Portal: an example on the Great Eastern main line, showing fixed termination.

Chat Moss line in terms of end to end journey times, the CLC route offers superior connectivity, running as it does via Manchester Piccadilly and Liverpool South Parkway, as well as serving the important commercial centre of Warrington, with a population of 200,000. In view of this, I consider it a strategic error to omit the CLC route from the North West electrification scheme.

There must surely be a commercial justification for retaining some TransPennine Express services over the CLC route, at least as far as Leeds via Huddersfield.

I also fail to see how the remapping will free up capacity at Piccadilly if Northern is going to run additional services to compensate for the loss of TPE trains.

In the same article, I'd like to know how the additional hourly service from Chester to Leeds via Manchester and the Calder Valley will be enabled to serve Warrington Central. I think this should read Warrington Bank Quay.

PAUL SILVESTRI
Kingsteignton, Devon

You're right. It should be Warrington Bank Quay – Ed.

SEAT SPACING

I enjoyed reading Ian Walmsley's article about train seats (p44, last month) and entirely agree that far too few people complain about seats on trains. I am one of those people who has been disgruntled about seats but never uttered a word to the train operating company. That is until a recent journey.

I regularly commute between Ely and Peterborough and had the unfortunate pleasure of being faced with a seating decision on the 08.15 CrossCountry service, formed of a Class 170.

My colleague and I boarded the train and saw two seats that were reserved but not until later in the journey (not that this matters with CrossCountry's ridiculous reservations policy) and we sat in them. Once sat down I looked at him and said 'These are a bit tight aren't they?', so much so that I got a ruler out. This revealed that there was 210mm from the seat base to the back of the chair in front (as shown in the accompanying photo).

I had two decisions to make. The first was whether to stay there and have no knees by Peterborough or to move. Needless to say we moved.

The second was whether to complain. After reading Mr Walmsley's article, you will be happy to know that I did.

STEVEN HART
Ely, Cambridgeshire

I enjoyed the 'Pan Up' article on seat comfort and was surprised not to see any mention of the TransPennine Express Class 158 refurbishment of 1997/98. I'm not sure if Ian Walmsley was referring to me as a 'well-intentioned but essentially clueless individual', but during the specification period for this refurbishment I visited Derby several times as seats were chosen (as Product Manager – note no Managing Director involved!), and each time said 'softer'. Eventually we reached a situation I was happy with and subsequent customer satisfaction surveys included a 100% positive response to the First Class seats and only just less than that for Standard.

I think the increased bulk of the seat which the comfort specification necessitated did mean some reduction in pitch, but this did not seem to affect the perception of quality. It may have been these seats that were also used in the West Yorkshire '158/9s' which Mr Walmsley mentions, for which they were patently not suitable, being intended for longer distance inter-urban passengers. However, it seems that I may have been one of the last rail business managers to ask for more comfort!

JOHN HEADON
By e-mail

Tight: the red line indicates the gap between seats on a CrossCountry Class 170 Turbostar. Steven Hart

THE AGEING IMPERMANENT WAY

Thank you for the interesting and useful article on the landslip at Harbury ('Railtalk', March).

In addition to the projects mentioned, considerable research on infrastructure slopes (embankments and cuttings) has been carried out over the past decade or so, funded mainly by the Engineering and Physical Sciences Research Council (EPSRC), Rail Safety and Standards Board (RSSB), Network Rail and London Underground. As a result, we now have good models for assessing the impacts of weather, climate and vegetation on slopes, and have developed more economical methods for slope remediation and strengthening. This knowledge has been incorporated into current industry guidelines and practice.

Nonetheless, some physical and mechanistic unknowns remain, particularly in connection with the permeability and other properties of the surface soils that govern infiltration into the rest of the slope, and the implications and mitigation of groundwater flooding. These are being investigated in the EPRSC-funded project iSMART (infrastructure slopes: Sustainable Management And Resilience assessmenT) by a consortium comprising the British Geological Survey and the universities of Durham, Loughborough, Newcastle, Southampton and Queen's University Belfast. Even when they are fully understood, some degree of uncertainty will still be inevitable because the interaction between slope stability and weather is a matter of probability. A slope that has remained stable for decades may become unstable following a particular sequence of weather (e.g. a wet winter followed by a wet summer and another wet winter) as the water pressures within the soil pores rise. To guarantee slope stability in all possible extremes of weather would require a conservative re-grading of the slope (which is often not possible) or engineering intervention such as stabilisation using discrete reinforced concrete piles. Increased use of the latter may well be needed to ensure that our railway infrastructure remains robust and resilient to the effects of future climate change.

PROFESSOR WILLIAM POWRIE
Dean of Engineering and the Environment
University of Southampton

A SPITFIRE RACES IN

Regarding your editorial on the Forth Bridge air raid ('Welcome', last month) I am afraid that the passing of time has somewhat dulled the memory of many alleged 'eye-witnesses' of this event, including Edward Thomson. Might I be permitted to correct the various statements made by him in order that the true facts of this event are correctly recorded.

The train involved, the only one permitted to cross the Forth Bridge at the time of the raid, was