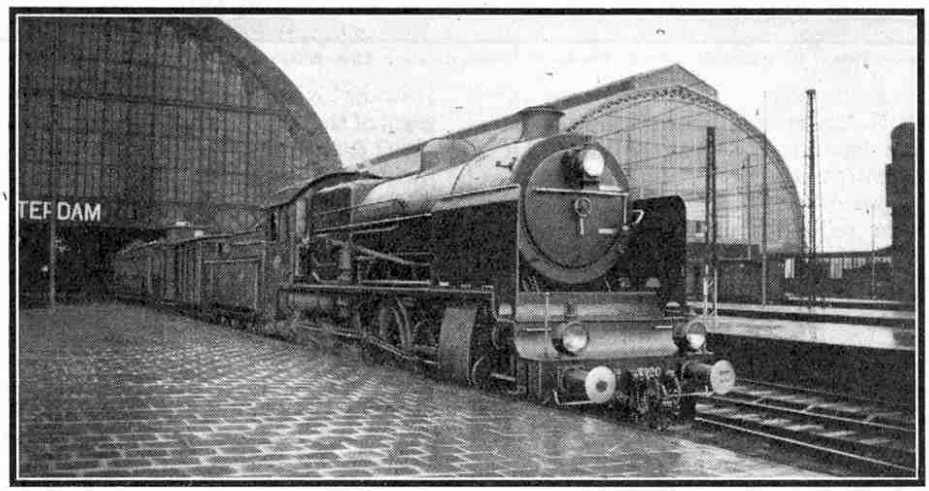
Railway Working in Holland

Steam, Electric, and Diesel Traction

By a Railway Engineer

ONE of the most outstanding characteristics of the Dutch railways is the curious mixture of English and Continental practice that one finds on almost every route. It is not that practice as a whole is a kind of half-way house between the two; the differences are as clear-cut as could be imagined, some features being wholly English, others just as definitely Continental. They run on the right-hand track, use upper-quadrant signals of a shape very strange to English eyes, and the rails are flat-bottomed; but the stations, especially those serving the bigger towns, with their high platforms and quiet serene atmosphere might easily be in the suburbs of London or Manchester, but for the prevalence of a foreign language. Most English of all are the locomotives, with their clean handsome lines and copper-capped chimneys; and one is not in the least surprised to see "Beyer, Peacock" or "Sharp, Stewart" on their makers' plates.

On all the principal services within the country, steam haulage is gradually being superseded. Along the shores of the North Sea the network of electrified lines is slowly extending, while farther east the chief internal services are being worked by Diesel-electric trains. The distances between large towns are so short that nothing in the shape of corridor restaurant car expresses is needed, and a fast and convenient service can be most satisfactorily maintained by multiple-unit vestibule trains, whether Diesel or electrically driven. With the international trains it is quite different. The famous "*Rheingold*" and "*Edelweiss*" expresses begin their journeys to Switzerland at Amsterdam; the cross-country express from The Hook of Holland to Berlin is a very popular service with English travellers; and all these trains are made up of very heavy all-steel coaches, and are steam hauled. On the less busy lines to the east of the Zuider Zee steam traction is still exclusively employed, though no doubt it is only a matter of time before Diesel trains are used here.



Amsterdam Central Station, showing an express for North Germany ready to start. The locomotive is a large 4-6-0 and, like most Dutch engines, follows British practice in many respects.

The short run from the Hook of Holland up to Rotterdam forms a very striking introduction to the Dutch railways. This is the latest section to be electrified, and the service is operated by some of the most remarkable multiple-unit trains that have been put into service anywhere in the world. The trains are made up of two-car articulated sets; each end is carefully streamlined and an additional cowling is provided over the bogies to assist in reducing air resistance. The power supply is 1,500 volts D.C., using overhead conductors. The coaches are finished externally in a handsome colour scheme of grey and scarlet, while the interior effect is entirely grey, relieved by a liberal amount of chromium plating. In addition to being good to look at and supremely comfortable to ride in, these trains are capable of really startling performance. In some trials carried out on the main line between Rotterdam and Amsterdam, one two-car set attained a speed of 100.6 m.p.h.! Of course the speeds demanded on the service between The Hook and Rotterdam are very much less than this, but after each station stop the acceleration was perfectly astounding. Every time we were up to 55 m.p.h. in about three-quarters of a mile from the start, and then the motorman eased up for the rest of the distance on to the next station.

