

INTRODUCTION

In 1875 David Page, geologist and enthusiast for intellectual culture, published a pamphlet-length plea for an increase in the number of field clubs and science associations.¹ In his petition Page deployed the well-worn themes that had marked countless calls made in Victorian towns entreating local publics to participate in scientific pursuits. Botany, geology and meteorology among other subjects were recommended to Page's readers as physically and mentally invigorating pastimes. For Page, natural history, more than other forms of intellectual culture, offered a stimulating distraction from the debilitating effects of routine urban existence. Page was careful to point out the dangers of narrow scientific professionalism, a condition incompatible with 'the duties of brotherly sympathy, honest manliness, and good citizenship, which render life sweet and society enjoyable.'² Recreative science, on the other hand, united the pursuit of general happiness and individual intelligence and provided a hopeful way forward amidst signs of social decay.

Page's estimation of the social benefits of a widespread and collective interest in natural science was shared by the Revd Charles Kingsley. In a preface to a series of lectures on 'town geology' first published in 1872 Kingsley presented the political advantages associated with diffusing a scientific spirit among Britain's urban classes.³ The 'dream' that Kingsley offered to his readers was of a 'true working aristocracy' that functioned according to the habits of mind acquired through active participation in scientific work. The patient study of town geology (or any other branch of natural history) would supply the basis for the freedom, equality and brotherhood, which state government could not by itself provide. As 'a student of society and history' Kingsley urged his readers to heed the prognosis – inductively derived – that 'power will pass more and more, if all goes healthily and well, into the hands of scientific men.'⁴

The testimonies of Page and Kingsley typify a pervasive rhetoric attached to attempts at enlarging participation in scientific pursuits. It was a rhetoric which tied science to improvement and citizenship during the long age of reform and offered a justification for the popular and collective pursuit of science beyond the confines of elite institutions. The agitation on behalf of accessible science by

Page and Kingsley acted as a counterpoint to the professionalizing strategies of scientific experts. It was offered less as an antagonistic alternative to the lobbying of elite men of science than a parallel movement existing alongside, and in creative tension with, efforts to secure central government support for salaried science.

As well as complementing the rise of the salaried scientific expert, the advocacy of Page and Kingsley was in general harmony with a wider culture of improvement and voluntarism in Victorian Britain.⁵ Their particular concern, however, was to carve out a prominent place for science within civic culture by highlighting the benefits of scientific voluntarism and by favourably comparing it with other forms of self-help and associational activity. For both spokesmen, an active interest in natural history provided a safe and certain route to moral improvement and physical well-being and supplied a set of virtues, including a healthy combination of independent thought and mutual regard, acutely relevant to involvement in public life.

Rather than stirring the embers of a burnt-out scientific voluntarism, the appeals made by Page and Kingsley accompanied a real and rapid growth in the number of natural history societies and field clubs across Britain.⁶ Dedicated to the exploration of local natural history and the dissemination of a taste for scientific studies, these societies provided an institutional and local expression of the vision held forth by more widely recognized public figures. Members of the societies, occupying territory between the cloistered world of scientific expertise and the more corrigible world of civic culture, presented themselves as important players in the production and maintenance of a healthy civil society. With varying degrees of success they engaged a wider scientific culture and a local public and their activities provided a defining example of attempts to make public life scientific and scientific life public in the face of significant social and intellectual change. The societies operated according to the procedures typical of subscriber democracy and combined a commitment to scientific progress with a more local loyalty to civic culture.⁷ Subscribing to a natural history society meant subscribing to the conjoint success of civic and scientific culture.

This book takes as a particular focus the activities of nineteenth-century natural history societies in Scottish civic culture. In concentrating on Scotland it aims to fill a gap in historical scholarship on popular science and on Victorian civic and provincial society. In so doing it aims not only to explore in greater depth Scottish scientific and civic culture but also to reposition thinking about Victorian popular science and query the use of abstractions such as 'Victorian natural history'. Considering specifically the work of naturalists' associations, the book explores a distinct segment of recreational and scientific culture that has not occupied a central place in studies of Victorian science and society. Sometimes dismissed as marginal to both civic and scientific culture in the Victorian

period, natural history societies have not attracted sustained attention from historians of Victorian public culture or historians of nineteenth-century science. Their significance can, of course, be exaggerated. Even so, the societies pursued their social and scientific goals with a vigour that has yet to be fully appreciated or analysed. In taking seriously the scores of societies active across nineteenth-century Scotland this study mines their formal and more ephemeral records and seeks to enrich our understanding of the intersections between provincial civic society and scientific culture during the Victorian period.

At the heart of this book is the contention that the societies straddled more or less successfully two relatively distinct constituencies: a local public and a more scattered scientific community. Important to my argument is the claim that examining the societies solely in terms of their contribution (or lack of it) to the sprawling and dynamic world of Victorian science would miss the ways in which natural historical knowledge was made to serve other more local cultural and social ends. Natural history was prominent in the vast repertoire of cultural pursuits that occupied the growing urban population of Victorian Britain and cannot be understood without attending to the cultural geography of nineteenth-century civic society. By the same token, reducing the work of the societies to a kind of local cultural competence and quest for civic status would be to ignore the scientific and universalizing aspirations of provincial naturalists. The wider world of natural science and the emergence of areas of specialist expertise during the second half of the nineteenth century remained an influential backdrop and provided significant opportunities for provincial scientific practitioners.⁸ Taking seriously the cultural and intellectual aspirations of associational science draws attention to one influential expression of the dialectic between nineteenth-century science and civil society.

