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**Natural history societies in Victorian Scotland: towards a  
historical geography of civic science**

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## Abstract

This thesis examines the historical geography of Scottish natural history societies active during the period 1831-1900. It argues that the work of the societies described and constituted an important set of relations between science and Scottish civil society that has not been investigated hitherto. The institutional practices of natural history, including fieldwork and display, involved encounters between scientific and cultural expectations which were played out in relation to different audiences and in a variety of sites and spaces. A central concern of Scottish associational naturalists was to transpose science into the language of civic pride and progress. At the same time, members of these societies were anxious to maintain epistemic credibility in relation to a scientific culture itself in flux. The task of appealing both to a local public and to a scientific constituency took different forms in different civic and scientific contexts. The thesis attempts to detail this historical geography with reference to the societies' activities of display, fieldwork, publishing and collective scientific endeavour. The work is based on assessment of primary sources, published and unpublished, and a variety of secondary material.

The thesis is organised to reflect the features central to the past geographies of Scottish natural history as associational civic science. The first substantive section (Section II, Chapters 2-5) analyses the efforts of society members to persuade local publics of the relevance and the benefits of associational natural history. Fieldwork involved a series of situated negotiations and affiliations between the language and practices of leisure, aesthetic taste, moral improvement and science. Through public events and built spaces natural history was promoted as an expression of civic culture and as a set of practices capable of transforming urban society. At an individual level, supporters of civic science championed an image of the naturalist as public servant and votary of nature, an image that linked scientific conduct to civic identity.

The second substantive section (Section III, Chapters 6-7) examines the influence of the meaning and methods of later-nineteenth-century science on the organisation and activities of Scottish natural history societies. Initiatives to standardise the work of local scientific societies are considered alongside the efforts of individual members to secure

a scientific reputation. In addition, the changing relations between the research activities of the societies and the emergence and consolidation of scientific disciplines are investigated alongside the maintenance of an inter-disciplinary ethos. In Chapter 7, engagement with evolutionary ideas is examined, uncovering the ways in which Darwinism was deployed to reinforce, and also to modify, an inductivist view of science and to argue for the continuing relevance of associational natural history to local civil society.

In conclusion, the thesis reveals the historical geography of nineteenth-century Scottish natural history to be a dynamic narrative of intellectual and institutional activity conducted in different social and scientific spaces, and it suggests that these practices of local science were an important constituent of civic society and, in part, of national natural knowledge in nineteenth-century Scotland.

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# Section I

## Introduction

# Chapter 1

## Associational science: histories, geographies and possibilities

The associational world of nineteenth-century Britain included a set of institutions dedicated to the exploration of local natural history and the dissemination of a 'taste' for scientific studies. This provincial 'subscriber science' has interested a number of researchers.<sup>1</sup> Yet little attention has been given to the 70 or so Scottish natural history societies active for some or all of the period between 1831 and 1900. This thesis is an attempt to address that neglect and to situate nineteenth-century associational science within civic and scientific culture. More broadly, the study is offered as a contribution to the historical geography of nineteenth-century civic science.

The activities of nineteenth-century natural history societies are treated here as an inter-related set of scientific and social practices. Approaching the societies solely in terms of their contribution or relationship to 'science' would miss, it is argued, the ways in which natural historical knowledge was made to serve cultural and social ends. Yet, as others have shown, the uneven and at times *ad hoc* institutionalisation and specialisation of natural science through the nineteenth century remained an important context for provincial associational science.<sup>2</sup> I attempt, then, to highlight the dialectic between 'science' and 'society' that characterised the societies' activities and examine the different forms that dialectic took across the varied associational spaces occupied by the bodies in question.

Given that general aim, it has been necessary to interrogate a range of archival

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<sup>1</sup> Recent examples focusing on nineteenth-century English societies include S. J. M. M. Alberti, 'Field, lab and museum: the practice and place of life science in Yorkshire, 1870-1904', PhD thesis, University of Sheffield, 2001, 173-213; S. Naylor, 'The field, the museum and the lecture hall: the spaces of natural history in Victorian Cornwall', *Transactions of the Institute of British Geographers* (2002), 4, 494-513. For Irish societies, see R. Bayles, 'Understanding local science: the Belfast Natural History Society in the mid nineteenth century', in D. Attis and C. Mollan (eds.), *Science and Irish culture. Why the history of science matters in Ireland*, Dublin, 2004, 139-169. All of these draw from D. E. Allen, *The naturalist in Britain*, London, 1976.

<sup>2</sup> For the importance of Victorian scientific societies in accounting for the development of ecology, see P. D. Lowe, 'Amateurs and professionals: the institutional emergence of British plant ecology', *Journal of the Society for the Bibliography of Natural History* (1976), 7, 517-35. Simon Knell has examined the impact of English philosophical societies on nineteenth-century geology. See S. J. Knell, *The culture of English geology*, Aldershot, 2000, 49-72.

material. While the published transactions of the societies were shaped by a concern to appeal to two different (though at times overlapping) constituencies, I will argue that they did not exhaust the means by which the societies worked out their central problematic or dual identity. As I intend to show, only a limited number of societies issued a regular publication and those that managed to do so often regarded published transactions as a fulfilment of a scientific rather than social aim. For this reason, the thesis also draws on other archival material including minute books, private correspondence, local newspaper reports and other primary material. By so doing, a fuller account can be given of the efforts of the societies' members to establish the utility and credibility of associational science before a range of audiences.

Keeping in view the twofold nature of nineteenth-century Scottish natural history societies leads to a particular assessment of their value for the historian. Scientific work *per se* has increasingly been regarded by historians of science as connected in different ways to social and cultural concerns and to certain forms of sociability. This constructivist move, the complicated and contested nature of which cannot be addressed in detail here, has a particular purchase with respect to mapping the historical geographies of local scientific societies.<sup>3</sup> Such institutions, I contend, were established for the express purpose of enrolling science in the cause of civic culture and enrolling civic culture in the cause of science. As such, they provide the historian with a useful set of explicit intersections between nineteenth-century 'social' and 'scientific' praxis.

David Allen's writings on the history of natural history in Victorian Britain invariably appear as an 'original ancestor' of attempts that seek to recover, using the tools of the social historian, the workings and impact of nineteenth-century natural history societies and field clubs.<sup>4</sup> More than anyone else Allen has examined the rich and varying nature of Victorian associational science through its relations to changing fashions and

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<sup>3</sup> A concern with the social construction of scientific knowledge has generated a large secondary literature. For a useful summary, see J. Golinski, *Making natural knowledge: constructivism and the history of science*, Cambridge, 1998. For a later assessment arguing for a 'post-constructivist' turn in science studies, see J. Rouse, 'Vampires: social constructivism, realism and other philosophical undead', *History and theory* (2002), 41, 60-78.

<sup>4</sup> Allen, *op. cit.* (fn. 1). See also *idem*, 'Natural history and social history', *Journal of the Society for the Bibliography of Natural History* (1976), 7, 509-16; *idem*, 'Naturalists in Britain: some tasks for the historian', *Journal of the Society for the Bibliography of Natural History*, (1977), 8, 91-107; *idem*, 'The natural history society in Britain through the years', *Archives of natural history* (1987), 14, 243-59.

technologies as well as its re-working of older traditions of natural history. Allen's work places British natural history societies in the midst of developments in the organisation and production of nineteenth-century natural science as well as situating them alongside, and party to, other kinds of social and cultural change. Yet much remains to be done, not least with respect to situating natural history societies in their local contexts and asking what difference that context made to their place in a wider scientific culture.

Allen's attempts at recovering the practices of Victorian associational science has generated a substantial secondary literature. This literature suggests several themes that inform the approach taken here to narrating the activities of nineteenth-century Scottish societies. In order to put the societies in historiographical context, I want to outline in the remainder of this chapter a number of these themes. The first to be considered is the importance of a sensitivity to the past geographies of associational science. This strongly informs the general methodological approach I have adopted. The second theme, that of civic science, forms the *leitmotif* of my study and is considered at some length. A number of other themes are then signalled, including scientific identity, popular science and science popularisation. Each raises questions relevant to the study of the historical geographies of nineteenth-century Scottish natural history societies. The chapter then concludes by offering an overview of the thesis.

## Geographies of science

Work by historical geographers and historians of science has, in recent years, paid increasing attention to the spaces of science.<sup>5</sup> A sensitivity to the sites of science's making, dissemination and consumption and to the translation of scientific knowledge across space has been connected to an emphasis on the contingencies of scientific

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<sup>5</sup> For work by historians of science that explicitly addresses a concern with the difference space makes to the conduct and content of science, see S. Shapin, 'Placing the view from nowhere: historical and sociological problems in the location of science', *Transactions of the Institute of British Geographers* (1998), 23, 5-12; C. Smith and J. Agar (eds.), *Making space for science: territorial themes in the shaping of knowledge*, London, 1998. For extended discussions of the situated nature of scientific knowledge by historical geographers, see D. N. Livingstone, 'The spaces of knowledge: contributions towards a historical geography of science', *Environment and planning D: society and space* (1995), 13, 5-34; *idem*, *Putting science in its place: geographies of scientific knowledge*, Chicago, 2003; C. W. J. Withers, *Geography, science and national identity: Scotland since 1520*, Cambridge, 2001, 1-29.

practice rather than the apparent 'universality' of finished products. Scientific method and conduct have, it has been argued, an inescapably local character worked out in relation to a range of concerns that vary from one scientific project to the next. Science, viewed not as series of inquiries replicating an identical and set procedure, but as a contested and open-ended investigation shaped by social as well as epistemic concerns, can be understood, then, to have a discernable historical geography.

This 'spatial turn' can be detected in work on nineteenth-century associational science. The sites and spaces of Victorian natural history are most explicitly examined by Simon Naylor in his study of the Penzance Natural History and Antiquarian Society (PNHAS).<sup>6</sup> Naylor interrogates three different spaces – the lecture hall, the museum and the field – through which the PNHAS worked up a knowledge of the region of Cornwall and established itself as a participant in a wider national and international scientific network. Naylor thus narrates the societies through their more mundane and situated practices. Elsewhere, Naylor has examined the historical geographies of Cornish antiquarians who worked alongside, or on other occasions as, naturalists in recovering knowledge, (pre-) historical and natural, of their region.<sup>7</sup>

Naylor signals not only to the sites where natural historical knowledge was made and disseminated but also to the ways in which the region of Cornwall was represented through the field and display practices of local antiquarian-naturalists. The historical geography of Cornish science is thus taken to include a particular version of regional identity and vision of regional space. In contrast to their eighteenth-century forerunners nineteenth-century Cornish antiquarian-naturalists, concerned with promoting their work in a professionalising age through standardising field techniques, read Cornwall's antiquities in a more strictly comparative way. This epistemological move offered a distinctive and influential reading of the meaning of Cornwall as a region, conceptualising it relationally rather than as a terminating point for antiquarian study. For Naylor, Cornwall was not just a useful way to spatially delimit research but figured in, and took a certain form through, the field and display practices of Cornish naturalists and antiquarians.

Naturalists, because of the influence of the material, social and political spaces in

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<sup>6</sup> Naylor, *op. cit.*, (fn. 1).

<sup>7</sup> S. Naylor, 'Collecting quoits: field cultures in the history of Cornish antiquarianism', *Cultural geographies* (2003), 10, 309-33.

which they resided, had a stake in the ways such spaces were organised and represented. The field sites, museum spaces and meeting rooms of the PNHAS were both shapers of scientific conduct and shaped by scientific concerns. The spaces of nineteenth-century Cornish science thus emerged alongside the scientific practices they influenced. As David Matless has argued:

The language of geography ... itself carries a cultural charge. Far from being a terminology to apply in analysis without reference to contests over its meaning for those involved, the language of the local, as of the national, regional, global etc., serves to constitute as well as situate debate.<sup>8</sup>

Attention to the meanings ascribed to the spaces regarded as important for the proper functioning of natural history societies can be taken, then, as a key task in unravelling the historical geographies of nineteenth-century associational science.

A sensitivity to the historical geographies of associational science characterises much of the recent work on nineteenth-century scientific societies. A concern with the micro-geographies of scientific sites, the neglected spaces of science ‘on the margins’ and the connections between the spatial practices of associational science and civic and national identity are all apparent in the growing literature on science conducted outside state-endowed and elite institutions. A ‘spatialised historiography’ is thus a useful aid in plotting the themes that have helped define the interpretations given in this thesis of nineteenth-century Scottish natural history societies.

## Civil society and civic science

Civil society, although commonly thought of as a socially structured sphere existing between household and state and sustained by voluntary associational activity, has a long and contested history.<sup>9</sup> Frank Trentmann has argued that civil society emerged in early modern Europe as a form of sociability with distinctive values different from those encouraged by earlier forms of social organisation.<sup>10</sup> What exactly set civil society apart

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<sup>8</sup> D. Matless, ‘Original theories: science and the currency of the local’, *Cultural geographies* (2003), 10, 356.

<sup>9</sup> For an overview, see S. Khilnani, ‘The development of civil society’, in S. Kaviraj and S. Khilnani (eds.), *Civil society: history and possibilities*, Cambridge, 2001, 11-32.

<sup>10</sup> F. Trentmann, ‘Paradoxes of civil society’, in F. Trentmann (ed.), *Paradoxes of civil society*, New York, 2000, 10.



from contrasting social formations has, however, been a difficult question to answer.

The term's complex genealogy is one reason why Sunil Khilnani has argued that:

Civil society is not best thought of as a substantive category, as embodying a set of determinate institutions which exist distinct from or in opposition to the state, and which might be supposed to possess causal independence from the state .... Civil society is most usefully thought of as identifying a set of human *capacities*, moral and political.<sup>11</sup>

Khilnani develops this definition by tentatively suggesting certain 'pre-conditions' for civil society. These include agreed upon rules of public debate, a 'corrigible self' willing to adopt positions that have been demonstrated convincingly by rational argumentation and a refusal to privilege the optimising of self-interest.<sup>12</sup> Civil society, understood in these terms, has in the past been closely connected to the development of local civic culture and to national identity.

As I hope to show, the institutions and ideals of civil society had a particular resonance with the stated aims of nineteenth-century Scottish scientific societies. Members regarded science as a rational and self-effacing form of inquiry that encouraged the 'neutral territory' necessary for civil society. Science could also, it was believed, produce the kinds of citizens that made possible a vibrant civic culture and liberal progressive nation. These contentions have been supported by a number of historians of science who have likewise recognised the importance of considering the activities of associational science in relation to civil society. Alberti's study of the institutions of late-nineteenth-century life science in Yorkshire mobilises an 'ecological' approach to their activities thereby underlining the 'organic' relations not only between different scientific sites but also between scientific institutions and a wider civic culture.

Important work by historians of nineteenth-century German associational science has elaborated further the connections between science and civil society. Lynn Nyhart, by outlining the career of the zoologist Karl Möbius from the late 1850s to the late 1870s, has traced the connections between German civic culture and the science of practitioners working outside the university.<sup>13</sup> Nyhart demonstrates how Möbius's

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<sup>11</sup> Khilnani, *op. cit.* (fn. 9), 24-25, (emphasis in original).

<sup>12</sup> Khilnani, *op. cit.* (fn. 9), 25-29. Graeme Morton has also suggested ways that 'civil society' can be made analytically precise. See G. Morton, 'Civil society, municipal government and the state: enshrinement, empowerment and legitimacy. Scotland, 1800 – 1929', *Urban history* (1998), 25, 348-67.

<sup>13</sup> L. Nyhart, 'Civic and economic zoology in nineteenth-century Germany: the living communities of

participation in a group of Hamburg ‘amateur’ naturalists shaped his idea of a biotic community. Möbius thus produced a type of zoology influenced by the sort of scientific work being done without state support.<sup>14</sup> Such work, although less theoretical in nature than university science, was regarded as making important contributions to scientific progress. I take this to be true of nineteenth-century Scottish associational science with the qualification that where the science of Hamburg’s naturalist community was marked by a certain ‘cosmopolitanism’, that of Scottish ‘civic naturalists’ was characterised by a provincialism defined against a cosmopolitan ideal.

While Nyhart notes that ‘civic zoology’ could ‘articulate a set of civic values through the medium of natural history’, it is left for others to demonstrate how. Andreas Daum, by describing the inter-locking of science, religion and politics in the life of the naturalist Emil Adolf Rossmässler (1806-1867) offers insight on just this issue.<sup>15</sup> Rossmässler, Daum argues, was an exemplar of a ‘new intellectual and social type in Germany, that of a public-oriented naturalist and advocate of science outside the [elite] institutions of science’.<sup>16</sup> Transforming himself from professor to ‘natural history teacher for the people’, Rossmässler thereby distanced himself from the increasingly specialised natural science research carried out and promoted by the universities.<sup>17</sup> Behind such moves Daum discerns a distinctive political message, a message also seen in Rossmässler’s efforts to encourage the formation of local Humboldt Associations. The associations, in principle at least, sought membership from any class and allowed lady members. An important defining feature was a desire for a rapprochement between the middle classes and artisans and the encouragement of an inclusive ‘civil religion’. The associations thus served, through promoting the collective pursuit of science, the liberal values of a progressive German civil society. Rossmässler’s later efforts to found a national society, the German Humboldt Association (GHA), consolidated this aim. Organising festivals that included speeches, songs and excursions, the Association encouraged participation in science now linked not only to local but also to national civil society.

