

WELL IN THE VILLAGE "EUREKA"

Autobiography of M.H. Panhwar
(First ten years of my life seventy chapters, 250 pages.)

There was only one well in the village constructed by Wadero Haji Allah Warayo in late twenties. He brought his Mushid (holy spiritual guide) to locate the site, the latter also brought a person from Thar or Rajasthan desert. The latter may have been water diviner to help Pir in his assignment. The location of well was in cultivated low land rice field and it was sure sign that having been irrigated for some 60 years, enough seepage water may have accumulated down to ensure regular supplies for drinking purposes. The land surrounding it was irrigated year after year and thus water was recharged annually.

This well was an attractive site for children. Water from Nar or Persian wheel was falling in to a trough (Parach) dug out from trunk of a tree and it discharged into another similar piece called Nesaro. The latter discharged in to cemented manger like pond from which animals drank. Animals of whole village were brought by owners, who queued up. About ten thirsty animals were drinking water simultaneously and the movements of their mouths, heads, necks and upper shoulders, during the process of drinking showed their urgency, containment and final withdrawal at end of quenching the thirst. Each group of animals i.e., buffaloes, cows, goats, sheep, camels and even dogs had their own way of drinking and is worth observing any day. For birds, this was the only place to get water in miles. But the most interesting was the drama going on inside the well.

The Nar or Persian wheel called Sindhi wheel by Arabs was a copy of bronze bilage pumps developed by Greeks to remove water from leaky ships around 250 BC. A large number of Greek ships visited Barbarican (Banbhore) under patronage of Ptomeys of Egypt since 200 BC, and under romans after 30 BC. Bilage pumps had two cog wheels to convert rotary motion of one cog wheel moving in a vertical plane to horizontal axle of another cog wheel. On the axle of second cog wheel, the Nar or wheel with a long end-less fibre chain was fitted. To the chain were fitted bronze buckets. The trade with Barbarican reached its climax around 60 AD. It was during this period that Sindhi carpenters and farmers may have seen the wheel and copied it for irrigation, though it was used in Mediterrean countries around 200 BC, and information on it may have travelled from there. However the crude wooden copy was not as efficient as bronze one. The trough dug out from tree trunk allowed water to splash as

buckets kept discharging from some height. Since trough had to be located sufficiently above the axle so as to discharge via another trough to water tank by gravity, to reduce excessive splash it had to be located mid-way between buckets and axle of wheel. Buckets discharged water before they reached the level of trough and kept doing so after they left it. In general fifty to sixty percent water discharges back into well. This splashing created beauty of sprinkling water that was surpassed only by Niagara or Victoria Falls, which I visited decades later on. Large quantities of water broken in to droplets, were falling every-where inside the well and along its walls. Some times rainbow was formed specially just before mid day to mid afternoon.

On a Sunday, I lay down on stomach with my head on the edge of well and was watching its Kalidasopic beauty, when around 11.00 a.m, they sopped the wheel, as water table had gone down by some ten feet and buckets of wheel could not submerge into water. I saw some thing that has been a matter of investigation in my life. The village folk believed that water in the well was connected with another well near the grave of Makhdoom Bilawal a holy man six kilometers south as crow flies but I saw some thing altogether different. Water was trickling through the brick joints all around the ten feet column and though hardly perceivable in top layers, but as it collected on way down the wall, it could clearly be seen filling the well sump. I rushed to my grand-father, who was there and told him water in the well is not coming from bottom or by any under-ground natural pipe line from Makhdoom Bilawal's well, but from the sides. Every body who heard it laughed and ridiculed me. The next day the school boys did the same. They called me by name Khyali (day dreamer). However it did not discourage me and I kept watching the well every Sunday. Then we had summer vacation which coincided with flowing of inundation canals and irrigation water applied to fields surrounding the well. I went to visit it. Water table in it had risen. It was half way between the top of well and where it stood when Persian wheel was operating earlier, before the field around the well were irrigated. I made it a point to visit well every day and by end of vacation (end July or early August), the well was full to the berm. During the same day I had dug a pit just one foot diameter with a pointed wooden stick, near the bank of watercourse and deep enough that I could lower my-self into it up to neck to hide myself from my mother, when she took me for bath around sun set. Next day I found the pit almost three quarter full, but no sign that any one had filled it. I dug another pit, left it over night and again saw it filled. The mystery was solved. It was water, seeping from watercourse which had filled my pit and level of water in pits was slightly below that in the watercourse. It became clear that it was water from fields which was going down and also seeping horizontally to fill the village well. When water table in the fields

kept rising, it did so in the well too. By end of July ground was saturated with water and water in the well reached its top. This discovery while I still was about six years old made me very happy to run and disclose, but I understood the consequence would be another ridicule. While in high school. I read of Archimedes running naked and disclosing to the Ptolemy King, "Eureka" or I have found out.

My mind was so involved in this, that twenty years later in 1951, I found my self voluntarily busy in USA, on investigating of ground water, its development by tube-wells and conservation by recharge. An economic out-come of this was installation of three thousand tube-wells in Sindh and one thousand wells with pumping sets, in Baluchistan as Agriculture Engineer in Sindh 1953-1958 and Superintendeing Engineer for Sindh and Baluchistan (1958-1969). Another out come was some major publications on ground water listed below:

- I. Ground Water in Dadu District, 1962.
- II. Ground Water in Hyderabad District, 1962.
- III. Ground Water in Arid Zone of Hyderabad and Khairpur Divisions, 1963.
- IV. Ground Water in Hyderabad and Khairpur Division, 1964.
- V. Ground Water in Karachi District, 1964.
- VI. Ground Water in Lasbella District, 1965.
- VII. Ground Water in Quetta Division, 1967.
- VIII. Ground Water in Kalat Division, 1968.
- IX. Ground Water in Hyderabad and Khairpur Divisions, enlarged edition, 1969.
- X. Ground Water in Karachi Master Plan area, (4,000 square miles along the Super Highway) 4 volumes, 2400 pages, 1972.

The efforts put in by me between 1953 to 1969 can be seen from introduction to my book "Ground Water in Hyderabad and Khairpur Divisions".

Investigation into ground water meant extensive travelling in Sindh collecting iformation, reading and analysing. Inmy travels I visited

Darhiaro, Kute-ji-Kabar and Gorakh hill peaks. I also was able to locate forty two springs out of which eighteen were thermal or hot springs in Dadu, Thatta and Karachi districts. I travelled both Thar and Kohistan, the Indus plains being routine travel. I have observed the plains and hills from aeroplanes and have learnt how to locate old courses of rivers, archaeological sites etc., from air and aerial photographs. Between 1953 to 1970 I had collected 3000 books on Sindh. This number has increased today, I have 15,500 books on Sindh and another 27,500 books on Engineering and Agriucture. I think no body in this century or before has travelled in Sindh so extensively as I did and read books on so many different fields. Thanks to child hood membership of "Separation of Sindh from Bombay Presidency" and psychological fixation with Sindh. I think Freud was not right when he said that childhood fixation pertains only to sexual behaviour of a person. In my opinion it affects the total life pattern.