

TGV Est lifts the record

The opening of LGV Est-Européenne has seen the world's fastest scheduled start-to-stop timing jump by 18 km/h to almost 280 km/h. The Taipei – Kaohsiung line has brought Taiwan straight into third place in the international speed league, and further improvements can be anticipated as more new lines open

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THIS YEAR has seen some dramatic developments in the high speed rail sector, with the opening of several new lines, including LGV Est-Européenne in France and THSRC in Taiwan. We have also seen the setting of a new world speed record for conventional rail, with 574.8 km/h achieved on April 3 as part of the V150 test programme.

Yet apart from one outstanding run on LGV Est, which has lifted the world's fastest timetabled start-to-stop run to within a whisker of 280 km/h, this year's survey shows no faster schedules on any passenger rail service than the best reported in our last review (RG 11.05 p699). In fact, both the league leaders France and Japan have seen their best timings fall back slightly.

This of course is only temporary. Maximum speeds in many countries are being raised, as operators actively plan for routes operating at 360, 400 and even 500 km/h in commercial service. How long, we wonder, before engineers may have to grapple with the possible effect of a sonic boom on a railway track? Speeds exceeding 1 300 km/h may not be achieved in our day, but trains passing on adjacent tracks at a combined speed not far short of that must surely be approached with some trepidation.

New lines, dedicated to high speed trains, are increasingly showing the way to go. Tilting trains on existing tracks have played their part in terms of shorter journey times, and will continue to do so. But the greatest improvements – and most recognisable to the passenger – are being achieved on lines designed exclusively for high

speed travel. Our round-up of Europe's high speed line construction programme (RG 12.06 p774) hints at what the future may hold.

More countries speed up

In the first *Railway Gazette* speed survey in 1975, the late Donald Steffee identified 10 countries which had advertised train services achieving start-to-stop averages of 120 km/h or more between any two stations. The crown went to Japan, which had launched the world's first schedules over 160 km/h a decade before. But Steffee commented that 'promises and performance are sometimes hard to disentangle' (RG 7.75 p269). Much the same was said in 2003 and could well be repeated today.

Nevertheless, the list of contenders has been growing steadily. In the two years after Steffee's last review in 1985, when there were 11 countries, five newcomers joined the high speed club, including Spain, Australia, Finland and Ireland. By the end of the 20th Century the number had risen to over 20. So it was decided for the 2001 review to raise the threshold to 150 km/h, cutting the first division back to 11. Although some of those countries have not re-appeared, others have taken their place and the 'League of Honour' in Table 1 now boasts 15 members. The 'new kid on the block' is Taiwan, which has leapt astonishingly straight into third place, whilst the number of countries achieving scheduled point-to-point timings above 120 km/h has now risen to more than 25.

France and the Far East

As in our last review, France still leads the way. LGV Est allows faster journeys between Paris and cities in eastern France such as Nancy, Metz and even Mulhouse via Strasbourg and Colmar, a somewhat indirect 556 km route compared to the 491 km via Chaumont and Belfort. But as most trains leave the new line to serve existing city-centre stations, it is only the handful of sprints between the sparsely-served intermediate stations where the benefit of 320 km/h running really shows up in the point-to-point timings. The best of these now leads Table I with a blistering 279.3 km/h over the 167.6 km between Lorraine-Louvigny TGV and Champagne-Ardenne TGV. Some of the other LGV Est schedules feature in Table II, including a fascinating St-Pierre-des-Corps – Strasbourg run via Massy, skirting Paris via the *Grande Ceinture*.

Japan still holds second place, though



ABOVE: France has reinforced its position at the top of the World Speed Survey following the start of revenue-earning services along LGV Est-Européenne Photo: Jean-Paul Masse

BELOW: The Taipei – Kaohsiung line in Taiwan takes third spot in the speed league, with a fastest point-to-point average of 244.7 km/h. Series N700T trainsets built in Japan run along an alignment that is designed largely to European standards





The N700 marks the latest evolution of the Shinkansen. The sets were launched in revenue service in July by JR Central and JR West between Tokyo, Osaka and Hakata. JR East meanwhile continues to test its Fastech prototype, intended to operate in service at 360 km/h
Photo: JR Central

with a surprising slight drop in best performance. Japan's entries are little changed in spite of the introduction of the Series N700 trainsets for *Nozomi* services on the Tokaido and Sanyo Shinkansen. Extensive high speed testing with the two Fastech 360 prototypes on JR East (RG 11.05 p 693) has not yet been translated into faster schedules but there is little doubt that Japan is set to remain among the leaders.