To set the scene and establish some of the conceptual concerns that animate this book's exploration of a particular manifestation of science within civil society a number of issues deserve attention. To begin with, presenting alternative accounts of the relations between science and civil society will identify more precisely the species of civic science that lies at the heart of this study. The term *subscriber science* is used here to describe a collective and voluntary interest in science as a social and intellectual pursuit suitable for citizens in an age of reform. From this sketch of the local operations and international horizons of subscriber science more specific issues arise. First, exploring the connections between associational science and civil society evident in the vexed arena of identity formation raises a set of questions useful for interrogating the activities of Scottish naturalists' societies. Second, these questions can be further elaborated by carefully situating the practices that sustained and shaped the work of natural history societies in particular scientific and civic spaces, a methodological manoeuvre introduced below. Finally, it is important to consider the significance

of the national context which helps frame this study. My aim in this respect is not so much an exhaustive account of the uniquely Scottish character of nineteenth-century associational science pursued in Dundee or Dumfries. Rather, I want to be sensitive to the connections forged between science and the construction of local and national identity occasioned by a collective interest in Scotland's flora and fauna. Underlying this general aim is a conviction that the character of Scottish subscriber science is best approached as an activity operating at a number of interlocking scales. My first concern, however, is to explore what might be meant by the term civic science when applied to the work of Scottish natural history societies.

Varieties of Civic Science

The specific subject matter and central argument of this study can be usefully set within a wider set of debates about the connections between nineteenth-century science and civil society. The term 'civic science', which might refer to relationships between science and citizenship or between science and urban society, has been used to describe a range of scientific practices related in different ways to the proper functioning of civil society. Civic science has, for example, been used as a synonym for cameralism, a set of administrative practices important in the eighteenth and nineteenth centuries and concerned with the scientific management of financial affairs in German-speaking states.⁹ Though very different from the civic science of natural history societies, cameralism shared at least one feature in common. As David Lindenfeld has pointed out, a working knowledge of Linnaean taxonomy was recommended by some as an appropriate propaedeutic for training in cameralist science.¹⁰ The governing of German states, the argument went, called for a detailed taxonomy of regulatory mechanisms and the precision of Linnaean classificatory methods supplied a helpful model. It was this general line of thought that led Patrick Geddes, commenting in 1903 on the benefits of a naturalists' society, to argue that an interest in local natural history was of particular value to the 'organizer of commerce' and that a child's herbarium was a fitting preparation for 'either library or counting-house'.¹¹

The understanding of civic science as the application of scientific methods to the management of human society is in certain respects akin to definitions employed by scholars of nineteenth-century scientific culture in Britain. For Robert Kargon, civic science described the work of a group of applied scientists concerned with practical problems associated with the urban environment of mid-Victorian Manchester.¹² It was a science conducted by trained experts whose activities were geared towards technical solutions to practical engineering problems. Others have pointed to Victorian civic engineering of a different sort. Frank Turner, for example, has described eugenics, the manipulation of popula-

tions by scientific means, as ‘the civic science par excellence’.¹³ In both cases civic science is defined as the application of scientific expertise to the management and alleviation of particular social problems.

Members of natural history societies in the same period articulated and enacted a rather different vision of the relationship between science and civic society. Participation in a local scientific society was a species of civic science pursued beyond the deeper shadows cast by the state and at one or more removes from the expert public scientists profiled by Turner and Kargon. As such, associational science, rather than acting as an external agent, was itself a form of public culture deeply implicated in the making and maintenance of civic identity. In light of this, the epithet ‘subscriber science’ is employed here to point to the structural similarities between scientific societies and other voluntary associations and places them firmly within a set of regulative ideals and social conditions which helped define nineteenth-century civil society.

Associational naturalists were not alone in combining scientific interests with civic values and ambitions. A number of studies concerned with the social uses of science in civic contexts in early nineteenth-century England have demonstrated how natural knowledge became a central feature of provincial urban society providing marginal men – that is, members of the emerging middle classes – with a cultural enterprise that helped legitimize their growing public influence.¹⁴ Examinations of the activities of mechanics’ institutes, science lecturers and societies in late-eighteenth and early nineteenth-century urban Britain have uncovered further intersections between scientific associations, civic culture and class identity.¹⁵ Such studies operate with a geographical specificity and provincial focus that has been adopted by more recent work on locally-negotiated connections between science and civic culture. Louise Miskell’s account of intellectual culture in early to mid-nineteenth-century Swansea provides one notable example and traces affinities between an interest in science and a growing sense of provincial civic identity. Miskell argues that Swansea’s scientific society became, ‘the main vehicle by which the town’s status and identity were advanced on the regional and national stage’ and did more to mould and promote civic identity than the town council.¹⁶

Subscriber science was not, of course, a uniquely British affair. Though locally rooted and modulated by regional and national concerns subscriber science can be approached as a transnational phenomenon. Without denying regional variation, the promotion of associational science as a means to civic culture might be traced from Seattle to St. Petersburg and across European colonial spheres of influence.¹⁷ This was due not only to scientific networks of exchange and communication but also because of the widespread growth of voluntary associations.¹⁸ The political philosophy promoted in Alexis de Tocqueville’s *Democracy in America*, with its emphasis on the role of voluntary societies for sustaining

moral culture in an increasingly egalitarian age, had an international appeal not immediately evident from de Tocqueville's fascination with North America. The view that voluntary societies helped ameliorate the excesses associated with democratic societies and provided essential moral training for politically-active citizens found significant transatlantic and pan-European support and scientific societies were prominent players in the expansive world of nineteenth-century associationalism.

