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Water for the tip of Africa

Early water supply systems for Cape Town

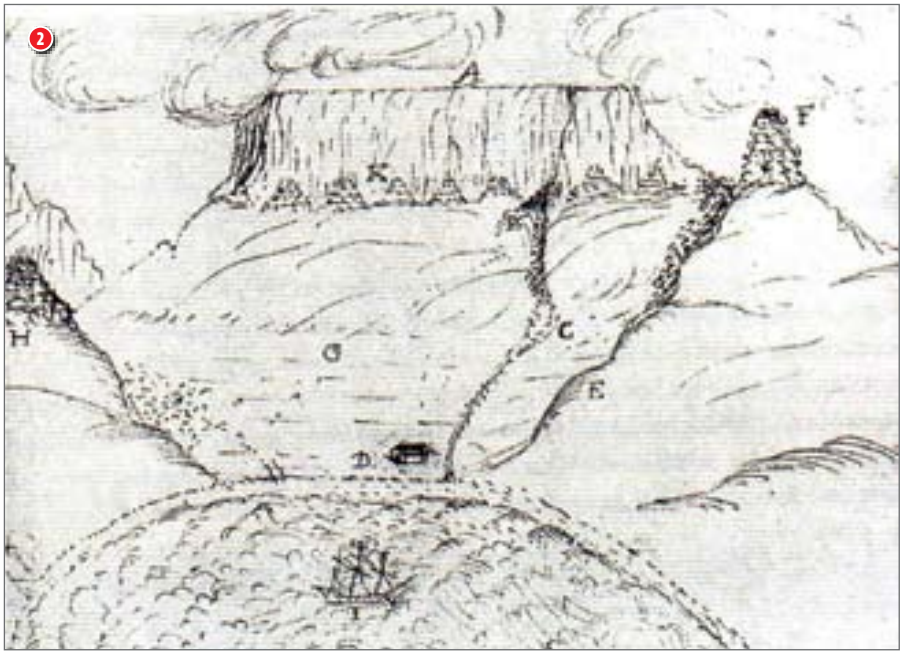
CAPE TOWN OWES ITS foundation to the presence of fresh water, specifically from the stream which once flowed into Table Bay from the Platteklip Gorge which bisects Table Mountain. The stream was prominent in pre-settlement times. A sketch by Peter Mundy in 1634 shows this as a prominent feature of the valley below the mountain: *"a Prettie Brooke which cometh from the Monstrous Cleft"*.

The governing board of the Dutch East India Company resolved to set up a temporary settlement at the foot of Table Mountain and sent Jan van Riebeeck to establish the Company Gardens just below the area where the Platteklip Stream split naturally into two. He diverted it into channels around both sides of the cultivated area, and installed a system of minor furrows for irrigation. The major stream, which he named the "Varsche River" then continued down to the sea where it was the source of drinking water for both the settlement and passing ships.

In 1660 he widened and deepened the stream bed, which now assumed the status of 'gracht' or canal, and he built a dam for filling water casks near the jetty. Van Riebeeck's successor, Wagenaar, replaced this with a larger cistern in 1670, and the remains of this structure were unearthed during the construction of the Golden Acre project in the 1970s where they are on display, in situ, today.

In all their colonies the Dutch harked back to their homeland and built canals, and even in the cash-strapped Company town at the Cape, a network of channels soon evolved. The main Heerengracht canal was augmented by a stream along Plein Street, while a cross canal along Strand Street drained from the slopes of Signal Hill. Other canals flanked Strand Street, Wale Street, Queen Victoria Street (then called Tuinstraat) and Long Street. The Kaisersgracht along the present Darling Street was built in 1693.

But the "prettie brooke" and its fresh,



1 John Chisholm: Cape Town Water Superintendent 1821-1856
2 Peter Mundy's 1634 sketch of the "prettie brooke"

clear water was soon a thing of the past. The "Varsche River" became polluted with dust blown in by the southeaster and by the run-off from the rudimentary streets, while slaves found it a convenient dumping place for household waste. Within a short while the canal water was undrinkable.

In 1707 Willem Adriaan van der Stel procured 200 lead pipes from the VOC to bring fresh water from the foot of Table Mountain to the jetty. A four-jet fountain supplied the local needs, and Cape Town was, waterwise, considered to be well provided for. A well in Greenmarket Square was the main source of drinking water when the fountains were dry. As the population increased, slaves had to bring drinking water to the citizenry from springs on the mountainside.

The directors of the Dutch East India Company, the Here Sewentien, were very reluctant to spend any money on 'unnecessary' infrastructure. Very little was done in the eighteenth century to improve services, and by the end of the era the Company had declined into near bankruptcy and had no money to spend on any improvements.

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BRITISH RULE

When the British took permanent occupation in 1806 the population of the town was about 17 000, but municipal services had progressed very little since van Riebeeck's time.

The shortage of water in the town required urgent attention, and the Home Government appointed the leading engineer of the day, John Rennie, to investigate augmentation of the supply. His solution was to build a 250 000 gallon reservoir in what is now Hof Street in 1814. A water superintendent, Mr John Chisholm, was appointed to implement the Rennie scheme, and he held this post under various titles until his death in 1856. Under his guidance the first cast-iron pipeline of 12-inch diameter was laid down Long Street, and branches of smaller bore were extended to the cross streets. He built several pumps to lift water from underground tanks, filled by mountain springs, for the use of the public. One example, the Hurling Swaai Pump, still exists in Princes Street, Oranjezicht, and has been declared a National Monument. However, by 1850 only 20% of the town buildings had running water. All others relied on slaves collecting water from the public fountains, or carrying water from the mountain springs.

