

THE BOTTOM LINE ON TOPS

Education, training & implementation

Harry Reed

The Headquarters of the TOPS project was located in Blandford House, an old LNER building in the shadow of Marylebone Station. It was self-contained and ideal for the purpose.

When I joined the Project in September 1971 work on upgrading the building was ongoing. The ground floor was dedicated to the telecommunications network that was needed to link the computer to the nationwide rail network. The first floor was the computer floor: a vast open space, big enough for a five-a-side football match, but at that time completely empty (whatever a computer looked like I would have to wait and see). Offices occupied the second floor, whilst the third floor was another large open space, destined to be the home of the computer programmers.

Although a lot of preparatory planning work had been done, relatively few appointments had been made to the Project Team. The Project Manager was Bob Arnott, a senior railway operator, and a very sensible appointment as this was a railway operational project. Too often, tasks such as this have been placed in the hands of Management Service Departments with the result that they are unable to sell the system to those at whom it is aimed. A second sensible aspect of the Project Organisation was that the Management Services Staff, so essential to the technical side, were members of the team and not merely 'on-loan'.

Basically, the organisation had two wings; the technical side was led by Brian Hollingsworth, a civil engineer turned management services specialist. He controlled:

- Systems Programmers – ie. those programmers that make the computer work
- Application Programmers – ie. those programmers relating to the operation of the railway
- Computer Room

The other wing was led by Syd Keeling, formerly Divisional Operating Superintendent at Euston with an extensive operating background. Syd's outstanding strength, in my eyes, was his patient, statesmanlike qualities. He was able to smooth the most ruffled feathers and never seemed to be upset or angry even under the utmost provocation. Syd had under his direct command:

1. Implementation Officer – Basil Robley
Basil had a long operating background and had been responsible for ATI at BRHQ. He had been involved in the detailed planning of TOPS from its earliest days. He had a flair for detail matched by his wide geographical knowledge. Much of the Project's successful implementation can be traced to his initial work.

2. Education and Training Officer

It was to this post that your hapless author was appointed in September 1971. My experiences are really, for good or ill, what

With deep regret, the Editors have to report that Harry Reed died suddenly in May. Two or three of his entertaining articles remain to be published and they will appear, in his memory, in subsequent issues.

this article is all about.

3. TOPS On-line Control

This was a three shift organisation along the lines of train and traffic control but dealing entirely with TOPS issues and the link between the computer and the user.

When I arrived, the place was an empty shell with only a handful of staff in post. On my first morning I met people previously mentioned and the two Americans mentioned in my first article. Ted Strong, the Vice President of TOPS On-line Inc., spent a lot of time visiting with us; his ruthless determination and boundless energy always caused things to happen. Life was never dull when Ted was around. Jack Pfeiffer became our resident consultant, he even grew to understand our sense of humour, always an ally, often a buffer between fractious parties. Although, perhaps out of context, I should mention three other Americans, all of whom were railwaymen (not consultants) who helped so much in the implementation (jargon for introduction) of TOPS. One was Rudi Aron who was in charge of Southern Pacific's Application Programmers. It needs to be borne in mind that, although TOPS was fully in operation in the USA, there were very major differences in railway operating practice. Rudi and his team made hundreds of changes, usually at short notice, always without rancour, to meet our needs. Bobby Wolfe had a genius for new ideas on operating practice and was able to persuade us to introduce them here before his home based colleagues. His principal contribution was in the concept of wagon distribution. It is ironic that some years later I was involved in preaching the merits of Bob's system to the rolling-stock distributors of Canadian National Railway who, not surprisingly, were as reluctant to accept change as their BR counterparts.

The third member of the trio was Luke Ermedes, patient and long suffering. I still believe he was chosen specifically to hold back the brashness of myself and my team.

That however was in the future. In September 1971 I had other more immediate things to consider, not least of which was to try and understand what this system was all about. As Bob Arnott wrote a definitive history of the TOPS Project in 1979, which describes in detail how the system works, I do not need to cover that ground again.