If the argument made so far is correct, the activities of natural history societies can be regarded as a form of subscriber science best understood against a backdrop of associational activity and in relation to other forms of scientific and civic endeavour. A number of general claims might be made on this basis. Members of natural history societies, while aspiring to wider recognition, also operated according to a more local horizon and promoted natural history as a means to self-culture and as a pursuit worthy of local public support. Further, the defining characteristic of the civic science of natural history societies was less the application of certified expertise in service of an efficient civil society and more the collective participation of ordinary citizens in scientific work. Such voluntary endeavour was considered productive not only of scientific data but also of improved character and civic virtue. The emphasis on the cultural utility of natural history did not preclude arguments about the economic relevance of the subject or the applicability of natural historical methods to managing and governing urban society. The dominant note, however, was moral and cultural rather than commercial or practical. This note was strengthened by appeals to natural theology, a buttressing that did not significantly weaken even by the end of the nineteenth century.¹⁹

This general sketch of subscriber science can be supplemented by drawing on scholarly work that concentrates on the collective pursuit of natural history outside state-controlled and elite spaces. David Allen's writings on the history of natural history in Victorian Britain might be described as the original ancestor of attempts that seek to recover, using the tools of the social historian, the workings and impact of the subscriber science of natural history societies and field clubs.²⁰ In his classic account, Allen presents the rich and varying character of Victorian associational natural history through its relations to changing cultural fashions and technologies and in light of its reworking of older traditions of inquiry. The natural history field club in particular is singled out as a 'master-piece of social mechanics' which mediated social differences while promoting the collective pursuit of science.²¹ With low subscription rates, out-of-doors camaraderie and general informality, field clubs had an appeal that transcended social divisions of gender and class even if the impact of an egalitarian ethos was uneven. Allen detects, as well, signs of piecemeal decline towards the end of the nineteenth century. The gradual eclipse of the social experiment inaugu-

rated and maintained by natural history societies was the result, Allen argues, of a general loosening of the bonds between a locale and its scientific residents. The dissipation of the focused energy of committed provincial naturalists was further accelerated by the rather different demands made by nature conservationists and by the fragmentation of natural history into more discrete and technical disciplines regulated by the state.²²

Allen's work highlights the native enthusiasm of naturalists as a primary motivation behind the collective pursuit of natural history even while offering acute observations about the impact of wider cultural and social trends in shaping associational science. What is perhaps less apparent in Allen's accounts are the locally negotiated alliances made between naturalists and civic culture, alliances that I want to suggest significantly shaped the identity, character and purpose of British associational natural history. More germane to this particular line of enquiry is scholarship on associational natural history in nineteenth-century Germany, which demonstrates how the norms and institutions of natural history were tightly bound to a concern with moral improvement and civic progress in an age of political reform. The proliferation of naturalists' associations in German-speaking Europe during the nineteenth century encouraged the expanding urban middle classes or *Bürgertum* to engage in self-cultivating excursions and the collection of natural historical specimens in the local neighbourhood. These excursions supplied knowledge of the natural landscape of the fatherland and contributed to local culture, tying scientific activity to civic and national identity. Cooperation between provincial naturalists' societies, enabled by nationally recognized natural science journals such as *Allgemeine Deutsche Naturhistorische Zeitung*, was aligned to a desire for a unified and liberal German nation.²³ Other institutions such as the German Humboldt Association (GHA) further consolidated this rapprochement between popular science and German nationhood after 1848.²⁴ By organizing festivals and excursions, the Association became part of a wider movement of educational and cultural institutions whose activities aimed at ameliorating religious and class antagonism. German associational science conducted and supported beyond elite and state-sponsored institutions was enrolled in the promulgation of a vision of civil society framed by a concern with the success and coherence of national life. Associational science thus became a vehicle for addressing questions of local, regional and national identity and for promoting a form of citizenship congruent with dominant ideas about political progress. Of course, the situation in Germany was in many respects different from the political and cultural context in which Scottish naturalists worked. Nevertheless, the proclivities of German naturalists' societies highlight an aspect of subscriber science relevant to this study and the bonds forged between associational natural history and civic identity mark out a key theme which deserves more detailed commentary.

Subscriber Science and Identity

For many in nineteenth-century Britain science provided not just a set of solutions to practical problems but also a set of moral and social practices suitable for those active in public life, whether local or national. Kingsley's utopian vision of power passing into the hands of scientific men articulated a widespread conviction that science provided a model and mode of self and civic governance essential for a democratic society. What was true of science in general was also true of natural history in particular. To participate in a natural history society was to engage in a pursuit worthy of responsible and active citizens. Scientific identity and political identity thus coincided, at least in Kingsley's vision of civil society. There was, of course, a significant gap between Kingsley's rhetoric and reality and not all members of natural history societies concerned themselves with the fulfilment of his ambitious and all-encompassing vision. Nevertheless, the public persona of associational naturalists undoubtedly emerged from an infusion of civic and scientific concerns. Membership of a natural history society conferred and confirmed social and scientific status. Such mutual effects, it should be acknowledged, did not always produce stable results and there was a danger that the transferral of power to citizens trained in science would turn out to be a pyrrhic victory. It was possible that the widespread diffusion of a scientific sensibility would in fact erode a commitment to civic pride and progress, a commitment which demanded a dedication to local concerns potentially at odds with the perceived universalizing and professionalizing impulse of late nineteenth-century science.

