Subsoil Water Levels on the Agricultural Research Station, Sakrand.

By R. S. K. I. Thadani, M.Sc., M.Ag., and Dr. B. T. Mulwani.

EARLY in the period of construction of the Lloyd Barrage and canals project, the question of water-logging was brought very prominently to notice by the experience of the Punjab Irrigation Department. In the Punjab, water-logging has, on some older canal systems, become a very serious problem indeed and it has been necessary for the Punjab Government to set up a special organisation for the investigation of water-logging problems and to undertake many expensive drainage schemes with a view to the reclamation of water-logged or damaged lands and the prevention of further extensions of the trouble. The canal systems in the Bombay Deccan, which are fed from storage reservoirs, have also experienced a certain amount of the trouble due to the damaging, or water-logging, of lands as a consequence of irrigation from the canal systems. The experience of both the Punjab and Bombay indicated that similar trouble might be expected in Sind. This indication has led to the investigation of conditions in the areas commanded by the Lloyd Barrage canals to ascertain the possibilities of water-logging following the commencement of Barrage irrigation.

It has been now found out as a result of preliminary investigations by the Research Division of the P. W. D., that a very large area on the Right Bank (about 3,500 sq. miles) in which the predominant crop was Rice, has a high sub-soil water table. This water table is found to vary, yearly, from 3 ft. to 13 ft. below the surface of the ground, the water table being nearest the surface at the end of the irrigation (Kharif) season (*i.e.*, in October) and lowest at the commencement of the irrigation season in June.

In the other areas commanded by the Barrage, notably those on the Left Bank of the river, sub-soil water table has been found

Sub-soil water level in feet above sea-level. (Average of readings from six bore-holes.)

Year	Minimum Water level	Date when the minimum was reached	Maximum Water level	Date when the maximum was reached	Annual rainfall inches	Remarks
1928	70·9	27th May	73·9	17th Sept.	2·00	
1929	68·9	27th May	83·0	7th Oct.	20·36	Abnormal Floods.
1930	77·3	3rd June	86·0	16th Sept.	6·21	Floods.
1931	77·8	1st July	80·2	16th Sept.	3·45	
1932	73·5	16th June	83·5	16th Oct.	6·96	Supply of Barrage Water started from July.
1933	77·8	1st July	81·8	16th Oct.	7·00	
1934	76·2	1st July	80·2	16th Oct.	6·10	
1935	75·2	15th July	77·7	1st Oct.	4·83	
1936	74·4	1st July	76·7	1st Oct.	1·54	
1937	72·3	1st July	74·0	16th Sept.	3·82	

(*N.B.*—The ground-level is approximately 100 feet above sea-level).

to be situated at much lower levels; the problem of possible water-logging is, therefore, considered to be most urgent on the Right Bank.

It was considered necessary to know the result and effect of irrigation water, increased intensity in the cultivation and other factors like seepage, etc. (following the opening of the Barrage canals) on sub-soil water. With this object in view a series of six bore-holes had been struck right across the Sakrand Research Station in 1928. A record of the periodic fluctuations in the sub-soil water levels has been maintained since then. The maximum and minimum levels of the ground water from year to year have been tabulated above.

Examination of the data has shown so far that both the maximum and minimum levels are steadily decreasing after the rise following the supply of the Barrage water. This steady recession of the sub-soil water-level away from the soil surface is a welcome feature, on the left Bank of the Indus. Similar observations will be recorded at the Agricultural Research Station, Dakri on the Right Bank, which has just been started.

Dr. T. S. Wheeler, D.Sc., Ph.D., F.I.C., F.Inst.P., M.I.Chem.E.

THE retirement of Dr. T. S. Wheeler from the Royal Institute of Science, Bombay, is a very real loss to chemistry in India.

Dr. Wheeler possessed unique qualifications and experience as a pure and applied chemist. Educated at the O'Connell School and Royal College of Science, Dublin, he began his professional career as a demonstrator in organic chemistry at the Royal Technical College, Glasgow. He next turned to chemical industry as research chemist at the Royal Naval Cordite Factory, Dorsetshire, and later at the Research Department, Woolwich Arsenal, London. He was then appointed Senior Research Chemist to the Imperial Chemical Industries, a position rarely filled by one of Dr. Wheeler's comparative youth. The outstanding feature of Dr. Wheeler's record as a chemist is his versatility, his publications consisting of over 80 papers in well-known journals embracing every branch of pure and applied chemistry. The width of the range can be judged by his contribution to the theory of liquids on the one hand and his work on the chemistry of coumarins and chromones on the other. He was a D.Sc., a Fellow of the Institutes of Chemistry and Physics and a Member of the Institution of Chemical Engineers, an unusual array of qualifications. During the seven years that Dr. Wheeler spent in India, he established a notable position for himself in the chemical life of the country. He was responsible for the creation and development of a vigorous school of research in physical and organic chemistry in Bombay. The Department of Chemical Technology of the University of Bombay owes a great deal to the enthusiasm, initiative and general technical ability of Dr. Wheeler. As a member of the various committees connected with the creation of the Department and Vice-Chairman of the Board of Visitors, Dr. Wheeler's interest in the Department of Chemical Technology has been deep and abiding. Dr. Wheeler was prominently associated with every scientific organisation in India, being a member of the Publication Committee of the Indian Chemical Society and Vice-President of the National Institute of Sciences and of the Indian Academy of Sciences. In his departure from India, Dr. Wheeler carries with him a keen sense of regret on the part of Indian chemists that his association with them should have been prematurely terminated and every good wish for success and happiness in the new post of State Chemist in Eire, to which he has been appointed.
