Book review

HOW STEAM LOCOMOTIVES REALLY WORK.

P. W. B. Semmens and A. J. Goldfinch. Oxford University Press, 2003. ISBN 0 19 860782 2, £ 8.99, 348 pp.

This book has really come 50 years too late, in as far as it would have made an excellent standard textbook for locomotive engineers and designers. It will now provide the same function for railway preservation societies, and may even be instrumental in keeping some of them running.

Having said that, it is compulsive reading for any engineer, and I read it at breakfast, dinner and teatime—much to the annoyance of my family.

The book follows a logical progression from combustion and firebox through boiler cylinders and fame and finally to the brakes. At each stage the authors cover theory, design, maintenance and operation.

For me, the parts covering the operation of the locomotive were the most fascinating aspects. I had never realised the immense skill and physical effort involved in being a locomotive fireman. To quote from the book: 'Careful placing of eight shovelfuls of coal per minute in the face of about 100 radiant horsepower from white hot flame at 1400°C just inside the firehole tends to put off any fireman who is not really enthusiastic about record breaking.'

The book also covers historical aspects and development of locomotives, not only in the United Kingdom, but also in North America and Europe. Explanations of these parallel developments show that often picturesque idiosyncrasies of foreign locomotives are all dictated by practical considerations. Availability of materials, fuel and the geography of each

country obviously played a major part in the design and development of steam locomotives. However, national characteristics also played a part. I was not surprised to read that there was no formal training of British enginemen, unlike the practices in some continental countries. British enginemen learned by 'sitting with Nellie', and were fined or suspended when they made mistakes.

Another aspect brought out in the book that cannot fail to impress is the high level of manual skill and judgement that was commonplace just 50 years ago. Boiler inspection and repair was just one operation that, if done poorly, could have resulted in horrific explosions. However, such events were very rare despite the large number of locomotives and the difficulties in carrying out the operation without the sophisticated instrumentation available today.

The book shows that even small and seemingly unimportant components had an immense effect on locomotive performance. Chimneys are a case in point. I had always assumed that these were left to an anonymous draughtsman, but I discovered that the shape of the blastpipe was dictated by considerations such as reducing coal consumption, and those modifications to the LMS Ivatt class 4MT drafting arrangements almost doubled the steaming rate.

This book is essentially for steam railway enthusiasts, but it will also appeal to any railway engineer and rolling stock engineer. Its clarity of approach makes it very readable, and at £8.99 it will provide an absorbing 'read' for any engineer on a long train journey.

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