In about 1827 the town canals had long passed their usefulness for supplying household water and Chisholm made a start on covering them over with stone or brick barrel arches. By all accounts these drains were not constructed to the engineering standards of the day. It also is unlikely, given the resources at the disposal of the fledgling municipality, that any proper maintenance was carried out. The stenches that emerged from these foul sewers – for such they had become – were cause for concern and annoyance, if not action.

By the mid 1840s the summer flow from the Platteklip Stream had all but dried up, and in 1849 Chisholm built a 2,5 million gallon reservoir to store winter flow. The main source of supply was the spring on the farm Oranjezicht. The supply chamber is still in existence and delivers about one Megalitre per day, although the quality is no longer considered potable. A 12 million gallon reservoir followed in 1856. These open tanks, Service Reservoirs No 1 and No 2, are still in use and can be seen below Camp Street in the Gardens.

Around the world public health reform was taking root, and in mid-century significant changes to London's drainage began to take place. By 1850 it had been amply demonstrated that cholera was spread by infected drinking water, and there were vigorous movements to install and improve drainage and sewerage in European cities. The medical practitioners who came to the Colony from Europe brought ideas about waterborne sewerage with them, but the municipality was not prepared to invest in sanitary services. Cape Town was, however, not only unpleasantly smelly, but unmistakably

3 Main spring chamber - situated on the original farm Oranjezicht

4 The Molteno Reservoir – built 1881, failed 1882, rebuilt 1886

unhealthy, and action was needed.

In 1857 the situation was becoming intolerable, and the newly established House of Assembly decided to flex its muscle. It appointed a Select Committee to report on the sanitary state of Cape Town. The Committee heard extensive evidence, and one can only marvel at the thoroughness and perspicacity of the Chairman of the Committee, the well-known John Fairbairn, who led the questioning. The obvious solution was to install proper sewerage, but there would not be sufficient fresh water to allow for waterborne sanitation and proper flushing of sewers.

The possibility of damming the Platteklip Stream was examined in some detail, but rejected, and there were brief thoughts on building dams on Table Mountain and exploiting the Newlands Spring. These were rejected in favour of a reservoir above the town, and augmentation from springs on the property of a Mr van Breda in the area now known as Oranjezicht. Again, however, there was no legal machinery to expropriate the rights to such resources, and significant improvements were still some time away.

Nothing happened for over twenty years, when enabling legislation to permit a reservoir to be constructed on the Van Breda property was eventually passed in 1877. In fairness to Council and its officials, it does appear that the ratepayers had refused to raise a loan of £10 000 for construction of main sewers. In 1880 the town was in a shocking state. Unrestrained winter torrents gouged out roads and flooded homes. Sand enveloped the town in clouds of red dust during southeasters, blinding and knocking down unfortunate pedestrians. Waste accumulated in covered grachts and released stinking gases. Night soil and refuse collection was inefficient and the contents of the latrine pails were frequently emptied directly into the streets. The city fathers were conservative to the point of lethargy and did little to promote proper sanitation. However, the water supply was becoming critical, so the new dam was given the green light.

The Molteno Reservoir was designed to hold 40 million gallons (about 180 Megalitres). This earth dam was completed in 1880, but the following year was exceptionally dry and the mountain streams dried up, so there was no winter inflow. Water restrictions had to be applied, and the public had to make do with three hours supply on alternate days. When the drought was broken in 1882, the reservoir burst, and it was not restored until 1886.

As the Colony expanded there was a clear need for proper expertise to organise the supply of water for the growing towns and villages. John Gamble was appointed as Hydraulic Engineer to the Colony in 1877, and amongst his wider duties was asked to find a more adequate and permanent source of water for Cape Town. Some older engineers had suggested that the plateau behind Table Mountain was a likely source. Gamble, who had set up rain gauges across the country, could confirm that there would be sufficient rainfall on the mountain top to justify a bold scheme to bring supplies from the back of the mountain through the Twelve Apostles to feed the Molteno Reservoir. He identified dam sites which could be used to store winter rainfall for consumption during the dry summers.

In the late 1880s a more progressive group of Councillors took control of the municipality and boldly decided to implement the proposals. Thomas Cairncross was appointed as City Engineer and he designed the tunnel through the Twelve Apostles which was completed in 1891. Initially water from the Disa River was simply diverted into the tunnel, and then piped to the Molteno Reservoir, but after a year or two it was plain that a dam would be necessary.

And so, in 1894, construction commenced on the Woodhead Reservoir.

At the same time the main sewerage scheme was implemented, so by the time the dam was completed the demand for water had grown appreciably. By 1899 Cape Town could at last be called a clean, healthy and modern city, but the water situation was again critical. At the end of the Anglo-Boer war – during which the influx of large numbers of troops added to the water shortage – a start was made on the Hely-Hutchinson reservoir, while three dams were built nearby to supply the separate municipality of Wynberg.

But these measures did not quench Cape Town's thirst, and in the 20th century a succession of much larger dams were built in the Hottentots Holland Mountains. The latest dam on the Berg River near Franschhoek will increase the available quantity of water sufficiently to prevent water shortages in the region until 2013, after which innovative sources would have to be found to meet the demand. □

Source:
http://www.saice.org.za/downloads/monthly_publications/2008/CivilOct2008/#/0