Attempts to win this debate in favour of the kind of vision proffered by Kingsley were made at the level of individual biography. This can be clearly seen in the obituaries of celebrated Scottish naturalists that appeared in society proceedings and in local and national newspapers. In these eulogies, the harmonious blend of scientific and civic virtues embodied in the life and work of a local naturalist was a common commemorative motif. Mobilizing biography to secure a scientific vision for civic culture was not, of course, restricted to Scotland. Lynn Nyhart, for example, has explored the significant overlap between civic concerns and natural history in the career of the nineteenth-century German zoologist Karl Möbius.²⁵ For Möbius, the study of communities of living specimens provided a more accessible science than embryology or morphology and was combined with an emphasis on education, commerce and colonial travel. Moreover, the underlying values associated with these concerns included social harmony and the cultivation of *Gemeingeist* or commitment to community living that regarded individuals as part of a greater organic whole. This package of civic and scientific values was secured in part by stressing that associations in living nature could provide lessons for human associations facing threats from

radical individualism or rampant socialism.²⁶ Without ignoring important local nuances, it is possible to identify in Möbius's biography an embodied argument about cooperation between science and civic society utilized by members of Scottish natural history societies.

Cutting across efforts to advertise the harmony between scientific and civic enterprise exhibited in individual lives was the question of the professionalization of science. In common with other places, the subscriber science of Scottish natural history societies was predicated on a culture of voluntarism. At first sight this seems to set it on a collision course with moves, which gathered pace in the late Victorian period, to professionalize science. Yet what has become evident through detailed studies of the piecemeal emergence of the professional scientist in the mid- to late nineteenth century is that amateur ideals and amateur practitioners persisted longer and proved more adaptable than was once thought.²⁷ This insight has been unpacked in some detail by Sam Alberti in his account of naturalists in late-nineteenth-century Yorkshire.²⁸ In this regional context, the effort made by professionals to accredit themselves as experts over and against amateur science is interpreted by Alberti as a rhetorical strategy which obscured the significant and on-going contributions of other competent naturalists. By concentrating on the self-descriptions of Yorkshire naturalists, Alberti amasses evidence that demonstrates the versatility, diversity and resilience of amateurs.²⁹ In particular, Alberti notes the increasing emphasis placed by amateurs on their contributions as expert collectors of natural history in the field, a role they regarded as complementary to the laboratory work of professional scientists.

What becomes clear in such revisionist accounts of the character and consequences of professionalization is that attention to the complexities of local negotiations between amateurs and professionals is essential for registering the dynamic and contested nature of scientific identity throughout the nineteenth century. A brief comparison with work on other local and national contexts is salutary here. On the one hand, as the work of Carol Harrison suggests, nineteenth-century associational science could be unabashedly parochial in character. According to Harrison, strong state support for Parisian scientific institutions in nineteenth-century France meant that members of provincial bodies emphasized the personal and social benefits of recreational science and downplayed the possibility of original contributions to scientific knowledge.³⁰ In the context of post-revolutionary France, science provided a set of practices useful to the self-fashioning concerns of bourgeois male 'citizen-scientists' and wider recognition of expertise was relatively unimportant. On the other hand, Lynn Nyhart has argued that amateur naturalists active in mid-nineteenth-century Hamburg took their scientific work more seriously. In her study of this group, Nyhart cautions that 'the possibility that [Hamburg naturalists] developed areas of theoretical knowledge that involved serious intellectual novelty' should not be

overlooked.³¹ For Scottish associational naturalists a vital part of their vision for a civic-scientific culture was involvement in science that was not merely derivative but which also entailed active engagement in scientific pursuits considered valuable in their own right. This meant that formal professional accreditation of a kind only gradually exerting wider influence during the Victorian period was not the only way in which expertise was assessed or valued. As a consequence, the scientific identity of individual members cannot be captured particularly well by positioning it along an amateur–professional continuum.

Taking seriously the contested nature and piecemeal appearance of professionalization can also open up space for a rather different interpretation of the participation of women in nineteenth-century natural history. It has been argued that women were increasingly excluded from natural history in England from the early nineteenth century due in part to efforts to re-formulate the subject as a serious and expert science suitable for male practitioners in contrast to a polite and private amusement undertaken by ladies.³² This general claim does not automatically apply to the less regulated world of associational science. What I argue in this book is that women wishing to make an active contribution to a natural history society faced a different set of exclusions as much related to the gendered character of civil society as to changing conceptions of science. Like other institutions that were part of civil society, nineteenth-century naturalists' societies often excluded women. In the case of early nineteenth-century German civic naturalists the rise of a liberal politics and the associated desire to appeal to a wide and socially differentiated audience meant that the fashionable aristocratic ladies who had formerly been seen as an important audience for science were no longer seriously addressed.³³ Likewise, the French provincial 'citizen-scientist' emerged in a period when complete male suffrage was in doubt and involvement in science could help secure civic status for male citizens.³⁴ In post-revolutionary France emulation societies used science, not always successfully, to distance their activities from pursuits considered effeminate.

