THE UNIVERSITY *of* EDINBURGH

Astrology in Early Modern Scotland

ca. 1560-1726

Jane Ridder-Patrick

PhD

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DECLARATION

I declare that this thesis has been composed by me and that the work is my own. It has not been submitted for any other degree or professional qualification, nor has it been published in any form. NB: Some of the material in chapters three, four and six expands work done towards the degree of MSc in History (University of Edinburgh, 2007). All of the work, however, is substantially different from any submitted towards that degree.

The relevant parts of dictate manuscripts EUL, MS.3101.6, EUL, Dc.5.115 and EUL La.III.724 used in this thesis were transcribed by Kirsty Stewart. All other transcriptions are my own, as are all of the Latin translations, unless otherwise specified.

ABSTRACT

Over the last generation scholars have demonstrated the fundamental importance of astrology in the early modern European worldview. While detailed studies have been undertaken of England and many areas of continental Europe, the Scottish experience has been almost completely overlooked. This thesis seeks to address that gap in the literature and recover a lost dimension of early modern Scottish intellectual life, one that was central and influential for a considerable period of time. The thesis examines the place of, and perceptions about, astrology in Scotland ca. 1560-1726. It demonstrates that despite well-worn arguments against it on theological, theoretical, moral-psychological and effectiveness grounds, astrology was largely accepted throughout all sectors of Scottish society until at least the final quarter of the seventeenth century. Opportunities to learn about it were widespread after the Reformation. As evidenced by student notebooks, it was taught in all of the universities, whose library contents reflect the subject's importance, and it was readily available to a large proportion of the populace through almanacs and other popular literature. Its uses, too, were widespread and various. Medical practitioners, both qualified and non-qualified, drew on it as a diagnostic, prognostic and therapeutic guide and natural philosophers used it to ponder the phenomena and cycles of nature and human chronology. For those involved in negotiating the environment it was an aid to the timing of activities, while individuals interested in predicting future events and conditions could attempt to do so using the rather more suspect judicial astrology. By the last two decades of the seventeenth century, however, astrology was losing credibility among the educated, and the thesis examines and evaluates the factors that contributed to this, which include the ousting of scholasticism from academia by new approaches to understanding the natural world, the increasingly tainted image of the astrologer and the difficulty, if not impossibility, of subjecting astrology to the new experimental methods of the virtuosi.

TABLE OF CONTENTS

Acknowledgements *iv*

List of Figures and Tables *v*

Abbreviations *vi*

Introduction 1

Part One: Sources of Learning

1. Astrology in the Scottish Universities 24

2. Astrology Books in the University Libraries 72

3. Scottish Almanacs 99

Part Two: Astrology Criticised and Defended

4. The Debate about Astrology 137

Part Three: The Practice of Astrology

5. Astrology in Medicine 171

6. Judicial Astrology 217

7. Astrology and Natural Knowledge 248

Conclusion 283

Bibliography 293

Appendix: List of extant Scottish Almanacs to 1726 324

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LIST OF FIGURES AND TABLES

Table 1. List of student notebooks with astrological content 37

Table 2. Location of astrology found in the natural philosophy syllabus 38

Table 3. Astrological significators taught 42

Table 4. Signs, qualities and temperaments 42

Figure 1. Table of planetary dignities and detriments, Edinburgh, 1672 45

Figure 2. Astrological aspects, St Salvator's College, St Andrews, 1661 47

Figure 3. Figure of the twelve houses, St Salvator's College, St Andrews 1661 48

Table 5. Astrological houses, King's College, Aberdeen, 1662-1663 49

Table 6. Astrological houses, King's College, Aberdeen, 1671-1672 49-50

Figure 4. The twelve houses, King's College, Aberdeen 1672 50

Table 7. Student notebooks, 1682-1701 59

Table 8. Book with astrological content bought by EUL, 1653-1702 84-85

ABBREVIATIONS

AUL	Aberdeen University Library
CCO	Christ Church College, Oxford
DNB	Dictionary of National Biography
EUL	Edinburgh University Library
GUA	Glasgow University Archives
GUL	Glasgow University Library
NLS	National Library of Scotland
NRS	National Records of Scotland
Oxford DNB	Oxford Dictionary of National Biography
RCPE	Royal College of Physicians of Edinburgh
RCPSG	Royal College of Physicians and Surgeons of Glasgow
RCSE	Royal College of Surgeons of Edinburgh
SAUL	St Andrews University Library

INTRODUCTION

In the dark skies of the early modern period, free from present-day light pollution, the majesty of the celestial bodies and the stark contrast between day and night would have provoked an almost visceral response to the heavens, especially in the relatively smoke-free country areas. The rhythms of daily, and seasonal, life were bound up with a relationship with the sky, which was looked to as a source of causation, meaning and guidance. Astrology was an important means of attempting to understand the sky's significance[1] and 'probably the most ambitious attempt ever made to reduce the baffling diversity of human affairs to some sort of intelligible order'.[2] While by no means everyone used it, or was necessarily interested, there was scarcely an aspect of contemporary life that astrology did not touch, and all sectors of society had access or recourse to it, in some form or another, from the elite and highly educated to the humblest of farm labourers. Its imagery permeated literature[3] and practical activities, and speculative matters were conducted according to its directives.[4] Those engaged in farming, gardening, arboriculture and animal husbandry looked to it to find the best times for sowing and for reaping, for pruning, for gelding, for breeding and for shearing. As William Ramesay wrote

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[1] The literature on astrology is extensive and references will be made to specialised areas of this in the chapters that follow. Two accounts of astrology in early modern England remain unsurpassed: Keith Thomas, *Religion and the Decline of Magic* (Harmondsworth, 1973), pp. 336–458; Bernard Capp, *Astrology and the Popular Press: English Almanacs 1500-1800* (London, 1979).

[2] Thomas, *Religion*, p. 340.

[3] J. Eade, *The Forgotten Sky: A Guide to Astrology in English Literature* (Oxford, 1984).

[4] For the history of astrology, see Nicholas Campion, *A History of Western Astrology*, 2 vols. (London, 2009), II; J. D. North, *Horoscopes and History* (London, 1986); *Horoscopes and Public Spheres: Essays on the History of Astrology*, ed. by Günther Oestmann, Darrel K. Rutkin and K. von Stuckrad (Berlin, 2005); Jim Tester, *A History of Western Astrology* (Woodbridge, 1987); M. Williams, *Fiery Shapes Celestial Portents and Astrology in Ireland and Wales, 700-1700* (Oxford, 2010); Theodore Wedel, *The Medieval Attitude Toward Astrology, Particularly in England* (New Haven, 1920).

> It is reported of the women in the North, both of *England* and in *Scotland*, that they diligently observe a time of the Moon to set their Egges, that they may all come to good.[5]

The weather forecasts found in almanacs, which were vital for these activities, were arrived at through astrological calculations, too. As celestial cycles governed human physiology, as well as that of animals and plants, physicians and lay healers employed it for diagnosis and prognosis and for the timing of the preparation and administration of medicines, and also for anticipating and interpreting the significance of times of plague and other epidemics.[6] Surgeons used it to identify the most auspicious times to perform phlebotomies and operations on particular body areas and, just as important, the times when such interventions should be avoided. Astrology offered a rich psychological typology, remnants of which survive to the present day in the designation of certain individuals as mercurial, martial, jovial, saturnian or lunatic, and nations, too, were classified according to astrology's ethnography. Judicial astrologers claimed that they could divine, from the complex patterns and rich symbols of the horoscope, answers to questions of every kind, and identify optimal times for carrying out particular enterprises. Astrology provided a

[5] William Ramesay, *Lux Veritatis* (London, 1651), p. 34.

[6] For astrology and medicine see Monica Azzolini, 'Reading Health in the Stars: Prognosis and Astrology in Renaissance Italy', in *Horoscopes and Public Spheres* (Berlin: New York, 2005), pp. 183–205; Allan Chapman, 'Astrological Medicine', in *Health, Medicine and Mortality in the Sixteenth Century*, ed. by Charles Webster (Cambridge, 1979); Hugh G. Dick, 'Students of Physick and Astrology', *Journal of the History of Medicine and Allied Sciences*, 1 (1946), 300–315; 419–433; Morten Fink-Jensen, 'Medicine, Natural Philosophy, and the Influence of Melanchthon in Reformation Denmark and Norway', *Bulletin of the History of Medicine*, 80 (2006), 439–464; Ole Grell and Andrew Cunningham, *Religio Medici: Medicine and Religion in Seventeenth-century England* (Aldershot, 1996); Lauren Kassell, *Medicine and Magic in Elizabethan London: Simon Forman - Astrologer, Alchemist, and Physician* (Oxford, 2005); Navarro Lanuza, 'Medical Astrology in Spain During the Seventeenth Century', *Cronos*, 9 (2006), 59–84; Michael MacDonald, *Mystical Bedlam: Madness, Anxiety, and Healing in Seventeenth-century England* (Cambridge, 1981); G. Miller, 'A 17th-Century Astrological Diagnosis', in *Science, Medicine and History*, ed. by E. A. Underwood (London, 1953), pp. 28–33; Anthony Grafton and Nancy Siraisi, 'Between the Election and My Hopes: Girolamo Cardano and Medical Astrology', in *Secrets of Nature: Astrology and Alchemy in Early Modern Europe*, ed. by William Newman and Anthony Grafton (Cambridge Mass., 2001); Barbara Traister, *The Notorious Astrological Physician of London: Works and Days of Simon Forman* (Chicago, 2001); *Health, Medicine and Mortality in the Sixteenth Century*, ed. by Charles Webster (Cambridge, 1979).

framework and a language to account for the twists and turns in both individual destinies and societal change, and for understanding and giving meaning to natural disasters as well as political and religious upheavals. Knowledge of the natural world, theoretical, practical and philosophical, was deduced and pondered using its concepts. Long before Newton put forward the universal law of gravitation, the 'universal natural law was astrological.'[7] Astrology was used at many different levels of sophistication and expertise. Patrick Curry suggested a useful hierarchical model which divided the practice into three types that roughly corresponded to social class: high astrology was engaged in by theologians and philosophers, middling astrology was practised by those who had the necessary skills required to erect and interpret horoscopes and low astrology was the kind that was found in almanacs and practised by street fortune-tellers.[8] Its wide range of applications meant that astrology's cultural, theological and economic impact was considerable.

Finding a precise definition for astrology, however, can prove elusive, for astrology was not simply one thing; the term covered many different beliefs and practices. For Keith Thomas, astrology was an integral part of a much larger whole, 'less a separate discipline than an aspect of a generally accepted world picture...It was not a coterie doctrine, but an essential aspect of the intellectual framework in which men were educated',[9] and his definition of astrology was the straightforward conclusion that 'if astronomy is the study of the movements of the heavenly bodies, then astrology is the study of the effects of these movements.'[10] Astrology, however,

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[7] Lynn Thorndike, 'The True Place of Astrology in the History of Science', *Isis*, 46 (1955), 273–278 (p. 273).
[8] Patrick Curry, *Prophecy and Power: Astrology in Early Modern England* (Princeton, N.J., 1989), p. 95 ff.
[9] Thomas, *Religion*, p. 338.
[10] Ibid, p. 337.

was not confined to studying the causative effects of these bodies; it also included their symbolism and meaning.[11] Ann Geneva grappled with astrology's identity and finally fashioned a definition from negatives:

> Astrology in seventeenth century England was not a science. It was not a religion. It was not magic. Nor was it astronomy, mathematics, puritanism, neo-Platonism, psychology, meteorology, alchemy or witchcraft. It used some of these as tools; it held tenets in common with others; and some people were adept in several of these skills. But in the final analysis it was only itself: a unique divinatory and prognostic art embodying centuries of accreted methodology and tradition.[12]

Although useful in that it highlights the many and disparate areas in which astrology was involved, this adds little to the understanding of what it actually was. Given the protean nature of astrology, any attempt to delineate it narrowly as an art, craft, science, practice or worldview tends to create as many problems as it solves. Curry formulated an important working definition which is more sophisticated than that of Thomas or Geneva as it highlights a fundamental dynamic aspect of the craft, that of interpretation, and the context of such interpretation. He suggested that astrology

> includes any practice or belief that is centred on interpreting the human or terrestrial meaning of the stars[13]... Astrology does have a central feature which such a definition brings out. That is the act of interpretation. Such interpretation did not exist in a vacuum. It was intimately connected to other considerations of knowledge, values and power.[14]

A perspective and definition that incorporates, and broadens a little, all of the above has been chosen for this thesis, as it only when the net is thrown wide that the full range of astrology's applications in the early modern period, and its relationship to natural philosophy, astronomy and religion, can be viewed. It is this: *astrology is any*

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[11] Theological astrologers, such as Robert Pont, would refer to Genesis 1:14. 'And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for *signs*, and for seasons, and for days, and years.'
[12] Ann Geneva, *Astrology and the Seventeenth-century Mind: William Lilly and the Language of the Stars* (Manchester, 1995), p. 9.
[13] The term 'stars' here includes planets and other celestial phenomena.
[14] Curry, *Prophecy and Power*, p. 4.

theory, practice or belief that draws inferences from, or parallels between, events and patterns in the sky and events and circumstances on earth. With this definition, where 'inferences' includes contextual interpretation, astrology can then be seen as spanning four contiguous areas of cognition that cover almost every approach to understanding the natural world that was considered valid during the early modern period.[15] These are spread along a continuum, in which the interpretation of celestial occurrences, at one extremity, was based on objective observations and, at the other, subjective judgements. At the most objective end were observations of the relationship between the luminaries and the earth below. The Sun's potency could be experienced as periodic, its diurnal rhythm producing light at daybreak and darkness at sunset, while its annual rhythm was linked with an increase or decrease in heat, signalled by its position in relation to the earth at the beginnings of the seasons. These latter could largely be predicted, though not precisely, during the period under review. David Abercromby (*d.* 1701?) pondering, as he saw it, the impossibility of ever calculating the exact timing of the solstices, lamented in 1685 that

> the quantity of the natural year shall never be exactly determined, because we can never know the critical Minute of the Suns first step backward from one Tropick towards the other.[16]

The effect of the Moon on the tides, too, was generally, though not universally, accepted as self-evident. As recently as the late fifteenth century, however, Pico della Mirandola (1463-1494) had disputed the Moon's role in this ebb and flow as part of his rejection of astrology.[17] The correlations of the Sun and Moon with qualities on earth – heat and cold, light and darkness, high water and low water – could be

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[15] It does not, however, include second sight. For this see Michael Hunter, *The Occult Laboratory* (Woodbridge, 2001).
[16] David Abercromby, *A Discourse of Wit* (London, 1685), p. 99.
[17] D. C. Allen, *The Star-Crossed Renaissance: The Quarrel About Astrology and Its Influence in England* (New York, 1966), p. 28.

calculated mathematically and were predictable, though there were variations between, say, the temperature of one summer and another and the amount of light in one winter's day to the next.

Compared with these 'mathematical certanties [sic]'[18] was the less exactly predictable 'probable certaintie'[19] of the outcome of celestial influences on the temperament, physiology and notable life events of individuals (natal or genethlialogical astrology), and the patterns and cycles of the weather and other natural systems and the precise outworking of the trends of the zeitgeist suggested by the heavens, (universal astrology) which Ptolemy (ca.90 – ca.168 CE) had systematised in his *Tetrabiblos*. Astrologers put these uncertainties down to the effect of other variables and to the belief that the stars inclined but did not compel.[20] People of the time, however, clearly held the view that there was some kind of relationship between terrestrial matters and patterns in the sky, and astrology of this kind was, in the main, accepted throughout the period.

Much more speculative, and disputed, was judicial astrology, a form of divination that was often linked, or believed to be linked, with magic and the diabolic. It was described under the name of *katarchē* (an inception) by ancient Greek astrologers and came to be known in the Middle Ages as *electio* (a choice). The earliest extant work that gathered together the various teachings about *katarchē* is that of Dorotheus of Sidon (ca. 75 CE). This was preserved in an eighth-century Arab translation of a third-century Persian translation, which gave rise to the belief

[18] Well-wisher to the Mathematicks, *An Almanack or New Prognostication* (Aberdeen, 1666), p. 8.
[19] Robert Pont, *A Newe Treatise on the Right Reckoning of Yeares and Ages of the World* (Edinburgh, 1599), p. 47.
[20] The frontispiece portrait of William Lilly in his *Christian Astrology* shows him pointing to the phrase 'non cogunt.'

that it had been developed by Arab scholars. [21] Ptolemy did not, however, include this form of astrology, which was used to determine the outcome not only of literal inceptions, such as the beginning of journeys, but also of all manner of questions, such as enquiries about stolen goods or the nature of a future spouse. These questions were also known as interrogations or horary questions. Although there was a corpus of generally agreed rules for such judgements there were also many disputed areas, so that both questions and elections depended heavily on the subjective interpretations of its practitioners.

Finally, there were the celestial events that were understood as being preternatural, in that they occurred infrequently outwith the ordinary course of nature. The Christian God is a sky deity, 'which art in heaven', and the stars were seen as His handiwork. As an omnipotent being, it was thought that He could, and did when He so willed it, transcend natural law and alter the accustomed celestial order to produce signs in the sky as messages and warnings. He could also send punishments for man's disobedience, in the form of plague, famine and wars, effected by His instruments, the heavenly bodies. Interpretations of such occurrences, depending as they did on belief, personal or collective, were the most subjective and least demonstrable of all, and they were akin to divine revelation, another accepted form of knowing.[22] It can be seen that astrology, in its various forms, linked and informed the spheres of religion, magic, divination, scholastic natural philosophy and what was to become the arena of the emerging natural sciences, all of which enterprises experienced sweeping challenges and changes over the period under review, as did astrology itself.

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[21] Tester, *History*, pp. 88-89.
[22] See p. 224, n.623.

The boundaries between these four types of understanding and interpretation of celestial events were, however, by no means clear-cut and in practice they were frequently blurred. So too was the distinction between the terms *astronomia*, astronomy, and *astrologia*, astrology, and they were often used interchangeably as the two were seen as two complementary facets of the same subject. Ptolemy divided astronomy into two parts, the first measured the positions and movements of the planets and stars and this he dealt with in his *Almagest,* while the second part was concerned with the prediction of the effects of these movements, and these he covered in his *Tetrabiblos,* also known as the *Quadripartitum*. Astronomy was, then, the *theoretica* of the knowledge of the heavenly bodies, while astrology was the *practica*.

Isidore of Seville (ca.560-636) was one of the first writers to make a clear distinction between what he called physical astrology, which dealt with 'the courses of the sun and moon, or the fixed seasons of the stars', and superstitious astrology, which is that which is 'pursued by the *mathematici*, who prophesy by the stars, and who distribute the twelve heavenly signs among the parts of the soul and body, and attempt to foretell the births and characters from the courses of the stars'.[23] By medieval and Renaissance times, astrology was customarily divided, especially by theologians, into two kinds, natural and judicial. Natural astrology, which dealt with weather and biological patterns, was endorsed, while judicial astrology was often condemned as blasphemous and demonic, and under this term was included, to a varying degree, not only the questions and elections of the Greeks, but general predictions and the doctrine of nativities.[24]

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[23] Isidore of Seville, *EALtymologiae*, Book III, paragraph 27, quoted in Tester, *History*, p. 19.
[24] Jean Calvin, *An Admonicion Against Astrology Judiciall* (London, 1561).

The mid seventeenth century formed the 'high-water mark of English astrology' when astrology 'flourished as never before' and this was followed by an abrupt decline at the Restoration.[25] As well as those of Bernard Capp and Keith Thomas, several important accounts have been given of astrology's flowering and fall from mainstream intellectual favour in the early modern period.[26] Mary Ellen Bowden suggested that a failed scientific revolution was at the root of astrology's rejection, while Ann Geneva's explanation was that it was seen as ambiguous and enigmatic at a time when a universally understood language was being sought and that as the neo-Platonic universe, connected by consonant harmonies, was being dismantled and that 'Astrology's failure was that of a symbolic system which had become out of tune with its frame of reference.' [27] For Peter Wright, it simply became irrelevant as it failed 'even to produce a form of interpretation in the idiom of the materially effective techniques of the period,'[28] and Darrel Rutkin traced one strand of its expulsion from mainstream intellectual life to its ousting from the mathematics and natural philosophy curricula of the universities. Curry concurred with most of the reasons usually given for its downfall: 'the hostility of the Protestant Church, the effects of the new scientific discoveries and theories, urbanization, literacy, a new 'ideology of 'self-help', astrology's failure to adapt and /or become institutionalized and its radical associations'. It was, however, the last that he sought to emphasise, arguing that the members of the new social mainstream that arose around the end of the seventeenth century – the 'respectable' middle and professional

[25] Curry, *Prophecy and Power*, p. 7.
[26] In addition to Capp, Curry, Geneva and Thomas see Mary Ellen Bowden, 'The Scientific Revolution in Astrology: The English Reformers 1558-1686' (unpublished PhD thesis, New Haven, 1975); Darrel K. Rutkin, 'Astrology', in *The Cambridge History of Science, Volume 3, Early Modern Science*, ed. by Katharine Park and Lorraine J. Daston (Cambridge, 2006); P. Wright, 'Astrology and Science in Seventeenth-Century England', *Social Studies of Science*, 5 (1975), 399–422.
[27] Geneva, *Seventeenth-century Mind*, p. 282.
[28] Wright, 'Astrology and Science', p. 420.

classes – were keen to distance themselves from plebeian culture and to adopt the ideology of their superiors. As many of the upper orders were hostile towards astrology because of its involvement in the religious and political propaganda of Revolutionary and Restoration England, members of this socially aspiring new class aligned themselves with this antagonism.[29]

With detailed studies of astrology, such as these, in England and in many areas of continental Europe,[30] scholars, over the last generation, have demonstrated the fundamental importance of astrology in the early modern European worldview and in its transformation. The experience of Scotland, however, remains neglected. This thesis seeks to address that gap in the literature and to provide the first academic study of Scottish astrology between the Reformation and the early days of the Scottish Enlightenment, asking the following questions: Where was astrology located in the 'intellectual geography' of Scottish culture? How and where was knowledge about astrology to be obtained? What astrological theories were taught or circulated, and how was this information disseminated? Who were the participants in the debate about astrology, and what arguments were being put forward to condemn and advocate it? Who practised astrology and how, and for what ends? Finally, what factors influenced astrology's relatively rapid fall from grace, from being a respected component of the academic tradition in the first half of the seventeenth century to becoming reviled and risible by the beginning of the eighteenth century?

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[29] Patrick Curry, 'Saving Astrology in Restoration England', in *Astrology, Science and Society*, ed. by Patrick Curry (Woodbridge, 1987), p. 258.

[30] Monica Azzolini, 'The Political Uses of Astrology: Predicting the Illness and Death of Princes, Kings and Popes in the Italian Renaissance', *Studies in History and Philosophy of Biological and Biomedical Sciences.*, 41 (2010), 135; Steven vanden Broecke, *The Limits of Influence: Pico, Louvain, and the Crisis of Renaissance Astrology* (Leiden, 2003); Anthony Grafton, *Cardano's Cosmos: The Worlds and Works of a Renaissance Astrologer* (Cambridge Mass., 1999); William Newman and Anthony Grafton, *Secrets of Nature: Astrology and Alchemy in Early Modern Europe* (Cambridge Mass., 2001); Lynn Thorndike, *A History of Magic and Experimental Science*, 8 vols. (London, 1923).

As the Scottish Reformation of 1560 marks a major turning point for religion and education in Scotland, this date provides a logical *terminus a quo* for the study. A suitable *terminus ad quem* is less easily determined. 1726, however, has been chosen as it marks the death of Colin Campbell, the last Scottish minister and mathematician so far identified who worked seriously with astrology and also because there are clustered around this date several other relevant occurrences that mark the beginning of a new era of development in Scotland's intellectual life; the medical school of the University of Edinburgh opened in 1726 and 1725 saw the publication of the first philosophical work by Francis Hutcheson, one of the founders of the Scottish Enlightenment.[31] The extension of the date beyond the end of the seventeenth century takes in the period from 1708 when Edinburgh University changed from the regenting to the professorial system of education and also permits the inclusion of several key university library catalogues from Aberdeen and St Andrews universities which were first compiled in the second decade of the eighteenth century.

Keith Thomas made it a deliberate policy to resist 'the temptation to draw parallels with Scotland, Ireland, and the continent of Europe' as he thought that an 'exercise in comparative history, however desirable, is not possible until the data for each country have been properly assembled.'[32] As data assembly about astrology with reference to Scotland, and Scotland alone, plus its interpretation, is the business of this research, his is a policy that will be followed here, too, and the thesis will cover the geographical area of Scotland and people whose lives were largely spent in

[31] Francis Hutcheson, *An Inquiry into the Original of Our Ideas of Beauty and Virtue* (London, 1725).
[32] Thomas, *Religion*, p. x.

Scotland, or who were influenced by, or made a contribution to, Scottish culture during the period 1560 to 1726.

As there is little mention of Scottish astrology in the secondary literature and no obvious cache of primary material that invited investigation, the location of sources for this study presented some special challenges. This apparent lack of material may, indeed, be the reason that the topic has attracted so little previous scholarly attention. It was considered at the outset, however, that it would have been a curious anomaly if astrology had not been a feature of Scottish life as it was in England or on the continent. A survey of a *List of Books Published in Scotland before 1700* and the *English Short Title Catalogue*[33] made it apparent that very little astrological literature was printed in Scotland during the period, apart from almanacs.[34] Extensive keyword searches were then undertaken of the catalogues of the National Records of Scotland (NRS), and those of the university libraries of Aberdeen, Glasgow and St Andrews, using a wide range of terms that might have had some relevance for astrology, and a physical search was carried out through all of the more fully annotated hard-copy records of the National Library of Scotland (NLS) and Edinburgh University Library (EUL). Although this did unearth the material that forms the basis of this study, the total number of items found was surprisingly small, especially as those that were found show that astrology was, undoubtedly, a subject of some importance in Scotland.

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[33] Harry G. Aldis, *A List of Books Printed in Scotland Before 1700* (Edinburgh, 1970) ; *English Short Title Catalogue* (www.estc.bl.uk).

[34] Works published include Robert Pont, *Newe Treatise*; William Cock, *Doctrinae Substantiarum, Sive, Naturae Apertae* (Edinburgh, 1679); George Eglisham, *Accurata Methodus Erigendi Thematis Natalitii, in Diebus Criticis Disquirendis* (Edinburgh, 1616); King James VI, *Daemonologie* (Edinburgh, 1597); Christopher Irvine, *Medicina Magnetica, or, The Rare and Wonderful Art of Curing by Sympathy* (Edinburgh, 1656); George Sinclair, *The Principles of Astronomy and Navigation* (Edinburgh, 1688).

The paucity of astrology books may be explained by 'the isolated position of the Scottish press, pursuing its unambitious course unaffected by outside influences.'[35] Even if the printers had been ambitious, it would hardly have been worth their time, effort and expense to publish titles for the home market that did not have significant local appeal, especially given the sophistication and skills of the European printers and the ease with which their works could be imported into Scotland.[36] As very few titles on associated subjects, such as natural philosophy, mathematics and astronomy, were printed in Scotland at the time either, the small number of books of an astrological nature cannot, therefore, be taken as a sign of lack of interest or ignorance of the subject, but more of an indication of the limited scope of the Scottish press in relation to the natural sciences. Aldis warned of the dangers of drawing generalised conclusions from the *List* about 'the extent and kind of books circulated in Scotland' because of 'the large number of books of Scottish authorship printed abroad.' [37] At a time when astrology was considered a legitimate branch of mathematics and when a number of Scots were teaching that subject at European universities it might be expected that some would have published on the practice. And, indeed, several such men, including James Bassantin (d. 1568), Hugh Sempill (1596–1654), George Buchanan (1506-1582), Duncan Liddell (1561–1613) and William Davisson (ca.1593–1669), who showed an interest in astrology, have been identified. It is likely that there were other Scottish authors who remain as yet undiscovered. With the latinisation of names, and the easy assimilation into foreign cultures that is the mark of the Scot abroad, such authors are difficult, if not impossible, to recognise unless the title pages or other references in their books give

[35] Aldis, *List*, p. xi.
[36] Alastair Mann, *The Scottish Book Trade, 1500-1720* (East Linton, 2000), pp. 68–76.
[37] Aldis, *List*, p. xii.

clues as to their origins, or unless they returned to Scotland and were known or noted in other contexts, as were Buchanan, Liddel and Bassantin. This same process of invisibility through assimilation is almost certain to have taken place, too, among Scots who sought their fortunes in London. The accession of James VI (1566-1625) to the English throne in 1603 gave unprecedented access to those of his countrymen who had ambitions to thrive in the richer and more fertile economic and intellectual soil of London. Opportunities and wealthy patrons were more abundant in the south and James himself was accused by resentful Englishmen of favouring his own.[38] One second-generation Scot who stands out among English astrologers is William Ramesay (1626-1675), who had studied at the University of Edinburgh, though he did not graduate. He gave an account of his time in Scotland in *Astrologia Restaurata*, a copy of which was bought for Edinburgh university library in 1669.[39] From Scots who published in England, further books have been located with commentary or content pertaining to astrology. These include Peter Lowe's *Discourse of the whole art of Chirurgerie*,[40] William Cock's *Meteorologia* [41] and David Abercromby's *Discourse on Wit, Academia Scientiarum* and *A Moral Discourse of the Power of Interest*. [42]

Compared to what is almost an embarrassment of riches in astrological manuscripts found in other countries, for example in the Ashmolean Collection in Oxford's Bodleian Library and in the Vatican Library in Rome, Scotland's astrological remains appear deeply impoverished. Several reasons could account for

[38] Jenny Wormald, 'James VI and I (1566–1625)', in *Oxford DNB* (Oxford, 2004).
[39] William Ramesay, *Astrologia Restaurata* (London, 1654), p. 29. His contribution to Scottish astrology is, however, not emphasised as he does not fit the criteria for inclusion.
[40] Peter Lowe, *The Whole Course of Chirurgerie* (London, 1597).
[41] William Cock, *Meteorologia* (London, 1671).
[42] Abercromby, *Wit*; David Abercromby, *Academia Scientiarum* (London, 1687); David Abercromby, *A Moral Discourse of the Power of Interest* (London, 1690).

the dearth. It may be that there is astrological material, unrecognised for what it is and therefore not catalogued as such, still to be discovered hidden among miscellaneous collections in Scotland's archives or collecting dust in the attics of the great houses of old families.

Manuscripts could have been accidentally lost or damaged, as were half of Scotland's non-legal records in the mid seventeenth century. In 1651 most of the Scottish archives were sent to London after Stirling Castle, where they had been moved from Edinburgh for safety, fell to the English. Although the legal registers were returned in 1657, all of the remaining records were sent back after the Restoration in 1660 in two ships. One, however, the 'Elizabeth', was lost in a storm off Northumberland, and with her perished her cargo of Scottish papers and parchments that recorded a vital part of the country's history, and it is possible that some of those may have had astrological content. [43] Yet another tragedy was the house fire in the late eighteenth century that destroyed John Napier's papers which, from the interests he was known to have, would undoubtedly have included much astrological material.[44] Almost inevitably, many seemingly unimportant documents would have been disposed of as waste in clear-outs at deaths or house removals. Deliberate destruction because of astrology's decline in respectability and hostility from the Church may also have played a significant role. At least two letters of James Corss to the much-respected reverend Colin Campbell that were extant in 1833 have disappeared from the archives of Edinburgh University Library, but whether the loss was malicious or accidental cannot be ascertained.[45] That these undoubtedly contained astrological material is evidenced by the one remaining letter

[43] http://www.nas.gov.uk/about/history.asp.
[44] Mark Napier, *Memoirs of John Napier of Merchiston* (Edinburgh, 1834), p. v.
[45] Dr. Lee and Professor Wallace, 'List of Campbell Letters', 1833, EUL, 3097.5.fol.19.

which begins with a discussion about an astronomical instrument, but moves on to answer questions about astrology later in the document.

In comparison to Scotland's catalogue of losses, were circumstances in England and Italy that enhanced the preservation of their astrological documentation. England's astrological heritage was greatly enriched by the fortuitous circumstance that the almost obsessive collecting of astrological material by Elias Ashmole (1617–1692) was accompanied by a personal influence powerful enough to induce Oxford University to erect a building fit to house the collection he would bequeath.[46] Scottish astrology, it would appear, had no such acquisitive, wealthy and influential patron. In sixteenth-century Italy, as Monica Azzolini has pointed out, astrology played a powerful political role in church and state affairs, and as Italians were assiduous record-keepers, hundreds of astrological manuscripts are to be found preserved in many private as well as state archives. [47] The Vatican Library not only houses its own assets, it also acquired several important European collections, often as war booty, over the centuries, including the Bibliotheca Palatina of Heidelberg, the most important library of the German Renaissance.[48] No evidence has, as yet, come to light about any such corresponding astrologically influenced political intrigues in Scotland that would have promoted the preservation of such manuscripts nor, as a small, impoverished country on the periphery of Europe, was there much potential for literary acquisitions obtained as a result of power and dominance.

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[46] Michael Hunter, *John Aubrey and the Realm of Learning* (London, 1975), p. 87.
[47] Azzolini, *Health in the Stars*, p. 187.
[48] For the history of the Ashmolean Museum and Vatican Library see: Arthur G. MacGregor, *The Ashmolean Museum: a Brief History of the Museum and Its Collections* (Oxford, 2001); Alphonso M. Stickler and others, *The Vatican Library: Its History and Treasures* (Yorktown Heights, NY, 1989); Lynn Thorndike, 'Vatican Latin Manuscripts in the History of Science and Medicine', *Isis*, 13 (1929), 53–102.

That the shortage of manuscript material might simply be a result of a lack of astrological activity within Scotland, however, can be ruled out. Scotland had extensive trade links with the continent and had for centuries exported a steady stream of students, professors and pedlars south of the border and across the German Sea. Many young Scots received part, and sometimes all, of their university education in France, Germany, Italy and Holland and would have returned home with ideas garnered from the intellectual cultures they had encountered there.[49] It was also far from uncommon for Scots to hold academic posts in Europe, especially in mathematics. It is scarcely credible that these men would not have been *au fait* with European trends in astrology. This traffic of ideas and information was no one-way street either, as European scholars both corresponded with learned Scots in their homeland and visited Scotland.[50]

The main primary sources that have been located for ascertaining what, how and where astrology was taught at the Scottish universities are student lecture notes which were found in the NLS as well as the university libraries of Aberdeen, Edinburgh, Glasgow and St Andrews and these are described more fully in the first chapter. Extensive library records that list book holdings, purchases, donations and bequests exist for Edinburgh University library since its foundation, and records are extant to a lesser degree of completeness for the other universities. These give a good account of the quantity and type of astrological material that was available in the universities for students and regents. Many Scottish almanacs printed between 1619 and the early decades of the eighteenth century have survived, along with a few

[49] Douglas Guthrie, 'The Influence of the Leyden School upon Scottish Medicine', *Medical History*, 3 (1959), 108–122 (pp. 109–110).
[50] Examples are the correspondence and meetings of John Craig and Tycho Brahe, and John Hamilton, Archbishop of St Andrews and Girolamo Cardano. John Henry, 'John Craig (d. 1620?)', in *Oxford DNB*, 2004; Janet P. Foggie, 'John Hamilton (1510/11–1571)', in *Oxford DNB*, 2004.

astrological broadsheets, though relative numbers can in no way compare with what remains of their English counterparts. Journals, letters, kirk session records, medical textbooks and other printed materials that have relevance for the debate about astrology and its practice have also been found, and all of these sources are dealt with more fully in their relevant contexts.

Each of the chapters that follow draws on a different set of sources that uniquely highlights the issues of the practice, attitudes and social context of astrology and of the change in these over time. The thesis is divided into three sections. Part one, which comprises the first three chapters, focuses on where and how people in Scotland gained information and instruction about the theories and practice of astrology, and about the kind of predictions that were being made from it.

Chapter one identifies the place of astrology in the education of the men that would go on to form the professional and administrative core of Scotland – the future ministers, lawyers, physicians and bureaucrats who attended the country's universities. Using student notebooks and university records and histories, where, how and why astrology fitted in to the scholastic natural philosophy curriculum can be determined. An examination of the nature of the astrological material that was taught at the four centres of learning until at least the seventh decade of the seventeenth century allows an assessment to be made of what elite attitudes were towards astrology, and affords a view of the range of opinion and degree of interest between individual regents. From the lecture notes, too, changes in astrology's status can be put in the context of the sweeping reforms that were taking place in approaches to conceptualising and understanding the natural world and the timing of

the radical shift that took place in academic attitudes towards astrology and possible reasons for this change can be estimated with some degree of accuracy.

Chapter two, through an examination of the library catalogues of the Scottish universities, identifies books with astrological content that were to be found in them, and thereby obtains an indication of the resources that would have been available to students and teachers to expand on the astrological material that was taught in the lectures. As virtually all of the books in all of the university libraries were acquired after the Reformation it is argued that the nature and contents of these books must largely reflect contemporary Scottish Protestant values and, therefore, in turn, reveal attitudes of this culture towards astrology in academia. An investigation of donations and bequests made shows the type of astrology books that donors outside of the universities, though often affiliated with them in some way, regarded as suitable gifts for an institute of higher education. In particular, donations by magistrands, young men who were just completing their university education and who, therefore, would have had up-to-date knowledge of what was required in their library, draw attention to texts that would have been deemed desirable and appropriate. Further, a review of the lists of purchases by the universities themselves, often suggested by regents, is undertaken to show those astrology books that would have been deemed of especial value to the teaching of the subject at that particular institution. Finally, an analysis of the categories of astrology books held is undertaken to evaluate the range and nature of the astrological scholarship embraced by the Scottish universities, but most particularly at Edinburgh University, as it is for this that the best records are found.

Chapter three focuses on the popular press in the form of almanacs to gain an understanding of the type of astrological information that was available to the wider

Scottish public and of the contexts in which this was used. As the sales figures for the almanacs show that they were owned by a very large proportion of the population, the factors that facilitated the success of this phenomenon in Scotland will be traced. An examination of their general contents allows an assessment to be made of what it was that the public wanted, as well as the markets that the almanacs were aimed at, which in turn shows the type of people who would have been exposed to the astrological ideas contained in them. The kinds of astrology that were acceptable to the civic licensing authorities can be gauged from the varieties of astrological material that appear in the almanacs, and the degree of censorship that was imposed can be estimated from covertness or otherwise of the predictive material. Where information is available about individual almanac-makers, this is used to assess their social and educational backgrounds, their degree of expertise in astrology and the place of astrology in their professional lives. Finally, examination of the commentary and controversy in the almanacs is used to track the changes in attitudes to astrology over the late seventeenth and early eighteenth centuries.

Part two, which comprises chapter four, centres on the debate about astrology in order to highlight the main areas of dispute and the concerns of opponents and proponents, and often the impetus behind these. Analysis of the arguments over the period provides insights into the relationship between astrology and theology, pedagogy and developments in the approach to the natural sciences, as well as astrology's battle for survival. One area of critical importance was the question of whether or not the practice was theologically legitimate. Because of his status, power and authority, the arguments of King James VI on this theme are closely scrutinised, as are those of another influential figure, the leading Reformer, theologian and judge,

Robert Pont, who took an opposite view, and possible motivations for their views are put forward. An investigation of claims advanced about the moral dangers of astrology, mainly taken from the writings of the humanist educator, George Buchanan, help throw light on contemporary concerns about the public and private consequences of the potential damage that could result from the evoking of superstitious fears by astrologers. The veracity of astrology was another hotly disputed area with false predictions and the lack of agreement of astrologers about methodology being held up as evidence of astrology's invalidity. An exploration of the accusations and counter-arguments throws valuable light on the expectations of accuracy of astrological prediction versus the acceptance of its limitations and where the reasons or blame were thought to lie for the inability of astrologers always to come up with correct answers. Lack of rationality was an increasingly voiced criticism and an investigation of the arguments associated with this, and the nature of the combatants, provides important clues as to why astrology struggled, then failed, to survive in mainstream intellectual culture.

Part three examines the practice and practitioners of astrology. Chapter five investigates and maps out two broad areas of astrology's association with medicine in early modern Scotland. Section one seeks to contextualise medical astrology and assess its prestige by examining the connections between astrological medicine and the institutions – the court, the professional medical bodies and the universities – through the publications and libraries of the physicians and surgeons associated with them. An investigation of lay practitioners and quacks, followed by a review of the medical literature that was available to those interested in self-help reveals what astrological resources that were on offer and accessible as an alternative to

professional medical care. Section two turns to the practice of medical astrology, to find the ideological frameworks within which it was practised and the techniques which were employed as well as to assess the competencies of those involved in astrology's application to medicine.

Judicial astrology is the concern of chapter six and by investigating case studies of each of the main specialities of the practice in turn – nativities, questions, elections and general predictions – the way in which each of the techniques was carried out can be elicited. By paying attention, concurrently, to the kind of people who were employing each of these branches, and to their clientele, light can be thrown on the question of whether or not there were differences in practice between three different groups: the educated elite, the autodidactic practitioners and the common people. Given the considerable condemnation of the practice in some quarters, a study of the type of censure that was applied to practitioners in these different layers of the social hierarchy is used to highlight the effect of power and influence on attitudes to those practising astrology.

Chapter seven concludes the thesis with an analysis of astrology's place in understanding the natural world, and its changing relationship with natural philosophy, outside of the universities. This examines the attitudes towards astrology of members of the last generation of highly influential Scots who had encountered astrology as part of the scholastic natural philosophy curriculum in their university education, and who were closely or loosely part of the network of correspondents centred on Colin Campbell of Achnaba (1644–1726), and his associates. By looking at the ways that they approached astrology under the headings of rejection, continued use, desire for reform or attempt at integration into the newly emerging paradigm, a

picture can be built up of how the astrological worldview was fragmenting in the face of competition from developments in the natural, and especially mathematical, sciences.

In these seven chapters, this thesis surveys the shifting place, practice and status of astrology in early modern Scotland. It demonstrates its fundamental importance to Scottish intellectual and cultural life for much of the period and also suggests a range of causes that contributed to its eventual decline. It will be argued that among the reasons for its demise, three key factors stand out: changes in the natural philosophy curriculum at the universities, the vulgarisation of the image of the astrologer and the incompatibility of astrology's nature, as well as its contemporaneous practice, with the aims of the virtuosi.

Chapter One: Astrology in the Scottish Universities

> *Imprimis*, In the first college and first class, shall be a reader of dialectic, who shall accomplish his course thereof in one year. In mathematics, which is the second class, shall be a reader who shall complete his course of arithmetic, geometry, cosmography, and astrology, in one year. In the third class shall be a reader of natural philosophy, who shall complete his course in a year. And who after these three years, by trial and examination, shall be found sufficiently instructed in the foresaid sciences, shall be laureate and graduate in philosophy.
>
> First Book of Discipline, 1561[51]

Astrology was an established component of the curriculum of European universities throughout much of the early modern period.[52] It was taught at Valencia, for example, by one of the most outstanding mathematicians of sixteenth-century Spain, Jerónimo Muñoz (1520-1591), a staunch defender of astrology. At Salamanca the chair of mathematics was known as the chair of astrology, and judicial astrology was included in the mathematics syllabus there.[53] Up to the second half of the seventeenth century and in some cases into the eighteenth century, professors of astronomy at some Italian universities were expected to produce annual *taccuini*, astronomical-astrological almanacs and, especially at Pavia, some published

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[51] John Knox, *The History of the Reformation of Religion in Scotland*, ed. by William M'Gavin (Glasgow, 1844), p. 500.

[52] For histories of the English and European universities see *Universities and Science in the Early Modern Period*, ed. by Mordechai Feingold and Víctor Navarro Brotons (Dordrecht, 2006); Paul Grendler, *The Universities of the Italian Renaissance* (Baltimore, 2002); Hugh F. Kearney, *Scholars and Gentlemen: Universities and Society in Pre-Industrial Britain, 1500-1700* (London, 1970); *The History of the University of Oxford. Volume III: The Collegiate University*, ed. by James McConica (Oxford, 1986); Victor Morgan, *A History of the University of Cambridge. Volume II: 1546-1750* (Cambridge, 2004); *A History of the University in Europe. Volume II: Universities in Early Modern Europe (1500-1800)*, ed. by Hilde de Ridder-Symoens (Cambridge, 1996); Helga Robinson-Hammerstein, *European Universities in the Age of Reformation and Counter Reformation* (Dublin, 1998); Nicholas Tyacke, *The History of the University of Oxford. Volume IV: Seventeenth-Century Oxford* (Oxford, 1997). For astrology in the English and European universities see Broecke, *Limits of Influence*, pp. 12-17; Rutkin, *'Astrology'*; Hilary Carey, *Courting Disaster: Astrology at the English Court and University in the Later Middle Ages* (New York, 1992); William J. Costello, *The Scholastic Curriculum at Early Seventeenth-century Cambridge* (Cambridge, 1958), p. 91.

[53] Victor Navarro-Brotons, 'The Cultivation of Astronomy in Spanish Universities in the Latter Half of the 16th Century', in *Universities and Science in the Early Modern Period*, ed. by Mordechai Feingold and Víctor Navarro-Brotons (Dordrecht, 2006), pp. 83–98 (pp. 83, 85, 90).

astrological texts,[54] while at Wittenberg, under the aegis of Phillip Melanchthon (1497-1560), astrology was actively promoted.[55] At Oxford and Cambridge astrology was taught at least until the early years of the seventeenth century, and although from its creation in 1619 incumbents of the Savilian chair of astronomy at Oxford had been banned from teaching judicial or natal astrology, William Lilly (1602–1681) claimed that as late as the 1650s he had many admirers there and at Cambridge too.[56] Scotland was no exception to this European tradition, as astrology was taught in all of the country's universities until the last quarter of the seventeenth century, but little research has been carried out on this aspect of the country's educational past. The intention of this chapter, therefore, is to investigate the place of astrology in the Scottish universities from the time of the Reformation until 1726, guided by the following questions. Where, and how, did astrology fit into the curricula of the universities? What was being taught about it and were there variations in the astrological material that was presented to students by different regents and at different universities? When did changes appear in the universities' approach to astrology over the period? How and why did these changes come about at the time that they did and, finally, what was nature and impact of these changes?

The main primary sources for this investigation are manuscript notebooks of magistrand-year students archived in the libraries of Aberdeen, Edinburgh, Glasgow and St Andrews universities, as well as in the National Library of Scotland. Christine Shepherd identified over 150 manuscript student notebooks for the period, of which

[54] Gigliola Fragnito, *Church, Censorship, and Culture in Early Modern Italy* (Cambridge, 2001), pp. 79–109.
[55] Sachiko Kusukawa, *The Transformation of Natural Philosophy: The Case of Philip Melanchthon* (Cambridge, 1995), pp. 124–160.
[56] Thomas, *Religion*, pp. 419.

by far the largest number is from Edinburgh University.[57] These consist of 65 notebooks for Edinburgh from 1613 to 1705, 47 notebooks for Glasgow from 1637 to 1715, 22 notebooks for St Andrews from 1642 to 1723 and 36 notebooks for Aberdeen from 1611 to 1717.[58] Of these, 70 are from the magistrand year. Thirty-three are from Edinburgh, 17 from Glasgow, eight from St Andrews and twelve from Aberdeen, of which seven are from King's College and five from Marischal. Two more, both of which have relevance for this chapter, have come to light since Shepherd's study, bringing the total to 72.[59] The number of extant student notebooks shows that they have survived better than any other body of manuscript material yet found, probably because the information they contained was considered to be useful reference material for later study and, with the passing of the years, they may have gained some sentimental value as family heirlooms. Sources of information on the curriculum, proposed or implemented, are found in *The First Book of Discipline* of 1561, university and town council minutes and the reports of the numerous commissions appointed by Church and State to visit the universities during the seventeenth century,[60] and these are supplemented by various histories and records of the universities.[61]

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[57] Christine M. Shepherd, 'Philosophy and Science in the Arts Curriculum of the Scottish Universities in the Seventeenth Century' (unpublished PhD thesis, University of Edinburgh, 1974), pp. 344–357.
[58] Shepherd, 'Philosophy and Science', p. 4.
[59] NLS, Acc.4975; EUL, Gen.2028.
[60] *First Book of Discipline* (Edinburgh, 1561); Alexander Morgan, *University of Edinburgh: Charters, Statutes, and Acts of the Town Council and the Senatus, 1583-1858* (Edinburgh, 1937); *Evidence Oral and Documentary Taken and Received by the Commissioners Appointed by His Majesty George IV, July 1826...for Visiting the Universities of Scotland* (London, 1837).
[61] For the history of Scottish universities see R. D. Anderson, *Scottish Education Since the Reformation* (Edinburgh, 1997); R. D. Anderson, Michael Lynch and N. T. Phillipson, *The University of Edinburgh: An Illustrated History* (Edinburgh, 2003); Ronald G Cant, *The University of St Andrews: A Short History* (Edinburgh, 1970); Ronald G. Cant, *The College of St. Salvator: Its Foundation and Development* (Edinburgh, 1950); Ronald G. Cant, *The New Foundation of 1579 in Historical Perspective* (Edinburgh, 1979); Thomas Craufurd, *History of the University of Edinburgh, from 1580 to 1646* (Edinburgh, 1808); John Durkan, 'The Library of St Salvador's College', *The Bibliothek*, ii (1961); John Durkan, *The University of Glasgow, 1451-1577* (Glasgow, 1977); Sir

After setting the historical stage by examining what is known of astrology in the pre-Reformation universities, the academic context in which astrology was taught will be explored, both in light of the Reformers' vision for the universities, and in the structures that actually pertained. The nature of the astrological material that was taught within this framework for most of the seventeenth century will be examined and the course of the gradual rejection in the universities throughout the seventeenth-century of Aristotelianism, which provided a niche for astrological theory, will then be traced. Finally, the content of university lectures from the 1680s onwards will be investigated to probe the new attitudes to astrology and how and why this change came about.

There is evidence of strong astrological associations with two of Scotland's pre-Reformation universities; at St Andrews, which was founded in 1413, and King's College, Aberdeen which came into being in 1495. At Glasgow, which was established in 1451, data to ratify a firm connection has not yet come to hand, but it would be surprising if this had not been the case there, too. William Scheves (ca.1440-1497), courtier, physician, second archbishop of St Andrews and one of the most powerful men in the Scotland of James III (*reg.*1460-1488), was for ten years, between 1460 and 1470, a teacher at the University of St Andrews. His renowned

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Alexander Grant, *The Story of the University of Edinburgh*, 2 vols. (Edinburgh, 1884), I; John Herkless and Robert Kerr Hannay, *The College of St Leonard* (Edinburgh, 1905); Cosmo Innes, 'Munimenta Alme Universitatis Glasguensis', in *Maitland Club* (Glasgow, 1854), II; 'Fasti Aberdonenses: Selections from the Records of the University and King's College of Aberdeen, 1494-1854', in *Spalding Club*, ed. by Cosmo Innes (Aberdeen, 1854); David Stevenson, *King's College, Aberdeen, 1560-1641: From Protestant Reformation to Covenanting Revolution* (Aberdeen, 1990); Paul Wood, *The Aberdeen Enlightenment: The Arts Curriculum in the Eighteenth Century* (Aberdeen, 1993); Paul Wood, 'Candide in Caledonia: The Culture of Science in the Scottish Universities, 1690-1805', in *Universities and Science in the Early Modern Period*, ed. by Mordechai Feingold and Víctor Navarro Brotons (Dordrecht, 2006); 'Fasti Academiae Mariscallanae Aberdonensis MDXCIII-MDCCCLX', in *New Spalding Club*, ed. by P. J. Anderson (Aberdeen, 1889).

library reflected his keen interest in astrology and astronomy and his copy of Guido Bonatus's (ca.1202- ca.1295) *Decem Continens Tractatus Astronomia,*[62] also known as *De Astronomia Tractatus X*, one of the most important astrology books of the late Middle Ages, which he had signed in several places, is heavily annotated, the marginalia bearing witness to the fact that the book had not only been read with scholarly scrutiny, but also that certain tracts had also been marked out for teaching. Such was the fame of Scheves's erudition and interest in celestial matters that Jasper Laet de Borchloen, who described himself as a doctor of medicine and an astrologer at the University of Louvain, dedicated a book on the solar eclipse of May 1491[63] to him, writing:

> Who has not admired your profound learning? In the City of St. Andrews, where there is an illustrious University, and an influx of many learned men, you have instituted, at great expense, and with unwonted diligence, a valuable library, which is filled with books of every kind. But especially have you brought from the darkness of obscurity into the light of day the mathematical sciences, which, through the negligence of the Scotch, had become nearly forgotten; and you have collected numerous volumes for the restoration of the sidereal science.[64]

Schevez graduated MD at Louvain, where he also studied under the astrologer Spiricus, or Spierinck,[65] and, according to Thomas Dempster 'he made such progress in astrology, theology, and medicine that he had scarcely his equal in France or Britain.'[66]

Aberdeen's astrological link is rather more unusual as the university there had, quite literally, astrology built into its fabric. Around 1497 Hector Boece

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[62] Guido Bonatus, *Decem Continens Tractatus Astronomia* (Augsburg, 1491). Scheves's personal copy was donated to Edinburgh University library in 1631.
[63] Jasper Laet, *De Eclipsi Solis*, 1491. The only surving copy is found in the library of the Royal Observatory, Edinburgh.
[64] J. F. S Gordon, *Ecclesiastical Chronicle for Scotland: Monasticon* (London, 1875), I, p. 235; C. J. Lyon, *The History of St Andrews Ancient and Modern* (Edinburgh, 1838), II, p. 342.
[65] Broeke, *Limits of Influence*, p. 37.
[66] Thomas Dempster, *Historia Ecclesiastica Gentis Scotorum Lib. XIX* (Bologna, 1627), quoted in Alexander Hastie Millar, *DNB*, vol. 50, 1885-1900.

(ca.1465-1536) was summoned from his teaching post at the University of Paris to become the first principal of the new university at Aberdeen, and it was he who oversaw the layout of the buildings of King's College. An inventory of 1542[67] shows that the quadrangle is orientated with the four cardinal points of the compass, points which are highly significant astrologically.[68] It also gave the names of the rooms and accommodation of the teachers and students. Two of the chambers were named after constellations, five after planets and eight after signs of the zodiac.[69] The constellation chambers belonged to the sub-principal and other university officers, those of the planets Saturn, Jove, Hercules,[70] Luna, Mercury and Venus were given over to the theologians. Thirteen students of the Arts were assigned rooms named after the first six zodiacal signs, Aries, Taurus, Gemini, Cancer, Leo and Virgo, while that called Scorpio was used for the college library.[71] Jane Stevenson and Peter Davidson have speculated, with some persuasiveness, that the inspiration for this arrangement was Marsilio Ficino's astrological text, *De Triplici Vita*, which Boece had acquired in Paris shortly after its first publication[72] and had much annotated.[73] Book One of *De Vita* gives astrological advice for caring for the health of students and men of letters, as they were regarded as being particularly prone to melancholy from too much study, and Stevenson and Davidson suggest that Boece had arranged

[67] Jennifer J. Carter and Colin A. McLaren, *Crown and Gown: Illustrated History of the University of Aberdeen, 1495-1995* (Aberdeen, 1994), p. 17; Jane Stevenson and Peter Davidson, 'Ficino in Aberdeen: The Continuing Problem of the Scottish Renaissance', *Journal of the Northern Renaissance*, 1.1 (2009), 64–87.
[68] These points mark the beginning of the seasons which occur at the beginning of the cardinal signs of the zodiac, Aries, Cancer, Libra and Capricorn, and horoscopes drawn up for 0 degrees of these signs in any year indicate celestial influences for the forthcoming three months.
[69] Stevenson and Davidson, *Ficino*, p. 72.
[70] This is an alternative name for Mars.
[71] James Pickard, *A History of King's College Library, Aberdeen, until 1860* (Aberdeen, 1987), pp. 5–6.
[72] Marsilio Ficino, *De Triplici Vita* (Paris, 1494).
[73] Stevenson and Davidson, *Ficino*, p. 70.

the lodgings of his students and academics according to Ficino's proposals for the best maintenance of their wellbeing. Regardless of whether this is, indeed, the case or not, the giving of the chambers astrological names shows that the subject was well integrated into the value system of the university at the time.

The fifteen and sixteenth centuries saw two powerful developments in the country's educational policy. Contemporaneous with the foundation of King's College, James IV passed the Education Act of 1496. This introduced into Scotland compulsory education for the sons of barons and substantial freeholders who, through their heritable status, would later be responsible for overseeing the legal system at a local level. The intention behind this law was to prepare these young men for their future responsibilities by providing an education that would enable them to understand the law and administer justice effectively, 'to eliminate the need of the poor to seek redress from the king's principal auditors for each small injury.' In other words, a key function of a university, at least in the eyes of the crown, if not the clergy and the academics, was not only to provide a theologically-based education but to promote an efficient Scottish bureaucracy.[74]

The Reformation brought a call for an even greater transformation, one that would bring the universities into line with the momentous changes that were revolutionising religion in Scotland. 'The Protestant goal was to bring worship and practice in conformity to the 'Word', understood both in the passive meaning of Scriptural authority and the more dynamic sense of the 'Logos' (Word) of Christ.'[75] As the Bible, regarded as the Word of God, became the basis of the Scottish Church and the *prima materia* for interpretative contemplation, along with the accompanying

[74] *The Education Act 1496* <http://www.rps.ac.uk/.
[75] Jane Dawson, *Scotland Re-formed, 1488-1587* (Edinburgh, 2007), p. 224.

concept of the priesthood of all believers, literacy became a burning necessity for each and every individual within the fold of the Kirk who was capable of attaining it, and not only for the elite. An educated clergy was also required, something that Scotland, at that time, greatly lacked and, crucially, there was a need to transform the Catholic pre-Reformation universities into Protestant institutions.[76] For the regulation of this, agreed parameters were needed. Swiftly, by the following year, 1561, these had been set down in the *First Book of Discipline*, a document drawn up by a committee appointed by the Scottish Privy Council and sanctioned by the latter. In this, recommendations about education take up a substantial part of the book and guidelines were laid down for 'the great schools, called universities', whose function was now to lay great stress on theologically sound education for ministers, as well as lawyers and administrators.

The *First Book of Discipline* set out the subjects to be taught in the basic Arts course, and these were to include dialectics, ethics, mathematics, arithmetic, geometry, cosmography, astrology and natural philosophy.[77] The term astrology, however, was frequently used indiscriminately for both astronomy and astrology, so no assumptions can be made about what precisely was meant here. The proposed curriculum and administrative structures for each of the then universities at St Andrews, Glasgow and Aberdeen were set down in some detail, but like so many other later pieces of proposed legislation about the universities it was not fully implemented. The *First Book of Discipline* remained, however, an important statement of Protestant intention. There are several points worth noting about the

[76] Ibid, pp. 216-239; Steven Reid, *Humanism and Calvinism: Andrew Melville and the Universities of Scotland, 1560-1625* (Farnham, 2011); J. Kirk, '"Melvillian" Reform in the Scottish Universities', in *The Renaissance in Scotland*, ed. by A. A. MacDonald, M. Lynch and I. B. Cowan (Leiden, 1994), pp. 276–300.
[77] Knox, *History of the Reformation*, p.500.

drawing up of its educational proposals. It brought sweeping changes in that, for the first time, it broke with the ancient universities' traditional autonomy of self-regulation by having reforms proposed by an external body. This opened the floodgates to further external meddling in university matters, of which there was much, not only from the Kirk, but from the Crown, Parliament and, in the case of Edinburgh University, the Town Council. This meant that what was taught, and this included astrology, would be under not only internal scrutiny, but was open to inspection by other interested official bodies. The second matter of significance was the willingness of the Reformers to leave details of the syllabus in the hands of the regents and masters.

> All other things touching the books to be read in each class, and all such particular affairs, we refer to the discretion of the masters, principals, and regents, with their well-advised councils: not doubting but if God shall grant quietness, and if your wisdoms grace to set forward letters in the sort prescribed, ye shall leave wisdom and learning to your posterity, a treasure more to be esteemed nor any earthly treasure ye are able to provide for them…[78]

This clause, in line with the Protestant championing of the right of each individual to use his judgement and conscience to determine and interpret intellectual and religious matters and convictions, had wide-reaching ramifications, possibilities and consequences. Theoretically at least, it opened wide the doors of university classrooms for the introduction of any topic that the regent saw fit to teach, subject to the approval of his immediate superiors. And in fact, as will be shown, the regents did indeed exercise a great deal of power over the details, if not the gross structure, of what was taught in the lectures.

[78] Ibid, p. 503.

Two new centres of higher education were born out of the Reformation: the 'tounis college', later the University of Edinburgh, [79] which was founded in 1582 and funded and regulated by the Town Council, and Marischal College in Aberdeen, which was founded in 1593 by the 4th Earl Marischal (1506-1581).[80] As these establishments were embodiments of post-Reformation Protestantism and its educational reforms, it seems reasonable to conclude that any astrology that was taught in these institutions, and attitudes towards it, must largely reflect the values of the Scottish Protestant movement. Some of the lists of graduates of the early years of Edinburgh University have been annotated to give the profession the graduate eventually went on to follow, and these show a predominance of 'ministers of the word', followed by lawyers and physicians.[81] Any subject that was taught at the universities, therefore, would have been part of the intellectual provender of the men who upheld the professional structures of Scottish society.

Throughout the seventeenth century the core curriculum at all universities contained the same subjects which were taught in virtually the same order. The Arts course in seventeenth-century Scottish universities, in which astrology had its place, lasted for four years. Students normally began their studies around the age of fourteen when they entered the Bajan or first class. In the second year they became Semis, by third year they were known as Bachelors and in the fourth and final year they were Magistrands. The teaching material, after the Bajan year in which Greek

[79] For the sake of simplicity what began as the Town College will be referred to hereafter as the University of Edinburgh or Edinburgh University, except when quoting from original sources.
[80] For the founding of Edinburgh and Marischal Colleges, see Craufurd, *History of the University from 1580*; John Durkan, 'Education: The Laying of Fresh Foundations', in *Humanism in Renaissance Scotland*, ed. by J. MacQueen (Edinburgh, 1990); G. D Henderson, *The Founding of Marischal College, Aberdeen* (Aberdeen, 1947); Steven Reid, 'Aberdeen's "Toun College": Marischal College, 1593–1623', *Innes Review*, 58 (2007), 173–195.
[81] *A Catalogue of the Graduates in the Faculties of Arts, Divinity, and Law, of the University of Edinburgh, Since Its Foundation*, ed. by David Laing (Edinburgh, 1858).

was taught, consisted mainly of commentaries on the works of Aristotle until the last decades of the seventeenth century.[82] In the second year Logic and Metaphysics were introduced, the third year was taken up with Ethics and the continuation of Metaphysics and in the fourth and final year Natural Philosophy was taught, and sometimes a little anatomy. The magistrand notebooks of Edinburgh students reveal that the teaching syllabus followed fairly closely the regulations laid down by the Town Council on 3rd December 1628 for 'The Forme and Ordour of Teaching and Proceiding of the Students in Thair Foure Yeires Course in the College of Edinburgh.' It was recommended that students be examined on the previous year's studies on return from their summer break, and that the fourth year should then proceed as follows:

> The Fourt Yeir
>
> The examinatiounes being endit the Regent teacheth unto theme the first sum pairt of the second and the fourt buik De Caelo.
>
> The buikes De Caelo being endit he teacheth Sphaeram Joannis de Sacra Bosco, and out of his fourt chapter gives theme some insicht in the theoretick of the planets magnitudes and constellatiouns of the starris.
>
> The sphere being endit he teacheth the buikes De Ortu et Interitu and the Metiores so far as is neidfull.[83]

Morgan is of the opinion that the Town Council's recommendations may simply have been a statement of what was already taking place, rather than any attempt to implement change. Astrology, where it was taught, would have fitted naturally into the fourth year syllabus, and this is borne out by the evidence of the student notebooks. All of the exemplars found so far which contain astrological content have been those belonging to students in the magistrand year.

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[82] For the curriculum at Oxford see Mordechai Feingold, 'The Humanities', in *The History of the University of Oxford*, ed.Tyacke, pp. 211–357.
[83] Morgan, *Charters, Statutes, Acts*, p. 113.

Instruction at all of the Scottish universities until the eighteenth century was carried out by the regenting system, as opposed to a professorial system where lessons are given by specialists, and this, as will be seen, had profound implications for the teaching of astrology. In the regenting system the same teacher instructed a class on every subject in turn all the way through the four years of the Arts course, and then repeated the process with a fresh bajan class. Lectures were given in the mornings, followed in the afternoon by disputations on what had just been taught so that through debate the students could absorb the lessons more thoroughly. The regents read out their lectures in Latin, the language of instruction prescribed by the statutes, at dictation speed to the students who wrote them down, almost exactly word for word, in their notebooks; for this reason the notebooks were often referred to as dictates. The majority of the notebooks contain the material taught over the course of one academic year, which ran from September or October to April, and they give a good account of the dates of the lessons, the subject matter taught and even the exact words that the regent had used. This provides the researcher with a superb record of the details of what was being taught on an almost daily basis. Unfortunately, particulars of the disputations have gone largely undocumented.

