



Promise in the East

Andrew Charman visits Taiwan and learns about a narrow gauge empire facing a challenging period of transition from industry to tourism.

Globe-trotting narrow gauge enthusiasts arriving in Taiwan are more often than not heading for the remarkable Alishan Forest Railroad, a spectacular mountain line famed for its switchbacks, spirals and Shay geared locomotives.

However look beyond the obvious and the Pacific island holds a great deal of other rail interest with a rich narrow gauge history, remarkable considering the island stretches less than 200 miles from one end to the other. As detailed by Michael Reilly in his recent book *Narrow Gauge Railways of Taiwan*, until the advent of a mass-transit network in the 1990s and the opening of a high-speed system in 2006, Taiwan was an entirely narrow gauge country, with more than 800km of 3ft 6in gauge main line, and almost 4000km of narrower gauge routes, mostly of 762mm gauge. Today much of this,

particularly the remarkable 1300km of 'push-cart' lines, has gone, but plenty remains too, in places still running as an industrial operation, and all of it in the care of the Taiwan Sugar Corporation (TSC).

I must admit that before I arrived in Taiwan in December I knew very little about the Taiwan Sugar Corporation. In my long involvement with the Welshpool & Llanfair Light Railway I was aware that our German Diema works diesel had come from Taiwan in 2004, but that was it.

What I found in a week spent on the island was that TSC is a corporation very aware of its history, wanting to make the most of its heritage, but facing great challenges in understanding the way forward. Equally Taiwan has a highly active enthusiast community, initially surprising to me but perhaps less so after I saw the variety of narrow

Above: Extremes of railways in Taiwan – a loaded sugar cane train en route to Huwei is passed by a train on the standard gauge high-speed line.

Below: Industrial traffic still remains – a load of sugar cane awaits the end of ceremonies for the start of the harvest – note the remains of fire crackers on the ground!

All photos by Andrew Charman unless stated

gauge hardware that is still resident on the island.

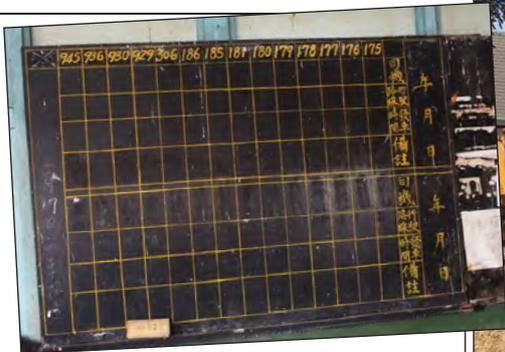
Taiwan has been growing, refining and marketing sugar since the 17th century and by the outbreak of World War II was the world's fourth largest sugar producer, exporting some 1.4 million tons a year. More than 40 mills relied on 2900km of 762mm railway line to move their product, and the network went far beyond industrial use. At least 600km was also used for passenger trains that became very extensive – at one point 600 trains a day were carrying 60,000 passengers on the sugar network, while annual freight figures reached six million tons.

Motive power variety

To haul these a trains a rich variety of motive power was used. The first steam locomotives were 10-ton Porter 0-4-0STs from the USA, followed by further orders from Baldwin, Alco and Davenport. As the network grew so did the loco orders – German builder Orenstein & Koppel was the most prolific provider, with at least 30 engines sent east by 1930. Orders also went to Barclay, Avonside and Kerr Stuart in the UK, Henschel in Germany and Tubize in Belgium, while from 1910 Japanese companies took an increasing slice of the business.

Most of these engines were fairly standard industrial designs of 0-4-0 or 0-6-0 wheel arrangement, though varying immensely in size. There were others, 0-4-2s and even 0-4-4s while following nationalisation of the mills to form TSC in 1949 orders for new locos were generally for heavier machines, (the corporation inheriting





a vast variety of mainly badly run-down locos). China now controlled Taiwan and among the Chinese anti-Japanese feeling was high so new loco business went mainly to Europe, principally to Belgian builders Anglo-Franco-Belge and Tubize for 0-6-0 side tanks in an attempt at standardisation.

By the 1950s some 350 steam locos were operational in Taiwan and steam survived in industrial use on the sugar systems until 1979. However from the end of World War Two steam had begun to be gradually replaced by internal combustion locos. Initially these were petrol-engined, the first 15 supplied by US builder Fate-Root-Heath in 1948. Some engines were also built on the island and in 1956-7 a 50-strong order was placed with Brookville in America for engines modified to run on ethanol, which as it formed from fermenting sugar was plentiful in Taiwan. Not everyone was convinced, however, and the Brookville order was followed in 1958 by one for more steam locos, built in Taiwan.

At this time the sugar industry was at its peak, employing 100,000 people and producing more than three quarters of all Taiwan's export earnings. The sugar lines were very busy, though freight now dominated, the passenger traffic having declined significantly. What traffic there was did result in an eclectic collection of railcars joining the motive power.

