Performance Puzzle

A British service-planner
investigates causes of late running on the SBB

Holidaying at Arbon on the Bodensee, I was struck by the curious, and un-Swiss habit of the local Rorschach-Schaffhausen services of running three or four minutes late. Without venturing into pages of detail, I discovered that the cause was the late arrival at Zurich of the hourly Geneva Airport-St Gallen train. This delayed the Brig/Geneva Airport-Romanshorn train with which it interconnects at Zurich and, consequently, forward connections to Rorschach and Stein-am-Rhein among others. This, incidentally, meant that the reverse connections were delayed and the return St.Gallen-Geneva Airport service often started late,! In a fortnight I only saw one of these trains ron on time and that was late on a quiet Saturday evening.

Naturally, as a service planner, my curiosity was aroused, and I set out to determine the cause of the unreliability. After much delving, I came to the conclusion that the problem was one of a sequence of tight workings, none of which, individually, would create serious unreliability, but which, in each hour, collectively would always result in something not working. I've suffered this sort of problem in Britain and know the symptoms well.
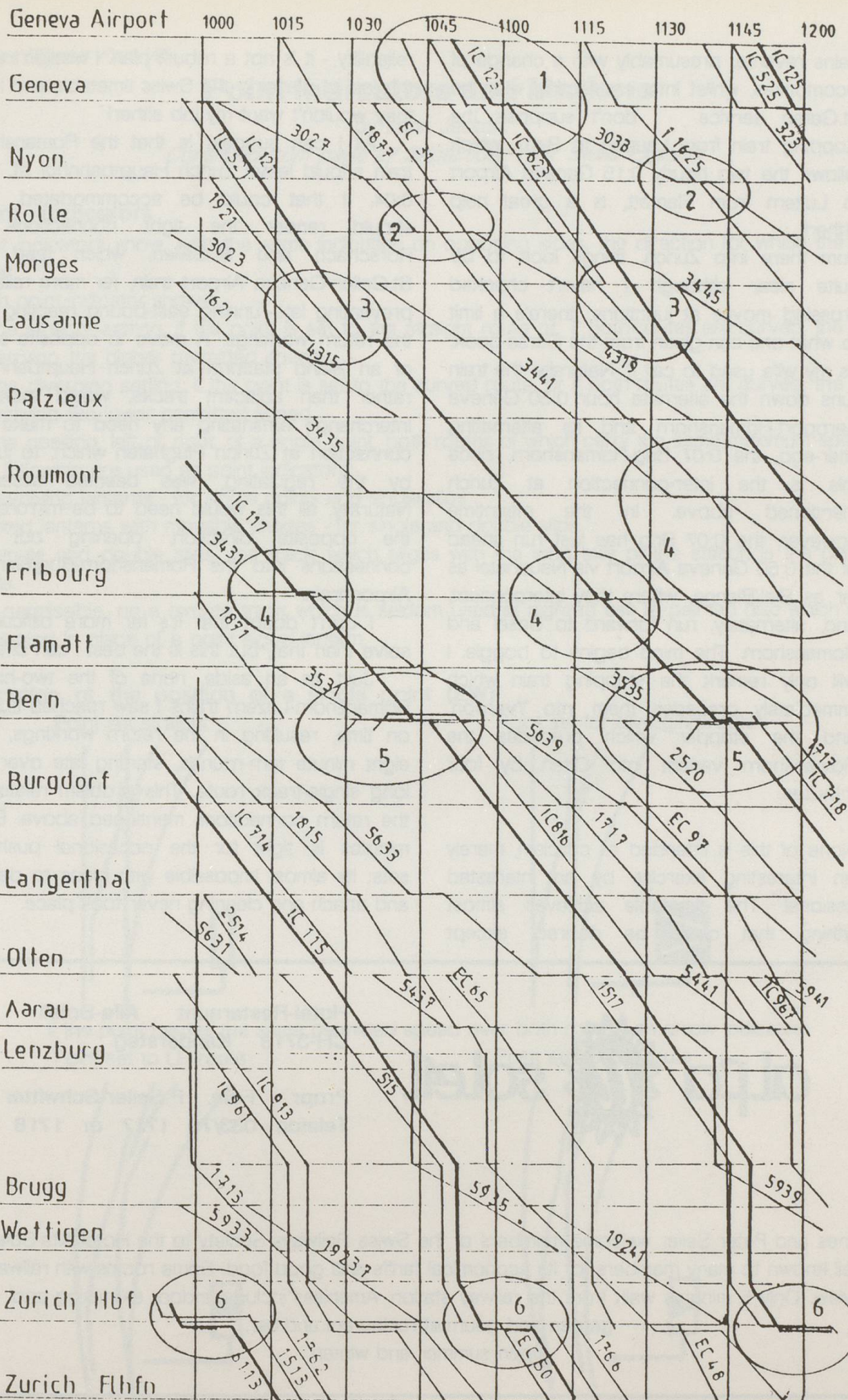
To demonstrate the problem I've sketched a graph which shows two hours of passenger timetable of the line Geneva Airport-Bern-Zurich-Zurich Flughafen both vial Lenzburg and via Brugg. The graph does not show all the trains around Bern, into Zurich or between there and Flughafen, and you will, I trust, forgive me for not including Morges/Lausanne-Neuchatel-Biel/Bienne-Olten, even though this is pertinent. There is a limit to the amount of work one will undertake just out of interest. Neither have I included trains in the Westbound direction.