Some sets of lecture notes by the same regents are replicated exactly several years later, suggesting that the regent was simply repeating the same series of lectures year after year without updating them or bringing in any new material or ideas. David Gregory (1659-1708) certainly did this in his astronomy lectures. This made it possible for a lazy or unscrupulous incoming student to buy a copy of earlier lecture notes, and add his own name to the title page, and Shepherd reported a case

of this in St Andrews in 1713.[84] Even if this were to be the case with any of the notebooks examined, however, its value as a source of information on the subject matter of the courses, the organisation of the year and what a particular regent had actually said would be unimpaired.

As evidenced by magistrand dictates, astrology was taught at all four of the Scottish universities until at least the final quarter of the seventeenth century, the two Aberdeen colleges for the moment being regarded as one university. To date, nineteen student notebooks have been located that contain astrological material of one kind or another; fifteen from Edinburgh, two from Aberdeen, and one each from St Andrews and Glasgow. The earliest notebook that has been found is dated 1613-14. This belonged to Alexander Henryson and it records the dictates of the regent James Reid at Edinburgh University. This is followed by two other Edinburgh notebooks, one from 1643-44 of Alexander Hepburn's lectures and one from those of Thomas Craufurd in 1653-53. Three notebooks survive from the immediate post-Restoration period. The first, dated 1660-1661, from St Salvator's College, St Andrews, belonged to Colin Campbell who graduated MA on 27 July 1661 under George Campbell. There are two others from Thomas Craufurds's class of 1681-1682, and the following year; in 1662-1663, John Barclay, student at King's College and 'son to the lady Johnstoune', transcribed the notes of his regent, George Gordon, later 1st Earl of Aberdeen (1637–1720). Of the three notebooks from the 1670s the first, again from King's College, comprises the 1671-1672 notes of Robert Forbes written out by Francis Fordyce and the others are dictates from 1672-1673 of the Edinburgh regent, James Pillans, one owned by Archibald Flint and another by

[84] Shepherd, 'Philosophy and Science', pp.5-6.

Adam Blackader. From the 1680s there are five notebooks from Edinburgh; one of the lectures of Comissary Wishart in 1680 recorded by James Cranford, one of regent Herbert Kennedy's notes belonging to Edward Lewis, while the dictates of Robert Stewart and James Reid record Andrew Massie's 1682-1683 lectures, and there is one from David Gregory's class recorded by an unknown scribe. Finally, from the 1690s, there is another set of Andrew Massie's dictates, from 1690 to 1691, belonging to Patrick Tullidaeph, and, also from Edinburgh, Robert Kello's 1693-1694 notes of Herbert Kennedy's lectures and those of John Orr which recorded William Scott's classes, as well as another from David Gregory transcribed by Francis Pringle. The latest-dated student notebook, which spans the final months of the old century and those beginning the new, is from Glasgow University, and this contains D. McLea's transcript of John Tran's dictates. The lectures of David Gregory, professor of mathematics at Edinburgh from 1686 to 1691, are somewhat anomalous as they were given outwith the formal Arts course. A brief summary of the notebooks containing astrological material arranged in date order is as follows:

DATE	UNIVERSITY	REGENT	STUDENT	LOCATION
1613-14	Edinburgh	James Reid	Alex^{r}. Henryson	NLS, Adv.MS.5.2.3
1643-44	Edinburgh	Alexander Hepburn	[Unknown]	EUL, Dk.5.5^{2}
1653-54	Edinburgh	Thomas Craufurd	[Unknown]	EUL, Dc.5.122
1660-61	St. Andrews (St. S)	William Campbell	Colin Campbell	EUL, MS.3101.6
1661-62	Edinburgh	Thomas Craufurd	Alexander Burton	EUL, Dc.5.55
1662-63	Aberdeen (King's)	George Gordon	John Barclay	NLS, Adv.MS.22.7.15
1662-63	Edinburgh	William Tweedie	J. Whitelaw	EUL, mic.M.645
1671-72	Aberdeen (King's)	Robert Forbes	Francis Fordyce	NLS, Acc.4975
1672-73	Edinburgh	James Pillans	Archibald Flint	EUL, Dc. 6.5
1672-73	Edinburgh	James Pillans	Adam Blackader	EUL, Gen.2028
1679-80	Edinburgh	James Wishart	James Cranford	EUL, Dk.5.27
1682-83	Edinburgh	Andrew Massie	Robert Stewart	EUL, Dc.6.23
1682-83	Edinburgh	Andrew Massie	James Reid	EUL, Dc.5.115
1685-86	Edinburgh	Herbert Kennedy	Edward Lewis	NLS, MS.2075
1686	Edinburgh	David Gregory	[Unknown]	CCO, MS. 133, ff.47-50
1690	Edinburgh	David Gregory	Francis Pringle	EUL, La.III.570
1690-91	Edinburgh	Andrew Massie	Patrick Tullidaeph	EUL, Dc.7.92
1693-94	Edinburgh	Herbert Kennedy	Robert Kello	EUL, Dc.8.118
1699-1700	Glasgow	John Tran	D. McLea	EUL, La.III.724

Table 1. List of student notebooks with astrological content

As, however, many of the extant dictates are virtually illegible there may, in fact, be more with astrological content, but those that are amenable to transcription and translation give a good indication of the nature, range and variety of the material covered.

All of the astrological material identified was found in the astronomy, physics or special physics sections of the magistrand-year student notebooks. Most often, in those before the 1680s, it appeared under astronomy as commentary to Book Two of Aristotle's *De Caelo* or to Sacrobosco's *Sphaera*. When criticism of astrology replaced the practice of teaching it, this appeared as appendices to astronomy, special physics or Cartesian natural philosophy, and these notebooks will be dealt with later in the chapter. The following table gives an overview of where in the syllabus regents introduced astrology.

Regent	Sacrobosco Sphaera	Aristotle Book 2	Special Physics	Following Descartes	Astronomy
Reid	X				
Campbell		X			
Gordon	X				
Tweedie		X			
Forbes	X				
Pillans	X				
Wishart		X			
Massie				X	
Kennedy			X		
Gregory					X
Scott			X		
Tran			X		

Table 2. Location of astrology found in the natural philosophy syllabus

It is unsurprising that the teaching of astrological theory is found appended to Aristotle's *De Coelo* and Sacrobosco's *Sphaera* as these, and texts closely associated with them, are broadly supportive of the central astrological tenet of 'as above, so below'. In Aristotle's cosmology the heavenly bodies are thought to exert a profound influence on the terrestrial world, especially on the processes of generation and decay

that were seen to involve the four elements. He was, however, not specific about the exact nature of these influences.[85] Sacrobosco, 'the clearest, most elementary, and most used textbook in astronomy and cosmography from the thirteenth to the seventeenth century',[86] is usually considered to contain only astronomical 'facts' and to be devoid of astrology. While it is true that in Sacrobosco there is an absence of any attempt to describe the meaning and qualities of celestial bodies and events, he did, however, support and perpetuate the Aristotelian notions that underline the association between heaven and earth. Later commentators on the *Sphere* were able to plant astrological theory into this fertile soil. The edition annotated by Junctinus, for example, contains a great deal of astrology.[87] The Ptolemaic system of planetary motion was taught alongside Aristotelian astronomy for the greatest part of the seventeenth century. Ptolemy has been described as 'a pro-astrological authority of the highest magnitude'[88] and his *Tetrabiblos*, also known as the *Quadripartitum,* whose contents will be reviewed in the next chapter, was the main source of astrological information that had been used continuously from the third century. It was almost certainly the original source of the astrology in the later editions of Sacrobosco. Ptolemy's works were found in all of the Scottish university libraries.[89] Glasgow and St Andrews each had one copy of the 1551 Basel edition of *Omnia quae extant opera praeter Geographiam* and Edinburgh had two copies. Marischal

[85] John L. Russell, 'Cosmological Teaching in the Seventeenth-century Scottish Universities', *Journal for the History of Astronomy*, 5 (1974), 122–132; 145–154 (p. 124).
[86] Lynn Thorndike, *The Sphere of Sacrobosco and Its Commentators* (Chicago, 1949), p. 1.
[87] Johannes Sacrobosco, *Sphaera Ioannis De Sacro Bosco, Emendata:... Francisci Iunctini* (Antwerp, 1573). Colin Campbell had a copy of this particular edition, which is now in EUL.
[88] H. Darrel Rutkin, 'The Use and Abuse of Ptolemy's Tetrabiblos in Renaissance and Early Modern Europe', in *Ptolemy in Perspective: Use and Criticism of His Work from Antiquity to the Nineteenth Century* (Dordrecht, 2010), pp. 139–150.
[89] 'University of Edinburgh Library Catalogue', 1636, EUL, Da.1.14; 'Catalogue of the Books in the Library of Glasgow University', 1691, GUL, MS.Gen.1312; 'Marischal College Library Catalogue, 1669-1713', 1713, AUL, MSM.71; 'Catalogue of Books Belonging to the Public Library of the University of St Andrews', 1687, SAUL, UYUY105/2.

College, too, had his *Opera Omnia*, but the edition held was not recorded. It also had a copy of the 1553 Basel edition of Phillip Melanchthon's interpretation of Ptolemy's *Quadripartitum, de Praedictionibus Astronomicis*,[90] which is a purely astrological work, as did Edinburgh. Ptolemy's astrological writings were also found in the university libraries as inclusions in compendia of ancient authors, such as those of Proclus and Julius Firmicus Maternus, and bound, too, with other astronomical or astrological books, such as Bonatus. It would, therefore, have been difficult to overlook Ptolemy when studying astronomy or astrology.

II

The astrological material found in all of the student notebooks reflects that found in Ptolemy's *Tetrabiblos*. There is, however, an idiosyncrasy in the 1613 notebook of Alexander Henryson. Just after the section on astronomy and immediately before the annotations on Aristotle's *De Ortu et Interitu* which was begun on Monday 14th February 1614, there is a summary of the names of the signs of the zodiac, the signs the Sun occupies at the equinoxes and solstices, and the length of the planetary cycles. Beneath this, pasted into the notebook, is a printed picture of a Zodiac Man which had almost certainly been cut out of an old almanac in which such images were common features. It depicts a naked man surrounded by the animals of the zodiac. On the man's head sits a ram, representing Aries, and from each of the other zodiacal symbols a line radiates to the part of the body ruled by that sign. The accompanying text explains the associations.

> As in the sky the rising (sequence) of signs is twelve
> So this is in man's body continuously maintained
> For instance the head and face themselves rejoice in Aries
> The throat and neck are where Taurus dominates

[90] Claudius Ptolemy, *De Praedictionibus Astronomicis*, ed. by Phillip Melanchthon (Basel, 1553).

The arms and hands are supported by Gemini
It is the nature of Cancer to stretch forth her breast
And Leo wishes [illegible] for itself
But the intestines Virgo desires above all
Libra has dominion over both loins
Scorpio wishes to have the shameful parts
Faithful Sagittarius wants to rule the hips
Capricorn has power over both knees
Finally the calves are fittingly declared for Aquarius
And Pisces is then the lord to the soles of the feet [91]

This is standard astrological lore and differed little from what could have been found in an almanac, and may indeed have been copied from one. It is the only instance of such material being found in a university notebook, and may have been inserted by Henryson himself outside the class, but the fact that it is included as part of the running text of the notebook, and that it is in Latin, makes it rather more likely that it was a continuation of the teaching material. Some basic medical theory and anatomy was often taught in the universities, as will be seen in a later chapter, and the Zodiac Man may have been included for this reason.

The astrological material that was otherwise taught covered the four essential groups of significators that were required for judging astrological figures: the qualities of the planets and signs, their strengths and weaknesses, the aspects between them, and their houses, or sector of the sky in which they are located. Students, therefore, were instructed in the foundational principles of astrological theory that would have allowed them to interpret a horoscope, in at least an elementary fashion. The range, quantity and type of astrological material that was taught at the universities until the last two decades of the seventeenth century illustrate the degree of independence which the regents had, within the broad parameters of the curriculum, to teach the subject in their own way, according to

[91] NLS, Adv.MS.5.2.3.

their own interests and emphases. The table below demonstrates this variation, and shows that no one particular emphasis dominated.

REGENT	Qualities (Signs and Planets)	Qualities (with fixed stars)	Dignities And Debilities	Houses	Aspects
REID			X		
HEPBURN	X				
CRAUFURD					X
CAMPBELL				X	X
GORDON		X		XX	X
TWEEDIE			X		
FORBES	X	X	XX	XX	X
PILLANS	X		X		X
WISHART		X			X

Table 3. Astrological significators taught

The regents showed a great deal of individual preference as to how and what was taught. Hepburn, at Edinburgh University, assigned two of the four principles – hot, cold, wet or dry – to each of the signs and linked these qualities to the seasonal weather that is characteristic of the time when the Sun is in these signs. The students would have already encountered these humours earlier in the Arts course in Aristotle's *De Generatione et Corruptione*, and his information varies very little from what is described in *Tetrabiblos* Book One, section 11, and may even have been taken straight from it.[92] Whitelaw encapsulated the notes of his regent, James Tweedie, in table form, as shown below, linking each of the elements with zodiacal signs, qualities and temperaments. [93]

Ignis	Terra	Aer	Aqua
Aries	Taurus	Gemini	Cancer
Leo	Virgo	Libra	Scorpius
Sagitt.	Capricorn	Aquarius	Pisces
Ignea	Terrea	Aerea	Aquea
Cholerica	Melancholica	Sanguinea	Phlegmatica

Table 4. Signs, qualities and temperaments

[92] Claudius Ptolemy, *Tetrabiblos*, trans. by F. E. Robbins (Cambridge, Mass, 1953), Book 1.19.
[93] 'Lectures of William Tweedie Transcribed by J. Whitelaw', 1662, EUL, mic.M.645.

Similarly, Pillans and Forbes in lectures given in the same year, 1672, also linked the zodiacal signs with the four elements and temperaments. Pillans gave the choleric fire signs as Aries, Leo and Sagittarius which are hot and dry, the melancholic earth signs as Taurus, Virgo and Capricorn which are cold and dry, Gemini, Libra and Aquarius as sanguine, warm and humid and the phlegmatic signs as Cancer, Scorpio and Pisces, which are cold and wet. Forbes went further after categorising the planets in a similar fashion, adding reasons for their effects and classifying them as beneficial or malefic.

> Saturn is cold and dry and as it takes heat away it is reckoned to be the great infortune...Jupiter is temperately warm and wet and it is called the great benefic whose influence gives the greatest benefit...Mars is hot and dry and because of its drying qualities it is said to be the minor malefic...Venus is temperately warm and humid and is said to be the lesser benefic [94]

Wishart's explanation for the qualities attributed to the signs was that they were associated with the nature of the fixed stars whose positions are found in these signs.

When it came to providing information about the planetary strengths and weaknesses, also known as their dignities and debilities, there is much more uniformity among the regents; Reid, Tweedie and Pillans at Edinburgh, as well as Forbes at Aberdeen, all gave similar information. According to Reid's notes, 'The first of these dignities is by house.'[95] The term 'house' has two different meanings in astrology, which can give rise to some confusion. It can mean the zodiacal sign in which a planet is situated at any one time, or it can mean one of the twelve sectors into which the horoscope is divided and which represent the twelve different areas of life that astrologers delineate. Here, however, the sense is clear. It means the zodiacal sign or signs, and each of these is 'ruled' by a planet and in that sign the planet is

[94] 'Lectures of Robert Forbes Transcribed by Francis Fordyce', 1671, NLS, Acc.4975.
[95] NLS, Adv.MS.5.2.3.

powerful and 'at home.' All of these regents assigned signs to each planet as follows: the Sun and Moon have domination over only one sign each – Leo has the Sun and Cancer has the Moon while all of the other planets claim two signs each. Mercury's houses are Virgo and Gemini; Venus rules Libra and Taurus; Mars commands Scorpio and Aries; Jupiter has domination over Pisces and Sagittarius and, finally, Saturn has rulership of Aquarius and Capricorn.

Reid and Pillans went on to explain that the planets are stronger in one of their houses than in the other. For example, Mercury has more strength in Virgo than in Gemini, Venus is more powerful in Taurus than in Libra, Mars in Scorpio than in Aries and so on. The regents then gave the debility, exaltation and fall of each planet, which are the signs in which they are thought to be, respectively, debilitated and vulnerable; especially advantaged; and lacking in potency. Pillans was at pains here to emphasise to his students that it was not only judicial astrologers who gave consideration to this division of the signs, but that the moderate learned and experienced men did so too and used it with diligence in judging their advice, plans and deliberations.

Alexander Henryson, Reid's student in 1613, and Archibald Flint, Pillans's student in 1672, both drew up tables that provide at-a-glance overviews of these four most important placements of the planets – their house, detriment, exaltation and fall – which would have allowed students to assess the planets' relative strengths at any given moment. The table drawn by Flint is shown below.

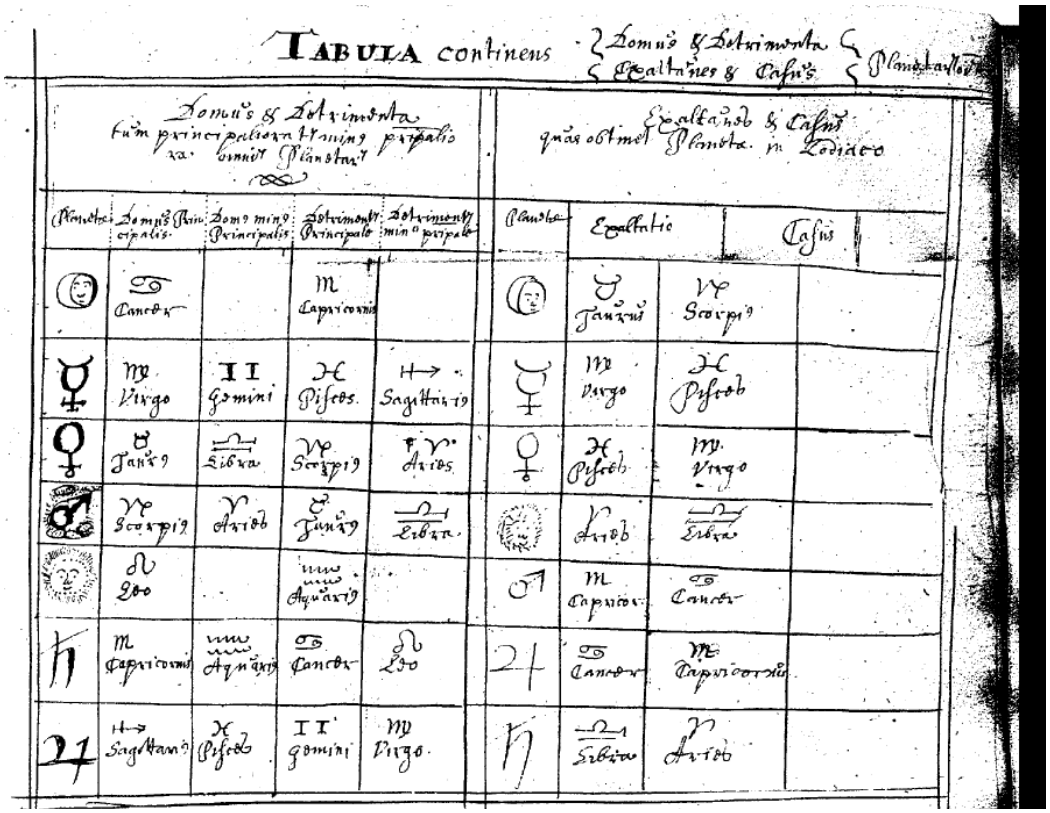

Figure 1. Table of Planetary dignities and detriments, Edinburgh, 1672[96]

Forbes, at King's College, went much further than any of the other regents to describe the complexities of the planetary weighting system by providing details of the planets' terms and faces. There are several disparate systems of planetary terms, a scheme of sub-rulerships whereby the thirty degrees that each of the signs occupies is divided into five unequal portions, and each of these segments is said to be ruled by a different planet in turn. Dignity by face is another ancient system of rulerships whereby each sign is divided into three decanates of ten degrees, each ruled by a particular planet, and this provides a minor indication of a planet's strength. [97]

[96] 'Lectures of James Pillans Transcribed by Archibald Flint', 1672, EUL, Dc. 6.5. Flint has confused the symbols of Scorpio and Capricorn.
[97] Deborah Houlding, *Ptolemy's Terms and Conditions*, http://www.skyscript.co.uk/terms.html.

The planetary dignities and debilities had a crucial role to play in judicial astrology for determining the outcome of a given situation. The more essential dignities a planet had, the greater its strength, which was important when judging the likely outcome of contests and who was the strongest party in horary questions. When a planet was in its own terms, for example, it was thought to be in a position of temporary strength, and terms were also used to provide physical descriptions of people who were signified by any particular planet in an interrogation.

Aspects, which are significant angular distances between the positions of the planets, measured in degrees of arc along the ecliptic, were important astrological determinants that described relationships between planets. Most regents provided descriptions of these, and also included the symbols for them. The lectures of Crawford, Campbell, Gordon, Forbes and Pillans, for example, all included the five aspects described by Ptolemy. These are the conjunction, also known as the synod, where two or more planets are in the same degree of longitude along the ecliptic; they are in opposition when they are 180º apart; in sextile when 60º apart; in square, or quadrate, relationship when they are at right angles to each other; and in trine, or trigon, aspect when they are separated by a distance of 120º. Campbell's notes go on to give a description of the Ptolemaic planetary aspects and this is illustrated by the diagram below which shows they are connected within the circle that represents the sky.

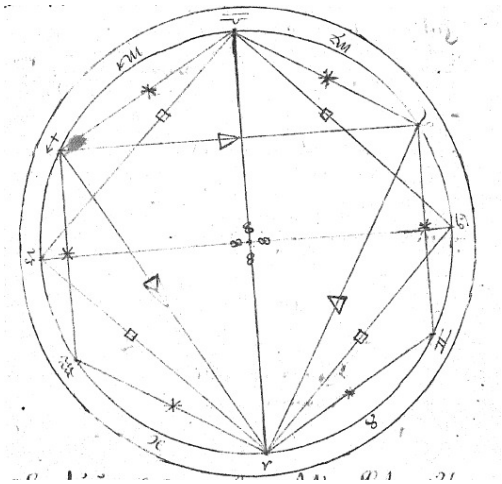

Figure 2. Astrological aspects, St Salvator's College, St Andrews, 1661[98]

Conjunctionist astrology was an important consideration in natural philosophy. In this, conjunctions of the outermost known planets at that time, Jupiter and Saturn, were given special consideration, as were the conjunctions, oppositions and squares of the two malefic planets, Mars and Saturn. Jupiter-Saturn conjunctions were thought to be powerful indicators of political change and Mars and Saturn in conjunction or in 90 or 180 degree relationships threatened particularly troublesome times ahead. Little of this, however, was delineated in the notebooks, but Forbes did teach that judicial astrologers used the positions of the planets in houses, along with good and bad aspects, to make their judgements and went on to give some broad explanatory notes and maxims about this.

> The Sun is hot and moderately humid and with unfortunate planets impedes and with fortunate planets brings good influences. Mercury is changeable and is good with good planets and bad with bad planets. The Moon is cold and moist and her effects depend on her velocity and propinquity to that below. [99]

In order to make an astrological judgement, whether this was about a person's nature and prospects, a horary question, future weather conditions or the election of the best

[98] EUL, MS.3101.6.
[99] NLS, Acc.4975.

time for certain activities, a horoscope had to be drawn up, so that the planets could be shown in their areas of activity and in their relationships with other planets. The first step in the process was to draw a two-dimensional figure of the sky as it would be seen from the place concerned and at the time under consideration. This diagram was then divided into twelve segments, known as the twelve houses of the horoscope, each of which represented a particular area of life. A planet was considered to act in the context of the life area that was represented by the house in which it is situated. In the one extant St Andrew's notebook, the regent William Campbell included a description of the erection of a figure of the heavens, saying that 'Astrologers divide the whole of the sky above and below into twelve houses.' He went on to say that the beginning of the horoscope is made by cutting the inferior hemisphere from the superior and designating the houses according to the following schemata, which begins on the left hand side at the first house, and runs counter-clockwise to the twelfth house, in order to determine the customary significations of the planets in them.[100]

Figure 3. Figure of the twelve houses, St Salvator's College, St Andrews, 1661[101]

[100] EUL, MS.3101.6.
[101] Ibid.

He did not, however, give any delineation of the meanings of the houses, apart from commenting that

> Astrologers boasted that it is possible to predict all of the future that will come forth into being because of celestial influxes from various astrological aspects, and furthermore most contingently.[102]

Such significators were only found in the two Aberdeen notebooks, and in these, each of the regents, Gordon and Forbes, used differing terminology to denote the same areas of life, indicative of them having used different sources for their information. In the notebook of Johnston, Gordon's student, there are two diagrams of astrological figures, one square and the other round, and both were divided into the twelve houses, each of which represented a different area of life and each house in turn was ascribed a meaning as follows:

HOUSE	REPRESENTS
First	Life
Second	Profit
Third	Brothers / cousins
Fourth	Father
Fifth	Children
Sixth	Health[103]
Seventh	Wife
Eighth	Death
Ninth	Religion, Journey
Tenth	King, Power
Eleventh	Benefactor
Twelfth	Prison

Table 5. Astrological Houses, 1662-1663, King's College, Aberdeen[104]

Forbes gave the meanings of the houses, or lodgings, of the celestial scheme and these are rather fuller than those of Gordon and are as follows:

HOUSE	REPRESENTS
First	Life and constitution of the heart
Second	Wealth, resources and good fortune
Third	Brothers, parents and short journeys
Fourth	Steadfastness of goods
Fifth	Offspring, children and joy
Sixth	Servants and infirmity

[102] Ibid.
[103] Valetudo can be translated as either health or ill-health.
[104] NLS, Adv.MS.22.7.15.

Seventh	Spouse and open enemies
Eighth	Death and inheritance
Ninth	Religion, priests and long journeys
Tenth	Rulers, honour, offices and dignities
Eleventh	Friendship and happiness and good fortune
Twelfth	Hidden enemies, imprisonment and afflictions

Table 6. Astrological Houses, King's College, Aberdeen, 1671-1672[105]

He then grouped the houses into angular, succedent and cadent, the angular being the first, fourth, seventh and tenth. The succedent houses which follow were the second, fifth, eighth and eleventh, and following these came the cadent houses, the third, sixth, ninth and twelfth. In his diagram, shown below, the names of the houses differ slightly from the list that was given previously. There are variations in the meanings of the second, third, eleventh and twelfth houses, which are here given the names prospects, goddess and brethern, good daemon and evil daemon respectively.[106]

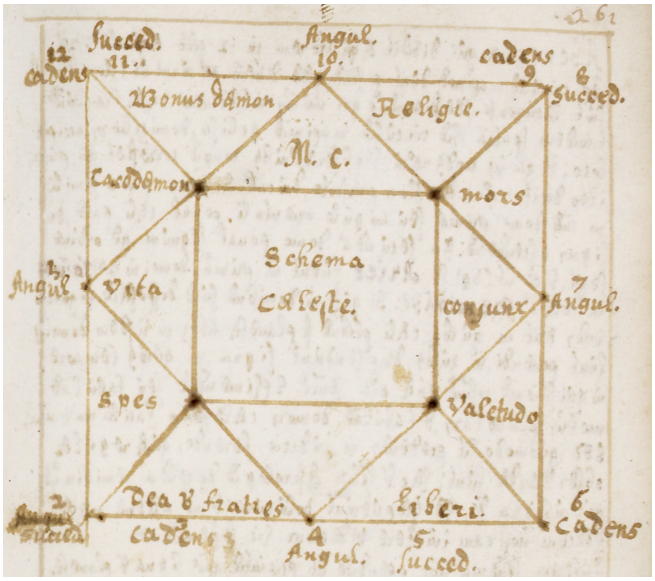

Figure 4. The twelve houses, King's College, Aberdeen, 1672[107]

[105] NLS, Acc.4975.
[106] For more detailed information on delineation of horoscopes see Eade, *Forgotten Sky*; North, *Horoscopes and History*.
[107] NLS, Acc.4975.

There were several different house systems that might be used when dividing up a horoscope and Forbes described two main methods, those of Julius Firmicus and Abraham Ebenezra,[108] but he also referred to that of Cardanus. He then gave some instruction on how to erect a figure, using a table of houses to draw the outline, an ephemeris and a table of planetary motions to find the exact positions of the planets, which could then be inserted into the appropriate houses of the horoscope. Forbes finished his lesson by showing the class a representation of the nativity of Charles II. He may have drawn this up himself or passed around the class a book containing a copy of the nativity, and he then instructed his students that they should

> In the meantime assess this figure so that you may perceive why the signs and planets are placed thus so that the planet is within that house and in the sign which it occupies: This is the figure of the natal figure of our most illustrious leader, Charles the second, who was born in London in the year 1630, on May 29th at 10 hours 21 minutes a.m. under the latitude 51 degrees 32. [109]

According the London astrologer, John Gadbury (1627–1704), several nativities of Charles II were in circulation, and the one that all the other London astrologers were sure was correct was set for ten minutes past noon. Gadbury, however, considered that this did not fit with the events, or 'accidents', in the king's life and in his *Nativity of the Late King Charls* [sic] [110] reported that he had rectified the time to '10 hours 21 minutes Ante Meridiem', which synchronised better. As this agrees with the data given to the class, this is almost certain to be Forbes's source. In Gadbury's book detailed instructions are given for the calculation of the ascendant, or beginning of the first house, of the horoscope and it may, therefore, have been used as a teaching manual for Forbes's class. The king was a prominent public figure, whose activities

[108] This is probably from Abraham Ibn Ezra, *Abrahe Avenaris Judei Astrologi Peritissimi in Re Iudiciali Opera* (Venice, 1507).
[109] NLS, Acc.4975.
[110] John Gadbury, *The Nativity of the Late King Charls [sic]* (London, 1659).

and life events would have been widely reported, making his horoscope an ideal case study for comparing astrological theory with actual life events, as Gadbury had done. This is the only case as yet found of a working example of a horoscope being given in the context of a university lecture, and it may well be that astrology was particularly favoured at Aberdeen at the time. It was certainly well-represented in Aberdeen' academia as Duncan Liddel, a respected astrologer and the almanac-maker of John Forbes was, contemporaneously, professor of mathematics at the rival Marischal College.[111]

A point to be stressed is that although astrology did not feature in many of the extant notebooks, the *absence* of astrological material does not necessarily imply a lack of interest or distaste on the part of the regent. The physician Dr William Johnston (fl.1622-1640) is a case in point. He returned to his native Aberdeen in 1626 from Sedan, where he had been professor of philosophy, to take up the post as first professor of mathematics at Marischal College. His bequest to the college in 1640 contained a substantial number of astrological texts, indicative of a special interest in the subject.[112] His dictates, however, contained a thorough and painstaking evaluation of the theories of Ptolemy, Copernicus[113] and Tycho Brahe, but no astrology.[114] The case of George Sinclair (*d.* 1696?) is similar. He was a regent, then professor of mathematics and experimental philosophy, at Glasgow University. His dictates of 1660-1661, transcribed by Alexander Hamilton, contain a great deal of

[111] James Paterson, *Long Lent* (Edinburgh, 1685); Betty Ponting, 'The History of Mathematics at Aberdeen', *The Aberdeen University Review*, XLVIII (1979), 26–35; 162–176.
[112] 'AUL, MSM.71'; 'Catalogue of Books in King's College Library', 1717, AUL, MSK.113.
[113] For a full account of the relationship between Copernicus and astrology see Robert Westman, *The Copernican Question: Prognostication, Skepticism, and Celestial Order* (Berkeley, 2011).
[114] 'Lectures of William Johnston, 1633-4', 1634, AUL, MS.181.

pure astronomy and mathematics but, again, no astrology.[115] Yet the works he published, especially his *Natural Philosophy Improven,* [116] show a keen interest in the topic while his correspondence with Colin Campbell indicate that he was actively investigating it.[117] If the mathematician James Corss (1632- ca.1679) is to be believed there was a shortage of mathematical expertise in Scotland during the early- to mid-seventeenth century. He lamented in 1662

> to see so many Learned Mathematicians to arise in sundry parts of the world, and so few to appear in our Native Country. In other things we are parallel with...other Nations; but in Arts and Sciences Mathematical, all exceed us. [118]

The Aberdeen chair had been vacant for eleven years before Johnston arrived, and there was also a lack of qualified assistants in the subject, pointing to great need for his skills to be focussed on that area.[119] Sinclair, too, was a skilled mathematician and the author of a mathematical primer aimed at youths.[120] Regents who had such skills, therefore, may have been obligated, either by conscience or decree, to employ these to the full, leaving little time to teach astrology, the general principles of which would have been more readily acquired outside of the universities than the more difficult enterprise of mathematics.[121]

There are several points of interest about the astrological material that was taught in the universities. That the information was presented in its most basic form in most instances and, apart from Forbes's case, with little explanation or interpretation, suggests that more detailed instruction and practical work may have continued in the more interactive setting of the afternoon disputations. Another

[115] 'Lectures of George Sinclair, 1660-1661', 1661, NLS, MS.9382.
[116] George Sinclair, *Natural Philosophy Improven by New Experiments* (Edinburgh, 1683).
[117] EUL, MS.3099.21.
[118] James Corss, *Ouranoskopia* (Edinburgh, 1662), sig. A3.
[119] The pittance that the College were able to pay until then undoubtedly also played a part.
[120] George Sinclair, *Tyrocinia Mathematica* (Glasgow, 1661).
[121] This is not true of the more advanced calculations, which demanded a relatively high degree of numeracy.

significant factor is that the four types of information provided – the qualities and strengths of planets and signs, the houses, and the aspects – comprise the four fundamentals necessary for judging a horoscope, whether this was a person's nativity, or was to be used for weather forecasting, for evaluating horary questions, for choosing propitious moments or for pondering chronologies and political change, or for any other of the many purposes for which astrology was employed. The information that was taught may have been of a rudimentary nature, but it was there nevertheless. The inclusion of such material in the lectures lent legitimacy to the practice and would have provided an introduction to the subject that the student could have taken further if he so wished, with the aid of an ephemeris and table of houses, and each of the universities had these in their libraries.[122] Aberdeen had those of Leowitz (1557), Origanus (1609), Argol (date unknown) and Hecker (1662). Edinburgh also had Leowitz (1557) and Origanus (1609), as well as Gadbury (1682), Wharton and Wing (1652 and 1702) and Glasgow had Magini (1610) Argol (1638), Stoeffler (1533) and Vlaq (1632) while St Andrews had those of Stoeffler (1533), Simi (1554) and Argol (1659).[123] Most of these include instructions on how to erect a horoscope and many also included astrological interpretations.[124]

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[122] 'Catalogue of Books in King's College Library Ca. 1700', 1700, AUL, MSK.111; 'AUL, MSK.113'; 'AUL, MSM.71'; 'Catalogue of Books in Edinburgh University Library A-N', 1641, EUL, Da.1.15; 'Register of Contributions from Magistrands, with Titles of the Books Bought, 1627-1692', 1692, EUL, Da.1.32; 'Catalogus Librorum Bibliothecae Universitatis Glasguensis Anno 1691', 1691, GUL, MS.Gen.1312; 'Catalogue of Books Belonging to the Public Library of the University of St Andrews Drawn up by the Order of the Visitation in April 1687, with Later Additions', 1687, SAUL, MS.Z.921.S.2.DO3.

[123] Andreas Argol, *Ephemerides...1630 Ad 1680* (Venice, 1638); Andreas Argol, *Ephemerides...1641 Ad 1700* (Lyon, 1659); John Gadbury, *Ephemeris: Or, A Diary, Astronomical, Astrological, Meteorological...1682* (London, 1682); Johann Hecker, *Motuum Caelestium Ephemerides...1666 Ad 1680* (Danzig, 1662); Cyprian Leowitz, *Ephemeridum Novum* (Augsburg, 1557); Giovanni Magini, *Ephemerides 1608 Ad 1630* (Frankfurt, 1610); David Origanus, *Novae Motuum Coelestium Ephemerides Brandenburgicae...1595 Ad 1655* (Frankfurt an der Oder, 1609); Nicolò Simi, *Ephemerides...1554 Ad 1568* (Venice, 1554); Joannes Stoeffler, *Ephemeridium...1532 Ad 1552* (Tubingen, 1533); Adriaan Vlacq, *Ephemerides...1633 to 1636* (Gouda, 1632); George Wharton, *Ephemeris: Or, a Diary Astronomicall, Meteorologicall, Chronologicall* (London, 1655); John Wing,

Some students clearly did take the subject further. Cyprian Leowitz's massive *Ephemeridum Novum*[125] contains tables of planetary positions and eclipses from 1557 to 1606, and the positions of the fixed stars from 1349 to 2029, as well as detailed instructions of how to erect and interpret astrological charts of all kinds. On the title page of the copy held by Edinburgh University is the signature of Robert Lermonth, who donated it to the university library in 1612, as well as that of Alexander Guthree, almost certainly the future Town Clerk of Edinburgh who graduated from Edinburgh University in 1609 under the regentship of Andrew Young.[126] Someone, possibly Guthree himself as he would have been the correct age, has tried to calculate in an astrological workbook[127] the nativity of Alexander Guthree, born on 14th September 1591, using data which corresponds to that found in *Ephemeridum Novum*. He abandoned the attempt after three pages, perhaps intimidated by the mathematics involved. Colin Campbell of St Andrews University had more success with his calculations and went on to study astrology in depth, maintaining a life-long interest in the practice. As will be seen in the next chapter, books donated and bequeathed show that many students, mainly ministers and lawyers, took their astrological studies further than the first rudimentary lessons they received in their university lectures.

There can be no doubt that astrological teaching in the Scottish universities in the first four decades of the seventeenth century was condoned by the Church and State as well as the university authorities. No condemnation of the central concept of

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Ephemerides of the Cœlestial Motions...1702 to 1707 (London, 1702); Vincent Wing, *An Ephemerides of the Cœlestial Motions... 1652 to 1658* (London, 1652).

[124] For example: Cyprian Leowitz, *De Coniunctionibus Magnis* (London, 1573).

[125] Leowitz, *Ephemeridum Novum*.

[126] Laing, *Graduates*, p. 24.

[127] George Eglisham, *Accurata Methodus* (Edinburgh, 1616).

astrology, or of certain of its practices, came from Geneva and that powerful influence on the Scottish Protestant movement, John Calvin (1509-1564). D. C. Allen has asserted that 'Though astrologers liked to call Calvin one of their supporters, it is only by a twisting of the evidence that the acid reformer could be placed in their company',[128] but this claim itself, however, somewhat twists the evidence. Calvin was certainly no friend of judicial astrology, of that there can be no dispute. Throughout his *Admonicion against Astrology Iudiciall*, however, it is evident that he not only approved of natural astrology, he endorsed it enthusiastically, both as a means of stirring up the urge to worship God and – as he emphasised several times – for the profit it offered. Calvin defined astrology – a term which he used to include astronomy – as 'the knowledg of the naturall order & disposition that God hath set in the starres & the planets to judge of their office propertie and vertue & to bring all to their end and use.'[129] This is a definition which clearly covers both astrology and astronomy, and he spelled out what the study of the heavens can offer:

> the starres be signes unto us to shewe us times to sow or plant, to let bloode or to minister Phisike and to cut wood ... I know that to knowe the course of the starres, their vertue, and that which is of this sort is not onely very profitable to men: but also doth styre thē up to magnifie the name of God in his wonderfull wisedom which he sheweth there.[130]

He went on to elaborate:

> we must needes confesse that there is a certain conuenience betwyxte the starres or planets and the disposition of mans body...the influence of heauen doth often times cause tempest whirle windes and chaunge of weather, and continuall raines: so consequently it bringeth barrennes and pestilences weather, and continual rains: so consequently it brings barrenness and pestilences.[131]

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[128] Allen, *Star-Crossed Renaissance*, p. 71.
[129] Calvin, *Admonicion*, [p.11].
[130] Ibid, [pp. 47-48].
[131] Ibid, [pp. 14-15, 32].

Further, he claimed that through astrology the effects on earth 'are advertised before they come…which... geveth also some conjectures for the tyme to come.'[132] All of these passages cannot be read other than an endorsement of natural and philosophical astrology. But he went even further to consider that the planets may play a part in shaping and influencing human bodies and personalities.

> I grant surely that as touching the complexions of men and chiefly as concerning the affections which are partakers of the qualities of the bodies: that they partly depend of the stars or at least have some agreement therewith. As to say that a man is of a more choleric than phlegmatic complexion or contrariwise.[133]

He saw an 'order and as it were a knot and tying together of the things which are above with things that are beneath [and was] not against but that one may seek in the heavenly creatures the beginning and cause of the accidents which are seen here in the earth', but he took 'this word beginning not as the first and principal cause, but as an inferior means of God's will... to accomplish his work.' His vitriol was reserved for the 'shameless deceivers' who called themselves mathematicians and 'counterfeited' another kind of astrology which they called judicial. There was, then, no contradiction between Calvin's Protestant vision and the central astrological concept of a correlation between celestial events and earthly affairs, nor any condemnation of the practice of natural and philosophical astrology, provided God was acknowledged as the first cause.

Additionally, no evidence has come to light of disapproval, condemnation or challenge to the inclusion of astrology in the curriculum by any of those authorities with a vested interest in what was taught, and there were many interested parties. There were Commissions of the General Assembly in 1642, 1664, 1672 and 1683

[132] Ibid, p. 13.
[133] Ibid, p. 26.

which made recommendations about university teaching, and the universities themselves were keen to keep a regulatory eye on their regents as this report of representatives of St Salvator's College shows:

> Wee indeed approve that Masters be not allowed to teach or vent errors, or dangerous principles, which wee are still awarr off, and ar sure non can justly be charged upon us, whatever may be feigned or suggested.[134]

An act of the town council of Edinburgh in February 1626 laid down that there should be visitations to the college by the Council twice yearly in December and June, and that the books of scholars were to be examined to see whether their lessons were written out carefully.[135] Any negligence on the students' parts was to be visited upon the masters of their respective classes. As the notebooks contained virtually word-for-word transcripts of the regents' lectures there could have been no hiding of what was being taught. Whether or not the notebooks were actually closely inspected by the councillors, it is hard to imagine that the threat would not have been taken seriously, especially as the Council was in charge of the employment of regents. Further evidence that astrology was condoned in the universities can be found in university library catalogues which record donations, bequests and library holdings and, often, the categories under which they were stored. This is dealt with in chapter two.

III

There was very little change in the nature of the astrological content in student notebooks from the beginning of the seventeenth century until the 1670s. All of the

[134] *Evidence Oral and Documentary Taken and Received by the Commissioners Appointed by His Majesty George IV, July 1826...for Visiting the Universities of Scotland* (London, 1837), p. 21.
[135] Morgan, *Charters, Statutes, Acts*, pp. 106-107.

extant notebooks which engage with astrology from 1679 onwards, however, contain attacks on the subject. The sample of dictates available is small and amounts to eight notebooks, one from Glasgow and seven from Edinburgh, which record the lectures of two regents, Andrew Massie and Herbert Kennedy and one professor of mathematics, David Gregory, and a list of these follows.

Date	University	Regent	Student	Location
1682-83	Edinburgh	Andrew Massie	Robert Stewart	EUL, Dc.6.23
1682-83	Edinburgh	Andrew Massie	James Reid	EUL, Dc.5.115
1685-86	Edinburgh	Herbert Kennedy	Edward Lewis	NLS, MS.2075
1686	Edinburgh	David Gregory	[unknown]	CCO, MS.133, ff.47-50
1690	Edinburgh	David Gregory	Francis Pringle	EUL, La.III.570
1690-91	Edinburgh	Andrew Massie	Patrick Tullidaeph	EUL, Dc.7.92
1693-94	Edinburgh	Herbert Kennedy	Robert Kello	EUL, 8.118
1699-1701	Glasgow	John Tran?	D. McLea	EUL, La.III.724

Table 7. Student notebooks, 1682-1701

Despite their restricted numbers, these notebooks demonstrate a radical shift in what was being taught, and this must be accounted for. As astrology was linked, contextually at least, with scholastic cosmology in the earlier notebooks, it seems apposite to investigate any possible connection between the loss of credibility of astrology and the overturning of some of Aristotle's central astronomical premises, the doctrine of spheres, immobility of the earth and the incorruptibility of the heavens.

Through an examination of extant university theses, which were lists of topics that were set by regents for magistrands to defend before graduating, Christine Shepherd and John Russell traced changes in cosmological teaching in the universities throughout the seventeenth century and found that there had been three reforming regents at Edinburgh in the first quarter of the century.[136] These were James Knox who, in 1601, refuted Aristotle's theory of multiple spheres and of

[136] Russell, '*Cosmological Teaching*', p. 125; Shepherd, 'Philosophy and Science', p. 5 and passim.

celestial immutability. In 1616, and again in 1624, William King cited the comet of 1577 and new stars as proof that changes can occur in celestial bodies, but acknowledged

> the limitations of the human mind which, in probing the secrets of nature, is often deceived, sometimes indeed completely blind. The wise man therefore will accept with a good grace that there are some things which he does not know.[137]

James Reid, the third modernising regent, inclined towards Copernicus, maintaining that there were no real objections to his hypothesis from natural philosophy, astronomy or scriptures. This modernising process ended abruptly, however, when, in his 1626 theses, Reid criticised theologians, who opposed the liberal sciences:

> Whatever these persons may think of themselves, who can thus contemn human Philosophy, such is its lustre in the Christian life, and so great its benefit to civil society, that Aristippus chose rather to be a Christian philosopher than an *ignorant or unphilosophic* divine.[138]

This was an allusion to William Struthers, an Edinburgh minister and moderator of the Presbytery, who had called natural philosophy 'the *dish-clout* to divinity'.[139] Reid paid dearly for his temerity. Struthers, who already held a secret grudge against him, was deeply offended and used his considerable influence to have a charge against Reid brought before the Town Council. Struthers's supporters availed themselves 'of certain unfavourable circumstances in [Reid's] conduct, [and] succeeded in stirring up a strong prejudice against him.'[140] A struggle ensued between the ministers, who at that time were very powerful, and the Council, who favoured Reid and, despite tactical delays by the latter, the Struthers faction prevailed. The Council, with great reluctance, agreed to dismiss Reid, paying him on severance one thousand pounds

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[137] Cited in Russell, '*Cosmological Teaching'*, p. 125.
[138] Andrew Dalzel, *History of the University of Edinburgh*, 2 vols. (Edinburgh, 1862), II, p. 86.
[139] Ibid, p. 86.
[140] Ibid, p. 87.

Scots in recognition of his faithful services.[141] The regents appear to have been cowed by the affair, as thereafter theses at Edinburgh reverted to traditional scholasticism and no further mention of the Tychonic or Copernican theory appears until 1660 when Pillans referred to the latter as 'an ancient madness' and John Wishart was equally dismissive.[142]

At the other universities there were tentative challenges, but much resistance to change, too. At King's College, Robert Forbes had, in 1656, considered the heavens incorruptible and rejected Copernican system as contrary to scripture. In 1680 and 1684 he fought a spirited rearguard battle, deploring the unbridled zeal for novelty which had led so many to forsake the old methods of philosophy and run after Descartes. He also tried to discredit use of the telescope, suggesting that what could be seen through it were mere artefacts of the glass. William Campbell at St Salvator's was also 'strongly anti-Copernican, on grounds both of reason and Scripture.'[143] The real tipping point for the new cosmologies came around 1670 with the appearance in theses topics, within three years of each other, of mechanistic philosophy,[144] based on the ideas of René Descartes (1596-1650) and Robert Boyle (1627-1691), at St Andrews (1668) Marischal (1669) and Edinburgh (1670).[145]

By 1680, Cartesian philosophy was predominant at all of the universities and heliocentricism, too, had been almost universally adopted, although some regents had concerns about its compatibility with scripture until 1700. Newton's cosmology was

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[141] Town-Council records, July 18, 1627, quoted in ibid, p. 88.
[142] Russell, '*Cosmological Teaching*', p. 128.
[143] Ibid, p. 148.
[144] For accounts of the mechanical philosophy and Newtonianism see John Henry, *The Scientific Revolution and the Origins of Modern Science*, 3rd edn (London, 2008), pp. 69–84; Christine M. Shepherd, 'Newtonianism in Scottish Universities in the Seventeenth Century', in *The Origins and Nature of the Scottish Enlightenment*, ed. by R. H. Campbell and Andrew S. Skinner, (Edinburgh, 1982), pp. 65–86.
[145] Russell, '*Cosmological Teaching*', p. 152.

taken up quickly at Edinburgh and St Andrews universities very soon after the publication of *Principia Mathematica* in 1687, largely because of David Gregory's influence, and it was taught at all of the universities by 1710. A factor in its acceptance was almost undoubtedly that Newton's theory of gravity, unlike Descartes's philosophy, appeared to require the existence of God.

The rearguard action against modernisation by the regents who taught astrology mid century also supports the deep-rooted connection between traditionalism and astrological teaching. At Edinburgh there is a clear illustration of such a connection, and of the power of individual regents to block or promote change. Tweedie was geostatic, but anti-Ptolemaic. As late as 1677 Pillans was still teaching the geostatic system and Wishart, although he was somewhat more open to question old ideas, remained conservative to the end. By 1679 he was using Joseph Moxon's popular textbook of astronomy and geography, but even this had a section given over to instructions on how to erect a horoscope.[146] Pillans, having been professor of humanities since 1644, was a regent between 1652 and 1681 and Wishart held the position from 1653 to1680. John Wood, regent between 1666 and1678, and William Paterson between 1667 and 1678 both welcomed – though cautiously – Cartesian philosophy and Boyle's experimental ideas. These four men, Pillans, Wishart, Wood and Paterson, all largely traditionalist, were in sole charge of regenting at Edinburgh throughout the 1670s and it is known that all of them were engaged with astrology. The dictates of Pillans and Wishart show that they included astrology in their lectures, and Paterson and Wood, as will be seen in the next chapter, purchased for their magistrand classes, respectively, Lilly's primer of

[146] EUL, Dk.5.27; Joseph Moxon, *A Tutor to Astronomie and Geographie* (London, 1670), p. 122.

astrology and the predictions of Nostradamus. By 1681, however, they had been replaced by a completely new cohort, including Massie and Kennedy, who swept away the last traces of Aristotelianism. This new development was strengthened by the appointment in 1683 of David Gregory. All of them adhered to the Cartesian method of doubt, apparently with no theological qualms. And all of them rejected astrology, although Massie appeared to take the least critical stance and retained some interest in astrological meteorology. Massie had, until 1679, been a regent at King's College, Aberdeen, where he may have been influenced by Forbes's pro-astrological bias. He introduced the subject by saying that astrology had had a place among the sciences for judging mundane matters in almost every culture and gave various theories of where it was reputed to have begun – among the Chaldeans or Babylonians or perhaps from Zoroaster or even Seth, Adam's son. The ancient philosophers, he explained, had claimed that 'from the aspect of the stars... future things could be disclosed such as mutations of the air, cold summers, fine weather, abundance of crops and scarcity of deaths, epidemics, wars, plagues, etc.,' but, he went on, 'some, in their audacity and vanity went further to suggest that fate of men can be determined in advance'. He then went on to paraphrase the chapter disparaging judicial astrology in Jacques Rohault's *Tractatus Physicus*, frequently quoting it word for word.[147] He claimed that it had no certain foundation, nor firm and unquestioned principles, nor was it based on experience, and gave examples of false reasoning used to defend it. For example, just because it thundered once when Socrates was leaving the city when there was a certain configuration of the stars, it did not mean that the situation was caused by this, or that the circumstances would

[147] Jaques Rohault, *Tractatus Physicus* (Geneva, 1674); Jaques Rohault, *Traité De Physique* (Amsterdam, 1672). The latter was part of the 1678 Nairn bequest to EUL. The chapter, 'Des Influences des Astres' is found in vol. 2, pp. 141-151.

recur under the same configuration. He pointed out that because it would take several thousand years for the same configurations to re-appear, astrologers have certainly not established the characteristics of the stars by observation. Furthermore, even if it had been possible for astrologers to observe the same effect many times, always under certain positions of the stars, these effects would only pertain in the countries in which they were observed, because the same effects would not prevail everywhere. He gave the example of the Dog Star whose rising with the Sun was reckoned to cause heat in summer, but this rising happens in winter in southern countries. He said there was no doubt about the effects of Sun, but these came only from its light and as the light of all the stars together is weaker than that of the Sun, it is the Sun that is the cause of all the effects.[148]

He attacked, too, the false ideas about the Moon prevalent among the common people about its corrosive effect on stones (some of these notions actually stemmed from Pliny's *Natural History,* a key text of scholasticism). This happens, it was explained, when the heat of the sun calcifies them, and moisture then dissolves the product. The idea that oysters and fish are fatter, and that there is more marrow in bones, at some phases of Moon is also false; this is attributed to differences in nutritional status and energy expenditure. Finally, he deplored the audacity of some astrologers who quoted scripture in their defence, but he concluded that his students should not be disturbed by their predictions as the outcomes of these had most often confirmed the truth that anybody, no matter how ignorant, could predict just as accurately as they could.[149]

[148] EUL, Dc.6.23; EUL, Dc.5.115; EUL, Dc.7.92.
[149] Ibid.

While Massie's objections were based on Cartesian rationality and radical doubt, laced with some contempt for judicial astrology, Herbert Kennedy's dictates of the topic in 1686 and 1690 were angry tirades against judicial astrologers which are almost word-for-word identical to what is contained in the lectures of David Gregory from the same years. The two men began teaching at Edinburgh at almost the same time. Kennedy, Gregory's senior by ten years, was appointed regent on 2nd January 1684, and his first magistrand class was that of 1686, while Gregory took up his post in October 1683. It is highly likely that Gregory was the source and Kennedy the copier, as less than a month after Gregory's appointment

> the Rev Primar and remanent Professors...met... and ...ordained that Mr. David Gregory, Professor of Mathematics, should read publicly twice a week in the common schools of the College, viz., betwixt the hours of ten and eleven in the forenoon on Monday and Friday, and that from the 1st of December to the last of May each year; and ordained that all the students in the said College, together with the Masters, at least the Hebdomadar for the time, should be present at the said lessons.[150]

Gregory, therefore, had a captive audience of each and every one of the masters and students of Edinburgh University, regularly and over a prolonged period, and a decree so universally applied could only mean that the university officials considered his work of such importance that it was essential for all to pay attention to it. His ideas, consequently, would have been enormously influential, and as his attitude to astrology was unmistakably hostile this may well have been a major factor, and perhaps even *the* major factor, that sounded the death-knell for the teaching of the subject in Edinburgh University. Both Gregory and Kennedy complained about the vanity and vulgarity of astrologers, which they associated with their craving for popularity or gain from the credulous common people and expressed indignation,

[150] Dalzel, *University of Edinburgh*, II, p. 213.

too, that astrologers considered their astrology to be among the mathematical sciences. They ridiculed the basic techniques of astrology – the mutual planetary aspects, houses, essential dignities – and expressed outrage at astrologers' claims that people were fated and that all of the activities in a person's life depended on the configuration of stars at the time of birth. In fact, they asserted, the astrologers summoned up so much foolishness that they provoked indignation from every honest person. They claimed, too, that astrologers were not scrupulous about obtaining accurate data and that most of them were completely ignorant of astronomy and that the answers they got to questions were nothing more than stupidity, so much so that astrology was classed with geomancy and chiromancy because the answers obtained from it proved to be wrong so often. Furthermore, they went on, these questions gave them the opportunity to make up whatever new things they liked from astrological principles, and the credulous populace readily accepted this. Consequently, they concluded, a hotchpotch of the most diverse rules was practised among them, so that they could deduce as much as they liked, from as many of the rules as they liked, from any given astrological figure.

For this reason, they said, it was condemned by the church fathers; most societies up to the present time had punished them, and they had been expelled from ancient Rome. Both lecturers went on to comment that in their own time it would hardly be believed how much harm had been done to leaders, fabricated by astrologers and ascribed to predictions from the stars, and that this would obviously not have been possible to come about without seditious men, greedily desirous of new things, who had seized the occasion. They claimed that the most malevolent and fraudulent of these astrologers, with the greatest of ease, persuaded the highest magistrates with

these sacrilegious weapons to seize the opportunity of the time so that the rulers were able to be oppressed by the naive populace. From this, Gregory and Kennedy concluded that astrology rested on no solid foundation and was actually to be ridiculed, and stated that it was therefore agreed that it had no place in the education of magistrands. They ended by declaring that 'it was fitting as good men and submissive Christians that we should absolutely deny it a place in our physics.'[151]

Despite the near-identical wording in the notes, there are some subtle, and telling, differences. Gregory, in 1686, mentioned Charles I and Charles II by name as the leaders who were so badly damaged by astrologers. Kennedy only alluded to harm done to leaders, as did Gregory in 1690. Also, the 'indignation' that Kennedy reported as honest people's response to astrologers' practices in 1686 was elevated to 'bile and nausea' in 1690, while Gregory proclaimed, in the same year, that it would make the stomachs of wise men heave. These increasingly visceral descriptions of outrage and the concurrent omission of the names of the Stuart kings are likely to be linked with the revolution of 1688. As an Episcopalian and an associate of Pitcairne, a known supporter of James VII, Gregory was under suspicion. This was heightened by the visitation crisis in Edinburgh in 1690, when the Scottish Parliament empowered a university commission to enforce an oath of loyalty to be taken to the new regime of William and Mary and to eject unfit masters. Although Gregory refused the oaths, he was not expelled, probably because of his powerful patrons, like Lord Tarbat FRS, Lord Clerk Register of Scotland (1630–1714). Prudence and ambition, however, led him to pursue, and to win, the Savilian chair of Astronomy at

[151] 'Lectures of Herbert Kennedy Transcribed by Edward Lewis', 1685, NLS, MS.2075; 'Lectures of Herbert Kennedy Transcribed by Robert Kello', 1693, EUL, Dc.8.118; 'Lectures of David Gregory Transcribed by Francis Pringle', 1690, EUL, La.III.570.

Oxford which he took up in 1691.[152] He would not have been discomfited by the fact that holders of this had been forbidden to teach judicial astrology or the doctrine of nativities since its establishment in 1619.[153]

Meanwhile, in Glasgow in 1699-1700, John Tran's attack on astrology had yet another emphasis. His was grounded in conventional theological arguments, backed up by the opinions of the French philosopher, Pierre Gassendi (1592-1655), who had written a polemic against judicial astrology.[154] Questioning whether it was possible to predict future events from the stars, he concluded that it was not, although 'it was possible to know about eclipses and various conjunctions of planets a long time in advance, with any alterations in those depending on the omnipotence of God alone.' He condemned the futility of predictions that were bandied about among the common rabble, sneering that 'the throw of a dice could determine which days in the coming year will be calm, which will be cloudy, and which will be windy as accurately as the prognosticators who claimed that the type of weather depends on positions of the stars.' He advised students to rely 'cheerfully on divine providence for the outcome of events and not to listen to these deceivers who would deny that men have free will choice.'[155]

Given the strength of criticism from men like Massie, Kennedy, Gregory and Tran, the practice of judicial astrology in Scotland must have been, in the last quarter of the seventeenth century, a phenomenon that was so widespread and common that it was perceived as a public nuisance by these educated men and this is borne out by

[152] For Gregory's contribution to mathematical sciences at Oxford see Mordechai Feingold, 'The Mathematical Sciences and New Philosophies', in *The History of the University of Oxford*, ed. Tyacke, pp. 359–448 (pp. 433–434).
[153] Thomas, *Religion*, p. 420.
[154] Pierre Gassendi, *The Vanity of Judiciary Astrology* (London, 1659).
[155] 'Lectures of John Tran', 1699, EUL, La.III.724.

the comment of Sir Alexander Grant that 'Edinburgh had been remarkably infested with quacks.'[156] Although the Scottish almanacs, as will be seen in chapter three, did carry astrological content, this was of a relatively restrained nature, and it is unlikely that these were the source of the strong feelings and opinions expressed in these lectures. English almanacs, which contained fuller and more explicit astrological predictions and political propaganda, were certainly available in Scotland. For example, an unknown Scottish gentleman, with connections to Edinburgh and Coldingham, was using William Lilly's 1666 almanac as a diary.[157] His notes of purchases of silk stockings, buckles for his sword, books with titles such as *Cosmographie* and *Geographie*, and the hire of coaches, indicate a significant degree of wealth and education, and such almanacs may have had a wide readership, not only among the sensation-seeking, but among the more affluent and cultured. By the 1690s John Partridge's colourfully explicit predictions were also being printed in Edinburgh.[158]

It is more likely, however, that the source of the regents' displeasure lay closer to home. Regrettably, scant evidence remains of indigenous Scottish astrological practitioners who were pandering to the 'credulous populace', apart from a few broadsheets and glimpses afforded by the condemnation of detractors, but these shards do indicate, as will be shown in later chapters, not only that they existed, but that there was a lively market for their trade. The contempt expressed for the ignorance and vulgarity of these judicial astrologers in all of the lectures makes it difficult to ignore the possibility that an element of caste snobbery was involved.

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[156] Grant, *Story of the University*, p. 217.
[157] William Lilly, *Merlini Anglici Ephemeris, or, Astrological Judgments for the Year 1666* (London, 1666). This is found in NRS, GD.267/7/22.
[158] John Partridge, *Partridges Observations of the Year 1691* (Edinburgh, 1691).

That astrology was taught at all of the Scottish universities until the final decades of the seventeenth century underlines the fact that it was an institutionally sanctioned component of Scotland's higher education and that it had, therefore, a position of no little importance in the contemporary intellectual life of the country until that time. Students were given enough instruction on the first principles of astrology to enable them to understand and practise basic horoscope erection and interpretation. It was taught in the natural philosophy syllabus, well integrated with scholasticism and as that paradigm was gradually eroded and replaced by the ideas of Descartes and Bacon and, later, Newton, it too lost its credibility along with the ideas of Aristotle. The 1670s proved to be a watershed as the new mechanistic philosophy took firm root in the universities and, from evidence of Edinburgh at least, once the old guard Aristotelians had retired there by the early 1680s, astrology disappeared with them, as the new men were largely hostile to the subject. In the, admittedly small, sample of notebooks available, there were three quite different emphases in the lecturers' arguments against astrology. Massie's opposition was predominantly on rational and observational grounds and, as will be seen in the next chapter, he was still interested enough in the potential of natural astrology to purchase, with his class funds, two books on astrological meteorology. Tran, though focussing on the theological objections that had long been used against astrology, though to little avail, was largely simply recycling old arguments but he did bring in Gassendi to back up reason. The revulsion and animus in Gregory's and Kennedy's attacks, however, could only stem from some personal hostility, and this was almost certainly political. Two new factors stand out in the lectures: the increased use of rational questioning of

astrology rather that the formulaic transmission of traditional dogma as had been the case with scholastic teachings, and the perception of the astrologer as both a buffoon and a danger. Arrived at by different avenues, the conclusion in each case was, nevertheless, the same – that astrology was something to be condemned and that it had no place in university education. Significantly, too, although the attacks were principally centred on objections to judicial astrology, their also force swept away the astrology that had previously been institutionally sanctioned as part of natural philosophy.

Chapter Two: Astrology Books in Scottish University Libraries

> That the Librarie be finished and furnished with all possible speed, *ne sint magistri sine libris*... That means be used to draw scholars to the New Colledge for the studie of divinitie...*ut non sint libri sine magistris*.
>
> King James VI[159]

Young men educated at the Scottish universities would go on to hold key positions of power and responsibility in the country and form the backbone of Scottish society – the future ministers, lawyers and physicians, the administrators, natural philosophers and shapers of the country's political policy. Any subject that was taught in these institutions can, therefore, be assumed to have been of intellectual value for such students, either as an element of training for their career, or as a component of the intellectual attainments deemed fitting for educated men. Books in the university libraries can be regarded as an extension of this education, providing resources to deepen and expand the knowledge of the core subjects taught in lectures and debated in disputations. The purpose of this chapter, therefore, is to gain a broader understanding of astrology's status and place in the academic institutions by examining the books with astrological content that were available to regents and students in the university libraries.

The main contemporary sources of information about library holdings and acquisitions are the library catalogues, lists of bequests and donations, and records of book purchases that are to be found in varying degrees of thoroughness in all of the Scottish universities. The majority of the books named in these records can still be found in the university libraries today and inspection of such volumes for ownership,

[159] James VI on his visit to Scotland in 1617 laid down these articles regarding the library at the University of St Andrews which had been founded in 1612. *Miscellany of the Maitland Club* (Edinburgh, 1833), p. 306.

dedicatory inscriptions and marginalia, as well as astrological content, builds substantially on the information found in the early catalogues. Two contemporary bibliographical sources were particularly useful in compiling lists of astrological texts and authors to be sought in the libraries. These are William Lilly's extensive list of 'most astrological authors now extant' appended to his *Christian Astrology* and the *Index Auctorum qui de Astrologia Scripserunt* in *De Mathematicis Disciplinis* compiled by the Scottish Jesuit mathematician, Hugh Sempill. Additionally, the second volume of F. Leigh Gardner's *Catalogue Raisonné of Works on the Occult Sciences* provides an early twentieth century compilation.[160]

Records of donations and bequests will be examined to give an indication of which books were being bought or collected outside of academia, and which were thought to be fitting endowments for an institution of higher learning. Contributions from graduating students can be expected to provide a nearer indication of what was then being taught and perceived to be needful in the university classrooms, while a survey of purchases will reveal texts that were deliberately chosen, and these, therefore, provide the surest indicator of a book's perceived worth to the university. Press catalogues, which list the shelves on which the books were stored in the libraries, identify the categories in which they were classified providing an indication of the subject's status. Overall, the data collected will also provide information about the extent to which the university was keeping up with the evolution in astrological writing that took place between the time of the publication of the earliest texts and

[160] William Lilly, *Christian Astrology* (London, 1647), p. 833 ff; Hugh Sempill, *De Mathematicis Disciplinis Libri Duodecim* (Antwerp, 1635), pp. 300–302; F. Leigh Gardner, *Bibliotheca Astrologica: A Catalogue of Astrological Publications of the 15th through the 19th Centuries* (Belle Fourche, SD, n.d.).

the first decade of the eighteenth century, and give an indication of the breadth of European scholarship that was being embraced.