After various delays and setbacks, it was only in January this year that fare-paying passengers enjoyed their first run in the Japanese-built Series 700T trainsets on Taiwan's new high speed line (RG 2.07 p55). Yet less than five months later the initial timetable was revised to cut journey times, so that the 179.5 km run between Taichung and Zuoying now averages 244.7 km/h, over 15 km/h faster than at the outset. Zuoying, formerly Tsoying, is the line's current southern terminus pending completion of the final 8.6 km into the centre of Kaohsiung.

With Taiwan overtaking both Germany and the International group, and with South Korea and now China not far behind, the Far East could be on track to dominate Table I in future years. This is a marked contrast with the other side of the Pacific, where the USA which once held third place has now fallen to 12th. Despite the resurgence of interest in high speed rail for the USA (p561), there seems little prospect of any return to the top of the table. Once lying in fourth place, Canada has now fallen out of Table I completely.

South Korea's entries this year show some accelerations, but KTX remains in

seventh place, having been overtaken by China, which has an aggressive programme of high speed line development (RG 8.07 p481). With new trains now entering service in increasing numbers, China's first results can be seen on the Qinhuangdao – Shenyang line, which was designed for 250 km/h running back in 2002. With a leading non-stop entry at 197.1 km/h, China is now firmly established in Table I; some other significant fast runs including intermediate stops are shown in Tables II and III.

European developments

All the remaining Table I entries are from Europe, with Thalys and Eurostar again taking the honours in the International category. The summer Saturday *Thalys Soleil* from Brussels again leads with a 244.6 km/h average to Valence TGV. After another stop in Avignon, it reaches Marseille in 4 h 28 min at an overall average of 236 km/h as shown in Table II.

Table I. Fastest start-to-stop runs at 150 km/h or more with advertised trains between different station pairs*

Train	From	To	Distance	Time	Speed
			km	min	km/h
France (Maximum speed limit 320 km/h)					
TGV 5422	Lorraine TGV	Champagne TGV	167.6	36	279.3
TGV 5102	Valence TGV	Avignon TGV	129.7	30	259.4
TGV 6129	Paris Lyon	Avignon TGV	657.0	154	255.6
TGV 9802	Massy TGV	St-Pierre-des-Corps	206.9	49	253.3
TGV 6133 & 6137	Paris Lyon	Aix-en-Provence TGV	730.7	175	250.5
6 TGV	Paris Lyon	Marseille ¹	749.4	180	249.8
Japan (300 km/h)					
<i>Nozomi 1</i>	Okayama	Hiroshima	144.9	34	255.7
4 <i>Nozomi</i>	Hiroshima	Kokura	192.0	46	250.4
5 <i>Nozomi</i>	Shin Kobe	Okayama	128.3	31	248.3
<i>Hayate Komachi 2</i>	Morioka	Sendai	171.1	43	238.7
11 <i>Hayate</i>	Omiya	Sendai	294.1	74	238.5
<i>Tsubame 1</i>	Shin Yatsushira	Kagoshima Chuo	137.0	35	234.9
Taiwan (300 km/h)					
7 trains	Taichung	Zuoying	179.5	44	244.7
4 trains	Hsinchu	Taichung	93.6	23	244.1
26 trains	Taichung	Banciao ¹	152.6	43	212.9
6 trains	Taichung	Chaiyi	85.9	24	214.6
6 trains	Tainan	Chaiyi	62.3	18	207.6
International					
<i>Thalys Soleil</i>	Brussels Midi	Valence TGV	831.7	204	244.6
Thalys 9884	Brussels Midi	Roissy-CdG	291.7	74	236.5
51 Thalys trains	Brussels Midi	Paris Nord ¹	313.6	82	229.5
Eurostar 9053	Marne-la-Vallée	Ashford International	403.4	111	218.1
Eurostar 9051	Paris Nord	Ashford International	401.5	113	213.2
4 Eurostar	Paris Nord	Waterloo International ¹	494.2	155	191.3
Germany (300 km/h)					
ICE trains	Frankfurt Flughafen	Siegburg/Bonn	144.0	37	233.5
ICE 721	Montabaur	Frankfurt Flughafen	81.0	23	211.3
10 ICE trains	Siegburg/Bonn	Montabaur	63.0	18	210.0
15 ICE trains	Frankfurt Flughafen	Limburg Süd	59.0	17	208.3
ICE 225/629	Köln	Frankfurt Flughafen	169.3	52	195.3
4 ICE trains	Ingolstadt	Nürnberg Hbf	90.0	28	192.9
Spain (300 km/h)					
7 AVE trains	Madrid Atocha	Zaragoza Delicias	307.2	81	227.6
AVE 9886	Camp de Tarragona	Zaragoza Delicias	219.3	58	226.9
7 AVE trains	Madrid Atocha	Ciudad Real	170.7	50	204.8
12 AVE trains	Madrid Atocha	Córdoba	343.7	102	202.2
AVE 9616 & 9617	Madrid Atocha	Sevilla ¹	470.5	140	201.6
7 AVE trains	Córdoba	Puertollano	134.3	41	196.5



