Fowler's Fury

I recently purchased the book entitled "*Fowler's Fury*" by I.F. Carney. I am not particularly interested in steam traction, but I am interested in steam engines and related equipment.

Since I was unfamiliar with the Schmidt high pressure steam system the book offered me an opportunity to gain some understanding of it. Mr Carney's background does not appear to be strongly technical, and there were a fair number of points on which we would disagree. However, the author's style makes for a text that is easy to follow despite weaknesses in the proof reading. I am sure these latter will be addressed in the second edition.

Fowler's Fury is without doubt an ideal coffee table book. The photographs and their accompanying captions provide plenty of browsing interest. Anyone wishing to model the external appearance of Fury will find Mr Carney's book an excellent resource. For my own purposes, Fowler's Fury had provided me with everything I needed to know about the Schmidt system within a few minutes. Notwithstanding the points on which I would disagree with the author, by the time I had finished the book, it was abundantly clear to me that Fury ought not to have been constructed at all.

In my view, it is incorrect to regard Fury as an experimental locomotive. Some interesting background information included by Mr Carney strongly suggests that the London Midland & Scottish (LMS) Railway Board of Directors had no interest in innovation. Sir Henry Fowler's desire for a fleet of 4-6-2s was rejected, and eventually the Royal Scots were built instead. After the Fury incident, Sir Henry was sidelined by the Board of LMS. It almost seems that the introduction of Pacifics may have been a condition set by Stanier before he would accept the post of Chief Mechanical Engineer vacated by Fowler.

Fury seems to have been nothing more than an opportunistic gamble by the LMS Board. Rights to the Schmidt system were held by the Superheater Company Ltd. A significant part of the development risk of the locomotive was carried by that company, no doubt keen to capitalise on the patent rights. If Fury was successful, LMS would be able to claim they were in the "*Superpower*" league. If it failed, it could be quietly forgotten, and LMS would still keep the Royal Scot rolling chassis on which the Fury was constructed.

Any experienced boiler designer considering the Schmidt system would probably conclude that boiler failure at some point was pretty much a foregone conclusion. Even today, leaking boilers in power stations are commonplace. From an operational perspective, the objective is to balance the cost of the lost heat and steam against lost production during a shutdown for overhaul.

That a boiler failure would result in a fatal accident would have been harder to predict. The occurrence of such an accident after a few miles of operation was just plain bad luck. Once that happened, the legal profession took over and everyone, understandably, dived for cover.

For its part, LMS was a transport operator. On one view, it would have been entirely inappropriate for the Board to consider locomotive development as part of its remit. They lost their bet on Fury in the most embarrassing way. In fact there was little motivation for the construction of any unusual locomotive. There were more obvious avenues for improving profitability and reliability. Some of them involved virtually no technical risk at all.

One major problem with Fury was that the Superheater Company could scarcely deviate from the Schmidt concept without losing such Intellectual Property protection as the patent offered. Consequently, improvements which any intelligent boiler designer might have wished to make could not be incorporated.

Although Sir Henry Fowler held design authority, it is understandable that he would take the view that the Superheater Company were far more qualified than he was to make the appropriate design decisions. After all, the patentee was "*Doctor*" Schmidt. The status of a doctorate carries a lot of clout. In the 1930's few would dare to question the opinions of a person holding such a qualification. Furthermore, had Sir Henry Fowler directed that alterations be made to the design of the boiler, there would have been contractual ramifications.

Dr Schmidt's concept was defective in many respects. Its brightest prospect for successful operation would have been implementation in Cloud Cuckoo Land. A reliable high pressure locomotive *could* have been built in the late 1920s - provided one did not take advice from Dr Schmidt. Importantly, it does not require modern computer technology with a full three dimensional heat and mass transfer analysis to arrive at this conclusion. All the necessary technical knowhow was available years before Fury's genesis.

Amongst other things, Mr Carney's book may be seen as a case study of the manner in which the Intellectual Property system is counterproductive to the goal of innovation. Furthermore, ill conceived projects, of which Fury is an excellent example, are thoroughly obstructive to progress.

Externally, Fury was, as Mr Carney puts it, a "*Magnificent Beast*". As I have observed elsewhere, if it looks right, one would be well advised to check carefully that it really *is* right.

The fact that an abysmal failure such as Fury had the external appearance of something which ought to work, made it that much more difficult for the innovative person to persuade investors that *any* departure from established practice could be successful.

Thermodynamics was a mature subject by the late 1920s. Callendar's steam tables were available by 1915 at the latest. By 1922, my father in law was using them in his Engineering Degree course at St Andrew's University in Scotland. Amongst other things, the injector was in widespread use, giving some measure of the extent to which fluid mechanics had been integrated into engineering knowledge. Materials science, particularly for steels, had ensured that materials were not the limiting factor they might have been. Engineering workshop practice texts from the early 1900s underline the advanced nature of mechanical engineering and production methods of the period. The forging produced by Babcock's for Fury's high pressure boiler was a fine example of the capability available.

Mr Carney himself noted the degree of achievement in graphic representation displayed by Drawing Office staff. The North British Locomotive (NBL) engineers and fitters proved themselves fully equal to the challenges presented by the complexity of the Schmidt system. As Sir Henry Fowler observed it was "*A Magnificent Job*".

Mr Carney gives useful insight into the management of NBL during that period. Significantly, the Board of that company declared a profit in a year when the company made a trading loss. The profit was achieved through the transfer of funds from reserves. It would seem that the Board desperately wanted to keep their jobs by creating the illusion, particularly amongst less well informed shareholders, that the company was in better condition than it actually was.

Perhaps the Board even received a profit related bonus and share options as a result of their exercise in creative accounting. What is equally likely is that they were divesting of their own stock into the brief period of market strength their profit announcement would have generated.

As is so often the case in engineering endeavour, the problem was not to be found in materials, knowledge, or the workforce. Rather, the shortcomings which faced LMS and NBL lay in a management devoid of commitment, innovative skill, and leadership qualities.

The management of these companies failed to grasp the magnificent resources which were at their disposal in terms of a qualified workforce and industrial real estate. The NBL Board might have exercised initiative, using its reserve funds wisely, instead of handing them out to shareholders and the taxman.

At the outset, LMS could have accepted the views of Sir Henry Fowler in respect of 4-6-2s, rather than vacillating and gambling on a long shot.

Those who love engineering can only dream, not so much of what "*Might have been*" but worse, what "*Should never have been*".

Who knows, perhaps Fury was "*Fowler's Revenge.*"

Jim Cahill

Cutter@swarfology.com