

Modernisation of the Kent Coast Main Line



View of Bickley Junction, looking towards London, showing the sharply-curved loops which are to be replaced by improved lines

THE most urgent major undertaking of the Southern Region of British Railways under the British Transport Commission Modernisation Plan is the electrification and improvement of the main line from London to the Kent Coast, *via* Chatham and Faversham. In addition to serving all the north and east Kentish coast resorts, this line affords an alternative route, *via* Canterbury, for Continental boat trains to and from Dover. Moreover, it has a considerable passenger and goods traffic to the Medway Towns, and serves fast-developing dormitory areas in the neighbourhood of London, and new housing estates further afield. Unfortunately, the line was built hurriedly by the former London, Chatham & Dover Railway for competitive reasons, and has severe gradients, and some sharp curves.

It was recognised long ago that at least the London-Medway Towns section was well suited to electrification, an undertaking that was, in fact, completed as far as Gillingham in 1939. Though this facility went a long way towards solving the problems of that section of the line at the time, its effects were stultified by an out-of-date signalling system and track limitations, especially

in the London area. Nor has the electrification secured any relief for traffic east of Gillingham, which has developed rapidly in some directions.

The heavy traffic into and out of Victoria Station, London, has the choice of two double-line routes between Brixton Junction and Shortlands Junction, ten miles from the terminus. Four tracks, which are inconveniently arranged for present traffic, are also in service for some three miles between Shortlands and Bickley Junctions, but onwards only two are available. Under the modernisation plan, 750-volt third-rail electrification and colour-light signalling are being installed throughout the main lines to Ramsgate *via* Chatham and Dover *via* Canterbury. Moreover, a great deal of engineering work is in hand in the shape of line-widening and other improvements to facilitate the movement of traffic.

From Shortlands Junction to Bickley Junction the existing double tracks from the main and Catford loop lines run together as a pair of down and a pair of up lines, as shown in the accompanying diagram "A." This arrangement, therefore, forms a bottleneck; a train crossing Shortlands Junction from one side to the other completely blocks the path of all

oncoming trains on both roads. To obviate this, the four tracks are being re-arranged to form two pairs of up and down lines, as shown in the lower part of the diagram, enabling trains to run straight through Shortlands Junction without holding each other up. Obviously these changes involve drastic alteration to the signalling throughout, and to track layout at each end of the section. Moreover, the sharpness of the existing

curves involves considerable speed restriction, but extensive work is being carried out to ease the curves and to permit expresses to run through at speed.

At Shortlands Junction on the up side a new cutting and bank are being constructed to flatten the existing curves, a new bridge has to be built over the road, and a good deal of work is necessary at Shortlands Station. The easing of the curves will raise speeds from 40 to 60



Map of railways in Kent, showing the lines to be electrified

m.p.h. on the Victoria line and from 20 to 40 m.p.h. on the Catford loop line.

At Bromley South Station on this section the switch-over of lines entails extensive alterations to the island platforms, the lines outside them, station buildings, and track layout generally. These will permit 30-m.p.h. speeds on the outer local lines to go up to 60. At the same time the station buildings will be modernised and the platforms lengthened to 810 ft. to take 12-car trains. Alterations to the track layout at Bickley Station are being undertaken and are similar to those at Bromley South.

revised skew so as to secure an easement at the curves.

As will be seen from the diagram, several flying and burrowing junctions are necessary to enable trains to run from one of the intersecting Folkestone and Kent Coast main lines to the other. In fact most of the Continental boat trains between Victoria and Folkestone and Dover *via* Ashford do this.

The whole of this extremely complicated system of junctions has been re-designed. Three of the loops are being re-aligned on entirely new locations so as to ease the existing sharp curves and