Connections between associational science, civil society and national identity in early

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Karl Möbius’, *Isis* (1998), 89, 605-30.

<sup>14</sup> Nyhart, op. cit. (fn. 13), 628.

<sup>15</sup> A. W. Daum, ‘Science, politics, and religion: Humboldtian thinking and the transformations of civil society in Germany, 1830-1870’, *Osiris* (2002), 17, 107-40.

<sup>16</sup> Daum, op. cit. (fn. 15), 131.

<sup>17</sup> Daum, op. cit. (fn. 15), 122.

nineteenth-century Germany have also been mapped by Denise Phillips.<sup>18</sup> Charting the growing interest in regional natural history in German towns from the early nineteenth century, Phillips detects a rapprochement between science and liberal politics. The urban middle classes, engaged in 'self-cultivating excursions' with the purpose of collecting natural historical specimens in the local neighbourhood, saw science as a means to civic identity. Yet natural history exploration also added to a knowledge of Germany's natural landscape and thus contributed to a sense of nationhood. Co-operation between provincial naturalists' societies, encouraged through the natural science journal *Allgemeine Deutsche Naturhistorische Zeitung* was, Phillips argues, aligned to a desire for a unified and liberal German nation.

The usefulness of nineteenth-century civic science for creating a sense of national identity has also been noted in the case of Scottish natural history societies.<sup>19</sup> Scottish civil society in the mid-nineteenth century has been regarded as a crucial site for creating and sustaining a particular form of Scottish national identity.<sup>20</sup> The associational activity in Scotland's towns provided support for an emerging 'civic nationalism' that appropriated Scotland's past in a way that allowed for a strong sense of nationhood while affirming the value of union with England. Natural history societies, regarded as part of this associational scene, thus contributed to the 'unionist nationalism' that characterised middle-class urban society in mid-Victorian Scotland.

The affinities between provincial science and a sense of regional and civic identity have been argued in the case of other nineteenth-century British scientific institutions. In a study of early nineteenth-century Swansea, Louis Miskell has suggested that the town's scientific institution inculcated a strong sense of civic identity and was linked to Swansea's status as an important urban centre. Through the dovetailing of cultural and commercial interests, the institution was also regarded as an aid to the success of a Welsh region.<sup>21</sup> Ian Inkster and Paul Elliot have made a similar point for British scientific institutions active in other locations. Recovering the activities of mechanics'

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<sup>18</sup> D. Phillips, 'Friends of nature: urban sociability and regional natural history in Dresden, 1800-1850' (2003), *Osiris*, 18, 43-59. Andreas Daum has identified eighty associations focusing on the natural sciences in Germany established between 1840 and 1870. This figure is cited in H. G. Penny, 'The civic uses of science: ethnology and civil society in imperial Germany', *Osiris* (2002), 17, 228-52.

<sup>19</sup> Withers, op. cit. (fn. 5), 182-91.

<sup>20</sup> G. Morton, *Unionist nationalism: governing urban Scotland 1830-1860*, East Linton, 1999.

<sup>21</sup> L. Miskell, 'The making of a new Welsh metropolis: science, leisure and industry in early-nineteenth-century Swansea', *History* (2003), 88, 32-52.

institutes, science lecturers and societies in late-eighteenth and early nineteenth-century urban Britain, Inkster and Elliot have directed attention to the central role played by such endeavours in defining local civic culture and place identity.<sup>22</sup>

While associational natural history has been linked by historians of science to civic and national identity, tracing the connections between civil society, science and gender has proved more problematic. This may be due in part to the gendered nature of civil society both as a concept and a description of the nineteenth-century public sphere. Anne Phillips has argued, for example, that civil society, for all its conceptual imprecision, has tended to be presented as a male-dominated realm.<sup>23</sup> Feminist historians have thus tended to place more emphasis upon the public/private problematic and the 'constitutive agency' of the domestic sphere.

Like other institutions that were part of civil society, nineteenth-century scientific societies often excluded women. Denise Phillips has argued that 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 regarded as such.<sup>24</sup> Anne Shteir has noted that women were increasingly excluded from botanical science in England from the early nineteenth century.<sup>25</sup> Botany, Shteir argues, was re-formulated as a serious science suitable for male practitioners rather than as a polite and private 'amusement' undertaken by ladies.

In other ways, however, nineteenth-century societies increased the visibility and participation of women in science and in civil society. As Daum's observations of Rossmässler's Humboldt associations showed, civic science could be defined in part as an attempt to include women. Even where this was not the case, precisely because the boundaries between the home and the 'civic sphere', or between popular and 'serious' science were not fixed, women could and did make significant contributions. Adrian

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<sup>22</sup> I. Inkster, *Scientific culture and urbanisation in industrialising Britain*, Aldershot, 1997; P. Elliot, 'The origins of the 'creative class': provincial urban society, scientific culture and socio-political marginality in Britain in the eighteenth and nineteenth centuries', *Social history* (2003), 28, 361-87. See also I. Inkster and J. Morrell (eds.), *Metropolis and province: science in British culture, 1780-1850*, London, 1983.

<sup>23</sup> A. Phillips, 'Does feminism need a conception of civil society?' in S. Chambers and W. Kymlicka, *Alternative conceptions of civil society*, Princeton, 2002, 71-89.

<sup>24</sup> Phillips, *op. cit.* (fn. 23), 50-51; 57-8.

<sup>25</sup> A. Shteir, 'Gender and modern botany in Victorian England', *Osiris* (1997), 12, 29-38.

Desmond, for example, has directed attention to the role of ‘creative couples’ in nineteenth-century science, indicating the contributions of wives to the scientific and public reputation of individual men of science.<sup>26</sup> Hayden Lorimer’s suggestion that the role of women in the history of science ‘should not hinge on intellectual contribution alone, but should highlight the social world of everyday practicalities and meanings too’ encourages the contributions of women to the general running of the societies to be included in any account of civic science.<sup>27</sup>

As the studies above show, civic science could be used to promote civic progress and instil national pride. The politics of civic science was often liberal in the sense of seeking the inclusion of the working classes and women in science. While affirming that these larger narratives undoubtedly influenced the practices of Scottish ‘civic science’, this thesis seeks to situate in more detail the institutional practices of individual societies in nineteenth-century Scottish civic society. In so doing, ‘the chaotic and messy pluralism of associational life’ that Simone Chambers and Will Kymlicka caution is all too easily played down in studies of associational activity, can be given due attention.<sup>28</sup> A number of other themes are now considered to help meet that challenge.

## Collecting identities

The fashioning of scientific identities has been a key motif in the work of a number of scholars concerned with the practices of nineteenth-century science. As Lorraine Daston and Otto Sibum have suggested, a concern with the public image of scientific practitioners offers a fruitful line of inquiry in recovering ‘how cultural categories intersected with [scientific] lifelines’.<sup>29</sup> If it is granted that an important reason for forming a natural history society was to create a coherent sense of purpose for the

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<sup>26</sup> A. Desmond, ‘Redefining the X Axis: “professionals”, “amateurs” and the making of mid-Victorian biology: a progress report’ *Journal of the history of biology* (2001), 34, 16-21.

<sup>27</sup> H. Lorimer, ‘Revisiting fieldwork practice: a geographical family expedition, Glen Roy, Scotland’ (forthcoming), *British journal for the history of science*.

<sup>28</sup> S. Chambers and W. Kymlicka, ‘Introduction’, in S. Chambers and W. Kymlicka (eds.), *Alternative conceptions of civil society*, Princeton, 2002, 9.

<sup>29</sup> L. Daston and H. O. Sibum, ‘Introduction: scientific personae and their histories’, *Science in context* (2003), 16, 2. For work on this topic in relation to science in the eighteenth century, see S. Shapin, ‘The image of the man of science’, in R. Porter (ed.), *The Cambridge history of science. Vol. 4: eighteenth-century science*, Cambridge, 2003, 159-83.

individual naturalist both with respect to science and to a local community, the question of identity emerges as an important concern. I want to examine, then, the issues others have identified as being significant in the self-fashioning of nineteenth-century scientific practitioners active outside elite institutions.

Scientific identity is a central concern in Anne Secord's work on artisan naturalists and gentlemen practitioners in early nineteenth-century England.<sup>30</sup> By examining the botanical practices of artisans in a way that resists 'the interpretation ... from the perspective of scientific generalisers at the heart of elite institutions', Secord seeks to understand scientific identity in terms of the cultural spaces in which it was formed.<sup>31</sup> Secord, by drawing attention not only to the situated nature of the investigative practices of artisans but also the different meanings given to local natural knowledge by the artisan and gentleman botanist, links scientific identity to questions of status, wealth and social practice. Although for the gentleman local knowledge was viewed as necessary for the development of general scientific theory – a task deemed suitable only for those who could travel beyond a particular locale – Secord does not take this as meaning gentlemen practitioners were free from local constraints. By giving a localist reading of 'general' botanical science, Secord assesses such work in terms of 'what knowledge was marginalised, silenced or rendered disreputable'.<sup>32</sup> It follows, therefore, that the scientific identity of the elite botanist was as much a matter of local practice as was that of the artisan naturalist.

Sam Alberti, with a similar emphasis on the practices and spaces of provincial science, has helped re-invigorate debates about the use of the categories 'professional' and 'amateur' to describe scientific practitioners in late-nineteenth-century Yorkshire.<sup>33</sup> Dealing with the middle-class science of local naturalists, Alberti traces the relationships between the emerging professional scientist and the amateur volunteer. In the same way that Secord is critical of descriptions of artisans by gentlemen, Alberti avoids

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<sup>30</sup> A. Secord, 'Artisan naturalists: Science as popular culture in nineteenth-century England', PhD thesis, University of London, 2002.

<sup>31</sup> Secord, op. cit. (fn. 30), 205.

<sup>32</sup> Secord, op. cit. (fn. 30), 206. This echoes Latour's aphorism: 'When someone talks to me about a universal, I always ask what size it is, and who is projecting it onto what screen. I also ask how many people maintain it and how much it costs to pay them'. B. Latour, *The Pasteurization of France*, London, 1988, 221.

<sup>33</sup> S. J. M. M. Alberti, 'Amateurs and professionals in one county: biology and natural history in late Victorian Yorkshire', *Journal of the history of biology* (2001), 34, 115-147.

representing amateurs only through reports of their activities by professionals. The 'boundary work' of professionals to accredit themselves as expert *vis-à-vis* the amateur is interpreted by Alberti as a set of strategies which obscured both the heterogeneity of amateur identity and the contributions made by amateurs to a professionalising science. By focusing on the self-descriptions of amateurs and professionals alike, Alberti amasses evidence that demonstrates the versatility, diversity and resilience of amateur naturalists in an age of professionalisation.<sup>34</sup> 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 the professional scientist.

The identity of nineteenth-century associational naturalists was not only forged in relation to matters of scientific credibility. The identity of amateurs, as Alberti notes, was shaped in part by an understanding of natural historical fieldwork as a popular leisure activity. As Secord demonstrates, artisan botanists utilised a range of visual and memory skills acquired through the practices of their craft and communicated scientific findings in a manner consistent with a vibrant oral tradition. The overlap and mutual relations between scientific work and other social activities has been noted by others. Myles Jackson, for example, by recounting the popularity of choral songs among members of the German Association of Investigators of Nature and Physicians, has noted how music was employed by early nineteenth-century German men of science to construct an image of a coherent scientific community.<sup>35</sup> For Jackson, the songs replaced collections of natural objects as the prevailing form of sociability and allowed science, set to German folk music and written into choral works, to be promoted as a vital national endeavour. The borrowing of other cultural and social practices to facilitate science can thus be regarded as an important task in the attempt to understand the identity of nineteenth-century Scottish associational naturalists.

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<sup>34</sup> On this, see also R. Barton, "'Men of science': language, identity and professionalization in the mid-Victorian scientific community', *History of science* (2003), 41, 73-119.

<sup>35</sup> M. W. Jackson, 'Harmonious investigators of nature: music and the persona of the German *naturforschcr* in the nineteenth century', *Science in context* (2003), 16, 121-45.

## Popular science

One way to categorise the ‘civic science’ of nineteenth-century Britain and Germany would be to term it popular rather than expert or advanced. For Lynn Nyhart, while popular writing and the popularisation of scientific knowledge were regarded as important tasks by Hamburg’s ‘amateur’ naturalists, they also made other contributions to the world of German science. It would, Nyhart argues, be too easy, ‘to ignore both the empirical scientific contributions ... and the possibility that they developed areas of theoretical knowledge that involved serious intellectual novelty’.<sup>36</sup> As I will demonstrate, something like this claim was made by members of nineteenth-century Scottish natural history societies. In the written constitutions of the societies at least, the aim of contributing to the sum of scientific knowledge through natural historical fieldwork and experimentation and the aim of diffusing a ‘taste’ for, and knowledge of, ‘popular’ science were kept separate. My concern, however, is not to adjudicate between nineteenth-century science practitioners who held different views on the scientific status of Scottish associational science. Rather it is to situate the practices of Scottish natural history societies within wider debates over the meaning of ‘popular science’ in nineteenth-century British scientific culture.<sup>37</sup>

For Anne Secord, ‘popular science’ defined as knowledge accessible to, and passively consumed by the non-expert emerged from ‘contests over who could participate [in science] and on what terms’.<sup>38</sup> Secord argues that in early nineteenth-century Britain the ‘popular’ science of artisan naturalists contrasted to the ‘dominant’ science of gentlemen in ways defined more in relation to cultural difference than scientific expertise. With a growing concern with who was and was not qualified to do ‘science’, the contributions of the untrained or autodidact naturalist was increasingly relegated to a ‘popular’ realm existing apart from the main current of scientific progress.

As an outcome, the dominant meaning of ‘popular science’ in the Victorian period was the science of the ‘non-expert’. Yet historians of science have resisted this definition

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<sup>36</sup> Nyhart, *op. cit.* (fn. 13), 628.

<sup>37</sup> On this, see R. Cooter and S. Pumfrey, ‘Separate spheres and public places: reflections on the history of science popularization and science in popular culture’, *History of science* (1994), 32, 237-67.

<sup>38</sup> Secord, *op. cit.* (fn. 30), 84.



and have emphasised the 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 was properly termed 'popular'.<sup>39</sup> McLaughlin-Jenkins point is not that the contributions of middle-class amateurs involved more than second-hand science. Rather, because of the dominant nature of middle class values, describing bourgeois science as popular obscures more than it clarifies. Accenting the importance of class identity, McLaughlin-Jenkins seeks to recover the 'popular science' of working class naturalists in a way that resists a definition of 'popular science' subscribed to by members of 'dominant' culture. While working class science may have been 'popular', it was not restricted to the passive consumption of knowledge produced elsewhere.

Whatever the merits of this argument, and it does allow a number of important points to be made, it risks importing ideas of 'dominant/hegemonic' versus 'popular' culture into nineteenth-century debates that are not always best understood in those terms. It could be argued, for example, that by the mid-Victorian period a separation between middle-class and working class science was not clear cut. A number of historians have noted a 'mid-Victorian consensus' between working class and middle class in terms of values and pursuits.<sup>40</sup> Christopher Whatley for example, using the diary of a Dundee millwright written in the 1860s, has argued that some artisans at least shared with the 'middle classes' a concern with the pursuit of respectability and a positive assessment of mid-Victorian capitalism.<sup>41</sup> This does not, of course, resolve the issue of the place of 'non-artisan' working class science but it does suggest that the complicated terrain of science in the 'age of equipoise' may not have reduced to a stand off between distinct classes.<sup>42</sup>

Yet it is nonetheless helpful to draw from both readings of class in Victorian Britain

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<sup>39</sup> E. K. McLaughlin-Jenkins, 'Common knowledge: the Victorian working-class press and the low road to science, 1870-1900', PhD thesis, York University, 2001, 21-22. See also E. K. McLaughlin-Jenkins, 'Walking the low road: the pursuit of scientific knowledge in late Victorian working-class communities', *Public understanding of science* (2003), 12, 147-166.

<sup>40</sup> See for example D. G. Wright, *Popular radicalism: the working class experience 1780-1880*, London, 1988, 150-69.

<sup>41</sup> C. A. Whatley (ed.), *The diary of John Sturrock, millwright, Dundee, 1864-65*, East Lothian, 1996, 8-9.

