This report presents a historical account of the development of rear lighting systems. The account is based partly on a comprehensive review of the available documented sources. Various details of both technical developments and lighting standards are covered. Then the rear end crash situation is discussed. It is noted that rear end crashes constitute a large and increasing problem in present road traffic. This is followed by an analysis of the various functions of rear signaling systems and the extent to which the present rear lamps accomplish those functions. In the final section, the tasks of the driver in car-following situations are discussed, followed by a listing of possible changes to rear signaling systems that could enhance the safety of road transportation. (The report contains 191 references.)