Train	From	To	Distance	Time	Speed
			km	min	km/h
China (250 km/h)					
Trains D24 & D28	Shenyang Bei	Qinhuangdao	404.0	123	197.1
Trains D1 & D2	Beijing	Shenyang Bei ¹	703.0	239	193.9
D' trains	Shenzhen	Guangzhou Dong ¹	139.0	52	160.4
Trains D27 & D26	Beijing	Harbin ¹	1249.0	470	159.4
Trains D507 & 515	Beijing	Qinhuangdao	299.0	119	150.8
South Korea (300 km/h)					
KTX trains 410 & 411	Seoul Yongsan	Seodaeyeon ¹	161.0	50	193.2
9 KTX expresses	Seoul Main	Daejeon ¹	160.0	52	184.6
13 KTX expresses	Daejeon	Cheonan Asan ¹	64.0	22	174.5
KTX 155	Daejeon	Dongdaegu	133.0	46	173.5
United Kingdom (200 km/h)					
1 IC225	London King's Cross	York	303.2	105	173.3
1 IC225	London King's Cross	Doncaster	250.9	87	173.0
1 IC225	York	Stevenage	259.0	90	172.7
1 IC225	York	Peterborough	180.5	63	171.9
1 IC225	London King's Cross	Retford	222.9	78	171.5
1 Pioneer	Stevenage	Grantham	125.4	44	171.0
Sweden (200 km/h)					
X2000 543	Alvesta	Hässleholm	98.0	34	172.9
X2000 436	Skövde	Södertälje	277.0	97	171.3
X2000 424	Skövde	Flemingsberg	297.0	105	169.7
X2000 435	Flemingsberg	Hallsberg	183.2	65	169.1
7 X2000	Katrineholm	Skövde ¹	179.3	64	168.1
X2000 443	Södertälje	Töreboda	272.0	125	167.3
Italy (250 km/h)					
Eurostar 9484	Roma Termini	Firenze SMN	261.0	92	170.3
Eurostar 9421	Arezzo	Roma Termini	198.7	76	156.9
TrenBiz 9301	Bologna	Roma Termini	357.9	143	150.2
USA (240 km/h)					
7 Acela Expresses	Baltimore	Wilmington	110.1	41	161.1
15 Acela Expresses	Philadelphia	Wilmington	50.6	19	159.8
Finland (200 km/h)					
10 Pendolinos	Tikkurila	Tampere	177.0	67	158.5
4 expresses	Salu	Karjaa ¹	53.1	21	151.7
Austria (200 km/h)					
Eurocity 62 & ICE 766	St Pölten	Linz Hbf	122.7	48	153.4
Norway (180 km/h)					
Airport trains	Lillestrøm	Gardermoen	30.2	12	151.2
Non-stop trains	Oslo Sentral	Gardermoen	47.8	19	150.9

* subject to a maximum of six entries per country 1. Runs in both directions

While Germany ranks fifth in Table I, some ICEs also operate into France via LGV Est-Européenne on services from Frankfurt to Paris. These modified ICE3MF sets are operated by Alleo, an SNCF-DB joint venture

Photo: Christophe Masse

Non-stop trains between London and Paris also feature, and when Section 2 of the Channel Tunnel Rail Link into London St Pancras becomes operational on November 14 there will be a further acceleration of Eurostar services. The launch timetable unveiled in July shows five Eurostars covering the 456.5 km from Paris to Ebbsfleet in 125 min at an average of 219.1 km/h. The 2 h 15 min non-stop timing for the 492.4 km from St Pancras to Paris Nord represents a start-to-stop average of 218.8 km/h.