The early libraries[161] of the colleges at St Andrews appear to have been rudimentary.[162] The university library proper was founded in 1612 by King James VI and grew around a kernel of donations, none of which had astrological content, made by the Royal Family, the Archbishop of Canterbury and other important dignitaries of the day.[163] Glasgow, too, had a limited pre-Reformation library, which was regenerated in the *Nova Erectio* of 1577 when Andrew Melville (1545–1622) brought to it a rigorous Protestant reform, and 25 books of Greek donated by George Buchanan and 48 books of theology from James Boyd, Bishop of Glasgow formed the seeds of the new library.[164] A small library at King's College centred on the bequest of its founder, Bishop William Elphinstone, between 1510 and 1514[165] with the addition of the collections and works of Hector Boece and his colleagues, while Marischal College grew from the nucleus of the bequest of the library of the Aberdeen mathematician, astronomer and physician Duncan Liddell (1561–1613) in 1613. Edinburgh's library, too, was founded on a gift, the bequest of Clement Littil in

[161] For the development of the library in early modern Europe see Peter Burke, *A Social History of Knowledge: From Gutenberg to Diderot* (Cambridge, 2000); *The Cambridge History of Libraries in Britain and Ireland*, ed. by E. S Leedham-Green, Teresa Webber and Giles Howard Mandelbrote, 3 vols. (Cambridge, 2006); J. Oates, *Cambridge University Library: a History from the Beginnings to the Copyright Act of Queen Anne* (Cambridge, 1986); Ian Philip, *The Bodleian Library in the Seventeenth and Eighteenth Centuries* (Oxford, 1983).

[162] For histories of the Scottish university libraries see: Anon, *St Andrews University Library: A Brief History* (St Andrews, 1978); G. H. Bushnell, 'Early History of the Libraries of St Andrews University', in *Henderson's Benefaction* (St Andrews, 1942); David Cuthbertson, *Edinburgh University Library: An Account of Its Origin with a Description of Its Rarer Books and Manuscripts* (Edinburgh, 1910); Durkan, 'The Library of St Salvador's College'; John Durkan and Anthony Ross, *Early Scottish Libraries* (Glasgow, 1961); Charles P. Finlayson and S.M. Simpson, 'The Library of the University of Edinburgh: The Early Period 1580-1710', *Library History*; Jean R. Guild and Alexander Law, *Edinburgh University Library, 1580-1980* (Edinburgh, 1982); John Higgit, *Scottish Libraries* (London, 2006); R. M. Stott, 'The Library of Thomas Kincaid, a Seventeenth-century Scottish Surgeon.', *Canadian Bulletin of Medical History*, 12 (1995), 351–67.

[163] 'Catalogus Librorum Bibliothecae Communis Academiae Andrea-Politanae, 1st December 1612', in *Miscellany of the Maitland Club* (Edinburgh, 1833), p. 322.

[164] Durkan, *The University of Glasgow, 1451-1577*, p. 310 ff.

[165] Pickard, *History of King's College Library*, p. 2.

1582.[166] It can be seen, then, that the libraries of St Andrews, Glasgow and King's College had little advance on the newer establishments in their book holdings as all of the libraries only began to take on real substance after the Reformation. This means that, with few exceptions, the astrology books that appear in the catalogues of all of the universities were acquired during the last two decades of the sixteenth century and throughout the seventeenth century.

II

Donations and bequests were vital to the formation and growth of these libraries, and as astrological texts were included among them these were clearly prized for their educational value. Some of these astrological donations came from alumni and university staff. [167] James Stewart, first earl of Moray (ca.1531–1570), Regent of Scotland, who had been a student at St Andrews, donated Johann Schoener's *Opera Mathematica*, two titles by Johann Stoffler, *De Elucidatio Fabricae Ususque Astrolabii* and *In Procli Diadochi,* and Ptolemy's *Omnia...Opera, Praeter Geographiam.*[168] George Buchanan, while he was principal of St Leonard's, donated Nicolo Simi's *Ephemerides ...1554 to 1568* and Johannes Regiomontanus's *Tabulae Directionum Profectionumq[ue].*[169] Buchanan in his pedagogical poem *De Sphaera*[170] had shown his disapproval of judicial astrology, yet Simi's ephemeris contained not only planetary positions, but also information on elections and annual

[166] Charles P. Finlayson, *Clement Littil and His Library: The Origins of Edinburgh University Library* (Edinburgh, 1980).
[167] Durkan and Ross, *Early Scottish Libraries*, pp. 261, 292.
[168] Johann Schöner, *Opera Mathematica* (Nuremberg, 1561); Johannes Stoeffler, *Elucidatio Fabricae Ususque Astrolabii* (Oppenheim, 1524); Johannes Stoeffler, *In Procli Diadochi* (Tubingen, 1534); Claudius Ptolemy, *Omnia Quae Extant Opera, Praeter Geographiam* (Basel, 1551).
[169] Simi, *Ephemerides*; Johannes Mueller (Regiomontanus), *Tabulae Directionum Profectionumq[ue], Non Tam Astrologiae Iudiciariae, Quàm Tabulis Instrumentisq[ue] Innumeris Fabricandis Utiles Ac Necessariae.* (Tubingen, 1550). Durkan and Ross, *Early Scottish Libraries*, p. 308.
[170] George Buchanan, *De Sphaera, Libri V* (Heidelberg, 1609).

revolutions, while the directions and profections of Regiomontanus were essential calculations for judging nativities. Given Buchanan's interest in astronomy, as evidenced by his long labours spanning two decades on *De Sphaera*, it is most likely that he would have simply chosen the tables for their accuracy. Such ephemerides do, however, demonstrate how closely astrology and astronomy were intertwined and how difficult it was, even if one so desired, to distance oneself from astrology when studying astronomy. Another important bequest was that of Sir John Wedderburn (1599-1679), personal physician to Charles I and regent of St Leonard's College from 1620 to 1630, who left 136 volumes, comprising mainly medical books. At least two of these are of astrological interest. These are Thomas Erastus's *De Astrologia Divinatrice Epistolae*, which is an attack on astrology and Otto Brunfels, *Onomastikon,* which contains practical medical astrology.[171]

At Glasgow there appears not to have been any major donors of books of mathematics, astronomy or natural philosophy during the period under review and those donations and bequests that were made, however, were predominantly theological.[172] The two catalogues of *Books presented to King's College Library 1684-1860*[173] have little to offer this study as most of the entries are of too late a date to be included. In any case, only one relevant title was found and that is of marginal interest. This is the *History of Chaldaik Philosophy* which was presented in 1723 by James Fraser.[174] The *Marischal College Library Catalogue 1669-1713*,[175] however,

[171] Thomas Erastus, *De Astrologia Divinatrice Epistolae* (Basel, 1580); Otto Brunfels, *Onomastikon* (Strasbourg, 1534). Sir John Wedderburn's bequest can be found in St Andrews University catalogue under 'Wedderburn, John, Sir, 1599-1679, donor'.
[172] 'Catalogus Librorum Communis Bibliothecae Collegii Glasguensis', 1578, GUA, 26619; 'GUL, MS.Gen.1312'.
[173] 'Catalogue of Books Presented to King's College Library', 1684, AUL, MSK.114; 'Catalogue of Books Presented to King's College Library (another Copy)', 1684, AUL, MSK.115.
[174] Thomas Stanley, *History of Chaldaik Philosophy* (London, 1662).
[175] 'AUL, MSM.71'.

records major bequests and donations that were made throughout the late seventeenth century, as well as retrospective records of acquisitions made before the catalogue was begun, including those of Duncan Liddel and William Johnstone. The exact numbers and descriptions of the more than 260 volumes that formed the bequest of Duncan Liddel in 1613 are not available but, of those, 55 titles of his have been identified in the current Aberdeen University Library catalogue. Of these 55, at least 17 have astrological content. They include the great classics, Ptolemy's *Quadripartitum*, Guido Bonatus's *De Astronomia Tractatus X,* Stoeffler's *Elucidatio* and *De Mysteriis* by Iamblichus.[176]

William Johnstone, brother of the Latin poet and royal physician Arthur Johnstone and first professor of mathematics at Marischal,[177] left 90 volumes to the college, at least 23 of which are of an astrological nature and include Schöner's *De Judiciis Nativitatum*, Catton's *Geomancie*, Ferrier's *Jugements Astronomiques sur les Nativitez*, Naibod's *Elementa Astrologiae*, Hispalensis's *Epitome Astrologiae*, Leowitz's *De Coniunctionibus Magnis* and *Ratio Iudicandi Genituras* and Lindhout's *Speculum Astrologicae*, as well as the same edition of Guido Bonatus's influential 'summa', '*De Astronomia Tractatus X*' that had been part of Liddel's library.[178] That the libraries of two of Aberdeen's most important early beneficiaries were eminent mathematicians whose libraries contained significant numbers of

[176] Ptolemy, *De Praedictionibus Astronomicis*; Johannes Stoeffler, *Elucidatio Fabricae Ususque Astrolabij* (Cologne, 1594); Iamblichus, *De Mysteriis Aegyptiorvm, Chaldaeorum, Assyriorum* (Lyon, 1577); Guido Bonatus, *De Astronomia Tractatus X* (Basel, 1550).
[177] Ponting, *'History of Mathematics at Aberdeen'*, pp. 26-35.
[178] Johann Schöner, *De Judiciis Nativitatum Libri Tres* (Nuremberg, 1545); Christopher Cattan, *Geomancie* (London, 1591); Valentine Naibod, *Enarratio Elementorum Astrologiae* (Cologne, 1560); Bonatus, *De Astronomia*; Joannes Hispalensis, *Epitome Totius Astrologiae* (Nuremberg, 1548); Cyprian Leowitz, *Brevis Et Perspicua Ratio Iudicandi Genituras* (London, 1558); Leowitz, *De Coniunctionibus*; Henricus Lindhout, *Speculum Astrologiae* (Frankfurt, 1608); Auger Ferrier, *Trois Livres Des Jugements Astronomiques Sur Les Nativitez* (Lyons, 1550).

astrology books underlines the fact that such books would have been considered a valued part of the academic canon.

At Edinburgh, the poet William Drummond of Hawthornden (1585-1649) donated nearly 700 volumes, equivalent to almost half of the books he possessed, to his alma mater during the 1620s and 1630s.[179] He had graduated from the university in 1605 and would have been aware of what books were lacking in those early days. Most of the books are works of literature, but at least seven sixteenth-century books of judicial astrology were included among the donations. These are the *Isagoge* of Alcabitius (or Al-Qabisi), Dariot's *Astrological Judgement of the Starres*, Ferrerius *De Vera Cometae Significatione,* Messahala's *De Elementis*, Ptolemy's *C.P. Inerrantium Stellarum Significationes*, Augustine Niphus's *Des Augures, ou Divinations* and Claudius Coelestinus's *De Influentijs Caelorum.*[180]

The largest bequest of the seventeenth century was that made in 1678 by the Reverend James Nairn, the minister at Wemyss in Fife.[181] He graduated from Edinburgh University in 1650 as the magistrand of Thomas Crawford and was for a time librarian there, before going on to become chaplain to the Countess of Wemyss and later chaplain-in-ordinary to King Charles II. He left his library of 1,838 printed items to the university, of which 1,678 survive, and this donation alone increased the size of the library by a third. As might be expected from a churchman, his library was

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[179] *The Library of Drummond of Hawthornden*, ed. by R. H. MacDonald (Edinburgh, 1971); *Auctarium Bibliothecae Edinburgene, Sive Catalogus Librorum Quos Guilielmus Drummondus Ab Hawthornden Bibliothecae D.D.Q* (Edinburgh, 1627).

[180] Claude Dariot, *Astrologicall Judgement of the Starres* (London, 1598); Johannes Ferrerius, *De Vera Cometae Significatione, Contra Astrologorum Omnium Vanitatem* (Paris, 1540); Claudius Ptolemy, *C.P. Inerrantium Stellarum Significationes* (Antwerp, 1527); Augustine Niphus, *Des Augures, Ou Divinations* (Lyon, 1581); Claudius Coelestinus, *De Influentiis Caelorum* (Paris, 1542); Messahala, *De Elementis & Orbibus Coelestibus* (Nuremberg, 1549); Alcabitius, *Ad Magisterium Judiciorum Astrorum Isagoge* (Paris, 1521).

[181] Murray C. T. Simpson, *A Catalogue of the Library of the Revd James Nairn, 1629-1678, Bequeathed by Him to Edinburgh University Library* (Edinburgh, 1990). http://www.lib.ed.ac.uk/about/bgallery/Gallery/records/fifteen/nairn.html.

mainly theological, but it does contain some volumes of medicine, science and astrology. These include Fromondus's *Meteorologica*, the hermetic text *Diuinus Pymander* as well as the popular neo-Platonic work, Iamblichus, *De Mysteriis Aegyptiorum, Chaldaeorum Assyriorum* printed in London in 1667, as well as William Lilly's great classic, *Christian Astrology* and Pierre Gassendi's *The Vanity of Judiciary Astrology*.[182] As these two texts by highly influential authors held diametrically opposite views on the subject, their appearance in such a collection points to a mind that was gathering information in order to evaluate both sides of a debate. Nairn bequeathed his whole library to the university, so what was received in 1678 may have been more of a reflection of Nairn's tastes than that the library's specific needs than was possibly the case with Drummond. The fact, however, that these books were included in his library speaks of the wider dialogue about astrology that was going on outside of the university and was occupying the attention of some of the most learned and influential men in the land.

The most important donation of astrological material, however, came in the bequest of James Douglas of Whittingham,[183] who was a secretary of James VI in London, and an intimate friend of the mathematician James Craig.[184] He left 84 mathematical books to the university in 1635, among them eighteen that contain astrology of one kind or another, including some classic texts of judicial astrology, such as Schoener's *De Judiciis Nativitatum*, Albumasar's *Introductorium in Astronomian*, Eschuid's *Summa Astrologiae Judicalis,* Albohazen Haly's *De Judiciis*

[182] Libertus Fromondus, *Meteorolgia* (Antwerp, 1627); Iamblichus, *De Mysteriis Aegyptiorvm, Chaldaeorum, Assyriorum* (London, 1667); *Diuinus Pymander Hermetis Mercurii Trismegisti* (Cologne, 1630); Lilly, *Christian Astrology*.; Gassendi, *Vanity of Judiciary Astrology*.
[183] 'The Bequest of James Douglas of Whittingham', 1635, EUL, Da.1.29.
[184] W. R. Thomas, 'John Napier', *The Mathematical Gazette*, 19 (1935), 192–205.

Astrorum and Garcaeus's *Astrologiae Methodus.* The heading of the entry of Douglas's bequest in the library catalogue reads:

> Catalogus librorum mathematicorum quos Jacob Douglassius Wittingami Jacobo Regi Sexto, secretarius, academiaiae Jacobi Regis testamento legabit.

That such books on judicial astrology were given by such a well-connected and educated man, and received, and recorded with gratitude by the university, provides compelling evidence of how entrenched astrology, in all its branches, both natural and judicial, was within the Scottish academic system and within the mathematical sciences in particular in the early years of the seventeenth century.

A great deal can be learned about which books were perceived to be lacking, and desirable, in the lecture rooms of the universities from donations of textbooks made by students. From the early days at all of the universities it was customary for students who were matriculating and graduating to donate money so that teaching staff could buy such books as were deemed necessary. Alternatively, graduating students could donate works of their own choice, with poorer magistrands sometimes pooling their resources for the purchase of an expensive book. Some records exist of astrological texts which were donated to Edinburgh University in this way but such documentation is lacking for the other universities. Most of the magistrand donations below were discovered while examining books for other purposes. It was in the magistrand year, which was the fourth and final year of the master's degree, that astronomy and astrology were taught, and the fact that books of this kind were given by students who had just completed those subjects gives a strong indication that astrology, judicial as well as natural, was an important topic of academic interest and value at that time. The customary inscription on the title page of student donations 'Ego donatus sum Academia Edinburgenae a magisterii candidatis' [I am given to

Edinburgh University by magistrand candidates], followed by the date on which it was presented, facilitates identification of the donor's class and the regent who had taught him. Many of these acquisitions also had signatures on the title page, either of the giver or of a previous owner, or both, providing insights into provenance and identifying those with an interest in astrology outside of academia. One example of this is Valentine Naibod's *Enarratio Elementorum Astrologiae* which was gifted in 1598. This is a Latin exposition of the *Introduction to Astrology* of Alcabitius which in its four sections provides a practical commentary on, and a guide to, judicial astrology. A signature on the title page shows that it had previously belonged to W Sinklair of Roislin. This was almost certainly Sir William St Clair, 14th Baron of Rosslyn, (d. ca. 1600) who succeeded to the title in 1554 and was appointed Lord Chief Justice of Scotland by Queen Mary in 1559. The book has been closely read and is heavily annotated and underlined throughout. The notes at the front of the book which reference the page numbers of tables and significant sections for judging, for example, the significator of lifespan in a natal chart, suggest that it was used by someone who had a keen and ongoing interest in astrology. This may well have been Sir William himself, but it is also possible that it had been used as a teaching aid. Another book that had belonged to 'W Santclair of Roislin, knecht', presumably the same Sir William, was the massive *Ephemeridum Novum* of Cyprian Leowitz, referred to in chapter one, which contains, as well as tables of planetary positions, eclipses and fixed stars, detailed instructions of how to erect and interpret astrological charts of all kinds.[185] The inscription on the title page shows that it was donated to the library of Edinburgh University in 1612. As it also bears the signature

[185] Leowitz, *Ephemeridum Novum*.

of Robert Lermonth who graduated that year under the regent William King, it is highly likely that he was the donor.[186]

In 1631, two astrology books were gifted by magistrands who graduated under Robert Rankin.[187] One was *De Divinatione* by Francesco Guintini, more commonly known as Junctinus, which is a debate between two Roman Catholic theologians, the first part entitled 'Defensio bonorum astrologorum de Astrologia iudiciaria' and the second is Belliolanis's 'Contra genethliacorum superstitionem'. The other donation was Bonatus's *De Astronomia Tractatus X*, which had belonged to William Scheves, archbishop of St Andrews from 1478 to 1497. Another signature dated 12th January 1605 shows that it had at that time belonged to Carolus Lumisden, who had been one of the regents in the university[188] before he was appointed minister of Duddingston in 1586.[189] By that time he had married Beatrix, daughter of Robert Pont (1524–1606).[190] It is possible that Pont, as a prominent churchman and proponent of astrology, was the link or broker for the book coming into Lumisden's possession and he may even have been an owner of the book himself at one time. As Charles Lumisden died in June 1631, it is likely to have been in his possession until that time, when it was bought by the magistrands for the university.[191]

Other astrology books that were similarly donated and dated are Otto Casmann's *Astrologia,* given by Thomas Young in 1603 and, in the same year, Cornelius Agrippa's *De Occulta Philosophia* presented by Robert Adamson, later principal of the university. Gerhard Dorn's *Commentaria in Archidoxon* was given in

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[186] Laing, *Graduates*, p. 26.
[187] The 1631 magistrands included James Pillans, later a regent who taught astrology.
[188] Laing, *Graduates*, p. xi.
[189] James McFarlane, *New Statistical Account of Duddingston* (Edinburgh, 1843); A facsimile of McFarlane can be found at http://www.ancestor.abel.co.uk/dud/dudnsa.html.
[190] NLS Biographies: The Pont Family: http://maps.nls.uk/pont/bio/ponts_family.pdf.
[191] 'Testament of Charles Lumsden', 1631, NRS, CC8/8/88.

1610 by Adam Watson, who went on to become a minister, and Johannes Garceus's *Astrologus Methodus,* was gifted in 1617 by James Aikenhead, a future advocate.[192] A later student donation was made in 1677 of a magnificent folio edition of Jean Baptiste Morin's *Astrologia Gallica*, which is regarded as the last major attempt at the reform of astrology, and this is recorded as being given for George Brown of Colston's 18th birthday.[193] These gifts of astrology books by young magistrands are powerful testimony to the vitality of astrology at the university at that time.

Four of these books, those by Casmann, Censorinus, Dorn and one from Mizauld [194] were not entered in the early catalogues, despite incontrovertible evidence that they belonged to the university at the dates above. It is possible that, instead of being stored in the library, they were kept in the classroom to be consulted there, and it is highly likely that, given the recent exposure to astronomy and astrology in lessons, that the books which were donated by graduates were chosen because of their perceived value to academic lessons. Possibly they were texts which the graduates would have themselves found helpful when they were in the magistrand class.

What is certain, however, is that books bought with the money donated by matriculating and graduating students would have been carefully and deliberately selected by the university authorities to fit in with the curriculum, and Edinburgh University has excellent documentation about books purchased with student library

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[192] Otto Casmann, *Astrologia* (Frankfurt, 1599); Cornelius Agrippa, *De Occulta Philosophia* (Cologne, 1533); Gerhard Dorn, *Commentaria in Archidoxon* (Frankfurt, 1584); Johannes Garceus, *Astrologiae Methodus* (Basel, 1576).
[193] 'Record of Contributions Paid by Students at Matriculation...with Details of Books Purchased', 1653, EUL, Da.1.33.
[194] Antoine Mizauld, *Asterismi, Sive Stellatarum Octaui Coeli* (Paris, 1553).

contributions.[195] The following is a list of astrology-related titles bought between 1653 and 1693 with names of the regent whose class had given money towards their purchase and, where recorded, the price paid for the books.

Date	Regent	Title	Price paid
1653	John Wishart	Cornelius Agrippa De vanitate scientarum	
		Idem. Occulta philosophia	
1656	James Pillans	Iamblichus De mysteriis	
1658	Thomas Crawford	Wing's Astronomy	
1659	John Nicol	Vincent Wing, Astronomia Instaurata	
1660	James Pillans	Saturn Ephemerides[196]	£20-00-00
1661	John Wishart	Alexr de angles in astrologos conjectores[197]	£00-02-02
1662	John Wishart	Hartgill & Gadbury's Astronomical tables	£03-00
1667	Andrew Ross	Tabulae Rudolphinae a Tychone[198]	£06-00-00
1668	John Wishart	Wing's Astronomia	
		Astrologie Restored by William Ramsay[199]	
1669	James Pillans	The Horoscope of the Patriarch...by Gaffarel[200]	£02-18-00
1671	William Paterson	Hermes Trismegistus his Pymander tr de Everard	£00-16-08
1672	William Paterson	Lilly's Introduction to Astrology[201]	£04-16-00
1673	James Pillans	Gaule Against Astrology alias his Magastromancer	£01.16-00
1674	John Wood	Nostradamus Prophesies[202]	£08-00-00
1677	James Pillans	Gadbury's Collection of Nativities[203]	£03-10-00
		Coley's Key to Astrology[204]	£04-00-00
1683	Andrew Massie	Gadbury's Ephemeris anno 1682-1701[205]	£06-00-00
		Dr Goad's Astrometeorologia (London, 1668)	£08-00-00
1688	Mr Cunningham	De Blegney's Zodiacus medico-gallicus[206]	£02:08:00
1693	Wm Law	~~Ephemerides medico-physico-Germanicae, 5 vols~~[207]	£45-00-00

[195] 'EUL, Da.1.32'; 'EUL, Da.1.33'.
[196] This has not been identified.
[197] Alexander de Angelis, *In Astrologos Coniectores* (Lyon, 1615).
[198] Johannes Kepler, *Tabulae Rudolphinae* (Ulm, 1627).
[199] Ramesay, *Astrologia Restaurata*.
[200] Jacques Gaffarel, *Unheard-of Curiosities...the Horoscope of the Patriarkes, or Astrology of the Ancient Hebrews, and the Reading of the Stars* (London, 1650).
[201] This is Lilly's *Christian Astrology*.
[202] Michael Nostradamus, *The True Prophecies or Prognostications of Michael Nostradamus* (London, 1672).
[203] John Gadbury, *Collectio Geniturarum: (or, a Collection of Nativities)* (London, 1662).
[204] Henry Coley, *Clavis Astrologiae Elimata, or, A Key to the Whole Art of Astrology* (London, 1676).
[205] Gadbury, *Ephemeris 1682*.
[206] This may be one volume of Blégny, below.
[207] Nicolas Blégny, *Zodiacus Medico-Gallicus*, 5 vols. (Geneva, 1680).

1698	Herbert Kennedy	Manilius Englished [208]	£03-12-00
1702	Andrew Massie	John Wing's Ephemeris 1702-1707	£03-12-00

Table 8. Books with astrological content bought by EUL, 1653-1702

The purchase of four key astrology texts of the time – Lilly's *Christian Astrology*, Gadbury's *Collection of Nativities*, Coley's *Key to Astrology* and Ramesay's *Astrologie Restored* as well as the donation of Morin's *Astrologia Gallica* during the years of rule of the quadrumvirate of old-guard regents, Pillans, Wishart, Paterson and Wood, suggests that there was a heightened enquiry into the subject at the time. This supposition is further strengthened by purchase of books against astrology, too, such as De Angelis's *In Astrologos Coniectores* [209] and Gaule's popular and weighty attack, *Mag-astro-mancer*, which indicate an intention to keep up to date with both sides of the debate. Regrettably, no notebooks of Paterson and Wood appear to have survived, as their interest in astrology, reflected in their purchases of Lilly's *Christian Astrology* and Nostradamus's *Predictions* respectively, indicates that content germane to astrology could well have been included in their lectures, too.

Unfortunately little information about such acquisitions is lacking in the other universities. No lists of student donations or purchases appear to be extant from either of the Aberdeen colleges, but the 1687 St Andrews catalogue [210] records that one of the 'Books given in by the Cives[211] since Mr James Hendrie's entry' was

[208] Manilius, *Five Books of Marcus Manilius Containing a System of the Ancient Astronomy and Astrology*, trans. by Thomas Creech (London, 1697).
[209] For an in-depth analysis of De Angelis's objections, see Allen, *Star-Crossed Renaissance*, p. 96ff.
[210] "Catalogue of Books Belonging to the Public Library of the University of St Andrews", 1687, SAUL-UYUY105/2.
[211] Cives were students who, having attended two years of Latin and Greek classes, were entitled to continue attendance of future classes free of charge. *Evidence Oral and Documentary Taken and Received by the Commissioners Appointed by His Majesty George IV, July 1826...for Visiting the Universities of Scotland*, p. 338.

Judiciall astrologie, judicially condemned ,[212] a work, as the title declares, antithetical to judicial astrology. This was included in the supplement to the main catalogue and appears to be dated around 1699, showing that at St Andrews, too, astrology was still thought worthy of intellectual enquiry, even if was only to oppose it. Astrology books were also being bought by Glasgow University library as late as the 1690s. The 1691 catalogue has an entry dated November 1691 of books bought at London.[213] Among these were two volumes with diametrically opposing views on the subject, Claude Dariot's primer, *Judiciall Astrology*, and Chamber's *Against Judiciall Astrology.*[214] It would seem then that the debate on astrology had accelerated in Glasgow in the 1690s, too. This is further evidenced by the inclusion of a lecture on judicial astrology in the 1699-1700 class taught by John Tran which was examined in chapter one.

III

While a book's presence in a university is no indication that it was read, library holdings can give a broad picture of what was considered of academic interest and a book's category, and its physical location, in the library reflects its place in the academic structure. The five centres of learning have left records of varying degrees of meticulousness and, again, Edinburgh has the fullest records, with 22 catalogues dated between 1583 and the early eighteenth century. Listings in the 1636 Edinburgh University library catalogue show that the library's size had swelled almost tenfold to 2,308 volumes since its modest beginnings in 1583 with a mere 276 items. By 1667, the book stock was approximately 4,000, and by 1684 the books numbered around 6,000. At least 180 books with astrological content were acquired by the university

[212] William Rowland, *Judiciall Astrologie, Judicially Condemned* (London, 1651).
[213] "Catalogue of the Books in the Library of Glasgow University", 1691, GUL-MS.Gen.1312.
[214] John Chamber, *Against Judiciall Astrology* (London, 1610).

between the time of its inception in 1583 and the early years of the eighteenth century. This is unlikely to be the final total of such literature as a small, but highly significant, number of astrology books have been discovered that are not included in contemporary library catalogues, although their inscriptions show that they were, without question, in the library's book stock in the seventeenth century.

The 1636 press catalogue shows that astrology books were to be found in two places: alongside books on philosophy, and with books on mathematics and astronomy.[215] An example of this is Press H, Shelf 8, which held 28 books, mainly of a mathematical nature, such as astronomy, arithmetic, geometry, mathematics navigation and geography. These included Nicholas Copernicus's *Astronomia Instaurata* and his *De Revolutionibus*, Ludolph Ceulen's A*rithemetica & Geometica*, three books of Euclid, two by Tycho Brahe, *Epistolarum Astronomicarum* and *De Mund Aetheri*, three volumes of Simon Stevin's *Hypomnemata Mathematica* and Vitellionis's *De Projectione*, on optics.[216] Alongside these were six books with astrological content including Ptolemy's *Omnia Opera praeter Geographia*, Cardano's *Geniturarum XII,* Stadius's *Tabula Bergensis*, Stoeffler's *De Astrolabi* and his *De Judiciis Nativitatum Libri tres*, as well as Schöner's *Opera Mathematica*.[217] Similar placements were to be found in the two shelves on either side; Shelf 7 held 33 titles, of which ten contained astrological material and Shelf 9 housed 29 books, four of them language texts and 25 mathematical, of which seven were of an astrological nature. This is typical of the range of such books found in all of the press

[215] 'EUL, Da.1.14'. 'Press' is the Scots word for a cupboard, usually built into a wall.
[216] Tycho Brahe, *De Mundi Aetheri* (Uraniborg, 1588); Tycho Brahe, *Epistolarum Astronomicarum* (Uraniborg, 1594); Nicholas Copernicus, *De Revolutionibus* (Basel, 1564); Nicholas Copernicus, *Astronomia Instaurata* (Amsterdam, 1617); Simon Stevin, *Hypomnemata Mathematica* (Leiden, 1608); Erazmus Vitellio, *De Projectione* (Nuremberg, 1534).
[217] Girolamo Cardano, *De Astrorum Iudiciis* (Basel, 1554); Claudius Ptolemy, *Opera Omnia* (Basel, 1551); Joannes Stadius, *Tabula Bergensis* (Cologne, 1560); Joannes Stoeffler, *De Judiciis Nativitatum Libri Tres* (Nuremberg, 1545); Joannes Stoeffler, *De Astrolabi* (Mainz, 1553).

catalogues examined. The classification of astrological texts, including judicial astrology, as mathematical books shows that the complete spectrum of astrology was regarded at Edinburgh University not as a marginal subject, but as one that had a legitimate place among the sciences and natural philosophy. Finally, it can be seen that astrological material was far from being a rarity. In the three shelves of mathematics books dealt with above, 24 out of the 90 titles contained astrological material of some kind. This is equivalent to just over 25% of the total volumes on these shelves, a not inconsiderable proportion. Although there were shelves in other presses that contained books relating to magic,[218] no astrology books were found under that category, except Gaule's *Mag-astro-mancer.*[219] In this, however, the author argues that astrology is sorcery, which would explain its place within that particular grouping.

Relatively fewer astrology books were found at the other universities. Nine library catalogues for St Andrews exist, dated between 1588 and 1714, [220] many of which are perfunctory. Only 17 titles of astrological interest have been positively identified. The 1687 catalogue, which lists 1,257 books, around a quarter of Edinburgh's total in 1684, has the fullest record and its listings show that astrology books were stored under natural philosophy and medicine. At Glasgow, by the end of the seventeenth century the book stock stood at over 3,000 volumes, which made it half the size of Edinburgh University library and double the size of St Andrews. The most important lists of library holdings are two comprehensive and almost identical

[218] 'Press Catalogue A-T', 1695, EUL, Da.1.16. This records magick books as being stored in Press O, shelf 18.
[219] John Gaule, *Pys-mantia the Mag-astro-mancer* (London, 1652).
[220] "Catalogue of Books Belonging to the Library of the University of St Andrews", 1714, SAUL-UYUY105/3; "SAUL-UYUY105/2"; "Catalogue of the Murray and Wedderburn Gifts to St Leonard's College", 1678, SAUL-UYLY106/1; "Foundation Catalogue of the University Library, the 'Lentron' Catalogue", ca 1644, SAUL-UYLY105/1; "Catalogue of St Leonard's College Library", ca 1720, SAUL-MS.Z921.StAL4; *Miscellany of the Maitland Club*, vol. 1 (Edinburgh, 1833), p. 307.

press catalogues prepared in 1691 with additions appended until around 1714.[221] In these, 38 books with varying amounts of astrological content were identified, which were all shelved in the mathematics section.

Four substantial records exist for King's College, two catalogues of acquisitions, both entitled *Catalogue of Books presented to King's College Library 1684-1860* and press catalogues dated 1700 and 1717. [222] The latter records the total number of books in King's College Library as 2,857, half the size of Edinburgh University library and a roughly similar size to that of Glasgow. Twenty-eight books with astrological content have been identified in these catalogues, all of which were stored under philosophy. The Marischal College Catalogue of 1669-1713 records around 2,050 titles, 49 of which have astrological content, and of these 24 were from the bequest of William Johnstone, and 11 from that of Thomas Reid, Latin secretary to James VI. The relatively larger numbers of astrology books recorded as purchased, donated and held at Edinburgh University compared to the other centres of learning would seem to indicate that there was a more lively interest in the debate about astrology there than at the other universities. This may have reflect the personal preferences of the individual regents, or suggest that fiercer attacks there required more robust rear-guard action to defend it.

IV

[221] GUL-MS.Gen.1313; GUL-MS.Gen.1312.
[222] "Catalogue of Books in King's College Library", ca 1700, AUL-M.K.111; "Catalogue of Books in King's College Library", 1717, AUL-M.K.113; "Catalogue of Books presented to King's College Library 1684-1860", n.d., AUL-MSK.114; "Catalogue of Books presented to King's College Library 1684-1860", n.d., AUL-MSK.115.

The books with astrological content found in the libraries can be divided chronologically into five distinct waves of astrological thinking and practice, as reflected in the classical, Arab, medieval summa, European academic and English vernacular texts. Additionally, there were those books that attacked astrology. The most important authors of antiquity are Ptolemy and the *Astronomi Veteres*, who include Proclus, Aratus of Solensis, Hyginus, Censorinus, Firmicus Maternus and Marcus Manilius.[223] The works of Claudius Ptolemy include *Almagest*, a comprehensive text of ancient astronomy and *Geography* as well as the *Quadripartitum.* The latter had a profound and prolonged influence on natural philosophy lasting well into the late seventeenth century as it systematised post-Hellenic astrology and provided the foundation of all subsequent astrology for at least the following 1,500 years. Its contents, therefore, warrant some description. In the first book Ptolemy advocated astrology's usefulness and explained the natures of the planets, fixed stars, signs, as well as factors that modify a planet's qualities and power. Book Two deals with the astrology of countries, cities and populations, and makes special reference to eclipses and weather forecasting. Natal astrology is the subject of the third book and this includes descriptions of parents, siblings, length of life and illnesses. Finally, Book Four provides techniques for discovering the kinds of events that are likely to happen during the course of a life, based on a person's nativity, such as wealth, honours, profession, marriage, children, friends and enemies, travel, and the nature and timing of death. As was shown in chapter one, all of the universities record at least one copy of his astrological work.

[223] Others are Leontius Mechanicus, Avienus, Germanicus Caesar and Vettius Valens. Cicero can be included because of his *De Divinatione*, taught in the third year of the Scottish Arts course.

The *Astronomicon* of Julius Firmicus Maternus, also known as the *Mathesis*, is an eight-part text written ca.334 C.E. and revived among European scholars around the eleventh century.[224] As Edinburgh had three copies of this and the other universities had one each, this book, also, was clearly an important academic text. It addresses objections to astrology and includes the basic tenets of Hellenistic astrology, delineations of planetary positions and aspects, predictions derived from the Moon as well as case studies and the Thema Mundi, or a hypothetical chart of the creation of the world. Much of this material is a greatly expanded and detailed version of what was found in the student notebooks at Aberdeen and Edinburgh.

Marcus Manilius's first-century Latin work, *Astronomica*, an astronomical and astrological poem in five books, re-appeared early in the fifteenth century and was translated by Joseph Scaliger in 1579 and then again by Thomas Creech in rhyming couplets in 1697. As shown above, Edinburgh bought a copy of the 1697 translation, St Andrews and Glasgow both had earlier editions and Aberdeen had none. Edinburgh had two copies of the *Phaenomena et Prognostica* of Aratus (310-240 BCE), a poem about the constellations and weather forecasting from portents, Glasgow and Marischal had one, while St Andrews and King's had none.[225] Edinburgh had copies of Hyginus and Censorinus's *De Die Natali*. Marischal had two copies of the latter from Johnstone's bequest, but the other centres had none of either. All of the universities, then, apart from St Andrews were well equipped with these ancient astrological authorities, providing a traditional basis for the teaching of astrology. It is interesting to note that Edinburgh's Manilius translation had almost certainly been bought from contributions by the class of Herbert Kennedy who, as

[224] Julius Firmicus Maternus, *Astronomicon* (Basel, 1533).
[225] Aratus Solensis, *Phaenomena, et Prognostica* (Paris, 1559).

was shown in the last chapter, was a fierce opponent of judicial astrology. It was, therefore, in that case most likely purchased for its astronomical and pedagogic merits, rather than its astrological content.

Many of the ancient texts were lost or neglected between the sixth and twelfth centuries with the collapse of the classical world, and Arab astrologers kept the practice alive when it was largely forgotten in Europe, in particular the art of interrogations, or horary questions, which is a practice much more akin to divination than natural philosophy. Their books were translated into Latin in the eleventh and twelfth centuries when interest in astrology was rekindled in Europe. Alcabitius's *Ad Magisterium Judiciorum Astrorum* (Paris, 1521), by the tenth-century Syrian astrologer, Alcabitius, also known as Al-Qabisi, is an isagoge, or scholarly introduction, to the judgement of the stars, based on a wide range of Greek, Indian, Persian and Arabic sources.[226] In the twelfth century John of Seville's Latin translation of the work resulted in this becoming the standard introduction to astrology in Western Europe. The most prominent Arab astrologers are Albohalus, Albohazen Haly, Albumasar, Alcabitius, Alfraganus, Al-kindi, Almansor and Messahala and Edinburgh had copies of all of these, while St Andrews had Alcabitius and Almansor and Marischal had a copy of Alfraganus. Only Glasgow seems to have lacked Arab astrologers, and it is possible that theological concerns there militated against such works being accepted there.

The next wave of astrological writing, the s*ummae* of astrological knowledge, came during the thirteenth and fourteenth centuries, and some of these texts ran to

[226] For a modern translation and commentary see *Al-Qabisi (Alcabitius): The Introduction to Astrology*, ed. by Charles Burnett, Keiji Yamamoto and Michio Yano (London, 2004).

many hundreds of pages.[227] One example found in Edinburgh's library is Oxford-educated Johannes Eschuid's *Summa Astrologiae Jiudicialis* (Venice, 1489), donated by James Douglas in 1635, but arguably the best-known and most influential summa author is the thirteenth-century astrologer Guido Bonatus (ca.1202- ca.1295). His great *Liber Astronomiae,* was also known as *Decem Tractatus Astrologiae, De Astronomia Tractatus X*, or simply *Tractatus X*, as it is divided into ten sections that were often printed separately.[228] It provided a complete guide to astrology, as can be seen from the titles of the tracts which are: 'Defense of Astrology', 'Signs and Houses', 'Planets', 'Conjunctions', 'Considerations', 'Questions', 'Elections', 'Revolutions and Parts', 'Nativities' and, finally, 'Heavy Rains', which covers meteorology. Only three complete editions of it were printed, in 1491, 1506 and 1550. Edinburgh had copies of both the 1491 and 1550 editions and King's College and Marischal College each possessed a 1550 edition.

In the late fifteenth and throughout the sixteenth century, with the expansion of printing, many European astronomers and mathematicians who held positions of authority at continental universities, especially in Germany and Italy, began to produce astrology books. Works were found in the Scottish university libraries of men such as Johannes Stoeffler (1452-1531) Professor of mathematics at the University of Tübingen, Cyprian Leowitz (?1514-1574) Professor of mathematics and astronomy at the University of Lauingen, Junctinus (Francesco Giuntini) (1523-1590) Professor of mathematics at University of Bologna, Valentine Naibod (1523-1593), Professor of mathematics at the University of Cologne, David Origanus

[227] Charles Burnett, 'Astrology', in *Medieval Latin: An Introduction and Bibliographical Guide*, ed. by F. A. C. Mantello (Washington DC, 1996), pp. 369–383.
[228] For a modern translation see Guido Bonatus, *Book of Astronomy*, trans. by Ben Dykes (Golden Valley, MN, 2007).

(1558-1629) Professor of mathematics at Frankfurt (Oder) and Andreas Argol (1570-1657) Professor of mathematics at Padua. These were 'the learned' that were often referred to in the debate about astrology. All of them produced ephemerides, tables of planetary positions and other celestial phenomena that are essential for predicting astronomical events and for erecting horoscopes, and all of them, too, provided astrological instruction, especially on the erection and delineation of nativities. Stoeffler's text, *De Astrolabi*, on how to build and use an astrolabe was in the libraries of all of the universities, and this also contained examples of elections and revolutions. Leowitz, as well as his *Ephemeridum Novum*, wrote on nativities, the great conjunctions, eclipses and comets and their effects in history.[229] Junctinus wrote commentaries on Sacrobosco's *Sphere* that included a great deal of astrology, and Naibod's special interest in nativities led him to produce several primers on the subject. Although Origanus was mainly known for his ephemerides, these too instructed on all parts of astrology, including directions and revolutions used in judging nativities. Argol's famed ephemerides, which were especially favoured at Glasgow and Aberdeen, contained information on natal and mundane astrology, weather and navigation, but he also published a medical astrology text on critical days and the decumbiture of the sick, which was found in St Andrews library.[230]

A change of great significance took place around 1650, when London became a thriving centre for the printing of astrology books, associated with the phenomenal upsurge in the production of such literature in England at that time.[231] As most of this

[229] Leowitz, *Ephemeridum Novum*; Leowitz, *Genituras*; Leowitz, *De Coniunctionibus.*
[230] Argol, *Ephemerides 1630-1680*; Andreas Argol, *Tabulae Primi Mobilis* (Padua, 1644); Argol, *Ephemerides 1641-1700*; Andreas Argol, *De Diebus Criticis Et De Aegrorum Decubitu Libri Duo* (Padua, 1652).

was written in the vernacular it made astrological literature, which had been previously been locked up in Latin, accessible to anyone who was literate. These books were usually translations and compilations of earlier literature. John Gadbury said that William Lilly's highly influential *Christian Astrology* was little more than a translation of Albohazen Haly filius Abenragel's *De Judiciis Astrorum*, and a plagiarised version at that, making the accusation that

> for the greater part of his Christian Astrologie, my self saw in Manuscript in the hands of ... Dr. Fiske, which by the Doctor was translated from Haly, de judiciis Astrorum, as many of L's best Friends know also to be true.[232]

Lilly did, however, give an impressive list of the main 29 authors whose work he drew on, and although he claimed that the method was his own, it is a digest rather than an original composition. During the second half of the seventeenth century astrology books in English proliferated, and some of the best known were incorporated into the university libraries in Scotland. Edinburgh and Glasgow each had copies of William Lilly's *Christian Astrology*, William Ramesay's *Astrologia Restaurata* and John Gadbury's *Nativities*, and Edinburgh, additionally, had Henry Coley's *Key to Astrology*, but St Andrews and Aberdeen seem to have been less ready to acquire such texts, possibly because at Marischal there was already a good store of astrology books in Latin from William Johnston's bequest. The books at Edinburgh were acquired in the late 1660s and 1670s, perhaps an indication of the degree of engagement with the issue by regents at Edinburgh, while those at Glasgow seem to have been bought in the 1690s, perhaps pointing to a rather later interest in the matter in the west of Scotland.

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[231] For the upsurge in production in astrological literature in England in the seventeenth century see Capp, *Almanacs*, pp. 39ff; Curry, *Prophecy and Power*, pp. 19-44; Dick, *Students of Physick*, pp. 311-313; Thomas, *Religion*, pp. 406 ff.
[232] John Gadbury, *Dies Novissimus* (London, 1664), p. 47.

The books that were being published in the second half of the seventeenth century were mostly produced by men like William Lilly, largely self-taught in astrology, and quite different from the sixteenth-century European academic peers of the Scottish regents, united across country boundaries by a similarity of education and the universal language of Latin. Characteristic of many of this new breed of astrological author is a lack of a formal university education. Exceptions to this are John Gadbury (1628-1704),[233] who was apprenticed to a tailor until a timely reconciliation with his wealthy grandfather enabled him to be educated at Oxford, and Nicholas Culpeper (1616-1654). Although the latter had studied at Cambridge, he was a populist and his attitude to privilege and vested interests was antagonistic.[234] William Lilly had an excellent grammar school education which left him, he claimed, speaking Latin as freely as English, but he was not able to go on to Cambridge because, as he wrote 'fortune then frowning upon father's present condition, he is not in any capacity to maintain me at the university.'[235] Henry Coley (1633-1695), Lilly's apprentice had, likewise, had no university education.[236] Although Sir George Wharton (1617–1681) went to Oxford to study, he did not matriculate.[237] Vincent Wing 1619-1668) had little formal education but, according to the first Astronomer Royal, John Flamsteed, he produced the most accurate planetary tables of the time.[238] Finally, William Ramesay, despite attending Edinburgh University for a time, failed to graduate as he left because of the plague of

[233] Patrick Curry, 'John Gadbury, John (1627–1704)', in *Oxford DNB*, 2004.
[234] Patrick Curry, 'Nicholas Culpeper (1616–1654)', in *Oxford DNB*, 2004.
[235] Derek Parker, *Familiar to All: William Lilly and Astrology in the Seventeenth Century* (London, 1975), p. 30.
[236] Bernard Capp, 'Henry Coley (1633–1704)', in *Oxford DNB*, 2004.
[237] Bernard Capp, 'Sir George Wharton, First Baronet (1617–1681)', in *Oxford DNB*, 2004.
[238] Bernard Capp, 'Vincent Wing (1619–1668)', in *Oxford DNB*, 2004.

1645.[239] These men had not undergone the rigorous academic discipline of the university and were, therefore, not initiates of the intellectual elite. They were, in that sense, outsiders, often brash, boastful, self-promoting and disputational, impatient with academic and other authoritarian protocols. While it is certainly not the only reason, the lack of scholarly rigour and unverifiable claims of some of the central figures of popular astrology may have been a significant strand in the process that helped oust astrology from the academic syllabus by the beginning of the eighteenth century.

Ten books attacking astrology were also found in the various catalogues and these are as follows: Pico della Mirandola's *Opera Omnia,* (found in all of the libraries apart from Glasgow), Calvin's *Admonicion against Astrology Judiciall* and Chamber's *Against Judiciall Astrology* (both held in Glasgow), Thomas Erastus's *Defensio Libelli Hieronymi Savonarole de Astrologia Divinities* and Rowland's *Judiciall Astrologie, Judicially Condemned* (both at St Andrews), John Gaule's *Mag-astro-mancer* (Marischal and Edinburgh) Cornelius Pleierus's *Contra uromantes impostores*, De Angelis's *In Astrologos Conjectores,* Ferrerius's *De Vera Cometae Significatione, Contra Astrologorum,* Henry Howard's, *Defensative against the poyson of supposed prophecies* and Pierre Gassendi's *The Vanity of Judiciary Astrology* (all at Edinburgh). It is interesting to speculate why only one university, Glasgow, had a copy of Calvin's *Admonicion* and this adds more fuel to the supposition that Glasgow was the university that was most theologically constrained and least open to astrology in any of its guises, at least until the 1690s.

[239] Ramesay, *Astrologia Restaurata*, pp. 28-29.

From the above it can be seen that all five categories of astrological writings that were available in the period, the classical authors, Arab astrologers, compilers of summae, Renaissance and early modern academic mathematicians and the seventeenth-century, mainly London-based, English-language writers were well represented in the university libraries of Edinburgh and Aberdeen, and to a lesser extent at Glasgow and St Andrews, The range and diversity of the astrological material available, especially at Edinburgh, demonstrates that it kept well up to date with contemporary trends. The number of books on judicial astrology suggests that astrology's detractors had not succeeded in banishing this speciality from the universities, and that the university authorities could have seen no substantial incompatibility between the religion of the day and this branch of astrology. In the university libraries, astrology books were mainly categorised as, and stored alongside, works of mathematics and astronomy, or natural philosophy, underlining the fact that they were regarded as part of the mainstream academic natural sciences. Many of these astrology books were donated and bequeathed by patrons and by former students from their own libraries and some were given by students on graduation which strongly suggests, even if it does not absolutely prove, that judicial astrology was taught in the final, or magistrand, year of the Arts course along with physics and astronomy. Further evidence that astrological literature was a valued and valuable part of the library is provided by the fact that textbooks on the subject were actively chosen to be purchased from the meagre funds that were available for books up until the end of the seventeenth century.

Chapter Three: Scottish Almanacs [240]

> Now by Heav'ns Constellations, and my Art,
> I to the Vulgar do make known a part
> Of what is needful to be known by all,
> Of the Suns rise, and when he hath his fall,
> The true time of Eclipses, and the Tides,
> Of all known Fairs, and other things besides;
> The truth whereof, when time comes you shall see,
> And say I do speak truth, and not a lie.[241]

As only a tiny proportion of the Scottish population was able to take advantage of the education offered at the universities, for the majority of people any written information about astrology would have come from the popular press in the form of almanacs. The Scottish almanac, like Scottish astrology, has been largely ignored by scholars of the early modern period. Apart from a three-page sketch in 1838[242] and a fine bibliographic survey of Scottish seventeenth-century almanacs by William McDonald, in 1963,[243] little account has been made of them. Even McDonald, however, showed scant interest in the almanac contents *per se*, apart from advertisements, images and text that provided details of disputes among the printers and almanac-makers. These he covered fairly comprehensively, but he overlooked their astrological matter completely and dismissed the remaining contents summarily:

> When they contain nothing but details of eclipses, dates of fairs, tables of the moon's rising and setting and other exact data they are very dull and, except as items of bibliographical importance, of little interest.[244]

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[240] As many of the almanacs have no foliation or pagination, for consistency notional page numbers, or the month involved, are indicated in square brackets for all almanacs for the purposes of footnote references. For ease of identification, in second and subsequent references to almanacs the name of the author and date only are given. A full list of extant Scottish almanacs is found in the appendix.
[241] A Lover of the Mathematicks, *A New Prognostication* (Edinburgh, 1686), [p. 15].
[242] Joseph Robertson, 'Sketch of the History of Scottish Almanacs', in *Oliver and Boyd's New Edinburgh Almanac and National Repository for the Year 1838* (Edinburgh, 1838), p. 454–6.
[243] William McDonald, 'Scottish Seventeenth-century Almanacs', *The Bibliothek*, 4 (1963-6), 256–322.
[244] McDonald, 'Almanacs', p. 280.

Bernard Capp in his masterly work on English almanacs, *Astrology and the Popular Press*, gives less than a page to their Scottish counterparts, but he does concur with MacDonald in dismissing them *en passant* as 'rather colourless.'[245] While it is undeniable that Scottish almanacs are more restrained and limited in content than their English counterparts, it could be argued that they are rather more interesting than Capp and McDonald have suggested and, further, that their very restraints and limitations can be a positive aid to research by forcing the focus on to the essence rather than the excrescence of the social trends and pre-occupations they reflect, as economy of content has the effect of sifting the vital from the inessential.

Almanac production was the first successful mass media enterprise[246] and the purpose of this chapter is to examine almanacs in the Scottish context and to enquire into what can be learned from them about the contemporary practice of astrology, and attitudes towards it, in Scotland. After outlining their form, survival, origins and content, the market for the Scottish almanac will be assessed, along with factors that facilitated their success and this will be followed by an analysis of the almanacs' predictive content. Although this is in no way intended to be a comparative study, given the sharp contrast between the quantity and quality of astrological material in

[245] Capp, *Almanacs*, p. 275.

[246] For other accounts of almanacs of the period see William Burns, 'Astrology and Politics in Seventeenth-Century England: King James II and the Almanac Men', *Seventeenth Century*, 20 (2005), 242–253; Hilary Carey, 'Astrological Medicine and the Medieval English Folded Almanac', *Social History of Medicine*, 17 (2004), 345–363; Alison Chapman, 'Marking Time: Astrology, Almanacs, and English Protestantism', *Renaissance Quarterly*, 60 (2007), 1257–1290; Louise Curth, *English Almanacs, Astrology, and Popular Medicine: 1550-1700* (Manchester, 2007); Louise Curth, 'The Medical Content of English Almanacs 1640-1700', *Journal of the History of Medicine and Allied Sciences*, 60 (2005), 255–82; Marion Stowell, *Early American Almanacs: The Colonial Weekday Bible* (New York, 1977); Jonathan Green, *Printing and Prophecy: Prognostication and Media Change, 1450-1550* (Ann Arbor, 2011); Marjorie Nicolson, 'English Almanacs and the "New Astronomy"', *Annals of Science*, 4 (1939), 1–33; Frank Palmeri, 'History, Nation, and the Satiric Almanac, 1660-1760', *Criticism*, 40 (1998), 377; Adam Smyth, 'Almanacs, Annotators, and Life-Writing in Early Modern England', *English Literary Renaissance*, 38 (2008), 200–244.

the almanacs of Scotland and England, it seems pertinent to go on to address next the questions of why this should be so in these two neighbouring countries and why the predictions in Scottish almanacs were, in comparison, so reined-in and bland. Finally, a review will be made of the changes that can be detected in the almanacs over the time-frame of this study.

Scottish almanacs, also known as prognostications, were small printed booklets containing a miscellany of ephemeral information that generally had relevance for a single year only. They consist, with very few exceptions, of 16 pages in octavo, a format which persisted throughout the seventeenth century and well into the eighteenth. Not only were the contents of the almanacs ephemeral, so too in the main was their physical substance. Very few copies have survived the centuries. Aldis lists a mere seven almanacs published before 1640 and only two between 1640 and 1660, which, given other evidence of the widespread distribution of such material, can in no way reflect a true measure of what was actually being printed and purchased.[247] The turbulence of the times and the brief season of relevance of the booklets would have militated against their survival. As reading material in most homes was limited they are likely to have been well-thumbed over the year and may simply have fallen apart after twelve months' service. Few people today purposely keep calendars after their allotted time and there is little reason to suppose that things would have been very different in early modern Scotland. The majority of the surviving almanacs include the word 'New' in their title or sub-title, so it seems that the printers were either responding to and exploiting a public hunger for novelty and change, or creating the demand themselves – or both. By putting newness in printed

[247] Aldis¸ *Books Printed in Scotland*, p. 126. These results are corroborated using the *English Short Title Catalogue* at www.estc.bl.uk.

material at a premium, by extension the old would have been devalued, and therefore less likely to be considered worthy of keeping. A damp climate, unfavourable to preservation, and a thrifty use of what would have been seen as waste paper would have added to the toll of their destruction. One use for old almanacs appears in a letter which the naturalist and philologist Edward Lhuyd (1660-1709) wrote to Rev. Colin Campbell 'in Muc-Carn in Lorn' in 1707 asking for information and samples of plants that grew in the Highlands. His request was modest: 'a single leaf dried in an old pocket almanac, of each sort that grows on the highest and steepest rocks is all I am ambitious of.'[248] Lhuyd's taking it for granted that Campbell would have an old almanac to hand underlines just how much these booklets were considered part of the normal trappings of everyday life, even in the remotest corners of the kingdom.

McDonald identified 95 examples of Scottish annual almanacs printed before 1701, of which 91 are extant. To date ten more surviving almanacs have come to light and a further 42 that were printed between 1701 and 1726 inclusive have been identified, bringing the total used for this study to 143. The locations of the existing almanacs are scattered, with the majority of copies being found in the National Library of Scotland, The Signet Library, Glasgow University Library and the British Library. Thirty of the almanacs were printed at Aberdeen, 78 in Edinburgh and 26 in Glasgow, while in another nine cases the same almanac was printed in Aberdeen and reprinted in Edinburgh. These three towns were the centres of almanac production, with Aberdeen's almanacs being the most highly regarded because of their reputation for accuracy.[249]

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[248] Letter, Edward Lhuyd to Colin Campbell, 1707, EUL, MS 3099.14.fol.2.

[249] The main Aberdeen almanac printers were Edward Raban and John Forbes, father and son. Robert Sanders, followed by his son, had the market virtually to himself in Glasgow, while in the larger centre of Edinburgh there were a number of printers involved in almanac production over the years

Thirty-six different names or initials of authors have been identified in the period. Apart from James Corss, whose name appeared on one Glasgow almanac before he moved to Edinburgh, none of the almanac-makers of Glasgow is known as they are referred to only by initials or pseudonyms such as Philomathes or a Well-Wisher in Astrology. The same applies to Aberdeen, but through the quarrel between James Paterson and the Aberdeen printer, John Forbes, in the mid-1680s it became known that Forbes's almanac-maker was Duncan Liddel (fl. 1649-1687), nephew and namesake of the renowned physician, mathematician and benefactor of Marischal College, Duncan Liddel (1561–1613), assisted perhaps by his son George. It was only in Edinburgh that the most prominent almanac-makers were named directly – James Corss (1632- ca. 1679), James Paterson (fl.1679-93), John Man (fl. 1696-1707) and John Thomson (fl. 1712-1715).

According to Bosanquet, the English almanac originated in the amalgamation of three separate publications. These are, first, the Almanack, which contained the year's most important astronomical information, such as eclipses and major planetary aspects; second, the Prognostication based on an astrological interpretation of this data; and, finally, the ecclesiastical Kalendar.[250] Almanacs and prognostications were among the earliest books printed in Europe and these were incorporated into a single publication mainly by Continental astrologers. Most originated in Germany and the Netherlands but from France came the *Kalendrier des Bergers* which added folklore, especially about health and weather. Its popularity, in translation as *The Shepherd's Calendar*, lasted until the Interregnum. Its first 'English' translation, which was

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including Andro Hart, John Wreittoun, James Glen, David Lindsay, John Colmer, John Reid, James Watson and, above all, Andrew Anderson, who was succeeded by his litigious spouse Agnes Campbell.

[250] Eustace Bosanquet, *English Printed Almanacks and Prognostications* (London, 1917), pp. 1–4.

published in Paris in 1503 as *The Kalendayr of the Shyppars*, was in fact into a Scots dialect, no doubt made by one of the many Scots who sought employment abroad. [251] Scotland had a thriving trade with the Low Countries and France, shipping out boatloads of wool and hides, coal and salt and bringing back cargoes of manufactured goods and printed materials.[252] This would have been the natural route of entry for almanacs which were translated and printed on the Continent for the English-speaking market.

Little is known about the early origins of Scottish almanacs but it is likely that their forerunners were not the almanacs and prognostications which were imported from Europe, but, as Robertson suggested, the Kalendars prefixed to Bibles, Psalm-books and other ecclesiastical texts.[253] The most comprehensive of these was compiled by Adam King, a Scots professor of philosophy in Paris. This appeared with his translation of the Catechism of Canisius into Scots, entitled *Catechisme & Kalendar Perpetual*, printed at Paris in 1588. It was, as the title suggests, a perpetual calendar, which contained, as well as saints' days, very full information for finding the positions of the Sun and Moon in zodiacal longitude, days of the week and moveable feasts. As the first Bible to be printed in Scotland was going to press in 1579 the eminent minister, Robert Pont, successfully petitioned the General Assembly of the Church of Scotland to have a similar calendar and almanac inserted into it. It included a table for finding the sign and degree of the

[251] E. G. R. Taylor, *The Mathematical Practitioners of Tudor and Stuart England* (Cambridge, 1954), pp. 11, 311.
[252] Mann, *Book Trade*, p. 68.
[253] Robertson, 'Almanacs', pp. 454-6.

Moon at any time as well as the astrological qualities of the signs – temperate and cold and moist and dry.[254]

Perpetual calendars and prognostications, although related to the annual almanacs, contained information that could be used over an indefinite period as the content did not refer to any one particular year. The earliest Scottish perpetual prognostication to survive is Andro Hart's *General Prognostication Forever*, printed at Edinburgh in 1619, which was based on an English almanac by Leonard Digges. There is, however, evidence of earlier printings. The will and inventory of Thomas Bassandyne, printer and burgess of Edinburgh, who died in October 1577,[255] recorded 'tua Prognosticationes for euir, price of the pece –xld. – summa, vis. Viii d.'[256] and on his death in September 1586 Robert Gourlaw, bookbinder, left behind 'Erra Pater, xi, vj d. the piece.'[257] *The pronostycacion for euer of Erra Pater* was described by Capp as 'the most successful of the handbooks aimed at the bottom end of the market.'[258]

In the inventory of Margaret Wallace, however, 'sumtyme spous' to the printer Robert Charterus, who died on 1st February 1603, 'fyve hundredth Prognosticatiounes at iij s. iiij d. the do[zen]' were listed.[259] She also had the same number of 'Philotus buikis',[260] which are yearly predictions purporting to be written by Nostradamus. Given the large number and the early date in the year, both of these publications were almost certainly annual almanacs, rather than perpetual

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[254] *The Bible and Holy Scriptures Conteined in the Olde and Newe Testament* (Edinburgh, 1579).
[255] *The Bannatyne Miscellany*, vol. II (Edinburgh, 1836), p. 196.
[256] In comparing the prices of the three sets of almanacs, the number of almanacs in Bassandyne's stock must have been two dozen and not two single copies.
[257] *Bannatyne Miscellany*, vol. II, p. 214.
[258] Capp, *Almanacs*, p. 31
[259] *Bannatyne Miscellany*, vol. II, p. 236.
[260] Michael Nostradamus, *An Excellent Tretise, Shevving Suche Perillous, and Contagious Infirmities, as Shall Insue 1559 and 1566 [sic]*, trans. by Laurentius Philotus (London, 1559).

prognostications. As Robert Pont had written in 1599 about 'vulgare Prognostications, that are yearely to be sold abroade',[261] annual almanacs had obviously been in circulation for many years previously. It is not known, however, if these were indigenous productions or imports. There was very little evolution in the content of the perpetual prognostications between the late sixteenth century, and the latest in this study, *The Book of Knowledge*, purporting to be the work of William Lilly, printed in Glasgow in 1726. Indeed, the latter differs little from the 'pier-end' genre of astrological fortune-telling books still published today. The fact that few perpetual prognostications appear to have been printed in Scotland after 1619 suggests that the annual almanac, with its up-to-date information, far outran the former in popularity from the early years of the seventeenth century.[262]

The earliest extant annual almanac of Scottish origin is the *Prognostication* printed in 1626 at Aberdeen and it shows signs that its printer, an Englishman, Edward Raban, had imported material from his native country. From the scant evidence that survives,[263] it is possible that the home-grown Scottish almanac may only have become fully established after the Restoration, in the early 1660s, with the almanacs of James Corss, the first Scottish almanac-maker whose identity is known for certain.

Several logistical factors facilitated the proliferation and success of the almanacs. Each almanac consisted of a single folio sheet of paper folded three times, giving a finished size of 150mm by 95mm – just slightly smaller than A6. This meant that they were light and therefore easily transported in bulk. An effective

[261] Pont, *Newe Treatise*, p. 46.
[262] Perpetual prognostications survive for 1619, 1626 1632, 1686 and 1702, plus Anon, *The Book of Knowledge* (Glasgow, 1726).
[263] Only four intact pre-1660 almanacs survive, and mere fragments of examples from 1651 and 1658.

means of distribution was available in the form of the chapmen who travelled all over Scotland so that their availability was not confined to the larger centres of population.[264] They were also cheap enough for almost everyone to afford. Throughout the seventeenth century the wholesale price stayed much the same at one plack or 4d. Scots – the equivalent of one third of one penny sterling.[265] Chapmen, as the printers knew well, would not only have been carriers of almanacs. Since their profits depended on their skills as salesmen, they were also almanac marketeers, and the printers were keen to enlist their services, flattering them and emphasising the excellent profits that could be made by these wandering hawkers. Variations of this verse, in which printers encouraged chapmen to carry their wares, are found in several almanacs.

