

STARS AND SINGLE TRACKS IN NUCLEAR PLATES

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IN March 1949, a series of balloon flight experiments was conducted from Madras, in which Ilford N.R. plates (B_2 and C_2 , 50μ) were exposed at altitudes up to 60,000 ft. In June 1949 a similar series was conducted from Bangalore, using Kodak N.T. 4 plates (200μ), in which altitudes above 90,000 ft. were reached. Some plates from each batch were used as controls and developed along with the flight plates. The plates have now been partially examined, and the purpose of the present paper is to give a preliminary report of phenomena observed in the plates which appear to be of interest and importance.

All the plates examined show a population of short isolated tracks. In the preliminary stages of the examination of the plates we were struck by the apparent constancy in the length of these tracks, and by the fact that they often appeared in the vicinity of stars. Stars were frequently found with an isolated track visible in the same field of view. With some stars there were two such tracks and in two cases even three. It was therefore considered desirable to collect detailed statistics regarding the phenomenon, which has so far not been reported by other workers.

Some 50 sq. cm. of the plates has been examined under a medium power, in which about 1,200 isolated tracks have been recorded. The results shown in Table I are confined, however, to a total area of some 17 sq. cm. which has been examined in detail, using objectives of 60x with a N.A. of 0.90. Care has been taken to ensure that nothing of significance has been missed in this area. The actual measurements have all been made under oil.

Only those isolated tracks of which both ends are in the emulsion, and only those stars which have their point of origin in the emulsion, are included in the statistics. The stars are classified into 'large' and 'small'. Large stars are those with six or more prongs, or with one track exceeding 60μ in length. These stars are almost certainly of cosmic ray origin, whereas the small stars may be due, in part, to radioactive contamination. The results for the four groups of plates are collected in Table I.