In other ways, however, nineteenth-century naturalists' societies could increase the visibility and participation of women in science and in civil society. The civic science of Humboldt Associations in nineteenth-century Germany was defined in part by an effort to include women in the public sphere. Even where this liberal agenda was muted the fluid boundaries between the home and the civic sphere and between dilettante and expert science meant that women could and did make significant contributions. This contribution may have taken the form of 'creative couples', with wives supporting in various ways the scientific reputation of their husbands.³⁵ It was also registered at a more institutional level. Because natural history societies relied upon public support and encouraged wide participation in scientific pursuits women, whether members or not, became important allies and visible participants. Recent work demonstrating

the diverse and prominent civic roles of Victorian women in a public sphere often pictured as a male-dominated domain lends support to this suggestion.³⁶

The role of women points to one set of social relations and identity markers evident in, and modified by, nineteenth-century natural history societies. The class affiliations of natural history societies raise another set of questions that can be used to interrogate further the overlap between subscriber science and the construction of civic and individual identity. In crude terms, the majority of members of nineteenth-century natural history societies, in Britain at least, were drawn from the middle classes. Natural history clubs composed of artisan naturalists did of course exist but did not achieve the same visibility in the civic sphere. Yet what did become visible was an image of the artisanal naturalist as a heroic individual showcasing the values associated with individual self-improvement. As Anne Secord has shown, this image took form and achieved currency in a middle-class culture that promoted self-improvement and individual agency for reasons often alien to the artisan naturalists themselves.³⁷

Highlighting the dominance of middle-class constructions of natural history has unsettled a definition of popular science as knowledge accessible to and passively consumed by the non-expert or amateur. As Anne Secord has noted, this conception emerged from specific 'contests over who could participate [in science] and on what terms' and depended, as already suggested, on the rhetorical constructions of professionalizing scientists in the second half of the nineteenth century.³⁸ Secord argues that in early nineteenth-century Britain the 'popular' science of artisan naturalists contrasted to the 'dominant' science of gentlemen in ways more related to cultural differences than to questions of scientific expertise. Work on a later period has also emphasized continuing negotiations over the meaning of science as a popular pursuit. Erin McLaughlin-Jenkins, in mapping the terrain of late-nineteenth-century non-artisan working-class science, has questioned whether nineteenth-century middle-class science of the sort carried out by members of natural history societies can properly be termed popular.³⁹ In light of the hegemonic status of middle class values, describing bourgeois science as popular obscures more than it clarifies. Accenting the importance of class identity, McLaughlin-Jenkins troubles the definition of popular science subscribed to by members of the dominant middle classes.

While such analysis is helpful in complicating accounts of popular science it risks narrowing the range of meanings attached to natural history among middle-class naturalists. Further, it has been argued that in the mid-Victorian period a separation between middle-class and working-class science was not as clear-cut as the language of cultural hegemony might suggest. A number of historians have, for example, noted a 'mid-Victorian consensus' between working class and middle class in terms of values and pursuits.⁴⁰ Christopher Whatley, using the diary of a Dundee millwright written in the 1860s, has argued that some arti-

sans shared with the 'middle classes' a concern with the pursuit of respectability and a positive assessment of mid-Victorian capitalism.⁴¹ This could of course be read as confirmation of the successful operation or routinization of middle-class hegemonic values but there is at least scope for a different interpretation of the mediation of class relations through science in the age of equipoise.⁴²

In whatever way the relations between different social groups are parsed it is clear that Victorian natural history societies provided a vehicle for a particular set of values that significantly shaped the making and management of collective and individual civic identity. The societies were part of a much larger set of nineteenth-century voluntary societies which, as R. J. Morris has argued, gave coherence to an elite-led middle class.⁴³ Yet to approach natural history societies as just another example of a wider movement that consolidated class identity would be to miss ways in which the specific character of associational natural history did not always conform to an obvious cultural consensus or to images of middle-class science proffered by nascent professionals. As I have noted already, committed members of natural history societies rarely represented their work as a matter of passive consumption but stressed just the opposite. It was their ability to contribute to the progress of science through small-scale but significant scientific investigations that animated their proceedings and bestowed a degree of authority within civic society. There is less evidence of resistance to middle-class values or narratives of self-improvement in part because civic culture more than professional science was the immediate environment in which the societies flourished. Even so, they were not all of a piece with middle-class civic culture and tensions did surface. Carefully situating the activities of associational natural history provides a way of highlighting the unique as well as the normative character of subscriber science. It is to this third strand of my argument that I now wish to turn.

Situating Subscriber Science

One of the aims of this book is to examine how the shared suite of practices that helped define the subscriber science of Scottish natural history societies were put to work in different sorts of spaces, cultural and scientific. Charles Taylor's notion of 'contexts of action' is useful here to emphasize the reciprocal relations between practical actions and the circumstances that make those actions meaningful.⁴⁴ While Taylor uses this concept to explore communicative practices, it can be applied to the interplay between custom and innovation, or context and action evident in the work of naturalists' societies. To begin, however, it is worth commenting on the kinds of natural historical practices that shaped the inner momentum of natural history societies.