Though keeping the same relative positions, Germany and Spain each slip one place down the table. Germany's fastest runs remain unchanged, with the Köln – Frankfurt *Neubaustrecke* still dominant, but Spain is narrowing the gap with further development of its high speed network. The Siemens-built Class 103 sets, designed for 350 km/h operation have now entered service on the partially-completed Madrid – Barcelona line, where speeds have now been raised to 300 km/h.

The introduction of the Class 120 *Alvia* EMUs has cut the fastest Madrid – Barcelona time to 3 h 55 min, with a rapid change of gauge at Camp de Tarragona before covering the last 67.1 km on the broad gauge old line. However, it is the standard-gauge AVE sets which still dominate the Spanish entries, including a 184 km/h schedule for AVE 9881 from Madrid Atocha to Huesca using the regauged branch running north from Zaragoza, as shown in Table II. Also worthy of note are some Madrid – Málaga *Altaria* and Talgo 200 trains between Córdoba and Antequera Santa Ana, the current end of the high speed line near Bobadilla. These trains

Table II. Other notable or interesting advertised runs at 140 km/h or more

Country	Train	From	To	Distance km	Time h min	Speed km/h	Stops
International	<i>Thalys Soleil</i>	Brussels Midi	Marseille	1 054.0	4 28	236.0	2
France	12 TGV	Paris Est	Metz ¹	315.0	1 23	227.7	0
France	TGV 9864	Marseille	Lille Europe	996.1	4 31	220.5	4
France	23 TGV	Paris Est	Nancy ¹	330.0	1 30	220.0	0
Taiwan	26 trains	Zuoying	Taipei ¹	339.3	1 36	212.1	2
France	TGV 9295	Paris Est	Strasbourg	450.0	2 17	197.1	0
France	11 TGVs	Paris Est	Reims ¹	147.0	45	196.0	0
Taiwan	13 trains	Taichung	Taipei	159.8	50	191.8	0
Germany	4 ICE trains	Berlin Hbf	Hamburg Hbf ¹	286.0	1 30	190.7	0
Germany	5 ICE trains	Braunschweig	Berlin Spandau ¹	203.6	1 05	188.0	0
France	TGV 9295	Paris Est	Mulhouse	556.0	2 59	186.4	1
Spain	AVE 9881	Madrid Atocha	Huesca	386.3	2 06	184.0	0
International	TGV 2865	Luxembourg	Paris Est	379.0	2 05	181.9	2
France	TGV 5444	St-Pierre-des-Corps	Strasbourg	697.1	4 02	172.8	5
International	2 TGV	Paris Est	Basel SNCF	590.0	3 26	171.8	2
UK	1 Pendolino	Watford Junction	Rugby	104.7	37	169.8	0
UK	1 Pendolino	Watford Junction	Lichfield TV	159.1	57	167.4	0
Sweden	X2000 400	Göteborg	Stockholm	456.2	2 45	165.9	0
UK	1 Pendolino	London Euston	Rugby	132.7	48	165.9	0
Germany	ICE trains	München Hbf	Nürnberg Hbf ¹	171.0	1 02	165.5	0
UK	5 trains	Berwick-upon-Tweed	Alnmouth	51.7	20	155.2	0
Spain	<i>Alvia</i> 1199	Madrid Atocha	Barcelona Sants	602.8	3 55	153.9	0
South Korea	7 KTX trains	Seoul Main	Busan ¹	409.0	2 40	153.4	2
UK	1 Adelante	London Paddington	Reading	57.7	23	150.4	0
International	TGV 9297	Paris Est	Zürich Hbf	678.0	4 32	149.6	4
Italy	14 Alta Velocità	Roma Termini	Napoli ¹	214.0	1 27	147.6	0
China	Train D11	Beijing	Shanghai	1 463.0	9 59	146.5	0
UK	1 Adelante	Taunton	Reading	171.8	1 13	141.2	0

1. runs in both directions

take 39 min for 111.1 km, an average of 170.9 km/h.

