$$RL = \frac{Sw \times 100}{2 \times Mss - Sw}$$

For annual plants of low salt tolerance ... Mss = 20

For annual plants of medium salt tolerance ... Mss = 30

For annual plants of high salt tolerance . Mss = 75

For standard water-quality comparisons, the use of Mss = 30 is suggested.

Comments on the Derivation of the Equations

The leaching requirement, RL, represents the percentage of the applied irrigation water which should be passed through and out of the root zone as leachate for the maintenance of yields averaging 80 per cent as high as on similar non-saline soil. If the equations, when converted to acre inches of leachate, for example, show that there should be five acre inches of leachate, this amount remains valid irrespective of whether the actual leaching is brought about by irrigation or by rainfall, *i.e.*, the rainfall may produce the leaching but the acre inches of required leachate computed on the basis of the amount of irrigation water applied is not changed.

In the RL calculation, unreasonably high values result if either the electrical conductivity or sum-of-cations is substituted for $Cl + \frac{1}{2}SO_4$, because HCO_3 would be included; HCO_3 is not significantly accumulated by plants. But its presence as $NaHCO_3$ depresses Ca and Mg accumulations. These ions, in ample amounts, are essential for good crop production. It is more economical to avoid the adverse effects of HCO_3 by the use of gypsum than by extra leaching. In the instance of the Indus River at Sukkar on January 30, 1953 [3]. the leaching requirement by the present equations is 1.4 per cent. But on the basis of electrical conductance or sum of anions or cations, the requirement is found to be several times greater and unreasonably high.

The expression, in the Ca requirement equations, Na × 0.43 shows the amount of Ca + Mg needed for 70 per cent Na. If a water contains 5 me./l of Na then Na × 0.43 shows that 2.15 me./l of Ca + Mg will be needed to give 70 per cent Na. The deficiency or excess from 2.15 is carried forward with the plus or minus sign in computing the Ca requirement: a+b+c.

The present Mss values (used in the denominator of the RL equation), are lower than those previously suggested because of experimental results [4, pp. 411-416] showing that chloride accumulates at root surfaces and gives rise to higher accumulations in plants on a soil than on a water culture even though the substrate concentrations are maintained at the same level.