That I was able to meet my immediate objective says much for the help received from others, although all of us were groping in the dark. At this time, I received good and bad news. The good news was that I was to make a trip to Montana to see the Burlington Northern Railroad 'cut-over' (i.e. implement

– introduce) the system in that part of their railway. The bad news was that this was to be in February 1972. Montana is a trifle chilly in winter, I believe. Fortunately, because of their problems, my visit was postponed until June 1972.

Meanwhile my mind turned to other things: firstly establishing my own organisation. I recognised that the education of staff all levels was to be of paramount importance and I wanted this done by operators who could, using their knowledge and experience, convince their peers, rather than specialists in the training field. I was very fortunate to attract Geordies, Arnold Brown and Colin McKeever, and two Scotsmen, Andrew Forrester and George Wilkie. I attracted one other, who proved to be a 'star find'. I wanted an expert keyboard operator but the post was lowly graded at CO3. The senior applicant was not recommended: a man of about 50 who had had one promotion in his 30 plus years career. Arnold Brown and I interviewed him out of courtesy. We were impressed and he proved to be a genius at his task: the other cornerstone on which training was built. Having had one promotion in his first 36 years, he had five in the last 10 years of his career. It was said of Jefferson Davis "The man and the moment are met". It was equally true of Jack Langston.

Our understanding of TOPS was developing; a major moment was the arrival of the first machine which was the 'interface' with the computer. It seems hard to believe now that communication with the computer in these days could only be achieved via a punch card. These cards had 80 columns: data received from the computer appeared in the first 56 columns eg. wagon number (up to 10 columns); Update of information, eg. empty wagon being loaded, was recorded in the remaining 24 columns and re-input to the computer. The machine used was called an IBM 1050 and, even to our novice eyes, it was slow, noisy and obsolete. It was however, the machine in use in the USA and TOPS On-Line Inc. were quite specific that it should be used on BR. We were also very excited when we received a high speed-listing machine known as an IBM 444. It weighed two tons, was roughly the size of a Sherman tank and it was impossible to site it anywhere except in the lobby of Blandford House. We were eager to see it work and, until it was powered up, we used a hand-cranking device. Imagine our surprise when out popped three 80-column cards, headed US NAVY PEARL HARBOUR JULY 1944. So here we had a genuine war veteran, probably a survivor of the Japanese attack!

Even so we were in business and that business was *education*. By this time, copies of the individual procedures were drifting across from San Francisco and these had to be rewritten in understandable language ie. in English not American and with English spelling. This was a personal task which

found me spending time alone at home for many hours. The procedures eventually filled three large, thick loose binders (easy to update) and a further instruction manual. I was not too impressed with the SP presentations so I hit on the simple but effective idea of colour coding: the procedures on white paper, computer responses to input messages on pink and any unsolicited output on blue paper. Later, when my role in the organisation changed, the task of writing the procedures was taken over by Colin McKeever.

