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'Cheap or rapid or convenient road transport for man and goods is one of the most important of all contributions to national comfort and prosperity.' An early evangelist for the automobile, William Worby Beaumont (1848–1929) drew on his engineering background to produce the first volume of this work in 1900, when motor vehicles were still relatively new to British roads. Rapid developments in the automotive industry prompted the publication of a second volume in 1906. Replete with technical drawings and photographs, the work describes in great detail the design, construction and operation of the earliest motor vehicles, including those powered by steam, electricity and fuels derived from oil. Volume 2 describes the advances made both in the technological development of automobiles and in the volume produced. Detailed descriptions and illustrations are provided for the leading examples of the time from manufacturers such as Renault, Cadillac, Daimler and Wolseley.

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W. Worby Beaumont

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Motor Vehicles and Motors

*Their Design, Construction
and Working by Steam, Oil and Electricity*

VOLUME 2

W. WORBY BEAUMONT



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MOTOR VEHICLES AND MOTORS

THEIR DESIGN CONSTRUCTION AND
WORKING BY STEAM OIL
AND ELECTRICITY

BY W. WORBY BEAUMONT

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PREFACE TO VOLUME II

WHEN the Preface to the first volume of this work was written in 1900 it was thought that if its reception proved a second edition to be required, some supplementary chapters and engravings would enable me to present to the reader a sufficient account of the advance likely to be made in design and construction of motor vehicles. The favour, however, and, I might add, indulgence with which the book was received by the public and the Press made a second edition necessary more than two years ago. It was then found that the space which the supplementary matter and illustrations, which even a general survey of the improvements made in two years would require, would occupy, not the space of a supplement, but a new volume.

The progress made in the past four years in motor vehicle construction has been phenomenal, and more remarkable than that in any other mechanical engineering industry ever established. The value of the output in Great Britain alone exceeded two millions sterling in the past year, and our imports amounted to about the same sum. The British output in the year—September, 1905, to September, 1906—will probably be little, if at all, short of £4,000,000. My anticipations, as expressed in lectures in 1895–6, have been more than realized, though then received with polite incredulity. When it is remembered that of the 18,500,000 of the population actively engaged in various occupations in the United Kingdom, 1 in every 12·3 is engaged in conveyance services of one kind or another, it will be readily understood that an immense field is open for new mechanical means of road transport.

All the essential elements of design, described and illustrated in the first volume, and the principles of construction, remain the same now in 1905 as in March, 1900; but the details of design and utilization of the results of experience have made such great strides towards the fulfilment of general motor vehicle requirements, that this second volume is necessary; partly from the illustrative and descriptive point of view, and partly in order that the results of experience in many matters may be placed before the reader in a way that may be useful in practice. There are also numerous questions of a practical-theoretical character with which it has been found necessary to deal. Some of these arise out of experience in the new directions of development, and some of them are required in order that some principles of design and construction may

▼

PREFACE

be presented in a simple practical manner, as applied in motor vehicle considerations.

Of this kind are the chapters on turning effort and sequence of cycles in motors, design and strength of crankshafts and axles, on radiators and water-cooling requirements; power speed and tractive effort, carburettors and carburation; engine dimensions, overturning and skidding efforts and stresses; transmission efficiency, and on the cost of motor transport.

The drawings for this volume have been more than three years in preparation, and cover the period 1900–1905. It is impossible to include the most recent changes in general design, or detail; but those herein presented may, it is hoped, prove sufficiently illustrative or indicative of the change and the trend of design to make this volume as acceptable to the constructor and to the automobilist as the first volume proved to be.

It has not been found necessary in this volume to deal with several of the subjects taken up in the first; others are again dealt with where experience and experiment have either modified opinions, or have introduced new practical applications of principles previously well understood.

Those interested in motor vehicles have now an illustrated press with contributors, probably a hundred to one that existed at the time of the preparation of my first volume. These illustrated journals show the character of the changes from week to week, and show how great is the industry which only ten years ago was struggling to be allowed to exist. To two of these journals—the *Autocar* and the *Automotor Journal*—frequent reference is herein made.

As it is impossible or inaccurate to treat some kinds of vehicles as of more importance than others, or to make any rigid classification of types, except as dictated by the employment of either internal combustion engines, steam engines, or electric motors, no particular order of presentation of different cars is herein attempted. It has been common to classify vehicles in the trials of the Automobile Club by their prices and seating capacity. This classification cannot be observed here, as it is inconvenient to separate the different sizes of similar designs or of the same make. Any apparent want of sequence in this respect must be assumed to be rendered unimportant by reference to the index.

I have to crave the indulgence of reader and critic, as nothing but the fact that I am committed to the realization of the promise made in the Preface to the second edition of Volume I. would have induced me to add the labours of this one to occupations already sufficiently engrossing.

I have to acknowledge the assistance of several of those whose vehicles are herein described, and more particularly the assistance of my son, Mr. E. G. E. Beaumont, Assoc.M.Inst.C.E.

W. W. B.

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