> Rouz up your selves, brave Chap-men all,
> and go about your Trade,
> By your labouriousness ye shall
> exceeding rich be made.[266]

Just how essential the chapmen were for the almanac's proliferation and success in Scotland can be seen by comparing the situation in France where the restricted numbers of licensed chapmen can be linked with the slow uptake of the almanac in that country until the eighteenth century. In 1611 there were only 46 licensed *colporteurs* in the whole of France, rising to 3,500 in 1740.[267]

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[264] On chapmen see also Roger Leitch, '"Here Chapman Billies Tak Their Stand": a Pilot Study of Scottish Chapmen, Packmen and Pedlars', *Proc. Soc. Antiq. Scot.*, 120 (1990), 173–188; Laurence Fontaine, *History of Pedlars in Europe* (Cambridge, 1996); Margaret Spufford, *Small Books and Pleasant Histories: Popular Fiction and Its Readership in Seventeenth-Century England* (London, 1981); Richard Sugget, 'Pedlars and Mercers as Distributors of Print in Early Modern Wales', in *The Mighty Engine: The Printing Press & Its Impact*, ed. by Peter Isaac (Winchester, 2000).
[265] Anon, *A Short Account of Scotish [sic] Money* (Edinburgh, 1817).
[266] Lover of the Mathematicks, 1686, [p. 3].
[267] Capp, *Almanacs*, p. 271.

In the 1680s one printer alone, Forbes of Aberdeen, claimed in a court case that his annual sales of almanacs were around 50,000 copies.[268] This is more than the sales of that most famous of English astrologers, William Lilly, who at the height of his popularity sold 30,000 copies of his almanac a year.[269] It is, of course, impossible to know how many of the almanacs that Forbes claimed to have printed were actually sold, but it seems safe to suppose, given that paper was an expensive import, that a well-established printer of Forbes's experience would have been at pains not to produce any great excess. More compelling evidence that the figures are accurate is that it was in the best interests of the person he was suing to challenge the figures he was giving – and no such challenge was made. Leaving aside the output of the Edinburgh and Glasgow presses, which may well have been considerable, assuming that all of the 50,000 Aberdeen almanacs were sold, and estimating that the population of Scotland at that time to have been around one million,[270] this means that there was one almanac for every 20 people. Taking between four and six as a conservative estimate of family size would add up to one in three or one in four of Scottish households having owned an almanac.[271] Per capita, these figures compare well with the total sales in England for the same period, which were estimated at an excess of 400,000 per annum.[272] Paralleling the sales and distribution of the Bible and possibly even exceeding this, almanacs would have found their way into a

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[268] *The Register of the Privy Council of Scotland, Third Series A.D. 1638-1684* (Edinburgh, 1684)., p. 384, quoted in McDonald, 'Almanacs', p. 271.
[269] Geneva, *Seventeenth-century Mind*, p. 56.
[270] Michael Flinn, *Scottish Population History: From the 17th Century to the 1930s* (Cambridge, 1976); James Kyd, *Scottish Population Statistics Including Webster's Analysis of Population 1755* (Edinburgh, 1952). The population in Scotland in 1755 was calculated as 1,265,380.
[271] Cyprian Blagden, 'The Distribution of Almanacks in the Second Half of the Seventeenth Century', *Studies in Bibliography.*, xi (1958), 107–116; Tom Arkell, 'Multiplying Factors for Estimating Population Totals from the Hearth Tax', *Local Population Studies*, 28 (1982), 51–57; Richard Wall, *Family Forms in Historic Europe* (Cambridge, 1983).
[272] Capp, *Almanacs*, p. 44.

substantial number of Scottish households, and if the purchasers reflected the market catered for, this would have been right across the social spectrum.[273]

With the commercial success of the almanacs it was almost inevitable that trade wars ensued. These involved counterfeiting, piracy and undercutting, with one of the main culprits being the formidable Agnes Campbell, widow of the Edinburgh printer Andrew Anderson. A hard-nosed and capable businesswoman bent on dominating the printing market, it was she that Forbes was suing when he revealed his sales figures in court, claiming that she was damaging his business by her sharp practices.[274] From 1713 onwards, however, almanacs were published that were printed first in Aberdeen and then reprinted in Edinburgh. This increased cooperation between printers and the decline in open piracy may be linked with the death, at an advanced age, of Agnes Campbell in 1716.

The fierce competition and high sales figures demonstrate the voracity of demand for almanacs in Scotland and give an indication of just how powerfully the contents of these small pamphlets resonated with something vital in the collective imagination. The contents of the almanacs hint at what this something was and give clues as to their target readership. The layout of Scottish almanacs remained fairly consistent throughout the period. In a typical example the first section would begin with a chronology and the common or vulgar notes, an abbreviated form of the original Kalendar, which gave the Golden Number, Epact and Dominical Letter for

[273] McDonald, 'Almanacs', p. 261.
[274] John Fairley, *Agnes Campbell, Lady Roseburn, Relict of Andrew Anderson* (Aberdeen, 1925); Henry Plomer, *A Dictionary of the Printers and Booksellers Who Were at Work in England, Scotland and Ireland from 1668 to 1725,* (Oxford, 1922); Alastair Mann, 'Book Commerce, Litigation and the Art of Monopoly: The Case of Agnes Campbell, Royal Printer, 1676-1712', *Scottish Economic and Social History*, 18 (1998), 114–156.

finding days of the week, and dates of the most important church festivals.[275] A description of the year's eclipses and information about the start of the four seasons usually followed. The bulk of the publication was taken up with the monthly report, which gave the day of the week and the time of sunrise on the first of the month, plus the time and date of the Moon's four quarters. This was followed by a long-range weather forecast and dates and places of fairs to be held that month, and sometimes advice on medicine, agriculture or husbandry. Tide tables, advertisements, miscellaneous predictions, folklore and matters that the almanac-maker wanted to promote or vent his spleen upon were generally to be found towards the end of the almanac.

The list of fairs was essential for those who might profit in some way from these markets, especially country folk, particularly farmers and sheep and cattle dealers. Merchants and manufacturers and those simply in search of company, diversion and entertainment would have found the information useful too. The tide tables which were found in more than half of the almanacs suggest a substantial readership among seamen and coastal dwellers. Sanders of Glasgow regularly provided farmers and gardeners with guidelines on animal husbandry and on crops. Medical advice featured too, which would have been of interest to housewives, mothers and the many lay healers with which the country abounded.[276] The advertisements that appeared later in the century for books on music, law, religion, languages and history as well as for translating services and the teaching of mathematics and navigation show that the almanacs were aimed at the widest possible readership, the well-educated and the aspiring as well as the common folk,

[275] These were Fastens-even, Easter day, Ascension Day and Whit Sunday.
[276] For popular medicine in English almanacs see Louise Curth, *English Almanacs, Astrology, and Popular Medicine: 1550-1700* (Manchester, 2007).

'the Vulgar' as well as 'Noblemen, Gentlemen, Lawyers and others' that Anderson's 1686 Edinburgh almanac addresses.[277] The astrological content, too, catered for a broad spectrum, from the educated who would understand the more arcane references, sometimes in Latin, that some almanacs provided, to those whose interest ran more in the direction of sensationalistic predictions. It was indeed the case, as McDonald concluded, that 'every section of society found something of interest in them.' [278]

Apart from the crude verse, and the advertisements and commercial tables that appeared increasingly as the seventeenth century wore on, the main pre-occupation of the almanacs is almost exclusively with time in its many forms – time past, time present and time to come, as well as linear and cyclical time and times that have special significance. Time was measured in relation to the heavenly bodies as the movements of the Sun and the Moon and the planets were the only future events that could be predicted with a great degree of accuracy and this has continued until very recently.[279] Before the coming of the powerful artificial lighting of modern times the experience of the sky would have been an immediate one and this with its markers of time, the Sun and Moon and other celestial objects, is the one universal that is shared at virtually the same time by everyone living within the same few degrees of longitude and latitude, as do the inhabitants of a small country like Scotland. Few people would have had timepieces at home and, without them, outside of the towns there would have been no external means of telling the time or date

[277] Lover of the Mathematicks, 1686, [p. 14].
[278] McDonald, 'Almanacs', p. 261.
[279] Observation of the stars was used for very accurate time measurements before the invention of the caesium clock and the second was defined as 1/86400 of the mean solar day. In 1967 it was redefined as 9192631770 'ticks' of a caesium atomic clock, thus avoiding errors caused by variations in the speed of the Earth's rotation on its axis.
http://www.sciencemuseum.org.uk/onlinestuff/stories/atomic_clocks.aspx?keywords=atomic.

apart from the Sun and Moon.[280] For these people the Sun was their clock and the Moon their calendar. Dates were often fixed by the phase of the Moon, as illustrated by a letter from Alexander Campbell of Auchinrire to his uncle, Sir Colin Campbell of Glenurquhay informing the recipient that 'our goodman's son is to be married at the beginning of the first moon.'[281]

What the almanac provided was a vital means of synchronising those natural cycles with events in a wider societal context, allowing readers to attend fairs, celebrate church festivals and arrange business and other affairs with people outside their own isolated homes or small communities, in time and on time, allowing enterprises to be undertaken and trade to prosper. With the appearance and increasing popularity of the annual almanac, farming, trade and commerce had the necessary standardised communal timeframe that allowed the meetings they relied upon to take place without confusion and loss. The humble almanac was, therefore, a subtle but powerful instigator of social cohesion and economic progress.

Besides these 'horizontal' alignments in time between individuals and society, the almanacs also provided readers with information about 'vertical' alignments correlating celestial phenomena above with terrestrial events below, such as tides and weather and optimal times for medical and agricultural activities, as well as predicted trends in politics, economics and public health. There is, then, a theme in the almanacs of synchronicity – a coming together in time. As astrology too is based on congruities of time and place it is hardly surprising that almost all of the sections in

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[280] For further discussion of measuring time see Gerhard Dohrn-van Rossum, *History of the Hour: Clocks and Modern Temporal Orders* (Chicago, 1996); Paul Glennie and Nigel J. Thrift, *Shaping the Day: a History of Timekeeping in England and Wales 1300-1800* (Oxford, 2009); David Landes, *Revolution in Time: Clocks and the Making of the Modern World* (Cambridge Mass., 1983); E. G. Richards, *Mapping Time: The Calendar and Its History* (Oxford, 1998). See Tester, *History*, pp. 127–129 for the experience of daily life with no timepieces.

[281] 'Marriage Date', NRS, GD112/39/50/34.

the almanac were based on or associated with astronomical and astrological theory and practice. There is, however, very little explicit astrology in Scottish almanacs, compared with those from England, and it is evident, therefore, that in Scotland almanacs were purchased principally not for their astrological, but rather for their utilitarian, content.

Examples of all three of the different layers of prediction used in early modern natural philosophy can be found in the almanacs. There is pure astronomy, which describes and predicts the movements of the heavenly bodies and other celestial phenomena, but imputes no meaning to these calculations. Astrology, on the other hand, posits that celestial movements have significance as a cause, sign or symbol of events and qualities on earth. Natural astrology uses astronomical data to predict events in the natural world, such as weather and physiology, while judicial astrology concerns itself with interpreting the likely effects of these on human affairs. Astronomy, by and large, had universal approval. Natural astrology was accepted by most people as self-evident, while judicial astrology was increasingly disputed on charges of impiety, inaccuracy and theoretical inconsistencies.

An example of the economic importance of accurate astronomical data was highlighted in the quarrel between the Edinburgh mathematician and almanac-maker, James Paterson, and Duncan Liddel, professor of mathematics at Aberdeen, who supplied the calculations for Forbes of Aberdeen's almanacs. As Easter is the first Sunday after the first Full Moon after the spring equinox its calculation depends on the accuracy of the data used for those two celestial phenomena. Paterson took advantage of an error in the dates for Fastens-even and Easter in the common notes of Forbes's 1685 almanac to lambast Liddel in a broadsheet, *Long Lent*, as an

ignoramus and a 'great horned beast' and to attempt to undermine the reputation of the Aberdeen printer. The problem appears to have come from copying an otherwise-reliable ephemeris, and Paterson crows that only one ephemeris was accurate that year – that of Argol[282] – and that he, Paterson, had noticed this. As the dates of some important fairs depended on the dates of these church feasts, Paterson warned readers to keep away from the Aberdeen almanacs and 'others of that kind' as being 'Jock the liers' or they could risk missing markets.

> Or if these who at Fairs do use
> Come but a Week to late,
> And find these Fairs is past and gone
> They will look wondrous blait.[283]

The weather forecasts too relied on accurate astronomical data as they were judged astrologically by linking different meteorological conditions to mutual planetary aspects that occurred throughout the month in question.[284] A more exacting method was to erect horoscopes for the precise moment of the Sun's entry into each of the cardinal signs of the zodiac, Aries, Cancer, Libra and Capricorn at the beginning of the four seasons, plus those for the times of the New or Full Moon that immediately preceded these ingresses. This gave an indication of the overall weather for the year as well as each season. It was rare, however, until the 1680s to find astrological significators for weather predictions being given in Scottish almanacs. In none of James Corss's extant almanacs between 1662 and 1679 does he show the astrological underpinnings of his weather forecasts, yet in his 1662 primer of arithmetic and astrology, *Ouranoskopia,* he gave instructions for judging the weather 'from the

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[282] Argol, *Ephemerides 1641-1700.*
[283] Paterson, *Long Lent*, [p.1].
[284] For studies in the weather in early modern Europe see Wolfgang Behringer, *A Cultural History of Climate* (Cambridge, 2010); Vladimir Jankovic, *Reading the Skies: a Cultural History of English Weather, 1650-1820* (Manchester, 2000).

Coelestial Bodies', and made it clear that this is the method by which they were normally worked out.

> Although the knowledge of the Weather be a thing so common, yet the true Key is exceeding difficult: and therefore I have thought it necessary to write something thereof...[285]

Despite his leanings towards hyperbole, the weather forecast given by Corss for January 1662 is typical of the genre, short and to the point.

> The i,ii,iii.day cold wind, iv, v. and vi, frost, the vii, viii, ix, x. inclining to snow, xi. and xii. windy, and tempestuous, from thence to the xix. more temperat, xx to xxiv. rains & winds, the rest of the month seasonable.[286]

Considering that these forecasts would have been written up to a year in advance they are astonishingly specific and regardless of whether or not they were accurate, if they were followed at all, they had potentially weighty economic implications, especially for farmers and travellers. Capp gives an example of readers taking the weather forecasts in English almanacs seriously and there is no reason to believe that the situation would have been different north of the border.[287] Not all prognosticators were as diligent as Corss, however. Some were not simply guessing but writing with their tongues firmly lodged in their cheeks, such as 'M.I.G.' of Aberdeen who for each month iterated the same forecast of 'Long foule, little fayre: Little fayre, long foule'.[288] A change from the norm of non-annotated weather forecasts appears in James Paterson's almanacs from 1687 onwards, when he began to provide very detailed astrological explanations for his weather forecasts. For example in February 1687:

> upon the 16 day there is a Conjunction of Jupiter and Mars, which causes Tempestuous Weather to the 22 day, on which there is a square of Jupiter and

[285] Corss, *Ouranoskopia*, p. 39.
[286] James Corss, *Mercurius Coelicus* (Glasgow, 1662), [p. 5].
[287] Capp, *Almanacs*, p. 63.
[288] M. I. G., *Prognostication* (Aberdeen, 1639), [pp. 4-6].

> Venus making the Weather more Temperate to the 28 day; on which there is a square of Mars and Venus, which shows the Month shall end with cold weather.[289]

It is interesting to speculate why the inclusion of such explanations started up when it did around 1687. The likelihood is that Paterson was flaunting his astrological skills as part of his ongoing rivalry with Duncan Liddell whom Paterson was trying, unsuccessfully, to discredit. Duncan Liddell retired from teaching mathematics at Marischal College in 1687, and almost certainly from almanac-making too, because of failing health. Paterson was as ambitious as he was belligerent and by proving that he was equal to Liddell in astrological expertise he undoubtedly hoped to seize Aberdeen's reputation for producing the most accurate almanacs in Scotland. From this we can conclude that, at that time, being regarded as a competent astrologer was, at least in the almanac trade, a feather in one's professional cap and something greatly to be desired. Paterson's nephew and successor, John Man, carried forward this tradition of providing explicit astrological significators for his forecasts, as did John Thomson, Man's successor. Thomson appeared to have doubts, however, about astrology, as he added after the weather report for December 1713:

> The Weather here we cannot want,
> Least we Displease the Ignorant;
> Who thinks that Mortals have a Notion,
> Of Weather by the Planets Motion.[290]

Merry Andrew, author of the eponymous humorous almanac which appeared annually from 1699, agreed that weather forecasts were essential.

> An Almanack without foretelling the weather, is like a Bell without a Clapper, or a Liar without an Excuse, or powder'd Beef without Mustard. Therefore to compleat our Almanack, and make it as fit as a case for a Fiddle, we have plac'd the weather to each Month. [291]

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[289] James Paterson, *Edinburgh's True Almanack* (Edinburgh, 1687), [p. 6].
[290] John Thomson, *Edinburgh's New Almanack* (Edinburgh, 1713). [p. 16].
[291] Merry Andrew, *An Almanack* (Edinburgh, 1709), [p. 5].

But he went on to mock them all the same in February's forecast.

> Venus is in quartile with Mars; therefore there will be few Vessels ship-wrack on Arthur's Seat or the Lomond hills, because we shall have good harvest weather all this Month.[292]

But despite such mockery astrological weather forecasting continued to be popular and even as late as 1835 *The Caledonian Almanack*, printed in Perth, featured weather forecasts based 'upon philosophical considerations of the Sun and Moon, in their several positions respecting the Earth.'[293] This continued reliance on astrology may well stem from the fact that there was as yet nothing better with which to supplant it.

Not only the weather, but also everything in nature was perceived as being influenced by the heavenly bodies, so some almanacs gave indications of when actions were to be carried out in harmony with nature's cyclical time, such as planting and reaping and medical interventions. Advice on farming, husbandry, gardening and health was a speciality of Sanders of Glasgow. Where an astrological reason was given it always related to the Moon alone, never the planets, and for each phase of the Moon and month of the year there were appropriate activities. Philomathes in 1665 recommended for January:

> cut down timber (and it shall not cleave, nor be eaten by worms) in the last quarter of the Moon...set rose trees, peaches, philbird, and plum trees, if the frost be not hard, prune and lop them before full Moon...In the last quarter geld cattel, and fallow land for wheat and rye, trench gardens with dung, and remove bees. [294]

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[292] Ibid, [p. 6].
[293] Anon, *Caledonian Almanack* (Perth, 1835), p. 11.
[294] Philomathes, *A New Prognostication* (Glasgow, 1665). [p. 4].

Health advice too was given monthly and could be linked with humoral theory. Wreittoun's 1632 Edinburgh almanac gave a list of ailments to which the 'quarter is most inclined.'

> This Winter Quarter of his proper nature is cold and moyst, and of complexion Flegmaticke ...The sicknesses...[include] Rheumes, Goutes, Palsies, Pushes...coughs, melancholy, cathars, sciaticaes...[295]

Many liked to pass on their wisdom in verse. For November 1668 'J. A.' suggested:

> If Rheumes do now molest thy head,
> It is not ill to sweat in bed,
> Feed on good meats, if stomach serve.
> Else seek for that which doth preserve.[296]

Others were even more prescriptive:

> Pare your Corns well, then take a black Snail and bruise it and put a drop or two thereof on the place grieved; adding thereto a little powder of Samphire: This I can assure you with excellent use, in a little time will take away the Corns.[297]

The Zodiac Man, showing the parts of the body that are linked with the zodiacal signs, appeared in several almanacs from Edinburgh and Aberdeen. Little health or husbandry advice, apart from this, is found in the extant almanacs of Edinburgh and Aberdeen. Why this should be is not clear, but it may be that Sanders had a special interest in this kind of information where other printers did not. Not all of the copy in an almanac came from the almanac-maker. The printers, for example, were responsible for gathering information about the fairs and frequently advertised for information about new fairs. They may have added extras that appealed to them, or thought would increase sales or which they simply had to hand. Perhaps Glasgow and district had more smallholders than the more urban centres of the capital and the northern university port. That Corss's 1662 almanac printed in Glasgow contained

[295] John Whyte, *A New Prognostication* (Edinburgh, 1632), [p. 5].
[296] J. A. Mathematician, *A New Prognostication* (Edinburgh, 1668), [pp. 13-14]
[297] Ancient & Expert Astronomer, *A New Prognostication* (Aberdeen, 1680), [p. 16].

husbandry and gardening advice, while none of his from Edinburgh did, would indicate that it was Sanders, rather than Corss, who had chosen to include it.

While all almanacs contained natural astrology in the form of weather forecasts, even if not always overtly, not all contained judicial astrology. There were three typical ways that this was used to make predictions about human affairs in society as a whole – through the interpretation of eclipses, seasonal ingresses and significant planetary configurations – and all of these were found in Scottish almanacs. It was rare for eclipse dates to be omitted from almanacs, and this with good reason. An eclipse, especially a total eclipse of the Sun, can be a deeply unsettling phenomenon. It takes little imagination to understand why it might be interpreted as a supernatural phenomenon and lead to widespread panic. Robert Birrel's diary describes the effects of total solar eclipse whose path crossed directly over Edinburgh in February 1597/8.

> betwix 9 and 10 in the morneing, ane grate darknes, be reasone of eclipse, sic ane darknes hes not beine sene, for the haill pipell w'in Ed^{r}. yat knew not quhat it wes, thought yat it had bene Duimsday. Merchantis and utheris yat wer ignorant, steikit ther buith doris, and ran to the kirke to pray, as gif it had bene the last day.[298]

Even to watchers who were prepared, such events could be terrifying, as James Melvill related in his account of the same eclipse.

> In that Februar... was that maist conspicuous eclipse of the Sunne, quilk strak all creatours with sic estonishment and feir, as tho the day of Judgment haid bein com. I knew befor it was to com; I was nocht ignorant of the naturall cause therof; and yit when it cam to the amazfull, vglie, alriche darknes, I wast cast on my knies, and my hart almaist fealled.[299]

By demonstrating that eclipses could be anticipated, almanac-makers provided readers with reassuring evidence that these were natural, and not paranormal, events.

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[298] Ebenezer Henderson, *The Annals of Dunfermline and Vicinity* (Glasgow, 1879); John Graham Dalyell, *Fragments of Scotish [sic] History* (Edinburgh, 1798), p. 45.
[299] 'The Diary of Mr. James Melvill, 1556-1601', in *Bannatyne Club* (Edinburgh, 1827), p. 290.

Most provided not only the date of the eclipse, but also its time and duration while others even illustrated, with a woodcut image, the percentage of the solar or lunar surface that would be obscured. All of this educated the wider public about natural philosophy in general and astronomy in particular. These rational explanations did not, however, readily displace the belief in their prognosticatory significance.

In interpreting eclipses, almanac-makers tended to paint impressionistic word-pictures, hinting at dire outcomes rather than providing hard and fast predictions. Sensationalised language woven around arcane astrological detail left the reader in no doubt that that serious mischief could be expected, as when 'G. S.' wrote of an eclipse in 1691:

> The envyous planet Saturn rules the Horoscope, and will be in the ninth Angle, in platick Opposition of Jupiter: Mercury governs the Eclipse, and Mars from Gemini, (in conjunction of the Bulls Eye) casts an angry Quadrate both at the Eclipsed Sun and him. Verbum sat.[300]

A word apparently had to suffice as readers were left to work out the implications themselves. Those who knew their astrology, however, would have been well aware that the ninth angle, or house, referred to religious affairs and that Saturn, the 'great malefic' in that area, opposite Jupiter, significator of ecclesiastical men, could herald religious strife.[301] A Well Wisher of Artists in 1695 was somewhat more forthcoming:

> it is celebrated in the 8: house of the Heavens: By the learned it prognosticates to great Personages Mortality, and Rablous Insurrections, &c. which the Lord keep us from.[302]

Often, however, the interpretation was kept simple, merely stating that it would be to the detriment of those people and places associated with the sign in which the eclipse

[300] G. S. Philomath, *A New Prognostication* (Edinburgh, 1691), [p. 5]. A platick opposition means that the two planets are almost, but not exactly, 180º apart. 'G. S.' may have been George Sinclair.
[301] Ramesay, *Astrologia Restaurata*, p. 52.
[302] Well Wisher of Artists, *A New Prognostication* (Edinburgh, 1695), [p.5].

occurred. James Paterson explained in 1692 that as the eclipse 'in the 20 degree of his own house *Leo*: which Astrologers say, betokeneth no good to those persons or places under *Leo*', [303] but he did not specify who and where these were. [304] In these last two commentaries there is a theme that recurs throughout the almanacs to the extent of almost being a constant: the authors are careful to put a distance between themselves and their astrological commentaries by quoting the authority of others, here 'Astrologers' and 'the learned'. 'L. D.' in 1673 refused to be drawn and urged:

> Who desires further satisfaction in these matters, let them read M. William Ramsay his 4. book of his Astrologia restaurata, by which, and the help of an Ephemerides, every mans capacity may learn how to judge of the general accidents of the world, and alterations therein. [305]

The most comprehensive examples of astrological interpretation are to be found in Aberdeen's almanacs for 1665 and 1666. They contain some highly politicised astrological inferences whose meanings could easily be missed at a superficial reading. These almanacs were almost certainly authored by Duncan Liddel, who had returned home in 1661 from a 12-year sojourn in London where he had taught geometry, navigation and gunnery. Eclipses were almost invariably regarded as being catastrophic to some group or country or sector of the natural world. Liddel's eclipse entry of 1666 gave a detailed explanation of how an eclipse is interpreted, complete with tables of countries associated with the zodiacal signs to allow readers to work out for themselves who might be affected. The eclipse was in Cancer and although, from his tables, Scotland, Burgundy and Prussia, among others, are included in those places under Cancer, it was to Holland, also Cancer-ruled, that he chose to turn his attention.

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[303] James Paterson, *Edinburgh's True Almanack* (Edinburgh, 1692), [p.3].
[304] This is the only instance that has been found of Paterson using judicial astrology.
[305] L. D. an Expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, 1673), [p. 16].

> About the tyme that the effects doe operate, the Holand-Mates wil withstand the decrees of their Hogen Mogen Staten...And not only They, but Others also, keeping Boiling about what, *Vetat me Mathesios prudentia dicere*, but in the end they wil not prevaile.[306]

What was it that prudence forbad him to say? To further emphasise the effect on Cancer-ruled countries he went on:

> I should add the signification of the *Comet* appearing in Cancer, December 15, nothing lessening, but rather furthering the Fatall Events, such as Warrs, Discords, and much Evill...[307]

In the previous year, 1665, Liddel had calculated that Mars was the year's dominant planet, and then made one of the few positive predictions to be found in the almanacs:

> Moreover... if he be well placed as here ... it portends good successe to them (whose ascendant is Aries) against their Enemies.[308]

Countries under Aries include England, France and Germany. England at this time was fighting the second Anglo-Dutch war. This looks like thinly veiled propaganda. Further piquing the curiosity, he concluded:

> As concerning Jupiter, being Lord of the ascendant, with the Taile of the Dragon in the second house, *give judgement astrologer*: for the rest I leave to be further treated of by the astrologers.[309]

This jargon would almost certainly have been unintelligible to the majority of his readers but the sense of being party to great affairs unfolding could have given them a frisson of self-importance at having access to such 'insider' information, and much to speculate upon. Those *au fait* with astrology would have known that Jupiter is the 'great benefic' and that the second house of a horoscope – as was taught at King's

[306] Well-wisher to the Mathematicks, *An Almanack or New Prognostication*, (Aberdeen, 1666), [p.7].
[307] Ibid, [p. 7].
[308] Well-wisher to the Mathematicks, *A New Prognostication* (Aberdeen, 1665), [p. 8].
[309] Ibid, [p.8].

College – indicated that the issues involved were *lucrum*; gain, profit or avarice[310] and *spes;* hopes and prospects.[311] In that particular Anglo-Dutch war vast fortunes were at stake, with England trying to end the Dutch domination of world trade. Any clarity of judgment, however, was muddied because there was in the same house the 'unfortunate' tail of the dragon, that is, the Moon's south node, described by James Corss as 'that Catademon'.[312] It is hardly surprising that Liddel passed responsibility for determining the outcome onto astrologers, putting a clear distance between him and them. Apart from anything else, his stay in London at the height of astrology's phenomenal upsurge during the Interregnum would have alerted him to the dangers of making specific predictions.

The final common method of predicting was to examine important interplanetary aspects, usually those between the superior planets, Mars, Jupiter and Saturn and other celestial phenomena. In 1683 an indication of trouble, but little specific detail, was flagged up, because of Mars' long sojourn in Libra due to the planet's retrograde motion.

> I find the fiery planet Mars corrupting the Sign of Justice near eight Moneths together viz. From November 26 1682, unto the 12 day of July this year 1683. A transit of mischievous tendency in earnest.[313]

The astrological effects of the Saturn-Mars conjunction of 1686 were referred to, but glossed over in favour of the astronomical delights.

> although this Conjunction be of ill influence to all Persons and Places concern'd herein; yet it will be very delightful to observe the Planets conjoyn'd to rise near *Arcturus*, and the *Virgin's* Spike, two hours before the sun rises, several Mornings together.[314]

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[310] NLS, Adv.MS.22.7.15.
[311] NLS, Acc.4975.
[312] Letter, James Corss to Colin Campbell, 1664, EUL, MS.3099.9.
[313] Painful Astronomer, *A New Prognostication* (Glasgow, 1683), [p. 3].
[314] Lover of the Mathematicks, 1686, [p. 3].

In no case is a specific prediction found in the extant Scottish almanacs of the era. Hints and insinuations abounded and it was left for the reader to put two and two together. Some almanac-makers, however, cast a sceptical eye on predictions, among them 'J. A.' in 1667. He was happy enough to give the astronomical details of the eclipse because these could be verified, but predictions were another matter.

> Having Typically represented to thy view the form of this Eclipse, thy eye may afterwards be both judge and witnesse if I have deceived thee: As for Predictions therefrom, I have not attain'd the confidence of some young Prophets, who adventures to determine Things and Times in particulars, wherein their very Teachers are in doubt, and to decide in cases wherein the greatest Patrons of Astrology have not agreed among themselves... my forbearance, as it begets no expectation, so consequently no disappointment either to thee or my self. [315]

Merry Andrew's almanac of 1699 went further and mocked openly:

> This Eclipse portends great Frenzy in the Nodles of some jealous headed Coxcombs, who will rather trust a Dutch-man with their Butter, a Welch-man with their Cheese, a Highland-man with their Aquavit Bottle, or a Thief with their Purse, than their Wives alone, or in company of another Man.[316]

A notable feature of all of the eclipse and other astronomical entries, however, even in cases of ridicule or purloin, is that the data remained accurate.

Despite astrology's inclusion, overtly or covertly, in most Scottish almanacs, the question remains of why Scottish almanacs contained so much less of this material than English ones. One major constraint was certainly the limited print area available. Scottish almanacs were almost invariably made from one folio sheet folded to16 pages, whereas the English standard was three times that size, with three folio sheets providing 48 pages. Occasionally they even reached 96 pages.[317] English almanac-makers therefore had the luxury of space to elaborate on their astrological prognostications, which their Scots counterparts did not.

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[315] J. A. Mathematician, *A New Prognostication* (Edinburgh, 1667). [p. 4].
[316] Merry Andrew, *A Prognostication* (Edinburgh, 1699). [p. 3].
[317] Capp, *Almanacs*, p. 41.

Financial considerations undoubtedly restricted the size of the Scottish almanacs. Paper was an expensive commodity and even after Scottish paper-making had become firmly established from the 1680s the bulk of it still had to be imported, usually from England, and it was subject to importation taxes.[318] Scotland, compared to England, was a poor country and increasing the number of pages in an almanac would have substantially raised costs and this would almost certainly have made the product less attractive to purchasers; it might even have put it out of the financial reach of many, which would have made no commercial sense. Several almanac-makers, however, like the 1626 Aberdeen author, complained about having so little scope for astrology.

> Now it is thought, by our learned Astrologators, that much blood shall be spilt this yeare, by Sea and Land, the Pope shall be confused, and the Spaniard dismissed. I haue much more to say, but for want of rowme am forced to break off:[319]

The same situation prevailed forty years later in 1671:

> More might have been performed in this matter, but in being forced to abridge, I leave the rest to the astrologers judgement.[320]

It was not that readers were uninterested in astrological content, however, as is attested by 'A.F.' in 1674.

> at the desire of certain Persons I have set down here the Lord of the Year, or of this Annual revolution, with the Lords of the Quarters.[321]

There are only two known exceptions to the 16-page format. The 1665 and 1666 Aberdeen almanacs both have 24 pages and all of these extra pages are taken up with astrology which can surely only mean that they had been added for that purpose. It

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[318] Alistair Thomson, *The Paper Industry in Scotland 1590-1861* (Edinburgh, 1974); D. C. Coleman, *The British Paper Industry, 1495-1860* (Oxford, 1958).
[319] Anon, *Prognostication* (Aberdeen, 1626), [p.16].
[320] M. D. L., *A New Prognostication* (Glasgow, 1671), [p.4].
[321] A. F. Philomath, *A New Prognostication* (Edinburgh, 1674), [p. 5].

may have been Liddel who had persuaded Forbes to add the extra pages, or at least to increase the astrological content as he wrote in 1665:

> it may please you to understand, that the PRINTER is as large and willing, as you can be desirous; to satisfie you in all poynts Astrologicall...Gentle Reader, were it not for putting the PRINTER to too great paines and charges, for so small benefice, more might have been expected [322]

Regrettably, no complete Aberdeen almanacs between 1666 and 1678 have survived and by then they had reverted to the usual 16 pages.[323] It is hard to conclude anything other than that this departure was not a commercial success.[324] Readers may have wanted astrology but they were not willing, or perhaps able, to pay extra for it. Price was clearly a determinant of sales, hence the brisk trade in cut-price counterfeits, and it is unlikely that James Paterson's arguments below were successful in convincing his readers to pay more for the additional information in his 1688 almanac as by 1690 the extra tables had been removed.

> Here ends the Months, Changes, Fairs, and Weather,
> To which I add some common Tables further;
> Which makes it prove more useful than before:
> Now therefore grudge not if your price be more,
> ...
> [as] you may gain more with this exact,
> Than thrice the price of any Almanack.[325]

It might be argued that another reason for the lack of astrology in Scottish almanacs was the lack of astronomical and astrological expertise in Scotland, but that suggestion can easily be dismissed by a review of the known almanac-makers. In Edinburgh there was the chain of succession of over 50 years between ca.1662 and 1715 of James Corss, James Paterson, Paterson's nephew John Mann and John

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[322] Well-wisher, 1665, [p. 8].
[323] A 1674 exemplar exists as a fragment.
[324] Capp quotes George Parker in 1695 admitting that the cost of including details of the planetary motions in his almanacs had increased the cost to 6d and that the public had preferred to buy rival works at half-price. Capp, *Almanacs*, p. 41.
[325] James Paterson, *Edinburgh's True Almanack* (Edinburgh, 1688), [p. 12].

Thomson,[326] while in Aberdeen there was Duncan Liddel.[327] All of these men were mathematicians and astronomers whose work shows they knew their astrology. Corss had even written his own astrological primer, *Ouranoskopia*, which outlined most of the basic astrological techniques. Forbes of Aberdeen, probably not unbiased, claimed that Duncan Liddel was as great a master of the art of astrology as Lilly and that his

> skill and knowledge in Astronomy,
> And all the secrets of Astrology
> Is known to be so great, that there are few
> Will dare to challeng't [328]

In addition to writing almanacs all of these men had teaching commitments. Liddel, as professor of mathematics, taught six classes a week at Aberdeen university,[329] Corss had his own school and private pupils,[330] while Man gave instruction at Trinity House in Leith,[331] and Thomson taught privately 'at his house in the Castle Hill, Edinburgh.'[332] It is likely that the small payment for their labours and the substantial amount of time needed for the calculations would have provided little incentive to add more than was necessary to their labours in the way of astrology, unless there were pressing reasons to do so – such as scoring points off a rival in the case of Paterson. As Liddel recounts:

> in setting down to you exactly the Eclipses, with their effects; and how it may fal out on these regions under the Signe Eclipsed: With the foure Quarters of

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[326] D. J. Bryden, *Scottish Scientific Instrument-makers 1600-1900* (Edinburgh, 1972).
[327] It is unclear whether he was succeeded as an almanac-maker by his son George, who held the chair of mathematics after his father's retirement, from 1687 until he was deposed in 1716. Depending on his regent, George could have learned astrology at university in Aberdeen.
[328] John Forbes (attrib.), *A Vindication of Duncan Liddel, and His Son George Liddel* (Aberdeen, 1685).
[329] Ponting, 'History of Mathematics at Aberdeen', p. 26-35.
[330] *Extracts from the Records of the Burgh of Edinburgh: 1655-1665*, ed. by Marguerite Wood (Edinburgh, 1940), p. 93.
[331] John Mason, *The History of Trinity House of Leith* (Glasgow, 1958), p. 163. Professors of Mathematics at Trinity House were required to teach six hours a day in summer and four in winter.
[332] Thomson, 1713, [p. 7].

> the Year and with what Planets they are governed: As also, the exact day, houre and minute of your new-Moon, quarters and full, shewing you, on what day of the Week every quarter falleth; and on what day of the week, every Moneth begineth, with the daily disposition of the Weather: Whih [sic] is indeed a tedious bussines, more painful then profitable, yea, and more chargeable then well rewarded.[333]

The situation of the English counterparts of the Scottish almanac-makers was quite different. Most were professional astrologers who lived in London. They could afford to write almanacs for nominal fees as public relations exercises and as advertisements to draw potential clients from their considerable catchment area. It is known that some like Simon Forman and John Booker dealt with around a thousand clients a year each, while Lilly was consulted by double that number.[334]

Although Corss certainly offered his services as a teacher of judicial astrology, [335] it is doubtful whether he or any of the other known almanac-makers offered much, if anything, in the way of professional astrological services, and even if they did, it is highly unlikely that any of them, given the comparatively small populations of the Scottish burghs compared to London, could have attracted such substantial clienteles.

The next question to be addressed is why the predictions were so restrained compared to those of their English counterparts – and, indeed, compared to what was found in at least one Scottish broadsheet, that of John Stobo, an itinerant surgeon and 'student in astrologo-Physick', living in Kirkintilloch, near Glasgow. Only one edition of the latter's broadsheet series survives and that is for June, July and August of 1694 but it was clearly intended to appear regularly, probably quarterly. For 1694 and 1695 he predicted

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[333] Well-wisher, 1665, [p. 8].
[334] Thomas, *Religion*, p. 364.
[335] James Corss, *Mercurius Coelicus* (Edinburgh, 1663), [p. 14].

> great slaughter and bloodshed…Clandestine Plots or Councils to unthrone and unhorse some great man, or prime Commander…some monstrous Business is a hatching…The first, second, third most Principal or greatest person, or Prince of all Europe, shall either die ere 1694, or 1695…what the Grandees of these times cannot perform by Slaughter and Blood-shed, they now intend to execute by Deceipt, Fraud and Dissimulation…[336]

It was followed by much more in this vein. The broadsheet was almost certainly produced as an advertisement for his services, as in it he offered to operate on a wide variety of medical conditions. In the same year, writing as 'Mr John Stobo, student in Astrologo-Physick', he also produced an almanac for Edinburgh's Anderson press, but compared to the flamboyance of *The Scottish Mercury* it is a pedestrian affair, and contains no predictions. He did, however, use the opportunity to inform readers that he would be offering his thoughts on the effect of the December 1694 eclipse in a forthcoming broadsheet:

> the Sun being deprived of his light in the 25 degree of the Celestial Archer, we may be concerned in the effects thereof, which you shall see at large in the *Scottish Mercury* for that month.[337]

Certain printers in Edinburgh, Glasgow and Aberdeen were licensed by the magistrates of their respective burghs to produce almanacs.[338] This would have allowed these officials and the government a great deal of control of content, had they wished to exercise it. Broadsheets, like those of Stobo and one by an astrologer named Cathcart that had incensed Sir John Lauder in 1685,[339] seem to have escaped some of this vigilance. Even so, the Kirk was still a force to reckon with and to stave off any accusations of impiety Stobo declared his religious affiliation with it:

> Let all fix where they will, I resolve to build my Tabernacle upon the Reformed Church of Scotland, and will conform my Life accordinly [sic].[340]

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[336] John Stobo, *Scottish Mercury* (Edinburgh, 1694), p. 1-2.
[337] John Stobo, *Mercurius Scotus* (Edinburgh, 1694), [p. 5].
[338] Mann, *Book Trade*, pp. 13-14.
[339] Sir John Lauder, 'Historical Observes', in *Ballantyne Club* (Edinburgh, 1840), p. 145.
[340] Stobo, *Scottish Mercury*, p. 2.

Paterson's explanation in 1690 for an anagram he wrote for the previous year shows, however, how acutely sensitive the authorities were to political issues when it came to almanacs, even going as far as to suppress items in chronologies:

> The Printer according to an Act of Council at that time, caused alter the said Chronology, by taking out the Gun-powder-Plot, and put in the Birth of their Prince, which I considering to be no Robbery, but a fair Change, to take out old Plots, to make Room for new Ones.[341]

It is hardly surprising, then, that Sander's 1683 almanac – almost certainly a copy of Forbes's Aberdeen almanac, written by Liddel – gave a prediction about the forthcoming conjunction of Saturn and Jupiter in Leo as follows:[342]

> I will give you Andrew Argol's words thereof. Cum celebretur Conjunctio Superiorum Saturni & Jovis, in trigono igneo, Antiquorum concensu mutationes magna [sic] contingent, & generales constitutiones; ac de facili Dominiorum mutationes. [343]

With the predication shrouded in Latin, and therefore accessible only to the educated, and in the words of a respected authority, the almanac-maker could hope to stay clear of charges of stirring up trouble. The sign of Leo refers to kings and rulers. Seeming to predict an easy regime change at this time, when James, Duke of York and the heir of Charles II, had recently been exposed as a Catholic and when a regime change was exactly what many in Scotland wanted could have been political dynamite.

Censorship was not the only brake on making clear-cut predictions. Although proficient in astrology, and at times keen to demonstrate it, most Scottish almanac-makers identified themselves, above all, as being mathematicians and stressed the

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[341] James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, 1690), [p. 4].
[342] Painful Astronomer, 1683, [p. 3].
[343] This can be translated as: *It is considered that with the conjunction of the superior [planets] Saturn and Jupiter in the fiery trigon, by the consensus of the ancients great changes will come to pass in the general structure of things and with easy change rulers.*

otherness of astrologers. Liddel made this highly significant distinction between astrology and mathematics.

> More might have been said, then this Annuary Synopsis doth require, what remaineth I leave to the Scrutiny of the diligent *Astrologers,* who deduceth their Predictions from Celestiall Influences, and not from Mathematicall Certainties.[344]

This distinction must go a long way to explain the reluctance that Liddel and others, themselves mathematicians, had shown about making predictions. Mathematics gave precise and reproducible results that could be verified objectively; astrology offered broad patterns of theme-related possibilities, whose judgement required subjective interpretations, which were therefore open to dispute and error, and whose results did not always correspond with eventual observed outcomes. Despite this, in the deference frequently shown by almanac-makers in their references to 'astrologers' and 'the learned' it was clear that they believed that there was something of value to be found in astrology. As Liddel wrote, 'many things may be predicted by the Learned, which may come to pass either in whole or in part...'[345] Liddel may have had no problem with the fact that matters did not always turn out exactly as predicted by even the most erudite and meticulous astrologers whom he held in esteem, but there were others who found it risible and even contemptuous.

Making wrong predictions has always left the astrologer wide open to ridicule and the tradition of lampooning them stretches back to Roman times, but towards the end of the seventeenth century almanac-makers appear to have become more

[344] Well-wisher, 1666, [p. 8].
[345] Ibid, [p. 8]. Robert Pont had said very much the same in his *Newe Treatise* of 1599, p. 44.

defensive and the satire more robust.[346] Mockery seems to have started up in earnest in the 1670s. 'D. E.' of Glasgow in 1670 revealed to readers that

> The malignant planet being in opposition to Jupiter in the tenth house, it will not be convenient as yet for men to eat roasted Hedge-hogs with the bristles on.[347]

By 1695 a Well-wisher of Artists, while clearly having his own ideas, was intimidated by potential scorn, and declined to comment on possible outcomes.

> Upon the 12. day of August...there will fall out a great...Opposition of Saturn and Mars. in the 9. degrees of Cancer and Capricorn: If I should tell my Judgement, its like some would laugh, but leaves it to the Knowledge of the Learned, &c. to give theirs.[348]

'H.S.' of Glasgow in 1692 however thought that trying to convince astrology's critics was hardly worth the bother.

> Who seek by curious Art to satisfie
> Each cavilling Critick in Astrology,
> He hath as hard a Task even every whit,
> As to be forc'd to wooe a scornful Tit.[349]

From 1699, the *Prognostication* of Merry Andrew, 'professor of predictions by star-gazing, at Tam-Tallon', which ran for at least 70 years, took the mockery of astrology to new levels, while still retaining the standard features of an almanac.

Although Scottish almanacs certainly contained predictions these, as has been seen, were so non-committal that it seems doubtful whether their content alone could have evoked the disparaging attacks on astrology. On the other hand, this tentativeness can be seen as a sign of just how vulnerable to attack the almanac-makers perceived themselves to be in making predictions, and such vulnerability in practitioners of an art that had been seen as so dangerously influential would have

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[346] Tester, *History*, p. 243.
[347] D. E., *A New Prognostication* (Glasgow, 1670), [July: copy incomplete].
[348] Well Wisher, 1695, [p.5]
[349] H. S. Philomath, *A New Prognostication* (Glasgow, 1692), [p. 15].

been an open invitation to the satirist.[350] It is, after all, hardly worthwhile mocking what has not once wielded uncomfortable power. As Sophocles said, 'To mock foes, is not that the sweetest mockery?'[351] There must have been other, more sensational, publications, as well as practitioners, in Scotland that would have evoked greater censure from critics and sneerers, and this supposition is borne out by the railing of academics against prognosticators, as was noted in the first chapter. If Stobo's broadsheet is an example of the prognosticatory extravagances that were circulating, then the derision becomes more understandable. From the early 1690s Partridge's yearly predictions were reprinted in Edinburgh, presumably to cater for the gap in the market left by the lack of astrological commentary in the Scottish almanacs. In these prognostications Partridge had no hesitation in laying out his judgements in detail. Compared with 'G.S.', who for July of 1691 diffidently intimated that those subject to Taurus and Scorpio[352] could be affected by the month's celestial events, Partridge, for the same month, was more forthcoming:

> The *Armies* that were drawing together and approaching towards each other last Month seem now to be in downright good earnest to fall foul upon one another... there is some skirmishing about the beginning of the Month; but the heat of the business will be toward the latter end of it... There will be much blood spilt in those countries that undergo the seat of War...[353]

This was to affect France, Ireland or Poland. By making such specific predictions he was laying himself wide open to jeering if he was proved wrong.[354] Partridge's virulent political and religious views invited attack and a mock almanac, published

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[350] Capp, *Almanacs*, passim; Patrick Curry, 'Astrology in the Interregnum', in *Prophecy and Power: Astrology in Early Modern England* (Princeton, N.J., 1989); H. G. Rusche, 'Merlini Anglici: Astrology and Propaganda from 1644 to 1651', *English Historical Review*, 80 (1965), 322–333.
[351] Sophocles, *Ajax*, trans. by R. C. Trevelyan (London, 1919), Act 1, scene 1.
[352] G. S., 1691, [p. 5]. According to Corss and Ramesay, countries under Taurus include Ireland and Poland, and under Scorpio are Spain and Bavaria.
[353] John Partridge, *Partridges Observations of the Year 1691* (Edinburgh, 1691), [p.9].
[354] In this instance he was correct. On 12th July 1691 William's army decisively beat that of James II at the Battle of Aughrim in Ireland.

under the pseudonym of Isaac Bickerstaff by the satirist Jonathan Swift in 1708 predicting Partridge's death, succeeded in making the latter, and astrology, a laughing stock.[355] While no evidence has been found as yet of its direct effect in Scotland, given the closeness of the date to the Union of the Parliaments when so many Scots would have been in contact with London, it would be remarkable had it made no impact. A similar mock announcement via a broadsheet, of the supposed death of a well-known local astrologer, James Cathcart, was circulated in Edinburgh ca.1720, and the demise was refuted shortly afterwards. It may have copied the genre of Swift, but the humour was more indulgently affectionate than corrosive. [356]

At the same time that mockery of predictions was increasing, there was a steady rise in commercialism; the number of advertisements for books, medicines, playing cards, hotel services and other trading activities rose, tables for calculating annual rents gradually became standard and later in the period administrative items such as a 'List of Commissioners to Scottish Parliament since James VI succeeded to crown of England' began to appear.[357]

Paralleling this was a decline in the almanacs' astrological content. Time was being stripped of its dimension of meaning. From 1675 onwards few almanacs contained predictions associated with the seasons. Many gave only the date and time of the ingress of the Sun into the cardinal signs but this degree of accuracy would have enabled anyone who so desired to draw up the horoscope for the season and make his own judgement. Some omitted this section altogether. By the early

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[355] Capp, *Almanacs*, p. 244; Isaac Bickerstaff, *Predictions for the Year 1708... Written to Prevent People from Being Further Impos'd on by Vulgar Almanack-makers* (London, 1708). This was followed by an even more caustic one in 1710.
[356] Anon, *An Account of His Strange Life and Wonderful Actions* (Edinburgh, 1720); Anon, *The Restoration of Famous Cathcart* (Edinburgh, 1720).
[357] John Thomson, *Edinburgh's New Almanack* (Edinburgh, 1715), [p. 16].

eighteenth century the beginnings of the seasons had become uncoupled from the Sun's relationship to the zodiac and had acquired fixed dates, presumably in the interests of commerce, although in the Aberdeen almanacs until 1726, the date and time of the ingress was moved to the monthly report and the standardised dates for the beginning of the seasons appeared at the end of the almanac.[358]

The emphasis in the eclipse entries shifted from their significance as omens of doom to details of their astronomy. Mann's 1707 almanac gave an eclipse description that could have been taken, unaltered, from a mathematical textbook, and indeed may well have been. Stiff competition for accuracy in calculations continued. Merry Andrew made an attack on John Mann in 1702 that mirrored in part the Paterson-Liddel dispute over precision, but no astrological displays of virtuosity followed. Apart from weather forecasts, which continued to be linked with astrological significators throughout the period and beyond, the last astrological prediction to appear in an extant Scottish almanac is found in 1698, when 'G. C.' warned of a

> famous Conjunction of Jupiter and Mars in 22 degrees of the Celestial sign of Scorpia [sic]. It portends Afflictions to the Northern parts of the World, and chiefly places near the Sea; and occasions great Sea-fights, Shipwracks, Out-breakings of Waters above measure, with many misfortunes, &c.[359]

Somewhere in the late seventeenth century a tipping point seems to have been reached where astrology became dislodged from its tenuously respectable place not only in the intellectual mainstream of Scotland, as was shown in chapter one, but also in the regulated mainstream popular press as represented by almanacs. The educated person with an interest in astrology was now swimming against the tide and

[358] Ronald Black and Jane Ridder-Patrick, 'The Date of Òran a' Gheamhraidh' Revisited', *Scottish Gaelic Studies*, XXVII (2010), 1–18 (pp. 12–15); Well Wisher of the Mathematicks, *Aberdeen's New Prognostication* (Aberdeen, 1726), [p. 16].
[359] G. C. Mathermat., *An Almanack* (Edinburgh, 1698), [p. 3].

would have had to cultivate his curiosity privately, or face sharing the subject's ridicule. Almanacs themselves undoubtedly played a part in this decline by making the subject more accessible, taking it out of the shelter of the manse and university, where philosophical subtleties were understood and pondered, and exposing it to the rough and tumble of the marketplace. Meanwhile the Scottish almanacs moved on, placing their focus increasingly firmly on this marketplace of commercial and civic concerns.

Chapter Four: The Debate about Astrology

> After the Antonines vanished, the doctrine of the ministry of the planets became an integral part of the creed by which men lived, but like most doctrines it was not accepted with complete unanimity. There were many believers and a few doubters; there were many orthodox and a few heterodox; there were even a few martyrs.[360]

Criticism had dogged astrology since before the days of Ptolemy but the most trenchant intellectual and theological blow against it was delivered by Pico della Mirandola in 1495 in *Disputationes Adversus Astrologiam Divinatricem.* John Calvin followed up with his *Advertissement contre l'astrologie judiciaire* in 1549, which was translated into English in 1561.[361] But despite these and other authoritative attacks, before the seventeenth century, according to Keith Thomas, in England as elsewhere, 'total scepticism about astrological doctrine was highly exceptional.'[362] As has been demonstrated in previous chapters, in early modern Scotland too astrology was an integral part of the worldview and it was practised long after the time of Mirandola and Calvin. That being so, disputes about its legitimacy, desirability and veracity can shed light on issues around which the tectonic plates of traditional doctrine and the newly emerging paradigm clashed and buckled in the battle for supremacy in explaining the natural world.

Little scholarly work has been invested in the arguments and significance of the debate about astrology in early modern Scotland although many studies have been carried out with respect to other nations.[363] Of special interest is D. C. Allen's

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[360] Allen, *Star-Crossed Renaissance*, p. 3.
[361] Pico della Mirandola, *Disputationes Adversus Astrologiam Divinatricem* (Bologna, 1495); Jean Calvin, *Advertissement Contre L'astrologie Judiciaire* (Geneva, 1549); Calvin, *Admonicion.*
[362] Thomas, *Religion*, p. 338.
[363] For the debate in England and Europe, see: Allen, *Star-Crossed Renaissance*; Broeke, *Limits of Influence*; Campion, *History*; Garin, *Astrology in the Renaissance*; Claudia Brosseder, *Im Bann Der Sterne: Caspar Peucer, Philipp Melanchthon Und Andere Wittenberger Astrologen* (Berlin, 2004); G

invaluable and meticulous analysis of the debate that was taking place in Europe and in England. Arthur Williamson, however, in an article that covers the years straddling 1600, did underline the fact that there was a 'highly significant group of Edinburgh intellectuals' with an interest in various occult traditions, including astrology, at the time.[364] This chapter investigates attitudes to astrology in the Scottish context during the period between the Reformation and the earliest days of the Enlightenment, reviewing the arguments that were being put forward both for and against it outside of the academy under the headings of theology, morality, veracity and rationality, examining the preoccupations shown by those who opposed it and those who defended it, and noting any developments that can be detected over the period.

The importance of the debate about astrology in the early modern period can be gauged by the fact that two of the most powerful authorities in the land, on the eve of the seventeenth century, in 1597 and 1599, troubled to put into print their very differing opinions on the subject. The authors were King James VI (1566-1625) and the eminent theologian, judge and scholar Robert Pont, one of the founding fathers of the Scottish Reformation and six times moderator of the General Assembly of the Church of Scotland. Given these men's high status in Church and State, their views on the matter would have been regarded with utmost seriousness and would have been influential to the highest degree. As the carefully elaborated arguments in James's *Daemonologie* and Pont's *Newe Treatise* outline some of the most pertinent

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Coopland, *Nicole Oresme and the Astrologers* (Cambridge, Mass, 1952); M. Dougherty, *Pico Della Mirandola* (Cambridge, 2008); John Lapp, 'Three Attitudes Toward Astrology: Rabelais, Montaigne, and Pontus De Tyard', *Publications of the Modern Language Association of America*, 64 (1949), 530; P. Maxwell-Stuart, *The Occult in Early Modern Europe* (New York, 1999).

[364] Arthur H. Williamson, 'Number and National Consciousness', in *Scots and Britons*, ed. by R. Mason (Cambridge, 1994), pp. 187–212 (p. 192).

points of contemporary dialogue these texts form the core material of this chapter and will be examined in some detail.[365] Other sources used are the diaries and letters of Sir James Melville of Halhill (1535–1617), Sir Alexander Napier (1572-1629), Sir Robert Moray (1608/9-1673) and Sir John Lauder (1646-1722), as well as a selection of Scottish almanacs, the astrological textbooks of James Corss, Christopher Irvine (ca.1620–1693) and William Cock (fl. 1671-1679) and the pedagogic works of George Buchanan, David Person (fl.1635) and David Abercromby.

Daemonologie, which was published in Edinburgh in 1597 and in London in 1603, the year in which James succeeded to the English throne, is divided into three parts. The first book is a description of magic, necromancy and the lawful and unlawful uses of astrology; Book Two condemns sorcery and witchcraft, giving scriptural proof of their existence, while Book Three describes the four principal kinds of spirits and discusses the trial and punishment of witches. It is Book One that throws a great deal of light on James's attitude to astrology and his perception of its relationship to magic and witchcraft. In October 1599, scarcely two years after *Daemonologie* appeared, Pont, describing himself as 'an aged Pastour in the Kirk of Scotland', published *A Newe Treatise,* putting forward ideas about astrology that are largely contrary to James's. The book deals with eight propositions in its 105 pages. They concern the age of the world (Pont reckoned 5,548 years), counter the papist claim that 1600 is a Jubilee year (Pont believed that this had come and gone), suggest improvements to the reform the Julian calendar, examine the prophecies that indicate that the end of the world was fast approaching and, finally, there is an admonishment to all men to prepare themselves 'because the days are evill.' Pont's was an ambitious

[365] James VI, *Daemonologie* (Edinburgh, 1597); Robert Pont, *A Newe Treatise* (Edinburgh, 1599).

work that 'involved a massive integration of the apocalypse, number mysticism, chronology and astrology.'[366]

Fundamentally disagreeing about astrology, the authors inclined and bowed to each other in a courtly counterpoint, and although they were well acquainted, never once did either refer to the other, almost certainly out of diplomacy and mutual respect. These two books are representative of the arguments about astrology that were in place in Scotland around the beginning of the seventeenth century, formulaic arguments whose symmetry and balance allowed an oscillation backwards and forwards, but produced very little real movement in either direction.

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One crucially important area in the debate revolved around the question of whether or not the practice was theologically legitimate and this was widely deliberated. Most people, though, as will be seen, by no means everyone, accepted natural astrology. While there were significant grey areas, it was mainly the judicial branch of astrology that was hotly disputed. James VI highlighted some of the lines of demarcation in his *Daemonologie*, which is written in the form of a Ciceronian dialogue between two imaginary characters, Philomathes and Epistemon.[367] The former acts as questioner, while the latter assumes the role of expert and it is with him that James seems to identify most closely. Epistemon makes the all-important distinction between astronomy, natural astrology and judicial astrology.

> *Astronomia*…that is to say, the law of the Starres…is one of the members of the *Mathematicques*, and not only lawfull, but most necessary & commēdable *Astrologia*, [is] the word and preaching of the starres… [it] is diuided into two

[366] Williamson, *Number*, p. 194.
[367] In philosophical contexts, *scientia* and 'science' were used to translate the Greek word *epistemē*, which had acquired a specific definition in Greek philosophy, especially Aristotle, as a type of reliable knowledge which is built up logically from strong premises, and can be communicated and taught.

> parts: The first, by knowing thereby the powers of simples, and sicknesses, the course of the seasons and the weather, being ruled by their influence; which part depending vpon the former, although it be not of it self a part of *Mathematicques:* yet it is not unlawful, being moderately vsed, suppose not so necessarie and commendable as the former.[368]

No reason is given as to why astronomy is preferable and superior to natural astrology, and why the latter is granted only a grudging and qualified approval. There is, however, compelling evidence to suggest that James was born with cerebral palsy.[369] He had recourse to physicians much of his life, most of whom would have used astrology, but with no great success in any of his ailments, which may well have left this naturally sceptical man with a somewhat jaundiced view of the subject.[370] The practice, however, was deemed 'utterlie unlawful to be trusted in' when used in its judicial form

> to fore-tell what common-weales shall flourish or decay…what side shall winne in anie battell: what man shall obtaine victorie at singular combate: what way, and what age shall men die: what horse shall winne at match-runnning; and diuerse such like incredible things, wherein Cardanus, Cornelius Agrippa, and diuvers others haue more curiouslie than profitably written at large...this last part of Astrologie … was called by them pars fortuna [and] now is vtterlie unlawful to be trusted in, or practized amongst christians, as leaning to no ground of naturall reason: & it is this part which I called before the deuils schoole. [371]

This was the uncompromising stance taken by many. One couple felt so strongly about the unlawfulness of astrology that they had their argument carved in stone, quite literally, on the front wall of Lauriston Castle on the outskirts of Edinburgh. The castle had formerly been the home of the judge Sir Alexander Napier, half-brother to John Napier (1550-1617). Alexander, whose reputation as an

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[368] James VI, *Daemonologie*, (London, 1603), p. 13. This edition is used for extracts throughout.
[369] A. W. Beasley, 'The Disability of James VI & I', *Seventeenth Century*, 10 (1995), 151–162.
[370] Elizabeth Furdell, *The Royal Doctors, 1485-1714* (Rochester, 2001), pp. 98–100.
[371] James VI, *Daemonologie*, pp. 13-14.

accomplished judicial astrologer was well known,[372] had had a stone engraved with his own horoscope and placed above the front door of the castle when he inherited it in 1604.[373] Sometime in the 1650s the castle was acquired by another lawyer, Robert Dalglish and his wife Jean Douglas. They removed the horoscope and replaced it with a Latin-inscribed slab, still in place today, whose text firmly refutes astrology.[374] It reads:

> I acknowledge the stars neither as moderators of my life or the causes of my wealth. These things I possess I consider as witness of God's goodness, and I commit the same to God's faith to be disposed of by his will. I ask for and expect from Him the grace to use these things for His sake.

Not all of the debate, however, was shrouded in pious disapproval. It could be a matter for agreeable discussion among friends too. Sir Robert Moray, one of the founders of the Royal Society, was engaged in a long correspondence with his friend, Sir Alexander Bruce, co-inventer with Huygens of the pendulum clock and another moving force behind the Royal Society, who was ill in Bremen. In January 1658 Moray wrote

> Since you think judiciall astrology lawfull... we may find leasure to talk of it when we are drawing dry.[375]

Although judicial astrology was the main target for disapprobation, later in the period the theological legitimacy of natural astrology was also called into question. The fact that the very first sentence in William Cock's text on the astrological judgment of the weather, *Meteorologia*, published in 1671, addressed this issue attests to the fact that the practice was under attack. Cock was quick to assure readers of its lawfulness and

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[372] Napier, *Memoirs*, p.320 ff.
[373] From the planetary positions on the stone it can be calculated that he was born at 6.40a.m. on 8th October 1572.
[374] John Philip Wood, *Antient and Modern State of the Parish of Cramond* (Edinburgh, 1794), pp. 40–41.
[375] *Letters of Sir Robert Moray to the Earl of Kincardine, 1657-73*, ed. by David Stevenson (Aldershot, 2007), p. 118.

declared his own religious stance by signing himself as 'Thy Christian Friend'.[376] James Paterson, as was seen in chapter three, and evidenced by an outburst in his 1690 almanac, had also been in the firing line and, taking up the cudgel in his own defence, said he would 'endeavour to convince the ignorant with as great facility, and plainness as this final page can permit'.[377]

Much of the ammunition for the polarisation of opinion about astrology stemmed from the selective choice and interpretation of biblical passages as debaters turned to scripture to find support for their own particular viewpoints. At the Reformation the Bible, as the Word of God, had become the prime source of authority for the Scottish Church. The early Reformers were aware, however, of the dangers of individual interpretation of the Bible. In an attempt to minimise these John Calvin codified the theology of St Augustine in his *Institutes*, and thereby provided a body of doctrine for the new Church. St Augustine's belief about astrology was that any accurate results that were produced through its use came via the agency of evil spirits rather than through astrology itself, and Calvin blazoned this conviction in a quotation from Augustine's *City of God*, book 5, chapter 7, on the title page of his *Admonicion against Astrology Judiciall*.

> It is not without cause that men suppose that when the Astrologours do merueylously in their answeres declare many truthes, the same is done by a secrete instinct of wicked spirites, whose care is to fasten and confirme in mens mindes these false and hurtfull opinions of starrie destinies, and not by any art or connyng of the noting and beholding of the byrth star for there is no such art at all.[378]

When marginal notes, also intended as guidelines, were inserted into the English-language Geneva Bible that became the standard edition in Scotland after the

[376] Cock, *Meteorologia*, [p. ii].
[377] Paterson, 1690, [p. 13].
[378] Calvin, *Admonicion*, title page.

Reformation, these ideas of Augustine were implanted with them. Astrology's perceived link with the diabolical had for at least a millennium been a prime Christian argument against it, but with the Reformers' narrowing of the locus of authority tightly onto Scripture the words of the Old Testament took on a new prominence. Concerns about witchcraft, idolatry and demonic possession came sharply to the forefront of Protestant thinking and as the Geneva commentaries linked astrology directly with these enemies of God, the case against it became stronger.