Updating programme

A decline in passenger traffic and the short harvesting season during which locos were required helped keep the steam fleet in operation, TSC reluctant to spend too much on motive power that would sit idle for much of the year. But from the mid 1960s a replacement programme began, both steam and ethanol locos making way for conventional diesels. Hitachi supplied 54 200hp locos in 1967 to '69, while the 1948 petrol locos received new Allis-Chalmers diesel engines of 385hp, allowing most of the pre-war motive power to be withdrawn.

By the 1970s other industries, such as electronics and textiles, had replaced sugar in export importance,



Above: Not everything is preserved – this is at Sanhua refinery, which is still working but with only one operable loco. The Diema acquired by the Welshpool & Llanfair, no 175, formerly worked here and is included on the now-empty driver board (above left).

Right: Michael Reilly examines one of many plinthed steam locos, this is TSC no 365, Tubize 2343 of 1948.

Below: The Diema-hauled heritage trains on the short railway at Qiaotou mill sugar museum terminate behind another plinthed loco, TSC no 355, again a Tubize product from the 1948 order.



but the industry was still healthy with 25 mills in operation and the rail network extending to 2000km. A further loco order was made, this time from Diema in Germany – 66 0-6-0 diesel-hydraulics with 247bhp Mercedes-Benz engines were supplied in 1977, followed by 25 with identically-rated Allis-Chalmers engines in 1979.

They were the last new locos ordered by TSC, as the sugar industry, and its railways, went into a rapid decline. First to go was the passenger traffic, ended in 1981 by which time services were operating

over just 19km of route, passengers deserting them for their own scooters on the roads.

Meanwhile from 1976 world sugar prices collapsed, while Taiwanese operations were less efficient than those of other nations from which sugar could be cheaply imported. By the dawn of the new millennium only a dozen or so mills remained in operation, served by just 240km of rail network. Today only two mills are still working along with a single refinery. And just one of them, Huwei, is still served by rail.

In Europe the closure of such »





industrial operations would have been followed quickly by the scrapman moving in and all traces of such railways disappearing. But as I was to discover after stepping off a 15-hour flight from London Gatwick, while the vast majority of the sugar lines have gone, their presence remains very much a part of Taiwan today. Remarkably, a great deal of the motive power and rolling stock survives, and far from looking firmly ahead and consigning its rail operations to history, TSC is very aware of its heritage and keen to make the most of it.

As sugar production has declined the corporation has necessarily diversified into other areas and now operates a wide-ranging portfolio varying from shopping malls to pig farms. But the connection remains and while travelling across the country (and trying to avoid the hordes of local people riding scooters) it is quite normal, for example, to pass a TSC filling station with alongside a Diema loco preserved in plinthed status under a canopy.

Some 45 of the steam locos survive. Some have been exported to Japan where two work on heritage

Above: Redundant yellow Diema and red Hitachi diesels peek out of their shed at Qiaotou (which was the first sugar mill in Taiwan to gain a railway network).

Above right: The sugar cane lines are still very much a fabric of the community.

Left: This line of Brookville locos at Qiaotou look pristine but have not moved in a long time. The pillars support the high-speed rail system.

Below: Riding the train at Suantou travellers pass lines of wagons that formerly conveyed sugar cane to the mill.



lines. There are two in working order in Taiwan while several are also plinthed, mostly at the mills which TSC has turned to other uses.

During my week in Taiwan I visited six of TSC's industrial sites, only one of which, Huwei, was working. This operation is very different to former days. An intensive season now sees the cut sugar cane collected from the fields by lorries and taken to a rail head. Here it is loaded into high-capacity wagons hauled by a Diema to the mill, the trains regularly exceeding 54 wagons.

While sugar production is a thing of the past at other mills, they remain busy in very different ways. I visited one that had been turned into a museum of the industry, a second that is now a leisure park, a third that is an arts and crafts centre.

At most of the sites TSC's rail history remains, in the form of locomotives and stock, mostly redundant and many of the locos cosmetically restored. The sheer breadth of remaining motive power is eye-opening – at Qiaotou mill, which has been turned into a museum of the industry, a line of Brookville diesels sits in the sun, apparently in good condition. Look more closely, however, and the rusting plate under the new paintwork clearly indicates that these locos have not moved in a long time.

Redundant power

Similarly, several of the former mills boast sheds in which sit Hitachi and Diema diesels, only a few of them in working order or needing to be. It should be emphasised, however that operators of 762mm gauge railways should not now be rubbing their hands in anticipation of a potential opportunity to acquire new motive power – these locos are now regarded as national assets despite numbering far more than the redundant engines needed to supply parts to keep the few working Diemas running.