Other Spanish developments – and there will be many more to come – include *Avant* high speed shuttle services from Madrid to Puertollano and Córdoba to Sevilla. A branch of the high speed line from La Sagra now serves the ancient city of Toledo, covering the 75.1 km from Madrid in 30 min at a



Hull Trains is the only operator other than GNER to make the UK shortlist and competes with it on an open-access basis on the London – Hull route. It operates a fleet of 200 km/h DEMUs supplied by Bombardier

Photo: David Gould

credible average of 150.2 km/h.

The *Neubaustrecke* between Nürnberg and Ingolstadt opened last year and adds another route to Germany's high speed tally, with the four fastest non-stop ICE trains taking only 28 min to cover the 90 km at an average of 192.9 km/h. The new route cuts the journey time between Nürnberg and

München to just over 1 h each way, with trains averaging 165.5 km/h.

In sixth place last time, Sweden has now been overtaken by the UK, though only just, and not through any better performances on either part. SJ's fastest timing is now X2000 543 on the Stockholm – Malmö route. This retains the same timing as in 2005, whereas none of the trains on the faster

Göteborg line quite match the speeds attained two years ago.

Sweden's former fastest schedule was the non-stop X2000 from Falköping to Katrineholm, but this now calls at Skövde instead. Apart from a morning commuter run to Göteborg, Falköping is now without any express service that does not call also at Skövde or Herrljunga. The Stockholm – Göteborg line has long been one

where almost every train has a different stopping pattern, providing an attractive service for most intermediate stations.

The result is that Sweden's fastest timing is now 0.4 km/h behind the UK's best. A notable entry in Table II, however, is a non-stop run from Göteborg to the capital which averages 165.891 km/h. This compares with Britain's 18.08 Pendolino from London Euston to Rugby, which achieves 165.875 km/h.

Capacity not speed

For the commentary on the UK scene I am once again indebted to John Heaton FCILT. In suggesting that a

commitment to a radical expansion of capacity would be preferable to crowding more traffic onto a mixed-traffic railway, John writes:

'Extra time has been added to some of the fastest East Coast Main Line schedules to accommodate extra services that include standard daytime half-hourly Leeds trains and a second open-access operator, Grand Central. Although four operators provide 10 off-peak passenger trains each way per hour through the two-track Welwyn bottleneck and across the flat junction at Hitchin, the ECML remains at the head of the 2007 rankings.

'The former *Scottish Pullman*, now the anonymous 15.00 King's Cross – Edinburgh (extended to Glasgow Central on some dates) has survived the timetable tinkering to take the top spot with an average of 173.3 km/h for the first 303.2 km to York, yet the 105 min schedule includes 5 min recovery time that frequently results in the train standing outside York awaiting a path into the station.

'Second place falls to the 18.00 King's Cross – Glasgow Central, which reaches its first stop at Doncaster in 87 min at 173 km/h. In the Up direction, recovery time padding before King's Cross means that no East Coast trains into London exceed the 159.6 km/h average of GNER's 07.00 from Newcastle. Now that GNER's IC125 diesel sets are all timed for 2+9 formations, they no longer challenge the electric IC225 timings, although their better paths normally result in shorter journey times than those allocated for Grand Central's planned short-formation IC125s.

'Two more flyers from the north-

east, the York – Stevenage and York – Peterborough sections of the 06.30 and 06.00 from Newcastle, average 172.7 and 171.9 km/h respectively to take third and fourth places. Stevenage has the advantage over many other ECML stations in having platform faces on the main lines, allowing faster approaches within the 200 km/h line speed.

'The first non-GNER service in Table I is the off-pattern Stevenage – Grantham leg of Hull Trains' 09.48 King's Cross – Hull service, taking just 44 min for the 125.4 km at an average speed of 171 km/h. Virgin CrossCountry's Voyager DEMUs nose into seventh place on the York – Darlington section with 170.3 km/h. The Up journey takes only 1 min longer but the average drops to 163.8 km/h, showing the vulnerability of short sections to minor changes. Another interesting short hop for the Voyagers is the 51.7 km from Berwick-upon-Tweed to Alnmouth, along the North Sea coast. This is advertised as 20 min at 155.2 km/h, but the working time is just 18½ min at a startling 167.7 km/h. GNER's electrics are also advertised to take 20 min but have a 19 min working time at 163.3 km/h.

