope slides) was a glycerin-gelatin mixture with an addition of rubeanic acid (dithiooxamide.) This reagent was used to enable identification of copper or copper compounds; it also enables identification of nickel and cobalt. After making the collections, the slides were covered with a Saran film, after which they were exposed to strong ammonia vapor for fifteen minutes to effect partial solution of any copper or copper oxide particles.

RESULTS

The first collection was made at 10:00 a.m., July 25, about thirteen and one-half hours after the fireball was seen. The air was taken about twelve feet above ground level, on the campus of the School of Mines. The first run was for three minutes, processing about 102 liters of air. Several large particles were found in it that gave positive copper tests. In at least one of these the copper reaction was seen before the ammonia treatment, indicating the presence of at least a trace of a soluble copper compound. The sizes of particles seen in the first collections ranged up to over one hundred microns in the largest dimension: the largest particles gave the impression of being fragments of a somewhat fibrous material, with the smaller