

In proportion to their size, Chaj and Rechna Doabs are most seriously blighted by waterlogging and salinity, but 600,000 acres in Bari Doab are also affected, particularly in the southern part of Multan District and in the northern parts of Montgomery and Lahore.

The figures we have cited for waterlogging and salinity damage in the Former Punjab are less than half of those given in the "Report on a Reconnaissance Survey of the Land Forms, Soils, and Present Land Use of the Indus Plains," published in 1958 under a Colombo Plan Cooperative Project. The latter figures, which have been repeated in the "Program for Waterlogging and Salinity Control in the Irrigated Areas of West Pakistan,"<sup>(30)</sup> were based on aerial photographic mapping and not on estimates of crop damage from salination, or measurements of water levels and soil salt content. As the report itself indicates, these aerial photographic estimates are subject to considerable uncertainty (p. 378). In any case, it is clear that the problem of waterlogging and salinity damage in the Former Punjab has reached serious proportions. In agreement with the conclusions of previous investigators, we are convinced that it can be cured or arrested in areas of relatively fresh and usable ground water by constructing a system of large wells to provide vertical drainage. Most of the water pumped to the surface by these wells would be carried off by evapotranspiration; most of the remainder would percolate back into the ground, carrying the soil salts with it; a small part would be disposed of in the rivers. A large fraction of the saline soils can be reclaimed, though this will be slow and expensive in areas where the permeability has been lowered by sodium damages.

#### Waterlogging and Salinity in Former Bahawalpur

Throughout the Former State of Bahawalpur, a salt efflorescence appears on uncropped land, but soil salinity is said not to have a major adverse effect on agricultural production. The desert areas to the south and east apparently form a great sump in which some of the underground flow from the Punjab Rivers rise near to the surface and evaporates. Over most of the cultivated lands, the water table is mapped by the West Pakistan Water and Power Development Authority (WAPDA)<sup>(31)</sup> as being within 15 feet of the surface, and adequate drainage will undoubtedly become a problem in the future. This problem may be difficult to solve if, as suspected, the underground water is highly saline.

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(30) West Pakistan Water and Power Development Authority, May 1961.

(31) op. cit.