'Just outside the cut-off for Table I are the first entries for the West Coast Main Line, where progress with the route modernisation has allowed Virgin to accelerate some services, although West Coast schedules at present include a 65 km/h slowing for the remodelling of Rugby station. In eighth place is the Watford Junction – Rugby leg of the 20.46 Euston – Preston at an average of 169.8 km/h. The next best Pendolino run is a 167.4 km/h timing from Watford Junction to Lichfield Trent Valley, which features in Table II.

'Disappointingly, other lines in the UK fail even to challenge these figures. First

RENFE's Class 103s are the Spanish variant of Siemens' Velaro family, which is based on the ICE3. The class entered revenue service on June 22

Photo: Siemens



Great Western's best is 150.4 km/h between Paddington and Reading, achieved by the 16.52 Adelante to Oxford. This is advertised at 23 min, although it could be a timetable error as the working time is 1 min longer. Many regular IC125 trains are booked from Swindon to Reading at 142.5 km/h but the working net time is 3½ min less, corresponding to a 162.8 km/h average.

'All Up IC125s from Cardiff and Bristol now call at both Swindon and Reading and only one Down train, the 17.00 Paddington – Weston-super-Mare, omits the Reading stop. The only express to pass Swindon non-stop is the 17.45 Paddington – Carmarthen, which achieves a 140.8 km/h average from Reading to Bristol Parkway. Surprisingly, one Berks & Hants line service beats this figure; the 06.55 (Saturdays) Plymouth – Paddington Adelante manages 141.2 km/h, being allowed 73 min from Taunton to Reading including 3 min recovery time.

'First Great Western's series of short-distance sprints reflects the GWML's transformation from a long-distance inter-city route to a high-density commuter route serving growing intermediate towns. Whilst some prestige long-distance headline timings continue to exist on GNER, it remains to be seen how many will survive the

re-franchising of the East Coast inter-city business and the growing focus on maximising capacity rather than speed.'

Lower order

There is little change among the remaining countries in Table I. Italy and Finland have each produced some faster times, albeit marginally in the former case. VR has seen more substantial improvements with new Pendolino timings between Tikkurila, the station serving Helsinki airport, and Tampere. Italy is on the verge of producing faster times on the partially-completed Roma – Napoli and Torino – Milano high speed lines. Interesting newcomers to the Italian scene are the business-class *TrenBiz* services, making their debut on the Roma – Firenze – Milano artery. The fastest of these takes third place in the Table I entry, with a 150 km/h run from Bologna to Roma.

Austria has not featured in these reviews since 1997, after one train between St Pölten and Amstetten had scraped into Table I at 120 km/h in 1983. At that time, ÖBB's line speed limit was 140 km/h. By 1991, Supercity 189 had a scheduled 125.8 km/h timing between Linz and St Pölten, but by 1999 Austria's place at the tail end of Table I had been usurped by a host of comparative

Table III. Comparison of journey times from 30 years ago between selected places

Country	From	To	1977 train	Journey time h min	2007 train	Journey time h min	% cut*
Taiwan	Taipei	Kaohsiung	Train 2001	5 23	13 trains	1 36	70.3
Spain	Madrid	Sevilla	Talgo 452	6 8	AVE 9616 & 7	2 20	62.0
Germany	Köln	Frankfurt	<i>Prinz Eugen</i>	2 10	ICE 225/629	52	60.0
Finland	Salo	Karjaa	Express 132	46	3 Pendolino	21	54.3
France	Paris Lyon	Avignon	<i>Le Rhodanien</i>	5 36	TGV 6129	2 34	54.2
France	Paris Lyon	Marseille	<i>Le Rhodanien</i>	6 33	6 TGV	3 0	54.2
Korea	Seoul	Taejon	Train 1	1 50	KTX expresses	52	52.7
China	Beijing	Shanghai	1 train	22 20	12 Z express	11 28	48.7
Italy	Roma	Firenze	<i>Ambrosiano</i>	2 57	Eurostar 9484	1 32	48.0
Japan	Okayama	Hiroshima	7 Hikari	58	<i>Nozomi 1</i>	34	41.4
International	Paris Nord	Brussels Midi	5 trains #	2 20	Thalys trains	1 22	41.4
Austria	St Pölten	Linz Hbf	<i>Prinz Eugen</i>	1 11	2 expresses	48	32.4
Sweden	Göteborg	Stockholm	X36 & X52	4 3	X2000 400	2 45	32.1
Britain	London King's Cross	York	<i>The Talisman</i>	2 31	15.00 ex KX	1 45	30.5
Japan	Tokyo	Hakata	15 Hikari #	6 56	<i>Nozomi 1</i>	5 55	29.1
Britain	London King's Cross	Edinburgh	<i>Flying Scotsman</i>	5 43	15.00 ex KX	4 12	26.5
France	Paris Lyon	Bordeaux	<i>Aquitaine</i> #	4 0	TGV 8519	2 58	25.8
United States	Wilmington	Baltimore	Metroliners #	45	Acela Express	41	8.9
Italy	Milano	Bologna	<i>Settebello</i> #	1 40	T-Biz 9303	1 34	6.0
Russia	Moscow	St Petersburg	<i>Aurora</i>	4 59	<i>Aurora</i>	5 30	-10.4
Canada	Dorval	Guildwood	Turbotrains #	3 17	Train 61	3 49	-16.2