One insightful typology of practices associated with natural history has drawn attention to the full range of material, social, literary, bodily and reproductive skills involved.⁴⁵ This fivefold typology highlights the multiform character of natural history and refuses to privilege the social or the material as fundamental to our understanding of natural historical practices. All five components were evident in the work of associational naturalists. The prodigious array of equipment and material practices associated with naturalists' societies defies summary.⁴⁶ A cursory list of descriptive routines might include locating, identifying, recording, mapping, naming, classifying, cataloguing, preserving and displaying natural historical specimens. Such practices were the bread and butter of natural history societies and marked out their distinctive character within civil society. They do not, however, exhaust the kinds of practices important to members of the societies, something which becomes clear once the spaces in which the societies operated are brought to the fore.⁴⁷

Among the more obvious contexts crucial to the societies' work were the outdoor spaces of the field, the civic spaces of the town and the more diffuse spaces associated with the organization and communication of natural historical knowledge. The first setting was associated with field excursions, an activity regarded as crucial not only for accomplishing scientific objectives but also for meeting a range of social and cultural aims. In the second setting – the town – a set of additional epistemic and civic practices were employed to meet the social and scientific aims of the societies. Finally, the networked spaces of natural historical knowledge, coordinated more or less successfully with fieldwork and civic culture, connected societies with other similar institutions elsewhere and organized members and societies with a view to increasing scientific efficiency.

In each setting the unique contributions of the societies were offered within a broader set of cultural activities. Natural historical fieldwork was a form of rational recreation closely associated with the rise of popular excursions. Trips to the seaside or to scenic upland areas could readily be advertised as opportunities for the exercise of mind and body, an idea that helped define the meaning of rational recreation. Yet, despite such ready assimilation, tensions could arise between different kinds of pleasure and different understandings of leisure. The pleasure afforded by view-hunting, for example, was not considered the same as the pleasure associated with natural historical fieldwork, and the two different ways of looking sometimes clashed in practice. The demands of natural historical fieldwork, driven by a concern with accurate recording, extensive exploration and precise description, did not always sit easily with leisure understood as respite from mental and physical overexertion.

Carving out a space for natural history in town similarly involved uneasy alliances with a range of other well-established cultural pursuits. The pervasive presence of public speech in the form of lectures and other kinds of address – a

situation described by one mid-century commentator as an ‘overgrowth of social oratory’ – was one such context. Participating in this platform culture provided a suitable and familiar means of attracting a wider audience for natural history.⁴⁸ Accounts of itinerant science lecturers not attached to local institutions and explorations of lectures run by mechanics’ institutes and literary and philosophical societies have demonstrated the character and varied effects of formal scientific talk in the mid-nineteenth century.⁴⁹ Joining the cacophony of scientific speech were the locally organized lectures of natural history societies which aimed to recruit a local public to their scientific and civic cause.

Lecture halls and meeting rooms were, however, only one material space for delivery and display of civic natural history. Museums, more or less formally arranged, provided another crucial site for grafting science onto civic culture. Carefully organized displays of natural history – frequently combined with archaeological exhibits – spoke as much about the success of the society and of pride in a locality as it did of scientific utility and progress. And it was not only the displays themselves that provided a means of merging scientific and civic ends. Where it became affordable, museum buildings anchored societies more permanently in urban society.⁵⁰ Such buildings provided a public face for a society and firmly placed its activities alongside those of other prominent local institutions. The buildings themselves carried messages about science and civic progress reflecting subscribers’ attempts at balancing the demands of functionality and monumentality.

In addition to lectures and museums, societies arranged all manner of exhibitions often advertised as *conversazioni* or, in times when additional funds were required, bazaars. If the civic and scientific aims are (rather artificially) presented as opposite ends of a continuum, *conversazioni* and bazaars were located towards the civic end. On display were the promenading public showing a passing interest in scientific matters even while enjoying a different kind of social exhibitionism.⁵¹ Even so, from the perspective of the organizers, the purpose of *conversazioni*, and even bazaars, was to educate and recruit as well as to entertain.

Lectures, museums and *conversazioni* are the most obvious ways in which members of nineteenth-century scientific societies registered their importance in a local setting but they do not exhaust the societies’ adroit use of civic ceremonies to affirm and consolidate their mission. Urban historian Simon Gunn’s concern with the ‘politics of civic space’ in nineteenth-century Britain offers a helpful way of signalling this.⁵² In pointing to the range of public and collective practices that helped define the civic culture of mid-nineteenth-century Manchester, Gunn has directed historians’ attention to performance and public ritual. Speeches, dinners, testimonials, the laying of foundation stones and other

forms of civic ritual were organized in part to help integrate societies into local urban society.

An additional set of practices were employed to pursue further the scientific aims of societies and these practices set them within a more diffuse space that also influenced the character and meanings of associational natural history. The organization of members into different sections and societies into regional federations, the exchange of published transactions and collected specimens and the informal links forged by committed members through correspondence and joint action were all used more or less consciously to further scientific goals and to connect the societies to a wider scientific scene. The more successful societies managed to issue published proceedings on a regular basis that made more permanent their efforts to produce and expand scientific knowledge of natural history. In order to retain a voice within a rapidly changing and at times inhospitable scientific world it was imperative to keep abreast of wider scientific developments and participate in projects with a remit beyond a given locality.

Yet in straining towards scientific credibility, the societies risked loosening the bonds that guaranteed their appeal to a local public. Published proceedings that had wider scientific currency could alienate local authors and readers. It was important, then, to provide a rationale for the scientific organization of the societies that left room for the cultural and social aspects of associational natural history. So, for example, regional federations of societies set up to improve efficiency and pool resources, could also function, like the British Association for the Advancement of Science but on a smaller scale, as a useful vehicle for regional improvement and civic pride. Efforts made to concentrate energies on providing a complete account of the natural history of a local neighbourhood provides another example. The scientific rationale – systematic description and efficient use of local resources – could be provided alongside the civic rationale – exploring and celebrating the natural riches of a given neighbourhood.