I was bound for Amsterdam, and so alighted from this remarkable train at Schiedam, a junction just on the outskirts of Rotterdam where the main line comes in from the north. There are alternative routes between Rotterdam and Amsterdam. The western one is electrified and runs through The Hague and the university city of Leiden; the eastern route goes via Utrecht, and the inter-city service is worked by Diesel-electric trains. On the line to Amsterdam via The Hague the older electric trains are used. These are not nearly so attractive in appearance as the stock working on the Hook branch; they are rather American-looking and are painted a dull olive-green. But they are fast comfortable trains, and their big windows give fine views over the countryside.

The landscape is of a most astonishing flatness. In every direction as far as the eye can see there is not the slightest undulation, let alone as much as a hill; and it all lies below sea level. Every few miles the railway crosses canals; along their banks are built picturesque little villages, and there are usually one or two windmills in sight somewhere on the broad horizon. In the fields are numerous dwarf windmills. These look like large scale-models of the full-sized ones and are used for pumping work where only a small amount of power is required. They do not stand more than 10 ft. or 12 ft. high.

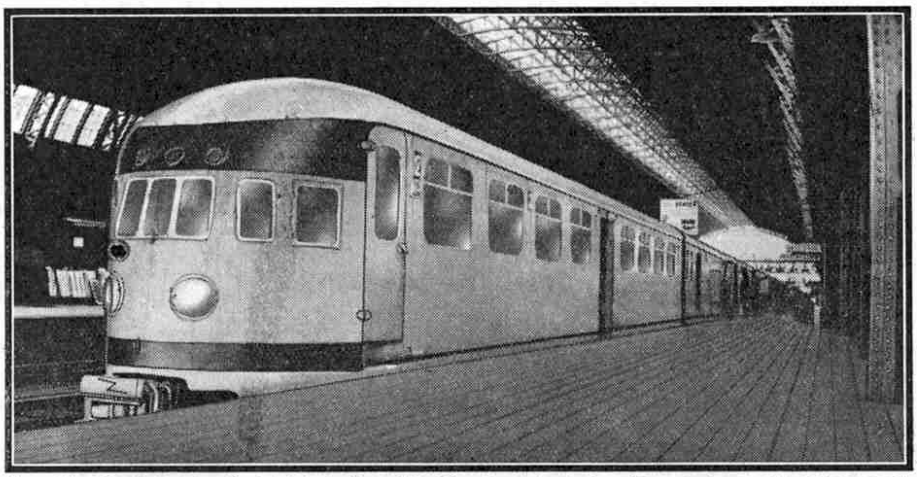
By now the train is nearing Delft, one of the most picturesque cities in all Holland; and there are pleasing glimpses from the train just after leaving the station. The town is intersected by a number of canals, the banks of which are lined with trees; two glorious church towers rise above the red-tiled roofs, and alongside the canal that runs parallel to the railway for some distance is a very fine windmill, right in the town. Just beyond this point is a notable example of a modern Dutch signal box. It is built in reinforced concrete, almost entirely glazed on three sides, and the flat roof is overhung to provide an awning over the windows. There is no ground floor at all; the cabin proper is perched high above the track, supported on four slender reinforced concrete pillars.

There are some very interesting features in modern Dutch signalling. Except in one or two very big stations, where electric point machines are used, the points are everywhere worked on the double-wire system. The underlying principle of this method of operation is that of an ordinary belt drive. The point lever, instead of being pulled through a small angle as in English practice, is moved through a full semi-circle, and to the lever is fixed a pulley wheel that revolves about the same centre as that round which the lever pivots. Adjacent to the points is a corresponding pulley wheel which is turned through half a revolution when the cabin lever is operated. The points are operated off this pulley by a mechanism just like the piston rod and connecting rod of an engine; in the case of double-wire worked points however the action is reversed, for the wheel drives the "piston." The work of throwing a pair of points is far too great for a simple belt to be used, and the wire is stoutly coupled to the pulleys at each end. The same principle is used for working signals.