Two conflicting torrents, however, flowed from the Reformation: the claim of freedom for individual conscience and judgement in religious matters, and the insistence on obedience to the word of God as set down in Scripture and guided by the authority of the servants of the new Church. Williamson summed it up thus: 'Early modern Calvinist Scotland certainly did not seek to become a tolerant society, yet within limits – and, to be sure, these were severe – it was just that.'[379] This friction between personal and doctrinal authority may have helped keep alive the defence of as well as attack on all types of astrology, even though Calvin strongly disapproved of the judicial branch. Following the contemporary urge to return to the purity of original texts, both opponents and proponents of astrology sought out biblical passages to justify their stance. James declared that in

> the Scriptures (which must be infallible ground to all true Christians)…in the Prophet *Ieremie* it is plainelie forbidden, to beleeue or harken vnto them that Prophecies and fore-speaks by the course of the Planets & Starres…[380]

Jeremiah 10 is given as a margin reference in *Daemonologie*. In the Geneva Bible, which was the version that James undoubtedly used, Jeremiah 10: 2 reads: 'Thus

[379] Williamson, *Number*, p. 193.
[380] James VI, *Daemonologie*, p. 14.

saith the Lorde, Learne not the way of the heathen, and be not afraide for the signes of heaven, though the heathen be afraid of such.' A command not to fear it is hardly a serious indictment of astrology, but the accompanying annotation most certainly is:

> God forbiddeth his people to give credit or fear the constellations of stares, and planets which have no power of themselves, but are governed by him, and their secret motions and influences are not knowen to man and therefore there can be no certaine judgement thereof, Deut 18, 9b meaning not onely in the observation of the starrs but their Lawes and ceremonies whereby they confirm their idolatorie which is forbidden.[381]

Deuteronomy, similarly, makes it clear that a person who is a 'regarder of the times' or similar, such as 'a sorcerer, a charmer or that counselleth with spirits or a soothsayer or that asketh counsel of the dead... [is] abomination unto the Lord'.[382] James, through the mouthpiece of Epistemon, anticipating the argument that it was the Magi, or astrologers, who followed the star to find and worship the Christ child in Bethlehem, forestalled it with:

> This word *Magi* in the Persian tongue, imports as much as to be ane contemplator or Interpretour of Diuine or heauenlie sciences: which being first vsed amōgs the *Chaldees*, through their ignorance of the true diuinitie, was esteemed and reputed amongst them, as a principall virtue: And therefore, was named vniustly with an honourable stile, which name the *Greeks* imitated, generally importing all these kinds of vnlawfull artes.[383]

He dismissed the Chaldean science on grounds of the ignorance of its practitioners and delivered a disapproving swipe at the magical neo-Platonic ideas of the Renaissance, which had developed from the rediscovery of Greek texts. Robert Pont, however, was far from concurring with this. Having used astrology and proved to his own satisfaction that there was value in it, it is unsurprising that he should regard it as being *a priori* lawful. To support his viewpoint he marshalled the authority of his own preferred passages of scripture declaring that:

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[381] Jeremiah 10: 2.
[382] Deuteronomy 18: 9-12
[383] James VI, *Daemonologie*, p. 8.

> For that cause, the eternall God appoynted them in the beginning, not onely to shine and shew lights vnto the world, but also to be for signs of things to come: as it is testified in Genesis...to give light unto the Earth...to distinguish times, dayes, and yeares...to forewarne men of many things profitable for this life.[384]

He also referred to Job 'where the Lord himself maketh mention of the pleasant influence of *Pleiades*'.[385] Genesis 1:14[386] and Job 38: 31-33[387] were favourites among astrologers; these were also used by William Cock as God's endorsement of the practice. James Cathcart too in 1685 had 'cited some texts of Scripture allowing ane influence to the stars'.[388] Sir John Lauder, later Lord Fountainhall (1646–1722), as befitted the judge that he was, took a balanced view, and chose passages from both the Old and New Testaments, pro and contra, backing these up with reference to a contemporary commentator.

> Christ, in the 24 of Mathew, v. 29, tells us there shall be signes and wonders in the heavens, so they are not altogither accidentall, though we are not to rely to much on them, for God forbids that by the prophet, I will make the diviners mad,[389] which was to fortify the Jews against the poison of the Chaldeans, who were miserably addicted to this curious wain judiciall astrologie; see Howards Defensative against the poison of pretended Prophecies.[390]

At the core of the theological debate, beyond the simple trading of biblical references, was a polarisation of belief regarding the nature of the moving force behind astrology. Those against astrology aligned themselves with Augustine, Calvin and James in attributing its successes to the devil, while those who favoured it argued that the stars and heavenly events were agents of God. In *Daemonologie* Epistemon

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[384] Pont, *Treatise*, p. 45.
[385] Ibid, p. 45.
[386] Genesis 1:14: And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years.
[387] Job 38: 31-33: Canst thou bind the sweet influences of Pleiades or loose the bands of Orion? ; Canst thou bring forth Mazzaroth in his season? Or canst thou guide Arcturus with his sons; Knowest thou the ordinances of heaven?
[388] Lauder, *Observes*, p. 145.
[389] This refers to Isaiah 44: 25.
[390] Lauder, *Observes* pp. 16–17; Henry Howard, *Defensative Against the Poyson of Supposed Prophecies* (London, 1583).

makes a distinction between the two arts employed by the 'professours of [the devil's] seruice'; 'one is called *Magie* or *Necromacie*, the other *Sorcerie* or *Witch-craft*' and goes on to elaborate:

> *Necromancie* is the prophecie by the dead. This last name is giuen, to this black & vnlawfull science by the figure *Synedoche* [sic], because it is a principall part of that art, to serue themselues with dead carcages in their diuinations. [391]

Epistemon here uses necromancy as a blanket term for divination, and by equating it with magic, as he did in the term '*Magie* or *Necromacie*', he conflates astrology, divination, magic and the raising of spirits of the dead. Later he suggests that there are 'certain seasons, days and hours, that [conjurers] observe' in raising apparitions,[392] suggesting that James believed that magicians used elections, a branch of judicial astrology, for timing their rituals. Robert Melville (1527/8–1621), privy councillor and judge, appeared to have held much the same opinion in this as James. In 1562, James Bassantin predicted that Queen Mary, in whose interest Melville was working, would be imprisoned and destroyed by Queen Elizabeth. Melville retorted that he 'lyked not to heir of sic deuelisch newes, nor yet wald he credit them in any sort' as such things were 'false vngodly and unlawfull for Christiens to medle them with.'[393]

Defenders of astrology, on the other hand, were of the opinion that the stars were created by God not only, as they interpreted matters in Genesis, to give signs of things to come, but also as effectors of his will. They saw no diminution of God's power by attributing causative properties to the celestial bodies, and went along with the view of Gilbert Skeyne who, in his work on the causes and cure of the plague,

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[391] James VI, *Daemonologie*, p.9.
[392] *Ibid*, p.17.
[393] James Melville of Halhill, 'Memoirs of His Own Life, 1549-1593', in *Bannatyne Club* (Edinburgh, 1827), p. 203.

wrote that 'Heauen … is the admirable instrument of God… without whose disposition in all things, other second causes works nothing.'[394]

The arguments of astrology's detractors on theological grounds tended to be monotone repetitions of scriptural passages that conflated astrology with the black arts and appeared to forbid its practice, while among the defenders of astrology the range of arguments was wider. James Bassantin, for instance, drew on the authority of the Lutheran luminary, Phillip Melanchthon, as well as the accepted practice of teaching astrology at many of the continental universities, to justify his use of it, declaring that

> Melanthon, who was a godly theologie, has declaired and written anent the naturell sciences, that are lawfull and daily red in dyuers Christien vniuersites[395]

Bassantin seemed to make no distinction between natural and judicial astrology and, clearly, from his predictions he considered the latter to be just as permissible theologically as the former. To add legitimacy to his art, he attributed his own aptitude for prescience as God-given and went on to enlarge on his predictions to Melville despite the latter's protests, explaining that

> as in all vther artis, God geues to some les, to some mair and clearer knawlege then till vthers; be the quhilk knawlege I haue also that at lenth, that the kingdome of England sall of rycht fall to the crown of Scotland, and that there are some born at this instant that sall bruk landis and heritages in England.[396]

Pont pressed home a similar point, that there is a precedent in nature for knowing what is to come: birds and animals have been given the ability to sense coming changes in the weather so then

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[394] Gilbert Skeyne, *Ane Breve Descriptioun of the Pest* (Edinburgh, 1568), [p. 3].
[395] Melville, *Memoirs*, p. 203.
[396] Ibid, p. 204.

> how should we altogether denie fore-knowledge to be graunted to men, to conjecture of these accidents, having reason, judgement, and experience to lead than thereunto?[397]

Defenders, however, were highly sensitive to the charge of sorcery. Despite his conviction that astrology was lawful, Bassantin protested to Melville:

> I am a Christien of your religion, and feares God, and purposes neuer to cast my self in any of the vunawull artis that ye mean of[398]

More than a century later, in 1695, John Stobo also felt he had to justify himself and his predictions. In his broadsheet, *The Scottish Mercury*, he assured readers:

> This I write with a publick Spirit, only for Caution to such as it may concern, well understanding God rules all eternally by Providence, having left to man but a Glimpse of Prescience...[399]

Like Bassantin, he was careful to stress his adherence not only to Christianity, but also to the 'Reformed Church of Scotland'. The realisation that they were under suspicion of trafficking with Satan prompted astrologers to make frequent references to their allegiance to God. Just as Cock had signed his address to the Reader as 'thy Christian friend', James Corss several times broke into ecstasies about God's glory and love in his textbook on astrology and arithmetic. Corss also drew parallels between the movements of the planets and both the social hierarchy and God's relationship with man. In the planetary movements he saw symbols and analogies with God's love:

> ...the Superiour Planets (Saturn, Jupiter and Mars) never apply (unlesse Retrograde) to the Inferiours; but (just as it is amongst men) the Inferiours alwayes apply unto the Superiours. This Coelestial Oeconomy demonstrates the infinit love of God towards us, who being *Superiorum Altissimus*, should apply himself to us, his sinful creatures, even when we run Retrograde. O wonderful love![400]

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[397] Pont, *Treatise*, p. 46.
[398] Melville, *Diary*, p. 204.
[399] Stobo, *Scottish Mercury*, p. 2.
[400] Corss, *Ouranoskopia*, p. 3-4.

Again it was left to Sir John Lauder to give the judge's balanced view. He wrote:

> It is a true Latin proverb, Sapiens dominabitur astris, [the wise man will be ruled by the stars] and esto, that Astra regunt horas, [the stars rule the hours] which may be denyed as to our minds and wills, except in so far as they are organically influenced by our bodies, yet Regit astra Deus.[God rules the stars].[401]

There is much extant documentation that provides clues to the influences that might have informed and moulded James VI's views of astrology. This abundance of evidence, coupled with the influence that his views would have had due to his position of power and authority, means that a greater consideration is given here to James's case than to all of the others. The negative opinions of George Buchanan about astrology could hardly have failed to have prejudiced James against the practice. Buchanan, a humanist, historian and the greatest Latin poet of his day, with admirers throughout Europe, was tutor of the young king. By his own admission, Buchanan was keen to impress on James the lessons of history. As Book Five of his astronomical poem, *De Sphaera*, which gives historical examples of the deleterious effects of astrological predictions was written during the 1570s, the years when Buchanan was James's tutor, it is exceedingly unlikely that this material would not have formed part of their lessons.

There is evidence that James had also been exposed to contemporary astrology in his lessons with his other tutor. An account exists from John Gibson, bookbinder, for six books for the use of the king, under the tutelage of Peter Young, and it is signed by the latter. On the back of the bill is an order upon the treasurer for payment subscribed by James himself and dated 1st October 1580. James would have been fourteen years old at the time.[402] The six books that had been purchased were

[401] Lauder, *Observes*, p. 17.
[402] *Miscellany of the Maitland Club*, p. 17.

listed as "Harmonia Stanhurti, Fregii questiones physicae, Hemmingius de superstitionibus magicis, Lapis metaphysicus, Memorabilia Mizaldi and Cardanus de geniture". These can be identified as Richard Stanihurst's *Harmonia seu Catena Dialectica in Porphyrianas Institutiones,* published in London in 1570, which is a commentary on Aristotle's categories,[403] Thomas Fregius's *Questiones Physicae* published at Basle, Niels Hemmingsen's treatise on witchcraft, *Admonitio de Superstitionibus Magicis Vitandis* published in Copenhagen in 1575, Gerhard Dorn's alchemical text of 1570, *Lapis metaphysicus,* Antoine Mizauld's miscellany of mystical writings *Memorabilia*[404] and, finally, one of the most famous astrology books of the time, Girolamo Cardan's *Geniturarum XII*.[405] James's education was clearly wide-ranging and up-to-date, incorporating some of the latest thinking on metaphysics, magic and astrology as well as Aristotle and natural philosophy. [406]

From his dismissal of Cardan's work, along with Cornelius Agrippa's, as 'more curiouslie than profitably written' it would appear that James's youthful exposure to Cardan's work had left him unconvinced of the validity of astrology. Cardan, embarrassingly, had been proved wrong in many of his predictions based on nativities. Another text that made a lasting impact on James was that of Niels Hemmingsen, a Danish Lutheran priest who had studied under Melanchthon. When James was in Denmark preparing to bring his bride, Anne of Denmark, back to Scotland he met the author of his boyhood text on witchcraft[407] and it would have been odd if they had not discussed the topic. The Dane is mentioned again in the

[403] Charles Lohr, 'Renaissance Latin Aristotle Commentaries', *Renaissance Quarterly*, 35 (1982), 164.
[404] Antoine Mizauld, *Memorabilium, Sive Arcanorum Omnis Generis* (Cologne, 1574). Mizauld was also the author of several books on judicial astrology.
[405] Girolamo Cardano, *De Astrorum Iudiciis* (Basel, 1578).
[406] For the textbooks of King James VI see Thomas Baldwin, *William Shakspere's Small Latine & Lesse Greeke* (Urbana, 1944), pp. 544–545.
[407] David Ward, 'The King and "Hamlet"', *Shakespeare Quarterly*, 43 (1992), 280 (p. 280).

preface to *Daemonologie* advising the reader who 'would know what hath been the opinion of the Auncients, concerning [the] power [of witches]' that 'hee shall see it well described by Hyperius & Hemmingius.' At the time of writing *Daemonologie*, James clearly believed in the reality of the devil and witchcraft, and that magic and astrology were both effective and dangerous. His personal experiences almost certainly informed his attitude towards astrology, especially as he appeared to perceive a close connection between the two. James was intensely self-protective. He had good reason to be, with a father murdered and mother executed, and his childhood dominated by an authoritarian tutor, and he had had, too, the experience of abduction and months-long imprisonment in the Ruthven Raid of 1582. James's sceptical nature, which would have been reinforced by Buchanan's early teaching, may explain his lack of intellectual engagement with astrology at a time when it was common currency. It could account too for his initial scoffing at the evidence of the North Berwick witches accused of raising a storm to try to kill him and his new wife as they sailed back from Copenhagen to Leith in 1590. He said 'they were all extreame lyars' until Agnis Sampson, one of the accused, took him aside and whispered in his ear the words that had passed between him and his bride on their wedding night.[408] This personal experience convinced him of the reality and power of witchcraft and it is almost certainly this that prompted him to write in *Daemonlogie* of Satan being able 'to reueale to them the secretes of anie persons, so being they bee once spoken, for the thought none knowes but GOD'.[409] To find his boundaries breached by non-physical means must have increased his insecurities alarmingly, especially as he had already been terrified by attacks from Francis Hepburn, the

[408] Anon, *Newes from Scotland* (London, 1591), p. 15.
[409] James VI, *Daemonologie*, pp. 21-22.

'Wizard' Earl of Bothwell, a man who practised judicial astrology and, reputedly, necromancy and witchcraft.[410] The padded clothes he habitually wore to avoid harm by stabbing would have provided no security here.[411] It seems that Agnis Sampson's whispered revelation was a turning point for James. Before that fateful journey back to Leith, James had visited Tycho Brahe (1546-1601) in his observatory on Hven and was so taken with him that he wrote two poems in his praise. It is difficult to detect any condemnation of astrology in this poem, written by James in praise of Brahe.

> He [God] also pitch'd eache Planet in his place
> And made them rulers of the ruling Lord
> As heauenlie impes to gouerne bodies basse
> Be [sic] subtle and celestiall sweete accord
> Then greate is Ticho who by this his booke
> Commandement doth ouer these commanders brooke. [412]

'heauenlie impes to gouerne bodies basse' suggests an acceptance of the idea of the concordance of heavenly and earthly happenings. It can be argued that James's distaste for astrology, which he conflated with sorcery, came not from a rational rejection of it based on theoretical incongruence or practical experience; nor did it stem from piety. Rather it rose from an alarming series of events that triggered off his own deep-seated fear of the irrational, the flames of which were fanned by the ambient Post-Reformation preoccupation with the culture and superstitions of the Old Testament. In his authorised version of The Bible, published in 1611, he ordered the commentaries that had been inserted by the Geneva Reformers to be removed. It is unlikely, however, that this was prompted by any second thoughts he may have had about astrology and witchcraft, although he did later 'relax his posture' on the

[410] Napier, *Memoirs*, p. 217.
[411] Furdell, *Royal Doctors*, p. 101.
[412] *The Poems of James VI of Scotland*, ed. by James Craigie (Edinburgh, 1958), II, p. 101.

latter.[413] As author of *Basilikon Doron* and upholder of the divine right of kings, what he strongly objected to was what he considered the seditious politics in some of the commentaries, suggesting that it was right to disobey and even overthrow an unsuitable king.[414] But with the removal of all of the marginal notes, some of the more biting attacks on astrology that were imbued with Biblical authority had been removed from the public theological sphere too, even though the influence of *Daemonologie* lived on. James may have revised some of his more extreme views on astrology as Johannes Kepler (1571-1630) dedicated his *Harmonice Mundi* to the king, whom he saw as a potential unifier of the Protestant Churches of Europe. Kepler also hoped to convert James to his new astrology, but there is little evidence that this ambition was ever realised.[415]

Robert Pont's view of astrology, just as James's, influenced and was much influenced by the theology of his age. There were two sources of Pont's defence of astrology. The first derived from personal experience. Unlike James, he had practised astrology and had found in it something of considerable value. He was untroubled by the fact that it delivered predictions of only 'probable certaintie' as this was consistent with his conviction that God could transcend natural processes at will. Second, and crucially important for his militant Protestant vision, astrology was a powerful weapon in his armoury to help him both to reveal the corruption and 'pompose superstition' of the Church of Rome and to calculate the date of the end of the world. As a founding father of the Scottish Reformation, he was profoundly affected by the millennialism that was sweeping Europe and was convinced, like John Napier and

[413] Furdell, *Royal Doctors*, p. 101.
[414] For example; Exodus 1:9 indicated that the Hebrew midwives were correct in disobeying the Egyptian king's orders, and a note for 2 Chronicles 15:16 said that King Asa should have had his mother executed and not merely deposed for the crime of worshipping an idol.
[415] Bowden, *Scientific Revolution in Astrology*, p. 109.

countless other learned men, that the world would end soon after 1600.[416] In the introduction to *A Newe Treatise* he stated his reason for the unusual decision to publish it in English and so hurriedly, when he already had a longer and more comprehensive volume in preparation:[417]

> The first cause (I confesse) that mooved mee to publish this Treatise in our English tongue, was to disswade the too curious conceites of certaine men, desirous to be at Rome this approching 1600 yeare commonly called a year of Iubilee, wherof they shuld receiue no profit, but rather domage, with losse of time & expenses.[418]

He wanted his views in *A Newe Treatise* to be read as widely as possible so that

> when the substance, the Satanicall inuention, and false ground, wherevpon these Iubilees are set vp, is truly considdered: There is no-well instructed Christian hart, but must needes abhorre the impietie and abuse thereof.[419]

For Pont it was not astrology that was linked with sorcery, it was the

> Antichristian Papale kingdome [that] did vtter the selfe in the person of SYLVESTER the second, who by art Magick, and divelrie, made himself to be promoted Pope [420]

Whose other black sins, like 'their blasphemous indulgences and Pardones' were

> teaching devilish doctrine, to witte, forbidding mariage, and commanding to abstaine from meates, which God created and ordained, to bee received with thanks-giving. [421]

From events in the Bible and reckoning times using the number seven which included the eras associated with the seven planets, he calculated that the world began in 3947 BC, which agreed with the date reached by Johann Heinrich Alsted and Joseph Scaliger, but computed using different methods. Then, reading minutely into the Book of Revelation and correlating this with biblical chronology and

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[416] Arthur H. Williamson, 'Scotland, Antichrist, and the Invention of Great Britain', in *New Perspectives on the Politics and Culture of Early Modern Scotland*, ed. by R. A. Dwyer and A. Murdoch (Edinburgh, 1982), pp. 44–58.; Williamson, *Number*, pp. 187-212.
[417] Robert Pont, *De Sabbaticorum Annorum Periodis Chronologica* (London, 1619).
[418] Pont, *Newe Treatise*, pp. 3-4.
[419] Ibid, p. 25.
[420] Ibid, p. 39.
[421] Ibid, p. 101.

prophecies and 'Astronomicall [reckoning] gathered by the course and revolutiones of the Heaven',[422] he worked out that

> there is an appearant dangerous alteration to fall out this yeare & within few yeares hereafter, … the Prophecies and signes declaring to us the world to be neare an end.[423]

He added however, possibly to reassure fellow Protestants, that 'the time by great probabilitie, & good arguments, is to be abbreviat, for the Elect sake'[424] and he cited several astrological portents that backed up his calculations:

> we seen in our dayes, divers apparitions in the heaven, namely, that most notable star or comete, which appeared in the yeare of our Lord 1572. most cleare, without any spowting haires or beames from it, the which the most learned did take for a signe of the approching of the Lord to judgemente against the bloudy tyrants of the earth, & namely, that Herode of France.[425]

He considered one of these signs to be the solar eclipse of 1598, whose effect he claimed still to be in operation, followed by the extraordinary number of eclipses to come in the following six years. He was especially concerned about

> that fearefull Eclipse of the 1605. yeare, wherein the Sun shall be allutterlie [sic] darkned at Noone-daie, whereof the effectes shall continue certaine yeares thereafter; pretende great mutations and perturbationes to ensue in those few yeares following; As warres, seditiones, pestilences, famine, with many other grievous calamities.[426]

He linked the prophecy of the 'shaking of the powers of the heaven'[427] with the precession of the equinoxes whereby 'the signes are changed from their former places: so that Aries is come to Taurus, and Taurus to Gemini for the most parte'[428] and would not enter into a discussion of the effects of the trigons and great

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[422] Ibid, p. 43.
[423] Ibid, p. 78.
[424] Ibid, p. 78.
[425] Ibid, p. 82.
[426] Ibid, p. 87.
[427] Ibid, p. 82.
[428] Ibid, p. 82.

conjunctions, supposing that their force had been greatly debilitated, because of the alteration of the signes, and so left the discourse to others, concluding that

> ...we are now in the 56th age, wherein all tokens of the latter times appeares for the most part to be fulfilled…and if we shall believe the Astrologues, Saturne being the Lorde of the great Circle of the yeare, signifieth Sectes, changing of estates and Kingdomes… all these things threaten unto us the hastie cumming of the Lord to judgement.[429]

And for Pont the

> most evident testimonie of all, is the agreement of those said heavenly signes, with the prophecies of the Revelation of the sixt and seventh trumpets. For the end of the sixt trumpet and Viale, and the beginning of the seaventh (vnder which now we are) agree together, as they doe in all the reste.[430]

Astrology for Pont was intricately bound up with, and supportive of, his passionate, crusading, and often vindictive theology while James, on the other hand, appeared to look to theology to make sense of and contextualise his personal terrors. Pont, unlike James, had manifestly had a great deal of practical understanding of astrology. He knew what he was talking about and could, and did, assess the capabilities and limitations of the craft. Writing from his own perspective of expertise lent dignity, power and authority to his words. Whatever the motivations and knowledge of the two men, however, by dint of their positions and status the influence of their opinions in the debate about astrology, both in Scotland and further afield, would have been considerable.

II

There were other considerations beside theology in the debate about astrology. Lauder may have believed that the influence of the stars did not extend to minds and wills, but others had concerns about the moral degeneracy that could come from the

[429] Ibid, p. 104.
[430] Ibid, p. 86.

use of astrology. In the mid 1550s George Buchanan was appointed tutor to Timoleon de Cosse, son of the Maréchal de Brissac, and around the same time, just after the publication of Copernicus's *De Revolutionibus*, he began work on his pedagogic poem on astronomy, *De Sphaera*. Writing of this continued until the 1570s and the unfinished opus was dedicated to Timoleon. For Buchanan, rationality was at the core of courage and godliness. He described the mind as 'kin to heaven' but suggested that it could be weakened by too much worldliness, 'overconfident wrong-headedness' and 'contempt for God'. Such people would then be left at the mercy of the irrational and 'like a boat without oars, driven and tossed by the storms of fortune' so that

> if the sky rattles with thunder, or the fire is struck from the clouds and quivers, there is fear, fluttering at the heart, consternation, and terror, even fear of the squeaking of the mouse and of the passage of the raven.[431]

And he argued that where there is ignorance of the true causes of natural phenomena, all sorts of superstitious practices arise such as the belief that eclipses could be caused by the magic chants of witches and dispelled by striking gongs. According to Buchanan there was, however, 'another pestilence … and not a lesser one' in the form of the astrologer, who as eclipses occur

> makes use of the stupidity of the mob and of their easily-led credulity. He threatens great and horrible things: maddening hunger, pestilence decimating the cities, wars, and whatever the insane bloodshed of wars brings on, and the gods in wrath against the affairs of men. [432]

Buchanan declared that such predictions were a license to plan every sort of crime, while absolving the criminal of all responsibility as

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[431] Buchanan, *De Sphaera*; James Naiden, *The Sphera of George Buchanan* (Washingon DC, 1952), p. 138-139.
[432] Naiden, *Sphera*, p. 139.

> the astrologer ascribes heaven to the misdeed, and encourages the follies of Kings by excusing them, and imputes all to the innocent stars.[433]

As if that were not enough, it was not only the vulgar who were stricken with fear, it was the leaders too

> who dreaded the eclipse of the sun, the pallor of the moon in darkness. For they thought by such tumult in heaven fate was portending destruction for the fearful earth; they lost courage and in terror paid for their stupidity through immense slaughter and the ruin of their country.[434]

He quoted the example of the Athenian leader, victorious so many times before, who after an eclipse of the moon was afraid to take his fleet out to battle 'against the will of heaven' and in the process lost the ships, his men and his life. Perseus of Macedonia, he related, came to a similar end through ignorance. Buchanan asked his pupil Timoleon not to believe 'that heavenly bodies are compelled by the compositions of man' and to pay attention to his descriptions of the natural causes of solar and lunar eclipses and the phases of the Moon.

James R. Naiden who undertook the first translation of *De Sphaera* saw Book Five as a refutation of Tycho Brahe's 1572 *De Nova Stella,* and most specifically of his astrological predictions. Tycho Brahe had made astrological forecasts about rulers, for example predicting that Sultan Soliman would die following a lunar eclipse in 1566, correctly as it turned out.[435] Buchanan, as a rationalist, may well have dismissed astrology but if he was seeking out Brahe specifically to criticise, then he was, by implication, placing him among the pestilential judicial astrologers rather than with the noble-minded and revered astronomers, whom he praised as

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[433] Ibid, p. 139.
[434] Ibid, p. 139.
[435] Hakan Hakansson, 'Profeten Tycho Brahe. Astrologi Och Apokalyps i 1500-talets Naturvetenskap', *Historisk Tidskrift.*, (2005), 683.

'mighty souls' and 'heroes' whom 'glory will place …in the shining light sublime.'[436] This is difficult to believe. In 1575, quoting from Ovid's *Metamorphoses*, Buchanan wrote that Tycho's *De Nova Stella* would inspire others to 'aspire to ride the clouds, and to take position on stout Atlas' shoulder.'[437] As a tutor of young men of nobility – these included Michel de Montaigne as well as James VI – Buchanan was charged with stocking their minds with intellectual riches, and preserving them from moral dangers, and these are the foremost issues that he addressed in Book Five of *De Sphaera*.

James VI, in the guise of Epistemon, was also concerned about the moral degeneracy he associated with astrology, but rather than putting this down to ignorance and superstition as Buchanan had done, he attributed blame to the curiosity of the educated which led them into the devil's clutches.

> The learned haue their curiositie wakened vp; and fedde by that which I call his [the devil's] schoole: this is the *Astrologie* judiciar. For diuers men hauing attained to a great perfection in learning…assaie to vendicate vnto them a greater name, by not onely knowing the course of things heavenly, but likewise to clim to the knowledge of things to come thereby.[438]

At first it seemed lawful to them as such knowledge appeared to be grounded only in natural causes, then finding that

> their practise to proue true in sundrie things, they studie to know the cause thereof: and so mounting from degree to degree, vpon the slipperie and vncertaine scale of curiositie; they are at last entised, that where lawfull artes or sciences failes, to satisfie their restlesse minds, euen to seeke to that black and vnlawfull science of *Magie*.[439]

They then become involved in casting spells and raising spirits to answer questions. At first 'they blindlie glorie of themselves' but then find they have become 'bond-

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[436] Naiden, *Sphera*, p. 138.
[437] Adam Mosley, *Bearing the Heavens* (Cambridge, 2007), p. 7, n. 21.
[438] James VI, *Daemonologie*, p. 10.
[439] Ibid, p. 10.

slaues to their mortall enemie' and receive 'the horrors of Hell for punishment thereof.' [440]

Defenders of astrology, however, went along with the sentiment of Cassius in Shakespeare's *Julius Caesar* that 'The fault…is not in our stars, But in ourselves, that we are underlings.'[441] Robert Pont, like Lauder, did not consider that 'the starres haue force to mooue the minds and willes of men, as it were by constraint, to this or that.'[442] Nor would Duncan Liddel, who gave his opinion in his 1666 almanac that 'Astra non cogunt, sed agunt, in haec inferiora & non frustra'[the stars do not compel, but urge, in these inferior places and not in vain].[443]

III

In the earlier part of the period even opponents appeared to accept that astrologers' predictions were accurate at least some of the time, though those going along with the thinking of St Augustine, Calvin and James VI attributed any correct answers gained through the use of astrology to the devil's influence. Astrology's validity, however, was even more powerfully challenged as a result of false predictions. Robert Pont had to

> confesse, that men of no evill inclination, are mooved to have those Astronomicall predictiones in greater contempt, because of the errour and ignorance of many professores of this science. [444]

Most of the criticism was put at the door of 'such as set foorth the vulgare Prognostications, that are yearely to be sold abroade.'[445] The almanac-makers James Corss and James Paterson had both come under attack and some of the criticism

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[440] Ibid, p. 11.
[441] William Shakespeare, *Julius Caesar*, Act I, scene 2, l. 140-141.
[442] Pont, *Newe Treatise*, p. 45.
[443] Well-wisher, *Prognostication*, 1666, [p. 6].
[444] Pont, *Newe Treatise*, p. 45.
[445] Ibid, p. 46.

came from other almanac-makers, such as J. A. in 1665 who refused to comment on possible effects of that year's eclipses, writing:

> As things shall stand forth in their season, I believe they will be as already they have been, viz. a disappointment to many small Prophets, who deduce their judgement from such doubtful Foundations; for who hath not lately known Great Things talked off, that never came to passe, and Great Things come to passe that hath not been talked off, to the manifest shame of Intruders into things they have not seen, and their Palpable Ignorance of things that are.[446]

Disagreement among astrologers about methodology was a frequent cause of critics' disparagement of the practice. The most common area of dispute among astrologers was about which system of house division to use. Astrologers divided the sky into twelve discrete sectors, called houses, each of which represented a different area of life, such as goods, spouse, honour, death and so on, and the interpretation of each of the planets varied depending on which sector it was found in the horoscope. Alexander Napier in a letter to Lord Lauder mentioned three of the most widely used systems of the time, those of Alcabitius, Campanus and Regiomontanus, and in declining to re-interpret the nativity of Lauder's son wrote that as another astrologer may have used a different house system from him

> were I to give judgement here it might be inconsistent with what I have already given, and thus lead me to contradict myself…which might haply afford the profane a scoff both against himself and '*the ever-to-be venerated art*' of astrology.[447]

Apart from wanting to avoid censure from mockers, he appeared to be untroubled in himself by the fact that different practitioners used such different frameworks for the judgement of the same astrological figure. As late as 1694 Stobo too simply accepted that dispute was the order of the day in astrology, as it was in medicine and religion:

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[446] J. A., *Prognostication*, 1667, [p. 4].
[447] Napier, *Memoirs*, p. 322.

> All truth is to be found in Divinity and Sacred Scripture, and yet all profess it not alike, there is hardly any portion of Scripture, but some conceited Brains vary therein, from the sober Judgement of grave Divines. [448]

This argument held little water for many, and indeed for some it was precisely such disagreements that damned astrology in their eyes. There were, however, advocates for the validity of astrology. Robert Pont, like other defenders of astrology, drew on their own experience of its veracity:

> many evident signes are founde in the motiones, configurations, and interchangeings of the courses of the heavenly light, whereby men, who are expert in divine science of Astrology, may gather and conjecture, many things to fall out, not only in the aire, but also in the naturall inclination of earthly creatures.[449]

Indeed, he went even further, turning on critics and accusing them of ignorance:

> I would informe them to amend their errour also, that deny the heavenly influences to be effectual, because the predictions of such as commonly set out the vulgare Prognostications oft-times, take not effect: I say, these men declare them selues very ignorant in naturall Philosophie, and are convict by experience and ensample of such things, as daily fal out, by vertue of the heavenly influences.[450]

Duncan Liddel, professor of mathematics at Aberdeen and almanac-maker, was of much the same opinion, writing that learned men could make predictions that were wholly or partially correct provided their 'Labours be accompanied with Vigilancie & Carefulness'. [451]

James Corss, William Cock and James Paterson had all become embroiled in the debate. Corss maintained that the aphorisms he supplied in *Ouranoskopia* 'by which the natural portents of eclipses may be foretold' were 'built upon experience'[452]

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[448] Stobo, *Scottish Mercury*, p. 2.
[449] Pont, *Newe Treatise*, p. 45.
[450] Ibid, p. 44.
[451] Well-wisher, *Prognostication*, 1666, [p. 8].
[452] Corss, *Ouranoskopia*, p. 18.

while Paterson in his 1690 Edinburgh almanac countered criticism about inaccuracy in weather forecasting by claiming:

> I have kept a Diery of the weather, since *September* 1684. which assists me greatly in judging the weather, and if Incouragement were given, could in an Ephemeris trace out the weather, and other natural occurrences, that from henceforth these Carpers should be ashamed that ever they disallowed it.[453]

Cock insisted too, in his characteristically hyperbolic manner, that his method of astrological meteorology was accurate and had been

> gained by the Observations of many years; and the Rules of it…a thousand times put to the touchstone of trial, and a thousand times… found…to be true.[454]

Some went as far as to make claims of near-infallibility for their judicial astrology. James Cathcart, for example, advertised that he could resolve astrological questions 'with great certainty' and did 'seldom or never fail'.[455] For men like Pont, who considered that 'this science, hath certaine limittes and boundes, over the which it ought not to be drawen',[456] Cathcart's assertions would most certainly have crossed that line. This was not because it was unlawful but because it was beyond man's ability and understanding to always predict accurately. [457] This was one of the many explanations given for the inability of astrologers always to come up with correct answers and predictions. Pont, although a defender of astrology, insisted that there was only 'probable certaintie in Astronomical predictiones'[458] and he warned against thinking 'that all things can be fore-told thereby'.[459] Duncan Liddel in his 1666 almanac made an important distinction between 'celestial influences' and

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[453] Paterson, 1690, [p. 13].
[454] Cock, *Meteorologia*, [p. ii].
[455] James Paterson, *A Geographical Description of Scotland* (Edinburgh, 1685), p. 24.
[456] Pont, *Newe Treatise*, p. 45.
[457] Ibid, p. 45.
[458] Ibid, p. 47.
[459] Ibid, p. 45.

'mathematical certainties'.[460] Stobo, too, in 1695 declared that he understood that 'God rules all eternally by Providence, having left to man but a Glimpse of Prescience.' Apart from these limitations of 'Humane Judgement' in which 'no certainty can be found'[461]– a view taken by him possibly as an insurance against professional errors – an important reason that predictions do not come about

> by absolute necessitie [is because] God is aboue all second causes, & may stay them when he pleaseth. [462]

In other words, according to Pont – and in line with Calvin's doctrine – God both controlled nature and was above it and He could therefore transcend natural laws.

But by far the most common reason given for wrong and overblown predictions was the ignorance of some of its adherents, and this almost invariably meant the almanac-makers and street astrologers. Condemnation of them is the common thread that links all of the criticisms of astrology throughout the period. Pont was keen to expose the errors of these practitioners and to point out exactly where they were going wrong:

> by reason of the great errour I see fall forth among the vulgare Prognosticators, for wronge taking vp of their groundes, in judging the face of the heaven, the weather, and other accidents and influences thereof: I haue thought good to discover their errour, that they may amend the same, and others be no further deceived by them.[463]

Despite this he still stood staunchly by his support for astrology, drawing a parallel with medicine and warning that just because an ignorant physician kills a patient it does not mean that all medicine is bad and that

> it followeth not hereof, that this divine science should be allutterly [sic] rejected or contemned, as many that be ignorant of it do.[464]

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[460] Well-wisher, 1666, [p. 8].
[461] Stobo, *Scottish Mercury*, p. 2.
[462] Pont, *Newe Treatise*, p. 46.
[463] Ibid, p. 44.
[464] Ibid, p. 46.

William Cock a century later also blamed the wretched reputation of astrology on the

> mistakes of our common… paper-Astrologers … a great sort of usurpers of this profession… and if they have made observations upon the influences, they are not able to try their experience by the touch-stone of true natural knowledg, in which they are meer strangers, and so no wonder they go wrong.[465]

He was just as keen to reform astrology, as had Pont been so many years before him,[466] while Stobo in 1694 merely shrugged off fellow astrologers' mistakes, declaring that 'All Arts have their Imperfections and their Enemies'.[467]

IV

Stobo may have been unconcerned about the imperfections and enemies of astrology, but within a decade or so astrology was no longer even a topic of consideration among the educated and in the universities. The reasons for this are many and complex and will be explored in the final chapter, but one thread in this change can be traced in the shifting emphases placed on theology and rationality. This can be examined by comparing the motivations for and context of the arguments for and against astrology that were put forward at two key turning points within the period under review. The first was around the turn of the sixteenth and seventeenth centuries and is exemplified by the opinions of James VI and Robert Pont while the second was around 1685 and can be seen in the views of Sir John Lauder, Duncan Liddel and David Abercromby.

By the 1680s the temperature of the theological debate about astrology, and especially the suspicion of its connection with magic, though still highly significant, had cooled somewhat. Some even doubted that sorcerers existed, and these included

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[465] Cock, *Meteorologia*, p. 2-3.
[466] This is covered in more detail in the chapter on natural and philosophical astrology.
[467] Stobo, *Scottish Mercury*, p. 2.

the erstwhile Jesuit who had converted to Protestantism, the physician, David Abercromby. Writing in 1685 that he could 'conceive no worse use of *Wit*, than to be busie about acquiring too much insight in Judiciary Astrology', he went on to add:

> 'Tis not only in my Judgement Sin which we should chiefly fear, to consult with Magicians and Witches, *if there be any*, [italics added] concerning contingent effects and contingencies. [468]

By the 1720s the connection between astrology and the devil was being treated in some quarters as more a matter for mirth than for prosecution. A broadsheet purporting to announce the demise of James Cathcart, an itinerant quack and judicial astrologer of Edinburgh, made speculative fun of the notion:

> Tho' some alleadg'd he was nae chancie,
> A Practiser of Nicromancie,
> Yet others say that's a fool Fancie,
> And boldy dars,
> To Swear he shines for ought they can see
> Amo' the Star's
>
> Others do confidently tell.
> That Orpheus like he went to Hell,
> And in black Art and Magick Spell
> Such Knowledge got,
> As to out-wit Auld Nick himsell,
> Like Mitchell Scot.[469]

In the post-Restoration period, however, another accusation, though by no means a new one, was gathering in strength; that of irrationality. David Abercromby, in addition to his engagement with religious controversy and medicine, was also one of Robert Boyle's protégés. He may not have been convinced that astrologers were trafficking with Satan, but he did conclude:

> I am moreover so little satisfied with the groundless grounds, and Principles of judiciary Astrology, that I fancy it the most vain, and most uncertain of all Sciences, and those that admire it to be none of the judicious sort.[470]

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[468] Abercromby, *Wit*, p. 141-142.
[469] Anon, *Strange Life*, [p.1].
[470] Abercromby, *Wit*, pp. 98.

Sir John Lauder, in the same year, while pondering on various possible portents, astrological and non-astrological, that might have been associated with the death of King Charles II, dismissed them all with: 'In none of [these] ther is anything for a rationall man to fix his belief upon'. James Corss and William Cock had become embroiled in the argument about the lack of rationale behind astrology, most especially in weather forecasting. Corss insisted that 'the true key [to such forecasting] is exceeding difficult' and that

> our Judgement of the Weather in out yearly Almanacks is not built upon a meer conjecture or bare guessing (as Millions of ignorant men think) but upon principles of reason, and that reason ratified and confirmed by many hundreds (if not thousands) of years experiences. [471]

Cock went further and deliberately set out to put the whole of his manual of astrological weather forecasting on rational grounds.

> For the due consideration of Meteor-Astrology…we must take notice of these twelve Hypotheses, upon which as so many magnificent pillars, we do set this stately Edifice of Starry knowledg.[472]

An atypical response to potential accusations of irrationality, however, came from Christopher Irvine when addressing the reader in the appendix to his *Medicina Magnetica*. With complete insouciance he mocked those who claimed his astrologically based magical medicine was irrational, writing:

> Christie hath served up this dish only for his own fancy, and his friends recreation…He thinks he ought to be allowed his folly, as well thou art permitted gravely, insanire cum ratione.[473]

It was unusual for anyone to be so confrontational about potential opposition, but Irvine was well-educated and in a position of some considerable influence as a royal

[471] Corss, *Ouranoskopia*, pp. 39-40.
[472] Cock, *Meteorologia*, p. 8.
[473] Irvine, *Medicina Magnetica*, p. 96.

physician. He was also a known hot-head and could, perhaps, afford to be dismissive of scoffers as neither his income nor professional reputation depended on astrology.

The reaction to such criticism from the almanac-maker James Paterson who, as has been noted previously, had come under attack for the lack of legitimacy, accuracy and rationality in his weather forecasting was frankly bellicose. Paterson, who manifestly had been reaping the harvest of attacks that he had himself sown, put forward a vigorous defence of natural astrology in 1690 against those detractors who 'some out of Malice, others out of Ignorance, had put very bad Constructions' on him and his work and who said 'that Astrology and foretelling the weather is unlawful, uncertain, and without any Grounds'. Completely ignoring the theological charge that astrology was unlawful, he asserted in 1690 that natural astrology was 'drawn from very good and certain grounds'. Making no distinction between the effects of the luminaries and those of the planets, he insisted that 'natural Astrology... is drawn from very good and certain grounds' He hoped that critics would 'not be so brutish' as to deny that the position of the Moon to the Sun altered the tides of the sea, arguing that the various different aspects between them cause different heights of tide and – making the sweeping assumption that the planets affected life on earth in the same way as did the luminaries – hoped that they would

> be forced, either to confess, that the rest of the Planets in their position to ours, and Aspects with the Sun and Moon, and among themselves does daily alter the weather, or contradict Reason.[474]

But in the event, the jury of learned opinion found that it was Paterson and his kind who were the ones to contradict reason and within less than two decades, in 1713,

[474] Paterson, *Prognostication*, 1690, [p. 13].

even his almanac-maker successor, John Thomson, was sneering at the idea of the connection between astrology and the weather. [475]

[475] Thomson, *Almanack*, 1713, [p. 7].

Chapter Five: Astrology in Medicine

> This *Science* cannot be thought sufficient without *Astrologie*: our *Physician* therefore must be skill'd in the *Planetary diseases* and *Plants,* that so he appease these.[476]

Astrological ideas permeated the conceptualisation of the body in health and sickness in all sectors of Scottish society throughout the early modern period influencing, both subtly and overtly, the theories and practice of medicine. The practice of astrological medicine had an integral place, too, in every area of contemporary health care until at least the end of the seventeenth century, being used by surgeons and physicians as well as quacks, folk healers and private individuals. The consequent importance of astrology to the understanding of early modern medicine has been recognised in the many in-depth studies that have been carried out on medical astrology in England and in Europe, though not in Scotland.[477] Much, too, has been written about Scottish medicine *per se*, and three of the fullest accounts of Scottish medicine in the period are J. D. Comrie's *History of Scottish Medicine to 1860,* David Hamilton's *The Healers* and Helen Dingwall's *A History of Scottish Medicine*.[478] Astrology is

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[476] Irvine, *Medicina Magnetica*, p. 43.

[477] For early modern medicine and astrology, as well as Azzolini, Chapman, Dick, Miller, Newman and Grafton, and Thomas, op. cit., see Agnes Arber, 'The Doctrine of Signatures, and Astrological Botany', in *Herbals: Their Origin and Evolution. A Chapter in the History of Botany, 1470-1670*, 2nd edn (Cambridge, 1938), pp. 247–264; Allen Debus, *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries* (New York, 1977); M. Harrison, 'From Medical Astrology to Medical Astronomy: Sol-lunar and Planetary Theories of Disease in British Medicine, C. 1700-1850.', *British Journal for the History of Science*, 33 (2000), 25–48; MacDonald, *Mystical Bedlam*; Anna Roos, 'Luminaries in Medicine: Richard Mead, James Gibbs, and Solar and Lunar Effects on the Human Body in Early Modern England', *Bulletin of the History of Medicine*, 74 (2000), 433–457; Charles Webster, *The Great Instauration: Science, Medicine, and Reform, 1626-1660*, 2nd ed. (London, 2002); Gerhild S. Williams and Charles D. Gunnoe, *Paracelsian Moments: Science, Medicine & Astrology in Early Modern Europe* (Kirksville Mo., 2002).

[478] For early modern Scottish medicine see J. S. G. Blair, *History of Medicine in the University of St. Andrews* (Edinburgh, 1987); John Comrie, *History of Scottish Medicine to 1860*, 2nd edn (London, 1932); Helen Dingwall, *Physicians, Surgeons and Apothecaries: Medicine in Seventeenth-century Edinburgh* (East Linton, 1995); Helen Dingwall, *A History of Scottish Medicine* (Edinburgh, 2003); David Hamilton, *The Healers: A History of Medicine in Scotland* (Edinburgh, 1981).

mentioned, though fleetingly, in all of them, acknowledging its presence in Scottish medicine, but with little further information given.

The present chapter, therefore, addresses in turn two broad areas of astrology's association with medicine in early modern Scotland. Part one focuses on medical astrology in context. It examines first the connections between astrological medicine and the institutions – the court, the professional medical bodies and the universities – through the publications and libraries of the physicians and surgeons associated with them. It then investigates the lay practitioners and quacks working outwith these institutions and goes on to review the medical literature that was available to those interested in self-help. Part two turns to the uses of medical astrology, looking at the ideological frameworks within which it was practised and the techniques which were employed as well as assessing the competencies of those involved in astrology's application to medicine. The primary sources for this study include Kirk Session records, publications by Scottish physicians and surgeons, astrologers and almanac-makers, as well as herbals and other medical texts printed in Scotland.

I

Those physicians and surgeons who were granted the privilege of a royal appointment were chosen because of their special contribution to medicine or for their political connections. In either case they were counted among the most influential figures in their field, and many of these men incorporated astrology into their work. This was despite the fact that James VI, as evidenced by *Daemonologie*, had only grudgingly admitted that there were legitimate grounds for using astrology in medicine, writing that 'it is not unlawful, being moderately used, suppose not so

necessarie and commendable as [astronomy]'.[479] The link between medicine and astrology was clearly so entrenched, however, that the doctors followed their traditional training and practices regardless of lukewarm royal approval. Gilbert Skeyne, George Eglisham and Christopher Irvine, provide three examples of kings' physicians who came from very different backgrounds but who all used astrology in their medical work. Their approaches show, too, the diversity of the medical applications of astrology that were practised within the royal retinue.[480]

Gilbert Skeyne (1522-1599), who was appointed principal royal physician to the 15-year old James VI in 1581, gained his MA and MD degrees at King's College, Aberdeen, where he became professor of medicine, or mediciner, in 1556. He held this position until he moved to Edinburgh in 1575, where he built up a successful practice.[481] While still at Aberdeen, in 1568, he published *Ane Breve Descriptioun of the Pest*. This was the first medical book to be written in Scots instead of Latin, and Skeyne had taken this exceptional step, as he explained in the introduction, because he wanted to help 'the common vulgar people', and to have the work understood by both the learned and the unlearned. He added that this was 'acceptable and allowit be the Magistratis of this Noble Burgh' suggesting that the authorities were keen to keep a regulatory eye on the type of literature that reached such sections of society. [482] As a man of the people, Skeyne offered explanations of the relationship between pestilence and such astrological phenomena as comets, eclipses and mutual aspects between malign planets, as well as the phases of the Moon and its aspects to the planets. It also provided preventative remedies, both mundane and theological.

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[479] James VI, *Daemonologie*, p. 13.
[480] Furdell, *Royal Doctors*, p. 99.
[481] Cooper Thompson and Sarah Bakewell, 'Gilbert Skeyne (c.1522–1599)', in *Oxford DNB*, 2004.
[482] Presumably Edinburgh was meant as this is where the book was published.

George Eglisham (fl. 1601-1642), on the other hand, appeared keener to demonstrate the intellectual refinements of learned astrology, rather than its social benefits. He graduated MD from Leiden and, on the recommendation of his friend and patron the Marquess of Hamilton, was appointed James VI's Physician in Scotland in 1616 shortly before the king made his only return visit to Scotland after his succession to the English throne. In the same year, Eglisham published in Edinburgh an astrological workbook entitled *Accurata methodus erigendi thematis natalitii, in diebus criticis disquirendis* which demonstrates the very high level of sophistication of astrological technique that was available, within the uppermost reaches of society at least, in early seventeenth-century Scottish medicine. The work's full title 'An accurate method for the erection of natal horoscopes, for investigating critical days' describes its function. Written in Latin, the octavo volume is made up of the same twelve printed pages repeated 14 times and includes all of the many calculations that the astrologer would be required to make to erect an accurate birth chart, and go on to identify and weigh up the dignities and debilities of the planets and to estimate whether they were by temperament hot, cold, wet or dry, a most important consideration that linked astrological and Galenic medicine. In the final pages, space is provided for a further 196 calculations to obtain the primary directions that identified critical future dates where important turning points, both positive and negative, might be expected in the life of the patient. Bringing together the calculation, evaluation and identification of potential future crises for twelve horoscopes in all, and with the blank pages providing space for additional notes, *Accurata Methodus* was a meticulously-honed tool for medical diagnosis, timing and prognosis and would have formed a durable and portable reference and aide

memoire for a state-of-the-art astrological physician, containing vital at-a-glance information about the temperaments and prospects of clients and others whose charts had been calculated.

Christopher Irvine, surgeon, polymath and physician-general to both Charles II and James VII and II, used astrology, however, in ways that might have scandalised Skeyne, but would have been familiar to the cosmopolitan Eglisham. His *Medicina Magnetica* is a handbook of what he referred to as Magickal-Medicine, based on the sympathetic and anti-sympathetic concepts of Neoplatonist magic that are intimately bound up with the basic astrological tenet of 'as above, so below'. In this book he emphasised the view that astrology is essential to the operation of magickal-medicine:

> This *Science* cannot be thought sufficient without *Astrologie*: our *Physician* therefore must be skill'd in the *Planetary diseases* and *Plants,* that so he appease these: yet so that to *diseases*, whether *strong or remisse*, he be sure to appose a *plant* of a *superiour degree*. In a word, he must understand the secret *natures* of both *men* and *simples*.[483]

Curing disease, he claimed, depended on the natal horoscope and on the election of the most propitious times to prepare medicines and to administer treatment.

Not only individuals, like Skeyne, Eglisham and Irvine, but also institutions might secure Royal patronage. The three most prestigious professional medical bodies in Scotland are the Royal College of Surgeons of Edinburgh (RCSE), the Royal College of Physicians and Surgeons of Glasgow (RCPSG) and the Royal College of Physicians of Edinburgh (RCPE) and in their early years all were linked with astrology through the writings and the libraries of their founders. Indeed, the institution that was eventually to evolve into the Royal College of Surgeons of

[483] Irvine, *Medicina Magnetica*, p. 43.

Edinburgh had astrology written into its charter. On 1st July 1505 representatives of the Barber Surgeons of Edinburgh gathered in the Tolbooth to present their Great Seal of Cause to the Provost, Bailies and Town Councillors, asking that they be granted 'the privilegis reullis and statutis contenit in it' in order to regulate their practices. Their plea being successful, they were formally incorporated as a Craft Guild of the city and this was ratified by King James IV in October 1506. The Seal of Cause stated that no-one was to be allowed to practise as a surgeon or barber in the burgh unless he

> be examit and previt in thir points following...that he knaw anotamell, nature and complexion of euery member humanis bodie, and inlykewayes he knaw all the vaynis of the samyn, that he may mak flewbothomell in dew tyme, and thatt he knaw in quhilk member the signe hes domination for the tyme.[484]

In other words the candidate for entry had to satisfy the examiners that he had an adequate knowledge of anatomy, humoral theory and the positions of the veins – phlebotomy was a much-used medical intervention – as well as enough astrology to determine the most favourable times to operate on various parts of the body. There can be no clearer demonstration than this that astrology was not only institutionally sanctioned in Scottish medicine at that time, but also that proficiency in it was an essential prerequisite for the right to practise surgery in Edinburgh. As in 1658, two years after the publication of *Medicina Magnetica*, Christopher Irvine became a master of the Incorporation of Surgeons in Edinburgh, the first physician to do so, astrological ideas appear to have been perfectly acceptable to that body a century and a half later.

The requirement for astrological knowledge for applicants may not have been spelled out as clearly when the Royal College of Physicians and Surgeons of

[484] *Extracts from the Records of the Burgh of Edinburgh: 1403-1528*, ed. by Cosmo Innes (Edinburgh, 1869), pp. 101–104.

Glasgow was established, but its founder had considered the subject of sufficient importance to be included in his teaching manual for students and practitioners of surgery. The impetus for founding the College came from Peter Lowe (ca.1550–1610),[485] an army surgeon who had spent some thirty years in France. There he had learned his profession and spent two years as surgeon major in the Spanish army before serving King Henri IV of France, both in his wars and as physician to the royal household.[486] During this time he had 'commoditie to practise all points, and operations of Chirurgerie.' [487] He returned to Glasgow in 1598 and, concerned about the deplorable state of medicine he discovered there, together with the physician Robert Hamilton and the apothecary William Spang, he successfully petitioned King James VI for permission to set up the Faculty of Physicians and Surgeons of Glasgow.

Its charter, dated 29 November 1599, unlike its Edinburgh equivalent, lists no specific knowledge, astrological or otherwise, that prospective candidates were expected to have attained, but states only that the faculty would 'examine thame upon thair literature, knawledge and practize.'[488] Two years previously, however, Lowe had published his most important book, *The Whole Course of Chirurgerie,* a pedagogic work that contains a substantial body of astrological lore. This includes linking the astrological signs with the Galenic humours, weighing up different authorities' opinions on the most propitious phases and signs of the Moon for surgical interventions, associating the ages of man with the different planets, and

[485] James Finlayson, *Account of the Life and Works of Maister Peter Lowe* (Glasgow, 1889).
[486] Helen Dingwall, 'Peter Lowe (c.1550–1610)', in *Oxford DNB*, 2004; James Finlayson, *The Last Will and Testament, with the Inventory of the Estate, of Maister Peter Lowe, Founder of the Faculty of Physicians and Surgeons, Glasgow* (Glasgow, 1898); Peter Lowe, *A Discourse of the Whole Art of Chyrurgerie* (London, 1612); Johanna Geyer-Kordesch, *Physicians and Surgeons in Glasgow* (London, 1999).
[487] Lowe, *Course of Chirurgerie*, [p.6].
[488] Comrie, *Scottish Medicine*, p. 169.

reviewing the all-important critical days of illnesses where a change in the patient's condition, for good or ill, might be expected. Lowe was not uncritical of astrology but when the second, enlarged, edition of the book appeared, dated 1612, under the title of *A Discourse of the Whole Art of Chirurgerie,* the astrological content which it carried was much expanded. This reflects not only the desire that Lowe had displayed in the first edition for completeness in presenting all that the traditional authorities had regarded as belonging to the art of surgery, whether or not he agreed with it himself, but also how central astrology was to the medical canon of the time.

Even though almost a century was to elapse after the founding of the Glasgow College before Edinburgh's physicians managed to establish their own institution, an astrological connection can still be discerned at its foundation through the library contents of two of its most eminent founders. After three unsuccessful attempts, in 1617, 1630 and 1656, to obtain a charter to found a College of Physicians in Edinburgh, matters were ripe for change. By 1680 a circle of physicians had formed around Robert Sibbald (1641-1722), a Leiden MD graduate, and later one of James VII's royal physicians, and these men were meeting regularly in their own homes to discuss the regulation of medical practice and how medical standards could be improved. Archibald Pitcairne (1652-1713), who had graduated MA from Edinburgh in 1671 and MD from Rheims in 1680, took his place in Sibbald's entourage on his return to Edinburgh and was one of the most prominent of the founding members of the College when Sibbald successfully petitioned King Charles II to grant the College of Physicians of Edinburgh its Royal Charter in 1681.[489]

[489] For Pitcairne's correspondence, see *The Best of Our Owne: Letters of Archibald Pitcairne, 1652-1713*, ed. by W. T. Johnston (Edinburgh, 1979). Sibbald's entourage included Sir Robert Sibbald

Pitcairne's library, which was reputed to be one of the finest collections of the time and which was sold after his death to the Tsar of Russia, contained a number of astrology books.[490] These included *Astronomica Veterum,* a compendium of Latin and Greek authorities on astronomy and astrology, the classic text of Arabic judicial astrology, Albohazen Haly's *De Judiciis Astrorum* and *De Methode Iatromathematicae Conjonctionis qua Astrologiae Fundamenta Certissima Indicantur* by Samuel Siderocratis.[491] It might be argued that these were old books, collected simply for antiquarian purposes, but Pitcairne had also acquired a number of contemporaneous astrological texts. As well as a 1681 edition of Nicholas Culpeper's *English Physitian*, whose subtitle is *An Astrologo-physical Discourse of the Vulgar Herbs of this Nation*, he owned a copy of John Goad's findings of his 30-year research on astrological correlations with the weather, *Aphorisms and Discourses of the Bodies Celestial, their Nature and Influences*, which was first published in 1686. Also included in his library was the work on the effect of the Sun and Moon on the human body, *De Imperio Solis ac Lunae in Corpora Humana,* written by one of his own students, Richard Mead, and published in 1704.

The section in Sibbald's library [492] on natural philosophy and mathematics also contained Albohazen Haly's *De Judiciis Astrorum* and other books of judicial astrology such as Lindhout's *Tractatus Astrologicus*, as well as several, like Gaule's *Mag-astro-mancer* and Del Rio's *Dispositiones Magicae*, which are critical of the

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(1641-1722), Sir Thomas Burnet (1638-1704), Sir Andrew Balfour (1630-1694), James Halkett (ca. 1655-1711), Archibald Pitcairne (1652-1713), Sir Archibald Stevenson (1652-1713).

[490] 'Transcript of Library Catalogues of Archibald Pitcairne and Robert Erskine', 1718, NLS, Acc.8042.

[491] Haly Albohazen, *Libri De Judiciis Astrorum* (Basel, 1551); *Astronomica Veterum* (St Andrews, 1589); Nicholas Culpeper, *The English Physitian* (London, 1681); John Goad, *Astro-meteorologica* (London, 1686); Samuel Siderocratis, *De Methode Iatromathematicae Conjonctionis Qua Astrologiae Fundamenta Certissima Indicantur* (Strasbourg, 1563).

[492] Gavin Drummond, *Bibliotheca Sibbaldiana* (Edinburgh, 1722).

subject.[493] Like Pitcairne, Sibbald also owned the works of Goad and Mead. As he advocated a medicine that looked to take the best from the past as well as from the present, by returning to the essence of classical principles, and using modern observations,[494] the acquisition of these two titles between 1686 and 1704 (or later), underlines the desire in both men to keep up to date with current research in 'scientific' observational astrology and, in Kepler's terms, not to throw out the astrological baby with the bathwater.[495]

These professional medical bodies came to be closely bound up with the teaching of medicine at the Scottish universities and by the early eighteenth century Edinburgh's College of Physicians and the universities were collaborating to lobby for parliamentary backing for legal restraint against the practice of medicine by any non-graduates who had not been examined by them. The chair of medicine at Edinburgh University was linked directly with the foundation of the RCPE. First established in 1685, three professors of the Practice of Physic were then appointed, Sir Robert Sibbald, Archibald Pitcairne and James Halket, all of whom were founder members of the Royal College of Physicians of Edinburgh, two of whom at least, as has been seen, had an active interest in contemporary astrology. The post was unsalaried and, although Pitcairne certainly did give lectures, no regular course appears to have been established until the foundation of the medical school in 1726.[496]

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[493] Martinus Delrius, *Disquisitionum Magicarum* (Mainz, 1612).
[494] Charles Withers, 'Sir Robert Sibbald (1641–1722)', in *Oxford DNB*, 2004.
[495] See Johannes Kepler, *Tertius Interveniens* (Frankfurt, 1610). In the introduction he wrote: "Warnung an etliche Theologos, Medicos und Philosophos...dass sie bey billicher Verwerffung der Sternguckerischen Aberglauben, nicht das Kindt mit dem Badt ausschütten und hiermit ihrer Profession unwissendt zuwider handlen."
[496] Comrie, *Scottish Medicine*, p. 187.

Previously, however, although many Scots sought their medical training in Europe, each of the Scottish universities had offered medical instruction in some measure, as medicine was regarded as an important branch of scholarship. The extent and content of the teaching was largely left to the discretion of the mediciner and some, like William Gordon at King's College, Aberdeen, in the 1630s, were enthusiastic, while others like Patrick Urquhart of the same institution, who held the chair from1672 until 1725, provided virtually no input at all. At Edinburgh, there is evidence of anatomy being taught in the third year of the Arts degree in Edinburgh in 1648, but little further information can be obtained about such teaching there, apart from occasional notes in student dictates.[497]

The nature of the medical teaching at St Andrews, and its astrological content, in the early seventeenth century can be assessed from the works of John Makluire (ca.1602 - after 1636).[498] He graduated MA in 1622 from St Leonard's, and went on to study medicine there under John Wedderburn, who later became a royal physician to both Charles I and Charles II.[499] Between 1630 and 1636 Makluire wrote three medical books, *The Buckler of Bodilie Health, Semitas Sanitatis* and *The General Practise of Medecine*.[500] The dedication in *The Buckler* is to James Montgomery who had been a fellow student and Makluire 'acknowledges … that the book was hatched in the University of St Andrews eleven years since,' that is in 1619 when he began making notes for the book and was encouraged by Wedderburn, who would have then been only twenty years old himself. Often using implicit rather than

[497] Ibid, pp. 140-141.
[498] James McHarg, *In Search of Dr. John MakLuire* (Glasgow, 1997).
[499] A. H. Millar and Roger Hutchins, 'Sir John Wedderburn (1599–1679), Physician', in *Oxford DNB*, 2004).
[500] John Makluire, *Sanitatis Semita* (Edinburgh, 1630); John Makluire, *The Buckler of Bodilie Health* (Edinburgh, 1630); John Makluire, *The General Practise of Medecine* (Edinburgh, 1636).

explicit astrological language, in *The Buckler of Bodilie Health* Makluire described the diseases, suitable occupations and diets for the four temperaments, as well as critical days, the astrology and diseases of the seasons, and treatment by sympathy and antipathy. There are many similarities between the peri-astrological content of Makluire's work and Peter Lowe's treatise on surgery, and it may well be that he had copied from it, and it could even have been intended as a companion volume to it. Makluire had petitioned for a charter to found a College of Physicians in 1630 and had this been successful there is little doubt that these publications would have had their place in its canon, bringing their astrological content into the forefront of the education of Edinburgh's physicians.

At St Andrews it was 1721 before a Chair in Medicine came into being, while Glasgow University's Chair was permanently established in 1713. Although Glasgow examined and granted medical degrees, as did St Andrews, there was no formal medical teaching there until William Cullen (1710–1790) took up his post in 1746. In the meantime there was an apprenticeship system with Lowe's manual with its astrological inclusions being used extensively by Scottish students.[501]

Medical education played a much greater role at Aberdeen. From its foundation in 1495 one of the teachers at King's College had always been a mediciner, making it the first university in Britain to have the subject integrated into the university syllabus, [502] but despite this long medical tradition at Aberdeen, even as late as 1787 there were still calls for the establishment of a medical school there.[503] As has been seen, at Aberdeen as elsewhere, the extent of medicine taught

[501] Comrie, *Scottish Medicine*, p. 173; http://www.gla.ac.uk/faculties/medicine/history/17thcentury/.
[502] Carter and McLaren, Crown and Gown, p. 6. Cambridge followed in 1540 and Oxford in 1546.
[503] *A Complete Collection of Papers Relating to the Union of the King's and Marischal Colleges of Aberdeen* (Aberdeen, 1787), pp. 18, 40, 47, 102, 117, 209.

depended on the inclination of each successive mediciner, some of them holding the position in title only. It is, however, unlikely that Gilbert Skeyne would have regarded his position at King's College as a sinecure. As a natural educator, keen to be understood by 'both the learned and the unlearned', it is inconceivable that he would not have taught the astrological ideas and explanations for the plague found in the book to his students.