* Note: A minus figure in the last column indicates a percentage INCREASE in journey time.

From RG 1975 Speed Review

newcomers including Hungary, Israel, Ireland, Saudi Arabia and Morocco. All of these countries disappeared with the raising of the threshold to 150 km/h. In 2005, diligent observer Daniel Kerner of Hungary noted that since that year's survey four trains had been scheduled to cover the realigned Westbahn between Linz and St Pölten in 48 min, bringing Austria back into the first division with 153.3 km/h (RG 3.06 p126).

So far, none of the other countries which in the last review had scheduled runs over 120 km/h have yet reached the 150 km/h threshold. Likely contenders include Denmark, where German ICE trains are set to run north as far as Århus from December (RG 4.07 p190). Delays to the opening of HSL-Zuid have prevented the Netherlands from regaining even the 121.3 km/h achieved once-weekly in 1983 by a train between Amersfoort and Zwolle (RG 9.83 p701). Because of capacity constraints, the same trip now takes 3 min longer and is 20 km/h slower by the fastest services. The Netherlands' fastest timings this year even fail to match the 106.9 km/h achieved by ICE trains between Utrecht and Arnhem as recorded in our 2005 survey.

Russia is another country where the introduction of the broad-gauge Velaro RUS may well permit 150 km/h start-to-stop runs on lines which are to be upgraded for 250 km/h running. Despite a report of a 3 h 55 min timing between Moscow and St Petersburg last year (RG 11.06 p 717), the current timetable shows nothing better than the 129.5 km/h average achieved by the famous *Aurora* express over the 164 km between Bologoye and Tver.

30-year comparison

Donald Steffee's second review in 1977 featured a new table that compared the fastest point-to-point timings of 1977 with those of 1970, a year which had marked the introduction of high speed trains in several countries.

Table III this year attempts to compare the fastest runs today with as near as possible the same runs when the first of these surveys appeared, and the fastest

runs then with the fastest between the same places as they are today. However, since many of the current fastest runs are between places not included in the 1975 survey, most of the current runs have been compared with timings from the Thomas Cook International Timetable of March/April 1977.

Although speed is easily compared it is rarely the passenger's main concern. Speed may thrill some but frighten others: journey time is generally more important to the traveller. Table III therefore sets out the station-to-station comparisons in order of travel time saving, the percentage reduction (or increase) over the last 30 years.

The figures give a fair comparison only to the extent that the distances have remained approximately the same, which is clearly not the case in some examples. This is one reason why speed comparisons alone could be misleading. Stations may not be in the same place, routes may be realigned or entirely replaced, sometimes making the distance longer, sometimes shorter. As noted, trains between Paris and Mulhouse now travel 65 km further via LGV Est than on the former route, but take less time. Conversely, the first example in the table, with a 69% reduction in travel time, is by a new route of 339 km, compared to 376 km in 1977, to a station nearly 9 km away from the former terminus. The apparent 82% increase in average speed from 116.4 km/h to 212 km/h in 2007 is of little real meaning.

Apart from some surprising changes in journey times, especially those of Canada and Russia, this table also brings back memories of the days when the 'crack' expresses on a railway were known by name rather than a mere number or train type and time of departure. *Flying Scotsman*, *Settebello*, and more recently *Scottish Pullman* are more recognisable and memorable than the way most of today's UK entries had to be depicted in the tables.