On the graph are numbered circles which refer to the comments below. The trains we are interested in are shown by a heavier line and leave Geneva Airport at fifty minutes past each hour, in shorthand 0:50.

1. The train is the third of a sequence of three trains from Geneva Airport at near-minimum headways. It is followed immediately from Geneva by an all-stations train.

2. The all stations train, dependent on the timekeeping of the group of three, is overtaken by the next fast train from Geneva Airport, establishing an inter-reaction between five trains. Note that the plan is further complicated in one hour by the presence of EC31, which also passes the stopper.

3. The first of the group of three makes two extra stops (Nyon and Morges), making its timing slower than those of the two subsequent trains and putting them at risk. Incidentally the second of the three, on alternate hours is the Geneva Airport-Romanshorn train which interconnects with the St.Gallen service at Zurich. The first train is also threatened by the preceding stopper, itself at risk from the 0:15 Geneva Airport and by the preceding group of three...

4. The St.Gallen train is next at risk at Fribourg, where it overtakes a stopping service. However, on alternate hours, when the 0:15 Geneva Airport is heading for Luzern, the same stopper is overtaken by the Luzern train at Romont. For risk factors see above.

5. A stopping train from Thun arrives at Bern at 0:22. It is followed in by a train from Interlaken, which runs alternately to Basel or Zurich Flughafen, alternating destinations with the next arrival from Brig or, occasionally and invariably disastrously, from Milano. I have never been on a punctual train anywhere near that city! Both these

| Geneva Airport | 1000 | 1015 | 1030 | 1045 | 1100 | 1115 | 1130 | 1145 | 1200 |

Geneva

Nyon

Rolle

Morges

Lausanne

Palzieux

Roumont

Fribourg

Flamatt

Bern

Burgdorf

Langenthal

Olten

Aarau

Lenzburg

Brugg

Wettigen

Zurich Hbf

Zurich Flhfn

IC 123 · EC 31 · IC 623 · IC 125 · IC 525 · 323
IC 521 · IC 121 · 3027 · 1877 · 3038 · 1625
1921 · 3023 · 1621 · 4315 · 3441 · 3445 · 4379
3435 · IC 117 · 3431 · 1871
3531 · 3531 · 3535 · 5639 · 2520 · 1717 · IC 718
IC 714 · 1815 · 5633 · IC816 · 1717 · EC 97
2514 · IC 115 · 547 · EC 65 · 1517 · 5441 · IC 961 · 5941
S631 · IC 913 · 515 · 5935 · 5939
1313 · 5933 · 1937 · 1941
6113 · 1513 · 1261 · EC50 · 1266 · EC 48

trains reverse, presumably with a change of locomotives, whilst inter-connecting with the St.Gallen service. I don't suppose the stopping train from Laupen to Bern, which follows the two hourly 0:15 Geneva Airport to Luzern from Flamatt, is a great help either!

6. From there into Zurich, things look to be quite clear although I havn't checked crossing moves at junctions; there's a limit to what one can glean from the Curse-book, as my wife used to call it. Naturally, the train runs down the alternate hour 0:50 Geneve Aeroport-Romanshorn and its alternating alter-ego, the 0:07 Brig-Romanshorn, since this is the inter-connection at Zurich mentioned above. In the meantime however, the 0:07 Brig has just run ahead of the 0:50 Geneva Airport via Neuchatel as far as Biel/Bienne, where they interconnect, and, alternately, run forward to Basel and Romanshorn. The mind begins to boggle. I will only remark the stopping train which immediately precedes them into Yverdon, and the stopper which precedes the Romanshorn variant into Olten by four minutes.

None of this is intended as criticism, merely as an interesting exercise by an interested professional. The timetable achieves almost everything that could be desired, except reliability - it is not a robust plan. I wouldn't want the job of planning the Swiss timetable and I bet they wouldn't want my job either!

All I can suggest is that the Romanshorn train should leave Zurich Hauptbahnhof at, say, 0:04, if that could be accommodated. This should render the tight connections at Rorschach and St.Gallen, which feed the St.Gallen-Geneva Airport train, far more reliable, preventing late-running east-bound reacting into the return workings. A move to opposite sides of an island platform at Zurich Hauptbahnhof, rather than adjacent tracks, would expedite interchange eliminating any need to make the connection at Zurich Flughafen which, to judge by the regulating, was deemed essential. Naturally, all this would need to be mirrored in the opposite direction, opening out the connections into the Romanshorn-Brig/Geneva Airport train.

I don't doubt that it's far more difficult to solve than that, but this is the best I can offer.

Just as an aside, none of the two-hourly Romanshorn-Luzern trains I saw reached Luzern on time, resulting in the return workings, with eight minute turn-rounds, starting late over this long single-track route. This problem relates to the return connections mentioned above. Eight minutes is tight for the occasional push-pull sets; its almost impossible with locos to detach and attach and cleaning never took place.