SUMMARY

From a microclimatic study of three sites in a field in an intermediate stage of succession, and one site in a mature oak-hickory forest community on the Piedmont of New Jersey, the following features were recognized:

1. Thermal extremes were manifest in decreasing intensity from the open, to the stations under the maple and cedar, to the most modified conditions found in the wood lot.

2. Maximum air temperatures ranged 10°-15° F higher and minimum air temperatures were 5°-10° F lower in the field opening than in the wood lot. These extremes in the woody matrix of the field were slightly less, being 5°-10° F different.

3. The degree of temperature difference was found to vary with the leafless and foliated season. When the broadleaf canopy was open, the highest temperatures were recorded at the lower levels (5 cm. and 20 cm.), but with a closed canopy the highest maximum temperatures were found at 2 meters.

4. Soil temperatures showed the same trend as air temperatures, but differences between stations were lower. The greatest difference occurred between the open and wood lot when the canopy was closed. Then, the maximum tempera-

tures were 10°-20° F higher and the minimum temperatures 5° F higher in the open than in the wood lot.

5. Evaporation from atmometers in the herb level at the four sampling stations revealed that evaporation was least in the wood lot. In the field, evaporation was lowest in the herb opening and highest under the cedar and maple.

6. The variation of temperature and vapor pressure deficit at the time of observation shows that the penetration of insolation, as controlled by the canopies and cloud coverage, was found to be most important in the vertical temperature gradient. Air movement appeared to be of more significance when coupled with the two previously mentioned factors in determining the vapor pressure deficit gradient of the air.