The RAILWAY STAFF TRAMWAY

INCORPORATING "THE RAILWAY & TRAMWAY MAGAZINE"
THE COMMISSIONERS' MONTHLY BULLETIN & THE SAFETY FIRST PAMPHLET.

To HELP, ENCOURAGE, and DEFEND

Vol. 4. No. 6.

JUNE 23, 1927

FEATURES:

Registered at the General Post Office, Sydney, N.S.W., for transmission by post as a newspaper.

SAFETY
COURTESY
EFFICIENCY

PRICE SIXPENCE

Lewisham Viaduct.

A JOB such as the widening of existing lines now being carried out between Sydney and Homebush entails a tremendous amount of work, a lot of which has to be done at night or at other periods of slack traffic. During the progress of such construction many incidents quite interesting in themselves crop up, but which, on account of the extent of the entire work, are more or less lost sight of. One such was the erection and placing into position of the new spans on the Lewisham viaduct.

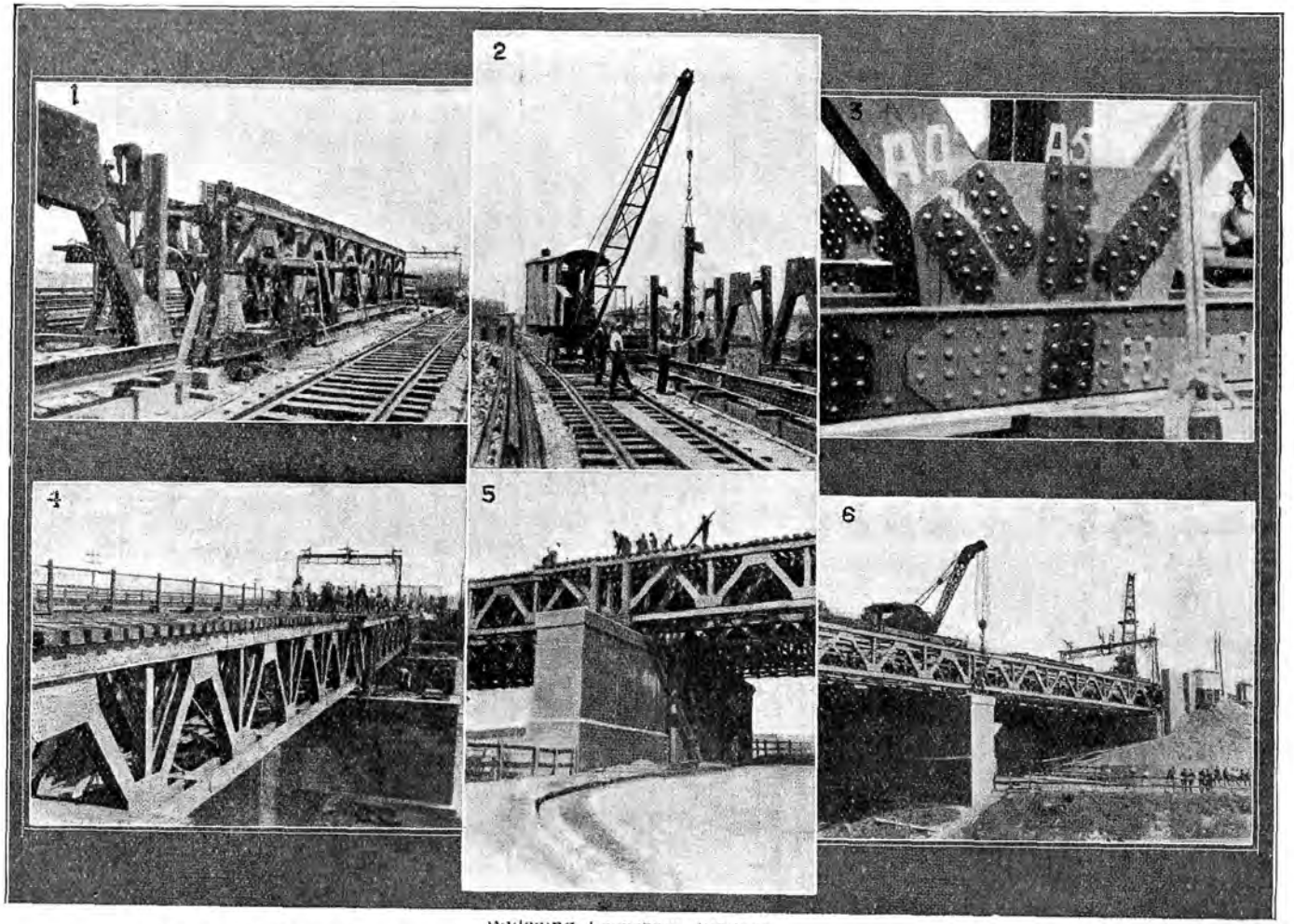
One of the earliest references to this locality is found in the Sydney Railway Company's report made in 1855, which refers to the viaduct, then nearing completion, as the heaviest piece of bridge work on the (Sydney-Granville Junction) line. This—the original bridge—was an eight-arch stone structure, similar in general to the stone arches at Lapstone and Picton. Beyond this, and the fact that it was for a double line, little seems to be known.

