## Contents

1 Introduction ................................................................. 1  
1.1 General ............................................................... 1  
1.2 Sources ............................................................ 5  
References ............................................................... 6  

2 Radio Astronomy in the Netherlands: An Astronomers’ Matter .... 7  
2.1 The History of Dutch Astronomy and Leiden’s Growing Dominance ......................................................... 7  
2.2 The ‘Founding Fathers’ Karl Jansky and Grote Reber .......... 10  
2.3 The Distribution of Astronomical Literature During the War ... 14  
2.4 Radar and the First Radio Astronomy Groups ................ 16  
2.5 Dutch Radio Astronomy: Astronomers Take the Lead .......... 22  
2.6 War Turmoil and the Discovery of the 21-Cm Hydrogen Line ... 25  
2.7 Looking for Partners ............................................... 31  
2.8 Seeking Financial Support: The Determination of Oort ....... 35  
2.9 The ‘Würzburg-Riese’ in Kootwijk ................................ 38  
2.10 Science and the Reconstruction of the Country ................ 41  
2.10.1 Pure Science and Its Applications: How to Fool Your Funders ......................................................... 46  
2.11 Being Both Judge and Jury ........................................ 49  
2.12 Galactic Versus Solar Research ................................... 50  
2.13 Big Science Versus Little Science ............................... 53  
2.14 Radio Astronomers Versus Optical Astronomers .............. 55  
References ............................................................... 56  

3 The Making of the Dwingeloo Radio Telescope ................. 61  
3.1 A National Foundation for Radio Astronomy .................. 61  
3.2 Maximal Efficiency and the Exclusion of Groningen ......... 62  
3.3 Troubles with Engineer Hoo ....................................... 65  
3.4 The ‘Dicke Switch’ .................................................. 68  
3.5 Rising Costs and Delays .......................................... 71  
3.6 In Search of a Location ............................................ 75
### Contents

3.7 Science and Society ........................................ 83  
3.8 A Spiral Structure ........................................ 89  
3.9 Competition Versus Cooperation .......................... 96  
3.10 The Invisible Engineer .................................... 99  
3.11 Beyond American Hegemony ............................... 106  
References ................................................................ 113  

4  Joining Forces with the Belgians .............................. 117  
4.1 A Continuity with the Past .................................. 117  
4.2 The Belgians and Their Continuing Astrophysical Tradition 121  
4.3 ‘Project Large Cross Antenna’ .............................. 126  
4.4 The Long and Difficult Road to an Agreement with the OEEC 129  
4.5 The OEEC as a Divisive Issue .............................. 136  
4.6 The Impossible Marriage Between Belgian and Dutch Science Policies .................................. 141  
4.7 Choosing Between ESO and BCAP: A False Dilemma .... 149  
4.8 Belgium’s Conditions: Internationalisation and Industrial Benefits .................................. 152  
4.9 The Inextricable Link to the Antarctic Expeditions .... 158  
References ................................................................ 165  

5  The Westerbork Synthesis Radio Telescope ................. 169  
5.1 The First Design ............................................. 169  
5.1.1 The Australians and the Cross ......................... 176  
5.2 The Second Design .......................................... 180  
5.3 The Third Design ............................................ 186  
5.3.1 Earth-Rotation Aperture Synthesis ................... 189  
5.4 The Fourth and Final Design ............................... 197  
5.5 Where to Build the Telescope? ............................. 199  
5.6 A Frustrating Construction Process ....................... 205  
5.7 Tightening Budgets ........................................... 207  
5.7.1 The Late Payments of the Belgians .................. 209  
5.7.2 Government Austerity and Stricter Application Procedures ........................................... 214  
5.8 Source Counts and Cosmology ............................. 219  
References ................................................................ 225  

6  Conclusion ......................................................... 229  
Reference ................................................................ 236  

Index ........................................................................ 237
The Rise of Radio Astronomy in the Netherlands
The People and the Politics
Elbers, A.
2017, XIV, 240 p. 40 illus., 8 illus. in color., Hardcover
ISBN: 978-3-319-49078-6