

CHINA the people move mountains to bring water

Clyde Sanger

This has been the year when the governments of the world turned their attention to their peoples' needs for water. In March they met at Mar del Plata, Argentina, at the United Nations Water Conference to discuss how to establish sound policies of water management at national and regional levels.

Then in August in Nairobi the focus was on those areas of the world where shortage of water is most acute. The United Nations Conference on Desertification had, at every turn, to face the truth that if the world's arid and semi-arid regions are to become more habitable and productive — in other words, are to be saved from becoming deserts — every skillful idea has to be used to provide these regions with water.

The work is still not finished: cutting a way through the rock to bring water to the rest of the county.



Photos: Clyde Sanger

The delegates to either of these conferences might have done well to learn about — much better still, to visit — Linhsien county in Honan Province of central China. For they would have seen an inspiring example of what can be done when a group of people become determined to end their years of poverty and to harness whatever water resources are available for everyone's benefit.

A first lesson for the delegates is that it requires long, hard work. It took 10 years for the able-bodied young and not-so-young people among the 700,000 population of Linhsien county to build the Red Flag Canal and all its branch canals, channels and irrigation ditches — some 1,500 kilometres of waterways. But, seven years after the canal's completion, it is possible to see what a transformation it has brought to the life of nearly everyone.

In the old days it was known as "the county of the four poors — poor mountains, poor water, poor fields and poor people". Exactly a century ago, a tablet was set up to mark the severe drought of 1877 and part of it reads: "... people kept alive on persimmon leaves and red soil. They sold their daughters for a few coppers. Deep unrest prevailed. What life was like during this natural calamity is engraved here in stone so that all will remember it."

These conditions continued. Our guide in Linhsien county, Liu Teh-ming, told us he fled in 1936 at the age of seven into another province to escape famine, while his sister was sold to rich people. One of the heroes of the canal construction, Jen Yang-cheng, was given that name, which means "nurtured by sheep", because he was born in a year of drought when adults weakened and starved, and his milk-less mother saved his life only by taking him each night to the landlord's sheepfold and finding a ewe that could give him some milk.

After Liberation, which came as early as 1944 in this area because Mao Tse-tung's armies had a strong base in the nearby Taihang Mountains, efforts began to improve water supplies. These efforts seemed ambitious at the time: many deep wells to provide irrigation, three large reservoirs and finally the 10-km Hero Canal out of the Taihang Mountains on which 8,000 people were mobilized to work. But in 1959 there was a more than usually severe drought; the canal dried up and the reservoirs were almost empty. Clearly they had not done enough.

Next year they took a deep breath and tried something far more ambitious. They decided to take water from the Changho River, which flows out of Shansi province and is the boundary between their Honan province and Hupeh province to the east. In order to build a gravity system and avoid any expensive pumping operations, they had to go 20 kilometres into Shansi province and divert river water along a canal they

would build on the contour around and sometimes through precipitous parts of the Taihang Mountains.

The Chinese do not hide the fact that the first weeks of construction were chaotic. The Party committee had hoped to finish the 70-km trunk canal in 80 days and have it ready for May Day 1960, by mobilizing 100,000 peasants to dig one metre each. But, as one account records, "when the number was around 37,000, the road became jammed with people and carts. . . . There was great difficulty in getting materials to the right place and in time, and there were not enough technicians and administrators to direct the work. . . . Some people even dug in the wrong places. Little headway was made on the project during the first 20 days. . . ."

Gradually they sorted themselves out. But, once inside Honan province, they faced their toughest obstacle: a granite cliff through which they would have to dig a tunnel more than 600 metres long. To do it, they had nothing except steel rods and sledgehammers and explosives that they made from finely ground ammonium nitrate fertilizer. The government in Peking was preaching austerity after three bad harvests, and gave them no help.

The Youth Tunnel, built by 300 handpicked young men and "iron girls", took 15 months to complete. It was here Jen Yang-cheng proved his heroism, dangling over the cliff-edge in all weathers to dislodge rocks loosened by blasting. Today he has the anticlimactic job of maintaining the tunnel and talking to visitors.

It was not until 1965 that the 70-km trunk canal was finished. From the diversion lock at its terminal spread out three main branch canals, the largest of them carrying water another 41 km south, with a flow of 14 cusecs. When the system was completed in 1969, it could irrigate 40,000 hectares of farmland, or two-thirds of the whole county.

What has it meant to the people? It has meant new crops. In the past they grew mostly millet and maize, and worried about the uncertainties of rainfall which reached 800mm only in a good year. Now they grow wheat, cabbages, cotton.

It has meant hydroelectric power. Not in large power stations, but by using the water several times over (we saw a series of 23 tiny plants, each generating 40 kilowatts, spaced down a sloping road) enough power is generated to bring rural electrification to the county's 500 villages. It also powers medium-sized industry: an iron and steel plant, a farm machinery factory, as well as threshing and milling operations in several places.

It has meant fruit orchards and trees on the mountainside to stabilize and improve the soil. Linhsien county means literally "forest county" and its name is only now regaining some truth.

Work has not ended for them. Plans are advanced to bring irrigation to the southern third of the county. When the summer crops are harvested, work gangs go out to level the land further so that agriculture can be mechanized and, in some areas, a third crop (perhaps winter wheat) can be grown in a year. Before the Red Flag Canal was built, average grain production per mu (one-fifteenth of a hectare) was 200 kg in a good year. Today it is 350 kg, and the county can sell more than 22,000 tons of surplus grain to the state. But county leaders say they can improve on that figure.

Living is still quite spartan in Linhsien county. The number of handcarts piled with cabbages, being hauled to market in early morning by young girls, attests to that. But it is far better than in the youth of Liu Teh-ming and Jen Yang-Sheng.

They will quote you Mao's saying, "Poverty forces people to make changes." They also like to recall his 1945 article on "The Foolish Old Man Who Removed the Mountains". For they did the same. □

Tiny hydroelectric plants bring power to 500 villages.



Clyde Sanger, Associate Director with IDRC's Publications Division, visited Linhsien county while in China late last year. This article was originally published in the IDRC Features series, a monthly news feature service on scientific, technical and educational subjects which is distributed free of charge to selected newspapers and magazines in the developing world. For more information write: IDRC Features, P.O. Box 8500, Ottawa, Canada, K1G 3H9.

The Changho River: diverting its waters through the mountains to Linhsien county took hard work and heroism.

