5. Deep wells should be employed in all areas where there is 60 or more tons per acre of salt on the ground surface and in the upper layers of the soil. Details relating to conclusions 4 and 5 are given in the following paragraphs:

(i) In all simulation runs except two the salt concentration of the applied irrigation water remained less than 2500 milligrams per liter during the first fifty years. The two cases in which this concentration was exceeded were combinations of shallow (50 ft) wells and high (60 tons per acre) initial salt concentration on the ground surface and with no drainage in surface channels. But in both of these situations when either a deeper well (250 ft) or drainage (10 percent) was introduced, the concentrations remained well below 2500 milligrams per liter level for the 50-year period.

(ii) With one exception for all runs having 60 tons per acre initially on the surface of the ground, the concentration of the applied irrigation water fell above the 1100 milligrams per liter level all or part of the time during the first 50 years. The exception was the combination of a deep well (250 ft) with initial ground water concentration of 1000 milligrams per liter.

(iii) In most runs with no initial salt on the land surface the concentrations for the first 50 years remained under 1100 milligrams per liter. The following cases were exceptions to this rule: (1) the various combinations with shallow wells (50 feet) with and without drainage and with high initial ground water concentration (2000 milligrams per liter); (2) one case of a deep well (250 ft) with high initial ground water concentration of 1000 milligrams per liter.

Digital Computer Simulation of the Hydro-Agronomic Regime

This model simulates the action of a tubewell (single well model) or set of wells (multiwell model) and other hydraulic control devices that may be used in combating waterlogging and salinity in the irrigated regions of West Pakistan. The program for the computer was designed by the Harvard Water Resources Group as an engineering tool for simulation of the future detailed planning of individual project areas. The objectives are: to illuminate choices between designs involving different combinations of tubewells, surface drains, subsurface drains, and canal linings; to determine the optimal spacing and depth of tubewells; the proper schedule of pumping during the year to maximize agricultural productivity; and the proper schedule for drainage. The program of the model has great flexibility; it can be used to simulate conditions in a wide range of geographical and hydro-geological environments