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TRANSACTIONS.

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THE DEVELOPMENT OF THE LOCOMOTIVE.

By T. T. VERNON SMITH, M. CAN. SOC. C. E.

To be read on 31st January, or 14th February.

A series of railway articles, by Mr. T. Curtis Clarke, have recently appeared, in a leading magazine, which have been decidedly interesting and deservedly popular, but they contain a number of statements which, designed to please American readers, are by no means correct in fact or generous to the engineers of other nationalities. Old country engineers have learned to regard railways and the locomotive, especially in its present form, as their undisputed invention and introduction, and although they are not so ungenerous as to claim every individual improvement, yet they consider that in this one department of engineering, the great bulk of the evolution of the present railway has been peculiarly British, and that Americans have not contributed a great deal towards the mechanical and scientific triumph that we now see. The first number of these papers is particularly guilty and ungracious in claiming for American inventors everything valuable and important that has been found out. "The modern railway," says Mr. Clarke, "was created by the Stephensons in 1830, when they built the locomotive Rocket. The development of the railway since is due to the development of the locomotive." "The earlier locomotives of this country modelled after the Rocket, weighed five or six tons, and could draw on a level about 40 tons. After the American improvements, which we shall describe, were made, our engines weighed 25 tons, and could draw on a level some sixty loaded cars, weighing 1,200 tons. The Stephenson type once fixed has remained unchanged (in Europe), except in detail, to the present day." "When we come to the United States we find an entirely different state of things. The key to the evolution of the American railway is the contempt for authority displayed by our engineers, and the untrammelled way in which they invented and applied whatever they thought would answer the best purpose, regardless of precedent." "When we began to build our railways in 1831, we followed English patterns for a short time, but our engineers soon saw that unless vital changes were made, our money would not hold out, and necessity truly became the mother of invention. The first and most far-seeing invention was that of the swivelling truck, which enables the engine to run round curves of almost any radius. This enabled us to build much less expensive lines than those of England, for we could avoid hills and other obstacles. The swivelling truck was first suggested by Horatio Allen for the South Carolina Railway in 1831, but the first practical use of it was made upon the Mohawk and Hudson Railroad in the same year. It is said to have been invented by John B. Jervis, Chief Engineer of that road. The next improvement was the equalizing beams or levers, by which the weight of the engine is always borne by three out of four or more driving wheels. The

Clarke, but not
similar!

The Rocket could run
on level ground
was used in 2 times