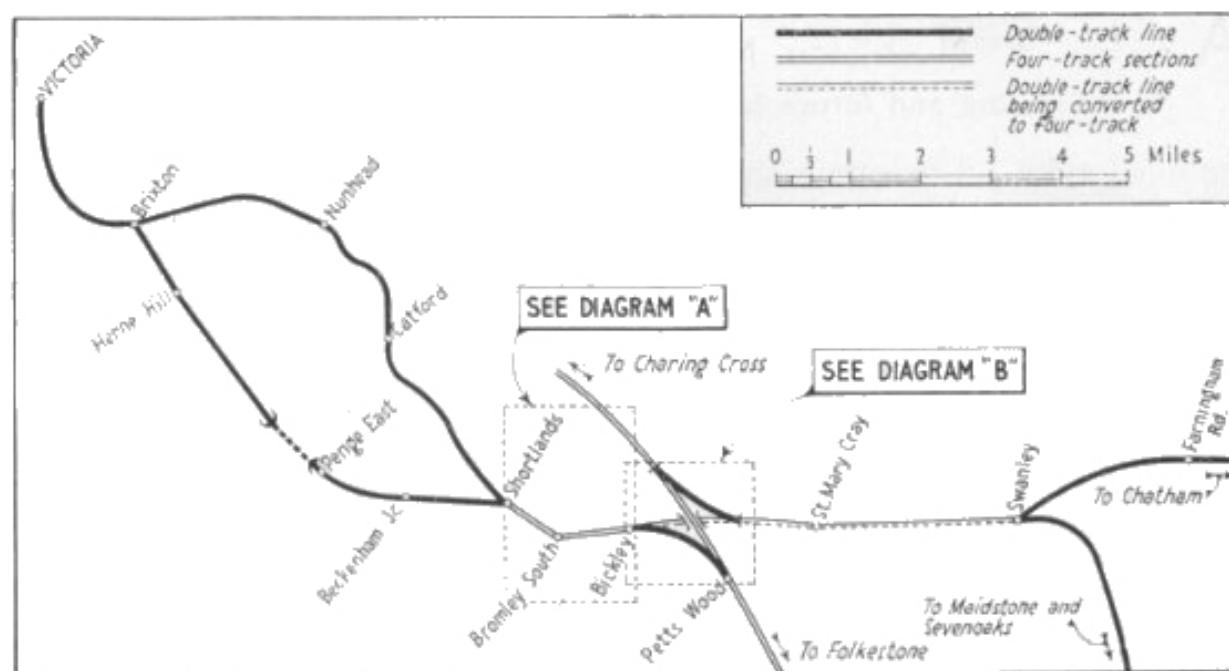
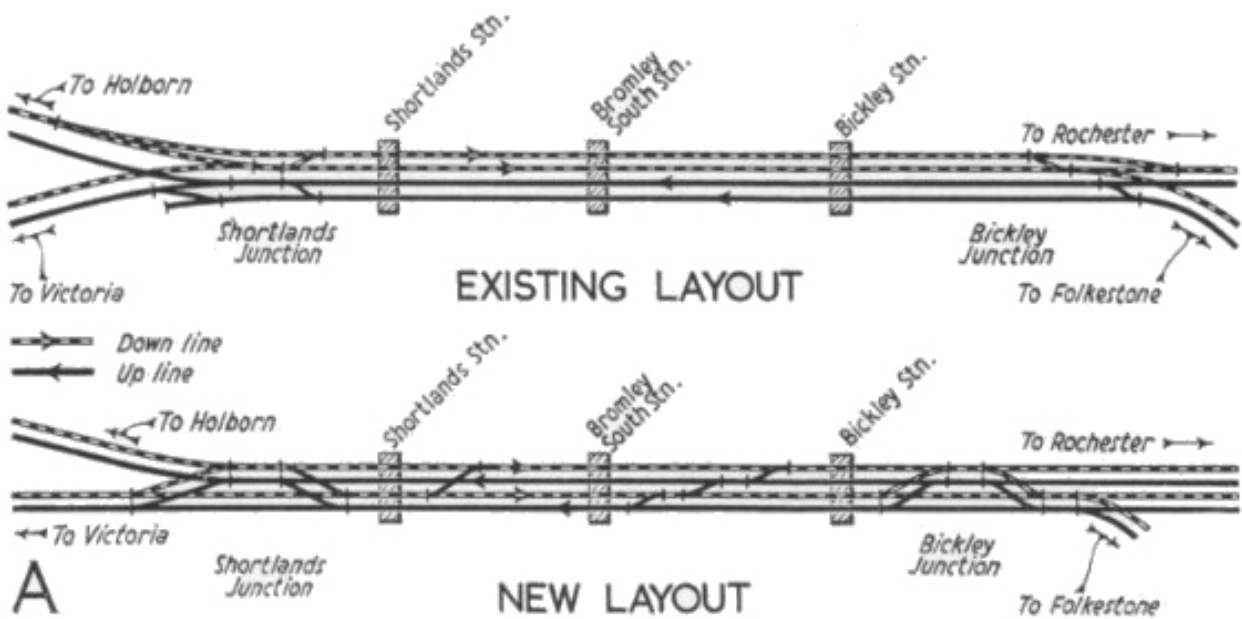