Another alumnus of King's College, the physician and mathematician Duncan Liddel,[504] made an important contribution to the understanding of astrology's link with medicine. After graduation, like so many Scots, Liddell travelled abroad to Germany and Poland to further his studies, and his career. There he met and studied with such mathematical and medical luminaries as John Craig, and the astronomers Paul Wittich and Tycho Brahe. It was said that 'he was the first person in Germany who explained the motions of the heavenly bodies, according to the three different hypotheses of Ptolemy, Copernicus, and Tycho Brahe.'[505] Around 1591 he settled in Helmstedt where he became professor of mathematics. He then graduated as a doctor of medicine, which he went on to teach and was appointed first physician at the court of Brunswick. Missing home, he returned to Aberdeen in 1607 where he died in 1613, leaving generous bequests of books, money and mathematical instruments to Marischal College.

Liddel's astronomical, mathematical and medical credentials were impeccable and his work in all of these spheres was highly regarded. His main publications were

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[504] Charles Platts and George Molland, 'Duncan Liddel (1561–1613)', in *Oxford DNB*, 2004; John Stewart, *A Sketch of the Life of Dr. Duncan Liddel* (Aberdeen, 1790); P. J. Anderson, *Notes on Academic Theses with a Bibliography of Duncan Liddel.* (Aberdeen, 1912); Peter J. Anderson, *Duncan Liddel, Professor in the University of Helmstedt 1591-1607* (Aberdeen, 1910).
[505] Duncan Liddel, *Ars Medica, Succincte Et Perspicue Explicata* (Hamburg, 1608). This includes a transcript letter of 1 May 1607 from Johannes Caselius to John Craig.

Disputatio de Elementis, *Disputationes Medicinales*, *Ars Medica*, *De Febribus libri tres* and, finally, *Operum Omnium Iatro-Galenicorum*, for which he had made copious notes before his death.[506] While they mainly followed the Galenic tradition, they were also progressive in the sympathy he showed for the ideas of Paracelsus. As will be seen later, in these works he brought together his astronomical and medical expertise to fine-tune the timing of Galen's critical days, which mark times when the patient's condition might be expected to change for better or for worse, insisting that they are astrologically based and therefore must be calculated precisely, using accurate astronomical data. The books he bequeathed to Marischal created the foundation of the college library and they included, as well as his own works, several astrological texts such as the late medieval classic of judicial astrology, Guido Bonatus's *Tractatus X*, as well as Ptolemy's *De praedictionibus astronomicis.*[507]As his own books represented the most up-to-date and respected medical knowledge of the day they linked Aberdeen and Scotland firmly into the mainstream of pan-European medical thinking and also made a significant contribution to academic understanding of the need for the accurate use of astronomy and astrology in medical prognosis.

Another Arts graduate of Marischal College who made a pedagogic contribution to astrology's application in medicine was Gilbert Jack (*bap.* 1577, *d.* 1628).[508] He qualified in medicine at Leiden and went on to teach the subject there. Though not as well-known as Liddel, he was eminent in his own time, and wrote

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[506] Duncan Liddel, *Disputatio De Elementis* (Helmstedt, 1596); Duncan Liddel, *Disputationes Medicinales.* (Helmaestadii, 1605); Duncan Liddel, *De Febribus* (Hamburg, 1610); Duncan Liddel, *Operum Omnium Iatro-Galenicorum* (Lyon, 1624); Duncan Liddel, *Tractatus De Dente* (Hamburg, 1628); Duncan Liddel, *Artis Conservandi Sanitatem* (Aberdeen, 1651).
[507] Bonatus, *De Astronomia*; Ptolemy, *De Praedictionibus Astronomicis*.
[508] Marja Smolenaars, 'Gilbert Jack (bap.1577, D.1628)', in *Oxford DNB*, 2004; David Irving, *Lives of Scottish Writers* (Edinburgh, 1839), pp. 323-333.

several textbooks, including *Institutiones Physicae* (1615) and *Institutiones Medicae* (1624), both of which were reprinted several times until well after his death, and go along with Aristotelian ideas of the effect of the heavens on the sublunar world.[509] As Leiden, along with Rheims, attracted the majority of Scots students seeking medical training abroad, his work would have had some considerable impact in Scotland.[510]

II

Despite disparity in quality, status and input, a little basic medical instruction was customarily included in the Arts course of all of Scottish universities as some knowledge of physick was regarded as proper to the well-educated man. The aim, however, was 'to produce not a practitioner, but a scholar, not craftsmanship but erudition.'[511] Trained medical help was hard to find outside of the cities; low population density and poor or non-existent roads could have provided only the most meagre of incomes for a medical man.[512] Even in more densely populated areas not everyone could afford a doctor's fees, so many relied on self-help or resorted to the ministrations of untrained practitioners. In country districts it was often the ministers and lairds who acted as local health advisors as these men usually had the rudiments of medical theory included in their university training, and such theory for most of the seventeenth century was Galenic, the concepts of which meshed neatly with astrology.[513]

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[509] Gilbert Jack, *Institutiones Physicae* (Leiden, 1615); Gilbert Jack, *Institutiones Medicae* (Leiden, 1624).
[510] For the Scots-Leiden connection, see Helen Dingwall, *Scottish Medicine*, p. 85; G. H. M. Posthumus Meyjes and Th. H. Lunsingh Scheurleer, *Leiden University in the Seventeenth Century.* (Leiden, 1975); Edward Peacock, *Index to English Speaking Students Who Have Graduated at Leyden University* (London, 1883); R. W. Innes Smith, *English-speaking Students of Medicine at the University of Leyden,* (Edinburgh: Oliver and Boyd, 1932); E. Ashworth Underwood, *Boerhaave's Men: At Leyden and After* (Edinburgh, 1977).
[511] Comrie, *Scottish Medicine*, p.141.
[512] Hamilton, *Healers*, p. 74; David Rorie, *The Book of Aberdeen* (Aberdeen, 1939).
[513] Comrie, *Scottish Medicine*, p. 106.

The minister and mathematician, Colin Campbell of Achnaba, had a parish in Argyllshire, in 'parts...so strongly barricaded with ferries & with mountains almost impossible' that it would have ill supported a doctor.[514] Among his papers is a notebook of household 'receipts',[515] most of which are medical remedies, mainly based on herbs, though there are also some chemical drugs, such as lead plasters, and a number of the animal and excrement-based prescriptions mention healing by sympathy. There are no recipes that explicitly mention celestial matters but, as was seen from Irvine's *Medicina Magnetica*, the concepts of sympathetical medicine are closely aligned with astrology. A handwritten copy of the *Iatromathematica* of Hermes Trismegistus was also found among his papers.[516] The original of this is an appendix to *Physical Rarities* published by Ralph Williams in London in 1652.[517] The manuscript is not in Campbell's hand, but his habit of appealing to friends for transcripts of books that had caught his attention makes it highly likely that he would have requested this work and studied it closely. As a mathematician it may have been *Iatromathematica's* subtitle of *Physical Mathematiques* that attracted him. The book describes which 'sensorie instruments are attributed unto the seven planets', directions for interpreting the decumbiture, or astrological figure drawn up for the moment a patient falls ill, and a list of remedies associated with each of the planets. The bulk of the book is taken up with a description of the 'effects the Moon causeth, being infortunately configured in any of the twelve signs, through the unluckie radiations of any malevolent and hurtfull Planet...'

[514] Colin McLaurin to Colin Campbell, 1721, EUL, MS.3099.3.
[515] 'Notebook of Medical Recipes', EUL, 3100.41.
[516] 'Transcript of Iatromathematica', EUL, 3097.4.
[517] Ralph Williams, *Physical Rarities* (London, 1652).

There is no firm evidence that Campbell ever practised astrological medicine, but given his lively curiosity and astronomical and astrological interests it is plausible to suppose that he would at least have made observations of possible links between configurations in the sky and the health of those below. And indeed there is among his papers an astrological interpretation of a horoscope in his own hand, which links the planetary positions with certain disease patterns that might be expected that year, such as fevers and blood disorders and, overall, a high death rate.[518]

As not everyone could afford to pay for doctors, who were in any case not always particularly well equipped to deal with disease or injuries, people often turned elsewhere for medical assistance, especially in the towns where ministers and gentry were less likely to be available to help. The most colourful and notorious of the unorthodox practitioners were the itinerant quacks or 'mountebanks' who usually, though not invariably, lacked formal training, and before the founding of the medical school there, Edinburgh had been inundated with them, as had Glasgow.[519] They made ample use of methods that most self-respecting doctors would shrink from; sensation-mongering publicity, brazen self-promotion and ostentatious dress.[520] Some, if not all, offered their astrological as well as medical services, a fact that almost certainly had calamitous consequences for astrology's reputation. Furthermore, it was judicial astrology that they offered, the more disputed branch of the art, rather than the natural astrology favoured by the orthodox practitioners.

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[518] 'Campbell Horoscope Interpretation', EUL, MS.3099.24.
[519] Grant, *Story of the University*, p. 217; Comrie, *Scottish Medicine*, p. 172.
[520] Hamilton, *Healers*, p.72. For quacks in England see Roy Porter, *Health for Sale: Quackery in England, 1660-1850* (Manchester, 1989).

In January 1685 Sir John Lauder wrote in his journal about the claims in a broadsheet of the itinerant astrologer James Cathcart, who offered not only to answer horary questions, but also claimed to be able to cure the French pox and other diseases.[521] The broadsheet has not survived but James Paterson's 1685 edition of *A Geographical Description of Scotland* carried the following advertisement:

> James Cathcart, Student in Astrology and Physick, resolveth all lauful Questions in Astrology, with great certainty, if seriosly [sic] proposed; he doth seldom, or never fail to give any person diseased a true account of the nature of the disease afflicting and part afflicted, and if curable or not; and of him you may have good and cheap Medicines with directions to use them. [522]

It is clear from this that Cathcart was practising the specialised branch of judicial astrology that deals with medical questions, called decumbitures, and boosting his income by selling medicines. Ten years later, in 1694, another of Cathcart's kind, John Stobo, arrived in Edinburgh but, unlike that of Cathcart, his broadsheet, entitled *The Scottish Mercury,* has survived. Melodramatically, this early forerunner of the tabloid press announced itself as 'Astronomically observing, and Astrologically demonstrating those grand Catastrophes of superlative Actions, designed by the Hieroglyphical Characters of Heaven, to be manifested in the World, during the Summer Quarter, viz. The Months of June, July, and August 1694', [523] and is filled with lurid political predictions and health disasters to come, prognosticating that

> even we in Scotland [shall suffer] from strange Fevers, or some new Distemper, or such sickness near this Month, as the Doctors understand not; yet Fevers seem to abound more in the Female than otherwise, whereof many great Ladies do die, and others by Abortive Births, as also Surfets, Palpitation of the Heart, the Gout, and Small Pox begin to be much feared...[524]

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[521] David Allan, 'Sir John Lauder, Second Baronet, Lord Fountainhall (1646-1722)', in *Oxford DNB*, 2004; Lauder, p. 145.
[522] Paterson, *Geographical Description*, P. 24.
[523] Stobo, *Mercury*, p. 1.
[524] Ibid, p. 1.

The implication may have been that Stobo did understand what the doctors do not. At the end of the broadsheet there is an advertisement for his services stating that he had practised throughout England and Scotland and that he had

> experience in most of the difficult points of Chirurgery and Medicine…particularly in curing all Distempers whatsomeever, I couch cateracts etc, And Cuts for the Stone in both sexes; and also, I artificially cut and cure Ruptures, Cancers, Hairlips, Wry Necks, Great Wans, Polipus, etc As also Amputations of all sorts…[525]

The astrology in *The Scottish Mercury* was almost certainly Stobo's vehicle for advertising his medical services and the histrionic and sensationalist approach combined with concrete predictions could hardly have failed to link astrology in educated people's minds with gullibility, lack of sophistication and cheap entertainment.

Closely linked with the quacks were the folk healers and in Aberdeenshire in September 1676 there is a rare record of a healer who used astrology being brought before the Kirk Session of Belhelvie.[526] On questioning, Isabell Davidson owned up to giving 'one cure to divers persone for different diseases & yt shee gave all these who came to her one potion made of ale & herbes.' She confessed too to being able to tell from the time of birth what pains a person had and what the causes for these were. [527]

III

Those who had no recourse to quacks, folk healers, sympathetic gentry or ministers, or who simply preferred to minister to their own maladies, could find some guidance in books and almanacs, many of which had astrological content. Few of the Edinburgh or Aberdeen almanacs contain specific medical advice, but many of the

[525] Ibid, p. 2.
[526] 'Belhelvie Kirk Session Record', 1676, NRS, CH2/32/3. [10-29 September].
[527] 'Aberdeen Presbytery Minutes', 1676, NRS, CH2/1.[31 October].

Glasgow ones do. On the other hand, all of the images of the Zodiac Man are found in Edinburgh and Aberdeen almanacs, with none appearing in those from Glasgow. The relative sparseness and uneven spread of medical information may simply be an artefact of the randomness of what has survived, but it does show that some small pickings of advice about bodily ills were to be found in Scottish annual almanacs. As has been argued in chapter three, the limited astrological content in Scottish almanacs compared to their English counterparts did not reflect a lack of interest in the topic, but rather the relative lack of space to include it. Astro-medical guidance, however, was far from entirely lacking and in his 1664 almanac Philomathes of Glasgow emphasised the importance of having a doctor well versed in astrology, advising readers to

> let blood according to strength and necessity, and the sign and weather being fit, but above all let your Physician be skilled in the stars, or he may as soon kill as cure, for remember, what cannot be cured in the spring by fit medicine, it must be endured all year long.[528]

Glasgow's 1669 *New Prognostication* gives the typical diseases of the seasons, for example:

> The usual infirmities of [Spring] are these, Measils, Smal Pocks, Scabs, Pushes in the face, Kings Evil, Agues, Fevers, Pestilence.[529]

At first glance this list seems to bear little relationship to astrology, but closer inspection shows that the diseases can be connected to the signs that comprise the season in question. For instance, the three signs that make up the spring season are Aries, Taurus and Gemini. William Lilly, in his great compendium drawn from the most important medieval and early modern sources, *Christian Astrology,* listed under Aries all diseases incident to the head, including pushes [pustules] and smallpox,

[528] Philomathes, *A New Prognostication* (Glasgow, 1664), [p. 6].
[529] Philomathes of Aberdeen, *A New Prognostication* (Glasgow, 1669), [p. 4].

under Taurus he has Kings Evil [tuberculosis] and Gemini is said to rule blood distempered, which included pestilence.[530]

Some almanacs included woodcuts of the Zodiac Man, showing which zodiacal sign was associated with each part of the body. Edinburgh's *New Prognostication* of 1695 has a particularly fine example, followed by the explanatory verse:

> The eager Ram rules both the Head and Face,
> The Neck and Throat is sullen Taurus's Place
> Resembling-Twins the Arms and Shoulders guide,
> The slow-pac'd Crab, the Breast, and Spleen and Side.
> The Heart and Back's, the Gen'rous Lyons share.
> The bashful Maid of Belly and Bow'ls takes care.
> To the just Ballance Reins and Loynes belong,
> The Secrets govern'd by the Scorpion.
> The Ivory Thighs the Archer doth affect,
> The Goat our Complemental Knees protect.
> The nimble Leggst' Aquarius lot doth fall,
> The active Feet to Pisces, and there's all.[531]

In no case, however, is the use of the illustration explained, or directions given how to do so, although this is not entirely straightforward. The doctrine was that bleeding in a part should *not* be done when the Moon was in the sign associated with it, or in the sign opposite or 90° away from it, and there were signs of the Moon which were favourable and unfavourable to certain medical interventions, such as giving particular medicines and purging. Unless the printers were simply using such woodcuts as attractive images to enhance the booklets, such correspondences and their correct application must have been common knowledge with the medical hints in the almanacs forming the tip of a large body of astrologically-infused folklore that was in common circulation.

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[530] Lilly, *Christian Astrology*, pp. 245–246.
[531] Well Wisher, 1695, [p. 14].

This is borne out by the astrological content in the perpetual almanacs. As these did not have the monthly reports that took up the bulk of the annual almanacs, they had a much greater capacity for such information. Andro Hart's 1619 *General Prognostication For Ever* had the following caveats for the letting of blood:

> These signs are most dangerous for blood-letting, the Moon being therein, Taurus, Gemini, Leo, Virgo and Capricornus, with the last half of Libra, and Scorpius. The rest are all good, so the moone bear no dominion in that member which yee cutte. [532]

The almanac also had guidance on the best times for cutting hair and shaving:

> Haire cut, groweth well, the moon increasing, being in the signs of Taurus, Virgo or Libra. Cutting, shaving, clipping, &c. in the wane causeth baldnesse, for what is then cut, groweth little.[533]

As this was followed by the hint in Latin, 'Calvitium prohibet Oleum tartari',[534] such publications were clearly targeting a broad readership, being aimed at the educated as well as the lower end of the market. There was little change in the astrological content of the perpetual almanacs over the period. *Caledonia's Everlasting Almanack* of 1702 and *The Book of Knowledge* published in Glasgow in 1726 contained similar information. The 1702 almanac instructed:

> Let blood the Sanguine from the New Moon to the first Quarter, the Cholerick from the first Quarter to the Full: the Phlegmatick from the Full Moon to the last Quarter: the Melancholick, from last Quarter to New Moon. Dangerous times for blood-letting, in the heat of summer or the cold of winter: and when the Moon is in that Sign which governs the part of the Body you would blood; Likeways, within two days of Change, or Full of the Moon.[535]

It would appear, then, that astrological rules for using the zodiac man were widely known and needed little explanation in the annual almanacs.

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[532] Digges (attrib), *A General Prognostication For Ever* (Edinburgh, 1619),[p. 28].
[533] Digges, *Prognostication*, [p.30].
[534] Oil of tartar prevents baldness. This was an alchemical remedy.
[535] Mattheus Symson, *Caledonia's Everlasting Almanack* (Edinburgh, 1702), [p. 27].

Astrology in medicine could also be found in more substantial volumes.[536] *Physick for the Common People* by Nicholas Culpeper, 'Student of Physick and Astrology', [537] was published in Edinburgh in 1664 and his *A Directory for Mid-wives* appeared in 1668.[538] The fact that they were published in Scotland, rather than simply being imported directly from England, shows that interest in the subject was great enough to make this a viable commercial proposition. Although these are intended primarily as medical, rather than astrological works, the astrological perspective is, nevertheless, apparent throughout the text. In the *Directory for Mid-wives*, which has the running-title of *Culpeper's Midwife Enlarged*, in discussing the notion that the left testicle is bigger while the right is the hotter, Culpeper swung a blow at Aristotle for mixing up the effects of the celestial and the microcosmical Sun and Moon.

> old Aristotle… having an overweening conceit of himself that he knew everything, though indeed he knew nothing at all rationally of the influence of the Planets upon man, presently concludes (before once he had looked whether or no he could prove it) that it was the Coelestial Sun which causeth the heat and strength of the right side of the Body, which indeed is no such matter, for it is the Microcosmical Sun within the Body which gives the heat to it, and the Microcosmical Moon which gives the radical moisture…[539]

In several places in the *Directory* Culpeper referred the reader to his *London Dispensatory* for directions on how to make certain medications, like robs and troches. Anyone who had done so would have found that its introduction provides 'An Astrolog-Physical Discourse of the Human Vertues in the Body of Man' that

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[536] The best known guide for those who knew a little medicine was John Moncrief, *Tippermalluch's Receits. Being a Collection of Many Useful and Easy Remedies for Most Distempers* (Edinburgh, 1712). This was also known as *The Poor Man's Physician*. Moncrief was an apothecary and this book was highly successful, the sixth edition being printed in 1796 in Aberdeen. It contains no obvious astrology, but it does link the seasons with diseases and counts them between solstices and equinoxes.
[537] On Culpeper's astrology see Arber, *Herbals*; Olav Thulesius, *Nicholas Culpeper, English Physician and Astrologer* (New York, 1992).
[538] Nicholas Culpeper, *Physick for the Common People* (Edinburgh, 1664); Nicholas Culpeper, *A Directory for Mid-wives* (Edinburgh, 1668).
[539] Culpeper, *A Directory for Mid-wives*, p. 9.

tightly knits together Galenic and astrological concepts.[540] The *Directory* itself gives instructions for the different kinds of medicines for diseases caused by 'choler, flegm, melancholly, or warry [sic] humors'.

Closer to home, James Corss, demonstrated that he was well acquainted with the rules and practice of astrological medicine, although none of his almanacs refers to medical matters. In *Ouranoskopia,* however, he addressed himself to astrological physicians:

> I am not now to act the part of a Physitian, (although I much honour their Functions) nor to prescribe or medle with their Manual Operations; but as a *Mathematician*, I may lawfully and acceptably direct my discourse to the *Astrological* Physitian, who of all others (in that Profession) I esteem most, for he only knows the Influence of the Stars upon humane bodies, and can tell a mans disease by the Stars, without going to visit the sick, &c. to these Gentlemen therefore I direct my speach.[541]

Corss seems to have been mindful of professional boundaries, and humbly drew back from trespassing into the territory of medical professionals, while affirming his own credentials to write on topics within his own sphere. Like Irvine, he saw remedies as having sympathetical and antipathetical qualities.

> When a Planet causeth a disease by Simpathy, the best and only way is to cure it by Simpathetical Herbs under the dominion of the said Planet; but if he cause the disease by Antipathy, look to what Planet it's to, whether it be to the Sun or Moon &c.[542]

He then went on to list trees, herbs and plants under the government of the seven planets and the particular diseases which these planets signify.[543]

As has been shown, astrology was bound up with medicine in every context – institutional, free enterprising and personal – in early modern Scotland and, as will be demonstrated, the range of techniques that were employed was correspondingly

[540] Culpeper, *Physick for the Common People*, p. 17.
[541] Corss, *Ouranoskopia*, p. 28.
[542] Ibid, p. 29.
[543] Ibid, pp. 28-32.

wide, as too was the spread in degree of expertise in those using it. One feature that stands out clearly in examining astrological medicine during this period is that the protean nature of astrology allowed it to be easily meshed with other systems of thought.

IV

In *Ane Breve Descriptioun* Gilbert Skeyne proffered, as well as the brief description promised in the title, a cohesive theory of the causes and remedies of the plague that seamlessly integrated Protestant theology, public health and astrology. Skeyne was a man fired with Reformer's passion for both godly and social justice. For him, the heavenly bodies were both signs and secondary causes of plague, God in his wrath being the primary cause. Skeyne considered 'the first and principal cause' of the pest to be 'ane scurge and punischment of the maist iust God, without quhais dispositioun in all thingis, vtheris secund causis wirkis no thing.' God achieves this through 'the Heauine,' his 'admirable instrument,' which blows the contagion on the face of the earth 'as quhan the maist nocent Sterres to man kynd conuenis, quhilkis be Astrologis ar callit infortunat.'[544] The air, by being influenced and impregnated both by these astrologically significant occurrences and by corruptions from the inferior elements of earth, becomes the carrier of epidemics. Among the inferior causes of plague, especially in towns, is the 'stink and corruption & filth, quhilk occupeis the comune streittis and gaittis.'[545] Skeyne went on to consider signs of the disease to come. Weather conditions, such as continual dampness in late spring without wind, he

[544] Skeyne, *Pest*, [p.3].
[545] Ibid, [p. 4].

considered the first and truest natural sign and cause. The second sign too came from the Heaven

> as quhan the Eclypsis of the Sone are greit and frequent, quhan Cometis or fyrie flammatiounis, or as Starris falland of the Heavin are sene, for sic thingis procedis and ar generit of greit drouthe, and hait fyrie Vaporis quhilkis corruptis the Air earēst in the tyme of Autumne.[546]

Here the astrological factors are seen as both the causes and the results of the weather conditions that generate the disease. He considered the places most liable to plague – those, for instance, which are close to stagnant water or where many dead bodies are buried – were most vulnerable at the times of the New Moon and the Full Moon, as well as when the Moon moved under Saturn and Mars and at 'thair quadrate',[547] with the susceptibility increasing most at sunrise, sunset, midday and midnight.[548]

Logically, since the principal cause of the disease is God's righteous anger at human sinfulness, the 'principal preseruatiue cure...is to returne to God ...to imploir the intercession of his Majestie ... to pacifie his wrathe against vs takand away sic punischment.'[549] This was not only considered an individual act of humility and contrition, it was also required for the healing of the whole community, as

> euerie one in his awin vocatione to be not only most studious be perfectioun of lyfe to mitigat apperandlie the juste wrathe of God touart vs, in this miserable tyme: Bot also to be maist curagius in suffering of trauail, for the aduancement of the cōmoun weilth.[550]

Skeyne also took the opportunity to lament social inequities where

> Euerie ane is becum sa detestable to vther... And speciallie the pure in the sicht of the riche as gif thay var not equall with thame twichand thair

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[546] Ibid, [p. 6].
[547] This refers to times when the Moon is in the same degree as Saturn or Mars, or 90° apart from either, measured along the ecliptic.
[548] These are astrologically significant points, when the Sun is on the horizon or meridian axes.
[549] Skeyne, *Pest*, [p. 8].
[550] Ibid, [p. 2].

> Creatioun, bot rather without saule or spirite as beistis degenerat fra man kynd.[551]

And he urged the remedy

> Wherefore let us humble ourselves in the presence of our God and Father...that he may not onlie remoue sic punischment and Plaig frome vs, Bot also that baith riche and puir may leue in sic Godly and ciuill societie, as may be agreable to his godlie will, that finallie we may be participant of his Kingdome preparit for his Electe fra the beginning.[552]

It is scarcely to be wondered at that Skeyne's text, coming as it did in a plague year and one so soon after the Reformation, was approved and permitted by the magistrates of Protestant Edinburgh.[553] It gave a theologically unassailable explanation for the horrors of the plague which, by blaming the victims, engendered guilt and fear, and would have encouraged an increased social cohesion through collective responsibility for both cause and prevention. It would have increased too the potential power of the church authorities to enforce behavioural control over individuals and communities. Heaven, God's abode, Skeyne conflated with the heavens, and with the air or wind, 'the breath of God', which was the absorber and carrier of the contagion that originates from both above and below. It followed then that plague, and warnings of the same as God's punishment for human conduct that evoked his displeasure, should come from above in the form of astrological configurations. In this context Skeyne used astrology not only as a method of explaining and predicting disease but as potent theological propaganda in support of the vision of the Protestant Reformation. And the use of the vernacular, as Skeyne had intended, would have spread widely these ideas, both astrological and theological.

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[551] Ibid, [p. 44].
[552] Ibid, [p. 44].
[553] On Edinburgh and the plague of 1568-1569 see Michael Lynch, *Edinburgh and the Reformation* (Edinburgh, 1981), p. 148.

The most common vehicle for the employment of astrology, however, was the Galenic model, with its Hippocratic humours (yellow bile, black bile, blood and phlegm) and temperaments (sanguine, choleric, melancholic and phlegmatic) that correspond closely to the four elements (air, fire, earth and water), also used in astrology. In his *Whole Course of Chyrurgerie,* Peter Lowe taught that the first thing a surgeon should observe before operating was the temperament of the patient,[554] and went on to show how the temperaments were linked to the four quarters of the year and to the different countries in the world. He also linked temperaments directly with astrology, claiming that astrologers consider that

> euery humour of the body is gouerned by certaine signes, as the sanguine by Taurus virgo and Capricornus, the phlegmatick humor by Aries & Sagittarius, the chollerick by Cancer & Pisces, the melancholick by Libra and Aquarius.[555]

This may well have been a printing error that was passed through subsequent editions.[556] If it was not, it would indicate that Lowe, an educated man, fond of quoting the classical authorities, was ignorant of some very basic astrological premises, as the rulerships he assigned to the humours are almost as far away from the traditional ones as it is possible to be and that he had simply included all the material that other surgeons might have expected to have found in such a book. [557]

In the theoretical basis for the diagnoses and treatments that John Makluire laid out in *The Buckler of Bodilie Health,* the close relationship between Galenic and

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[554] Lowe, *Course of Chirurgerie*, First Treatise, [p.13].
[555] Ibid, Eight Treatise, [p. 3].
[556] As the names of the signs are in italics, it is possible that they were inserted after the main text and at that point were mixed up.
[557] The sanguine are the air signs – Gemini, Libra and Aquarius, the phlegmatic, water– Cancer, Scorpio and Pisces, the choleric, fire– Aries, Leo and Sagittarius, and the melancholic, earth– Taurus, Virgo and Capricorn. Gemini is missing in Lowe's text.

astrological concepts can be seen clearly. Makluire was keenly interested in what is now known as psychosomatic medicine, the link between individual psychology and illness. In *The Buckler* he classified people according to temperament as 'Sanguineans, Cholericks, Melancholiks and Flegmaticks', and further subdivided these into the temperate and intemperate varieties. The descriptions he gave of these eight personality types and their susceptibilities to particular diseases follow closely the astrological typology of the air, fire, earth and water signs. Cholerics, for example, which correspond with the astrological fire signs of Aries, Leo and Sagittarius, are described as:

> prompt in spirit, hastie in all their actions, vehement in their affections, impatient, soone angrie, and soone pleased, ingenious in invention; but proude, bold, impudent, vanters, scorners, crastie, vindictiues, quarrelous, rash, and vndescreete. [558]

He linked each of the types with certain kinds of occupation. People of the melancholic temperament, for example, which corresponds with the earth signs, Taurus, Virgo and Capricorn, he regarded as much better suited for responsible office than those of other temperaments.

> Among all the complexions that are intemperate, there is none to be preferred to the melancholick, provyding it conteine it selfe within the tearmes of health: for of all men the melancholicks are fittest to carrie charge, the sanguineans are given to their pleasure: The bilious [cholerics] having their head full of quick silver, they lack judgement and deliberation: The pituitous [phlegmatics] are so lumpish, that they care for nothing but to haue their back at the fire: and the bellie at the table:[559]

He then recommended diets and treatment guidelines suitable for each, based on the principles of sympathy and antipathy.

> A temperate complexion should bee keeped by the lyke, and the intemperate corrected by the contrare, as the hote, by cold: the dry, by moist.[560]

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[558] Makluire, *Buckler*, p. 78.
[559] Ibid, p. 79.
[560] Ibid, p. 76.

Intemperate phlegmatics, being too cold and wet, were advised to 'make choyse of hote, & dry things' to correct their imbalances. Although Makluire, unlike Lowe, did not spell out the correlation between Galenic and astrological ideas, the connection is implicit in the content.

George Eglisham's calculations in *Accurata Methodus*, however, make the cross-fertilisation of concepts between Galenism and astrology quite clear. One part of his workbook is headed *Qualitates planetarum ad temperamentum* [Qualities of the planets according to temperament] and another *Collectio testimoniorum temperamenti* [summary of the evidence of the temperament]. In the first, each planet is judged to be hot, cold, moist or dry according to its sign, while the second table looks at the planets' relationships with three important astrological points, the ascendant of the horoscope, the part of fortune and the Moon's nodes. The last line provided space for the final result of the summing up of the various factors that would have helped him determine the temperament-appropriate treatment for the patient. Unlike Lowe and Makluire who were, to a degree, simply passing on the astrological content of received wisdom, there can be no doubt about Eglisham's clear understanding of astrological theory and practice.

Critical days were also a feature of Galenic medicine. These were derived from Galen's *De Diebus Decretoriis*.[561] In Lowe's second, enlarged, edition of his manual of surgery, renamed *A Discourse of the Whole Art of Chirurgerie,* whose astrological content is much expanded, he dealt with these critical or judgement days. Coming, as Lowe reported, 3, 5, 7, 9, 14, 17, 21 or 28 days after the beginning of the illness, on such days 'great mutations or presages of life or death' were to be expected

[561] Glen M. Cooper, 'Galen and Astrology: A Mésalliance?', *Early Science and Medicine*, 16 (2011), 120–146. Galen, in turn, was heavily influenced by Hippocrates.

and medical interventions and medicines should be withheld then. These are similar, but not identical, to the critical days of the astrological physician which occur at the exact times when the Moon in its cycle is 90°, 180°, 270° and then again, 0° away from the degree it was in when the illness began. That would occur generally on days 7, 14, 21 and 28. The intermediate degrees, i.e. 45°, 135° etc, which form on days 3-4, 17-18 etc were also used for very acute illness. Lowe, however, did not mention this and by giving this range of days, it seems likely he was not aware of the astrological origins of these days, but simply reported them as part of the medical canon.

Duncan Liddel, however, as an astronomer, was much more astrologically aware. Unlike Lowe, who simply repeated, with little reflection, what various authorities had written about celestial correlations in medicine, occasionally testing out the precepts and rejecting those that were ineffective or inconvenient, Liddel was keen to investigate the theoretical basis further. For instance, he reviewed Galen's teaching on critical days and found that they were not always accurate.

> It can be seen that critical days are sometimes greater and sometimes less [than those given by Galen]. Besides when by [his] reckoning the crisis should be on day 20 rather than 21, then another would be on the 13th day rather than the 14th. [562]

He did agree, however, that the critical days were important but that they were dependent on the movements of the heavenly bodies.

> None the less the constant and ordained rule of the critical days is seen to depend on the heavenly revolutions, although the immediate cause of the crisis arises from nature, as the motion of the heavens, which can come about, be followed and be directed by the heavens.[563]

[562] Liddel, *Operum Omnium Iatro-Galenicorum*, p. 336.
[563] Ibid. p. 336.

It was the constant variations and changes in the motion of all of these bodies that cause changes in the course of the disease.

> In disease it is primarily the motion of the Moon and Sun, followed by that of all of the rest of the stars. Short diseases are ruled by the Moon, and long ones by the Sun.[564]

Thus he argued:

> It is not contrary to the rule for the critical days to depend on the monthly periodicity of the Moon. For experience confirms and the astrologers bear witness to the fact that manifest changes are stirred up by the particular motion of the Moon when those places in the zodiac are aspected which are the same, in quadrate and opposition to the position in which the Moon was at the beginning of the illness.[565]

He then went on to discuss the monthly healing period, pointing out that there is an astronomical reason why the critical days cannot be fixed to a regular timetable such as the one given by Galen and Hippocrates.

> Actually, the apparent motion of the Moon is sometimes slower and sometimes faster therefore it is not credible that the crises take place at precisely fixed intervals of time as can be seen implied in Hippocrates book 6. *On Epidemics* where the prefix is added, one may know circa day 20, circa day 40. [566]

Liddel respected and built on tradition but his mathematical and medical expertise, enhanced by exchanges with leading astronomical thinkers of Europe, gave him a firm grasp of the theoretical basis of the astrology of critical days and he knew how to go about calculating those with precision. In his medical work he was a careful observer, applying to it the rules of a rational science rather than simply accepting dogma handed down by time-honoured authorities. He was willing to read their

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[564] Ibid. p. 336.
[565] Ibid. p. 336.
[566] The cycle of the Moon, he wrote, is 27 days, 6 hours and 27 minutes long, therefore the first 7th occurs at 6 days, 19 hours and 55 minutes, the second 7th at 13 days, 15 hours and 51 minutes and the third at 20 days 11 hours 45 minutes. By this reckoning the 14th day from the start of the illness will be a critical day, rather than the 13th, and the 21st rather than the 20th. Ibid. p. 336.

works critically and question them when they differed from his own observations and experience.

John Makluire's handling of critical days in *The General Practise of Medecine*, however, was almost identical to that of Lowe.

> The good crise arrives on the 7. 14. or 20. day, wherefore these dayes are called Criticks. The future crise was foreseene by the signes of digestion, appearing on the 4. 11. and 17.day: hence these days are called of the Greeks...dicatives, contemplatives: for according to the doctrine of Hip. The 4. day is the indicative of the 7. the 8 is the beginning of the next moneth, the 11. is also remarkable, because the fourth of the second weik, the 17. is also to bee observed, because the 4. after the 14. and the 7. from the 11.[567]

Makluire, like Lowe, simply accepted a great deal of the unspoken assumptions of the ambient patterns of belief and delved deeper into those matters that interested him more, such as psychology, weather and diet.

Although the subtitle of Eglisham's workbook declares that it is for *In Diebus Criticis Disquirendis* [for inquiring into critical days] the only calculations in the book that apply to periods of time after birth are those for primary directions, so it seems safe to assume that they are the 'critical days' referred to in the title. These however, are not the critical days referred to by Lowe and Liddel, which pinpoint the 'turning point' days in the course of an acute illness when the Moon comes to a critical angle with its own position at the time of the onset of the malady, or when the Sun does so in chronic ones. Primary directions are calculated to determine the date and nature of critical 'accidents' or key events right throughout the native's lifetime and this would also include times when the health might be at risk.

VI

[567] Makluire, *General Practice*, Canon xxvi, [p.58].

While primary directions plot out certain critical times of change, thought by pious astrologers to be pre-determined and controlled by God through the agency of the planets, in magic the practitioner takes on a pro-active role, fixing on a desired outcome and attempting to harness the power of the stars to obey his will. Christopher Irvine's aim in his neo-Platonically influenced *Medicina Magnetica* was to instruct on 'how to infuse the propitious *Heavens* or *Sun* into *things*... [to] perform wonders [as] hereupon depends all *magick operations*'.[568] This was intimately related to the personal horoscope.

> The *temperature* of a thing is altered by the *Stars*, when the *Horiscope* [sic] *of the Nativity* cometh to the *degree of apposition* of the *Planets* that be *contrary* to the beginning of the *life*.[569]

The art of magic can even ameliorate to a certain extent the influence of the stars:

> He that can fortifie the *particular spirit* with the *universal*, may prolong his life very long: unlesse the *stars* be against it; yet he may by these means lengthen his life, and health; and somewhat abate the malice of the stars...[570]

For remedies to work optimally they had to be made at astrologically favourable times. For instance, to prepare 'Gascones powder' the reader is instructed to 'Take the *black toes* of *Sea-Crabbs* boyled, beat them to powder, which must be done, *Venus* joyn'd with *Luna*, being in *Cancer*…'[571] As this recipe, complete with astrological timing, was to be found in the *London Pharmacopoeia* of 1650 it was in no way unusual in contemporary establishment medicine.[572] It was vital too to choose the correct time to gather herbs when they were at their most potent. Dismissing arguments, and calling on the authority of learned men, Irvine recommended that the

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[568] Irvine, *Medicina Magnetica*, p. 5.
[569] Ibid, p. 7.
[570] Ibid, p.10.
[571] Ibid, p. 58.
[572] William Brockbank, 'Sovereign Remedies, A Critical Depreciation of the Seventeenth-Century *London Pharmacopoeia*', *Med. Hist.*, 8 (1964), 1–14.

time be elected astrologically 'for indeed *Herbs* do not at all times possesse the same *qualities* or vertues; for sometimes more, sometimes nothing at all'.[573] He went into great astrological detail when describing the best moment for gathering any herb. It is when

> the *moon* in such a *sign* as governs the *members signed, especially* the *planet* that is Lord of the *plants* being in his *essential dignities*, and beholding them more *favourably*, and let the *moon* and the *Lord of the Plant* be both free; the Moon having the *dominion of the plant*, or the *sixth house*: and take heed the Moon be not joyned to any ill planets that are *retrograde*.[574]

As might be expected the time of administration of medicines mattered too.

> all *application* of these remedies...ought to be done, the Moon being in a *sign* conveniently *fortunate*, if it may be in the *tenth house*, and the *Lord* of the Plant of the *medicine* exalted above the *Lord* of the *disease*...[575]

However, as with his fellow army surgeon, Lowe, for Irvine pragmatism trumped dogmatism and he would not always wait for the stars:

> though all things do not agree exactly, yet do not thou forsake or procrastinate the cure, fit those things that thou canst fit...for if there be a due *application* of things, although the *stars* do not so exactly accord, the cure may be prolonged, but the effect will not be altogether frustrate. [576]

There is one curious anomaly in the instructions for preparing 'Pouder of Sympathy for curing Wounds' where he instructs the reader to

> Expose it to *Sun beams*, the Sun being in *Leo*, for the space of *three hundred and sixty hours*...The *Sun* enters *Leo* about the *twenty fifth day of July*, tis better to begin your operation two or three dayes after, that you may be sure the Sun is in the right Signe.[577]

That Irvine gives the date of the Sun moving into Leo as 25th July raises the question of how well he was acquainted with the astronomical underpinnings of astrology. In the Julian calendar the Sun would have appeared to enter the *constellation* of Leo in

[573] Irvine, *Medicina Magnetica*, p. 66.
[574] Ibid, p. 66.
[575] Ibid, p. 67.
[576] Ibid, p. 67-68.
[577] Ibid, p. 99.

the sky just a few days before 25th July.[578] Irvine could easily have worked out the position of the Sun, as it actually was in the sky, from observing the position of New Moons and Full Moons as seen within the constellations. The Sun would at those times have been in the same and opposite signs respectively. But to calculate the auspicious planetary configurations required for his medicines he would have needed to consult an ephemeris. The astronomical tables of planetary positions in ephemerides and almanacs in circulation then, however, were based on the tropical zodiac. This zodiac is measured from the position of the Sun in the ecliptic at the spring equinox, which is called 0°Aries. The ecliptic is then divided into twelve equal sectors each named after one of the constellations in turn, Aries, Taurus, Gemini, and so on, but confusion can arise from the fact that these sectors do not correspond with the actual constellations, as men like Robert Pont were well aware.[579] This suggests that Irvine was not particularly well-versed in astrological calculations and he was too impatient or careless to read an ephemeris properly. As he was effectively recommending two incompatible systems of measurement, if he actually practised the magic he was describing, he was almost certainly carrying out the operations at the wrong time. Whatever his practice, he certainly had an enduring fascination with the neo-Platonic imagery. In preface to his 1682 *Historiae Scoticae* dedicated to the future king, James, Duke of York, he referred to the 'attractive power [that] is in the *Royal Ray's*, and what Magnetick-influence they have over the Spirits

[578] The boundaries between the constellations are so notoriously difficult to delineate that modern astronomers have established an international agreement about where they are drawn, so Irvine's date is probably as good as anyone's. The date given may also have been a misprint.
[579] This is caused by the Precession of the Equinoxes where the spring equinox occurs fractionally earlier each year. The slippage amounts to approximately 1° every 70 years or one zodiacal sign every 2000 years. Pont, *Treatise*, p. 48.

and Affections of the Subject.'[580] Irvine, however, did demonstrate a sound grasp of the principles of sympathetic magic as well as the complex rules of astrological medicine. Unlike the other doctors, apart from Eglisham in his primary directions, the astrology he promoted was judicial, rather than natural, and he employed it in a very wide range of medical applications indeed.

VI

In sharp contrast, the medical theories of Archibald Pitcairne were far from magical.[581] A talented mathematician as well as one of the most illustrious physicians of his day, in the last decade of the seventeenth century Pitcairne was developing a new approach to medicine called iatromechanics, which is medicine based on the mechanical model of Newtonian physics.[582] His high, and ultimately unsuccessful, goal was to apply the mathematical model of measurement to all areas of medicine, discarding whatever proved non-amenable to this. He did, however, retain much of the old thinking. He considered, for instance, that the different temperaments were produced by changes in the canals and fluids of the body, thus stripping them of their Galenic associations and rendering them legitimate under his new scheme by turning them into concrete, measurable factors. Temperaments and humours were clearly valuable concepts for Pitcairne, but not everyone was so appreciative. Lord Tarbat's son, whom Pitcairne treated in 1699, wrote contemptuously that the latter had told him that 'his ailment was occasioned by this and that humour and suchlike occult

[580] Christopher Irvine, *Historiae Scoticae Nomenclatura Latino-vernacula* (Edinburgh, 1682), [p. 2].
[581] For his own description of his works see Archibald Pitcairne, *The Whole Works of Dr. Archibald Pitcairn: Wherein Are Discovered, the True Foundation and Principles of the Art of Physic* (London, 1727).
[582] Anita Guerrini, 'Archibald Pitcairne and Newtonian Medicine', *Medical History*, 31 (1), (1987), 70–83.

qualities.'[583] A physician who had been an Edinburgh University classmate, Sir Edward Eizat, was also a sneerer. He published a blistering attack on Pitcairne and his method, comparing it to that of

> that Famous Mountebank *Crinas Massiliensis,* who was so precise and exact in his Patients Diet, that he would not allow them to Eat or Drink, but with regard of Times and Seasons, observing the Course of the Stars, choosing good Days and Hours, and walking always by his Almanack and Ephimerides, and all this by his great skill in the Mathematicks...This Fellow at best was nothing but a cunning Rogue...[584]

Pitcairne believed, and experimented with, the hypothesis that the phases of the Moon affected the state of the blood, and evidently kept notes over many years of cases that illustrated the synchronicity of symptoms and the soli-lunar phase. One of Pitcairne's patients was given to profuse nosebleeds and epileptic fits which returned periodically twice every year, in March and September, at the new Moon near the vernal and autumnal equinoxes. He had also come across several women who were subject to epileptic symptoms, at the new and full Moon, especially pregnant women, and 'those who stopped childing early, and whose menstrual purgations left them before the usual time' as well as one fat redhead who, at every new and full Moon, vomited and had pain and squeezing about her heart and difficulty in breathing in the morning on rising. [585] Pitcairne's medical theory was that the pressure of the blood was affected by the Moon's relationship to the Sun and although using different nomenclature and working with the new experimental, mathematical and

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[583] Monica Clough, 'Lady Tarbat and the Physicians: 1699', *Proceedings of the Royal College of Physicians of Edinburgh*, 21 (1991), 467–74 (p. 471).
[584] Edward Eizat, *Apollo Mathematicus: Or the Art of Curing Diseases by the Mathematicks According to the Principles of Dr Pitcairne* (London, 1695), pp. 4–5.
[585] Richard Mead, 'A Treatise Concerning the Influence of the Sun and the Moon Upon Human Bodies, and the Diseases Thereby Produced', in *The Medical Works of Richard Mead* (Edinburgh, 1775), p. 133.

observational methods he still looked to the heavens for explanations of physiological events on earth.

VII

Astrology was also used in medicine in its own right, unalloyed with other systems, and the phases of the Moon that Pitcairne had so carefully observed had always been considered important in natural astrology. It was especially employed in the important medical intervention of blood-letting. Lowe noted that some people 'observe the course of the Moon, except in great necessity.' He himself considered the new Moon to be better for bleeding than the old, but quoted Gordonius[586] who advised that in other evacuations old women should be bled in the old of the Moon and young women in the new. In giving the rules to be observed in bleeding a patient he wrote:

> The Astrologians are of the opinion, that the starrs, planets and signes have power in mans body...According to their opinion and sometime Phisitians also, also *Constantinus Africanus*,[587] wee must not let blood that part where the signe is, which things are not obserued of the most learned Phisitians and Chirurgians as *Hipp, Galen, Oribasius*...For when the body is greuoulsy oppressed with maladie, we must not stay for the course of the celestiall signes.[588]

Lowe appeared to have rejected the astrological rules on pragmatic, rather than theoretical, grounds. A surgeon in times of emergency has no time to consult tables and draw up figures, or to wait until the Moon changes sign; he must act instantly, whatever the stars say. Another piece of traditional astrology that Lowe introduced was the seven ages of man, where each 'age' is governed by one of the seven planets and subject to its own particular qualities and diseases. Infancy, for example,

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[586] Gordonius was Professor of Medicine at Montpellier, 1285-1305.
[587] Constantinus Africanus (c.1020-1087) was an eleventh-century translator of Greek and Islamic medical texts.
[588] Lowe, *Course of Chirurgerie*, Eight Treatise, [p. 3].

> is hot and humide, but the humiditie surpasseth the heate, and lasteth from the houre of our birth, till thirteene yeeres, and is goverend by the Moone, as sayeth Ptolemy. In this time a man is subject to many griefes and diseases, like as Feuers, Fluxes, Wormes in the bellie, the Stone, Apostumes...[589]

This is based on Ptolemy's *De Praedictionibus Astronomis*, and was widely disseminated through the *Quadripartitum*, a compilation of Ptolemaic and pseudo-Ptolemaic writings that was found in all of the university libraries. Makluire also described the different ages of man from infancy to old age and his words and descriptions are so similar to those of Lowe that Makluire may well have copied from him. Makluire, however, was more interested in the annual round of the seasons and their impact on health due to celestial movements:

> [By the Sun] in his comming and going, the Air receiueth many divers alterations being subject to receaue the impressions and influences of the heavenly bodies: for the Sunne heateth and dryeth by his heate: the Moone in the contrare cooleth, and humecteth, or maketh moist.[590]

Certain configurations of the heavenly bodies were critical, for example:

> [the] Pleiades... cutte short often the hope of the labourer: for when they rise, the Sunne being opposite to them; and the Moone recountering also, if none of the other Planets doe not interveene in hote signes, here followeth many heavie raines, which spoileth the cornes and fruites of the ground. [591]

Characteristic diseases were attributed to each of the seasons. The 'proper diseases of the spring,' for instance, are scabbes, pustuls, tumours, and goute', which agreed with an almanac of a similar date,[592] but Makluire considered that particular celestial conditions could increase or decrease the likelihood of disease.

> The sunne entering in Leo, the little dogge beginneth to kyth,[593] [he] is called by the Greeks Syrios, because of his great heat and drouth…while the dogge doth make his course, the space of six weeks in the caniculare dayes, hee

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[589] Lowe, *A Discourse of the Whole art of Chyrurgerie* (London, 1612), Book 1, p. 29.
[590] Makluire, *Buckler*, p. 90.
[591] Ibid, pp. 92–93.
[592] Whyte, 1632, [p. 5].
[593] Kyth: to show itself

> augmenteth the heat of the sunne by his presence, ingendering many diseases.[594]

Events in the heavens like comets and shooting stars were also associated with disease in the community at large, as well as certain interplanetary aspects. Gilbert Skeyne, for example, considered that the conjunctions of Mars and Saturn were the most harmful.

VIII

Judicial astrology also had a place in medicine. One technique was to predict diseases that might be expected in the coming season from a horoscope drawn up at the exact moment of the equinoxes and solstices. From the one of the spring equinox of 1661, Colin Campbell deduced that

> The Moon in Dom. 8. and Weake prognostiks much mortality and being in Sagittarius the house of Jupiter that it shall be through corruption of the blood, feavers agues [spotted?] feavers, squinzies &.' [595]

The astrological judgement is that as the Moon is weak, both because of its position in the sky in the eighth house, an area of the horoscope which is associated with death, and in its relationship with Mars, a hot and malevolent planet, that many deaths could be expected from fevers. As it was in the sign of Sagittarius, which is ruled by Jupiter, which in turn is associated with the blood, illnesses which involved that were thought to be imminent. The peripatetic surgeon John Stobo, likewise, linked epidemics with seasonal horoscopes, predicting smallpox, miscarriages and strange fevers for the summer of 1685.[596]

For medical information about individuals, however, rather than the community at large, the decumbiture chart was used. Strictly speaking this was a

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[594] Makluire, *Buckler*, pp. 96–97.
[595] EUL, MS.3099.24.
[596] Stobo, *Scottish Mercury*, p. 2.

horoscope drawn up for the moment the patient is so overcome by illness that he or she had to lie down. As the exact time of such an event was rarely to be had, other methods of inquiry were devised. In *Christian Astrology*, William Lilly summarised three moments that could be used for a decumbiture figure:

> we ought carefully to take the exact time of the parties first falling sick, *viz.* the houre as neer as can be had, not that moment when first the Patient felt a smatch of it, but that very time when first he was so ill, or so extremely oppressed, that he was enforced to take to his Bed, or to repose.
>
> Secondly, if that cannot be had, then accept of that time when the sick parties *Urine* was first carried to somebody, to enquire of the Disease, whether the party enquired of was a Physitian or not.
>
> Thirdly, if no such thing can be had, let the Physitian take the time of his owne first speaking with, or accesse to the Patient, or when first the Urine was brought unto him...[597]

The second and third options essentially turn the decumbiture into a horary question and it is such methods that Corss was undoubtedly referring to when he wrote, in *Ouranoskopia*, about 'Astrological Physitions [who] can tell a mans disease by the Stars, without going to visit the sick.'[598] To give a practical example, Corss related the following story:

> A young student in Physick presented an Urine to me, and desired my Judgement what I thought of it, and of the Patient whose it was: I found *Mars* to be the causer of the disease, and in partile opposition to *Venus*, and she hard by the Dragons tail...I told him the Patient was afflicted in the Instruments of Generation, which was most true (as he confessed) Therefore I concluded that it was by Antipathy to *Venus*, and so I bade him make use of the Simpathetical Herbs of *Venus* for cure.[599]

Using the astronomical information that Corss gave, the date of the encounter can be calculated with some precision. It occurred in the late afternoon of 12th June 1655 OS, seven years before the publication of *Ouranoskopia*. Going this far back to find his example and the fact that he mentions that it was a medical student, and not a

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[597] William Lilly, *Christian Astrology* (London, 1647), p. 243.
[598] Corss, *Ouranoskopia*, p. 29.
[599] Ibid, p. 29.

patient, who approached him suggests that, although Corss undoubtedly was very familiar with the rules of medical astrology, he did not, or would not, meddle in medical affairs himself. Instead he saw that his role was to teach physicians to use astrology:

> I mention this Gentleman, only for your advantage in attaining the true causes of the disease, whether it be by the Nativity, Decumbiture, or Urine, that so you may speedily discover what Simpathetical Herbs are fit to cure it.[600]

James Cathcart, however, had no compunction about competing with the physicians for clients, and it is almost certainly the case that he would either have would have used the same method as Corss of interpreting the horoscope drawn up for the time of receipt of the patient's urine, or on receipt of the question by or about the patient's health.

IX

According to Keith Thomas, 'thorough-going astrological medicine had probably always been exceptional. Even in the reign of Elizabeth it was said that not one in a hundred physicians knew the proper rules,'[601] and this appears to have been true in Scotland too. It is clear that there were great differences in the proficiency and interest in astrology shown by practitioners of medicine. Some, like Lowe, appear to have simply passed on the astrological tenets that were part of the medical canon, but showed no particular enthusiasm for the topic, or indeed familiarity with its practice. For example, he mentioned

> the curious Astrologians who did alledge that there were 28. dayes in the yeare which were revealed by the Angell to good Joseph, which ever have beene remarked to be very fortunate dayes, either to purge, let bloud, cure wounds, build houses, fight battles…[602]

[600] Ibid, p. 29.
[601] Thomas, *Religion*, p. 421.
[602] Lowe, *Discourse*, p. 374.

This jumble of folklore bears no relationship to either natural or judicial astrology. Although many of the theories Lowe espoused, such as the elements and humours of Galenic medicine are closely linked with astrological ideas, he appeared to be only dimly aware of this. Ever pragmatic, he seemed simply to have absorbed astrological concepts, almost by osmosis, from the ambient traditional medical teachings, without much thought or critical analysis and used those that were of most practical value to him. Makluire, with his observations on typology and weather, showed a more immediate and practical interest in the subject and Irvine certainly had a good grasp of the principles of NeoPlatonic magic and of astrology, but his understanding of the underlying astronomical basis may have been rather less assured. Liddel, by way of contrast, with his academic background in both mathematics and medicine, had a fine understanding of the astronomical underpinnings of astrology and was able to bring the rigour of academic debate to the subject.

Orthodox physicians and surgeons, with some exceptions like Irvine, largely restricted themselves to natural astrology.[603] It was mainly the quacks, like Cathcart and Stobo, and the autodidactic astrologers, like Corss, who practised or wrote about judicial astrology, and it would appear that such practitioners had more expertise in astrology and its attendant astronomy than did doctors. In Corss's case, as a teacher of mathematics, astronomy and astrology, this is to be expected, but Stobo's accurate descriptions of the astronomical events from which he makes his predictions and medical prognostications show that he either had some expertise in astrology, or was

[603] Irvine may have written *Medicina Magnetica* partly to annoy. Addressing the reader he declared that 'Christie hath served up this dish only for his own fancy, and his friends recreation,' and taunted would-be critics with 'I live not by thy esteem or opinion; neither did you ever put such a favour on me, as should oblige me to dance attendance to thy humour...He [i.e. Irvine] thinks he ought to be allowed his folly, as well thou art permitted gravely, *insanire cum ratione*'. Irvine, *Medicina Magnetica*, p. 96.

astute enough to copy from reliable sources.

Astrology, as has been shown, was an integral part of medicine during the period, used in many different forms, by all classes of practitioner. It is difficult, however, to put even an imprecise date on the final exclusion of astrology from medicine in Scotland. When the first *Edinburgh Pharmacopoeia* was finally published in 1699, compiled in part by Robert Sibbald and Andrew Balfour (1630–1694) the first and third presidents of the RCPE respectively, it had no astrological content whatsoever. Archibald Pitcairne, who died in 1713, retained an interest in soli-lunar influences in medicine into the eighteenth century. He did not, however, use the term astrology when referring to these; he couched the causes of the observed effects in the language of mechanics. The great Scottish physician, chemist and influential university teacher, William Cullen (1710-1790), was just entering Glasgow University in 1726, the year in which the period under review comes to an end. Over 60 years later, in 1789, he wrote *A Treatise of the Materia Medica,* his own version of his popular lectures on the topic. In it the concept of temperaments was still included.

> Upon a particular supposition as to their causes, the ancients named [certain combinations of characteristics] *temperaments*; and the term has been continued to be employed in the schools of physic from the most ancient to the present time…Abstracting from all theory we continue to employ the same term to denote a combination or concurrence of circumstances which happens in certain persons, but which in several respects is different from the combination that happens in others…The appellations have been continued, though the theories which laid the foundation of them have been long exploded…[604]

It is telling that Cullen dismissed the suppositions and theories of the ancients about temperaments – undoubtedly meaning Galenism with its associated astrology – three

[604] William Cullen, *A Treatise of Materia Medica* (Edinburgh, 1789), pp. 61–62.

times in such a short paragraph and could not even bring himself to name its origins, despite the fact that he still found the system a useful tool in medicine. He went on:

> The moderns have neither by observation extended the ancient distinctions, nor, though they have often attempted it, have they ever given, so far as I can judge, any happy explanation of the causes or foundation of the distinctions they have so generally adopted. I believe it will be generally allowed that this part of medical doctrine is still in an embarrassed and undetermined state.[605]

Just how medicine in its relation to astrology came to be in this 'embarrassed and undetermined state' will be examined, along with the decline of astrology in natural philosophy, in the final chapter.

[605] Ibid, p. 62.

Chapter Six: Judicial Astrology

> All judicial astrology is either about changes in air, sea, or land (whence we calculate the dearth or abundance of things useful or harmful to us); or it is about the beginnings and changes of monarchies and republics, and the shifts of peoples, laws and morals, city-states and provinces or it is about each person's life, death, and the events of his life; or it is about the good or bad choices he makes in the things he has to do.
>
> Tomasso Campanella, *Astrologicorum libri VII* (1630) [606]

Despite serious objections on theological, theoretical, moral and operational grounds, judicial astrology was practised throughout the whole of the period under review, a fact that testifies to its perceived value to those who used it. The result was that it had an uneasy place in Scottish culture, but a significant, and sometimes influential, place nevertheless. Judicial astrology can be defined broadly as the practice of making judgements about the nature, outcome and timing of particular events or conditions in human affairs, by inference from the positions and relationships of the heavenly bodies. There were several ways in which judicial astrology was classified. According to John Calvin,

> Iudicialle [astrology] consisteth in two princypall articles: whereof y^{e} first is to know not onely the nature and complexion of mē: but also al their fortunes as they call them, yea and all that they shal either do or suffer in ther life. The second is what end those matters shall haue which they go aboute when they traffike and occupie one with an other and generally of the whole estate of y^{e} world[607]

Historians of astrology, however, such as Keith Thomas, have generally divided judicial astrology into four distinct specialities: nativities, questions, elections and mundane predictions, and these are the divisions that will be used here.[608]

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[606] Quoted in Maxwell-Stuart, *Occult*, p. 70.
[607] Calvin, *Admonicion*, [p. 15].
[608] Thomas, *Religion*, p. 338-339.

As in other areas of astrology, while substantial scholarship has been invested in researching the practice of judicial astrology and its practitioners in England and in Europe,[609] little scholarly endeavour has been invested in Scotland's experience. Passing references to Scots practitioners can be found in the works of Frances Bullough, David Stevenson and Keith Thomas, and while these affirm that they did indeed exist, they convey little more.[610] Arthur Williamson went somewhat further to argue that astrology was one of several occult traditions that were legitimized around the turn of the seventeenth century by a group of powerful and intensely Protestant Edinburgh intellectuals, intent on bringing their extensive scholarship to bear on biblical prophecy and the cycles inherent in nature in order to discover the timing of the Last Judgement. While this timely work makes it clear that astrology had a central role in Scottish intellectual life in the decades spanning 1600, the wider questions about its practice and practitioners remain unaddressed.[611]

The intention of this chapter is to examine judicial astrology in the Scottish context between the times of the country's Reformation in 1560 and the early stirrings of its Enlightenment in 1726, at a period when astrology throughout Europe was experiencing some of the most profound changes in its long history. After

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[609] In addition to Allen, *Star-Crossed Renaissance*; Eade, *Forgotten Sky*; Geneva, *Seventeenth-century Mind*; Grafton, *Cardano's Cosmos*; Newman and Grafton, *Secrets of Natur*e; Parker, *Familiar to All*; Thomas, *Religion*; *Horoscopes and Public Spheres*. eds. Oestmann, Rutkin and von Stuckrad see J. B. Bamborough, and J. C. Eade, 'Robert Burton's Astrological Notebook', *The Review of English Studies*, 32 (1981), 267–285; Claudia Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', *Journal of the History of Ideas*, 66 (2005), 557; Samuel Jeake, *An Astrological Diary of the Seventeenth Century: 1652-1699*, ed. by Michael Hunter and Annabel Gregory (Oxford, 1988); Robert S. Westman, 'The Astronomer's Role in the Sixteenth Century: A Preliminary Study', *History of Science*, xviii (1980), 105–147; Frances Yates, *Giordano Bruno and the Hermetic Tradition,* (Chicago, 1964).

[610] Bullough, F.S., 'Science and Supernaturalism in the Jacobean Age' (unpublished PhD thesis, University of Aberdeen, 1967), passim; David Stevenson, 'Masonry, Symbolism and Ethics in the Life of Sir Robert Moray, FRS', *Proc. Soc. Antiq. Scot.*, 1984, 405–431 (p. 414); David Stevenson, *Moray Letters*, p. 118.;Thomas, *Religion*, pp. 344, 408.

[611] Williamson, 'Number and National Consciousness', p. 187-212. See also Arthur H. Williamson, *Scottish National Consciousness in the Age of James VI* (Edinburgh, 1979); Williamson, 'Antichrist'.

setting the historical scene, examples of each of the four branches of judicial astrology will be looked at in turn, to identify the kind of people who were using it, what they were doing and why they were engaging in it, and whether there were any differences in the practice between three different groups, the educated elite, the autodidactic practitioners and the common people. Second, given the considerable condemnation of the practice, attention will be paid to the type of censure that was applied to practitioners and, again, whether there were any differences in this between the different layers of the social hierarchy.

As was indicated in the introduction, remarkably little documentation has come to light about the practice of judicial astrology in Scotland, compared to England, Italy and Germany. Enough material, however, has survived to permit an outline of its practice and practitioners to be traced. The main manuscript sources used are those in the Colin Campbell Collection in Edinburgh University Library and Kirk Session records from the National Records of Scotland. Other primary sources include the diaries of Sir John Lauder and Sir James Melville and the letters of Jean de Montereul, as well as contemporary biographies, Scottish almanacs and broadsheets and the published works of Robert Pont, James Corss and George Sinclair.