As might be expected, the traffic over it was very light at first, in fact, the time-table for 1856 shows the service to Liverpool on week days as being four mixed, one goods, and one "mail" train. On the return it consisted of five mixed and one goods, while on Sundays there were four passenger trains in each direction. Of course, the rolling-stock was considerably lighter than at present, there being only seven engines on the line, five 0-4-2 and two singles 2-2-2. The heaviest axle weight was 9¼ tons on the leading wheels of the Stephenson (0-4-2) engines, the whole engine scaled 26 tons and its tender 20½ tons, and the wagons and carriages were all four-wheelers. By 1885 the axle weight had risen to nearly 16 tons.

The first change at Lewisham came in 1886, when the famous eight arches were replaced by a three-span steel bridge. The alignment of the two new roads was slightly on the "down" side of the stone arches. In the illustration on page 331 the footing of the third arch may be seen on the Parramatta side of the first brick pier. At least one other footing of the old structure can be picked out at the site.

In 1891 the quadruplication of the lines demanded that a new bridge be constructed to

A Celebration at Lewisham in 1855.



Widening Lewisham Viaduct.

1 and 2. Assembling the spans on the site. 3. Near view of riveted joint. 4. "Down" spans in place.
5. One of the piers. 6. The last span in. (Note the "overseers" on the fence.)

At Home and Abroad—*continued.*

accommodate the two new roads, and three new spans were erected on the northern side on piers which abutted the others.

In 1920 the centres of the running lines were increased to 12 feet, and the "1886" spans were opened out to allow of the roads being moved while a new floor was put on the "1891" job. The new addition, of course, was laid to the 12-feet dimension.

Now, in 1927, the provision of two extra lines requires that more new spans be introduced. It

Base of one of the old Stone Arches, showing the Piers (right to left) built in 1886, 1891 and 1927.

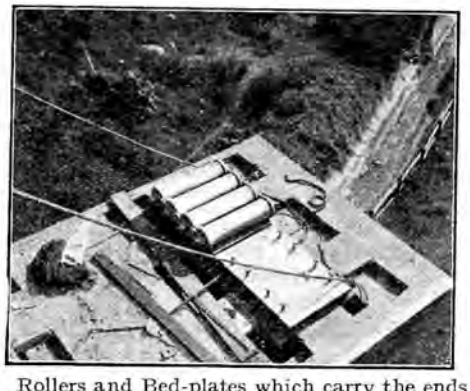
Alongside the fence may be seen the footings of one of the stone arches, still in existence.

is interesting to notice the differing forms of construction in the three bridges. The 1886 spans are composed of six trusses braced together, three under each rail, and are of the link form of construction. The second lot (1891) are formed of three pairs of heavy trusses, while the last spans (1927) revert to the individual truss, more or less, under each rail.