Acknowledgements

A review such as this could not be the work of one person alone. Apart from John Heaton's extensive coverage of the UK scene, I am grateful for his assistance with many other aspects including contacts with members of the Railway Performance Society. I should like to acknowledge in particular the vital information supplied by George Harris, Mike Baxter, and most recently, Alan Varley, whose phenomenal knowledge of the French rail system was freely given. Jose-Ramon Suarez

Notes on the tables

An explanation of how the tables are compiled was given at the end of the 2005 survey and all need not be repeated here.

It is important to recognise that all the trains mentioned as running in 2007 do not necessarily run every day or through every month of the (northern) summer period. Some may no longer be running as this article goes to press. However, all trains listed have been or are scheduled to run regularly at some period between March and September.

The basic information sources are the Thomas Cook European and Overseas timetables for March to August 2007. These are supplemented from other sources including, to a limited extent, railway websites for checking specific train times.

Distances are rounded to one decimal place where obtainable and are based on train centre starting and stopping points as far as known. Times are as publicly advertised, and may be either the departure or arrival time at stations other than termini. 'Dwell' times between arrival and departure are taken into account when known from published timetables, including working timetables if available, or ascertained by comparison with earlier sources.

Speeds are calculated on unrounded distances. Comments and suggestions, including any corrections, are welcomed.

Le TGV Est enregistre un nouveau record mondial de vitesse

La lutte entre l'Europe et l'Extrême-Orient continue dans notre tour d'horizon bisannuel et mondial des plus grandes vitesses des trains réalisées entre départs et arrêts figurant sur les horaires commerciaux. Colin Taylor fait apparaître que l'ouverture de la première section de ligne à grande vitesse entre Paris et Strasbourg permet à la France de réaliser un nouveau record de vitesse de presque 280 km/h, tandis que la nouvelle ligne Taipei - Kaohsiung propulse Taiwan directement à la troisième place au sein du club international de la vitesse. Les temps de parcours entre paires de villes ont chuté jusqu'à 70% au cours des 30 dernières années, bien que, ici ou là, offrir plus de capacité plutôt que des vitesses maximales, soit la stratégie dominante lors de l'établissement des horaires

TGV Est setzt neuen Geschwindigkeits-Weltrekord

Der Wettkampf zwischen Europa und Fernost geht in unserer alle zwei Jahre erscheinenden Übersicht über die höchsten Reisegeschwindigkeiten in seine nächste Runde. Colin Taylor stellt fest, dass die Eröffnung des ersten Abschnitts der Hochgeschwindigkeitsstrecke zwischen Paris und Strasbourg Frankreich zu einem neuen Weltrekord mit knapp unter 280 km/h verhilft, währenddem die neue Strecke zwischen Taipei und Kaohsiung Taiwan direkt auf Platz 3 in der internationalen Hochgeschwindigkeitsliga gebracht hat. Die Reisezeit auf einzelnen Städteverbindungen hat sich in den letzten 30 Jahren um bis zu 70% verkürzt, obwohl anderswo mehr Kapazität gegenüber Höchstgeschwindigkeit die Fahrplanstrategien dominiert

TGV Est establece un nuevo récord mundial de velocidad

La batalla entre Europa y el Lejano Oriente continúa en nuestro análisis bianual de los horarios de los trenes con velocidades más altas de arranque a parada. Colin Taylor opina que, en la apertura del primer tramo de la línea de alta velocidad entre Paris y Strasbourg, Francia ha conseguido un nuevo récord mundial de casi 280 km/h. La nueva línea entre Taipei y Kaohsiung ha llevado a Taiwán directamente al tercer puesto en la liga internacional de velocidad. El tiempo de tránsito entre algunas ciudades ha disminuido hasta un 70% en los últimos 30 años, aunque en la mayoría de casos, la prioridad es ofrecer mayor capacidad en lugar de mayor velocidad

Muñoz, as always, supplied a wealth of information on the Spanish scene.

I cannot conclude without recalling at this time the extensive contributions to previous surveys by Peter Semmens of York, and of Peter Tremlett of Thomas Cook Timetables, both of whom have sadly passed away since the 2005 survey. Their contribution will long be remembered. Fortunately, Peter Bass, John Potter and others at Cook's Timetables continue to offer unstinting help, without which surveys of this kind would scarcely be possible. ■