At a distance of 5½ miles beyond Delft is The Hague. Here a cross-country line from Utrecht comes in, over which the service is worked by Diesel-electric trains. As befits the capital city of Holland, The Hague has a fine station, very English in appearance, with of course the difference that trains run on the right-hand track instead of the left. Just as we arrived the southbound "*Edelweiss Express*" was leaving. This famous train is composed entirely of Pullman cars, and leaving Amsterdam at 8.6 a.m. serves Antwerp, Brussels, Luxemburg, Metz and Strasburg, reaching Basle at 6 p.m. Over the Dutch

portion of the journey the load is one of only four coaches, but farther south it becomes a very heavy train. This western route between Rotterdam and Amsterdam is also used by the through expresses from France, of which *"L'Etoille du Nord"* is the most celebrated.

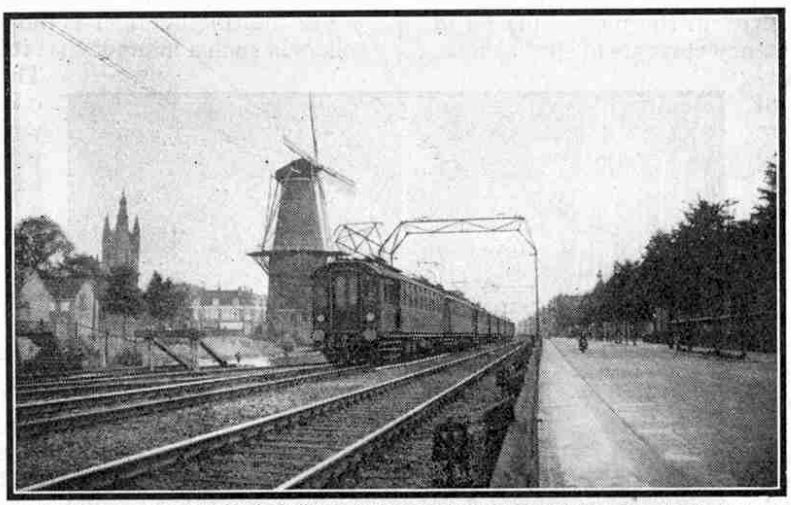
These trains are hauled by handsome four-cylinder 4–6–0s, the design of which was prepared by Beyer, Peacock and Co. Ltd. in consultation with the Dutch authorities. Steam train schedules in Holland, though quite smart, do not demand any very high speed, and a diameter of 6 ft. for the coupled wheels has been standardised. The cylinders of these particular engines are 15¾ in. in diameter by 26 in. stroke, and these ample dimensions coupled with a boiler pressure of 170 lb. per sq. in. give them a high accelerative capacity. The *"Edelweiss Express"* has no run longer than 40 miles in Holland, but on each section speed usually rises to over 60 m.p.h. The engines are painted olive green, but this rather drab colour is wonderfully set off by the copper-capped chimney and polished brass dome and safety valve casing. The numerous "gadgets" usually found on and around the boiler on Continental engines are conspicuous by their absence, and the only feature that differs in any way from English practice is the use of large electric headlamps.



One of the Diesel-electric articulated trains bound for Utrecht, at Amsterdam. These trains consist of three-coach units, the centre vehicle containing the engine and the luggage compartments.

From The Hague the line runs north through Leiden and Lisse to Haarlem. The country throughout is dead flat, and one is never far from the sea. In many places can be seen the long range of sand dunes that act as a natural bulwark to the low-lying country inland. In a comfortable electric train we bowled along at a steady 50 m.p.h. with surpassing smoothness, and then, approaching Haarlem, we passed through the world-famous bulb fields; it was August and the gladioli were a magnificent sight. Haarlem is an important junction; a short branch from the seaside town of Zandvoort comes in from the west, and another electrified line runs northward to Alkmaar, famed for its cheese. The main line swings round due east, and a run of 11¾ miles brings us to Amsterdam.