By describing the strategic and practical operations of associational science it becomes evident that the combination of enthusiasm for natural history and for civic progress that characterized naturalists' societies was marked by an intense engagement with local concerns and a looser entanglement with wider scientific affairs. Attending to the situated and distributed character of associational natural history societies aligns this book with the geographical turn in the history of science.⁵³ This move encourages sensitivity to the sites of science's making and consumption and to the movements of science between different sites, a sensitivity informed by an emphasis on the contingencies of scientific practice rather than the apparent universality of scientific theory. The influence of this approach is registered here by concentrating on specific contexts in which the scientific and civic aims of associational natural history were put into practice. Of course, attending to such contexts of action need not imply that the local is the only

relevant scale of inquiry. I have argued above that subscriber science, as a loosely defined social movement, can be approached as a transnational affair. Highlighting the practical actions of Scottish natural history societies both confirms and qualifies that claim. There is a sense in which the local *was* deliberately privileged by the societies and provides the most relevant scale at which to examine the societies' activities. Even so, international networks of exchange also mattered to many members and keeping abreast of wider changes in scientific culture was invariably part of a society's remit. Working at another scale of analysis, that of the nation, highlights a number of additional meanings that were routinely attached to subscriber science that might otherwise be lost in the midst of local colour or in the broad-brush nature of transnational surveys.

The Naturalist in Scotland

In one sense, restricting this study to Scottish natural history societies is to draw attention to a boundary that was frequently transgressed by provincial naturalists. In seeking to fortify their fragile scientific status members of naturalists' societies looked to similar bodies elsewhere in Britain and across the globe. More locally, border societies could regard the Tweed not as a political boundary but as the defining feature of a natural region (or river basin) independent of political considerations. The national focus nevertheless helps address a gap in the literature which has paid little attention to associational science in Scotland. Moreover, dwelling on Scotland provides an opportunity to explore the relationship between subscriber science and national identity. It has already been noted how, in the case of German naturalists' associations, natural historical fieldwork was closely linked to efforts to shore up national unity. In a similar fashion, it is possible to examine the ways in which naturalists' societies participated in a wider discourse about Scottish nationhood.

Relevant to this task is the suggestion that civil society in the mid-nineteenth century was a crucial site for the creation and maintenance of a particular sense of Scottish national identity.⁵⁴ It has been argued that associational activity in Scotland's towns provided support for a civic nationalism that appropriated the past in a way that engendered a keen sense of nationhood while affirming the value of political union with England. As part of Scottish civil society and situated in Scotland's 'Saxon lowlands', naturalists' associations worked within the compound unionist–nationalist political milieu sustained by middle-class urban society in Victorian Scotland.⁵⁵ Where other cultural institutions strengthened nationalist sentiments without questioning unionist assumptions through the promotion of historical narratives and cultural symbols, members of natural history societies could present their activities as a contribution to a fruitful part-

nership with England and as a way of celebrating the distinctive topography and natural history of their own nation.⁵⁶

The equipoise between nationalist and unionist sentiments among Scotland's middle classes was on occasion mirrored in the self-presentations of naturalists' societies. Members made much of the fact that the Berwickshire Naturalists' Club was the venerable parent of all subsequent field naturalists' societies. This sense of national pride was tempered, however, by the Club's border location and by the fact that its much-praised *modus operandi* was more rapidly adopted and adapted by field clubs active south of the Tweed. Scottish societies founded after the Berwickshire Club might be described as purveyors of a tradition with distinct Scottish roots whose centre of gravity had, for a variety of reasons, shifted south.

Claims for the distinctiveness of Scottish societies were rarely pressed at the expense of participating within a more extensive British and international enterprise. A number of such claims were nevertheless rehearsed with some regularity. The frequent appearance of the Scottish autodidact naturalist in the societies' recruitment rhetoric was among the most ubiquitous expressions of national pride and purpose. Although the societies were dominated by a middle-class membership, the names of Thomas Edward, Robert Dick, David Robertson and John Duncan were repeatedly cited and celebrated as examples of the egalitarian and democratic nature of Scottish scientific culture (see Chapter 4). Through mention of these Smilesian characters, members reinforced a widely-held view of Scottish education as more meritocratic than its English counterpart.

It was less obviously in the interests of society members to emphasize their participation in Scotland's distinctive religious culture. One of the commonly advertised advantages of natural history societies was their non-sectarian ethos. Unofficially, however, theological interests were inserted into the pronouncements and programmes of Scottish societies. To give just two examples explored in the coming pages, obituaries of leading members often vouched for their religious commitments and commentaries on Darwinism published in society transactions found room for the widely influential conciliatory schemes constructed by the Scottish evangelist and evolutionist Henry Drummond. The societies rarely attached themselves to a secularizing agenda and frequently cast their activities as consistent with and supportive of the religious sensibilities of moderate Presbyterian Scotland.

