

charge of Rs. 0.08 per kwh, used for both types of installation. In other respects too the two systems have been put on as comparable a basis as possible, as the source notes indicate in detail.

The computation shows that water pumped by private tubewells costs about 8 per cent more than water pumped by government wells. In view of the inherent lack of precision of such a calculation this difference should not be taken seriously; to all intents and purposes the calculation indicates that the costs of water from the two types of well are approximately the same. It should be noted, however, that in Table IV we have assumed the same load factor for both types of well, approximately 25 per cent. This load factor accords with the recorded experience with private wells but the public wells in the SCARP have been operated at a load factor of about 60 per cent. If the more intensive use of government as compared with private wells should persist, then the government wells will show an appreciable economy in comparison with the operating costs of the private wells.

At any rate, such cost comparisons cannot be decisive, because, as remarked above, the private and the public wells serve different purposes in the overall development of the Indus Plain. Private wells have been used only for very local supplementation of the supplies of canal water. Water provided by private tubewells is approximately four times as expensive as government canal water to the owner of the private well, and to a farmer who purchases from a private well owner, the discrepancy is even greater. Private wells will therefore be developed only in areas that have adequate supplies of high quality groundwater and they will be used mainly to fill in gaps in the supply of canal water. They have not been installed thus far in localities where the groundwater is too saline to be applied to the land without dilution with canal water. From the farmer's point of view the supply of government water from either wells or canals is less reliable than that of water provided by a locally owned tubewell and the government wells cannot be adapted as flexibly to day by day changes in the local requirements for irrigation water. On the other hand, the government wells can be used for the dilution of saline groundwater, for reclamation of deteriorated lands, and for closely integrated management of both ground and surface water supplies.

The advantage of closely coordinating canal diversions and groundwater withdrawals can be seen from a simple calculation based on the data in Table II. Suppose in the first instance that Mangla and Tarbela Dams are operating but that no tubewell water is available, and that the maximum amount of canal water available during any month in *kharif* is 12.4 MAF at the canal heads, or 8.7 MAF at the water courses, this being the maximum capacity of the canals.