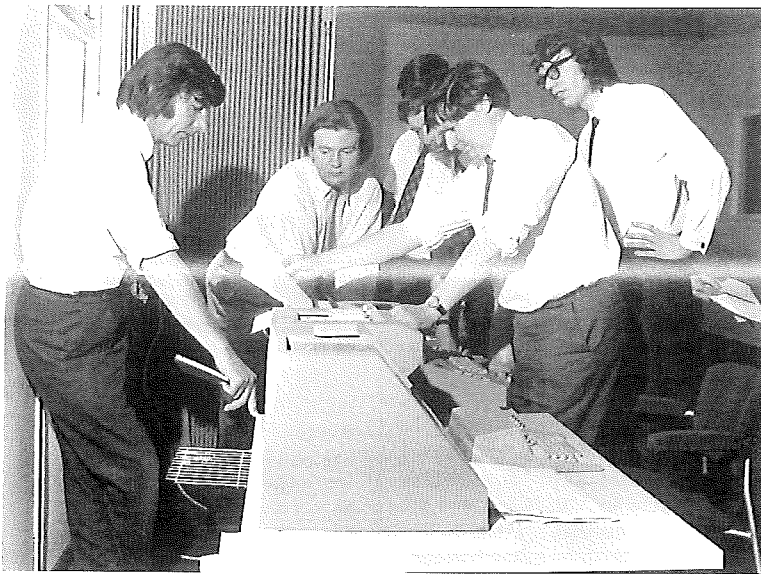
Armed with some procedures, with a couple of 1050 input/output devices (more jargon) and a greater understanding of the system, my group turned to launching our Education Programme. We still had no computer, so we adopted an 'American term' which was 'Show and Tell'. It was a carefully designed trick! We were able to link two of the 1050 machines with a straightforward connection between them but in adjacent rooms. A message input in one room printed out on the 1050 next door. A script was prepared in detail and the cards prepared to match. As the presenter went through his talk, cards were input and 'hey presto', as if by magic the 'computer' responded. On these occasions the computer was 'played' by Jack Langston, who, from time to time, became so engrossed in diversionary conversations with other staff, that responses were delayed. A kick on the wall usually attracted his attention. 'Show and Tell' was a huge success. Starting in the autumn of 1972, 50/60 staff of all levels enjoyed the sales pitch each week. The demonstrations lasted for almost a year until we were able to do much better when we got a real computer. I suspect that very few of the staff who were from a wide range of departments, customers and Trade Union representatives ever realised that the exercise was not 'on-line' (more jargon). I can say this for 'Show and Tell', we enjoyed it.

In June 1972, I jetted off to the Burlington Northern and arrived in Billings, Montana. The staple diet in this cattle country was large burnt steaks or spare ribs of the kind cartoon character Fred Flintstone eats. Ted Strong objected to the red wine being kept in the refrigerator. The people I met were wonderful and I came home with a number of concepts:

- I had, as a result of my visit, no worries at all over the quality of the clerical staff who would be employed in the TOPS offices compared with their American counterparts.
- The training team and the implementation team had to be integrated. In America the two groups were separate and considerable

animosity existed between them. Bob Arnott readily accepted my recommendation that we should have a co-ordinated team.

- Trying to train staff in the TOPS office whilst other work was ongoing was a recipe for chaos. I recommended mobile classrooms in railway coaches. After considerable detective work, I found four Mark 1 First class Open coaches which had been withdrawn from service. Enlisting the support of Arthur Cook, Works Manager, Simonside (with whom I had in the past conspired in the unofficial alterations to steel carrying wagons), I obtained a conversion cost of £2,000 per coach. I promoted the idea to Jack Pfeiffer and Syd Keeling and won their support. In his book, Bob Arnott says he was dubious



The guys with the dodgy haircuts are members of the Implementation Team, using 'Training Mode' to test procedures at The Grove, Watford. Arnold Brown (left), Lawrie Hall (next left), Harry Reed (centre front), Gerald Riley (right).

Harry Reed

sessions should not be more than 45 minutes long: 20 minutes slide presentation, 20 minutes machine work, 5 minutes summary followed by a 15 minute break. So often were the trainees that the break was often taken up by enquiries to the computer.

The biggest plus in training, was a system called 'Training Mode': once your machine was placed in this mode you were able to do all sorts of outlandish things without any effect on the database. As an example, one day at our Training School which we set up at Watford, someone practising use of a procedure called 'Locomotive Transfer' sent all the Eastern Region Deltic fleet to Dunkirk. Jimmy Burge, then Chief Operating Manager of the Eastern Region at Watford that day, made an enquiry and went 'ballistic', firmly believing that the 22 Deltics had gone abroad via the train ferry. Who says you cannot have realism in training!

