

Train Lighting



J. STONE & CO. (PERTFORD) LTD. • PERTFORD LONDON ENGLAND

I N T R O D U C T I O N

Some of the earlier attempts at train lighting seem to have been prompted not so much by consideration of the passengers' comfort as by the safety of his person: felonious attacks in unlighted coaches appear to have been regrettably common in the 1850's. At this period, such coaches as were lighted at all were subjected to the vagaries of candles and oil lamps—the former being available on demand to privileged passengers. When, however, one considers the attendant fire risk, it seems questionable whether the traveller at that time was not, on the whole, safer in the gloom of an unlighted coach.

Oil gas, introduced in the 1870's, was certainly a forward step, even though the fire risk remained. But the inconvenience of ignition and the high cost of maintenance pointed to the necessity for a more flexible system. Electricity was, of course, the obvious development, but its successful application to a moving vehicle presented a variety of problems.

The first trains to be lighted by electricity employed accumulators which, of course, needed to be detached for recharging at frequent intervals. So although this innovation met with the immediate approval of the travelling public, it was recognised as falling far short of the requirements of the railway engineer.

It was in the year 1894 that J. Stone & Co. Ltd., produced the axle-driven dynamo as the true answer to this problem—the basic system still in general use to-day. From that moment each railway coach became an independent unit, complete with its power-generating and storage battery equipment.

This first Stone system incorporated an extremely simple arrangement, namely, the slipping belt, to counteract the increased dynamo output that normally follows increased speed. So effective was this system that certain railways still find that it exactly meets their conditions of operation.

Another basic Stone development was the double battery system. With this system the battery is divided into two sections, one section being charged

from the dynamo, whilst the other floats at the requisite voltage for lighting.

The introduction of the inherently regulated generator represented the next stage in the evolution of train lighting : Stone's "Liliput" and "Tonum" third brush equipment, so well-known throughout the railway world, are of this class.

This third brush equipment, in combination with controlling equipment for the regulation of the battery charge, is particularly applicable to conditions where block train working, involving parallel equipments, is required.

Further developments in recent years have largely centred on the design of fully-regulated equipment, catering for the heavier and more variable electric loads now encountered in railway operation and incorporating, of course, all the refinements of modern engineering practice. Stone's Dual Regulator, representing the latest development in this field, combines the functions of controlling the generator output, lamp voltage and positively precluding battery over-charging and, in all but the most exceptional cases, obviating the necessity for a separate lamp voltage regulator.

The experience of this Company in the provision of train lighting equipment to suit the requirements of the world's railways, has shown that operating conditions are never exactly duplicated. The Stone policy, is therefore, to keep abreast of all modern developments and to recommend to each individual railway the type of equipment which, on the basis of practical experience, is known to suit the circumstances best. Thus, although automatically regulated apparatus, for example, undoubtedly constitutes a most important development in train lighting, it would not be recommended in every case. No one system can suit all operating conditions, and it is upon the ability to produce the best system for each individual railway that the world-wide reputation of J. Stone & Co. Ltd., has been maintained.

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THE COMPANY'S RAILWAY PRODUCTS INCLUDE :—

**Carriage Lighting Equipment ; Locomotive Lighting Equipment ;
Fluorescent Lighting Equipment ; Air Conditioning Equipment ;
Carriage Heating Equipment ; Refrigeration Equipment ; Steam
or Electric Ventilation Equipment ; Water Heating Equipment ;
Water Raising Equipment ; Gear Drives ; Lead Acid and
Alkaline Batteries.**

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