Diagram of the railway from Victoria to Swanley, showing the number of tracks available and the sites of the new works

The most extensive engineering works are, however, being carried out at Bickley Junction. Here there are three main junctions close together where the Victoria, Charing Cross, Kent Coast and Dover *via* Canterbury, and Folkestone and Dover *via* Ashford lines, meet and diverge. The existing bridge carrying the Charing Cross-Folkestone route over the Kent Coast line, with brick piers and a steel superstructure, consists of three spans, the present double line using the middle one. The new widened lines will pass one through each of the smaller side spans. To take the new up Chislehurst and down Bickley loops shown in diagram "B," however, a new bridge is being built under the Folkestone line to accommodate their realigned tracks at a

enable the present speed restrictions to be raised from 30 to 50 m.p.h. Extensive earthworks are involved, entailing the removal of 125,000 tons by heavy earth-moving plant, and the building of seven new bridges and culverts. The earthworks here are substantially complete and the plant has moved further eastwards. Meanwhile work is in hand on the bridgework preliminaries. The effects of these major alterations will be particularly beneficial to the operation of the heavy boat trains.

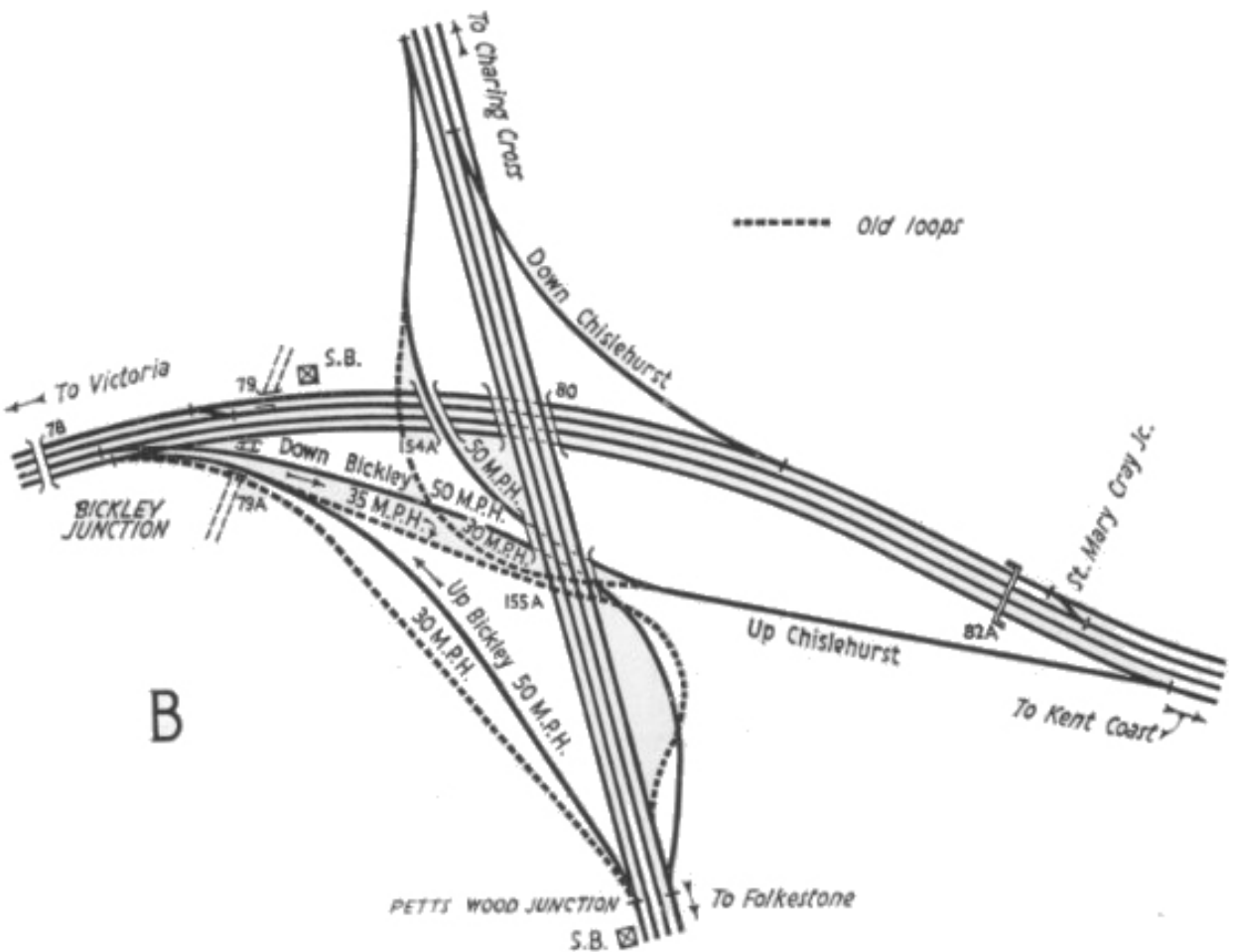
From Bickley Junction, the Kent Coast line at present narrows from four to two tracks, but the five-mile section onwards to Swanley Junction, where the line to Sevenoaks, Maidstone East and Ashford *via* Otford diverges, is at present