I

There is evidence that judicial astrology was practised in the highest circles in Scotland in the years that precede the period under review. That William Dunbar in his poem, *Remonstrance to the King*, listed astrologers among the many occupations of those who served at the court of James IV (*reg.* 1488-1513) is an indication that in

late fifteenth- and early sixteenth-century Scotland astrologers had a customary place in the royal retinue:

> Schir, ye have mony servitouris
> And officiaris of dyvers curis;
> Kirkmen, courtmen, and craftismen fine;
> Doctouris in jure, and medicine;
> Divinouris, rethoris, and philosophouris,
> Astrologis, artistis, and oratouris;
> Men of armes, and vailyeand knychtis,
> And mony uther gudlie wichtis... [612]

Queen Mary, too, had at least one astrologer in her entourage. George Buchanan, in his *History*, reported that there was at her court a French priest and astrologer by the name of Damiot, who had warned the queen's private secretary, David Rizzio, to 'beware of a bastard.' Rizzio, assuming that this was a reference to Mary's half-brother, the protestant Earl of Moray, laughed it off, only to have the first blow against him struck by the plotter George Douglas, 'the base-begotten son to the Earl of Angus.'[613]

During the regency of Mary of Guise, the Church, too, in the person of John Hamilton, archbishop of St Andrews (1510/11–1571) had an intimate link with European judicial astrology. In 1552 Hamilton was suffering from severe and life-threatening asthma. Having been treated to no avail by the court physicians of the French and German monarchs, Girolamo Cardano, physician, astrologer and mathematician, then at the height of his fame, was successfully enticed to come to Scotland, on the promise of a large fee. Cardano wrote of a conversation he had with Hamilton's physician, Gulielmus Casanatus, regarding his astrological observations of the case, correctly predicting that, as the significator for Hamilton's malady was Saturn in the sixth house of sickness, when the Moon approached it in a few days

[612] William Dunbar, *The Poems of William Dunbar* (Oxford, 1979), pp. 128–129.
[613] George Buchanan, *The History of Scotland* (London, 1690), p. 126.

hence his illness would worsen. This impressed Casanatus and the archbishop, too, when he was told.[614] No evidence appears to exist of what, if indeed any, astrological interventions he included in his treatment. In less than three months after Cardan's arrival the archbishop was already much improved, and within two years he had made a complete recovery.[615] The archbishop himself, or perhaps his elevated position and connections, had clearly made a strong impression on Cardan as two years later, in 1554, he dedicated his *De Astrorum Iudiciis* to Hamilton and this dedication, together with the inclusion in the book of a detailed analysis of the latter's nativity, which would have required Hamilton to disclose his birth details, point to Hamilton's endorsement of Cardano's astrology. In his delineation, Cardano predicted that Hamilton would achieve his goals through much anxiety and peril, and that if he lived past the year 1554, he would be in great danger from passion of the heart, or poison, in the year 1560. He failed, however, to predict that Hamilton would die by hanging in 1571.

II

Nativities, or natal horoscopes, sought to discover not only the 'nature and complexion' of the individual involved, but also fortunate and unfortunate periods throughout the lifetime during which different kinds of 'accidents' or incidents might be expected to occur. Two techniques were commonly used for making predictions about the lives of individuals – revolutions and primary directions – and there may

[614] Girolamo Cardano, *Opera Omnia*, ed. by C. Spon (Lyons, 1663), v, pp. 508–509., quoted in Grafton, *Cardano's Cosmos*, p. 113.
[615] Nancy Siraisi, The Clock and the Mirror: Girolamo Cardano and Renaissance Medicine (Princeton, NJ, 1997), pp. 5, 29, 33, 207; Charles L. Dana, 'The Story of a Great Consultation: Jerome Cardan Goes to Edinburgh', *Annals of Medical History*, 3 (1921), 122–135; William George Waters, *Jerome Cardan: A Biographical Study* (London, 1898), p. 131.

be an important Scottish connection with the calculation of these. For the first, a horoscope had to be drawn up for the moment when the Sun, in its apparent revolution around the earth, made its annual return to the position it had occupied at the exact time of the person's birth. This 'revolution' was valid for a single year and described the person's prospects during the following twelve months. Primary directions, on the other hand, identified times throughout the whole of a person's lifetime when critical events or turning points were likely to occur. Their determination involved highly complicated and time-consuming mathematical calculations, which were greatly facilitated by the invention of logarithms and improvements in spherical trigonometry. As both of these developments resulted from the genius of John Napier of Merchiston, who was an astronomer and astrologer as well as a mathematician, it is not unreasonable to suggest that it was, at least in part, the tedium of such astrological calculations, and his interest in the subject, that spurred on his endeavours.[616]

The astrological workbook of the royal physician George Eglisham, *Accurata Methodus*, published in Edinburgh 1616, shows just how painstaking a procedure it was to draw up a full natal horoscope.[617] Producing the figure itself involved 183 steps and a further 196 steps were required to work out the primary directions. As an accurate time of birth was essential for accurate predictions and this was often unavailable, techniques had also been developed for rectifying the horoscope from the timing of accidents that had already occurred. As at that time any practitioner of

[616] On the development of mathematics in the period see Taylor, *The Mathematical Practitioners of Tudor and Stuart England*; Mordechai Feingold, *The Mathematician's Apprenticeship: Science, Universities and Society in England, 1560-1640* (Cambridge, 1984); Stephen Johnston, 'The Identity of the Mathematical Practitioner in 16th-century England', in *Der "Mathematicus": Zur Entwicklung Und Bedeutung Einer Neuen Berfusgruppe in Der Zeit Gerhard Mercators*, ed. by Irmgarde Hantsche (Bochum, 1996), pp. 93–120.

[617] The same method would be used to erect a horoscope for any purpose. Other names for horoscopes were figures and celestial schemes.

this level of the art would have had to have been highly numerate, able to read Latin and use a series of complex tables and, preferably, have some knowledge of astronomy, such astrology was fully accessible only to those few who were mathematically fluent.

James Bassantin is an example of one such mathematically gifted individual who practised judicial astrology. Sir James Melville of Halhill told the story of the meeting between his brother, Sir Robert Melville, and Bassantin a Glasgow-educated academic who had been a professor of mathematics at Paris.[618] Bassantin had returned to Scotland in 1562, at a time when Melville was making valiant diplomatic attempts to improve the relationship between Mary of Scotland and Elizabeth of England. Sir James related how Bassantin warned his brother that this would all come to nothing as Mary would be betrayed and eventually destroyed by Elizabeth.

> Ane Bassentin a Scottis man, that had bean trauelit, and was learnit in hich scyences, cam to him and said; "Gud gentilman, I hear sa gud report of yow that I loue yow hartly, and therfore can not forbear to schaw yow, how that all your vprycht dealing and your honest trauell wilbe in vain, wher ye beleue to obtean a weall for our Quen at the Quen of Englandis handis. Ye bot tyn your tym; for first they will neuer meit togither, and nyxt ther will neuer be bot discembling and secret hattrent for a whyll, and at lenth captyuite and vtter wrak for our Quen be England.[619]

Bassantin spoke with conviction and, in the event, his prediction proved to be correct, but Robert Pont was more cautious about the results of judicial astrology. While convinced that astrology was useful for giving pointers to the future, he warned that there were limits to man's capabilities when it came to making judgements.

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[618] A. J. Turner, 'James Bassantin (d. 1568)', in *Oxford DNB*, 2004.
[619] Melville, *Memoirs*, p. 203.

> The first the chief authore in this arte Ptolemea himselfe affirmeth, that part of Astrologie, which is called Iudicair, exceedeth the weaknesse of mens apprehension…[620]

Although he affirmed that there were clues to future events in the heavens, Pont saw the ability to predict specifics as being beyond man's abilities. However, he conceded that although he could not

> bee perswaded that menne have yet so farre attayned to the knowledge thereof, as to finde out perfitelie [by judicial astrology], the generall and chaunges and alterationes of Kingdomes and common-wealthes. Al-beit it may bee, and is probable, that they have found out many particulars, concerning particular persons.[621]

If the story reported to Robert Wodrow is true, then it shows that Pont himself was interested in the lives of royalty, and had found out some important particulars about one particular person which he predicted with great certainty. Wodrow wrote:

> Mr Robert Pont had a discovery of Queen Elizabeth's death that same day she dyed...he came that night to King James the Sixth, at a very unseasonable time, and with difficulty he got access to him, and saluted [him] "King of Great Britain, France, and Ireland." The king said, "I told zou, zou would go distracted with zour learning, and nou I see zou are so!" "No, no," said Mr Pont, "I am not distempered. The thing is certain. She is dead, I assure zou!" –and so it was.[622]

Wodrow commented that some attributed this knowledge to his skill in astrology, while others claimed it was a revelation.

Nativities were not, however, confined to the lives and deaths of royalty; nobles and gentry had an interest in their own affairs too. An undated letter from Sir Alexander Napier, half-brother of John Napier, demonstrates Alexander's considerable expertise in astrology and the fact that he had erected and interpreted the natal horoscope of a friend's son. His correspondent was Mark Ker, first Earl of

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[620] Pont, *Treatis*e, p. 45.
[621] Ibid, pp. 67-68.
[622] Robert Wodrow, 'Analecta', in *Maitland Club,* 4 vols. (Edinburgh, 1842), II, pp. 341–342.

Lothian, who was interim Lord Chancellor of Scotland in 1604 and had been a friend of John Napier at St Andrew's University.[623]

Later, in the middle of the century, George Gordon, second Marquess of Huntly (ca.1590–1649),[624] was using nativities to examine his own life and prospects, as well as those of his enemies and friends. A report made in December 1647 by Jean de Montereul, the French ambassador in Scotland, informed Cardinal Mazarin, chief minister of France, that Huntly had

> from his youth been an adept in that somewhat trivial branch of mathematics that teaches to judge of people's fortunes by the study of the stars, and has persuaded himself that he had a complete knowledge of what was, so that he has always been very hopeful in his transactions.[625]

Huntly did not limit his astrological judgement to his own affairs. According to Gilbert Burnet (1643-1715), Bishop of Salisbury, himself a Scot who lived in his homeland until 1674, Huntly had also calculated the time of death of Charles I, the first Duke of Hamilton and James Graham first Marquess of Montrose. Burnet recounted that

> He said often, that neither the King, nor the Hamiltons, nor Montrose would prosper: He believed he should outlive them all, [626] and escape at last; as it happened in conclusion, as to outliving the others. [627]

Apparently Huntly was not always wrong in his prognostications as his third son, Lord Charles, told Montereul of many things that his father had known before they

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[623] Napier, *Memoirs*, pp. 301, 321.
[624] David Stevenson, 'George Gordon, Second Marquess of Huntly (c.1590–1649)', in *Oxford DNB*, 2004.
[625] Jean de Montereul, *The Diplomatic Correspondence of Jean De Montereul...French Ambassadors in ... Scotland, 1645-48*, ed. by J. G. Fotheringham, 2 vols. (Edinburgh, 1898), pp. 345–347.
[626] Burnet is not entirely accurate here. Huntly died on 22nd March 1649. He outlived the King who died on 30th January 1649, and James, Duke of Hamilton who died on 9 March 1649, but Montrose survived Huntly, dying on 21st May 1650.
[627] Gilbert Burnet, *Bishop Burnet's History of His Own Time,* 2 vols. (Dublin, 1724), I, p. 23.

had happened, and added 'I would certainly have taken him for a wizard had he not been my papa.'[628]

From the middle years of the century, there was an upsurge in the number of astrology books that were translated from Latin into the vernacular, which made the subject increasingly accessible to a readership that had been previously excluded. This broke the monopoly that the educated had on in-depth astrological knowledge, and allowed a new middle layer of practitioner, the autodidact, to arise between the learned and the 'vulgar prognosticators' and street astrologers. James Corss was such a man. Born in Glasgow, the son of a maltman, he

> studied the knouledge of the mathematicks and obteined ane competent knouledge therin and wther sciences therto belonging, being naturallie adictit therto from his infancie. [629]

As has been noted previously, in the cases of Paterson as well as Corss himself, there was little intellectual sophistication, or indeed, self-doubt in the interpretations of such practitioners, something that can be largely attributed to the fact that they were self-taught and had not had their pedagogic endeavours honed by the academic rigours of formal teaching and disputations. A letter, dated 23rd April 1664, from Corss to Colin Campbell, which shows that the men had been corresponding for some time, attests to both Corss's astrological expertise and his unsubtle approach to the craft. Campbell had been keen to learn about nativities and had sent Corss the birth details of a child and asked him about an astrological technique for finding the date of conception. Corss replied with the following firm assurance:

> As for the trutine of herms I have allwayes used it but never found ane error therin and I perceave that you can practise it exactly by that one example which I see in your Letter with the Childs Nativity.[630]

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[628] Ibid, p. 346.
[629] *Extracts from the Records of the Burgh of Glasgow, 1630-1662* (Glasgow, 1881), II, pp. 434–457.
[630] EUL, MS.3099.9.

In Corss's 1662 *Ouranoskopia* is a detailed account of how to apply the 'trutine of herms' which involves working out the child's date of conception based on the theory 'that the very degree of the same sign wherein the Moon was at the Conception of the Childe, should be the true sign and degree of the ascendant at the birth.'[631] Campbell had also asked about the paternity of a child as the alleged father appeared to have doubts about it. Corss's approach to astrology could scarcely be more different from that of learned men like Pont. There was neither caveat nor uncertainty in Corss's final judgement. Not only had he 'never' found an error in his method for calculating dates of conception, his assessment of the child's prospects was also quite unequivocal. The interpretation of a nativity sent by James Corss to Colin Campbell was little short of brutally frank.

> I thinke the paren[ ] have had severall jarrs and discontents. Yet I am sure the child is his owne. It will not live long for when Venus comes (by direction) to the body of Saturn, lord of the 4th, it will then expyre… The (Moon) seperats from the conjunction of (Mercury) and applyes to a (sextile) of (Saturn) but unhapily in the way meets with that Cacademon, viz. (South Node). The childs mother would willingly aggre with, and does greatly love her husband but he is possessd with jealousie and fury and the woman viz. his wife is most falsly calumniate and slandred. I perceave they are but poor & have no great wealth. It will be a difficult bussines to reconcile them and their in[ ]estine troubles together.[632]

Here Corss, with complete confidence, affirmed the paternity of a child, predicting not only that the infant would die, but when the death would take place. He gave an analysis of emotional dynamics in the relationship between the parents as well as their financial situation and poor prospects of reconciliation, all derived though astrological reasoning. Corss made a curious request at the end of the letter, asking

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[631] Corss, *Ouranoskopia*, p. 33

[632] EUL, MS.3099.9. There is enough information given in the description of the planetary positions to be able, using modern astronomical calculations, to date the figure that Corss is interpreting as 18th January 1664 OS at around 9.30pm.

Campbell to send him the name of the child and its father. Corss may have wanted to check that his judgement had been correct, but a faint suspicion hovers that Campbell might have been checking both the conception date and child's paternity for personal reasons. In his youth he was no puritan in sexual matters as in 1672 he was suspended from his post as minister of Ardchattan and Muckairn by the synod for pre-nuptial intercourse.[633]

It might be expected that birth times would only have been recorded in wealthier households which owned timepieces, but there is evidence that the lowlier sort had this information available too, meaning that their nativities would also have been available for astrological analysis. James Corss, in *Ouranoskopia,* gave an example of a technique using the birth chart of

> a Childe [who] was born in the famous city of *Glasgow*, Anno Christi, 1632 upon Sunday the 15 of *July*, about half an hour past 8 in the morning, as was observed and is reported.[634]

Glasgow baptismal records show that a James Corss was baptised on 21st July 1632, making it highly likely that the details are his own.[635] It may well be that the time of birth was noted more commonly than might be suspected.

While the highest level of astrology, as well as that practised by Corss, may have been closed to less well educated practitioners, some nevertheless found their own way of predicting people's destinies from less detailed birth information. This was certainly the case the folk-healer and fortune-teller, Isabell Davidson. She came before the Kirk session of Belhelvie in Aberdeenshire in September 1676, and on being questioned why she asked people 'the moneth wherein they wer born' she answered:

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[633] John Henry, 'Colin Campbell, of Achnaba (1644–1726)' in *Oxford DNB*, 2004.
[634] Corss, *Ouranoskopia*, p. 35.
[635] 'James Corss, Baptismal Record', NRS, Glasgow Baptisms 644.1/3.

> 'yt knowing the moneth in which they war born shee wald tell ym qt hd befallen them or might befall them aftward.[636]

She claimed to be able to identify critical times in people's lives and, as with Corss, Davidson's predictions were concrete and unsubtle:

> Barbara Gibsons mother having told her the tyme of her birth, shee knew her to be troubled wt yt pain & yt it was occasioned by her falling in a tub full of water qn shee was four yeares of age.[637]

Probed as to how she had come by that knowledge she answered

> by the tuelue signes for shee ft yr war fyve weirds [638] for men & fyve for women in every signe being asked how shee knew yt anssred by books.[639]

It is likely that the books she referred to were perpetual prognostications or fortune-telling chapbooks of some kind. One technique that divided each zodiacal sign into five was that of planetary terms, so she may have used a text that gave delineations of these.

III

While nativities dealt with rather fatalistic individual destinies, 'questions', also known as horary questions or interrogations, had the more practical and immediate function of attempting to provide information and insights that might help individuals make decisions and solve problems of every kind. For this, a horoscope was drawn up for the moment and place that the question was posed to, or received by, the astrologer. Though no details exist of how he operated, James Gordon (1617-1686), the historian and map-maker known as the Parson of Rothiemay, was reputed to be 'a Dealer in judicial Astrology',[640] while the Napier family of Merchiston were

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[636] NRS, CH2/32/3.
[637] NRS, CH2/32/3.
[638] Fates or destinies: *The Concise Scots Dictionary* (Aberdeen, 1985).
[639] NRS, CH2/32/3.
[640] Jeffrey C. Stone, 'James Gordon (1617–1686)', in *Oxford DNB*, 2004.

renowned for their use of such astrology. Claude Nau, Queen's Mary's secretary, wrote of Sir Archibald Napier (1534–1608) that

> the Laird of Markyston, who had the reputation of being a great wizard, made bets with several persons to the amount of five hundred crowns, that by the 5th of May [1568] Her Majesty would be out of Lochleven.[641]

Mary escaped on the 2nd of May, which presumably left Napier wealthier and with an enhanced reputation as a sorcerer. His son Alexander, who as a judge later became Lord Lauriston, was also an adept who

> read his session-papers in the stars, and wrote his interlocutors in the twelve houses of the heaven, being a most learned judicial astrologer.[642]

His elder half-brother, John Napier, too, had

> caught a corner, at least, of the mantle of *Cardan*, and loved to trifle with these mysterious indices of futurity.[643]

John, like his father, had a reputation for wizardry that was enhanced by the rumour that he kept a black cock as a familiar and by his habits of dressing in long black garments and of wandering about at night in his nightgown, as well as using cunning tricks to trap dishonest servants.[644] Each of these can be easily explained away, according to his biographer, Mark Napier. The Napiers, as suppliers of royal poultry, had a black cock as the family badge, the exotic garments and *déshabillé* could be attributed to scholarly affectations and distractions and the tricks to the clever use of psychology to keep his servants under control.

William Lilly indicated, too, in his autobiography that John Napier was a keen astrologer, which Lilly put down to the latter being a polymath. Despite their

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[641] Claude Nau, *The History of Mary Stewart, from the Murder of Riccio Until Her Flight into England.* (Edinburgh, 1883), p. 80.
[642] Napier, *Memoirs*, p. 320.
[643] Ibid, p. 214.
[644] Ibid, pp. 214-215. Napier put a black cock in a dark room and told his servants to go in one by one and touch it. They were told that the cock would crow when the servant who had stolen the goods touched it. Napier had covered the bird in soot and the thief was the only one with unsoiled hands.

diametrically opposed views on the subject, as well as religious differences, a firm friendship flourished between Napier and Henry Briggs, a mathematician and reader of the astronomy lecture at Gresham-College in London, based on their shared mathematical interests. Lilly wrote:

> These two persons were worthy men in their time; and yet the one, viz. Lord Marchiston, was a great lover of astrology, but Briggs the most satirical man against it that hath been known: but the reason hereof I conceive was, that Briggs was a severe Presbyterian, and wholly conversant with persons of that judgment; whereas the Lord Marchiston was a general scholar, and deeply read in all divine and human histories.[645]

In 1594 John Napier signed an infamous contract between himself and the outlaw and rebel Robert Logan of Restalrig[646] for recovering hidden treasure which reads:

> it is apointit contractit and agreit betuixt...Robert Logane of Restalrige...and Jhone neper fear of merchistoun...forasmeckle as ther is dywarse ald reportis...that thair suld be within the said Robertes dwellinge place of fascastell a soum o monie and poise heid and hurdit up secritlie...The said Jhone sall do his vttter and exact diligens to serche and sik out and be al craft and ingyne that he dow to tempt trye and find out the sam.[647]

Bullough has speculated that 'al craft and ingyne' may have meant the methods of John Dee,[648] but it is just as likely that judicial astrology, and specifically the horary branch, was the means by which Napier meant to undertake the search, as there was a 'contemporary fascination with hidden treasure' and many astrologers in England, including Simon Forman and John Napier's kinsman, Richard Napier,[649] were drawing up astrological rules for calculating the whereabouts of potential caches.[650] Should John be successful, he was to receive a third part of the treasure and a safe return to Edinburgh, accompanied by Logan (whom he obviously did not trust), plus

[645] William Lilly, *Mr William Lilly's History of His Life and Times from the Year 1602 to 1681* (London, 1722), pp. 238–239.
[646] John Simmons, 'Robert Logan of Restalrig (1555–1606)', in *Oxford DNB*, 2004.
[647] Napier, *Memoirs*, p. 220-221.
[648] Bullough, *Science and Supernatural*, p. 107.
[649] Richard Napier was a cousin of John Napier, but there is no evidence of any correspondence or contact between them.
[650] Thomas, *Religion*, p. 377.

Logan would destroy the contract in Napier's presence. Since the contract is extant the likelihood is that Napier did not find the treasure.

Among the middling sort of practitioner was James Corss. As was shown in chapter three, he had advertised his services as a teacher of horary questions in his 1663 almanac which he offered from his home and 'and abroad at prefixed times', [651] and presumably from this he had acquired other students and enquirers as well as Campbell. Regrettably, no records of his lessons or his pupils appear to have survived, apart from his textbook, *Ouranoskopia*, and his letter to Campbell. Twenty years later, in 1685, James Cathcart was offering his services in Edinburgh, not as a teacher but as a practitioner, claiming to be able to answer such questions as the date of the inquirer's death or marriage, the kind of husbands or wives they would have, and whether certain enterprises the questioners had in mind would result in success or failure, [652] and Cathcart was still working in this way until at least the 1720s.[653]

As with nativities, ordinary, poorly-educated people would have lacked the necessary skills to erect a horoscope in order to find answers to their questions and they would have had to consult a practitioner such as Cathcart. In 1669 James Hog did just that in Humbie, going to a man called Seal in Newbattle to ask who had stolen corn and cloth from out of his house. Seal, however, 'was under ane promise to the presbiterie of Dalkeith not to medle wt in any thing in that kinde' [654] so he gave Hog a letter of introduction 'to a person at Edr who wold tell him who was the theif of what he wantd'.[655] Hog sent his man Johne Wood to the astrologer, David Ewart,

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[651] Corss, 1663, [p. 14].
[652] Robert Thin, 'Medical Quacks in Edinburgh in the Seventeenth and Eighteenth Centuries', in *The Book of the Old Edinburgh Club* (Edinburgh, 1939), p. 139.
[653] Anon, *Restoration of the Famous Cathcart*, [p.1].
[654] NRS, CH2/389/1
[655] Ibid.

with some money and the letter from Seal and Ewart sent back a paper describing the thief, writing that he

> dwelt southward from the place that he was of sandie coloured hair, blew watering eyes with a big brow having a scar in his hedd on whierr there is no hair, and that he was ane old souldier or smith. [656]

Ewart, with the great assurance that was also evident in Corss's answer to Campbell, had provided a minutely detailed description of the culprit and his whereabouts inferred from the figure of the planetary positions that he would have erected for the moment Hog's question had reached him.

IV

While horary astrology looked for answers to specific queries by drawing up a figure for the moment the question was asked, in elections the practitioner pro-actively sought out future celestial configurations in order to select the most propitious date and time for an intended purpose. The case of Huntly provides an example. According to one biographer, he never 'intended ane actione that succeaded right'[657] and Montereul reported that Huntly had stayed in retreat in the Highlands in 1647 quite certain, based on his astrological calculations, that he would be at home by the end of the year, and from there proceed to Edinburgh to be held in greater acclaim than ever before, and that he had told many people about this. Instead, he was captured and ended up in Edinburgh's Tolbooth and was eventually beheaded on 22nd March 1649.[658] In such a high-ranking royalist there were considerable and dangerous political consequences in his arrogant insistence on following his own

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[656] Ibid.
[657] Patrick Gordon, *A Short Abridgement of Britane's Distemper* (Aberdeen: Spalding Club, 1844), pp. 4–5, 230–231.
[658] Fotheringham ,*Correspondence of Jean De Montereul*, pp. 345–347.

judgement of what he believed the skies were pronouncing and, indeed, he paid for it with his life.

Although no other specific incidences have as yet come to light where elections were used, it was certainly a technique that was known of, and argued about. Christopher Irvine in his *Medicina Magnetica* refused to

> enter in general any disputation against them, who in dispute of experiences, deny all *Astrological elections*, it is enough at present to suppose them profitable: for that which is confirmed by *authority* of so many *learned men*, needeth not our *Arguments*. [659]

Elections could be associated with magic. James VI thought that witches and sorcerers chose 'certaine seasons, dayes and houres' for their rituals,[660] while Irvine described the best time for a magical intervention to draw down the power of the heavens, which was

> *when the beneficial beam of the stars, being apt for that purpose, are at a fit time received into matter disposed, and in a due manner brought into all*; as *Natural Magick* more fully teacheth.[661]

Most often, however, elections were used in medicine to determine the times to give, or refrain from giving, treatments. It could also be used to find the best time to geld animals, plant different kinds of seeds, cut nails, hair or shave and instructions for this were often found in almanacs, and especially the perpetual prognostications.[662] The timing for these interventions mainly depended on the phase of the Moon, and this information was readily accessible to everyone, including the common people, either approximately through their own direct observations or exactly from an almanac. These uses are dealt with in the chapters on medicine and almanacs.

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[659] Irvine, *Medicina Magnetica*, p. 66.
[660] James VI, *Daemonologie*, p. 17.
[661] Irvine, *Medicina Magnetica*, p. 10.
[662] Digges, *Prognostication*, 1619, [p. 26].

In times of political, social and economic insecurity people tend to seek information about the future to look for reassurance, to manage uncertainty and simply to satisfy their curiosity. As the period between 1560 and 1726 was one of exceptional turmoil, at every social level people were anxious to obtain some foreknowledge of conditions that would affect society at large. Astrologically, this forecasting was done by examining and interpreting the configurations of the heavens that coincided with the particular times under consideration. By drawing up a horoscope for the date and exact time of the equinoxes and solstices, information was deduced about trends and possible events in the season whose beginning they marked, and this technique was used for general predictions as well as for weather forecasting. A figure drawn up for the ingress of the Sun into Aries at the spring equinox was regarded as the most important and could be used to deduce indications for the whole year ahead. Significant aspects between the planets, especially Mars, Jupiter and Saturn, both in such figures, and when the aspects moved towards exactitude in the sky at any time in a year, were associated with momentous changes in the affairs of men and nations.

An example exists of the astrological interpretation of a figure by Colin Campbell, who was later regarded as one of the greatest Scottish mathematicians of the period. Among Campbell's papers is a tightly-written, highly-detailed, four-page interpretation of an astrological chart in his own hand that demonstrates his early interest in the practice that was to be continued throughout his life. There is no accompanying horsocope and the paper is undated but there is enough information given to be able, using modern astronomical calculations, to identify the date and time of the horoscope referred to as 11th March 1661 OS at around 7am. At this

period Campbell would have been in his final, magistrand year at St Andrews University and from the evidence of his student notebook it was only in the previous month that that he had taken down his regent's dictates on astrology.[663] Given the date and the general nature of the interpretation, it is most likely that it was an ingress chart, drawn up at the spring equinox, for the moment when the Sun crossed the celestial equator, designated as 0º of Aries, as

> ... the true time from whence judgement is to be raised for the exact knowledge and predicting of future natural events in the Elements for any year, is when the Sun enters the first point or minute of Aries.[664]

It may well be significant too that Charles II was to be crowned in London only a month later on 23rd April 1661. After the unrest of the previous two decades it would have been understandable to want to find out more about conditions that were likely to prevail during the coming year. Campbell had obviously been studying such astrology closely as he displayed a firm grasp of the technicalities of the subject in describing the general strengths, weaknesses and relative positions of the most important planets in the chart when he wrote that

> The trine of sun to Saturn denotes the Ch[art] Rulers have dignity...the Sun is slenderly dignified & by triplicity only… Now the Moon having separated from sextile of Mars and applying both to trine of Jupiter and sextile of Venus, and Venus being strong in the figure at first view may seem to promise to the common people much pleasure... yet Venus being impotent wt conjunction of Mars and the Ascendant by opposition of Saturn...[665]

This underlines the reasoning behind the interpretation which was that

> The affairs of the King and Grandees shall suffer detriment trouble and difficulty shall be in and about them, they shall require aid and assistance from the common people, … impiety & nonbelievers shall increase, no pity nor mercy shall be found amongst them, misery upon misery trouble of troubles, all kynd of vexation, … which evills may be somewhat alleviated by

[663] EUL, MS.3101.6.
[664] Ramesay, *Astrologia Restaurata*¸ Lib. 4, p. 214. A copy of this was purchased in 1669 by Edinburgh University library.
[665] EUL, MS.3099.24.

> the forementioned application of the Moon to trine of Jupiter & sextile of Venus, and Venus being strong in the figure.[666]

His interpretation demonstrates the general, qualitative and descriptive nature of astrological predictions that depended upon the precise, quantitative, mathematical measurements that were required to erect the figure. Precise data, however, were not always easy to obtain, and if Campbell's analysis is of an ingress chart there is an error of just over a day in the timing of the horoscope which, according to astrology's rules, would render the interpretation false. While it may simply have been a student's error – if, indeed, the horoscope was drawn up by Campbell himself – it could also be that the data on which it was based were faulty. This was by no means an uncommon occurrence, and it was also an excuse given by defenders of astrology to explain wrong predictions. John Booker, in his 1662 almanac, gave the time of the spring equinox for that year taken from seven different ephemerides to demonstrate how different methods of calculation produced different results.[667] None of them agree, but the range of time differences is only three hours. A mistake in an ephemeris or almanac could explain Campbell's error, if error there was, and there is evidence that one Scottish almanac for 1661 did contain mistakes, though what these were is unspecified and no copy of any such 1661 almanac survives.[668]

The majority of the common people would have been unable to draw up a horoscope which meant that their role was mainly as consumers of the predictions of others rather than as practitioners themselves, and it is unlikely that they would have made much of a distinction between astrology and the ubiquitous prophecies which also served to both whip up and assuage anxiety and curiosity. Their main source of

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[666] Ibid.
[667] John Booker, *Telescopium Uranicum* (London, 1662), [p. 34].
[668] George Sinclair, *The Hydrostaticks* (Edinburgh, 1672), pp. 317–318.

general astrological predictions would have been the almanacs, and broadsheets issued by itinerant astrologers such as John Stobo, both of which genres have been covered in chapter three.

VI

The Scottish Witchcraft Act of 1563 laid down that it was forbidden for any person or persons of whatsoever estate, degree or condition to use any manner of witchcraft, sorcery or necromancy or to claim to have any skill or knowledge of these, thereby abusing the people. It was also forbidden to seek any help, response or consultation from any such users and abusers of witchcraft, sorcery or necromancy. The penalty for these offences, whether practitioner, claimant or client, was death and no-one, no matter what rank they held, was exempt from the Act. [669] As James VI in *Daemonologie* had conflated astrology and necromancy[670] it might be expected that astrologers would regularly have fallen foul of this law. While the Act was certainly enforced against many accused of witchcraft, there is little evidence to show that astrologers were charged under it, nor under the 1574 Act and Ordour Anent Provision for the Poor, which promised punitive action against charlatans who pretended knowledge of physiognomy, palmistry and 'other abused sciences' which might be expected to include astrology. According to Julian Goodare, the clause in the 1563 Witchcraft Act that required consulters to be put to death was 'tacitly ignored',[671] and the main rationale behind the act may not have been to punish witches and necromancers but to attempt to discourage and stamp out the belief that

[669] George Fraser Black, *A Calendar of Cases of Witchcraft in Scotland, 1510-1727* (New York, 1938), p. 11.
[670] James VI, *Daemonologie*, p.9.
[671] Julian Goodare, *The Government of Scotland 1560-1625* (Oxford, 2004), p. 122.

such things were possible, as the act declared that it was 'for auoyding and away putting of all sic vane superstitioun in tymes tocum.'[672]

The cases of the Earl of Bothwell and William Stewart, who were punished, are, however, somewhat exceptional. In 1595 the infamous Francis Stewart, first Earl of Bothwell, who had been accused of what appears to have been a trumped-up charge of witchcraft, was exiled for his part in the Gowrie affair. There seems no doubt that Bothwell did practise astrology. Sir Charles Cornwallis, in a letter to the Lords of the Privy-Council from Valladolid in 1605, wrote that the Earl of Bothwell 'by takeing upon him to tell fortunes and help men to goods purloyned, he hath incurred the suspicion of a sorcerer.[673] Previously, in 1568-9, Sir William Stewart of Luthrie, Lord Lyon, King of Arms, along with Sir Archibald Napier, was accused of treason and witchcraft. The men had reputedly invoked, using Italian incantations, a spirit called Obirion to divine the future for their own political advantage, probably after having elected an astrologically appropriate time for this. Stewart had had the audacity to predict his own marriage to the queen, who he believed would return to power following the downfall of Regent Moray, and for this he was executed in 1569. Napier, however, went free, provided he remained within two miles of Edinburgh and answered before the council when summoned.[674] None of the other Napiers came to grief under the Act, either. As his biographer, Mark Napier, pointed out, if John Napier had really enjoyed in his own times the character of 'holding conversations with Old Nick', it is most remarkable that never for a moment did he fall into the slightest "*cummer*" on that account.[675] Nor did he appear to have

[672] Black, *Cases of Witchcraft*, p. 11.
[673] Napier, *Memoirs*, p. 217.
[674] Julian Goodare, 'Sir Archibald Napier of Merchiston (1534–1608)', in *Oxford DNB*, 2004.
[675] Napier, *Memoirs*, p. 216.

received any censure for his astrology. The alleged practice of sorcery was a more serious matter but, unlike Stewart and Bothwell, neither John Napier, nor his father, posed any political threat, so there would have been little motivation to take punitive action against them. Also, Sir Archibald and his son were both making important contributions to the country's economy, the former in his work at the Scottish mint and the latter through his inventions in defence and in agriculture, so there were positive incentives to refrain from prosecuting them. Although John's brother, Alexander Napier, was acutely aware that his astrology might be scoffed at,[676] he clearly felt no greater threat than that, as he openly displayed his own horoscope, carved in stone, above his front door at Lauriston Castle.

In Bassantin's case, too, despite the fact that Melville had called his prognostication 'false vngodly and unlawfull for Christiens',[677] no charges were pressed against him. Pont also went uncensored for his announcement of the death of Queen Elizabeth, almost certainly because of his position, great learning and advanced age, not to mention the sheer force of his personality. Even a prediction by a Scottish astrologer at the court of James VI and I did not earn its issuer the death penalty. In 1611Prince Henry's death was foretold by

> one Bruce, a most famous astrologer of the Scottish nation, for which the Earle of Salisbury [Robert Cecil], a great statesman, caused him to be banished, who left this farewell with the earle, that it should be too true; yet his lordship should not see it, the earle dying in May, the prince in November next following.[678]

It is to be wondered that Bruce got away so lightly. In 1581 the English Parliament had made it a statutory felony to 'erect figures, cast nativities, or calculate by

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[676] Ibid, p. 322.
[677] Melville, *Memoirs*, p. 203.
[678] *Secret History of the Court of James the First*, ed. by Sir Walter Scott, 2 vols. (Edinburgh, 1811), I, p. 393.

prophecy how long the Queen would live or who would succeed her.'[679] As Henry was James's heir apparent, Bruce was surely venturing into dangerous territory. The leniency may simply have stemmed from Cecil calculating that banishment would rid the court of one of the king's Scottish hangers-on, whose presence caused so much resentment among the English courtiers. Banishment would also have created less publicity for the prediction than a trial. It is also to be wondered what Bruce was doing at James's court in the first place, as the king had made his disapproval of the practice abundantly clear in his *Daemonologie*. It is likely that James simply tolerated well-established customs – up to a certain point – as he had done in the case of allowing astrology in almanacs in England, but warning that

> All conjurers and framers of almanacs and prophesies exceeding the limits of allowable astrology shall be punished severely in their persons.[680]

Huntly's astrological involvement evoked little more than the equivalent of a sad shaking of the head. Several of his biographers blamed his ill-placed confidence in his own judgement as well as his disastrous military strategies and eventual downfall on his penchant for astrology. According to Burnet,

> Astrology ruined [Huntly]: he believed in the stars, and they deceived him... He was naturally a gallant man: but the stars had so subdued him, that he made a poor figure during the whole course of the wars. [681]

There is no suggestion that Colin Campbell was ever met with anything more challenging than a counter-argument against his astrological activities. It would appear that in Scotland objections to astrology remained in the realm of academic

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[679] It was apparently previously 'punishable by fine and imprisonment.' Sir E. Coke, *Institutes*, iii, chap.1, quoted in Thomas, *Religion*, p. 408, n. 119.
[680] Abel Heywood, *Three Papers on English Printed Almanacs* (London: privately printed, 1904); Marjorie Nicolson, 'English Almanacs and the "New Astronomy".', *Annals of Science*, 4 (1939), 1–33; Curry, *Prophecy and Power*, p. 20.
[681] Burnet, *History*, p. 23.

and theological debate and did not lead to prosecution, or at least not among the country's educated elite.

There is evidence that the authorities took a pragmatic approach towards astrology and astrologers in the case of the autodidactic practitioners, as shown by the attitude of Edinburgh Town Council to James Corss. His advertisement offering to teach 'how to resolve all manner of questions [and] to erect Celestial Schems or figures for any time assigned',[682] which would have been a breach of the 1563 Act, brought him no reprimand. On the contrary, he was 'admitted burgess and guildbrother of Edinburgh in 1664 despite not having served an apprenticeship, and granted full remission of fees.'[683] This may have been as a result of the care he took to keep on good terms with the Town Council. On 17th October 1662

> James Cors mathematician presented a bundle of little books called Ane Ephimeris or ane Almanack for the yeir 1663 dedicat to the Provost Baillies and Counsell of Edinburgh quhilk wer accepted aff his hands and distribute to the members of Counsell and the residue laid up in the Clerkis Chamber.[684]

He was also granted permission by both Edinburgh and Glasgow Town Councils, in 1658 and 1660 respectively, to set up his own school in these burghs.[685] Corss was a modest, pious man who was respectful towards authority. George Liddel, who was professor of mathematics at Marischal College from 1687 to 1716, wrote of his integrity and described him as

> a Man not given to Ostentation, but [one who] lived content with the Talent that God had bestowed upon him, in the Mathematical Sciences, neither did he envy any person, altho their Gifts were above his.[686]

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[682] Corss, 1663, [p.14].
[683] Bryden, 'James Corss (fl. 1658-1678)'.
[684] *Extracts from the Records of the Burgh of Edinburgh: 1655-1665*, ed. by Marguerite Wood, p. 308.
[685] *Records of Burgh of Edinburgh*: 1655-1665, p. 93; *Records of the Burgh of Glasgow*, II, pp. 434-457.
[686] George Liddel, *Certamen Mathematicum* (Aberdeen, 1684), p. 3.

There was nothing in Corss's manner towards authorities that invited attack and the value of his services to Edinburgh as an almanac-maker, surveyor and school-master almost certainly protected him from whatever slight danger of prosecution there was.

A thin line of respectability separated men like Corss, who were serious mathematicians and useful members of the community, from others, like Cathcart, who were considered to be quacks. Sir John Lauder reacted to Cathcart's 1685 advertisement of his astrological services by noting that

> It was a piece of great impudence in a Christian commonwealth to avow such an art, for if he had it by magick he was a sorcerer, if not he was an imposter and abuser of the people, which even is death by our 73 Nat. Parliament 1563.[687]

But while Lauder may have penned outrage into his private diary, the Act, apparently, was not brought against Cathcart. On the contrary, two broadsheets from ca.1720 reveal that he went on to make a good living over the forty years that followed. [688] While the first of these claimed that Cathcart had died, the second refuted this, asserting that Cathcart, who had by this time expanded his range of services, had become

> Physician, Astrologer, Heraldry-Teacher, Fortunes-Explainer, and Resolver of all Doubts, and all manner of Lawful Questions [and was still] in perfect Health, accurate Memory, and ripened Judgment, living at his House in Lauder's Land, near the Craig-Well at the back of the Canongate, at the foot of the Common-Closs. [689]

He seems to have been itinerant, plying his many trades throughout Britain, not just in Scotland as

> …for these Forty Years in Great Britain's Land
> Our brave Cathcart hath shown his skilful Hand
> Into several Nations his rarest Arts prevail'd,

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[687] Lauder, 'Historical Observes', p. 145.
[688] Anon, *Strange Life*; Anon, *Restoration of Cathcart*.
[689] Anon, *Restoration of Cathcart*, [p. 1].

And Country Towns him, as their Friend reveald.[690]

The first broadsheet gives telling insights into what seedy ranks popular astrologers like Cathcart were categorized.

Astrologers, Soothsayers, Seers;
Prognosticators Jock the Lyars,
Rank this amo' your dismal Years,
Your Patron's Dead…[691]

The old suspicions of links with sorcery were still attached to the practice, though this appears to be seen more as a joke than a threat.

And Pluto who such Arts inherits,
Did for his more than common Merits,
Teach him how he should Conjure Spirits
Witchcraft repell,
This he practis'd and many mae Rites,
Than Tongue can tell.

Which were by dark Characters done,
Just at the Change, or at full Moon,
Either before or afternoon;
As he fand right,
By which he made foul Spirits soon
To take to Flight,

This Sandie Gardner can attest,
Whom Witches griveously opprest,
And Fiends or Fairies did molest,
In forms of Flees.
And of his Nodle made a Nest,
Like Beik's o' Bees. [692]

James Cathcart may have become a legend in his own time and escaped prosecution, but some at the lower end of the social scale were not always so lucky even though, according to P. G. Maxwell-Stuart, 'specific mention of astrology in Scottish ecclesiastical records is most uncommon'.[693] Isabell Davidson, who had been telling

[690] Ibid, [p. 1].
[691] Anon, *Strange Life*, [p.1].
[692] Anon, *Strange Life*, [p. 1].
[693] P. G. Maxwell-Stuart, *An Abundance of Witches* (Stroud, 2004), p. 163.

fortunes in Belhelvie was ordered to attend the Aberdeen presbytery meeting but as she did not keep the appointment, it is not known how the Kirk would have dealt with her.[694] James Hog and Johne Wood were brought before the Kirk session at Humbie, in East Lothian, on April 25, 1669 where they confessed to consulting the astrologer, David Ewart, about some stolen corn and cloth.

> Whereupon the said James Hog and Johne Wood were sharplie rebuked for their sin in going to consult with one whom they supposed ane magician or wizard, their sin being laid out wnto them, they were exhorted to mourne for the same. but what their censure should be the session thought fit to referre that to the presbiterie.[695]

At Humbie judicial astrology was clearly deemed to be a form of magic or witchcraft. That the men were being accused of a crime of some magnitude can be inferred by the session's referring the case to the next highest level of the Kirk hierarchy, the Presbytery, as had also happened to Isabell Davidson. It was ordered, too, that the paper with the answer that David Ewart had given should be sent to the Canongate ministers so that they make take some action to restrain and censure him. The ministers evidently had an active communications network, helping each other keep their congregations under surveillance and control. On May 16th 'The minister reported that the Presbytery had ordained that James Hog and Johne Wood should 'publicklie be rebuked' and on 30th May 1669 it is recorded that 'James Hog and Johne Wood did acknowledge yr sorrow for yr heinous sin of consulting with David Ewart ane supposed sorcerer anent yr stollen goods'.[696] No matter how humiliating a public rebuke might be, the pair got off lightly for their offence of trading with someone variously described as a magician, wizard and sorcerer.

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[694] NRS, CH2/1.
[695] NRS, CH2/389/1.
[696] Ibid.

The Humbie case is almost certainly linked with one recorded in the July 1660 Canongate Kirk session,[697] where three people had consulted a diviner about stolen goods, while in September and October, the Presbytery of Dalkeith considered a letter, received from the Presbytery of Kelso, 'concerning Mr Silvanus, one of the parish of new battle, his abusing the people by giving them responses.' Silvanus 'acknowledged that he had discovered some secret things by his skill in astrology'[698] and offered to let presbytery officials examine his books which was done and they 'found there was nothing in them but groundless vanities'. So Silvanus went unpunished, but he was ordered to desist in future from such practices. Seal and Silvanus are almost certainly the same man. Both lived at Newbattle and had promised the Dalkeith presbytery not to meddle with such matters. In addition, the clerk at Humbie seemed unsure of Seal's name as, instead of entering a Christian name, a space is left before 'Seal' each time it is written, presumably to be filled in later, and Seal, depending on the accent, could easily be a phonetic rendering of the first syllable of Silvanus.

It is highly significant that in neither Humbie nor Canongate did the culprits receive severe punishments at a time when witches were being tried and burnt. It would appear that the church authorities, although nominally classifying astrology as a branch of witchcraft, actually regarded it as a fairly trivial offence, a 'groundless vanity', albeit one that had to be firmly discouraged. That this warning-off did have some effect, can be inferred from the fact that Seal/Silvanus was still cautious about practising the art a full nine years after being brought before the Canongate Kirk session.

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[697] 'Canongate Kirk Session Record', 1660, NRS, CH2/122/69, July 1660.
[698] Maxwell-Stuart, *An Abundance of Witches*, p. 163.

In conclusion, it can be seen that judicial astrology was practised at all levels of society and at all levels of expertise and that, in general, the more educated the person the most sophisticated and nuanced were the interpretations. All four branches of the art were practised; nativities, questions, elections and general predictions. Although surviving documentation is too scant to make a defintive judgement, it would appear to suggest that educated use of judicial astrology decreased towards the end of the century, while the practice increased among the lowlier sort. Despite draconian laws being in place that could have been applied to practitioners and clients of judicial astrology alike, these were not put into force against the educated unless linked with other, more heinous, crimes such as treason. It was rare for cases of astrological practice to be dealt with by the church authorities, but when they did they were censured by the Kirk Session and the Presbytery, with stern rebukes rather than prosecution for witchcraft.

Chapter Seven: Astrology and Natural Knowledge

I know that all beneath the moon decays,
And what by mortals in this world is brought,
In Time's great periods shall return to nought;
That fairest states have fatal nights and days;

William Drummond of Hawthornden[699]

The fact that early modern natural philosophy and modern science are two radically different enterprises had crucially important implications for astrology's changing status in the seventeenth century. Teaching at the Scottish universities until the last quarter of the seventeenth century was in the scholastic tradition and heavily biased towards the work of Aristotle, who divided 'science' into three sectors – the poetical, the theoretical and the practical. By poetical science he meant the fine arts as well as poetry; theoretical science comprised physics, mathematics and metaphysics, while practical science referred to ethics and politics.[700] The primary function of the Arts degree at Scottish universities was to provide training for young men destined to be ministers, lawyers, physicians and administrators. In these fields the ability to weigh up evidence and opinion and make ethical and political judgements was at a premium and so the scholastic syllabus, which fostered 'practical' skills of those kind, would have had much to recommend it. The teaching of natural philosophy in the final, magistrand year was an extension and culmination of this training in reasoning that built up from Greek in first year, through logic, rhetoric, ethics and metaphysics in the second and third years. The material for the magistrand class was based on such classical texts as Pliny's *Natural History*, Aristotle's *De Caelo,* Euclid's *Geometry* as

[699] William Drummond, *A Collection of All the Poems Written by William Drummond, Of Hawthornden* (Edinburgh, 1711), p. 1.
[700] 'Aristotle, Metaphysics, 1025b25'; Richard McKeon, *The Basic Works of Aristotle,* (New York, 1941), p. 778.

well as the works of Ptolemy and Sacrobosco, and the method of approaching an understanding of the natural world was through study and contemplation of what these authorities had said on the subject, by means of Aristotelian logic and disputations.

Peter Dear has argued persuasively that, unlike almost all other kinds of knowledge relating to the natural world, which were divided into *theoretica* and *practica*, their theoretical and applied arms, natural philosophy, strictly speaking, had neither. It was concerned with developing causal explanations for phenomena and was 'essentially and solely speculative because it was about understanding things, not doing things'.[701] In the hierarchy of the natural sciences, natural philosophy was accorded the highest intellectual status, with medicine following closely behind. Further down the scale came mathematics, and even lower still was applied mathematics, which included navigation, surveying, gunnery and the activities informed by natural astrology, such as agriculture, horticulture, and, above all, meteorology. In the late sixteenth and early seventeenth centuries such pursuits were mainly, though not exclusively, carried out by artisans, so it was not in the universities that general information about these practices was to be found but, for the public at large, in the widely distributed and utilitarian almanacs and, for the specialist, in textbooks such as James Corss's *Ouranoskopia* and *Practical Geometry*.

Francis Bacon, however, in his *Advancement of Learning* of 1605, [702] introduced into natural philosophy the seed ideas of utility and instrumentality that would find fertile soil in the intellectual climate of six decades later. While some

[701] Peter Dear, 'What Is the History of Science the History of? Early Modern Roots of the Ideology of Modern Science', *Isis*, 2005, 390–406 (p. 394).
[702] Francis Bacon, *Of the Proficience and Advancement of Learning, Divine and Humane* (London, 1605).

movement away from the traditional pedagogic framework can be detected in student notebooks before the 1670s, as was seen in the first chapter, this was slow and piecemeal. Given the vexed and often bloody religious conflicts that created unrest and national instability especially after the signing of the National Covenant in 1638, and a reformed church that was deeply suspicious of any intellectual enquiry that might threaten its dogma and was therefore attempting to exercise maximum control over the curricula of the universities, this is scarcely surprising. Teaching had to conform to Christian doctrine, rather than what was necessarily observably or theoretically true.[703]

The virtuosi movement that swept through Europe after the 1660s, revolutionising the values, methods and outcomes of the quest to understand the natural world did not, however, bypass Scotland, for its countrymen had a long tradition of travelling abroad for both education and employment and were natural recipients and carriers of these new ideas. There was a thriving network of Scots, active both within and without Scotland, linked by the common aim of pursuing knowledge in this new way, a network that was part of a wider complex of connections that spanned London and Europe. These men were actively engaged with science and learning in the broadest senses of the terms, and their work was driven by a powerful reaction to the factionalism and intellectual stagnation of the past and steered by a striving to create a better future. [704]

Instead of uncritically assuming the perceptions and interpretations of the natural world that had been handed down by the scholastic authorities, such as Pliny and Galen and the Scriptures and, above all, Aristotle, as had been the tradition for

[703] Shepherd, 'Philosophy and Science'; Russell, 'Cosmological Teaching'.
[704] Roger L. Emerson, 'Sir Robert Sibbald, Kt, the Royal Society of Scotland and the Origins of the Scottish Enlightenment.', *Annals of Science*, 45 (1988), 41–72 (p. 14).

centuries, these men took responsibility for the accumulation of their own data about the world around them. The information they gathered was based on the observations of their own senses as well as the senses enhanced and extended with the help of the new instruments that were becoming available, such as the microscope and telescope. Their ideal was to seek information that was measurable and verifiable by some objective means so that consensus could be reached. They were weary of the damaging schisms that had been rampant in church and state and which had destabilised and impoverished the country over the previous half century and more.

The means to this end was to be achieved through observational and, above all, mathematical methods. Galileo and Descartes and then, later, John Locke had divided attributes into two categories: primary and secondary qualities. Primary qualities are those factors that can be weighed and measured; they are quantifiable and provide objective information about any matter being studied and, importantly, can be agreed upon. Secondary qualities, on the other hand, are personal, subjective responses to stimuli that cannot be measured by mathematical abstractions and, like opinions, are open to a wide variety of interpretation – the very thing that had caused so much damage in recent history. Another notable hallmark of their enterprise was the drive not only to advance knowledge, but to share and disseminate their findings, not only among their peers and contacts but with a wider public.[705] They had, too, a

[705] The literature on the scientific revolution is extensive. For excellent introductory, bibliographical and historiograhical sources see: Henry, *The Scientific Revolution and the Origins of Modern Science;* H. Floris Cohen, *The Scientific Revolution: a Historiographical Inquiry* (Chicago, 1994). See also: J.R.R.Christie, 'The Origins and Development of the Scottish Scientific Community', *History of Science*, 12 (1974); Peter Dear, *Revolutionizing the Sciences: European Knowledge and Its Ambitions, 1500-1700* (Princeton N.J., 2001); Peter Dear, *Discipline and Experience: The Mathematical Way and the Scientific Revolution* (Chicago, 1995); John Henry, 'National Styles in Science: A Possible Factor in the Scientific Revolution', in *Geography and Revolution*, ed. by David N. Livingstone, and Charles Withers (London, 2005); *Archives of the Scientific Revolution: The Formation and Exchange of Ideas in Seventeenth-Century Europe*, ed. by Michael Hunter (Woodbridge, 1998); Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago, 1996); Paul Wood, 'The Scientific Revolution in

thirst for progress and a commitment to implementing *practical* improvements for the common good, based on their new understanding of nature. According to Hunter, 'Restoration scientists were obsessed by the usefulness of their studies.'[706] This engagement by educated men with utilitarian pursuits, formerly the operational area of artisans, was a radical departure from the philosophical detachment of the pre-Restoration era, and can almost be seen as a mirror image of the expansion of learning in the opposite direction: that of artisans into astrology in the vernacular.

The virtuosi movement, which both influenced and ran in parallel to changes in the university curricula in Scotland, had profound consequences for astrology's status in the intellectual sphere. By the mid 1680s, as has been shown in chapter one, the ideas of Bacon, Descartes and Gassendi and, later, Newton and Locke were being discussed by university regents and these had largely displaced Aristotle's *De caelo* and Sacrobosco's *Sphaera*, the two customary niches for astrology in the natural philosophy section of the Arts course. The small number of student notebooks that have survived means that a definitive answer cannot be given for all of the universities as to when the balance of opinion about astrology tipped from inclusion, as part of the pedagogic tradition, to rejection, but what evidence remains – and this is mainly from Edinburgh – would suggest that the change took place in the early to mid 1680s. Accordingly, this would mean that men born after 1670, and entering the magistrand class around the age of seventeen, would have encountered astrology at university, if it was mentioned at all, as a subject to be shunned. As the greatest

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Scotland', in *The Scientific Revolution in National Context*, ed. by Roy Porter and Mikulás Teich (Cambridge, 1992), pp. 263–288.

[706] This new attitude, and particularly the belief in the practical application of science, was common across Europe from the mid seventeenth century. See for example: Michael Hunter, *Science and Society in Restoration England* (Cambridge, 1981), p. 87; *Samuel Hartlib and Universal Reformation: Studies in Intellectual Communication*, ed. by Mark Greengrass, Michael Leslie and Timothy Raylor (Cambridge, 1994).

number of virtuosi of late seventeenth-century and early eighteenth-century Scotland were born between the 1630s and the late 1660s they therefore formed the last generation of students to have been taught astrology as part of the formal university course.

The intention of this chapter is to investigate the relationship that this 'bridge generation' of highly influential Scots had with astrology, using as case studies men who were part of the network of correspondents centred on Colin Campbell of Achnaba, and their associates. The source material for this study comes from the published works of these men as well as the extensive body of material, mainly in manuscript form, left by Colin Campbell which was donated to Edinburgh University by one of his descendants, John Gregorson, in 1827 and now forms the Colin Campbell Collection in Edinburgh University Library. The greatest portion of the papers deals with theology, mathematics and natural philosophy, but the letters, correspondence fragments, transcripts and household notes reflect, too, Campbell's wide-ranging interests in classical, literary, linguistic, medical, occult, and antiquarian matters as well as Scottish history, politics and astrology.

Campbell, a Church of Scotland clergyman, was in contact with some of the most powerful men in Scotland and beyond, including most of the prominent Scottish mathematicians of the day, and was held in high regard by all of them. One of the originators of calculus, John Craig (ca.1663-1731), an Edinburgh graduate and later Church of England clergyman, wrote to Campbell complimenting him on having developed techniques 'which would make us all ashamed of our little performances'.[707] There has been no major review of his life or a complete analysis

[707] John Craig to Colin Campbell, 1708, EUL, MS.3099.8.

of his manuscripts, perhaps because of the sheer range of his interests and the relatively small number of documents pertaining to any one topic, as well as the highly technical nature of his mathematical calculations. A learned, cultured and modest man as well as a gifted mathematician, in 1667 he was admitted as minister of Ardchattan and Muckairn in Argyll, where he performed his duties with distinction until his death in 1726 at the age of 82.[708] Campbell, 'something of a Mersenne figure for Scottish and English mathematicians and natural philosophers',[709] was pro-active in initiating correspondence, writing to people of eminence in their fields requesting information on 'what is doing by the learned in [their] business & off what books come out on the subject of it'.[710]

He exchanged letters with many men who could be considered virtuosi, including professors of mathematics from all of the Scottish Universities: George Sinclair and Robert Simpson who held chairs at Glasgow; the three Gregories at Edinburgh – James, primus, David and James, secundus; William Saunders, at St Andrews University, and Newton's brilliant young protégé, Colin MacLaurin at Aberdeen, who even made the arduous pilgrimage to Achnaba to visit him in 1720. Among his correspondents he numbered two prominent physicians who were also mathematicians – Archibald Pitcairne and the fashionable and mystically inclined George Cheyne. No evidence has been found to substantiate the claim that he also corresponded with Isaac Newton but, given his circle of contacts and his acknowledged brilliance, the suggestion is not a far-fetched one. Through these men Campbell had access to news and information from the much wider virtuosi community; Sir Robert Sibbald through Pitcairne; Sir John Lauder through John

[708] John Henry, 'Colin Campbell, of Achnaba (1644–1726)', in *Oxford DNB*, 2004.
[709] Erik Lars Sageng, 'Colin MacLaurin (1698–1746)', in *Oxford DNB*, 2004.
[710] Robert Simpson to Colin Campbell, 1717, EUL, MS.3099.20.

Murray; the work of William Cock through Sinclair; fellows of the Royal Society, such as Edinburgh-born Gilbert Burnet, Bishop of Salisbury, through John Craig, as well as David Abercromby, a protégé of Robert Boyle's.

While only shards of evidence survive of what they communicated among themselves about astrology, the attitudes of several of Campbell's correspondents, and their associates, towards the subject are known. Those that can be identified are George Sinclair (ca.1630-ca.1696) and James Corss (1632-ca.1678) who were born in the 1630s; from the 1640s are Gilbert Burnet (1643–1715), Colin Campbell himself (1644-1726) and Sir John Lauder (1646-1722) as well as, most likely, William Cock (fl. 1671-1679) and David Abercrombie (fl. 1685-ca.1701). Finally, from the 1650s and 1660s are Archibald Pitcairne (1652-1713), David Gregory (1659-1708) and John Murray, first Earl of Tullibardine (1660-1724).

It will be proposed that these men engaged with astrology as a means of understanding the natural world in one of four ways. Some rejected it outright, a few retained an interest and simply went on using it, albeit rarely without reservations, some tried to reform it, while others attempted to integrate it into the newly emerging paradigm to form a more comprehensive and sophisticated worldview. Each of these approaches will be examined in turn to gain an understanding of how and why these men related to astrology in the way they did. Finally, the intellectual legacies of those who took astrology seriously will be examined to trace the course of astrology's dwindling status in mainstream thinking.

I

The desire to avoid factionalism in their shared search for knowledge ran deep in these men as religious and political divisions raged around them in the mundane

world. Robert Sibbald, one of the most prominent and active of the Scottish virtuosi wrote in his autobiography that the divisions amongst the Presbyterians

> gave me ane disgust of them [and] disposed me to affect charity for all good men of any persuasion, and I preferred a quiet lyfe, wherin I might not be ingadged in factions of Church or State. Upon this consideration I fixed upon the studie of medicine, wherein I thought I might be of no faction, and might be usefull in my generation, if not here, elsewhere.[711]

While his desire to 'be usefull' bore rich fruit in his extensive survey of the natural resources of Scotland and their economic potential, as did his efforts to help establish Edinburgh's botanical garden, Royal College of Physicians and chair of medicine at the University, his hopes of a faction-free life were, however, to be in vain. Scottish medicine was riven by bitter schisms, especially in the fiercely-fought fever controversy of the 1690s over the opposing theories of the Sydenhamist, Andrew Brown, and the Newtonian, Archibald Pitcairne.[712] Sibbald himself was the victim of ugly religious sectarianism over his conversion to Catholicism in 1685, which he recanted the following year, as colleagues, especially Pitcairne, saw it as an act of betrayal. There were many personal rivalries and disagreements. Archibald Pitcairne wrote to Colin Campbell in 1703:

> Take notice that Dr Gregorie & Dr Cheyne are not indissoluble friends, tho both are mine…Also take note that Mr Craig is very far from being a friend to Dr Gregory. This for the politics. I am great with all.[713]

Although the irenic impulse was often more evident in its absence than in its achievement, the distaste for factionalism, and the machinations associated with this, was a central ideal of the virtuosi movement and it played a substantial role in determining astrology's place, too, within the new scientific endeavours as has been

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[711] Robert Sibbald, *The Memoirs of Sir Robert Sibbald 1641-1722*, ed. by Francis Paget Hett (London, 1932), pp. 55-56.
[712] A Cunningham, 'Sydenham Versus Newton: The Edinburgh Fever Dispute of the 1690s Between Andrew Brown and Archibald Pitcairne.', *Medical History. Supplement*, 1981; (1), 71–98.
[713] Archibald Pitcairn to Colin Campbell, 1703, EUL, MS.3099.18.

seen in David Gregory's attitude towards the subject. A mathematician and physician, Gregory attended Marischal College, Aberdeen between 1671 and 1675 and while no student notebooks containing astrology appear to have survived for that college the subject was certainly, during that time, taught at King's College where a similar syllabus was employed.[714] Gregory then completed his education over the following eight years in Europe, and spent several months in London in 1681, all of which would have kept him *au fait* with current trends in mathematics, astronomy and astrology. In 1683, supported by Archibald Pitcairne, he was given the chair of mathematics at Edinburgh University, which had been held previously by his uncle, James Gregory. He was keen to reform the mathematical teaching there and, in a move to invest it with the practical value prized by the virtuosi, he included surveying, as well as geometry and geography in his lectures.[715] In the astronomy classes he gave in 1690 at Edinburgh he lectured on astrology under the title of 'The vanity of astrology' and protested that astrology 'stands on the utterly ridiculous opinions of certain people, opinions that are so framed as to promote the attempts of men tending to form factions.'[716] Not only that, he accused astrologers of having caused enormous damage to both Charles I and Charles II. His objection to astrology was, then, not purely on grounds of its dubious veracity, but was powerfully influenced both by his royalist sympathies and the virtuosi abhorrence of factionalism. Examples of the kind of activities that led to Gregory's shunning of astrology can be glimpsed in the accounts of its insidious co-option by plotters and in the psychological damage done by predictions of death that are found in Bishop

[714] NLS, Acc.4975.
[715] Charles Withers, 'Geography, Science and the Scientific Revolution', in *Geography and Revolution*, ed. by David Livingstone and Charles Withers (London, 2005), p. 75.
[716] 'Lectures of David Gregory', 1686, CCO, MS.133.ff.47-50, quoted in Curry, 'Saving Astrology', p. 256.

Gilbert Burnet's *History of his Own Time*. Burnet, like Gregory, was a Fellow of the Royal Society as well as an alumnus of Marischal College, where he graduated in 1651 at the prodigiously early age of fourteen. He, too, professed to have 'little regard...to astrology'[717] and related how he had been told by John Wilmot, second Earl of Rochester, of the plot by the Earl of Bristol to try to ruin the Earl of Clarendon in 1663. Bristol, who

> had great skill in astrology, and had possessed the King with an high opinion of it: ...told the Duke of Buckingham...that he was confident that he would lay that before the King, which would totally alienate him both from his brother and from the Lord Clarendon: For he could demonstrate by the principles of that art, that he was to fall by his brother's means, if not by his hand: And he was sure this would work on the King.[718]

Bristol acted on his plan which did work, after a fashion, as 'ever after…the King never loved nor esteemed the Duke, yet seemed to stand in some sort of awe of him'.[719] Burnet's rejection of astrology was good-natured and unemphatic, displaying none of Gregory's vehemence, as he was always even-handed in pointing out when astrology did give correct results, and seemed happy simply to pass on snippets of gossip about it especially, it seems, when he had had it directly from the mouths of royalty, such as Queen Christina of Sweden who 'had given her self entirely for some years to the study of Astrology' [720] and the Princess Royal, Mary Henrietta Stuart, the eldest daughter of Charles I. The latter told him of the prediction about her husband, Prince William II of Orange, which was pressed into the hand of his mother by a stranger shortly after his birth. Burnet went on:

> She found it was her son's nativity, together with the fortunes of his life, and a full deduction of many accidents, which followed very punctually, as they were predicted. ...He was to have a son by a widow, and was to die of the

[717] Burnet, *History*, p. 177.
[718] Ibid, p. 110.
[719] This, presumably refers to the Duke of York, his brother.
[720] Burnet, *History*, p. 389.