<sup>42</sup> M. Hewitt (ed.), *An age of equipoise: reassessing mid-Victorian Britain*, Aldershot, 2000.

when approaching the activities of Scottish natural history societies. It can be argued that the societies were part of a wider set of nineteenth-century voluntary societies which, as R. J. Morris has argued, gave coherence to an elite-led middle class.<sup>43</sup> This claim is complicated, however, by the difficulties of defining the term ‘middle class’. Patrick Joyce has argued, for example, that a dominant meaning of ‘middle class’ was sustained not so much by the values of an identifiable section of the urban population. It was instead defined by a cultural elite whose ambitions were not necessarily shared by the people they purported to represent.<sup>44</sup> It is not possible to adjudicate here between different approaches to understanding middle class as a historical category. A question suggested by that debate, however, is whether the practices of associational science were all of a piece with ‘bourgeois values’. This is an important consideration if only because ‘civic science’ was often regarded as one way in which equality among the classes could be encouraged. The prominence given to Scottish autodidact naturalists of ‘humble origins’ was, I want to suggest, one important way in which science was promoted as bridging, or even eradicating, a British class divide. Whether this was done in a manner that imported ‘middle class’ values alongside scientific knowledge remains open to investigation.

## Geographies of popularisation

Questions about popular science cannot be separated from the meanings and methods of the popularisation of scientific knowledge. If popular science was not always understood as the second-hand knowledge of non-experts neither was popularisation everywhere regarded as science simplified for public consumption and disseminated by expert practitioners.<sup>45</sup> Recent work on science popularisation in Victorian Britain has argued that popularisers, publishers and audiences constituted a ‘communication circuit’

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<sup>43</sup> R. J. Morris, *Class, sect and party: the making of the British middle class, Leeds 1820-1850*, Manchester, 1990, 321. Morris’s argument for Leeds is found to apply to early Victorian Edinburgh – a case made through a detailed study of the city’s subscriber population, including members of scientific institutions. G. Morton, *Unionist nationalism: governing urban Scotland, 1830-1860*, East Linton, 1999, 64-96.

<sup>44</sup> As Joyce puts it, differing somewhat from Morris, the middle class were less ‘elite-led’ than ‘elite-created’. See P. Joyce, ‘Narratives of class’, in P. Joyce (ed.), *Class*, Oxford, 1995, 322-32.

<sup>45</sup> See Cooter and Pumfrey, *op. cit.* (fn. 37).

rather than a unidirectional flow of diluted information.<sup>46</sup>

This circuit involved different components and actors depending on the medium by which science was disseminated to large and diverse audiences. Charting the connections between science popularisation and Victorian print media has come to be regarded as a crucial task in better understanding the literary and cultural impact and form of nineteenth-century science.<sup>47</sup> James Secord, in his account of the ‘geographies of reading’ of *Vestiges of the natural history of creation* in mid- to late-Victorian Britain has revealed the diversity of response to, and the large readership of, an anonymous work of science.<sup>48</sup> Bernard Lightman has shown that books written by ‘non-experts’ played an important role in shaping perceptions of Victorian science.<sup>49</sup> Such writers, employing the latest print technology to produce vivid images, not only projected certain images of science but also re-fashioned the discourse of natural theology. More recent work has shown that the science of Victorian periodicals more regularly reached a large and diverse audience and formed a vital part of the historical geography of science popularisation.<sup>50</sup>

While it is possible to view nineteenth-century Scottish natural history societies as participants in this world of ‘popular’ science publications it is also necessary to ask how the popularising endeavours of the societies might have differed from the aims and audiences of other publications proffering scientific knowledge. Did the ‘geographies of reading’ of the published transactions of Scottish societies reveal anything about their aims and purpose? Were such publications regarded as attempts to popularise existing scientific knowledge or were they regarded as original contributions to science? More

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<sup>46</sup> The phrase ‘communication circuit’ is employed by Jonathan Topham to highlight the constitutive role for publishers, printers and readers as well as the scientific author in relation to the knowledge produced and disseminated. See J. R. Topham, ‘Beyond the “Common Context”: the production and reading of the Bridgewater Treatises’, *Isis* (1998), 89, 233-62.

<sup>47</sup> See, for example, G. Dawson and J. R. Topham, ‘Science in the nineteenth-century periodical’, *Literature compass review* (2004), 1, 1-9.

<sup>48</sup> J. A. Secord, *Victorian sensation: the extraordinary publication, reception, and secret authorship of Vestiges of the natural history of creation*. Chicago, 2000. See also D. N. Livingstone, ‘Science, religion and the geography of reading: Sir William Whittall and the editorial staging of Isaac Newton’s writings on biblical prophecy’, *British journal for the history of science* (2003), 36, 27-42.

<sup>49</sup> B. Lightman, ‘The visual theology of Victorian popularizers of science: from reverent eye to chemical retina’, *Isis* (2000), 91, 651-80.

<sup>50</sup> Two new books reveal the interest in this topic among historians. L. Henson et al., *Culture and science in the nineteenth-century media*, Aldershot, 2004 and G. Cantor and S. Shuttleworth (eds.), *Science serialised: representations of the sciences in nineteenth-century periodicals*, Cambridge Mass., 2004.

needs to be known about the content, purpose and readership of society publications before comparing or contrasting them to the science of other sorts of published science.

Alongside calls to examine the world of the Victorian periodical, historians have noted a neglect of nineteenth-century 'platform' culture. At the same time as a massive growth in the number and sales of periodicals the number of public lectures and meetings was increasing and reaching an equally wide and diverse audience.<sup>51</sup> The world of Victorian public oratory thus reveals yet another set of practices put to work in service of the dissemination of scientific and other sorts of knowledge. Historians of science have given some attention to the lecture circuits of nineteenth-century 'popularisers' and men of science. Accounts have been given of itinerant lecturers not attached to any particular institution and of lectures run by mechanics' institutes and literary and philosophical societies.<sup>52</sup> Although more attention has been given to lecturing in the early nineteenth-century, Sam Alberti has surveyed the lectures of Yorkshire 'lit and phils' and mechanics' institutes towards the century's end.<sup>53</sup> Given a research focus on the 'dual identity' of the Scottish societies and the nature of their efforts to raise awareness on scientific matters among a local public, the extent to which members supported public science lectures emerges as an important issue.

A study of the participation of natural history societies in 'platform culture', and indeed in museum culture, can include an examination of the material spaces of delivery and display. The buildings and rooms in which natural history societies disseminated scientific knowledge were, in other words, part of the 'communication circuit'. Sophie Forgan makes this point in some detail in her study of the architecture of the buildings used by scientific societies in nineteenth-century England.<sup>54</sup> Science lecture theatres successfully adapted the layout of the anatomical lecture theatres in a way that stressed

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<sup>51</sup> M. Hewitt, 'Aspects of platform culture in nineteenth-century Britain', *Nineteenth-century prose* (2002), 29, 1-32.

<sup>52</sup> For example, I. Inkster, 'The public lecture as an instrument of science education for adults – the case of Great Britain, c. 1750-1850', in I. Inkster, *Scientific culture and urbanisation in industrialising Britain*, Aldershot, 1997, II. Other chapters in this volume are also relevant. J. W. Hass has given an account of the Gilchrist Educational Trust sponsored science lecturer William Dallinger. See J. W. Hass, 'The Rev. Dr. William H. Dallinger F.R.S.: early advocate of theistic evolution and foe of spontaneous generation', *Perspectives on science and Christian faith* (2000), 52, 107-17.

<sup>53</sup> Alberti, *op. cit.* (fn. 1), 49-91.

<sup>54</sup> S. Forgan, 'Context, image and function: a preliminary enquiry into the architecture of scientific societies', *British journal for the history of science* (1986), 19, 89-113.

the importance of demonstrations to supplement more formal addresses. Society meeting rooms, another important semi-private venue where scientific knowledge was disseminated and discussed, tended to take one of two forms. The first, adopting an ecclesiastical form, gave precedence to the authority of the speaker over that of the audience. The second, epitomised by the meeting rooms of the London Geological Society, took a parliamentary form and projected an image of science as forged through lively debate. Yet society rooms and buildings, as Forgan notes, were not only built with the purposes and methods of scientific instruction in mind. They also demonstrated the civic importance of a society and firmly placed its activities alongside those of other prominent urban institutions. The buildings carried messages both about science and about civic progress. It is not always easy to recover the internal form of provincial society meetings rooms, which in any case were often considered less than ideal because of lack of funds to construct an appropriate venue in which to meet. Where buildings were erected by societies, however, records are better and the significance invested in meeting rooms, display spaces and lecture halls can be examined.

While buildings were one important way in which members of nineteenth-century scientific societies registered their importance in a local setting they did not necessarily exhaust the ways in which societies employed practices common to other institutions active in civic culture. Urban historian Simon Gunn's concern with the 'politics of civic space' in nineteenth-century Britain offers a helpful way of approaching this issue.<sup>55</sup> Gunn points to the rituals and monumentalism that helped define the civic culture of mid-nineteenth-century Manchester. Asking in what ways Scottish natural history societies participated in these aspects of urban culture can be regarded as an important aim. Were speeches, dinners, laying of foundation stones and other forms of civic ritual used to integrate the societies into local civic society? Were they also seen as a way to fulfil the aim of diffusing a taste for science?

Integrating science into civic culture also raised the issue of the relationship between science popularisation and entertainment. *Conversazioni*, public lectures and other 'popular' events run by nineteenth-century British scientific societies, as Sam Alberti has

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<sup>55</sup> S. Gunn, 'The public sphere, modernity and consumption: new perspectives on the history of the English middle class', in A. Kidd and D. Nicholls (eds), *Gender, civic culture and consumerism: middle class identity in Britain, 1800-1940*, Manchester, 1999,

shown, were designed to impart science in a cultural form familiar to a largely middle-class clientele.<sup>56</sup> This was not always a straightforward task. As Anne Secord has argued in the case of early nineteenth-century 'expert botanists', science popularisation could be as much about producing and recruiting reliable scientific observers as it was about drawing and entertaining large crowds.<sup>57</sup> This meant the role of pleasure in attracting an audience to a scientific lecture was a contentious issue. Care was needed in making careful distinctions between the useful pleasure associated with scientific graft and the morally dubious and scientifically suspect pleasures of other cultural pursuits. Debates about the place of pleasure, I want to suggest, were of equal importance to members of nineteenth-century Scottish natural history societies concerned not only to draw crowds but also to transform a public into disciplined scientific observers.

Natural history societies constituted only a fraction of the efforts made to disseminate and popularise science in Victorian Britain. Indeed, the popularity of associational science may have depended in part on the more extensive efforts to communicate science to the nation. I want to suggest, however, that the methods and meanings of popularisation associated with nineteenth-century Scottish natural history societies need to be set alongside the societies' particular aims and objectives. I hope to show that the societies were not straightforwardly popularising bodies and while diffusing scientific knowledge was considered a key task it took several different forms and was influenced by the civic and scientific contexts in which the societies functioned.

## Summary and overview

As later chapters will report in more detail, one of the key concerns for the scientific leadership of natural history societies active in Victorian Scotland was to encourage members to put to order their collections and publications by concentrating in a systematic manner on the exploration and cataloguing of the natural history of a local district. Inevitably, while this advice was influential, it was not everywhere heeded. It was a constant struggle to keep Scottish associational science centred around coherent

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<sup>56</sup> S. J. M. M. Alberti, 'Conversazione and the experience of science in Victorian England', *Journal of Victorian culture* (2003), 8, 208-30.

<sup>57</sup> A. Secord, 'Botany on a plate. Pleasure and the power of pictures in promoting early nineteenth-century scientific knowledge', *Isis* (2002), 93, 28-57.

and achievable aims. The historian, seeking to bring the societies to some order, faces the same considerable struggle. No overarching explanation can be offered without tidying up an inherently disordered scene. In many ways, this underlines the need for a methodological approach sensitive, if a crude distinction can be drawn, to the geographies as well as the histories of Scottish natural history societies. The societies simply did not stand in single file. Instead they spread out across different intellectual, cultural and social spaces.

While it is not the aim of this thesis to provide a comprehensive history of nineteenth-century Scottish natural history societies – and much has inevitably been left out – it does seek to understand them in relation to a central problematic. How could members of a society secure the interest and support of a local populace while at the same time maintain strong connections with the wider and rapidly changing world of Victorian science? The thesis, pivoting around this problematic, aims to understand in more detail the nature and effects of associational science in nineteenth-century Scottish civil society. Given the inherently contested nature of both science and civil society care is taken to approach the activities of the societies as a series of ongoing negotiations. While categories such as identity, popular science, spaces of science and science popularisation are useful in understanding the aims, objectives and actions of the societies, they were themselves caught up in these negotiations. Simply applying the term ‘popular science’, for example, to describe the activities of the societies is not to take sufficiently seriously the distinctions members themselves made between ‘popular’ and ‘advanced’ science. Yet members, I will argue, also worked to make ‘advanced science’ popular. This included attempts to represent ‘strictly’ scientific pursuits as a way of bridging class divides and as a source of pleasure and beauty.

The contested nature of popular science, scientific identity and the methods and aims of the popularisation of science can be regarded as an advantage rather than a problem. Questions about identity, science and civil society are therefore kept in mind through the entire thesis and are addressed in relation to a range of sites, spaces and practices. The chapters are organised into three main sections. Section I functions as an introduction to the historical geographies of nineteenth-century Scottish natural history societies. This chapter has looked to put the societies in historiographical context. Chapter 2 seeks to provide an overview of the societies’ basic historical geography. It both delineates the circumstances and locations of their foundation and introduces

some of the key concerns and founding aims that linked them both to a local public and to nineteenth-century British scientific culture.

Following these introductory chapters, the substantive sections of the thesis seek to analyse in turn the two aspects of the societies' dual identity. Section II, entitled subscriber science, looks to detail the senses in which the societies functioned as local voluntary associations. While sharing many of the characteristics of nineteenth-century voluntary societies active in provincial urban Scotland, the specific practices of naturalists' associations made, it is argued, a difference to their contribution to, and vision of, local civil society. The section thus focuses on how members tailored scientific pursuits and articulated their civic and scientific identity in ways that attracted the support of a local public and presented their societies as influential institutions in Scottish civic culture. Chapter 3 explores the societies' fieldwork as a set of discursive and material practices connected with a range of different civic and scientific concerns. The out-of-door work of the societies involved, it is argued, excursions into a range of different intellectual and social fields. Although often couched in the language of escape from the debilitating effects of the town, fieldwork was believed to produce the sorts of citizens equipped to improve civic life. Chapter 4 turns to the urban spaces and events where the members sought to support civic improvement through the practice of science. The public image of local natural history societies was constituted through conversaciones, fund raising bazaars, public lecture series and, in a more permanent manner, through the buildings designed to hold museum collections. Civic ritual and ceremony was lavishly employed to make worthy the cause of local science. Yet the values and norms of civic culture could also be challenged by the interventions of members of local natural history societies. Chapter 5 dissects in more detail the public profiles of individual members. Here the relations between science and civil society are teased out through recounting the more intimate politics of scientific and civic identity. Presenting the individual persona of prominent members was important in constructing the institutional persona of a given society and the lives of exemplary members showcased the benefits of a devotion to civic science.

Section III of the thesis, entitled field clubs and the republic of science, changes focus without losing sight of the central problematic. Rather than concentrating on the civic lives of the societies, it examines the efforts to press the societies in service of scientific aims and projects defined apart from immediate local concerns. Chapter 6 examines



this issue in relation to the changing organisation of Scottish associational science. The move to form federations of Scottish societies and the centralising efforts of the British Association for the Advancement of Science are outlined alongside the efforts of individual 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 prosopography of 'active members' details further the scientific ambitions of individual societies. Scientific aspirations are also central to the final chapter which examines the relations between the societies and individual scientific disciplines. The chapter also looks at the workings of a specific and inter-disciplinary scientific project in which a number of Scottish societies participated. Finally, it examines the societies' engagement with, and reception of, the 'grand' scientific theory of the age, namely Darwinism. As well as highlighting further negotiations over the scientific identity of field club members, chapter 7 maps the intersections between field club science and more general cultural concerns.

Despite the different emphases, the two sections do not represent a straightforward division between the scientific and the social practices of nineteenth-century Scottish natural history societies. Scrutiny of the scientific ambitions of the society reveals various social aspirations. Analysis of the efforts of the societies to fully participate in civic life uncovers a set of scientific objectives. The thesis is offered as an exposition of this dynamic as it unfolded in, and exerted influence on, the various sites and spaces in and through which the societies operated.

## Chapter 2

### Founding narratives

By far the greater number of societies have had their birth within recent years .... this result is no outcome of any temporary burst of enthusiasm, of any exciting scientific “revival” agitation, but is simply the natural fruit of the slow but sure development of the scientific spirit of our country. (James Britten, ‘Local scientific societies’, *Nature* (1873), 8, 523.)

