1 Development of the Prototype

1.1 Historical Context

Right from the beginning of railways their task has been primarily that of moving goods. Colliery owners realised the potential for moving their coal much more easily and cheaply by rail and they were foremost in the promotion of early wagonways. The earliest vehicles used evolved from the cart and were initially horse drawn. The speeds were slow and the running gear little more than 4 wheels running in plain bearings. The wheels had plain tyres and the cast iron plateway guided their progress. Often brakes were not fitted and sprags inserted between the wheel spokes and the wagon frame arrested movement in a crude way. Draw gear was little more than a convenient eyebolt to which a rope or chain could be attached. Trains were short, often no more than a couple of wagons, so forces were relatively low and the frames could withstand the pull.

Developments in technology brought a change from plateways to edge rails with flanged wheels on the vehicles. As steam traction became the norm trains got longer and heavier and speeds increased. Improved running- and draw-gear became essential and wagons became more complex. Wheels and axles were fitted into axleboxes sliding in guides with a spring to cushion the movement and to reduce the shock loading on both track and wagon.

Draw- and buffing-gear were permitted some movement, also under the control of springs, and hand brakes were eventually fitted to all vehicles. By far the most common type of wagon was the basic open topped box used for carrying bulk minerals or goods, though other specialised vehicles such as cattle trucks, covered vans and tank wagons developed. Most wagons shared very similar constructional principles and were simply but robustly made vehicles. Coaching stock also followed contemporary road practice and the earliest passenger vehicles were either simple open wagons or stagecoach-like bodies mounted on wagon underframes. As passenger train speeds increased, improvements were made to the riding qualities by the provision of more flexible springs. Coaches also got screw couplings to damp oscillation between them. It must be remembered that wagon development lagged well behind that of coaching stock and it is only in recent years that this gap has narrowed.

This description is brief and does not attempt to cover the full evolution of the railway wagon which was driven both by economic expedience and legislation. Many specialised types of wagon were developed to cater for regional requirements. There is a wealth of material available for individual research and study.