This last stretch has a most unusual interest. For almost its entire length there are parallel tracks for five different modes of transport. On the extreme left, looking towards Amsterdam, is the railway; then in order comes a canal, a highway for fast motor traffic, a special track for bicycles, and last of all a path for pedestrians. As if this were not enough, a few miles to the north is the big sea-level canal that connects Amsterdam with the sea; along this waterway ocean-going ships can often be seen.



A picturesque scene in Delft, including a typical windmill and showing a fast electric train on the run between Rotterdam and Amsterdam.

At Amsterdam Central station practically every phase of Dutch railway working can be observed. On the western side electric trains from Rotterdam, Zandvoort, and Alkmaar are coming and going every few minutes. Important international expresses arrive from all parts of Europe. The dark sepia cars of the Northern Railway of France are familiar objects; there are coaches of the International Sleeping Car Company, and all coming in on trains drawn by the English-looking 4–6–0 engines. The eastern end of the station bears a different complexion altogether. Here are to be seen expresses destined for all parts of Germany, some carrying through coaches for places still farther afield. The very distinctive Mitropa stock is largely used on these trains; all-steel construction is employed for ordinary carriages, dining cars, and sleeping cars alike, and they are painted a reddish-maroon colour that makes them recognisable anywhere. To an English traveller, accustomed to much timber work in coaches, they take some getting used to, with the clanging of steel doors and a chill to the touch; but they ride superbly and the internal decoration of the dining cars is most ornate.

On the routes running east from Amsterdam the latest type 4–6–0 engines are extensively used. They are slightly more powerful than the "Beyer, Peacock" type previously mentioned, having four cylinders 16½ in. in diameter by 26 in. stroke. The boiler is pitched considerably higher, and smoke deflecting plates are fitted at the front end, but still they are definitely English in appearance. This is perhaps more remarkable than in the case of the earlier engines, for the new type have all been built by the German firm of Henschel and Sohn of Cassel. Quite recently one of them was completely streamlined, not with a view to any ultra-rapid running, but in an attempt to reduce coal consumption.

Alongside these handsome steam-hauled trains may be seen the Diesel-electrics. In outward appearance they are very similar to the latest electric trains working on the Rotterdam–Hook service. They consist of three-coach articulated sets in which the centre coach contains the engines and luggage compartments. There are two engines to each three-car set, driving on to the two centre bogies. Each engine is of the Maybach 12-cylinder V-type, using airless injection, running at 1,400 r.p.m. and driving a D.C. generator that supplies current to the four motors, each of which is coupled direct to one of the bogie axles. These three-car trains develop no less than 820 h.p. and they have been tested up to 87 m.p.h.; in ordinary service however the speed rarely exceeds 60 m.p.h.

By way of contrast to these ultra-modern developments the branch lines in quiet country districts provide a most interesting study. Here traffic moves very sedately, the rolling stock consists chiefly of very spartan four-wheelers, and speed rarely exceeds 35 m.p.h. But for all that there is a wealth of interest about these placid branches. The historic seaport town of Hoorn, on the western shore of the Zuider Zee, is a fascinating railway centre. One evening when I was returning to Amsterdam a very odd collection of engines was on view. There were two "Beyer, Peacock" 4–4–0s built as long ago as 1892; they sported very tall chimneys and tiny boilers, but what made them still more ancient-looking was a huge bell-shaped dome. One of them was working a cross-country local to Alkmaar that consisted of three four-wheeled coaches!

Slightly more modern was a double-framed "Sharp, Stewart" 4–4–0, and then, just as I was studying this old "bus," what would rank as a fast train on this line arrived behind a handsome Dutch-built 4–4–0. In outward appearance this could best be described as a much enlarged edition of the early "Beyer" type, including even the bell-shaped dome. My own train, which consisted of only two coaches, was drawn by a 4–4–4 tank engine that bore a strong family likeness to the 4–4–0 just mentioned. We jogged along at a merry 27 to 28 m.p.h. between stops, and so reached Zaandam, where the electrified line from Alkmaar to Amsterdam is joined.

Even on these quiet unhurried routes traffic though slow is very punctually operated. So Zaandam, where the two extremes meet and one transfers from the placid "steamer" to the rapid bustling electric, is a good place to take leave of the Dutch Railways.