This chapter introduces Scottish natural history societies active between c. 1831-1900 by recovering three different but related perspectives discernable in contemporary accounts of their foundation and growth. The first perspective, that of sympathetic onlookers, included representations of Scottish natural history societies as bodies contributing to ‘national’ or ‘universal’ scientific progress. The second more ‘local’ perspective was that of founding members who promoted the utility of associational fieldwork as a cultural and scientific pursuit. A third perspective, accenting responsibility for the welfare of the host town, presented natural history societies as part of a wider array of institutions committed to civic improvement through the education of local citizens. These three ‘founding narratives’ of nineteenth-century Scottish natural history societies broadly map onto the chapter’s main divisions. The first section examines efforts made in the 1870s to catalogue the rise and spread of British and Irish local scientific societies with the aim of making them more efficient and focused in scientific terms. These surveys sought to counter, or respond to, changes in the organisation of science that militated against the ‘Baconian’ ethos of provincial scientific societies. By emphasising the links between scientific societies and an imagined ‘commonwealth of science’, commentators sympathetic to associational natural history worked to retain a prominent place for the societies in British scientific culture. The second and third sections switch to how members themselves gave accounts of their activities. The benefits of fieldwork occupied a central place in the apologia offered for founding a local natural history society and the second section, concentrating on the arguments presented in four inaugural addresses delivered to Scottish field clubs, seeks to recover the scientific and cultural advantages that were attached to out-of-door natural historical pursuits. The

third and final section focuses on the importance of local educational initiatives in the emergence of Scottish natural history societies. The origins of the societies both helped establish them as prominent civic institutions and encouraged members to regard as a central aim the education of local citizens in science.

This chapter, by looking at various attempts made to justify associational natural history to a local public and to a larger 'scientific world', introduces the historical geography of Scottish natural history societies in the nineteenth century and signals the key themes that this thesis seeks to develop in subsequent chapters. It also seeks to be sensitive to the local contingencies that shaped the sorts of natural history societies that emerged in so many Scottish cities and towns during the mid- to late-Victorian period. While certain societies were held up as model institutions there was no essential formula by which a natural history society might function and each institution, though considered part of a wider movement, was significantly shaped by local context.

## Vectors of a 'scientific contagion'

Of the 70 or so Scottish natural history societies instituted between 1831 and 1900 a little under two thirds were formed after 1870 (see Figure 2.1). Yet at first sight the late-Victorian period was not a friendly one either for positive appraisals of the contributions of older societies or for instituting new ones. In 1883, H. C. Watson launched a posthumous invective against the results and publications of local scientific societies: 'What else can be expected from the reports of provincial societies other than false records; records that are worse than useless'.<sup>1</sup> For Watson it was fortunate that such reports remained local given their inevitable inaccuracies and perpetuation of botanical error. As David Allen has noted, as early as 1849 Watson considered the local scientific society redundant in the wake of a system of centrally controlled botanical exchange organised from London and, to a lesser extent, Edinburgh.<sup>2</sup> Watson's tirade against 'superficial botanists ... rushing to print' signalled, in extreme form, an apparently

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<sup>1</sup> H. C. Watson, *Topographical botany being local and personal records towards shewing the distribution of British plants traced through the counties and vice-counties of England, Wales, and Scotland*, London, 1883, 2<sup>nd</sup> ed., 604. Watson died in 1881.

<sup>2</sup> D. E. Allen, 'The natural history society in Britain through the years', *Archives of natural history* (1987), 14, 250.

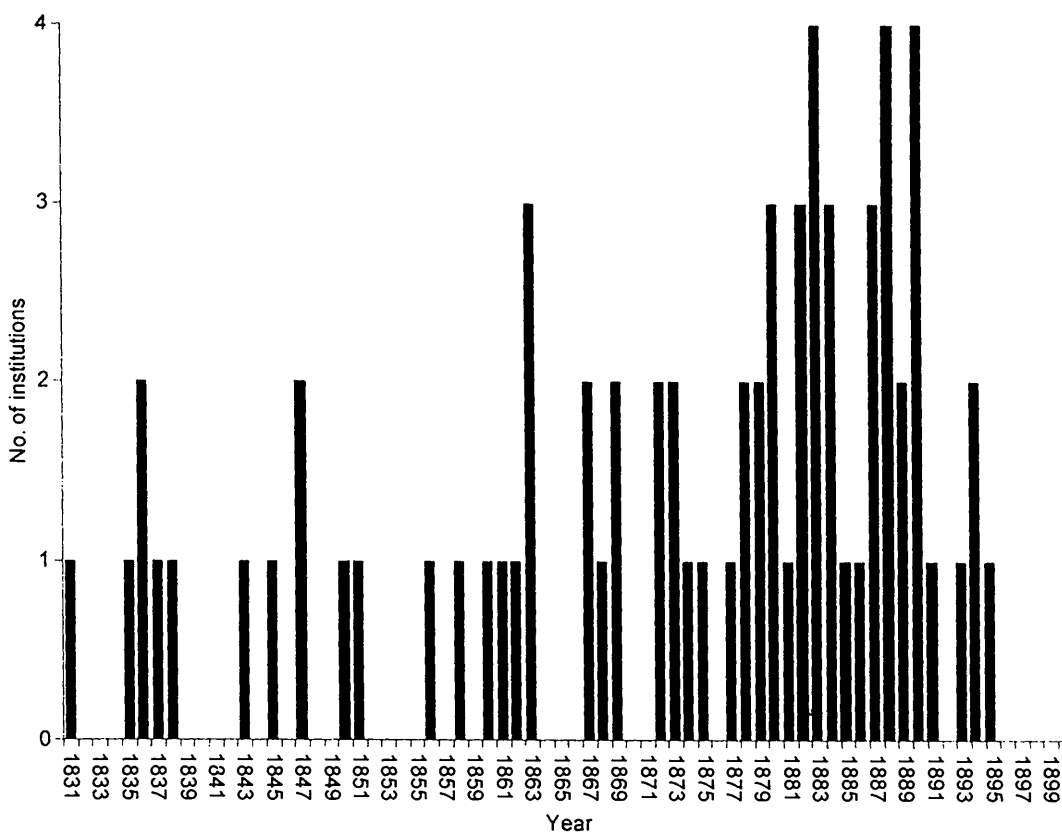


Figure 2.1. The chronology of foundation of Scottish natural history societies. See Appendix I for a full list and sources. This is a revised version of Figure 2 appearing in C. W. J. Withers and D. A. Finnegan, 'Natural history societies and local knowledge in nineteenth-century Scotland: towards a historical geography of civic science', *Cultural geographies* (2003), 10, 338.

growing unease with 'amateurish' local natural history from the 1870s onwards.<sup>3</sup>

Speaking in 1876, T. H. Huxley crafted an argument that, for different reasons, appeared to further devalue the efforts of Watson's 'superficial botanists'. For Huxley, the spectrum of possible meanings attached to natural history was sufficient grounds, despite its ancient pedigree, to jettison it as a descriptor for the work being done by a new breed of laboratory-trained biologists.<sup>4</sup> Natural history had already, Huxley argued, been shorn of some of the subjects that it had formerly included. The use of experimentation and mathematics in natural philosophy and chemistry during the seventeenth and eighteenth centuries distanced them from the descriptive science that

<sup>3</sup> Watson, *op. cit.* (fn. 1), 601

<sup>4</sup> T. H. Huxley, 'On the study of biology', in T. H. Huxley, *Collected essays*, 9 vols., London, 1893-4 [1876], iii, 262-93. As well as being an exercise in excluding certain practices and subjects from biology, Huxley's address had a synthetic dimension uniting zoology and botany under one science of life.

was natural history. 'Biology' could now include rigorous experimentation and be given mathematical expression and natural history could no longer contain it within its bounds. Huxley's exercise in semantics has been seen by others as typifying the 'laboratory turn' in natural science, a change in operations that made it more not less difficult for provincial scientific societies to claim participation in 'the marvellous progress' of the science of biology.<sup>5</sup>

Frederick Orpen Bower, one of the main actors in the promotion of a more laboratory-based biology, later diagnosed the period before Huxley's campaigns as a dire one for British botany.<sup>6</sup> For Bower, Professor of Botany at the University of Glasgow (1885-1925) and before that a Lecturer at Huxley's Normal School of Science, botany in nineteenth-century Britain had been marred by the dominance of floristic work and its associated field practices of collecting, recording and classifying. Such 'lopsidedness' had been offset only by the 'extreme brilliance of individual production' of one or two notable naturalists.<sup>7</sup> That meant training in the new biology was not available in Britain and to acquire the laboratory skills necessary for studying the life cycles, anatomy and physiology of plants the aspiring biologist had to travel to the continent. For Bower, it was only once sufficient numbers of botanists had undertaken such 'wanderjahre' that the 'continental leaven' worked to release British botany from the 'stranglehold' of systematic work.<sup>8</sup> Bower made little room in his account of a progressive botanical science for anyone other than the laboratory botanist with the exception of those of 'extreme brilliance', like Charles Darwin and Joseph Hooker, who had transformed systematics.

The apparent rejection of 'amateur' and associational natural history by leading men of science did not, however, fully define the period post-1870. Ruth Barton's investigation of the 'identity' language of mid-Victorian men of science has revealed how the terms 'professional' and 'amateur' did not acquire fixed and univocal meanings

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<sup>5</sup> On this, see A. Desmond, *Huxley: from devil's disciple to evolution's high priest*, Reading, 1997, 419. Also W. Coleman, *Biology in the nineteenth century*, Cambridge, 1977, 3; J. R. Green, *A history of botany, 1860-1900*, Oxford, 1909.

<sup>6</sup> F. O. Bower, *Sixty years of botany in Britain, 1875-1935: impressions of an eyewitness*, London, 1938.

<sup>7</sup> Bower, op. cit. (fn. 6), 20.

<sup>8</sup> Bower, op. cit. (fn. 6), 27; 42.

despite the increase in the number of university-trained and salaried science workers.<sup>9</sup> 'Amateur' continued to include a range of meanings from 'mere' to 'expert' (H. C. Watson, ever without a university post, being a case in point). There was sufficient, rather than rapidly diminishing, scope for members of natural history societies to identify themselves as making valued contributions to a larger republic of science. Even by the late nineteenth century 'amateur' naturalists in Yorkshire, for example, not only continued to speak of a scientific natural history associated with local fieldwork but taught or learned laboratory-based biology in Yorkshire's civic colleges.<sup>10</sup> As far as Huxley himself was concerned efforts to promote biology and eschew natural history did not mean there was no role for amateur field naturalists in science. His acknowledgement of a place for 'popular' natural history books as introductions to more expert knowledge (discovered in the laboratory) and his reputation as science's 'publicist', co-existing with his more exclusivist stance, suggests Huxley could enrol natural history societies as useful allies.<sup>11</sup> Bower's reminiscences can likewise be qualified. His Presidency of the Natural History Society of Glasgow from 1890-93 suggests his arguments for a scientific botany did not mean he opposed amateur involvement, or completely disparaged on-going work in systematic and floristic studies of British botany. Indeed, Bower wrote of the danger of an 'inverted lop-sidedness' in the 1880s and 1890s admitting that those taught under the 'new botany' had a 'very deficient knowledge of phanerogams' (seed bearing plants) and their distributions.<sup>12</sup>

The stance adopted by 'leading men of science' towards natural history societies and 'amateur' natural history, despite qualifications, nevertheless challenged the grounds on which most natural history societies were founded. Having in common the aims of fostering a taste for natural history and, of equal importance, actively contributing to scientific work meant that natural history societies did not necessarily consider themselves solely as popularising bodies. From 1870, several attempts were initiated in

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<sup>9</sup> R. Barton, "Men of science": language, identity and professionalization in the mid-Victorian scientific community', *History of science* (2003), 41, 73-119.

<sup>10</sup> S. J. M. M. Alberti, 'Amateurs and professionals in one county: biology and natural history in late Victorian Yorkshire', *Journal of the history of biology* (2001), 34, 115-47.

<sup>11</sup> Desmond, op. cit. (fn. 5), 636-38. Paul White argues that Huxley's 'common sense' view of science, placed alongside his promotion of science as 'high culture', produced a tension that characterised his entire career. P. White, *Thomas Huxley: making the "man of science"*, Cambridge, 2003, 95.

<sup>12</sup> Bower, op. cit. (fn. 6), 102.

various 'centres' to catalogue, consolidate and justify the scientific work of the societies. The authors of such projects were, unlike Watson, encouraged by the increasing number of local societies. At the same time, however, they called for stricter codes of scientific conduct and increased co-operation between the societies. Sir Walter Elliot was a pioneer of such endeavours. In his opening address on the progress of botanical science to the Botanical Society of Edinburgh in November 1870 Elliot diagnosed 'a growing love of science' in Great Britain from 'the close of the great [Napoleonic] war'.<sup>13</sup> The evidence marshalled for his claim was the increase in number of provincial natural history societies and their published lists of local flora and fauna. Behind Elliot's motive for counting the scientific societies and field clubs of the United Kingdom was a desire to increase 'systematic cooperation' between natural history societies and 'make their observations available to naturalists more generally'.<sup>14</sup> In addition, Elliot was concerned with encouraging individual societies to recruit effective workers. Elliot worried that: 'unless each association is large enough to include at all times a considerable number of true naturalists, they are liable to be diverted to purposes of pastime and amusement only'.<sup>15</sup>

As well as supporting local experts the work of societies could be rendered more useful to science by focusing on a given locality. The 'natural productions of the country' could be 'exhaustively ascertained' by 'resident observers'.<sup>16</sup> The particulars requested by Elliot when seeking information about societies underlined his emphasis on the importance of local fieldwork. Writing to George Gordon, Church of Scotland Minister at Birnie and author of a flora of Morayshire, Elliot inquired whether the local natural history society made field excursions and if its proceedings contained lists of local flora and fauna.<sup>17</sup> In 1872 such efforts were taken further when Elliot chaired a Subcommittee set up under the auspices of the British Association for the Advancement of Science for the purpose of 'organizing a system of cooperation' and publishing

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<sup>13</sup> W. Elliot, 'Opening address', *Transactions of the Botanical Society of Edinburgh* (1870), 11, 28.

<sup>14</sup> This is the description given of his efforts in an obituary which also claims that his initial list and the discussions which followed effected 'the union of local natural history societies'. See, H. Cleghorn, 'Sir Walter Elliot of Wolfelee', *Transactions of the Botanical Society of Edinburgh* (1887), 17, 343.

<sup>15</sup> Elliot, op. cit. (fn. 13), 28.

<sup>16</sup> Elliot, op. cit. (fn. 13), 11.

<sup>17</sup> Elgin Museum, George Gordon Correspondence, MS 71.1, W. Elliot to G. Gordon, 3 April, 1871.

annually ‘provincial societies’ observations and discoveries possessing general interest’.<sup>18</sup>

In addition to recording local flora and fauna the educational benefits of local scientific societies were stressed. James Britten, writing in *Nature* in 1873, compiled his own ‘census’ of local scientific societies suggesting that the increase in number had not so much been an ‘exciting scientific “revival” agitation’ than a ‘slow but sure development of the scientific spirit of our country’ and encouraged others to participate by setting up societies where none were yet active.<sup>19</sup> Britten stressed the societies’ educational potential and noted the ‘greatly widened’ recruiting ground that had appeared since the establishment of science schools following the 1870 Education Act (1872 in Scotland).<sup>20</sup> In taking advantage of this change the societies could, Britten argued, obtain essential financial support from the government and employ otherwise ‘useless’ local museums to good educational effect. A number of Britten’s later articles in 1873, echoing Elliot’s remarks, gave more attention to the useful scientific contributions societies could make through investigating the natural history of their districts.<sup>21</sup>

Both Elliot and Britten, concerned with the state of national more than local science, noted that Scotland had been lagging behind in terms of numbers of active and scientifically useful field clubs. Concurring with Elliot’s opinion that ‘there is an absence of activity in Scotland’ apart from ‘some bright exceptions’ Britten gave three examples of Scottish societies ‘deemed worthy of special mention’ in order to prompt others in Scotland to follow their example.<sup>22</sup> The Perthshire Society of Natural Science, instituted in 1867, was described as ‘one of the hardest working in the Kingdom’; the Alva (Alloa) Society of Natural Science of Archaeology was pronounced ‘excellent’ for its apparent inclusion of ‘all classes of society’; and the Largo Field Naturalists’ Society was commended for its ‘valuable collection of specimens’.<sup>23</sup> Yet despite these worthy examples, the 21 Scottish scientific societies listed in Britten’s census were considered

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<sup>18</sup> W. Elliot, ‘Subcommittee C: on the question of scientific organization as regards local scientific societies’, *Report of the British Association for the Advancement of Science* (1873), 506;509.

<sup>19</sup> J. Britten, ‘List of scientific societies and field clubs in Great Britain and Ireland’, *Nature*, 8, (1873), 523.

<sup>20</sup> J. Britten, *op. cit.* (fn. 19), 523.

<sup>21</sup> J. Britten, ‘Local scientific societies’, *Nature* (1873), 9, 24-5; 38-40; 97-9.

<sup>22</sup> W. Elliot, ‘List of field clubs’, *Transactions of the Botanical Society of Edinburgh* (1871), 11, 242, Britten, *op. cit.* (fn. 21), 97-8.

