ON TYCHO'S ISLAND

TYCHO BRAHE AND HIS ASSISTANTS, 1570–1601

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PART ONE

ON TYCHO'S ISLAND

INTRODUCTION

THIS BOOK IS ABOUT POWER. It shows how one man, Tycho Brahe, used his powerful position to bend the lives of hundreds of others toward a goal that he deemed important: a new understanding of the cosmos. It shows how he established a new role for the astronomer as large-scale organizer, active reformer, and natural philosopher.

Patronage was his means to create structures of power and incorporate others into his program of reform. This book therefore examines the hierarchies of patronage and clientage that extended from the highest ranks of human society to the broad laboring masses, hierarchies that incorporated men and women skilled in science, technology, learning, and the fine arts to work with Tycho Brahe and take him as their role model.

He used his power and patronage to build teams of people working together to carry out his ends, so this book is also about teamwork, which it aims to show was essential to the birth of modern science. Newton once remarked that he could see far because he stood on the shoulders of giants. This book shows how much of seventeenth-century European culture rested on the shoulders of a late sixteenth-century giant, Tycho Brahe: scientist, natural philosopher, technical expert, and poet; connoisseur of music, courtly grace, and the fine arts; and one of the most innovative organizers known to history.

In sixteenth-century Europe, Tycho Brahe was the patron of science par excellence. Because his use of patronage goes to the heart of the transition from Scientific Renaissance to Scientific Revolution, this book is a case study of patronage during that key period. The first chapter deals with Tycho Brahe as client of the king of Denmark and differentiates the two types of royal patronage he received. Chapter 2 shows how he reorganized the island of Hven and brought all of its inhabitants into his system, linking their labors to those of his dependents in Norway and two provinces

of Denmark. Chapter 3 focuses on theories of friendship that established reciprocal links with learned individuals throughout Europe and created an international support network for his work. Chapter 4 examines the structures of household and family as they were used by Tycho Brahe to shape his working staff. Chapter 5 shows how scientific expeditions, staff organization, the technology of printing, the fine arts, and the manipulation of objects and information in "museums" all served to reinforce reciprocal relationships of friendship and patronage while strengthening the pursuit of science and disseminating its results. Chapter 6 examines how the social linkage of patronage to family could shape the elements of continuity and discontinuity in sixteenth-century science. Chapter 7 looks at the problem of cultural conflict when scholars of various nationalities brought different mentalities and assumptions to their common work.

Chapter 8 shows how marriage strategies aimed to reinforce bonds of friendship and patronage, and how they could fail: The betrothal of Tycho Brahe's daughter, Magdalene Tygesdatter, was an attempt to bridge a gap between social classes, and its failure revealed much about the dynamics and the limits of late sixteenth-century social bonding. Chapters 8 and 9 show the importance of honor as a personal attribute, and how reputations could be destroyed and patronage lost in fierce battles between rival individuals, institutions, and ideologies. Chapter 10 deals with the difficult but not insuperable task of establishing new patronage relationships on the international level.

The scientific, research, and familial legacies of Tycho Brahe are discussed in Chapter 11, which brings Part One of this volume to a close. Part Two is a Biographical Directory, which sketches the careers of nearly one hundred individuals who were drawn into Tycho Brahe's network of patronage or, in a few cases, of friendship.

Tycho Brahe is the richest example of scientific patronage and friendship in sixteenth-century Europe, but his structures of power and support interlocked within a broader cultural ambience that also needs to be examined. In his Latin poetry, Tycho Brahe described his island of Hven as *Insula Venusinus*, a magical place where gods and goddesses dwelt on earth. The island's inhabitants lived and worked together in the Temple of Urania, devoting themselves to eternal matters and ignoring all lowly, earthly ones. In pursuing this elevated life, he asserted, they became like demigods. He said that visitors to the island had the privilege of experiencing the realm of the divine and left as better people. Such was Tycho Brahe's own description of a place that modern historians have seen as a crucible

of the Scientific Revolution. The disparity between the way he understood what he was doing and the twentieth-century assessment of his scientific achievement is quite astounding.

An important task of this book is therefore to focus upon the lives of dozens of Tycho Brahe's coworkers in order to see who these "demigods" really were, how they lived and worked together, what they made of their lives, and how they related to the mainstream of European science and culture. To bridge the gap between their mental world and ours, it is necessary to examine how these men and women of the sixteenth and seventeenth centuries saw the world, and how their world view changed. On this basis, we can move to a new understanding of Tycho Brahe's role in the Scientific Revolution and of his innovative achievement in organizing large-scale scientific research.

Tycho Brahe's idea of a large-scale, multifaceted scientific-research institution was inspired by the Neoplatonic tradition of the Renaissance, reinforced by the memory of the ancient Museum of Alexandria, and given focus through some of the places Tycho had visited in Denmark, Germany, Switzerland, and Italy. Once he had the idea for such an institution, financing it depended upon the fact that Tycho Brahe was born into the high nobility and had close connections to the Danish crown. Tycho recruited his staff by means of a European network of learned men and courtiers who felt connected by ties of Platonic friendship. Together, Tycho, his students, coworkers, and colleagues searched for the mathematical unities of the cosmos by means of huge new instruments, standardized procedures, innovative methods of observation and experimentation, and an epistemology that insisted upon quantifying and verifying the reliability of data. The result was a paradigm of research that gradually became a general European phenomenon.

The life and scientific achievement of Tycho Brahe were described at length in the late Victor E. Thoren's *The Lord of Uraniborg: A Biography of Tycho Brahe* (New York: Cambridge University Press, 1990), to which I contributed, but the focus of this book is quite different. Here, the staff, structure, and culture of Tycho's island move to the forefront, including the networks of patronage and clientage that converged on the island. What life and scientific work was like on Hven (also called Hveen or Ven) in the years 1576–97 is considered in some detail, followed by a look at how he conducted his search for a new patron in the years 1597–1601.

Scores of assistants, poets, scholars, scientists, and technicians scattered throughout Europe when they left Tycho Brahe's service, working in many

fields and frequently patterning their lives on his. Some of them tried to establish new institutions on the model of Hven. In the seventeenth century, they infused the scientific culture of Tycho's island into the mainstream of European life. This is their story.