

tional river water will have to be diverted on to these lands to meet the consumptive use requirements of crops and to leach down the salts. At the same time drainage channels will have to be constructed. As pointed out by Dr. Eaton, the drainage facilities must be provided before, rather than after, the agriculture is impoverished.

Saline Groundwater Areas

The most damaging recommendation in the *Revelle Report* was the proposal to pump water in the saline groundwater areas (having an average salinity of 6000 ppm), to mix it with canal water and to use the mixed water with an average salinity of 2000 ppm for irrigation purposes [18, p. 281]. The Panel members now consider (p. 344) that at least in half of the saline area the groundwater has a salinity of less than 5000 ppm, and this can be used for irrigation if it is sufficiently diluted with canal water. For justifying the use of this saline groundwater, the Panel members have developed a set of equations which are given on pages 348-350 of their paper.

Taking two examples, one with irrigation by canal water and the other with irrigation by mixed canal and tubewell water, the Panel members have shown (p. 350) that the salinity of the mixed water can be $0.188/0.0192 = 9.8$ times larger than that of the canal water. Thus if the surface water has a salinity of 200 ppm, the concentration of the mixed water can be 2000 ppm, corresponding to a groundwater with a salinity of 3800 ppm, mixed with an equal quantity of canal water.

It appears that the Panel members obtained their result by making two incorrect assumptions: 1) The depth of irrigation water was taken as .65 feet (or 7.8 inches) and the interval of canal irrigation was taken as 4 weeks; 2) with 25 per cent increase in water supply with the installation of tubewells, the interval of irrigation of mixed water was reduced from 4 weeks to 1.5 weeks. The actual depth of irrigation in West Pakistan is 3 to 4 inches which is about one half of that assumed by the Panel members. The water is generally applied after 2 weeks. When irrigation supply is increased by 25 per cent, the interval of irrigation can be reduced from 2 weeks to 1.5 weeks, but not from 4 weeks to 1.5 weeks. If the example on page 349 is recalculated by taking depth of irrigation as 0.325 feet and interval of irrigation as 2 weeks, the salinity concentration of the mixed water would be $0.188/0.048$ or 3.9 times that of canal water. If the salinity of canal water is 200 ppm, the salinity of mixed water can be 780 ppm, corresponding to a groundwater salinity of 1360 ppm when mixed with an equal quantity of canal water.