<sup>23</sup> Britten, *op. cit.* (fn. 21), 98.



deficient with Scotland not being ‘represented in the list of field-clubs in anything like the proportion ... that England is’.<sup>24</sup> Large areas of Scotland, Britten reported, remained unworked by any club.

Such deficiency was perhaps surprising given the fact that a leading example of a field club, the Berwickshire Naturalists’ Club (BNC), saw the exploration of a Scottish county as its *raison d’être*. It was Elliot who pointed out that the Berwickshire Club’s several distinctive features – day-long field excursions, eschewing of property and a focus on local natural history – provided a useful and popular model for others to follow. As Sir William Jardine had earlier put it to the Dumfriesshire and Galloway Natural History Society Scotland, unlike northern England, ‘had not availed herself of the border hint’.<sup>25</sup> Only one or two Scottish clubs had taken direct inspiration from the Berwickshire Club model. The Ayrshire Naturalists’ Club, which held its first meeting in the Ayr Arms Inn on 13 May 1850, was formed by the Rev. David Landsborough Sr. after encouragement from George Johnston, one of the founders of the BNC. It lasted only until 1854 when Landsborough died of cholera.<sup>26</sup> More enduring was the Tweedside Physical and Antiquarian Society, instituted in 1834. The Society had a number of members in common with the Berwickshire Club (including William Jardine) and had as their main object the collecting and cataloguing of local (‘the district adjoining the Tweed and its tributaries’) natural history.<sup>27</sup>

The lack of attention Scottish societies paid to the novel and exemplary *modus operandi* of the BNC, particularly the emphasis on local fieldwork, meant that Britten and Elliot singled out a number for criticism. For Elliot, some Scotch societies were ‘more custodians of museums than working bodies’.<sup>28</sup> Societies in Elgin, Montrose, Orkney and Perth (the Perth Literary and Antiquarian Society rather than the Perthshire Society of Natural Science), from the details Elliot gave about them in his list, appeared to be the most likely targets for Elliot’s stinging rebuke. Societies in Arbroath and Lerwick,

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<sup>24</sup> Britten, *op. cit.* (fn. 21), 98.

<sup>25</sup> W. Jardine, ‘Opening address’, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1863), 1, 29.

<sup>26</sup> Anon, *Annals of the Kilmarnock Glenfield Ramblers Society* (1907), 5, 27.

<sup>27</sup> Tweedside Physical and Antiquarian Society, *Rules and list of members of the Tweedside Physical and Antiquarian Society*, Kelso, 1838.

<sup>28</sup> Elliot, *op. cit.* (22), 242.

though not on Elliot's list, might also have qualified.<sup>29</sup> Certainly, all saw as a principal task 'the promoting of natural science by the support of a museum'.<sup>30</sup> The second law of the Montrose Natural History and Antiquarian Society (instituted in 1836) was typical of this perceived general purpose:

The object of the Society shall be to promote the study of natural history and to establish in Montrose a museum for the reception of specimens from the various branches of natural science, relics of antiquity and such other objects as are calculated to elucidate the history of our own and other countries.<sup>31</sup>

Natural history specimens, local and foreign, were donated to the Montrose Museum along with 'relics of antiquity' resulting in a collection that included such early donations as '800 dried specimens of the rarest plants of the British Flora', the horns of an antelope and the skin of 'an enormous Bengal tiger'.<sup>32</sup> The 'omnium gatherum' nature of such collections did not, pace Elliot, mean that the museum societies gave no support to local fieldwork. The Montrose Society was encouraged in 1841 to hold monthly meetings and assist in 'obtaining the most authentic information respecting the natural history and the antiquities of the counties of Angus and Mearns', a task seen as true to the original intentions of the Society.<sup>33</sup> In 1861, Mr George Smith, Sheriff-Clerk for Shetland, addressing a public meeting in Lerwick for the establishment of a museum and scientific association spoke of the 'good local field' for exploring mineralogy, zoology, ornithology and botany.<sup>34</sup> Another report on the new Society argued that although the donation of foreign specimens should be allowed 'it now seems to be generally agreed that the promoters of local Museums should ... subordinate all their efforts to render their collections representative of, and, as far as possible, complete, as regards their respective localities'.<sup>35</sup> The older Orkney Society likewise had recorded in their earliest regulations that 'special care shall be used to collect for the Museum

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<sup>29</sup> The Arbroath Natural History, Antiquarian and Scientific Society and the Shetland Literary and Scientific Society. See Appendix I and below for further details.

<sup>30</sup> Stromness Museum, uncatalogued MSS, Minutes of the Orkney Natural History Society, 28 December, 1837.

<sup>31</sup> Angus Archives (AA hereafter), MS 292/1, Minutes of the Montrose Natural History and Antiquarian Society, 15 September, 1836.

<sup>32</sup> AA, MS 292/1, Minutes of the Montrose Natural History and Antiquarian Society, 4 October, 1837.

<sup>33</sup> AA, MS 292/1, Minutes of the Montrose Natural History and Antiquarian Society, 27 January, 1841.

<sup>34</sup> *John O'Groat Journal*, 14 February, 1861.

<sup>35</sup> *John O'Groat Journal*, 11 March, 1861.

specimens of such objects in natural history and antiquities as Orkney can furnish'.<sup>36</sup> Despite Elliot's concern, a well-organised local collection, whether of natural history or archaeology, was the stated aim, if not common practice, of Scotland's 'museum societies'.

The call by Elliot and Britten for more local natural history societies to be established in Scotland may have been partly responsible for the marked increase in number of Scottish societies from 1875 onwards and in their chosen *modus operandi*. Between 1875 and 1900 some 40 societies were formed with close to half adopting the title 'field club' and each aimed to explore the natural history of 'neglected' regions of Scotland (see Figure 2.2). By 1887, Scotland's societies made up over a quarter of the membership of the British Association for the Advancement of Science's (BAAS) Corresponding Societies, a scheme first proposed in 1883 that attempted in more formal organisational terms to make good the earlier efforts of Walter Elliot to increase co-operation among local scientific societies.<sup>37</sup> Becoming properly operative at the BAAS's Aberdeen meeting in 1885 – a fact that may help explain the rapid uptake by Scottish societies – the scheme ran an annual Conference for local society delegates in conjunction with the main meeting and promoted scientific projects deemed appropriate for provincial societies.<sup>38</sup>

Britten and Elliot's vision, in popular terms at least, was a Baconian one, the societies sustaining large scale co-operative endeavour and the massive collection of facts, natural and historical. Such a vision presented a particular version of science and of the ideal scientific society. Science was accessible to all and scientific societies, enrolling large numbers of members, could make genuine contributions to national scientific advance. As we have seen, this conception of science was contested. As Richard Yeo has shown, leading men of science from William Whewell on had called into question Baconianism as a reliable guide for scientific procedure.<sup>39</sup> Without rejecting Bacon as a figurehead,

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<sup>36</sup> AA, MS 292/1, Minutes of the Montrose Natural History and Antiquarian Society, 28 December, 1837.

<sup>37</sup> This did, however, decline both proportionally and in real terms towards the end of the century. See D. M. MacLeod, J. R. Friday and C. Gregor, *The corresponding societies of the British Association for the Advancement of Science, 1883-1929*, London, 1975, 140.

<sup>38</sup> For more on the Conference of Corresponding Societies, see Chapter 6, pp. 186-88.

<sup>39</sup> R. Yeo, 'Scientific method and the rhetoric of science in Britain, 1830-1917', in J. A. Schuster and R. Yeo (eds.), *The politics and rhetoric of scientific method: historical studies*, Dordrecht, 1986, 259-97.

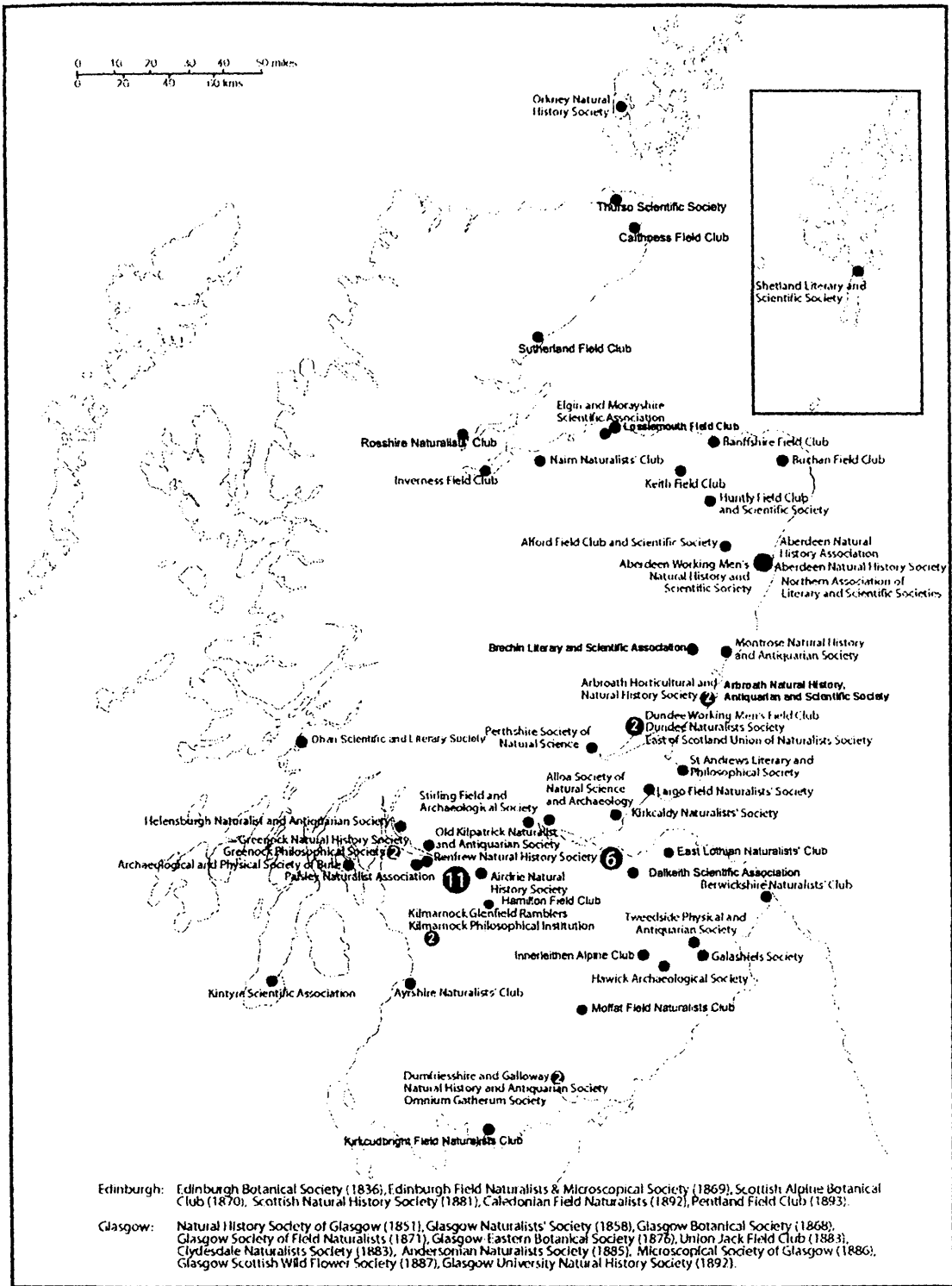


Figure 2.2. The location of natural history societies in nineteenth-century Scotland. This is a revised version of Figure 2 appearing in C. W. J. Withers and D. A. Finnegan, 'Natural history societies and local knowledge in nineteenth-century Scotland: towards a historical geography of civic science', *Cultural geographies* (2003), 10, 339.

the image of science as accessible to all was called into question. In this competing vision the relations between a scientific community and a non-scientific public were fundamentally altered.<sup>40</sup> It is not surprising, then, that it was the inclusivist and inductivist version of scientific work which was reiterated and reinforced in pronouncements made by the leadership of Scottish field clubs. In 1885, James Howden, Superintendent of the Montrose Asylum and long-standing member of the town's Museum Society, reminded members of a newly-formed Field Club that the primary object was to 'promote scientific studies and research'.<sup>41</sup> This aim was not something out of reach of any of the members as 'science simply means knowledge'.<sup>42</sup> Natural science, which excluded 'metaphysics, religion and politics', was best pursued by focusing on one its branches – chemistry, physics, geology, astronomy, meteorology and biology – for special study.<sup>43</sup> James Crichton, a local doctor, expressed a similar view to members of an Arbroath-based society, arguing a 'man of science should be a jack of all trades and a master of one'.<sup>44</sup> This democratic vision of scientific pursuits echoed the sentiments earlier displayed by William Jolly, Inspector of Schools, in his opening address to the Inverness Scientific Society and Field Club in 1876:

Happily, also, for the people in general, this scientific lore and these great discoveries have not been shut out from them as they were in the past, as a kind of sacred mystery, to be communicated to the initiated few, and our most eminent men of science vie with each other in making even their abstruse and far-reaching problems plain and level to the common understanding.<sup>45</sup>

It was this opportunity that underlined for Jolly the tragedy that so little had been achieved for science in Inverness. In order to rectify that state of affairs Jolly catalogued what he termed the 'scientific materials of the North' detailing opportunities for local fieldwork in geology, mineralogy, physical geography, botany and zoology. In

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<sup>40</sup> For an account of this shift, see S. Shapin, 'Science and the public', in R. C. Olby et al (eds.), *Companion to the history of modern science*, London, 990-1007.

<sup>41</sup> J. Howden, 'The aims of a naturalists' field club', *Report of the Montrose Natural History and Antiquarian Society* (1885), 12.

<sup>42</sup> Howden, op. cit. (fn. 41), 12.

<sup>43</sup> Howden, op. cit. (fn. 41), 12-13.

<sup>44</sup> J. S. Crichton, 'The aims and objects of a local natural history society', Arbroath, 1885, 2. G. Bell, 'James Smith Crichton, M.D., Arbroath', *Transactions of the Botanical Society of Edinburgh* (1889), 17, 522.

<sup>45</sup> W. Jolly, 'Opening address: the scientific materials of the north of Scotland', *Transactions of the Inverness Scientific Society and Field Club* (1876), 1, 4-21. An abridged version of Jolly's address was also published in the *Inverness Courier*.

order to support such endeavours the field club needed to adopt the particular ‘manner of working’ through fieldwork and thus allow members to become volunteers ‘however humble and un-ambitious, in the great army of scientific explorers’.<sup>46</sup>

Members of Scottish natural history societies represented by Jolly and Howden thus readily subscribed to Elliot and Britten’s ‘triumph of science’ narrative which pictured the rapid spread of a ‘scientific contagion’, the vectors of which were local natural history societies.<sup>47</sup> Natural history society members, through fieldwork and society meetings could, in Jolly’s terms, wander along the ‘bowery banks’ of the ‘wide and clear flowing river’ of science.<sup>48</sup> Such grand visions sat uneasily with an assessment of natural history as increasingly sub-scientific, an appraisal that could exclude the societies from the progress of science proper. Both ways of imagining the status and role of the societies represent situated rhetorical strategies tied to varying concerns, personalities and projects. Turning from the rhetoric of Elliot and Britten’s national surveys to look more closely at the apologetic tactics of the leadership of Scottish natural history societies reveals other ways in which Scottish naturalists worked for a place not only within the commonwealth of science but also within the civic culture of their host town.

## Fieldwork, utility and civil society

Steven Shapin, from his examination of an early-nineteenth-century English Philosophical Society, has argued that ‘the utility of science has to be pried loose from its purely economic associations and must be seen as a far more diffuse and vital concept’.<sup>49</sup> The ‘diffuse’ nature of the meaning of utility warns against any wholesale portrayal of nineteenth-century natural history, in contrast to the pursuit of local natural history in the eighteenth century, as defined by ‘discipline-bound systematisations’ and as no longer concerned with exploring the natural history of a district as a cultural end in itself.<sup>50</sup> An exhaustive account of a locality was, on such an account, increasingly

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<sup>46</sup> Jolly, *op. cit.* (fn. 45), 16.

<sup>47</sup> Britten, *op. cit.* (fn. 21), 99.

<sup>48</sup> Jolly, *op. cit.* (fn. 45), 5.

<sup>49</sup> S. Shapin, ‘The Pottery Philosophical Society, 1819-1835: an examination of the cultural uses of provincial science’, *Science studies* (1972), 2, 336.

