THE FUTURE OF WEATHER MODIFICATION*

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When I look back twenty-five years to the early days of Weather Modification--the exciting achievements, the often bitter arguments, the problems with early generators, the sometimes faltering steps, the skepticisms, the overenthusiasms, the court proceedings, as well as the good fellowships such as we are experiencing at this meeting--I look forward to the next quarter century with great anticipation. Without question there will be more of the same! I sincerely hope, however, that we will collectively be smart enough to avoid the serious pitfalls, that we will have learned how to get along with each other, and that we will temper our enthusiasms with some degree of modesty.

What of the future--whether the weather!

If I were to make one strong plea, it would be that we become more realistic about the job that needs to be done and scrap the outmoded and useless so-called randomized seeding procedures. In my opinion, a person is naive indeed if he (or she) thinks that randomization as presently practiced will ever solve the problem of whether or not cloud seeding is responsible for water in the river or snow on the mountainside. If successive storms proceeded to develop in identical ways, there might be a chance. As it is, however, except in rare and nearly unique instances, every storm is different from all others. To compare one with another is a frustrating exercise and one that is bound to fail.

The randomization folly (as I think of it) has reached the absurd level (as we were told during the course of this meeting) that even the main investigators of a project will not know until the season is over whether or not the clouds they were working on were seeded or not! What a way to conduct atmospheric research!!

I realize, of course, that what I am saying will not be accepted by certain persons and groups, and that I am attacking a "sacred cow" that has been carefully protected for these many years.

What I propose for the immediate future is a major effort on the part of at least a few research-minded field people, that every effort be expended to seed every weather system that comes along, searching in the process for new phenomena that can be used as evidence of seeding effects. The effects to be looked for are unnatural effects, so striking that when observed there can be

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little question about their uniqueness.

I know, of course, that there are a number of commercial programs that do just that. The shortcomings of such projects, however, is that most of the time the project sponsors are not particularly interested in scientific studies and thus are reluctant to provide funds to permit extra work to be done.

I recently enjoyed reading the fascinating account that Tom Henderson prepared of his journey to Russia, visiting the various hail projects underway in that country. Up to the moment this represents a unique opportunity, one that has not been granted to any other American.

At the end of his account, Tom proposes that a joint research project be planned to conduct a cooperative study with the Russians on hail prevention. Among the places suggested for this study is the Kericho area in Kenya, where Tom has considerable experience and which produces more than 200 hail days a year. It would be nice to believe that this recommendation would be adopted forthwith. However, I fear that this is an instance when a special case of the people problem will provide obstacles that will be hard to overcome.

I would make one final plea. I strongly urge that at least a few of our graduate schools give major attention to the training and development of first-rate field scientists. If we are to make real progress in sorting out the complexities of cloud behavior as affected by natural, anthropogenic (inadvertent) or intentional cloud seeding activities, we need a number of highly competent field men having the ability to understand what they see in the atmosphere, and who are capable and intelligent enough to utilize all of our present technological tools in combination with their field observing abilities.

Several times in the past I have suggested that we should have several major objectives for the immediate future. These include the elimination of false cirrus in the late afternoon sky, the effective seeding of a specified region so that it appears as a distinct anomaly on the snow survey maps prepared at the end of the snow season, and the removal or production of clouds for agricultural and solar energy purposes. I also believe the time is propitious to give careful attention to a return to the use of dry ice in aerial seeding.

Success in these endeavors can only auger well for the future progress of weather modification. I wish you well!