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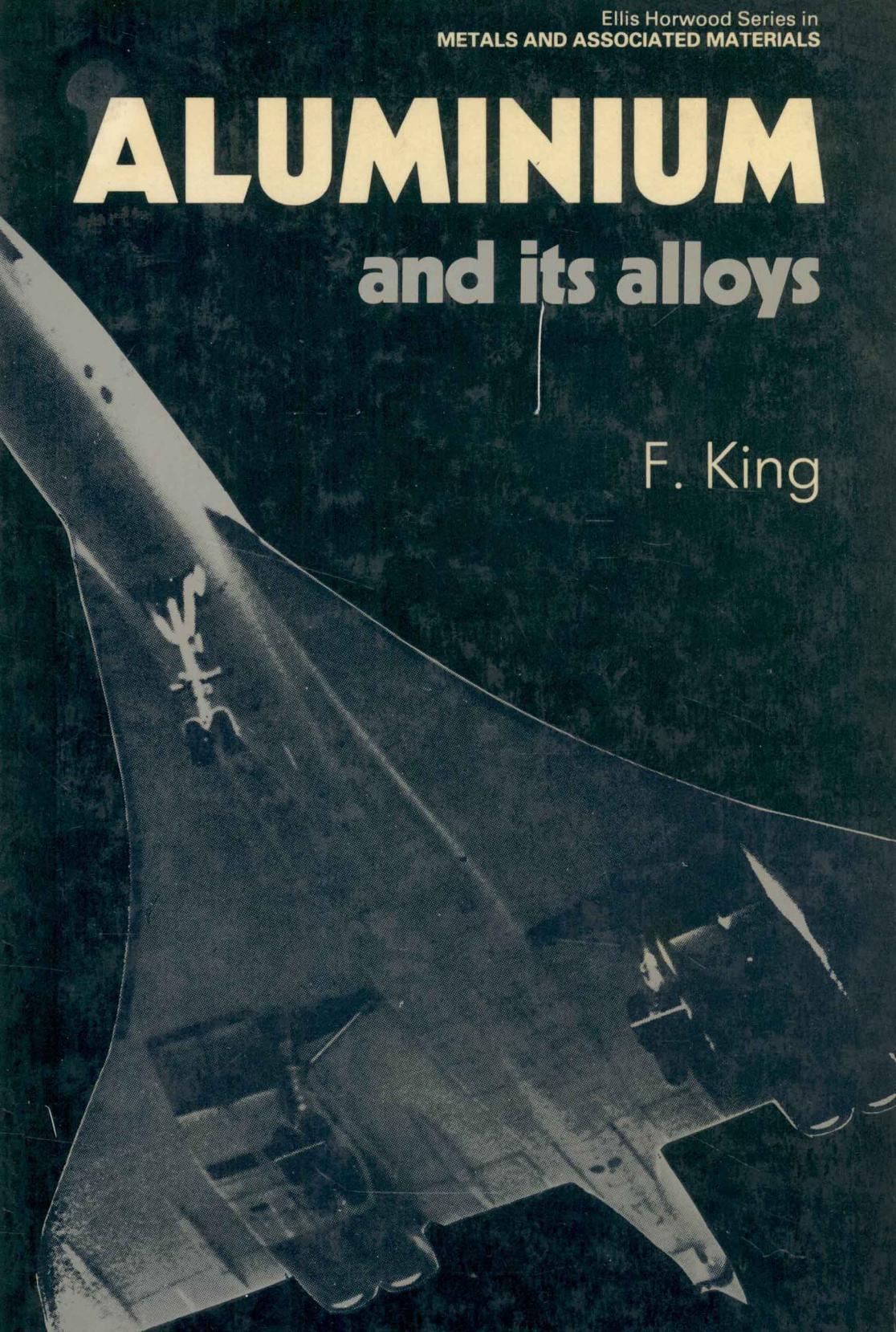
ALUMINIUM
and its alloys

F. King



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ALUMINIUM AND ITS ALLOYS

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Author's preface

Aluminium has grown in little more than a century from virtually a chemical curiosity to the world's second most commonly used metal. Its existence was postulated by Davy in the earliest years of the nineteenth century; its separation was first achieved some twenty years later; its extraction by reduction with molten sodium was undertaken commercially from 1855 to 1890 and the modern electrolytic process dates only from 1886. Since that time, mining of aluminium ore, bauxite, the extraction from it of alumina by chemical processing, electrolytic smelting of the metal and its processing into fabricated forms have spread throughout the world. There is a wide and varied family of aluminium alloys now used for a multitude of purposes from the thinnest foil for wrapping through every engineering industry to high technological applications in aeronautics, space exploration and electronics.

The aluminium industry has its foundations in basic research and development activities which continue on a wide scale both to assist production of the metal and its alloys and in its continuing application in virtually all the major industries.

The aim of this book is to provide an authoritative account of aluminium, its present technological position and its industrial capabilities, as well as a quick and ready source of reference data. It is intended for engineers concerned with production and design, for management in planning to extend the range of materials and products, and for students and teachers of engineering as well as in metallurgy and materials science. The occurrence and processes for extraction of aluminium are described with the economic–technological background involved and this is followed by summaries of the methods of fabrication applied to the aluminium group of metals.

The aluminium alloys are discussed in terms of their equilibrium

diagrams and heat treatment within a range from the metal itself with its low strength through the range of alloys to those eight to ten times stronger than the pure metal in the soft condition.

It is expected that through the references and recommendations for further reading, users and students will be encouraged to follow up this introduction to the possibilities for present and future applications of the light alloys of aluminium. It is a further addition to 'The Industrial Metals' series and follows the same general pattern.

Note: SI units are used throughout with conversion tables to Imperial Units in Appendix 5.

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F.K.