<sup>50</sup> See V. Jankovic, ‘The place of nature and the nature of place: The chorographic challenge to the history of British provincial science’, *History of science*, (2000), 38, 97.

defined in terms of the development of particular disciplines – geology, botany, zoology and, perhaps somewhat later, archaeology – rather than, as in the eighteenth century, in terms of all the natural and historical features of a given region. This portrayal risks obscuring the fact that the Hanoverian provincial clergyman naturalist could be concerned with a more ‘universal discourse’ associated with a ‘republic of letters’ and underplaying the continuities between the pursuit of local natural history in the eighteenth and nineteenth centuries.<sup>51</sup> That is to say, opposing a ‘cultural end’, (collecting morally improving knowledge of a region solely for its own sake), to a ‘cognitive’ one (collecting local natural history in order supplied universally valid ‘facts’) does not do justice to the ways in which these ends were argued to be mutually reinforcing both in the eighteenth and nineteenth century.<sup>52</sup> This section is concerned with the diverse ways in which members of Scottish natural history societies spoke of the utility of fieldwork to interest a local public in natural historical pursuits and gain support for establishing and running a natural history society. After a brief look at the general appreciation and organisation of associational fieldwork among natural history societies, four inaugural addresses to newly-formed societies are examined to uncover the composite portrait of fieldwork used to persuade a local public of its scientific and cultural value.

While Elliot and Britten were primarily concerned with how scientific societies fitted into the grand progress of science they did not lose sight of the need to present scientific work as useful in more ‘local’ terms. Britten’s encouragement in 1873 to natural history societies to concentrate their efforts on exploring their locality through fieldwork argued that by so doing they would ‘elevate’ their district.<sup>53</sup> Britten thus tied what he saw as the most efficient means by which a local natural history could contribute to ‘science’ to the desire to advertise the natural and cultural richness of a local neighbourhood. This argument was widely employed to justify the existence of Scottish natural history societies. Shetland, according to a local report of the first meeting of the Literary and Scientific Society in 1861, had been long considered ‘an El

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<sup>51</sup> For a different assessment of Gilbert White, one of Jankovic’s examples of a chorographer interested in his region as an end in itself, see T. Dadswell, *The Selbourne pioneer, Gilbert White as naturalist and scientist: a re-examination*, Aldershot, 2002.

<sup>52</sup> Jankovic, op. cit (50), 98.

<sup>53</sup> Britten, op. cit. (fn. 21), 25.

Dorado' for naturalists and the area around Dumfries, according to William Jardine, could not be surpassed in terms of 'variety and interest'.<sup>54</sup> Attention was also directed to pioneering work in natural history exploration by local individuals to bolster such claims. Reports of the instituting of the Shetland Society pointed to research on local botany and ornithology, particularly by the two Edmonstons. Laurence Edmonston had been an 'ornithologist of repute' and his son Thomas (1825-1846) published a *Flora of Shetland* in 1845.<sup>55</sup> James Howden, in registering his judgement that no place he knew afforded 'better scope for a Field Club than Montrose' listed what had already been achieved to offer worthy examples for the new Field Club to follow.<sup>56</sup> Alexander Croall, a teacher and later President of the Stirling Field Club, had 'worked up the botany and especially the Marine Algae of the district' and 'the fossils of the old red sandstone ... gained laurels to the Rev. Dr. Mitchell and Mr Powrie'.<sup>57</sup> The district was thus not only rich botanically or geologically but had produced naturalists of repute. The first President of Banffshire Field Club made the close connection between pioneering field exploration and the perception of a district even more explicit. In reminding Field Club members of the story of Thomas Edward, told by Samuel Smiles, Sheriff Moncrieff noted how 'Banffshire and zoology [have] come to be actually associated together in the minds of many afar off who have never visited our county'.<sup>58</sup>

The 'elevation' of a district by fieldwork was only made good, however, by setting up appropriate means for the display of the specimens obtained. In his inaugural address as President of the Stirling Field Club Alexander Croall lamented that:

The first question generally asked by a stranger is – "Now, then, where are your local collections? These we want to see, others we can see at home." I should like you to see the stare with which they hear the reply that we have none, or feel the humiliation with which I have to make it.<sup>59</sup>

Supporters of the Shetland Literary and Scientific Association, in reporting the

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<sup>54</sup> *John O'Groats Journal*, 14 February 1861; Jardine, op. cit. (fn. 25), 29.

<sup>55</sup> R. Palmer and W. Scott, *The flowering plants and ferns of the Shetland Islands*, Lerwick, 1987, 57-8. For more on the Edmonston family and their contributions to accounts of Shetland's natural history, see J. McBain, 'President's address', *Proceedings of the Royal Physical Society of Edinburgh* (1874), 4, 5-7. See also D. E. Allen, 'Edmondston, Laurence (1795-1879)', *Oxford dictionary of national biography*, Oxford, 2004; idem, 'Edmondston, Thomas (1825-1846)', *Oxford dictionary of national biography*, Oxford, 2004.

<sup>56</sup> Howden, op. cit. (fn. 41), 16.

<sup>57</sup> Howden, op. cit. (fn. 41), 16.

<sup>58</sup> S. Moncrieff, *Transactions of the Banffshire Field Club* (1880), 1, 27.

<sup>59</sup> A. Croall, 'President's address', *Transactions of the Stirling Field Club* (1880), 1, 10.



appearance of the new society, had likewise suggested that: 'only when there is an accessible collection of objects illustrating [Shetland's] natural history will it be valued as a place of resort by tourists and travellers in search of information'.<sup>60</sup> The necessary connection between field exploration and sites of display was evident outside Scotland. The Penzance Natural History and Antiquarian Society, for example, also took pains to point out the diversity and richness of Cornwall's flora alongside a stress on the importance of contributing to 'national taxonomic endeavour' through rigorous local collecting.<sup>61</sup>

As well as elevating the cultural and scientific reputation of a region and a town fieldwork held together interests that might otherwise have been kept apart. The Berwickshire Naturalists' Club's motto, 'mare et tellus, et quod tegit omnia coelum' ('the sea, the land and everything covered by the sky'), echoed the 'comprehensive vision' found in regional natural histories written in the seventeenth and eighteenth centuries.<sup>62</sup> The Berwickshire Club was not alone in valuing a generalist outlook. Neither was it exceptional in pursuing antiquarian endeavour alongside natural history, a coupling with a long history. For Walter Elliot, who included antiquarian and botanical endeavour among his own interests, it was 'especially fortunate' that the majority of local societies and field clubs pursued in concert natural history and archaeology given the rapidity with which landscapes and local traditions were being eroded by technological change.<sup>63</sup> Elliot, a member of the Berwickshire Naturalists' Club as well as the Botanical Society of Edinburgh, was representative of many leading members of Scottish natural history societies from James Hardy in Berwick to James Maxwell Joass in Sutherland who combined an interest in local botany and geology with an enthusiasm for the exploration of local archaeology.<sup>64</sup> At least half of the 70 or so natural history societies active in nineteenth-century Scotland included archaeology among their interests, a fact not always fully recognised by later commentators. D. V. Clarke's assessment that 'county [archaeology] societies did not become effectively established in Scotland' in the second

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<sup>60</sup> *John O'Groat Journal*, 14 February 1861.

<sup>61</sup> S. Naylor, 'The field, the museum and the lecture hall: the spaces of natural history in Victorian Cornwall', *Transactions of the Institute of British Geographers* (2002), 4, 509.

<sup>62</sup> In his *Natural history of Cornwall* (1758) William Borlase sought to catalogue 'all animate and inanimate substances, which Land Air, and Water contain'. Jankovic, op. cit. (fn. 50), 87.

<sup>63</sup> Elliot, op. cit. (fn. 13), 11; Cleghorn, op. cit. (fn. 14).

<sup>64</sup> See J. A. Diemer, 'The geologic work of the Rev. Dr. James Maxwell Joass' in I. Keillar and J. S. Smith, *George Gordon: man of science*, Aberdeen, 1995, 135-83.

half of the nineteenth century except, perhaps, in the Borders makes little mention of the antiquarian activity supported by local natural history societies.<sup>65</sup> C. S. Terry's 1909 catalogue of Scottish historical and 'kindred clubs', while listing several natural history societies, could have included at least 15 other naturalists' associations that promoted both the study of natural history and archaeology.<sup>66</sup> Indeed, it was often the case that antiquarian reports dominated the published proceedings of Scottish societies. The annual publication of the Berwickshire Naturalists' Club, for example, became increasingly weighted through the nineteenth century towards reports on local archaeology and history.

Archaeology was not the only subject combined with natural history. A number of societies encouraged papers on literary interests, local history and folklore while others included physics and chemistry among the subjects discussed at public exhibitions and conversazione. One society, the Arbroath Horticultural and Natural History Association, instituted in 1880 and amalgamating with the local horticultural society in 1883, included among its aims the 'interchange of information [on] productive and decorative gardening ... and the introduction of new and meritorious plants, fruits and vegetables'.<sup>67</sup> Yet the society was active in terms of local natural history fieldwork with members encouraged to 'bring objects of strictly scientific interest' to the meetings even if such items were 'thrown into the shade by the flowers that deck the table'.<sup>68</sup> The Society published a flora of Arbroath in 1882.<sup>69</sup>

The generalist bent of Scottish natural history societies endured alongside moves, from as early as the 1830s, to encourage individual members to concentrate on a single subject area. The following argument, addressed to members of the Stirling Field Club in 1880, was typical:

It is needless to expect any one individual member to attend the excursions with a botanical vasculum on one side, and a geological box on the other, his pockets full of microscopical appliances; his lapel stuck full of entomological pins; with an insect net in one hand and a

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<sup>65</sup> D. V. Clarke, 'Scottish archaeology in the second half of the nineteenth century', in A. S. Bell (ed.), *The Scottish antiquarian tradition*, Edinburgh, 1981, 116.

<sup>66</sup> C. S. Terry, *A catalogue of the publications of Scottish historical and kindred clubs and societies*, Glasgow, 1909.

<sup>67</sup> Anon, *Celebration of jubilee of Arbroath Scientific and Natural History Association*, Arbroath, 1930.

<sup>68</sup> Crichton, *op. cit.* (fn. 44), 1.

<sup>69</sup> *The flora of Arbroath and its neighbourhood*, Arbroath, 1882.

geological hammer in the other; and even if he did try “all things by turns” the probability is he would be “nothing long”.<sup>70</sup>

Fieldwork, in other words, was not useful unless systematic and focused. This logic lay behind the formation of ‘sections’ dedicated to a particular subject, a common device used to organise more efficient fieldwork. The Stirling Field Club started out with four sections: botany, zoology, geology and archaeology. A rather different division was set up by the Montrose Natural History and Antiquarian Society in 1836 with sections for ‘mammals and birds’; ‘insects and reptiles’; ‘fishes and shells’; and ‘geology, botany & c.’ as well for ‘fine arts’ and ‘antiquities, curiosities & c.’.<sup>71</sup> Yet specialisation was not presented as conflicting with a generalist intent and ethos. For the Rev. James Joass of the Inverness Club, a common recording procedure that included a ‘system of symbols for marking on charts’ made a division of labour both efficient and united around the common goal of researching the complete natural and human history of the district.<sup>72</sup>

Away from general claims of a region’s ‘scientific’ reputation and the organisation of knowledge, fieldwork proved to be an important subject for making claims for the cultural utility of local natural history societies. In particular, the moral and health-giving rewards of scientific fieldwork were stressed. William Jolly, in his inaugural address to the Inverness Scientific Society and Field Club, argued that the more ‘scientific’ (systematic and focused) fieldwork was the more truly recreational it became.<sup>73</sup> Jolly’s appeal to ‘recreative science’ was not meant to imply a species of science compromised or diluted by social benefits. Scottish societies discouraged members from being ‘drawing room amateurs’ or ‘carpet naturalists’ with their ‘lilies, birds and gaudy shells’ but offered instead models of diligent fieldworkers.<sup>74</sup> In cataloguing examples of ‘eminent’ naturalists like Roderick Murchison and Thomas Huxley, who had already explored the north of Scotland, Jolly was directing attention to those who had discovered in field science, as an exacting scientific ‘discipline’, moral and spiritual reward. James Crichton, speaking to the Arbroath Natural History and Horticultural Association was similarly concerned with encouraging ‘strictly’ scientific

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<sup>70</sup> Anon, *Transactions of the Stirling Field Club* (1880), 1, 5.

<sup>71</sup> Anon, op. cit. (fn. 31), 12 October 1836.

<sup>72</sup> Highland Archives, Minutes of the Inverness Scientific Society and Field Club, MS A1, 7 March, 1875.

<sup>73</sup> Jolly, op. cit. (fn. 41).

<sup>74</sup> The term ‘drawing room amateur’ comes from G. Johnston, *Selections from the correspondence of Dr. George Johnston*, Edinburgh, 1892 [1844], 277.

work. Yet it was this work that best uncovered the beauty of nature:

Think of [the world's] history, of the marvellous procession of varied life, of the wondrous scenes and events which Geology pictures to us – grander and more wonderful than poet or romancist ever dreamed .... Think of all the exuberant and manifold life with which the earth is full; of the beauty of its vegetation from the stoutest oak to the tiniest moss .... a study ennobling and elevating above all others, an atmosphere in which we may breathe a purer air and attain a loftier vigour and a never-falling youthfulness of hope and aspiration.<sup>75</sup>

Crichton's romantic scientific gaze was one that accorded with Jolly's conception of nature as a 'spring of high thought and deep moral power', an aspect that could be learnt from the 'naturalistic poets' of whom Wordsworth was 'the greatest and best'.<sup>76</sup> Scientific fieldwork was the means by which nature's beauty could be most readily and fully discovered. This was not only an argument employed in the context of natural history societies. As others have pointed out, even those scientific workers in nineteenth-century Britain who were more commonly considered representative of a 'strictly' scientific approach could borrow and adapt the vocabulary and concepts of romanticism in their most 'serious' science.<sup>77</sup> Robert Richards in particular has argued that Darwin's scientific work was substantially influenced by romantic thought. For Darwin, nature, rather than being 'morally meaningless', was a 'source of moral and aesthetic value'.<sup>78</sup>

The heightened aesthetic pleasure and moral capacity to be gained from the close study of nature in the out-of-doors was also contrasted in field club rhetoric with the moral decline associated with money-making. James Howden regarded the field naturalists' worst enemies as 'no longer the Church' but instead the 'all powerful priests of mammon' with their demands for evidence of the immediate or economic utility of all activities.<sup>79</sup> Howden went on to declare that: 'The man who is prepared to sacrifice his intellectual and even his physical life, for the sake of money making, can never be a

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<sup>75</sup> Crichton, *op. cit.* (fn. 44), 7-8.

<sup>76</sup> Jolly, *op. cit.* (fn. 45), 15.

<sup>77</sup> R. J. Richards, 'Biology', in D. Cahan (ed.), *From natural philosophy to the sciences: writing the history of nineteenth century science*, Chicago, 2003, 16-48.

<sup>78</sup> R. J. Richards, *The romantic conception of life*, Chicago, 2002, 539; 531. See also P. R. Sloan, "'The sense of sublimity": Darwin on nature and divinity', in J. H. Brooke, M. J. Osler and J. M. van der Meer (eds.), *Science in theistic contexts: cognitive dimensions*, New York, 2001, 251-69.

<sup>79</sup> Howden, *op. cit.* (fn. 41), 14.

true knowledge student'.<sup>80</sup> While providing a means to combat idleness with all its attendant temptations (listed by William Jardine as 'gambling, dissipation and sensuality') fieldwork was seen as compatible with 'the most active social life' and with public duty.<sup>81</sup> Howden underlined this by giving the examples of George Johnston ('for a time mayor of Berwick-upon-Tweed'), Sir John Lubbock, chemist and statesman and John Fleming, dedicated parish minister who had been seen 'robed in gown and bands [giving] full chase to a rare butterfly'.<sup>82</sup> Jolly pressed the argument further stating that scientific fieldwork was able to 'make better business men, better parents and better citizens, from the health and breadth and vigour' it would bring.<sup>83</sup>

Such accounts revealed elements that might be thought of as resonating with an eighteenth-century enlightenment sensibility. The public utility of natural knowledge was understood not so much in terms of economic benefit as the improvement of self and society through grasping the 'good, true and beautiful' that subsisted in nature, echoing what Lorraine Daston has called the 'Enlightenment ethos'.<sup>84</sup> Jolly's account of fieldwork was not far from Adam Ferguson's appreciation of leisure pursuits as a 'help to our conduct and the means of forming a character that may be happy in itself, and useful to mankind'.<sup>85</sup> At the same time, portraying the 'world of business' as diminishing the moral and intellectual capacities necessary for a civil society distanced the recruitment rhetoric of field clubs from enlightenment theorists such as Adam Smith who contended that 'commercial society' enabled, rather than competed with, 'civil society'.<sup>86</sup>

If careful fieldwork supplied capacities that aided one's work in the compromised world of commerce and uncovered the life-giving beauty and moral meaning of nature, it also carried, for Jolly and Crichton at least, a theological charge. Far from the watchmaker image associated with Paley, the 'God' of the fieldworker's Nature had more in common with the romanticised natural theology of William Wordsworth or

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<sup>80</sup> Howden, op. cit. (fn. 41), 14.

<sup>81</sup> Howden, op. cit. (fn. 41), 15; Jardine, op. cit. (fn. 24), 40.

<sup>82</sup> Howden, op. cit. (fn. 41), 14-15.