Existing and future layout of Shortlands-Bickley section

being quadrupled. This entails the construction of eleven bridges in addition to a new viaduct at St. Mary Cray. This 50 ft.-high structure will consist of nine spans each of 28 ft.; the piers will be in solid brickwork carrying reinforced concrete arches and brick-faced spandrels.

These works are already well in hand. As the side spans of two multi-span arched road overbridges were unsuitable for the widened lines, these structures are being demolished with explosives and replaced by single-span bridges. Since all the foregoing earthwork began last



Present and realigned tracks, to increase speeds, between Bickley, Chislehurst, St. Mary Cray and Petts Wood Junctions

August nearly half a million tons have been moved, with the aid of eight excavators and six scrapers.

At St. Mary Cray Station staggered platforms are being replaced by two new island platforms, and new station buildings will provide a booking hall at road level and other up-to-date facilities. Heavy retaining walls are being built to accommodate the widened lines and goods yards, rather than sterilise land.

East of Swanley Junction, no major construction works or track alterations

improvements are in hand on the Sittingbourne-Sheerness branch, at present a single line. This is being electrified, and doubled for the first three miles to the Swale, where it crosses to the Isle of Sheppey. Most of the earthwork is completed for the doubling, including the widening of the cutting at Kemsley, where, as a retaining wall, a length of 1,000 ft. of steel sheet piling is being driven; several bridge extensions are also being undertaken.

With the exception of that on the



Platform extensions at Rainham to accommodate eight-car trains

are being undertaken until after Rainham Station, three miles beyond Gillingham, is passed. There the formation is being widened and compacted with earth-moving plant for laying two passing-loops $2\frac{1}{4}$ miles long to beyond Newington Station. The movement of some 100,000 tons of earth has been necessary, and two overbridges have been demolished with explosives. These works were the subject of an article in our January issue. Rainham Station platforms are being extended and the Newington platforms rebuilt to accommodate eight-car trains. The goods yard at Newington also is being remodelled.

In addition to the main-line works,

Sheerness branch widening, which will be 98-lb. flat-bottom, all the new track will be of 109-lb. flat-bottom type. For full-speed running 1 in 24 crossings with G switches will be used at Shortlands Junction and 1 in 28 with G switches at Rainham.

The completion date for the whole electrification scheme to Ramsgate, Dover, and Sheerness is June, 1959, and work is well up to programme. The second stage of the scheme embraces the electrification of the main line from Sevenoaks to Folkestone and Dover, *via* Tonbridge and Ashford, the remaining routes in East Kent, and the line from Ashford to Appledore and Hastings.