TSC does need some working engines, and not just at Huwei. At five sites the corporation now operates short heritage railways. The trains consist of former sugar cane cars converted into open passenger carriages (inclement weather is less of an issue in southern Taiwan than in

the UK). The motive power is generally provided by the Diema diesels but at just one site, Xihu, some steam passenger services are operated by Anglo-Franco-Belge 0-6-0T no 346 (2654/1948).

TSC's heritage railway operations are popular – for UK heritage railways passenger figures of 475,000 a year are the stuff of dreams, never mind the several thousand tons of sugar cane still carried in the short processing season.

Concluding the chapter on the sugar railways in his book Michael Reilly expressed concerns that the heritage side of TSC's business was being neglected. The second steam loco then at Wushulin mill, Tubize 0-6-0 no 370 (2354/1948), was only rarely steamed and railcars used for charters were out of commission, while track was becoming overgrown and historic stock rusting away.

In just two years, however, the situation appears to have changed significantly, as myself and Michael Reilly discovered when we visited Taiwan in December in our capacities as respectively trustee and company secretary of the Welshpool & Llanfair Light Railway. We were guests of TSC for the signing of effectively a twinning agreement between the corporation and the W&LLR.

Festival star

The ceremony took place at Suantou mill, where TSC has a small museum collection, and formed part of the opening day of the annual Sugar Festival, a major celebration and this year featuring W&LLR Barclay 0-4-0T 'Dougal', on a six-month visit to Taiwan entirely funded by TSC. Dougal was in steam alongside Orenstein & Koppel no 650, and as reported on page 7 proved a big hit, attracting big crowds to the festival.

Suantou had undergone a major sprucing up for the occasion, and further evidence that TSC is now taking its heritage very seriously was evident later in the week at Xihu, home of a further museum of sugar railways where we rode in a fully restored Hitachi railcar dating from 1949 and were shown the former passenger station, now renovated to its original condition.

Yet while wanting to progress its heritage, TSC faces great challenges, being very unsure about how to go about it, and a prime reason for signing the agreement with the W&LLR is to learn about the most effective way of operating heritage railways. Efforts to understand this included a full-day 'international railway forum' held the day before the festival, with presentations from three European heritage railways and two »



Above: Calm before the storm. Visiting W&LLR Barclay loco 'Dougal' in steam at Suantou ahead of the sugar festival, alongside two working Diema diesels.



Upper right: Carriages for the heritage trains (left) have been converted from sugar cane cars at right.



Lower right: This well restored Hitachi railcar runs at Xihu.

Below: On static display at Xihu are these examples of European and Japanese steam.





in Japan as well as Taiwan's very active enthusiast community. And the most prolific questions I and others faced were on the subject of making use of volunteers, a concept the Taiwanese struggle to understand.

Michael effectively summed up the situation as reminiscent of the UK in the 1960s and 1970s when 'professional' railwaymen were dismissive of 'enthusiastic amateurs' with new ideas. TSC has an ageing workforce reluctant to consider new ways of doing things, while it faces difficulty in recruiting new, young staff. Meantime it also endures some criticism from elements of the

enthusiast community who argue that the corporation is going about heritage preservation in the wrong way – some challenges are common across the globe!

Encouraging repeat visitors is also challenged by the fact that the five railways basically offer the same product – mostly Diema-hauled trains in similar scenery – and are located not very far apart.

TSC chairman Charles Huang, who spent much of the week discussing the situation with us, and Roger Chang, director of the department responsible for the railways, are clearly determined to

Above left: Twin steam in the form of Dougal and Orenstein & Koppel no 650 helped swell the crowds attending the sugar festival at Sauntou.

Above: TSC chairman Charles Huang, here with Michael Reilly and the writer, is keen to progress Taiwan's narrow gauge heritage.

Left: The heritage trains carry very large numbers of passengers.

Below: Steam services are still operated at Xihu, hauled by Anglo Franco-Belge loco no 346. The rudimentary crossing gate would not impress UK authorities!

meet the challenges and make the most of their railways, which could easily become a major destination for international enthusiasts. Hopefully the tie-up with the experienced team at the W&LLR will help make significant progress towards that aim.

Taiwan is a destination this writer can recommend, having returned from the island vowing to go back some day. The Alishan and the various lines of TSC will provide enough to keep any narrow gauge enthusiast fascinated for a week, especially if you exchange the chill of a British winter to go around the end of the year during the harvesting season, when the sugar cane trains are running... **NGW**

■ The writer thanks Michael Reilly for his extensive help with this feature. Michael's book *Narrow Gauge Railways of Taiwan* is published by Mainline & Maritime, ISBN 978-1-900340-46-5. Thanks too to Charles Huang, Roger Chang and Ainsley Chen at TSC, and Justine Hsu our translator.

In our next issue we'll take a look at some of the wide variety of rolling stock extant on Taiwan's sugar lines.