<sup>83</sup> Jolly, op. cit. (fn. 45), 20.

<sup>84</sup> L. Daston, 'The ethos of Enlightenment' in W. Clark, J. Golinski and S. Schaffer (eds.), *The sciences in enlightened Europe*, Chicago, 1999, 495-504.

<sup>85</sup> A. Ferguson, *A history of civil society*, Cambridge, 2001, 34.

<sup>86</sup> See S. Khilnani, 'The development of civil society', in S. Kaviraj and S. Khilnani (eds.), *Civil society: history and possibilities*, Cambridge, 2001, 20-21.

Samuel Taylor Coleridge. Both Jolly and Crichton tended towards eliding Nature and God producing a discourse of Nature full of ‘the glory of Divine love’ alongside ‘the sad mystery of pain’.<sup>87</sup> Borrowing lines from Wordsworth, Jolly pictured investigations of ‘Nature’ and ‘God’ as ‘higher pursuits’ that alone could supply Wordsworth’s ‘renovating virtues’.<sup>88</sup> Jardine, however, made a clearer distinction between the ‘word of God’ and the ‘works of God’ and expressed his satisfaction in seeing ‘clergymen becoming members of our society ....When scepticism comes through science, how much it is needed that every clergymen should cultivate the branches of science, and especially natural history and geology’.<sup>89</sup> Such worries were passed over in silence by Howden who saw fieldwork as excluding metaphysics and religion, a stance perhaps more the exception than the rule for Scottish natural history societies. Equally exceptional, however, were the rules of the Aberdeen Natural History Association, founded in 1845, which stated that members ‘must be of good moral character and be connected with some religious body’.<sup>90</sup> More common was the appearance of a more ‘traditional’ natural theology than that of Jolly and Crichton. It was the help fieldwork gave to ‘appreciating the wisdom, power, and goodness displayed in the works of creation and providence’ that was appealed to at the public meeting launching the Shetland Literary and Scientific Society in 1861.<sup>91</sup> Yet it is clear that the place and use of natural theology in the activities of Scottish natural history societies lends support to J. H. Brooke’s description of later nineteenth-century ‘natural theology’ as a ‘fragmented’, but influential discourse.<sup>92</sup>

The arguments about fieldwork presented in the four inaugural addresses drawn upon above, intent upon interesting a local public as much as impressing a scientific elite,

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<sup>87</sup> Crichton, op. cit. (fn. 44), 7.

<sup>88</sup> Jolly, op. cit. (fn. 45), 20.

<sup>89</sup> Jardine, op. cit. (25), 42-3.

<sup>90</sup> University of Aberdeen Historic Collections, MS 544, Minutes of the Aberdeen Natural History Association, 27 August 1845.

<sup>91</sup> *John O’Groat Journal*, 11 March, 1861.

<sup>92</sup> J. H. Brooke, ‘Science and secularisation’, in L. Woodhead, (ed.), *Reinventing Christianity: Nineteenth-century contexts*, Aldershot, 2001, 229-38. Jonathan Topham has argued that natural theology was just as much a fragmented and contested context for scientific work in the early nineteenth century. J. R. Topham, ‘Beyond the “Common Context”: the production and reading of the Bridgewater Treatises’, *Isis* (1998), 89, 233-62. See also *idem.*, ‘Science, natural theology, and the practice of Christian piety in early-nineteenth-century religious magazines’, in *Science serialized. Representations of the sciences in nineteenth-century periodicals*, G. Cantor and S. Shuttleworth (eds.), London, 2004, 37-66.

animated the activities of Scottish natural history societies from their beginnings on. Representations of associational fieldwork balanced arguing for cultural and moral utility with fieldwork as scientific and valuable, eventually at least, with respect to more instrumental and economic concerns. If the balance was not maintained, members worried that fieldwork would either become inaccessible or sub-scientific. As James Crichton put it to the Arbroath association ‘unless we take up earnestly [a careful survey of the natural history of the district] we will degenerate into dilettante ways of playing at science’.<sup>93</sup> What this suggests is that members viewed natural historical fieldwork not as a hybrid set of practices that were neither fully scientific or fully literary, but rather as a set of ‘strictly’ scientific skills that nonetheless heightened aesthetic and moral sensibilities. This version of natural historical pursuits is somewhat different from Lynn Merrill’s portrayal of nineteenth-century natural history as a hybrid discourse situated between the worlds of science and literature.<sup>94</sup> While, as Alberti notes, questioning the ‘scientific status’ of natural historical fieldwork was not alien to those for whom ‘it was purely a recreational pastime’ it does not convey the ways in which many members of natural history societies insisted on the scientific nature of their fieldwork activities.<sup>95</sup> The various renditions given of fieldwork by those concerned with setting the agenda for Scottish natural history societies reveal the sorts of productive relations they forged, drawing on a range of discourses, between science and local civil society. Without compromising the ‘scientific’ nature of fieldwork it was presented as a spiritual and moral pursuit. Marked by a chorographical and generalist impulse, associational fieldwork was not opposed to lodging information in the banks of knowledge associated with particular disciplines such as botany or geology. Rather, the division of labour within the societies meant fieldwork could both describe a region’s natural and human history and provide discipline specific information.

While the celebration of fieldwork was a central component of arguments made for the utility of field clubs it did not exhaust the ways in which natural history societies could be represented as beneficial for civic culture and scientific progress. Looking at the local origins of Scottish natural history societies uncovers other ways in which their

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<sup>93</sup> Crichton, *op. cit.* (fn. 44), 2.

<sup>94</sup> L. L. Merrill, *The romance of Victorian natural history*, Oxford, 1989, 3-28.

<sup>95</sup> S. J. M. M. Alberti, ‘Field, lab and museum: the practice and place of life science in Yorkshire, 1870-1904’, PhD thesis, University of Sheffield, 2001, 191.

presence was justified in cultural and scientific terms. The leadership of the societies made it clear from the outset that they were bodies committed to a town's welfare and part of a larger associational and educational culture.

## From the ashes: science, education and civic precedent

The familiar rituals surrounding the formation of a scientific society – the circulars, preliminary public meetings and drawing up aims and objectives – necessitated the articulation of reasons why a proposed society was worth supporting. Along with cataloguing the benefits of fieldwork a common tactic was presenting the society as a continuation of the work of local institutions of high reputation. Such accounts were rather different from the history of the field club 'movement' given by commentators like Walter Elliot. For Elliot, it made sense to highlight a common beginning – the Berwickshire Naturalists' Club (BNC) for example – in an effort to point to grounds for joint action. Yet for members of societies it was local institutional ancestors more than nationally recognised predecessors that were cited in accounts of their origins. There were, of course, exceptions. Two Edinburgh field clubs, the Edinburgh Naturalists' Field Club (instituted 1869) and the Scottish Natural History Club, modelled themselves on a 'field club ideal' rather than on other local institutions. The ENFC ruled that it 'would own no property', echoing the famous innovation of the BNC, and the SNHC cited as their model 'the plan of English field clubs'.<sup>96</sup> In an already crowded associational scene the Edinburgh Clubs had reason to distance themselves from local rivals and precedents. Yet for most members of Scottish societies attaching their institutions to local pride and progress was a high priority.

In recovering some of these local accounts of beginnings this section uncovers an underlying concern with fashioning societies as important educational bodies. Although somewhat neglected in accounts of the history of adult education in Scotland natural history societies made it clear from the outset that scientific education was a primary concern.<sup>97</sup> This aim was the impetus behind the societies' efforts to establish a

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<sup>96</sup> National Archives of Scotland (hereafter NAC), GD 434/1/1, Minutes of the Edinburgh Naturalists' Field Club, 9 June 1869 and NAC, GD 434/2/1, Minutes of the Scottish Natural History Club, 23 March, 1881

<sup>97</sup> They are mentioned *en passant* in J. C. Stocks, 'Technical schools and the teaching of science in



significant urban presence through the erection of museum buildings and the running of popular science lectures. While Chapter 4 explores these efforts in more detail, this section examines how the societies from the beginning situated themselves in a network of past and present endeavours that worked to improve local citizens through education.

Of all the provincial societies the Shetland Literary and Scientific Society (SLSS), instituted in 1861, most conspicuously attempted to attach itself to a 'popular' educational establishment. The erection of the Anderson Educational Institute provided an opportunity for a letter to be sent from 75 'principal residents' appealing for space for a museum and meeting room to be used by the newly-formed scientific society.<sup>98</sup> The Educational Institute, named after its benefactor, Arthur Anderson – one of the original founders and directors of the Peninsular and Oriental Steam Navigation Company – provided an ideal space for a scientific association to fulfil its educational goals. Anderson's reply to the request for space outlined the purposes of the Institute building, the first and most fundamental of which was that it should provide accommodation for an elementary school. Yet in reading the request by the SLSS Anderson was pleased that 'a portion of the Institute building was so soon required for some of the objects which I intended it to be appropriated'.<sup>99</sup> The Society could, Anderson suggested, make use of the building along with other civic organisations that already met there, including a brass band, a ladies' society and a penny savings' bank.<sup>100</sup> Although Anderson's ambitious proposals for adjustments to the building that would have provided the appropriately fitted space for the scientific society were not in the end realised the Society's original laws and regulations resonated with the wider educational purposes promoted by Anderson for his Institute. While the primary focus of the Society was to 'promote and diffuse' scientific knowledge, particularly of the natural history and antiquities of Shetland, it offered members much wider intellectual

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Scotland', in H. Holmes (ed.), *Scottish life and society. Institutions of Scotland: education*, East Linton, 2000, 218-36.

<sup>98</sup> *John O'Groat Journal*, 14 February, 1861. For an account of the later history of the Society, see Shetland Archives (hereafter SA), D.5/1a/6, anonymous typescript account of the history of the Shetland Literary and Scientific Society.

<sup>99</sup> SA, D.5/1, A. Anderson, *Correspondence between Mr Arthur Anderson and the Shetland Literary and Scientific Society relative to the Educational Institute*, London, 1862, 4.

<sup>100</sup> Anderson, op. cit. (fn. 99), 8-9.

coverage through a library and museum.<sup>101</sup> A rejection of the names ‘Mechanics’ Institute’ and ‘Athenaeum’ for the SLSS – Mechanics’ Institutes because of their perceived failure to engage the ‘mechanic class’ and Athenaeum because of its ‘foreign’ ring – underlined rather than detracted from the fact that the Society sought to aid those ‘who cannot enjoy the benefits of the regular chartered Universities’.<sup>102</sup>

The formation of other societies, though less explicitly established to educate the working classes, traced their origins to local educational institutions that considered such a task a main objective. It was, for example, from a series of science classes at the local YMCA that the Dundee Naturalists’ Society (DNS) emerged after the lecturer Stephen Cooke, later Professor of Chemistry at Glasgow Veterinary College, ‘invited a number of gentlemen together’ on 22 January 1874 to discuss the possibility of starting a naturalists’ club.<sup>103</sup> The meeting, a culmination of the discussions of the ‘scientifically inclined’ at the shop of a Dundee optician, proved a success.<sup>104</sup> The Society also had less immediate local ancestors who had either been, or emerged from, institutes devoted to ‘popular’ education. Formed in 1810, the earliest ‘ancestor’ was the Rational Institution, a society which met to ‘facilitate the acquisition of literary and scientific knowledge’.<sup>105</sup> Though the Institution did not survive long, the Gleaners of Nature, a club of working men-botanists who had ‘been the bulwarks of the Institution’, was instituted on 16 July 1828.<sup>106</sup> The Rational Institution was also cited as the forerunner of the Watt Institution, an establishment begun in 1824 and set up for the instruction of working men.<sup>107</sup> The Watt Institution, providing lecture programmes, a library, a museum and a longer course of ‘mutual instruction’ on science (including natural history), had mixed fortunes. During its existence, it provided a meeting space for a Dundee Naturalists’ Association, another forerunner of the DNS, and one of the Institute’s Directors and life-long members was William Gardiner, who, by the time of

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<sup>101</sup> SA, D.5/1, *Laws and regulations, Shetland Literary and Scientific Society*, Lerwick, 1862.

<sup>102</sup> *John O’Groats Journal*, 14 February, 1861.

<sup>103</sup> Archive Services, University of Dundee (hereafter UD), MS 80/1/1, *Annual Report Dundee Naturalists’ Society* (1878), 4, 3.

<sup>104</sup> Anon, *George Lowden, optician and scientist*, Dundee, 1906,

<sup>105</sup> A. P. Stevenson, ‘William Gardiner, author of the *Flora of Forfarshire*, (1848)’, *Transactions of the Botanical Society of Edinburgh* (1912–13), 77, 161.

<sup>106</sup> Dundee Central Library, Local Study Collections (hereafter DCL), Kloc 925.8 G224, *Evening Telegraph*, n.d., 1880., Anon, ‘Forfarshire naturalists’.

<sup>107</sup> J. V. Smith, *The Watt Institution Dundee 1824-1849*, Dundee, 1978.

his death in 1852, was recognised by ‘nearly every well-known British botanist’.<sup>108</sup> Constantly exceeding its income it eventually ‘collapsed under its vast weight of debt’ in 1849.<sup>109</sup> Attempts made to raise funds through exhibitions and public lectures paradoxically helped quicken the Institution’s demise due to increased demands for better accommodation and running costs. The Institution’s collections were finally handed over to the Free Library in 1868 and placed in the newly-erected Albert Institute, a building erected as a memorial to Prince Albert and for the Dundee meeting of the British Association for the Advancement of science in 1867.<sup>110</sup> The buildings of the Watt Institute were later acquired by the YMCA and used for evening science classes.<sup>111</sup>

It was the extension of the Albert Institute in 1873, providing room for an art exhibition and museum, that occasioned a call for a ‘well-equipped’ Dundee scientific society. An article in *Nature* noted that in the list of scientific societies recently published Dundee occupied a ‘humble place’. Instead of a ‘large and efficient society’ like Perth, Dundee only supported ‘a small struggling society of young men, the naturalists’ field club’ which had met under the auspices of the YMCA since 1863.<sup>112</sup> A little over two years later the Dundee Naturalists’ Society held its first conversazione in the Albert Institute revealing, as one newspaper report put it, ‘all the signs of lusty life’.<sup>113</sup> Henry Alleyne Nicholson, Professor of Natural History at the University of St Andrews and the Society’s Honorary President, opened the Conversazione in the Institute’s Great Hall stating that: ‘All are interested in the cause of higher education in Dundee, and I am sure you must be convinced that an Association of this kind is calculated in no small degree to help forward the movement which has been so auspiciously commenced by the University lectures’.<sup>114</sup> The beginnings of the Society’s museum also invited comment, its display of birds from the Tay and herbarium of British Flora showing signs of ‘being a first class educational museum’.<sup>115</sup>

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<sup>108</sup> Stevenson, op. cit. (fn. 105), 177.

<sup>109</sup> Smith, op. cit. (fn. 107), 46.

<sup>110</sup> C. Mackean and D. Walker, *Dundee, an illustrated architectural guide*, Edinburgh, 1993, 43.

<sup>111</sup> W. H. Marwick, ‘Mechanics’ Institutes in Scotland’, *Journal of adult education* (1933), 6, 298. D. Southgate, *University education in Dundee: A centenary history*, Edinburgh, 1982, 7.

<sup>112</sup> Anon, *Nature* (1873), 9, 72, Elliot, op. cit. (fn. 22), 245.

<sup>113</sup> *Dundee Advertiser*, 28 January, 1876.

<sup>114</sup> *Dundee Advertiser*, 28 January, 1876.

<sup>115</sup> *Dundee Advertiser*, 28 January, 1876.

Like Dundee, the Inverness Scientific Society and Field Club (ISSFC) could point to local reasons for instituting a society devoted to promoting a taste for scientific study. The Northern Institution, instituted in 1825, had modelled itself on the Perth Literary and Antiquarian Society and created a museum of local objects, antiquarian and geological.<sup>116</sup> Prominent members included Thomas Dick Lauder and Sir George Mackenzie but despite their support it became moribund in 1835 handing over its museum to the Inverness Academy and in 1877 the ISSFC that took charge of the remnants of the Institution's collections. The Field Club found the museum in poor condition with most of the natural history specimens mothballed, but recovered as much of it as possible to form a nucleus for its own museum. The connections between the two societies meant more, however, than the mere retrieval of material objects. George Anderson, 'pioneer' of the Northern Institution in 1825 was also a founding member of the ISSFC and his death in May 1878 prompted the Society's president, Walter Carruthers, to remind members that the ISSFC had 'sprung from the ashes' of the Northern Institution.<sup>117</sup> In 1881, James Barron, presenting a short history of the Northern Institution, noted that the old reports of the Institution read 'like that of one of our own meetings'.<sup>118</sup>

Although the Northern Institution was cited as an important context for the emergence of the ISSFC the more immediate prompt for founding the ISSFC was a series of annual science lectures held in 1874. The second set of lectures, held in the Music Hall and accompanied by a field excursion to a local quarry, were delivered by John Young, Professor of Geology at the University of Glasgow. It was Young's lectures on the 'geology of Scotland' that resulted in a letter being sent to the *Inverness Courier* suggesting the formation of a local scientific society.<sup>119</sup> The letter, written by Thomas Aitken, Superintendent of the Inverness District Asylum, argued that such a society would 'undoubtedly fill up a gap in the intellectual life of the community, and be

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<sup>116</sup> See J Barron, 'The Northern Institution', *Transactions of the Inverness Scientific Society and Field Club* (1911), 7, 200-37.

