

EDITORIAL

This issue of the Journal of Applied Meteorology is dedicated to the memory of Abraham Gagin, who died in September 1987 at the age of 54. As guest editor for the Gagin Memorial Issue, I extend the thanks of the American Meteorological Society to all of the authors and reviewers who have joined in this tribute to him. Dr. Gagin was a well rounded individual, truly a citizen of the world as well as his adopted country, but my comments are limited to his scientific exploits.

Almost every review of the status of weather modification published since 1970 has described the Israeli experiments as providing the most convincing evidence available anywhere that cloud seeding can, in fact, increase average rainfall over an area. The credibility of the reported rainfall increases from Israel I and Israel II is due to impressive compilations of statistics and to Dr. Gagin's cloud physics studies, which provided a plausible explanation for the rainfall increases suggested by the statistical analyses. His pioneering work emphasized the continentality of convective winter clouds in Israel. He postulated that the lack of an active coalescence process in those clouds, coupled with a scarcity of natural ice nuclei effective at temperatures above roughly -20°C , made them ideal candidates for seeding with artificial ice nuclei to increase their precipitation efficiency. His successful attempts to combine radar observations, aircraft data, and raindrop observations at the ground into a coherent picture of the physical processes involved made the apparent rainfall increases credible.

There are still some outstanding questions about the rainfall statistics compiled on the second Israeli experiment, particularly concerning rainfall in the south target area. Furthermore, satellite observations of convective winter clouds in the eastern Mediterranean, with their banded structure and frequent overlying cirrus, and unofficial reports from pilots who have flown through convective clouds in that area, suggest that the target clouds for seeding in Israel are not as pristinely ice-free as Dr. Gagin thought at one time. However, this later evidence does not detract from the greatness of his accomplishments. He raised fundamental questions that made many scientists think more critically than they had previously about the physical processes involved in attempts to modify precipitation. Dr. Gagin's work is a foundation upon which future researchers can build as they seek answers to the fundamental questions that he raised in such a compelling fashion.

A. S. Dennis

Guest Editor

