

THE DEVELOPMENT OF  
JET AND  
TURBINE  
AERO ENGINES

4TH EDITION

BILL GUNSTON



# Contents

<i>Introduction</i>	6
<b>PART I: HOW GAS TURBINES WORK</b>	<b>7</b>
1 Principles	9
2 Compressors	16
3 Combustion	29
4 Turbines	39
5 Jetpipes	49
6 Propellers and fans	63
7 Engine systems	74
8 Construction	85
9 Installation	101
<b>PART II: THE HISTORICAL STORY</b>	<b>115</b>
10 The pioneers	117
11 The Second World War	132
12 Rockets and ramjets	146
13 The post-war era to 1960	151
14 Powered lift	162
15 Military jet engines	173
16 Civil jet engines	182
17 Turboprops and propfans	199
18 Helicopters	212
<i>Update to Second Edition</i>	220
<i>Update to Third Edition</i>	235
<i>Update to Fourth Edition</i>	249
<i>Glossary</i>	255
<i>Index</i>	257