> small pox in the twenty fifth year of his age. So those who were apt to give credit to predictions of that sort fancied, that the Princess Royal was to die; and that he was, upon that, to marry the widow of some other person... But then when he was taken ill of the small pox, then the decyphering the matter was obvious, and it struck his fancy so much, that probably it had an ill effect upon him.[721]

Burnet, despite his professed disbelief in astrology, was an indulgent, yet dispassionate, reporter of astrological activities of his contemporaries, people who were of equal or greater social standing than himself. They were of his totem, or of one he aspired to, and snobbery may have softened the edges of his own personal views. But during the same period, yet another Aberdonian shared Gregory's strong opinions. This was David Abercromby, who was author of several acclaimed medical texts[722] and his refutation of astrology was bound up, not so much with outrage at its effect on state affairs, but with the abuses he saw committed in his own specialities, medicine and religion, by quack doctors and judicial astrologers. In 1685 he described judicial astrology as the 'most vain & uncertain of all the sciences'[723] Two years later, however, in 1687 Abercromby published *Academia Scientiarum*, whose preface announces it to be a compendium of 'sufficient Knowledge of most Arts and Sciences' where one could 'learn most of the noblest Arts and Sciences' and declared that 'The *Virtuosi* are concern'd in this Treatise'. Curiously, after his withering treatment of judicial astrology in his 1685 *Discourse of Wit*, Abercromby included the subject among 31 branches of science.[724] He gave as its definition: 'Judiciary Astrology is that science, by the help of which Men pretend to judge of things to come, and more especially of men's good and bad fortunes' and provided a brief

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[721] Ibid, p. 177.
[722] David Abercromby, *Tuta, Ac Efficax Luis Venereae* (London, 1684); David Abercromby, *De Variatione, Ac Varietate Pulsus* (London, 1685); David Abercromby, *Opuscula Medica* (London, 1687).
[723] Abercromby, *Wit*, p. 98.
[724] Abercromby, *Academia Scientiarum*, pp. 18–23.

outline of the main components of astrology – the aspects, houses, dignities, trigones and retrogradation, as well as the authorities to be consulted for further reading, these being *Vannius, Butler, Cardan, Gadbury, Albohazen, Haly, Julius Firmicus, Johannes Jovianus Pontanus* and *Pezelius.* That he did include it suggests that he considered that there was a sufficient number of educated people who still regarded it as a legitimate science, even if he did not, and that its presence was required for completeness.

By 1690, however, in his *Moral Discourse of the Power of Interest* he was scoffing at the notion of the 'secret influences of the fixed stars upon the earth & all contingent things if judicial astrologers are to be believed' and castigated the ignorance and arrogance of

> the illiterate and Quack-Physicians, who neither understanding Physick, nor perhaps being capable of understanding it, set up every where for Doctors [who] rob men daily of their Lives and Estates.[725]

He blamed this on the greed of the practitioners and 'the credulous simplicity of the unlearned Tribe' and went on to claim that

> The like may be said of Judiciary Astrologers, who pretend to foresee the free Determinations of Humane Will, in the different Situation or Aspect of the Stars and Planets, their chief Design being to draw a Tribute from the ignorant Mob flocking to 'em for Advice about things to come, which they know nothing of, unless we allow them to be inspired Men, or real Prophets.[726]

These men he classified with lewd women and quack doctors in their motivations which he saw as being, quite simply, money.[727] Revealingly, however, while he dismissed judicial astrology he was, on the other hand, prepared to advocate physiognomy although, as he admitted, it 'can no more pretend to any demonstration,

[725] Abercromby, *Moral Discourse*, pp. 180-181.
[726] Ibid, p. 181.
[727] Abercromby, *Moral Discourse*, p. 181.

than Judiciary Astrology'.[728] His rejection of astrology was not, then, based on grounds of rationality, nor because it was not demonstrable, but on disgust at the behaviour of judicial astrologers and how they practised their art.

Although it was judicial astrology that had attracted the anger, contempt and rejection of Gregory, [729] its subversive misuse had clearly prejudiced Abercromby against every form of it, so that he was not prepared to give natural astrology a place in his physic either, no matter whether it might have proved of practical value or not. He, too, had no time for it in his own natural philosophy, classifying it as vulgar, charlatanistic, exploitative and immoral.

II

Some of the virtuosi and their contemporaries, however, retained the practice of looking for causes of terrestrial conditions in celestial events, just as men of a previous generation, like Sir Robert Moray (1608/9?–1673), one of the founders of the Royal Society, had done. Moray wrote about the 'propperty of the starres [having] secret power over inferiour things: and the operations they exert upon them by their influences' but he was of the opinion that 'even our Astrologers have not yet attained to deep knowledge of them.'[730] Sir John Lauder, a criminal advocate who went on to become Lord Fountainhall and attain the high office of lord justiciary was of that old school. He had graduated MA from Edinburgh in 1664 under the regent James Pillans who had a great interest in astronomy, introducing his students to a wide range of theories, including those of Argol as well as Ptolemy and Copernicus, and taking them out to view the night sky. He also included the rudiments of

[728] Ibid, p. 70.
[729] As will be seen later, however, he may have been more open to the subject in his private life.
[730] Stevenson, 'Masonry, Symbolism and Ethics', p. 414.

astrology in his lessons, and had bought astrology books for the library in the 1670s, including Gadbury's *Nativities* and Coley's *Key to Astrology*. It may have been Pillans who influenced Lauder to keep his mind equally open to a wide range of options.

In his *Historical Observes,* Lauder provided a fine demonstration of the traditional speculative approach to natural philosophy, reasoning and weighing up various learned opinions, as he pondered the details of the 'formidable' comet of 12th to 14th December 1680 which was seen in Edinburgh and was, with its 'prodigious long taill, greater then any that had been observed for these many 100 years.'[731] He was clearly interested in natural philosophy and had done some extensive reading and reflection on the effects of comets, pondering the ideas of such authorities as Aristotle, Scaliger, Cardan, Brahe, Galileo and Descartes, as well as reviewing historians' comments on them, such as 'Lucan's description of that comet, which appeared before the civill wars betwixt Caesar and Pompey.'[732] Although, as he wrote, some disputed the significance of comets as Nero's death was not preceded by one despite the fact that many had appeared at Rome during his rule, Lauder argued that comets did not always bring misfortune as 'the effects of thir fatall and ominous stars doe not follow immediatly; some think it takes as many years to operate as it appears nights.' He also argued the case for comets as positive omens.

> Others will only have them to be fore-runners of evill, but ther is no reason to restrict ther influence soley to malignancy. For if it was a comet which appeared to the 3 wise men, and directed them to Christ's cradle (as some learned men, viz. Grotius in his annotations on the 2d of Mathew, will have that star to be on,) sure I am it portended the greatest good that ever happened to poor mortalls.[733]

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[731] Lauder, *Historical Observes*, p. 18.
[732] Ibid, p. 14; Anneus Lucan, *De Bello Civili Vel Pharsaliae* (Antwerp, 1592).
[733] Lauder, *Observes*, p. 18.

Citing the exact page numbers of Rushworth's [734] and Dr. Bainbridge's[735] assessments of the path and effects of the comet of 1618 which passed above London and moved northwards to the Orkneys, his own opinion was that the comet

> gave England and Scotland in their civill wars a sad wype with its taill. They seldom shine in vain, though they proceed from exhalations and other natural causes.[736]

He mused on the star that was seen at midday at the birth of Charles II and the possible portents that might have announced it and not only did he link extraordinary celestial events like comets with mundane affairs, he did so with inter-planetary aspects, reporting that in 1683

> we ware allarumed with ane strange conjunction was to befall in it, of the 2 planets, Saturne and Jupiter in Leo, observed by Argol and other Astronomers, and our prognosticators who all spoke of it as a thing very ominous, and which had only happened twice before, since the creation of the world, and portended great alterations in Europe.[737]

He wondered, too, about the effect of the planetary juxtaposition on the unusual weather when he commented that 'Our winter, from November 1682 till March 1683, was rather like spring for mildnes : if it be to be ascrybed to this conjunction I know not.'[738] The way in which astrology can be annexed to justify partisan views, and the power over the imagination that its predictions can command, is evident from Lauder's journal. There was no consensus about the comet's effects and it was

> interpreted by every on according to ther several jealousies and interests…and in respect of the present fears of confusions and disorders, each applyed it as he pleased. Some laid, you banish, confine, and imprison our preachers, but ther is a preacher sent from Heaven, who is without the reach of malice.[739]

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[734] John Rushworth, *Historical Collections of Private Passages of State* (London, 1659).
[735] John Bainbridge, *An Astronomical Description of the Late Comet* (London, 1619).
[736] Lauder, *Observes*, p. 14.
[737] Ibid, p. 88.
[738] Ibid, p. 89.
[739] Ibid, p. 14.

Interpretations of the conjunction too had 'helped to fright timorous melancholy people'.[740] Lauder, as a man of broad culture, was abreast of the latest developments in natural philosophy in Scotland and referred to George Sinclair, professor of mathematics at Glasgow University, who 'did also call this planetary conjunction a very terrible on in his Description of the weather glasse and hygroscope.'[741] In summing up, he concluded that comets 'by no astronomicall or natural efficiency, can portend or signifie such things, farder, then the air infected by it may occasion sterility, pestilential diseases, and famine.'[742] So, for Lauder, apart from cases of divine intervention, celestial events were not portents – happenings charged with meaning – but, in fact, material causes of alterations in the air which in turn brought about changes in conditions on earth.

Despite his extensive and up-to-the-minute reading, the method and content of his speculations had not substantially changed since his university days. He was a natural philosopher of the traditional kind, whose methods suited his profession, and his conclusions scarcely differed from those published half a century earlier by David Person in 1635.[743] Little is known of Person except that he was a Gentleman of Loghlands in Scotland and that he had impeccable connections. Eight prominent Scots wrote dedicatory poems for it, including the bishops of both Edinburgh and Caithness, the poet and royal physician Arthur Johnston, the principal of Edinburgh University¸ John Adamson, and its professor of mathematics, Thomas Crafurd, as well as the poet William Drummond of Hawthornden, who wrote:

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[740] Ibid, p. 89.
[741] Ibid, p. 89.
[742] Ibid, p. 18.
[743] David Person, *Varieties* (London, 1635). The book is included in the 1636 Edinburgh University library catalogue.

> The Lawyer here may learne Divinity,
> The Divine, Lawes, or faire Astrology;
> The Dammaret respectively to fight,
> The Duellist to court a Mistresse right;
> ...
> All learne may somewhat, if they be not fooles
> Arts quicklier here are lesson'd, than in Schooles.[744]

With such commendations there is no doubt that the 'variety of opinions' that Person had collected was concordant with those of the Scottish establishment at the time. That it was in many ways an earlier prototype of Abercromby's *Academia Scientiarum* is indicated by its full title: *Varieties: or, A surveigh of rare and excellent matters, necessary and delectable for all sorts of persons, wherein the principall heads of diverse sciences are illustrated, rare secrets of naturall things unfoulded, &c.* and it, too, indicates how astrology was seen in relation to natural philosophy in the wider intellectual milieu outside of the universities. Lauder's survey of astrological aspects of natural philosophy covered topics similar to Person, who believed that 'remarkable Starres are...observed to appeare at the death of great men and Kings'[745] and that comets portend change, concluding that

> they never that they never appeare, but some bad event followeth thereon, either to the countrey over which it blazeth, or to which it aspecteth; or else to that countrey over which ruleth a starre which that comets tayle tendeth towards or followeth; though much rather to that countrey which it hath aspect unto.[746]

Lauder also would have gone along with the explanation espoused by Person that their 'hot & dry vapours move bodies & minds below to feare fiery & sudden revolts etc.' and that it was ' not by vertue of its influence, but by reason of the superabundancie of maligne, dry, and hot exhalations regorging and dispersing

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[744] Person, *Varieties*, pp. viii-ix.
[745] Lauder, *Observes*, p. 68.
[746] Ibid, p. 69.

themselves'[747] over whatever country is astrologically indicated as being liable to such assaults. This use of astrology to help explain and understand both political events and natural phenomena was part of mainstream natural philosophy, both inside and outside of the universities, for most of the seventeenth century in Scotland. Interestingly, Person also gave Albohazen Haly's commentary on comets in Latin 'lest the divulging of them might more harm than profit',[748] betraying his belief that learned men could be trusted to deal responsibly with such predictive speculations, whereas the less well schooled could not, and that they might misuse such information in some way.

Speculation on celestial portents and causes and their association with change in the terrestrial realm was, however, regarded by cultured men as a pursuit quite distinct from judicial astrology. That Lauder saw his own astrological musings on the possible links between celestial phenomena and terrestrial occurrences as of a radically different order from that practised by the likes of James Cathcart, 'a pretended mathematician or astrologer',[749] and 'that imposter Lillie, the astrologue'[750] is clear from his outrage that he vented at their claims and their 'great impudence'.[751] It is likely that the source of this curious distinction came from Ptolemy whose two divisions of astrology – universal and genethlialogical – were quite different from that of the theologians, who split it into natural astrology and judicial astrology. According to Ptolemy:

> Prognostication by astronomical means is divided into two great and principal parts... the first and more universal is that which relates to whole races,

[747] Ibid, p. 68.
[748] Ibid, p. 69.
[749] Ibid, p. 145.
[750] Ibid, p. 17.
[751] Ibid, p. 145.

> countries and cities and the second and more specific is that which relates to individual men, which is called genethlialogical.[752]

Universal prognostications included 'greater and more periodic conditions such as wars, famines, pestilences, earthquakes, deluges, and the like as well as lesser and more occasional, as for example the changes in temperature in the seasons of the year, and the variations of the intensity of storms, heat, and winds, or of good and bad crops,'[753] while genethlialogical or natal astrology was concerned with the affairs of individuals. Ptolemy's universals, by including wars and the fate of nations as well as weather and agriculture, straddle the territories of the later divisions of natural and judicial astrology. Ptolemy's *Tetrabiblos* was a core scholastic text which made speculation on such matters legitimate areas for an educated man's intellectual enquiries. As a natural philosopher, Lauder was attempting to piece together and understand, through contemplation and the weighing up of authoritative opinion, the causes and effects of events in the natural world – and this included the rise and fall of dynasties just as much as the ebb and flow of tides.

Whereas natural philosophers were accustomed to speculate on causes, explanations and outcomes but generally stopped short of making definitive pronouncements, often, for example, happy to use several different models to explain the solar system, judicial astrologers, on the other hand, were claiming that they could make correct specific, concrete predictions about future effects of the celestial bodies in the world, based on their own judgements. Not only were judicial astrologers considered to be abusing the vulnerable and ignorant, they were, in effect, claiming to know better than the educated, and thereby undermining their authority, status and even, at times, their financial interests. As the practice was increasingly

[752] Ptolemy, *Tetrabiblos*, pp. 117–118.
[753] Ibid, p. 119.

carried out by an emerging class of person – largely autodidactic and often highly entrepreneurial – taking advantage of books available in the vernacular, rather than by 'the learned', issues of competition and hegemony were arising. There is, in the appendix to George Sinclair's *Hydrostaticks* of 1672, a telling example of great animus shown by university men towards a self-taught almanac-maker.

> in the year 1661, a certain ingenious Gentleman, that had not been bred a Schollar, by his own industry advanced so far in the Mathematicks, that he was able to set forth an Almanack, for which, ingenuous and ingenious men should have commended him. But this Author, with another... fell upon him like a couple of Mastives,... in a Prognostication they set forth, rateing and abusing him out of measure: all the cause being some alledged mistakes, they thought they found in some of his calculations, ...which they say, though falsly...will not hold. What had that righteous man deserved at their hands, to be so abused in Print by them? But that the design is palpable, the raising of reputation to themselves, upon the ruine of the names of others? [754]

The accused were James Gregory, uncle of David Gregory who was, at that time, professor of mathematics at St Andrews, and William Sanders, who went on to occupy that chair when Gregory moved to Edinburgh University, and there is a strong possibility that the ingenious gentleman was James Corss, whose extant almanacs run from 1662. If that is the case, then their chagrin would not have been abated by the fact that in 1673 Corss, wrote in an almanac about using a quadrant of six feet radius to make a more accurate calculation of the latitude of Edinburgh than had previously been possible,[755] when a year later Gregory was writing to Campbell from St Andrews complaining that the largest quadrant that he had available there was only of four feet radius.[756] The fact that Corss published a popular book on geometry many years before Sanders published his academic treatise on the same

[754] Sinclair, *Hydrostaticks*, pp. 317–318.
[755] Corss, 1679, [p. 13].
[756] James Gregory Primus to Colin Campbell, 1674, EUL, 3099.12.

subject may also have given cause for ongoing resentment.[757] Sinclair showed more egalitarianism in his attitude to astrologers and almanac-makers in his many references to their works. This openness was perhaps fostered by his years of having to earn a living, like Corss, from the practical application of mathematics, and as a schoolmaster, after he resigned from his post at Glasgow, refusing to submit to an Episcopalian form of government.

III

Sinclair was also keen to keep up with current trends and reforms in natural philosophy, and that included astrology. The call to reform astrology, however, was not a new one in Scottish astrology. Robert Pont had mooted it as far back as 1599 in his *Newe Treatise*, even before Bacon and Kepler had advanced their ideas for reform. Like Cock after him, Pont reckoned that

> one of the chiefe causes, of the errour of those common Prognosticators to be, that they take not rightly up the grounds of their conjectures, but follow the old rules of the Chaldeans, Arabians, and others auncient authors in that science, which serve not for our dayes and time.[758]

Pont, however, had an explanation for the errors. For him it was because of 'the Aequinoctial poynt is moveable, flitting, and remooving back-wards'.[759] Because this point defines the beginning of the zodiac as it moves backwards

> the doctrine of the signes and houses of the heauens, and placing of the Planets thereinto, with their triplicities & mutuall qualities, in their applicationes, and joyning with the fixt starres, which served for the former ages; cannot now serue, nor be sufficient to ground solide conjectures vpon, for they are altered and changed.[760]

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[757] James Corss, *Practical Geometry* (Edinburgh, 1666); William Sanders, *Elementa Geometriae* (Glasgow, 1686).
[758] Pont, *Treatise*, p. 49.
[759] Because of the precession of the equinoxes, the time the Sun crosses the celestial equator slips back along the zodiac by around one degree every 70 years.
[760] Pont, *Treatise*, p. 47.

He suggested two ways to remedy the problem

> The one is, to reckon and calculate the signes, according to the eight spheare and fixed starres being therein, as they were reckoned of old, & in the daies of Ptolemee, not having respect to the vernall Aequinoctial poynte.[761]

In other words, he was recommending that the sidereal zodiac, which is based on the positions of the fixed stars in the constellations, should be used instead of the customary tropical zodiac which considers the exact moment of the spring equinox, when the Sun crosses the celestial equator northwards, at 0ºAries, to be the beginning of the zodiac. The alternative, he suggested, was to move the beginning of the zodiac to 27 degrees and 50 minutes of Aries to compensate for the effect of the precession of the equinoxes and to count the mansions of the Moon from there. Pont, while advocating astrology, clearly saw that its practice had some serious flaws that needed remedying, and was convinced that he had not only pinpointed the problem but also its solution.

George Sinclair, like Pont, was keenly interested in reform, but instead of conjuring with the abstractions of mathematics and astrology for theological purposes, he was more interested in applying mathematics to practical and improving ends. He was employed by various landowners to drain mines and by Edinburgh Town Council to to oversee the piping of the city's first supply of drinking-water from a well at Comiston.[762] This notice in his *Natural Philosophy Improven* of 1683, which is an enlarged edition of *The Hydrostaticks* published in 1672, shows him true to the virtuosi spirit:

> These are to give Advertisement, to all Ingenious Persons, who have found out, any New Inventions, or made any New Observations, of things Astronomical, of things in the Sea, in the Earth, above Ground or under. In a word, whatever may be useful, for the promoting of Natural Knowledge, and

[761] Ibid, p. 47.
[762] 'Sinclair', *Oxford DNB*.

> Learning, and profitable to others, let them be communicated to the Author of this Transaction, a true Narration being made, he shall have them published, with accuracy, and satisfaction to himself.[763]

The eclectic range of topics that he considered as belonging to natural philosophy is indicated in the book's full title:

> *Natural philosophy improven by new experiments touching the mercurial weather-glass, the hygroscope, eclipsis, conjunctions of Saturn and Jupiter, by new experiments, touching the pressure of fluids, the diving-bell, and all the curiosities thereof : to which is added some new observations, and experiments, lately made of several kinds : together with a true relation of an evil spirit, which troubled a mans family for many days : lastly, there is a large discourse anent coal, coal-sinks, dipps, risings, and streeks of coal, levels running of mines, gaes, dykes, damps, and wild-fire.* [764]

Astrology was, then, very much part of his natural philosophy, along with the experimental method, applied engineering and evil spirits. He gave a brief account of recent comets, showing his familiarity with popular astrology by pointing out that the comet of 1652 was short, 'yet Lilly that old Astrologer made it very prodigious'[765] and commenting on the 1682 lunar eclipse that 'the *Moons* face was red as Blood' and invited readers to 'compare it with *Ioel* 2:10. *Acts* 2.19, 20. *Isa.* 13.10. *Ezek.* 32.7, 8. *Mat.* 24.29. *Luk.* 21.25'.[766] The Scriptures, too, played a part in his cosmology.

He gave a full account of the Saturn-Jupiter conjunction of 1682 that Lauder had alluded to, and its place in the chain of great conjunctions. The doctrine of great conjunctions was an important astrological technique for predicting and assessing political upheavals and Sinclair wrote that 'there never happened, any great Change or Alteration, in any State or Kingdom, in *Europe*; but what hath been accompanied,

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[763] Sinclair, *Natural Philosophy*, p. 9.
[764] Ibid, title page.
[765] Ibid, p. 5.
[766] Ibid, p. 5.

with a Conjunction of *Saturn* and *Jupiter*.' [767] The great conjunctions of Saturn and Jupiter occur every twenty years, when the planets come to the same degree of the same zodiacal sign. These conjunctions take place in the signs of the same triplicity, in fire, earth, air or water, for around 200 years. The even more significant Greater Conjunctions occur at the change of triplicities. The fire triplicity was regarded as the beginning of the cycle and the years around the first, or Greatest Conjunction, in the fire triplicity – which comprises the zodiacal signs Aries, Leo and Sagittarius – were thought to signal the commencement of a new 800 year-long era. Sinclair, quoting the physician Simsines Philadelphus,[768] wrote that

> the Year 1603, in which, Saturn and Iupiter… had returned into the Fiery Triplicity, being the seventh time from the Creation, fell in Conjunction in that Fiery Sign Sagittary, in the Month of December... King Iames, his succeeding to the Crown of England that year… shews, that this, which he calls Regnum Scotorum, the Dominion of the Scots, and tenth Principality, was received, by these two superior Planets, in their Greatest Conjunction…And now there is not any greater Change to be expected in Britain, but a continued Succession of the Nearest in Blood. [769]

Political change and world chronology, then, were still part of his natural philosophy. He was, however, not simply a traditionalist, content to carry on with philosophical astrology in the accustomed way. Being a Baconian, experimentation was also heavily emphasised in Sinclair's books, and he was eager to apply this method of reform to astrology. In 1676 he wrote to Colin Campbell, asking him to make some observations about the weather.

> I had almost forgotten to desire yt you would keep a diary of the weather there with you, as I have done this half year setting doun morning forenoon &

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[767] Ibid, pp. 5-6.
[768] This was the pseudonym of Simeon Parlitz of Spitzberg. The book was, most likely, Simeon Partliz, *Eine Newe, Jedermänniglichen Sehr Nutzliche SternWarnung, Von Sehr Grossen Schrecklichen Veränderungen, so Auff Die Grosse Zusammenkunfften Der Beyden Höchsten Planeten Saturni Und Jovis...erfolgt* (Amsterdam, 1631).
[769] Sinclair, *Natural Philosophy*, p. 6.

> afternoon, the point the wind is on as neer as you can guess; as also rain & snow frost & thaw & apart your general observations from all. [770]

He particularly wanted to test a hypothesis about the connection between wind direction and disease.

> I desire to know if all this harvest bypast you had great south or south west or west winds, for by my observations the wind was never strong but out of one of these 3 airths (for 3 moneth) wc [sic] windes I think hath brought on the long continuing & deadly disease of the flux. [771]

In the same letter he referred to 'one Mr Cock who pretends to write new Wayes of foretelling the Weather' and offered to send Campbell a copy of the book as soon as possible, if one could be found, and alerted him to the fact that he would need 'to have ane ephemeris such as Lillie's' by him in order to be able to correlate the positions of the planets with weather conditions.

The book was William Cock's *Meteorologia* which was published in London in 1671. Little is known about Cock, apart from the fact that he signed himself 'of Perth and Edinburgh' and that he was well-educated as he authored two other books, both in Latin, which were published later in the decade, not in London but in Edinburgh. These are *Revelatio revelata*, a theological text on the Apocalypse of St John and *Doctrinae substantiorum sive naturae apertae,* classified as an early work of physics.[772] Cock's approach was much more radical than that of Sinclair. While the latter looked to add observation and experimentation to his repertoire, Cock was calling for a complete reform of astrological weather-forecasting. Having vilified almanac-makers as being 'ignorant of Philosophy and Nature, and void of well-

[770] George Sinclair to Colin Campbell, 1676, EUL, MS.3099.21.
[771] EUL, MS.3099.21.
[772] William Cock, *Revelatio Revelata* (Edinburgh, 1678); Cock, *Doctrinae Substantiarum, Sive, Naturae Apertae.*

grounded experience'[773] he then rejected some of the fundamental principles and procedures of the ancient astrological authorities, such as the practice of 'erecting of a Figure of the twelve Houses to the obtaining of the fore-knowledg of the Weather',[774] and claimed that some astrologers attributed the wrong planets to particular kinds of weather. Having demolished 'the sandy Foundations upon which the vulgar frame of an Almanack is totteringly erected',[775] he went on to present his approach systematically in twelve hypotheses, which included the nature of the planets, signs, aspects, transits and fixed stars as well as the effect of signs in sympathy with different countries, season of the year and the latitude and situation of the country. Further demonstrating openness to innovation, he had incorporated Kepler's 'new' aspects as well as the traditional Ptolemaic ones into his system. Incorporating Copernican concepts, he suggested that heliocentric as well as geocentric aspects could prove useful as

> it is the opinion of some good Artists, and curious Observators, that not only the Geocentrick Aspects ought to be considered, but also the Heliocentrick Aspects of the Planets, which are found to cause much variation in the Weather, when there hath been nothing to signifie the same otherwise.[776]

There is evidence too of empirical thinking. He claimed that his discoveries about the connections between astrology and weather were 'gained by the Observations of many years' and stated that: 'the Rules of it I have a thousand times put to the touchstone of trial, and a thousand times found them to be true.'[777] This is probably more hyperbole than absolute fact, and both James Corss and James Paterson made claims with a similar 'shout louder when under attack' air of exaggeration when they

[773] Cock, *Meteorologia*, p. 2.
[774] Ibid, p. 3.
[775] Ibid, p. 1.
[776] Ibid, [p.x]
[777] Ibid, p. 1.

were defending their weather-forecasting methods. Cock did, however, advise readers to keep their old annual ephemerides so that they could look back at weather patterns from previous years.

IV

There were some virtuosi, however, who rather than advocating such radical reform, looked to integrate the new mathematics with traditional cosmologies. This was attempted by the minister and mathematician, John Craig, a relative and protégé of Gilbert Burnet, who had studied mathematics at Edinburgh University under David Gregory. In 1699 he published *Theologiae Christianae Principia Mathematica,*[778] in which he put forward a mathematical argument to support Pascal's wager[779] and, with probabilistic reasoning and Newtonian fluxional calculus, tried to show how evidence for any historical event is weakened and strengthened under various conditions.[780] The book was generally poorly received. James Gregory, secundus, wrote to Colin Campbell on 29th May 1699, 'From the account I have of it, I am afraid that both divines and mathematicians will take it for banter.'[781]

Archibald Pitcairne's attempt at integrating mathematics, medicine and astrology, on the other hand, met with better success. Pitcairne graduated MA at Edinburgh in 1671 under William Paterson, a regent whose class had purchased William Lilly's *Christian Astrology* for the university library and so presumably had some interest in the subject. Before going on to study medicine, he developed an interest in mathematics and became an intimate friend of David Gregory. Both were in close contact with Newton and were among the first to recognise the significance

[778] John Craig, *Theologiae Christianae Principia Mathematica* (London, 1699).
[779] This is that a rational person should wager that God exists and live one's life accordingly, as there is everything to gain and nothing to lose thereby.
[780] Andrew I. Dale, 'John Craig (ca.1663–1731)', in *Oxford DNB*, 2004.
[781] EUL, MS.3099.13.

of his work. Pitcairne went on to develop iatro-mechanism, an innovative system of medicine, based on Newtonian mechanics. On the recommendation of Bishop Gilbert Burnet and James Dalrymple, Viscount Stair, Pitcairne was appointed to the chair of the medical practice at Leiden University in 1692, and although he remained there just one year, his lectures were highly acclaimed and his ideas on iatro-mechanism influenced a group of prominent physicians, including James Keill (1673–1719), John Freind (1675–1728) and Richard Mead (1673-1754). Richard Mead, whom Pitcairne had taught at Leiden in 1704, went on to publish the highly successful *De Imperio Solis ac Lunae in Corpora Humana et Morbis Inde Oriundis* (On the Influence of the Sun and Moon on Human Bodies and the Diseases created by them) a fusion of the theories of Hippocrates on climate and Newton on tides, which has been termed 'the last gasp of astrological medicine and one of the first works of Newtonian medicine.'[782] In the preface of a subsequent edition, Pitcairne's interest in natural astrology is evident:

> When I had communicated my intention of publishing this piece to my friend the celebrated Dr. Pitcairne, he not only applauded my design, but, of his great humanity, readily sent me some histories of periodical diseases out of his large stock.[783]

Several of Pitcairne's studies appear in Mead's treatise, and these are reviewed in chapter six, but Pitcairne's own case is worth singling out here. In February 1687, when at a country-seat near Edinburgh,

> he was seized, at nine in the morning, the very hour of the new Moon, with a sudden bleeding at the nose, after an uncommon faintness. And the next day, on his return to town, he found that the barometer was lower at that very hour, than either he or his friend Dr Gregory, who kept a journal of the weather, had ever observed it; and that another friend of his, Mr. Cockburn, professor of philosophy, had died suddenly at the same hour by an eruption of

[782] Anita Guerrini, 'Richard Mead (1673–1754)', in *Oxford DNB*, 2004.
[783] Mead, 'Treatise', p. 119.

> blood from the lungs: and also five or six others of his patients were seized with different haemorrhages.[784]

Pitcairne had obviously been making the observation of phases on the Moon a feature of his practice and had been in the custom of recording significant cases as he had a 'large stock' of 'periodical diseases'.[785] He had found that New and Full Moons especially were associated with the recurrence or worsening of these maladies. He was, in effect, using astrological medicine, but by adopting the model of Newtonian physics to explain changes in pressure in the vessels of the body, he was able to present the practice of iatro-mechanics as a mathematical innovation.

It is evident from Mead's account that Pitcairne and Gregory had discussed the extraordinary synchronicities of that February day, as it was David Gregory's journal that had been consulted for data. Gregory, in addition to his expertise in astronomy and mathematics, had a keen interest in medicine. He had matriculated as a medical student, in 1679, at the University of Leiden, where he stayed for several months,[786] and later, in 1692, took his DM from Balliol College, Oxford. This was no mere academic interest as he continued to prescribe for patients until his death and became an honorary fellow of the Royal College of Physicians of Edinburgh.[787] At the time of the nosebleed, Pitcairne and Gregory were sharing lodgings and it would have been quite remarkable, given their shared interests, if they had not debated the effects of the soli-lunar relationship on the body. Whatever Gregory's private opinion of the celestial causation of Pitcairne's nosebleed, in public, in his university lectures,

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[784] Ibid, p. 137.
[785] Ibid, p. 119.
[786] Anita Guerrini, 'David Gregory (1659–1708)', in *Oxford DNB*, 2004).
[787] Robert G. Frank, 'Medicine', in *The History of the University of Oxford*, ed. Tyacke, pp. 505–558 (pp. 524–525).

he appeared to have allowed no place for such observations and speculation, preferring to keep astrology of all kind divorced from astronomy and mathematics.

Although Colin Campbell corresponded with both men, he favoured the integrative over the separative approach when dealing with astrology, and his attempt at integrating astrology with other systems of thought, like Pitcairne's, met with considerable appreciation in some quarters. He had received instruction in astrology while in his magistrand year at St Salvator's College, St Andrews, and papers in his collection attest to the fact that his interest in the subject was life-long.[788] His correspondence with James Corss was noted in the previous chapter. Corss, in his 1663 almanac, had advertised his services as a teacher of arithmetic, horometria, geometry, astronomy and judicial astrology and had also announced that there would be a conjunction of Saturn and Jupiter that year, something that only happened every 20 years, and he requested

> all that affect the noble service of *Urania*, and accommodate with fit Instruments, to be diligent in observing the beginnings, durations, and end of these visible Eclipses, and the Conjunction of Saturn and Jupiter, and to communicate the same, which will conduce much to the further restauration of astronomy.[789]

It is highly probable that Campbell got in touch with him because of either or both of these announcements. Campbell was habitually pro-active in writing to people whose work interested him, asking if they would enter into correspondence with him.[790] Additionally, Campbell would also have been at St Andrews at the time of the publication of both the 1661 almanac and the spiteful broadsheet of Gregory and

[788] EUL, MS.3101.6; EUL, MS.3099.24.
[789] James Corss, *Mercurius Coelicus* (Edinburgh, 1663), [p. 3]
[790] Those he approached include the Aberdeen-born diet doctor, George Cheyne [EUL, MS.3099.7] and Professor Robert Simpson Professor of mathematics Glasgow University [EUL, MS.3099.20].

Sanders so it is likely that he would have heard of the affair, and this may have piqued his curiosity.

Campbell, almost certainly through the agency of James Corss, was in possession of all of the tools needed to erect horoscopes. Corss had lent Campbell some 'tables of house' which the latter had transcribed.[791] These are astronomical tables used by astrologers to divide the sky, at any particular latitude and longitude, into twelve segments, or 'houses', each of which describes a different area of life. As Alexander Napier had indicated there were several different methods for doing this, the commonest being those of Campanus, Regiomontanus and Alcabitius, but no record remains of which one Corss used. In the same bundle of Campbell's papers is an ephemeris in folio, in his own hand, entitled *A table of the true places of all the planets and the node of the Moon: for every 5 day and sometyme for the intermediat days for the Meridian of Edinburgh and year of Christ 1664*, which includes significant astrological interplanetary aspects. As this is the same year as Corss's letter, and Corss was an almanac-maker whose trade it was to calculate such things, it is safe to assume that Corss had lent him a copy of this too. The considerable time and effort to transcribe these gives an indication of how eager Campbell was to experiment with astrology himself and the ephemeris, along with the tables of houses, would have given him all the information he needed to erect an astrological figure for any moment of that year. He was also always keen to improve his mathematics, taking instruction, by post, from George Campbell in Edinburgh's Canongate in the 1680s.[792]

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[791] For techniques of house division see North, *Horoscopes and History*, pp. 14-17; Ralph W. Holden, *The Elements of House Division* (London, 1977).
[792] George Campbell to Colin Campbell, 1681, EUL, MS 3099.6.

Since at least 1704, Campbell had been carrying out correspondence on wide-ranging theological matters with a Mr M. Murray, who was almost certainly a fellow minister, although no trace of him can be found in *Fasti*. In 1701 Murray had evidently asked Campbell a challenging philosophical question that Campbell had taken some pains to address. In reply Murray wrote:

> 'I confess it was a piece of no small rudeness to propose such a question to one of your character & temper who is so readie to give yourself the vast trouble which a rational disquisition into the nature of things must necessarily occasion.[793]

Exactly what the question was that Murray proposed about the nature of things is tantalisingly elusive but Campbell's answer appears to have been a highly ambitious attempt to integrate mathematics, astrology, Newtonian physics and theology into a unified system. Murray went on:

> You have with great accuracy considered the matter not only mathematically & in the way of judicial astrology, but also have given excellent phylosophical & theological reflections on the same... You have intertwined several most curious observations which I scarce heard of before as the calculation of the varieties of one system from Newton and that which you call a primary law of nature; the mutual tendency of all particles of matter to one another in a duplicate reciprocal proportion.[794]

Another of Murray's letters, sent in 1704,[795] reveals that Campbell was attracted to the work of the French mystic Peter Poiret (1646-1719) whose 'sentiment of judicial astrology is that there is a good foundation for such a science.'[796] Campbell's papers include a manuscript copy of *The Tree of Christian Faith* by Jakob Boehme and of the biblical commentaries of the mystic Madame Guyon (1668-1712), as well as a transcription of the whole of Newton's *Principia* which he had written out himself, having been lent a copy by the mathematician James Craig in 1687, the year in which

[793] M. Murray to Colin Campbell, 1701, EUL, MS.3097.8 fol.27.
[794] Ibid, EUL, MS.3097.8 fol.27.
[795] M. Murray to Colin Campbell, 1704, EUL, MS.3097.8 fol. 13.
[796] EUL, MS.3097.8 fol.27.

it was first published. Campbell's work was the result of profound and broad-based scholarship that cross-fertilised the symbolic worldview of astrology with the abstractions of mathematics and directly-experienced Christian mysticism.

Acknowledging Campbell's letters 'in return to My Lord Murray's & mine', Murray went on:

> both he & the Earl of Tullibardine his father [797] were very much taken with it, his lsp kept it ever since until lately upon my earnest request he returned it. Several other ingenious gentlemen are curious to have a double of it.[798]

The then Earl of Tullibardine,[799] an army officer and politician who became the first Duke of Atholl and Lord Privy Seal, was heavily involved in Scottish politics and a notable opponent of the Union of 1707 and a proponent of the Darien Scheme. While there was widespread condemnation of judicial astrologers, as evidenced by the comments of Gregory, Lauder and Abercromby, it can be seen that as late as the first decade of the eighteenth century there were eminent men still open to taking such astrology seriously when it was presented to them by a man as learned as Colin Campbell. It seems, then, that it mattered not so much what was being said, as how the material was being presented – and by whom.

By the time of the death of Colin Campbell in 1726, natural as well as judicial astrology had all but disappeared from the mainstream intellectual map of Scotland. Although Campbell in his ' vitious modesty'[800] had always demurred at putting his work in print there were, however, some legacies of the efforts to reform astrology and incorporate it into the new and evolving science. Richard Mead's *De*

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[797] The son could have been one of the following: William Murray (1689-1746) who was attainted and removed from the succession in 1716; James Murray, 2nd Duke of Atholl (1690-1764) or Lord Charles Murray (1691-1720).
[798] EUL, MS.3097.8 fol.27.
[799] John R. Young, 'John Murray, First Duke of Atholl (1660–1724)', in *Oxford DNB*, 2004.
[800] EUL, MS.3099.8.

imperio solis ac lunae was highly successful and went in to several editions. It was substantially enlarged in 1746 and was published as late as 1775 in Edinburgh as part of his complete works.[801] It may even have had some influence on the decision by Edinburgh physicians seventy years later to set up the Scottish Meteorological Society for the specific purpose of investigating the connection between weather and mortality.[802]

William Cock's work on weather also excited interest, both at home and abroad. *Meteorologia* was republished in London in 1703 and was translated into German and printed in Hamburg under the same title in 1691. This influential edition became the basis of *Einleitung zu der neuen Meteroscopie* [sic] *oder Witterungs-Deutung nach W. Cock* published by Georg Ernst Stahl (1660–1734) in 1716. Stahl, a German chemist and physician, is best known for the development of the phlogiston theory, the first rational (though incorrect) theory of combustion, which dominated the chemistry of the latter part of the 18th century.[803] It is not without significance that it was in the areas of medicine and weather that astrology lingered longest in educated circles, as these are fields that were less amenable to mathematization than hard sciences such as surveying or gunnery.

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[801] Richard Mead, *The Medical Works of Richard Mead* (Edinburgh, 1775).
[802] A Cameron, 'Medicine, Meteorology and Vital Statistics: The Influence of the Royal College of Physicians of Edinburgh Upon Scottish Civil Registration, C. 1840-1855.', *The Journal of the Royal College of Physicians of Edinburgh*, 37 (2007), 173–80.
[803] *Chambers Biographical Encyclopaedia of Scientists* (Edinburgh, 1983), p. 475-476.

CONCLUSION

Astrological concepts and imagery had been an accepted part of the Scottish worldview from long before the Reformation, and the radical destruction and transformation of the old Church that this brought about did little, if anything, to change this. Sources of information about astrology were available in one form or another for all sectors of society. It was taught at all of the country's universities until at least the late 1670s, and it was therefore, until then, a customary part of an educated person's mental furnishings. Books on the subject, in all of its main categories, were found in the libraries of Scotland's universities, and bequests, donations and purchases throughout the seventeenth century attest to its perceived value in the academic world. Almanacs carried astrology to a wider readership, and these were targeted at, and bought by, every class of society from the common, vulgar people to the gentry. Astrology mattered as a topic for debate. Divisions of opinion over its theological legitimacy, morality, operational effectiveness and rational basis point to the seriousness with which it was regarded, both by its opponents and proponents. It had a wide range of applications and was utilized in many different ways. It was employed as a means of weather forecasting and for timing agricultural activities. In medicine it was used by physicians, university graduates, quacks, folk healers and lay people to find the causes and courses of illnesses, as well as their remedies and times for administration and intervention. Judicial astrologers used astrology to determine individual temperaments and destinies, to identify optimal times for the commencement of enterprises, to divine answers to all manner of questions from patterns in the sky and to predict and understand important events and changes in society at large. Towards the end of the

seventeenth century, however, astrology's vigour was diminishing, and four main reasons, and one minor speculative one, can be identified to account for its disappearance from mainstream intellectual life.The first is deracination, as the roots of institutional instruction in the subject were cut off. Astrology lost what academic support it had during the 1680s as the natural philosophy curriculum moved away from its traditional and almost exclusively scholastic method and content. The Aristotelian system of investigating nature was already being questioned in the late 1650s.[804] Robert Sibbald writing in his autobiography about his university days at Edinburgh described the arrival, in 1657, of his new regent William Tweedie, who had previously been a minister and, before that, a regent at St Andrews:

> When he came to us he gave us a paraphrase upon Aristotle his text, which gave many a disgust of him...Aristotle his philosophie being then depraved by the scholastik writters. [805]

As Tweedie also included astrology in his natural philosophy dictates, the subject may well have been contaminated by association in the students' disgust for the scholastics.[806] The loss of Aristotle's *De Coelo* and Sacrobosco's *Sphaera* and their commentaries from the syllabus meant that astrology's customary platform in the teaching of natural philosophy at the universities had been dismantled. The introduction of the ideas of Bacon, Gassendi and Descartes brought with it the necessity for new textbooks, the most significant of which for astrology's ousting was that of the Cartesian Jacques Rohault, *Tractatus Physicus,* which remained a standard physics manual in the universities for over fifty years. It includes a chapter 'On the influences of the stars, and of judicial astrology' which dismissed the subject

[804] For a discussion of the debate about Aristotle in the English universities see Mordechai Feingold, 'Aristotle and the English Universities', in *European Universities in the Age of Reformation and Counter Reformation*, ed. by Helga Robinson-Hammerstein (Dublin, 1998), pp. 135–149.
[805] Sibbald, *Memoirs*, p. 52.
[806] EUL, mic.M.645.

using the Cartesian method of doubt. With the rejection of Aristotelian astronomy and the introduction of Rohault's *Tractatus*, not only was astrology omitted from the teaching, it was comprehensively condemned, aided and abetted by the negative bias given to it by teachers like David Gregory and Herbert Kennedy at Edinburgh and John Tran at Glasgow. Its absence meant that those who did have an interest in the subject would have had to look outside of the formal educational environment for instruction. That, in itself, would have presented no great obstacle as there were plenty of books to be had in institutional libraries. The libraries of Edinburgh University and the Aberdeen colleges, for example, were well stocked with such material.

There was, however a second, and more formidable, barrier to the continuation of the use of astrology by the educated: the abysmal image of astrology outside of the academy. It had not only become unfashionable, it had become an object of satire and scorn. In the early part of the period under review, educated men referred with some reverence to 'the learned' astrologers, while dismissing 'vulgar prognosticators'. The proliferation of astrology books, translated from Latin into the vernacular, especially from the mid-seventeenth century onwards had opened the floodgates, allowing access to this knowledge, previously reserved for the educated, to anyone who was literate. And many of the less scrupulous took advantage of this as a powerful means of furthering their own ends, which were often political, financial or egotistical. By the end of the seventeenth century, the public image of the astrologer had almost entirely lost its identification with the man of wisdom and had shifted to that of the quack doctor and judicial astrologer, whose florid exhibitionism and exaggerated claims attracted such epithets as 'Jack the liar', and

this, along with their past association with scare-mongering and factionalism as well as their perceived ignorance and intention of abusing the gullible, would have repelled rather than appealed to an educated man. In 1673 William Ramesay summed up the perceived character of a quack astrologer:

> A three-penny *Prophet,* that undertakes the telling other folks *Fortunes,* meerly to supply the pinching necessities of his *own*...he understands neither things *past* nor *present,* yet kens to an Hairs-breath those *to come*...his whole *Art* but a well contriv'd *Faculty* or *Legerdemain* to buble inquisitive and credulous *Fools* of their *Money*... His natural *impudence,* and a stolen *Ephemeris* set him up, and he begins at once to be a *Student* and a *Professor*... He impudently cites *Ptolomy* and *Cardan,* and makes *Haly* and *Abumazar* his common vouchers, yet scarce understands *the Book of knowledg.* [807]

As the ideals of 'politeness' and of 'the gentleman' were growing in desirability at that time, and even shaping educational strategies,[808] astrologers were hardly suitable companions in reputation for those who wanted to cultivate a genteel image. It would have taken a great deal of determination, not to mention sheer eccentricity, to run the gauntlet of academic jeers and go against powerfully negative peer pressure.

The third reason for astrology's fall from intellectual grace was that the effectiveness of traditional natural philosophy, as compared to the emerging scientific methodology, was also being questioned. There was a reaction against reasoning, intuition and revelation, all highly subjective means of arriving at an understanding of nature, and natural philosophy was, above all, a contemplative, subjective study. The philosopher John Locke wrote:

> I deny not, but a Man accustomed to rational and regular Experiments, shall be able to see farther into the nature of Bodies, and their unknown Properties, than one that is a stranger to them. But this is but *Judgment,* and *Opinion,* not

[807] William Ramesay, *The Character of a Quack Astrologer* (London, 1673), [pp. 2, 5].
[808] Paul Wood, 'Candide in Caledonia: The Culture of Science in the Scottish Universities, 1690-1805', in *Universities and Science in the Early Modern Period,* p. 188 ff.

> *Knowledge* and *Certainty.* This makes me suspect that *Natural Philosophy* is not capable of being made a *Science.* [809]

In the same way, astrology, which was akin to, and had been embedded in, natural philosophy, was also not capable of being made a *Science* either. It, too, was a contemplative study, involving reasoning and intuition, personal assessment and opinion, as Colin Campbell's judgement of an astrological figure demonstrates.

> Saturn being Retrograde, and Jupiter no ways interposing upon such a position, one of the Masters of astrology gives this judgment. The affairs of the King and Grandees shall suffer detriment trouble and difficulty shall be in and about them, they shall require aid and assistance from the common people... [810]

Two features stand out in this. First, a rational, causal explanation was given for what was being predicted. Because Saturn, the great malefic, appeared to be moving backwards and there was no mitigation by Jupiter, the great benefic, then certain dire events could be expected, in this case to those in high office. The other characteristic is that the interpretation is purely descriptive and is open to a wide range of correspondences. It does not specify which particular Grandees would suffer, nor the exact nature of the vexations expected or what particular aid might be required; instead it described trends to come. Although precise, quantitative, mathematical measurements were required to erect an accurate astrological figure, astrology, like natural philosophy, dealt with qualities, not quantities. Both sought explanations for, and understanding of, natural and political phenomena and required subjective judgement and personal interpretation of authoritative sources to come to a conclusion. The influence of both waned with the increasing distaste for the abuses of subjectivity through factionalism and fear-filled propaganda and with the desire

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[809] John Locke, *An Abridgment of Mr. Locke's Essay Concerning Humane Understanding* (London, 1696), p. 263.
[810] EUL, MS.3099.24.

for objective information, and the increasing ability to acquire it through new instrumentation and methodologies.

The fourth, and perhaps the most important, reason for astrology's intellectual decline was that the contemporary practice of astrology was simply not in accord with virtuosi values. Astrology did not measure up to three of the virtuosi's key aims – the desire to find consensus on objectively agreed data and theoretically agreed models, the search for evidence based on observation and experimentation rather than reasoning, intuition or revelation, and the aspiration to apply knowledge so acquired for the practical benefit of society at large.

Much evidence has already been provided that shows the necessarily subjective nature of astrological interpretations and the lack of consensus consequent to this, as well as the disagreements about methodology. Although men like Sinclair, Cock, Pitcairne and Campbell did carry out observations to try to correlate celestial and natural terrestrial phenomena, these efforts petered out in subsequent generations. The likely reasons are that other areas of research proved more productive of results and, above all, that astrology was not readily amenable to the experimental method. As Rohault wrote:

> So far are Astrologers from having many Times observed, what the Disposition which the Stars will be in to Morrow in the Heavens is capable of producing, that strictly speaking, we may affirm, that they have not the least Observation at all; because it will take up several Thousand Years before such a Constitution of the Stars as we have observed can happen twice.[811]

He pointed out that the kaleidoscopic pattern of the heavenly bodies is rarely (if, indeed, ever) identical, thereby rendering astrology unsuitable for the strict application of the experimental method. Mary Ellen Bowden put the decline of

[811] Samuel Clarke, *Rohault's System of Natural Philosophy,* 2 vols. (London, 1728), II, p. 89.

astrology down to a failed scientific revolution.[812] While that is undoubtedly an important part of the explanation, it has to be viewed in the context of the fact that the natural systems that astrology was used to examine – such as the human body, weather and political systems – were themselves too complex to be within the grasp of contemporary scientific methodologies and instrumentation. It was only in the 1970s that rational structure-based drug design became possible;[813] weather prediction is, even with the aid of highly sophisticated mathematical modelling and computer technology, still imperfect and, as Anne Geneva has pointed out, it is debatable whether predictions of modern-day economists are any more accurate than those of seventeenth-century astrologers.[814] It was not so much that astrology was tested and found wanting – it was never tested, for it could not be. In contrast to natural philosophy and to astrology, the science of the virtuosi was about doing things rather than understanding things through speculation, and about quantities rather than qualities. 'Astrology seems to have provided a context of meaning, interpretation and even security for the conduct of everyday life, but was not concerned with any single material need.'[815] As the quantification of the world through mathematics and experimentation was offering economic advantages by providing improvements in areas such as surveying, map-making, navigation and horticulture, in a country where the threat of poverty, famine and disease was ever-present, it is scarcely surprising that the pursuit of mathematical certainties was privileged above speculation on celestial influences.

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[812] Bowden, 'Scientific Revolution in Astrology', passim.
[813] The first of these to be licensed, in 1977, was Captopril, an ACE inhibitor for hypertension developed by Squibb Laboratories.
[814] Geneva, *Seventeenth-century Mind*, pp. xv-xvi.
[815] Wright, ' Astrology and Science in Seventeenth-Century England', p. 415.

Developments at Edinburgh University in the first two decades of the eighteenth century would have spurred on this enthusiasm for mathematics. In 1708 it became the first of the Scottish universities to adopt the professorial system as part of Principal William Carstares's reforming campaign to compete with the Dutch universities, which he admired, so that Scottish students would be attracted to stay in their home country for their education instead of going abroad. The old regenting system with its scholastic curriculum was replaced by four core classes of Greek, logic and metaphysics, ethics, and natural philosophy, each one given by its own professor. [816] Students could then supplement these by choosing to attend courses given by other professors. While the professors of the core subjects were relatively well paid, those offering ancillary subjects, such as mathematics, could only hope to earn a reasonable living from class fees. As Paul Wood has pointed out, financial necessity provided an incentive to boost class sizes by opening them to those who were neither matriculated nor intending to graduate, in other words, to the wider public, which would have made an important contribution to the dissemination of natural knowledge, especially as the lectures were given in English, rather than Latin.[817] It is indicative of the appetite for mathematics, and perhaps its fashionable appeal at the time, that Colin Maclaurin, who took up the post of professor of mathematics in 1725, sometimes had as many as 126 students in his class.[818] Astrology had become a thing of the past as new, exciting and more practical enthusiasms, such as that for mathematics, flourished.

[816] Paul Wood, 'Science in the Scottish Enlightenment', in *Science in Europe, 1500-1800*, ed. by Malcolm Oster (Basingstoke, 2002), pp. 194–211 (p. 194).
[817] Ibid, p, 195.
[818] Ibid, pp. 194–195.

Apart from Colin Campbell, little evidence remains of the involvement of the educated elite in astrology after the 1670s. Campbell lived in the wilds of Argyll, and his view and experience of the night sky would have been an unobscured and primal one till the end of his life. The loss of such a direct connection with the heavens by the educated men who tended to live in ever-more crowded and smoke-polluted towns and cities, where the intellectual gaze would have tended to be horizontal rather than vertical, may be an added ground for the loss of interest in the meaning of the patterns in the sky. There appears, however, to have been little drop off in trade up until the end of the period, among astrological practitioners like Cathcart, who read the stars at second-hand from popular ephemerides, but by the second decade of the eighteenth century even some almanac-makers, like John Thompson, were showing scepticism towards astrology.[819] Although historians of astrology have cited the end of the seventeenth century as the time when astrology, both judicial and natural, had 'its second death'[820] and that its 'intellectual vitality...was gone forever'[821] and that it had 'ossified into a separate, and ultimately obsolete, system of belief',[822] in fact, as Patrick Curry has demonstrated, although the subject certainly lost its social and academic respectability, it did not die, it simply flowed into different channels.[823] Astrology survived in Scotland too but, similarly, not in the central current of mainstream thought. Although astrology was no longer sanctioned by the intellectual establishment, there were educated men who were willing to stand outside of convention to pursue their interest in the subject. Ebenezer Sibley (1751-1799) was one. A practising physician with a degree from King's College, Aberdeen,

[819] Thomson, 1713, [p. 7].
[820] Tester, *History*, p. 243.
[821] Thomas, *Religion*, p. 424.
[822] Ibid, p. 338.
[823] Curry, *Prophecy and Power*, pp. 95–117.

in 1784 he published the first serious astrology book to appear for many years.[824] In the nineteenth century John Crichton-Stuart, third Marquess of Bute (1847-1900), the richest man in Britain at the time, openly displayed his astrological interests at his home in Mount Stewart on the Isle of Bute by having a ceiling painted to show the exact position of the planets at the time of his birth on 12th September 1847.[825]

Astrology was kept alive at a more popular level too. The journal of Patrick Massie of Aberdeen from 1726-1741 contains notes not only on weather, farming, and domestic recipes, but on astrology, palmistry, and physiognomy.[826] To cater for a less educated market, in 1726 the Glasgow printer, James Duncan, published *The Book of Knowledge*, an anthology of astrology and folk-belief purporting to be the work of William Lilly. By the mid-1740s Merry Andrew's *Almanack* still claimed to offer an astrological judgement of the weather and, around 1800, *The book of knowledge, for the instruction of young people, in the principles of astronomy, astrology, geography, physic and surgery* made its appearance.[827] A similar chapbook was published in Stirling in 1820, entitled *The book of knowledge: treating of the wisdom of the ancients. Containing, a short prognostication concerning children born every day of the week. Of the birth of children, with respect to the age of the moon*.[828] Astrology may have all but disappeared from the mainstream intellectual landscape of Scotland by the beginning of the eighteenth century, but popular and amateur interest in the subject was, and is, still evident far beyond that time.

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[824] Ebenezer Sibly, *A New and Complete Illustration of the Celestial Science of Astrology* (London, 1784).
[825] Sir David Oswald Hunter Blair, *John Patrick, Third Marquess of Bute, K.T (1847-1900): a Memoir* (London, 1921), pp. 135, 225.
[826] 'Journal of Patrick Massie 1726-1741', AUL, MS.2002.
[827] Anon, *The Book of Knowledge, for the Instruction of Young People, in the Principles of Astronomy, Astrology, Geography, Physic and Surgery* (place unknown, 1800).
[828] Anon, *The Book of Knowledge: Treating of the Wisdom of the Ancients* (Stirling, 1820).

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Appendix: Extant Scottish Almanacs to 1726

1626

- Anon, *Prognostication* (Aberdeen, Raban, 1626).

1632

- John Whyte, Wel-willer to the Mathematickes, *A New Prognostication* (Edinburgh, Wreittoun, 1632).
- Anon, *Prognostication* (Aberdeen, Raban, 1632).

1639

- M. I. G., *Prognostication* (Aberdeen, Raban, 1639).

1651

- Kenky, Abenezer, *A New Prognostication* (Aberdeen, Brown, 1651).

1658

- Anon, *A New Prognostication* (Aberdeen, Brown, 1658).

1662

- James Corss Philomath, *Mercurius Coelicus* (Glasgow, Sanders, 1662).

1663

- James Corss Mathematician, *Mercurius Coelicus* (Edinburgh, Society of Stationers, 1663).

1664

- Philomathes, *A New Prognostication... set forth at Aberdeen* (Glasgow, Sanders, 1664).

1665

- A Well-wisher to the Mathematicks, *A New Prognostication* (Aberdeen, Forbes, 1665).
- Philomathes, *A New Prognostication... set forth at Aberdene* (Glasgow, Sanders, 1665).

1666

- A Well-wisher to the Mathematicks, *An Almanack or New Prognostication* (Aberdeen, Forbes, 1666).

1667

- J. A. Mathematician, *A New Prognostication* (Edinburgh, Society of Stationers, 1667).

1668

- J. A. Mathematician, *A New Prognostication* (Edinburgh, [-], 1668).
- I. H. Philomathes, *A New Prognostication* (Glasgow, Sanders, 1668).

1669

- Philomathes of Aberdene, *A New Prognostication* (Glasgow, Sanders, 1669).

1670

- J. A. Mathematician, *A New Prognostication* (Edinburgh, Glen, 1670).
- D. E., *A New Prognostication* (Glasgow, Sanders, 1670).

1671

- M. D. L., Professor of Mathematicks, *A New Prognostication... set forth in Aberdene* (Glasgow, Sanders, 1671).

1672

- P. A. Expert Mathematician, *A New Prognostication* (Glasgow, Sanders, 1672).

1673

- L. D. an expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, Sanders, 1673).

1674

- A. F. Philomathes, *A New Prognostication* (Edinburgh, [-], 1674).
- Ancient and Expert Mathematician, *A New Prognostication* (Aberdeen, Forbes, 1674).

1675

- I. C. Mathematician (James Corss), *A New Prognostication* (Edinburgh, [-], 1675).

1676

- P. S. A Lover of the Mathematicks, *Prognostication* (Edinburgh, [-], 1676).

1677

- An expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, Sanders, 1677).

1678

- A. R. A. M. an expert Mathematician, *A New Prognostication* (Aberdeen, Forbes, 1678).
- An expert Mathematician, *A New Prognostication* (Aberdeen, [-], 1678).
- An expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, Sanders, 1678)).

1679

- James Corss, Mathematician, *A New Prognostication* (Edinburgh, [-], 1679).
- An expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, Sanders, 1679).

1680

- An Ancient and Expert Astronomer, *A New Prognostication* (Aberdeen, Forbes, 1680).

1681

- Anon, *A New and Exact Prognostication...after Vincent Wing* (Aberdeen, Forbes, 1681).
- James Paterson, *A New Prognostication* (Edinburgh, [-] 1681).
- An expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, Sanders, 1681).

1682

- Anon, *Aberdeen's New Almanack* (Aberdeen, Forbes, 1682).
- An expert Mathematician at Aberdeen, *A New Prognostication* (Glasgow, Sanders, 1682).

1683

- A Painfull Astronomer, *A New Prognostication* (Aberdeen, Forbes, 1683).
- James Paterson, *Edinburgh's True Almanack* (Edinburgh, Anderson, 1683).
- A Painful Astronomer, *A New Prognostication* (Edinburgh, Anderson, 1683).
- A Painful Astronomer, *A New Prognostication* (Glasgow, Sanders 1683).

1684

- Painfull Astronomer, *Bon-Accord's Ephemeris* (Aberdeen, Forbes, 1684).
- An Expert Mathematician, *A New prognostication* (Edinburgh, Anderson, 1684).

- James Paterson, A New Prognostication (Edinburgh, Lindsay, 1684).
- Painful Astronomer at Aberdene, *A New Prognostication* (Glasgow, Sanders, 1684).

1685

- Old Painful Astronomer, *Aberdeen's True Almanack or A New Prognostication* (Aberdeen, Forbes, 1685).
- James Paterson, *Edinburgh's True Almanack or A New Prognostication* (Edinburgh, Colmer, 1685).
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- J. F. Philol & Philom, *A New Prognostication* (Edinburgh, [-], 1685).
- Painful Astronomer at Aberdene, *A New Prognostication* (Glasgow, Sanders, 1685).

1686

- Philomath, *A New Prognostication, or Aberdeen's True Almanack* (Aberdeen, Forbes, 1686).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Reid, 1686).
- A Lover of the Mathematicks, *A New Prognostication* (Edinburgh, Anderson, 1686).
- A Painful Astronomer, *A New Prognostication* (Glasgow, Sanders. 1686)

1687

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1687).
- James Paterson, *Edinburgh's True Almanack* (Edinburgh, Holy-Rood House, 1687)
- Anon, *A New Prognostication* (Edinburgh, Anderson, 1687).
- Anon, *A New Prognostication* (Edinburgh, Anderson, 1687), another issue

1688

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1688).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Holy-Rood House, 1688).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Holy-Rood House, 1688), another issue.

1689

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1689).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Holy-Rood House, 1689).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Holy-Rood House, 1689), another issue.

1690

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1690).
- An Expert Mathematician, *A New Almanack* (Aberdeen, [-], 1690).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Anderson, 1690).
- An Expert Mathematician, *A New Almanack* (Edinburgh, Reid, 1690).

1691

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1691).
- James Paterson, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Reid, 1691).
- G. S. Philomath, *A New Prognostication* (Edinburgh, Anderson, 1691).
- H. S., *A New Prognostication* (Glasgow, Sanders, 1691).

1692

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- Mr. J. S. Astrolog, *A New Prognostication* (Edinburgh, Anderson, 1692).
- H. S., *A New Prognostication* (Glasgow, Sanders, 1692).

1693

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1693).
- Mr. J. S. Astrolog, *A New Prognostication* (Edinburgh, Anderson, 1693).
- J. P., an expert Mathematician, *A New Almanack* (Edinburgh, Reid, 1693).

1694

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1694).
- Mr John Stobo, student in Astrologo-Physick, *Mercurius Scotus* (Edinburgh, Anderson, 1694).
- A Well-wisher in Astrology, *A New Prognostication* (Glasgow, Sanders, 1694).

1695

- Anon, *Vox Uraniae* (Aberdeen, Forbes, 1695).
- A Well Wisher of Artists, *An Almanack or A New Prognostication* (Edinburgh, John Reid, 1695).

1696

- John Man, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Reid, 1696).
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- H. S. A Well Wisher in Astrology, *Prognostication* (Glasgow, Sanders, 1696).

1697

- G. C. Mathemat, *A New Prognostication* (Edinburgh, Anderson, 1697).
- A Well Wisher in Astrology W.S., *Ane Prognostication* (Glasgow, Sanders, 1697).

1698

- John Man Philomat, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Reid, 1698).
- John Man Philomat, *Edinburgh's True Almanack or a New Prognostication* (Edinburgh, Reid, 1698), another issue.
- J. T. St in Ph: and Astr:, *Merlinus Scotus his Prognostication or Almanack* (Edinburgh, Watson, 1698).

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- G. C. Mathermat., An Almanack and New Prognostication (Edinburgh, Anderson, 1698).

1699

- Merry Andrew, *A Prognostication* (Edinburgh, Watson, 1699).
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1703

- Anon, *Gloria Deo in Excelsis* (Aberdeen, Forbes, 1703).
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1704

- Merry Andrew, *Merry Andrew... Or, an Almanack after a new fashion* (Edinburgh, Watson, 1704).
- Man, John, *Leith's True Almanack* (Edinburgh, Mosman, 1704).

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- Merry Andrew, *Merry Andrew... Or, an Almanack after a new fashion* (Edinburgh, Watson, 1705).
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1706

- Anon, Gloria Deo in excelsis (Aberdeen, Forbes, 1706).
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- G. C. Mathemat., *An Almanack, and New Prognostication* (Edinburgh, Anderson, 1706).

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- Merry Andrew, *Merry Andrew... Or, an Almanack after a new fashion* (Edinburgh, Watson, 1707).
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- Anon, *Merry Andrew* (Sanders, Glasgow, 1707).

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1713

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1714

- Thomson, John, Philomath, *Edinburgh's New Almanack* (Edinburgh, Moncur, 1714).

1715

- Thomson, John, Philomath, *Edinburgh's New Almanack* (Edinburgh, Moncur, 1715).

1717

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1718

- A Well-Wisher of the Mathematicks, *An Almanack or, Aberdeen's New Prognostication* (Aberdeen, Nicol; Edinburgh, Paton, 1718).

1720

- A Well-Wisher of the Mathematicks, *An Almanack or, Aberdeen's New Prognostication* (Aberdeen, Nicol; Edinburgh, Paton, 1720).

1721

- A Well-Wisher of the Mathematicks, *An Almanack or, Aberdeen's New Prognostication* (Aberdeen, Nicol; Edinburgh, Paton, 1721).

1722

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1726

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