As well as reinforcing a particular view of Scottish educational and religious culture some societies actively promoted a sense of national identity through Highland fieldwork. This involved visiting scenes evoked in the writings of Walter Scott and represented in the paintings of Horatio McCulloch. As a form of serious-minded tourism scientific fieldwork provided opportunities to experience a Highland landscape that had become central to popular conceptions of Scottish

national identity. Arguably, however, there was something distinctive about the representation of the Highlands by naturalists' societies. For naturalists, fieldwork enabled a more authentic and sustained encounter with the Highlands. If the average tourist only momentarily glimpsed the grandeur of the land of mountain and flood members of natural history societies immersed themselves in Highland topography and biogeography. For committed members of Scottish naturalists' societies, a thorough knowledge of the flora, fauna and geology of the Highlands took them beyond a romantic nationalism and towards a more practical and scientific knowledge of Scotland's natural landscape. National sentiment nevertheless remained. This is evident in pronouncements decrying dependence on English authorities for knowledge of Scotland's Highland flora and fauna. It was also evident in pleas for more local workers to participate in the task of mapping and cataloguing the natural history of the Scottish nation. To encourage greater participation in fieldwork such pleas mingled kailyard sentimentality and romanticism about the Highlands with a more scientific sensibility.⁵⁷

The combination of scientific rhetoric and nationalist sentiment that marked the work of naturalists' societies draws attention to connections between natural history and national identity expressed outside more elite spaces. In emphasizing the ways in which naturalists' societies contributed to a changing sense of nationhood this study does not seek to identify in advance a national style of associational science or to use Scottish science as a stable cultural referent. Rather, it argues that the character and contributions of natural history were part of a wider set of debates about Scottish nationhood which, even while they tended towards a unionist-nationalist consensus, were never fully resolved.

Synopsis

This book's account of the subscriber science of natural history societies in Victorian Scotland takes as a central concern attempts to secure the interest and support of a local public without losing touch with the wider world of Victorian science. The connections between identity, science and civil society are kept in mind throughout and are addressed in relation to a range of sites, spaces and practices. This task is organized according to the following chapter divisions. Before moving to a more detailed engagement with the situated practices of associational natural history Chapter 1, by uncovering three perspectives on the founding of Scottish naturalists' societies, provides a general overview of the historical geography of associational natural history in Victorian Scotland. The chapter suggests that for some commentators, natural history societies provided scientific training for citizens and were thus vital for the health of national life. Another perspective, building on the first but highlighting more explicitly the expectations of local civic culture, emphasized the cultural utility of natural his-

tory and packaged the activities of naturalists' associations in ways that would appeal to a local public. An emphasis on civic pride also ran through the third perspective which focused less on a national picture or on general cultural utility and emphasized instead the contributions societies could make to education. The local pedigree of naturalists' societies was also vouched for, embedding them within a more circumscribed narrative of civic progress.

Subsequent chapters fall into two main sections. The first section (Chapters 2–4) details the ways in which the societies functioned as voluntary associations in local civic culture. It is suggested that naturalists' associations, while sharing many of the characteristics of other voluntary societies, aimed to make a unique contribution to the cultural life of a town. The section demonstrates how members tailored scientific pursuits and articulated their civic and scientific identity in ways that attracted the support of a local public and secured the reputation of their society as a significant local institution. Chapter 2 explores the societies' fieldwork as a set of discursive and material practices connected with a range of different civic and scientific concerns. While often couched in the language of escape from the debilitating effects of the town, fieldwork was also believed to equip citizens with the skills necessary to improve civic life and contribute effectively to public affairs. Fieldwork was understood, in other words, as a suite of practices relevant to the proper management of urban society. Chapter 3, more directly concerned with urban society, turns to the ways in which members abetted moral and cultural improvement through a range of public events and more permanent exhibitions. Conversazioni, fundraising bazaars, public lecture series and buildings designed to hold and display natural history collections are analysed in some detail. Civic ritual and ceremony, often lavishly employed to promote the cause of local science, also receive attention. Chapter 4 dissects in more detail the public profiles of individual members. Here the connections between science and civil society are teased out by examining the composite scientific and civic identity of local naturalist worthies constructed through obituaries, portraiture and other forms of commemoration. I argue that profiling the persona of prominent members was important in constructing the collective identity of a given society and the lives of exemplary members showcased the benefits and the contradictions of a devotion to public natural history.

The second section consists of two Chapters (5 and 6) emphasizing the scientific operations of the societies without losing sight of their cultural commitments. Chapter 5 examines the organizational features of Scottish natural history societies arranged to improve efficiency and contribute to scientific progress. Among other things, this included organizing societies along disciplinary lines. In practice, many societies concentrated on one or two branches of natural historical inquiry and the chapter provides in outline the geography of

these disciplinary affiliations. Moves to create federations of societies and the role played by the British Association for the Advancement of Science are analysed alongside the individual efforts of societies to connect with a wider scientific world. In particular, the emphasis placed on producing a regular publication of interest to an international scientific community is analysed. A prosopographical analysis of the contributors to published proceedings provides further details about the scientific ambitions of more committed members. Chapter 6 turns from these more formal arrangements to look at various scientific projects in which societies participated. Exploring the nature and consequences of that participation provides a fuller account of how associational natural history was variously positioned within Victorian scientific culture. Turning from the moral economy of practical operations to engagement with more intellectual concerns, the chapter also investigates the reception of evolutionary ideas by society members. Here, I argue that evolutionary accounts of natural history impacted the activities and ethos of the societies in several ways and provoked a range of responses from society members.

Despite the different emphases, the two substantive sections do not represent a straightforward division between the scientific and the cultural practices of nineteenth-century Scottish natural history societies. Scrutiny of the scientific ambitions of the society reveals cultural and social aspirations. Analysis of the efforts of the societies to participate fully in civic life uncovers a set of scientific motivations. The book is offered as an exposition of this dialectic as it unfolded in and exerted influence upon the various sites and spaces crucial to associational natural history.