In early 1973 I was asked to attend Bob Arnott's office and was told that the organisation was to change and that I would, in addition to my present duties, embrace responsibility for Implementation. I was promoted to Senior Officer but, to this day, it still rankles that my salary was not enhanced. I must admit I felt very sorry for Basil Robley who had done so much work and was now denied the final chapter. It says so much for him that he never displayed any ill feelings and our relationship remained close and friendly. He was a genuine, nice guy.

when the idea was floated. Indeed he was – in fact, I remember the word 'stupid' being used in his initial response. To his credit, when he fully understood the full implications, he readily agreed. In due course four vehicles numbered HR1 to HR4 appeared on the files, each one had a classroom with overhead projection facilities, a machine section for the on-line computer terminals, a galley and a 6-seat saloon for an instructors office. Training benefited greatly from these facilities. It was one of my better decisions.

- I had decided, based on what I had seen, that TOPS clerks, once they were keyboard trained (that was Jack Langston's task), should receive a five day course of training on TOPS procedures. This was agreed and worked out just fine. Even now I am still surprised by the high level of enthusiasm shown by the TOPS clerks and by their keen desire to excel.

Teaching the procedures bothered me; after all it could be a very boring subject and in the USA I felt that it was not well done.

I decided to try to make it light-hearted by using cartoon characters (TOPS cat). I judged

fitted my concept of a co-ordinated training / implementation team which was now strengthened by the appointment of 25 young men, all ex-management trainees. The team eventually totalled some 100 staff. Training initially had to apply to my own staff and we were fortunate to be able to establish our own training school at The Grove at Watford. Here we had a classroom and three 'on-line' TOPS offices. We tried and tested every procedure we could think of. Some staff burnt the 'midnight oil' while others went to work with the milkman. There were formal exercises, even a very strongly contested sweepstake which brought out the best and worst in the contestants. By the time we brought the first Area Managers, their Assistants and Senior Supervisors for training we were ready and confident. Included in their training was a whole day exercise relating to the operation of the Gloucester Area Freight Centre (as the TOPS offices were now designated) with its associated marshalling yard. It was true to life and was designed to show how the operational railway would function using TOPS. Reports came in by telephone and a

key player was an obnoxious head shunter whose aim in life was to be as difficult as he could for the staff manning the office. It speaks volumes for the realism of exercises that tempers were often frayed and voices raised. Life in the TOPS office was never as difficult as it was during that exercise.

Time was marching on. The cutover order had changed: Newcastle, instead of being first, was to be at the end. We started instead in Cornwall in August 1973. OK, it was small beer in freight terms, but nevertheless we got a shock, when no less than 922 vans were revealed as surplus and the computer designated them 'Whitemoor'. It made my boasts about control of coal wagons in Newcastle sound somewhat empty (the boasts not the wagons). Our first, and indeed subsequent, cutovers went swimmingly, quite literally, in a weekend of monsoon-like downpours at St Blazey.

Our main problems centred on the IBM 1050 machines which were, not only painfully slow, but prone to mechanical failure and a mystery to the technicians sent to fix them. Brian Hollingsworth had been

experimenting with a new generation machine, still with an 80-column card but smaller and faster with a visual display screen and above all, a 12k memory, a marvel at that time (128k memory PCs in the home are now quite common).

In late November we experienced our first marshalling yard of any size, at Gloucester. We were convinced that IBM 1050s could not cope in a big yard like Toton or Healey Mills. Bob Amott, Ian Campbell (Deputy Chairman) and Harry Mallinson (Head of Management Services) arrived in the Gloucester TOPS office on Monday morning after cutover, and I was able to make my case. Ian Campbell immediately said "Listen to what he says, Bob". Bob made the decision there and then; Venteks were in, 1050's were out.

The Railway Industry in the 1970s was a hotbed of industrial relations problems. TOPS was from time to time caught up in them, and at one stage we were stopped for six months. Nevertheless, thanks to growing confidence and some creative replanning, the task was finished only 12 days behind

the date scheduled five years earlier.