It is the last section that this article is mainly dealing with. It is, like the others, 89 feet 9 inches span, each truss being 10 feet 2 inches deep and weighing 34 tons, or 408 tons for the whole structure. Each pair of trusses is of 7 feet 6 inches centres, and the two sets at 12 feet centres. The steel work was cut, drilled, and partly riveted at the Departmental shops at White Bay, but the majority of the 60,000 rivets in the

Lewisham Viaduct from Parramatta-road.

structure were driven during the assembling at the site. The trusses have a 1-inch camber and are secured, at the Sydney end on the "down" and the Parramatta end on the "up," on bed plates with eight threaded studs, each other end is carried on four 6-inch rollers. Most people are unaware of this idea, but a moment's thought will convince that the spans must be longer when the temperature is high than when it is low. The



Rollers and Bed-plates which carry the ends of the spans, the former allowing for expansion and contraction of the steel through temperature variations.

variation in each span would probably be about ½ or 5/8ths of an inch, and unless some provision were made in a rolling or sliding joint the structure would be dangerously stressed during temperature variations, hence the rollers. The idea of placing them on the "leaving" end is that all

Artist's conception of the Viaduct as incorporated in Petersham Municipal Council's Seal.

At Home and Abroad—*continued.*

impact and lengthening of the truss, due to the elimination of the camber as the train rolls over, is taken in the direction of the motion of the train.

The actual placing of the spans into position was worth seeing. As at Queanbeyan, dealt with last month, cranes were used for the lifting and traversing. The first set of spans, *i.e.*, the new "down" road, was put in during the dark hours, the cranes using the "up main" road, traffic

A "Close-up" of a lift into position.

The span was carried on the specially-designed gigantic "bolt" (2½ inches in diameter and 30 inches long) seen under the girder.

being diverted during this time. For the second set—the new "up"—a road was thrown across the new spans previously put in, and one Sunday recently the cranes again appeared on the site and lifted the second lot in from the new road, Although this appears simple when stated in print, arrangements had to be made to regulate traffic on the "up main," as the tail of the cranes fouled that line during portions of their swinging. The putting into place of these six trusses forming the new "up" road was carried out in five hours fifty minutes by fifteen men, which included crane-drivers, loco. drivers, guard, &c. The two cranes were from the Eveleigh and Broadmeadow Loco. Steam Sheds, the latter coming down by goods train. Sixty thousand rivets, weighing 25 tons, were used in the steel work of the new bridge work. The whole proceedings, especially the placing of the heavy structure into position, drew a large crowd, and most of them remained to the end to see that everything went off all right.

Tramway Rolling-stock.

Watching trams pass along the streets it might be thought that there are very many types. There are, in all, twelve classes, but considerably more than half fall in the "O" and "OP" types. Close examination will show that standardisation has been carried out to a great extent. All body work, with the exception of that of the "G" and a few "L" cars, can be grouped under one of three forms. The cross seat with curved and straight sides; the cross open seats; and the glass sides, as in the "LP," "OP," and "P" cars. Similarly, frames and carrying wheels may be seen to comprise four-wheelers of 6 ft. 6 in. or 7 ft. 6 in. wheel base; bogie cars with "maximum traction" (unequal wheel bogies) with one motor; and bogies with four equal wheels and two motors each. This last bogie is in two forms, those with the larger wheels being 33 in. diameter and the smaller 30 in. Controls, roughly, fall into two kinds—the direct, multiple unit (on most "Os"), and the electro-pneumatic on the "Ps." Of course, many details vary on the individual classes, but, generally speaking, the above covers the case. As each type is dealt with, some remarks will be made as to the special features embodied in it.

The classification of tramway vehicles started originally with the "A," which, with the "B" described last month, comprised the passenger stock of the steam service. Following these were two types, "C" and "D," with which the electric service was inaugurated in 1899. Both were four-wheelers, the "C" having a single cabin seating twenty-six passengers alongside a longitudinal aisle, while the "D" was somewhat similar, the cabin accommodating fourteen and the two pairs of open seats at the ends ten each. Both of the types have been retired.

Next in order come the "E" type cars, which consist of two four-wheelers permanently coupled, and which in many respects are rather novel. Each car of the pair contains four cross compartments, with a seat behind the driver at the end, and seats forty-five passengers. The compartments are of different widths, the centre one being 6 ft. 6 in. to provide access to the motors. Both cars are equipped with trolley poles, the trailing car pole being used in each case.

Miss Prim: "Wouldn't your mother be angry if she saw you in that scanty bathing suit?"

Up-to-date Flapper: "Too right, she would; it's hers."