greater than 0.5 to 1.0 percent. Most of this land is in Former Sind. In several million additional acres throughout the irrigated area of the Indus Plain, the upper soil layers contain 0.2 to 0.5 percent salt. It should be possible completely to restore the productivity of those portions of the latter area which have not been damaged by sodium, through application of 2 to 3 feet of leaching water. However, either vertical drainage with tubewells or horizontal drainage by means of ditches must first be established. Rice crops can often grow during the leaching process. About 6 feet of leaching water will be needed in the regions of high soil salt content which have not suffered sodium damage. With only 1 or 2 additional feet of water per acre available from tubewells, such reclamation over extensive areas must inevitably take several years before profitable crop production can be re-established.

Unfortunately, a large fraction, perhaps 50 percent of the salt-damaged soils in the Former Punjab may also have a high proportion of exchangeable sodium, and hence a seriously impaired permeability.

Analyses of nearly 2000 samples from Central Rechna Doab, in the area of Salinity Control and Reclamation Project No. One, show 51 percent with less than 3 milliequivalents of exchangeable sodium per 100 grams of soil; 24 percent containing 3 to 6 milliequivalents per 100 grams, and 25 percent with more than 6 milliequivalents per 100 grams. Presumably this twenty-five percent lies largely in the area of high saline soils. In most soils, an exchangeable sodium content of 3 to 6 milliequivalents per 100 grams would require nearly continuous leaching for 4 to 6 years. When the exchangeable sodium is greater than 6 milliequivalents per 100 grams, reclamation of typical soils usually can be accomplished only by special measures, such as leaching with highly saline waters having a relatively high ratio of calcium and magnesium to sodium, and relatively low carbonate content. The Punjab soils are not typical, because they usually contain small amounts of swelling clays, such as montmorillonite, but even so we anticipate that leaching will be very difficult in perhaps as much as half of the salt-damaged area.

The situation may be worse in Former Sind if, as may be expected, the sodium content of river and ground waters increases downstream. On the other hand, in the area under command of the Ghulam Mohammad Barrage Canals, south of Hyderabad, the ground water may fairly closely resemble sea water in composition, that is, it may have a low carbonate and a high