Ted Strong has written about how he found relations with us. After our initial suspicions, the TOPS team developed strong bonds with the Americans which exist to this day. Alas, our main problems lay with our own UK colleagues. We experienced not merely resistance to change but, in some cases, an active fight to stay the same. This was particularly true in Train, Traffic and Mineral Control offices where it was soon evident that TOPS allowed a decentralisation of much of their historic task. It gave little satisfaction to the Geordies among us to see the Newcastle Division as laggards in the acceptance of the new system.

It's all gone now, the railway has changed but the computer is at the centre of things, leaving no doubt in my mind that the pioneering work of TOPS laid the foundation for the acceptance of things new.

I have been told that the most essential quality required from those involved in teaching others is enthusiasm; that quality existed in abundance in my team and, what is more, it was fun while it lasted and a wonderful game to have played in.

CANADIAN MURALS

A Canadian Mountie on a retired Yorkshire police horse rode into the NRM compound on 24 May, to mark the opening of a special exhibition "Murals of a Great Canadian Train" (see picture on back cover).

The exhibition, which has been organised in conjunction with the Canadian High Commission and will be open until 24 September, displays murals which were mounted in the observation cars of the Canadian Pacific Railways *Canadian* from 1954. They depict scenes from the country's famous national and provincial parks traversed by the train on its journey from Toronto to Vancouver, and are accompanied by a number of souvenir items from the train such as cutlery, menus, and tickets.

The Museum has been able to add its own personal postscript to the material on display. A cine film shot in 1953 has been contributed by Mrs Brenda Ogilvy, mother-in-law of the Museum's Design Manager, and some stills of the train have come from Nick Winterbotham, Deputy Head of the Museum, who took the train across Canada en route to EXPO 86.

One can still travel from Toronto to Vancouver aboard the 1990s version of the *Canadian*, and an expert guide to that journey is George Rutter, Chairman of the South of England group, who acts as tour manager for a well known York travel firm which includes trans-Canada travel among its many rail-based holidays.

THE HOGWARTS EXPRESS

For those of a certain age, this title will mean little. But for many, the name Harry Potter causes great excitement. On Sunday 9 July the steam-hauled special train, 'Hogwarts Express', visited York and the locomotive, eight coaches and an EWS Class 66 spent the night at the NRM having delivered the author, J K Rowling, to the operating platform where she signed copies of her latest book, *Harry Potter and the Goblet of Fire* in one of the coaches (see picture on back cover).

The locomotive, whose normal identity is Bulleid Pacific No 34027 *Taw Valley*, was re-named for the tour and painted an usual shade of red.



NRM

LETTERS TO THE EDITORS

Dear Sirs

Aggressive Timekeeping

The phrase at the end of the article by 'the man on platform one' in *Review* No 91, about trains "now leaving aggressively on time", may have caught others' eyes as it did mine.

I think I can give an example of this, as related by a traveller on an evening GNER service from King's Cross earlier this year. Apparently, it was, through no fault of its own, some 18 minutes late into York. Those hoping for a connection to Scarborough were disappointed, as that train had left "aggressively on time" two minutes earlier!

Phillip Crossland
Driffield

Dear Sirs

Bombay, Baroda and Central Indian Railway locomotive

Can I express my delight at seeing, during my last visit to the NRM, that the Bombay, Baroda and Central Indian Railway model 2-4-0 tender loco was on display? This is the 1/4 full size model of an E B Wilson loco that I mentioned in my letter published in *NRM Review* No 90 (Winter 1999/2000).

I was also extremely surprised to see in *The Warehouse* two model BB&CIR coaches, as I was unaware of the existence of these. I noted that these were not built

to the same scale as the loco.

Finally, if the Friends are to participate in next Easter's York Model Railway show, would it be possible for the museum to loan the BB&CIR loco as part of the Friends' stand? As well as representing the NRM, that model would be an example *par excellence* of the work of model maker John Young of Leeds.

Bernard A Malton
Brough