<sup>117</sup> W. Carruthers, 'President's address', *Transactions of the Inverness Scientific Society and Field Club* (1878), 1, 148.

<sup>118</sup> J. Barron, 'The Northern Institution', *Transactions of the Inverness Scientific Society and Field Club* (1881), 2, 156.

<sup>119</sup> See biographical account of John Young, in P. Macnair and F. Mort, *History of the Geological Society of Glasgow, 1858-1908*, Glasgow, 1908, 210-12.

a not insignificant means towards its higher education'.<sup>120</sup>

'Platform culture', a prominent feature of the educational landscape of mid-Victorian towns, also provided the necessary conditions for the founding of the Kirkcaldy Naturalists' Society, instituted in 1882 after a series of Gilchrist Trust lectures.<sup>121</sup> William D. Sang, a Kirkcaldy engineer and Honorary Secretary of the town's Science Lecture Association, had successfully lobbied for Kirkcaldy to be one of the five Scottish locations (the others being Dundee, Brechin, Montrose and Perth) for a lecture series delivered in 1881 and 1882 and sponsored by the Gilchrist Trust.<sup>122</sup> The Kirkcaldy lectures were held in the Old Free Church and ran every Friday evening from 27 January to 3 March 1882 with good attendance reported. It was these lectures that provided the basis for a circular, issued in the *Fifehire Advertiser* two weeks later, calling for the 'formation for a permanent society, which shall not only provide lectures on scientific subjects, but meet periodically to discuss ... problems arising in the world of science'.<sup>123</sup> The Society, once founded, placed a particular emphasis on the importance of educating local citizens in science (see Chapter 3, p. 69).

Provincial centres like those visited by the Gilchrist lecturers benefited from the draw provided by prominent speakers who, in Kirkcaldy at least, helped generate the level of interest required to start a local society. In a city like Glasgow there was not the same need to provide high profile lecture series to stimulate the founding of scientific societies. It was more often to the city's educational initiatives and learned societies that Glasgow's natural history and scientific societies traced their origins. One of the first natural history societies to appear was the Clydesdale Naturalists' Association, an institution supported financially by the Philosophical Society.<sup>124</sup> The Philosophical Society, founded in 1802, also included an active botanical section.<sup>125</sup> Although there

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<sup>120</sup> T. Aitken, 'Introductory', *Transactions of the Inverness Scientific Society and Field Club* (1875), 1, 2.

<sup>121</sup> For an account of mid-Victorian 'platform culture', see M. Hewitt, 'Aspects of platform culture in nineteenth-century Britain', *Nineteenth century prose* (2002), 29, 1-32. See Chapter 4 pp. 115-24 for an elaboration of the argument presented here.

<sup>122</sup> University College London, Manuscript Room, Gil 1/1, Minutes of the Gilchrist Educational Trust, 15 June, 1881. For more on Scottish societies and the Gilchrist Trust see Chapter 4, pp. 117-20.

<sup>123</sup> J.B. Bease, *Full ninety years and more*, Kirkcaldy, 1975, 1.

<sup>124</sup> Glasgow University Library Special Collections, MS Gen 1631, Minutes of the Glasgow Philosophical Society, 18 December, 1850.

<sup>125</sup> On the history of the Philosophical Society, see D. Primrose et al, '*No mean society*': 200 years of the Royal Philosophical Society of Glasgow, Glasgow, 2003.

was an attempt in 1842 to start a Glasgow Botanical Society it was the disappearance of the regular updates from the botanical section in the *Proceedings of the Philosophical Society* that coincided with the appearance of Glasgow's most enduring and active natural history society.<sup>126</sup> Most of the founding members of the Natural History Society of Glasgow (NHSG), which held its first meeting in the Thistle Temperance Hotel on 2 July 1851, had been members of the Philosophical Society and on struggling to find an appropriate venue for meetings proposed a union with the botanical section of the Philosophical Society.<sup>127</sup> This did not, however, occur and the NHSG continued as an independent body, but one which had close links with the University of Glasgow and with Anderson's University in whose buildings it for a time met.

It was around the NHSG that a number of smaller societies orbited only to be absorbed by the larger Society more or less rapidly. One society, appearing in 1856, adopted the same name as the NHSG and the Secretary of the latter quickly demanded an explanation and a change.<sup>128</sup> The two societies that emerged from Anderson's University either quickly amalgamated or made sure to contrast themselves to the NHSG.<sup>129</sup> The Glasgow Naturalists' Society, founded in 1858, merged with the NHSG in 1866 and the Andersonian Naturalists' Society, formed in 1885 by members of a botany evening class run by the Rev. Alexander Stoddart Wilson, made it clear they did not intend to compete with the older Society. In 1885, an article appearing in the local *Evening News* stated that the Andersonian Society was 'a society intended chiefly to foster the love of science amongst young men, those who are only learning the natural sciences, so to speak, and in no way does it pretend to be a rival to the ... Natural History Society of Glasgow'.<sup>130</sup>

Although the NHSG clearly dominated, other small societies managed to survive for short periods alongside it. In the early 1880s the city was host to at least two Union Jack Field Clubs (UJFC), part of a nationwide movement of natural history clubs for

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<sup>126</sup> On the failed attempt to form a botanical society, see Royal Botanic Garden Edinburgh, K5; K19, W. Keddie to J. H. Balfour, 13 May 1843 and n. d. 1846.

<sup>127</sup> Mitchell Library, Glasgow City Archives (hereafter GCA), TD1408/1/1, Minutes of the Natural History Society of Glasgow, 3 February, 1852.

<sup>128</sup> GCA, TD1408/1/1, Minutes of the Natural History Society of Glasgow, 27 May, 1856.

<sup>129</sup> Anderson's University changed names to Anderson's College in 1877.

<sup>130</sup> GCA, TD1408/6/1/1, Minutes of Andersonian Naturalists' Society, 29 September, 1885.

young men begun by pugilist and popular journalist George Alfred Henty.<sup>131</sup> Although part of a national movement, members of the Glasgow (Western) Branch UJFC put forward a motion to ‘sever the connection with the UJFC and form a distinct association under the name “the Glasgow Naturalists’ Field Club”’.<sup>132</sup> James McGrouther, the proposer of the motion and a keen entomologist, was later instrumental in establishing another society, the Glasgow Practical Naturalists’ Society. McGrouther’s Society met in the Kelvingrove Museum from 1883 concentrating on entomology but became moribund around 1890.<sup>133</sup> The Glasgow Eastern Botanical Society, formed in 1876 from a botany class held at the Bridgeton Mechanics’ Institution, also managed to survive independently until 1898 when it merged with the NHSG.

The complicated historical geography of Glasgow’s natural history societies demonstrates the important supporting role played by educational bodies. Once formed there was less need or demand for the societies to run science classes or support popular lectures because of the large number of Glasgow institutions involved in that work. This contrasted with societies in Dundee and Kirkcaldy which, in different ways, invested in educational and popularising initiatives more than in field excursions or scientific publications. Despite such differences it is clear that the local origins of Scottish natural history societies ‘pointed to a widespread concern with ‘diffusing a taste for natural history’ that continued to shape the societies’ activities throughout the Victorian era.

## Summary and conclusion

By 1900 one contemporary estimate put the numbers involved in British and Irish scientific societies at 100,000.<sup>134</sup> For some, the societies supported an alternative natural historical programme that prioritised the making of a scientific citizenry over the

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<sup>131</sup> See Anon, ‘James McGrouther – Obituary’, *The young naturalist* (1887), 8, 50; Anon, ‘Reports of meetings and excursions’, *Union Jack naturalist*, (1881), 1, 3-5; Peter Newbolt, ‘Henty, George Alfred (1832-1902)’, *Oxford dictionary of national biography*, Oxford, 2004.

<sup>132</sup> *The Union Jack naturalist* (1882), 2(5), 41.

<sup>133</sup> See Appendix I for sources.

<sup>134</sup> This estimate, taken from the *Report of the British Association for the Advancement of Science* (1904), 341, is cited in P. D. Lowe, ‘The British Association and the provincial public’ in P. Collins and R. MacLeod, *The Parliament of Science*, Northwood, 1981, 133; 143.

formation of a scientific aristocracy. It was certainly the case that an exclusivist image of science was in several ways resisted by members of local natural history societies. In Scotland, as elsewhere in Britain, the 1870s and 1880s saw the most rapid growth coinciding with the rise of an apparently competing image of science as the domain of a professional elite.<sup>135</sup> Supporters of accessible science saw field clubs and other scientific associations as the means to a more scientific nation. Progress in science meant, for commentators like Walter Elliot and James Britten, the gradual but inexorable improvement of the nation.

Such propaganda was echoed in the pronouncements of the leadership of Scottish natural history societies but in a more local cadence. For the leadership of Scottish societies the grand claims of national scientific progress had to be brought home to the local audience who would support the founding and running of a provincial natural history society. By turning to the subject of fieldwork supporters of newly-formed and struggling local field clubs were able to develop a vision of associational science that appealed to local sensibilities. As well as servicing civic pride and regional progress fieldwork could re-make citizens spoiled by the sordid affairs of the town. Moral capacity and aesthetic discernment were but two of the effects of fieldwork that marked it as valuable in constructing a civil and scientific society. Behind the hyperbole of recruitment rhetoric was a desire to locate a natural history society from its inception in the midst of civic culture and within the borders of an expanding 'scientific republic'.

The aspirations represented by arguments for the cultural and scientific utility of fieldwork were also found in other local narratives that bound a society to reputable civic endeavour. By identifying with a longer history of attempts to educate and improve a local public members of natural history societies placed themselves at the heart of urban society. Tracing their origins to mechanics' institutes, local lecture programmes and other mass education initiatives, supporters of field clubs demonstrated their civic credibility. Yet a concern with popular appeal was in some places qualified by associations with more elite institutions like the university or literary

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<sup>135</sup> As Ruth Bayles has shown, the situation in Ireland was rather different, with more societies being formed in the 1840s and 1850s than in the later nineteenth century. See R. Bayles, 'Understanding local science: the Belfast Natural History Society in the mid nineteenth century', in D. Attis and C. Mollan (eds.), *Science and Irish culture. Why the history of science matters in Ireland*, Dublin, 2004, 139-169.



and philosophical society. There were, in other words, distinctions between societies and tracing their origin to one common ancestor or shared purpose does not do justice to the significance invested in local genealogies.

Although the differences not readily apparent in the general surveys of Elliot and Britten were important, what united Scottish natural history societies was a shared concern to simultaneously contribute to 'science' and to local 'civil society'. This chapter has introduced Scottish natural history societies, their diverse origins and founding narratives, in order to tease out this defining dynamic. How it was worked out in specific sites and spaces is the task set for the remaining chapters. The pull towards local civic culture is privileged in chapters three to five and the scientific impulse is given more attention in chapters six and seven. This is not to decide in advance that field club science and field club sociability were opposite poles more or less difficult to bring together. The science was always in some way social and the social was always in some way scientific. The ways in which the social and cultural nature of field club science was represented to a local public were nevertheless different from efforts to discipline and demarcate the work of societies in relation to a scientific constituency. The next chapter elaborates upon the arguments made for the utility of fieldwork and demonstrates how out-of-door science was linked to, and contrasted with, other forms of local civic endeavour.

## Section II

### Subscriber Science

## Chapter 3

### Fieldwork and excursion culture

Natural history, like other subjects involving investigative practices conducted outside the apparently more ordered world of the laboratory or study, cannot be reduced to set procedures, equipment and research questions sustained by a disciplined community of practitioners.<sup>1</sup> While such a statement needs elaboration and qualification it supplies a useful heuristic for approaching natural history fieldwork as it comes to light in the excursion culture promoted by nineteenth-century Scottish natural history societies. This chapter, concentrating on the societies' fieldwork, seeks to uncover the untidy and situated nature of associational science-in-the-field. As practiced by natural history societies, fieldwork meant criss-crossing intellectual and cultural territory while exploring and describing a range of material sites from mountain corries through sea lochs to river banks. The traffic between cultural, social and scientific concerns meant the borderland between fieldwork as science and fieldwork as 'popular' pursuit was a contested and complicated terrain. As an associational and voluntary activity fieldwork was represented as useful to local civil society and tracing the discursive and material connections made by the societies between out-of-door exploration and civic culture is the primary aim of this chapter.

Field excursions with the purpose of exploring local natural history had, of course, a longer history than the outdoor work of nineteenth-century natural history societies and field clubs. David Allen's 'archaeology' of fieldwork, identifying the earliest mentions of specialist equipment, outlets for publication and institutional supports, has uncovered a rich and diverse tradition.<sup>2</sup> In the eighteenth-century, fieldwork as a social rather than solitary pursuit received impetus from the 'herbarizing' associated with the Society of Apothecaries and from the need to supply a growing number of botanic gardens. Field

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<sup>1</sup> For an introduction to the nature of scientific fieldwork more generally, see H. Kuklick and R. E. Kohler, 'Science in the field: introduction', *Osiris* (1996), 11, 1-14. On the complexities, social and epistemological, of natural history, see W. E. Reif, 'Practice and theory in natural history: domains and epistemic things', *Theory in biosciences* (1999), 118, 161-74.

<sup>2</sup> D. E. Allen, *The naturalist in Britain*, London, 1976, 5-15.

excursions were employed from the late eighteenth and early nineteenth centuries to teach natural history at the University of Edinburgh, and later, at other British universities.<sup>3</sup> Members of Scottish natural history societies were aware of this longer history. In 1863, for example, Sir William Jardine, to encourage the Dumfriesshire and Galloway Natural History and Antiquarian Society to participate in outdoor natural history fieldwork, noted its use as a valuable teaching tool employed by Robert Jameson, Professor of Natural History at the University of Edinburgh, in his outdoor lectures begun in 1804.<sup>4</sup> Frequent allusions were made by members of other societies to more local histories of fieldwork endeavour. John Gray, founding member of the Natural History Society of Glasgow, directed attention to a pioneering effort to investigate the natural history of Clydesdale by publishing a short biographical account of the Rev. David Ure.<sup>5</sup> Ure was cast as heroic explorer tackling the difficulties of the scientific investigation of nature outdoors:

He carried a tin box for stowing curious plants – a large cudgel, armed with steel, so as to serve both as a spade and pick-axe; a few small chisels and other tools; a blow-pipe, with its appurtenances; a small liquid chemical apparatus, optical instruments, etc., etc., so that his friends used to call him a walking shop, or laboratory. In this way, he braved all weathers; and heat or cold, wet or dry, seemed equally indifferent to him.<sup>6</sup>

As well as sketching a venerable local and national tradition of fieldwork much was made of the need to complete the exploration of local natural history. As argued in chapter 2, this was presented as a means to contribute to an imagined commonwealth of science and, simultaneously, to the intellectual and cultural life of Scottish towns. The fieldwork of Scottish natural history societies did not, however, reduce to, and frequently transgressed, that neat schematic. The attempt to encourage wide participation in scientific fieldwork understood as a popular civic pursuit meant holding together pleasure and standardised investigation, aesthetic appreciation and scientific description, sociability and disciplined exploration, education and entertainment. Inevitably this meant tensions, conflicting approaches and disputes alongside efforts to

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<sup>3</sup> D. E. Allen, 'Walking the swards: medical education and the rise and spread of the botanical field class', *Archives of natural history* (2000), 27, 335-68.

<sup>4</sup> W. Jardine, 'Opening address', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian society* (1863), 1, 36.

<sup>5</sup> J. Gray, *Biographical notice of the Rev. David Ure*, Glasgow, 1865. Ure was the author of *A history of Rutherglen and East Kilbride*, Glasgow, 1793.

<sup>6</sup> Gray, *op. cit.* (fn. 5), 20.

promote a unified and positive view of fieldwork.

In exploring what has been termed the ‘high complexity’ of natural history fieldwork as practised by natural history societies in mid- to late-Victorian Scotland this chapter addresses a range of themes and outlines a number of detailed examples of the societies’ excursion cultures.<sup>7</sup> The relations between fieldwork and leisure, a Romanticist portrayal of nature and sociability and the instructional currency of outdoor science are examined. Although such relations are treated separately, sketching the anatomy of associational fieldwork entails showing how such elements impinged upon each other in important ways. This interplay of more general themes is further explored through four more detailed accounts of fieldwork activities supported by Scottish natural history societies. Starting with the examples of marine and mountain excursions, the different mingling of cultural convention and ‘scientific’ work in out-of-doors nature is highlighted. The sometimes fraught discussions about appropriate fieldwork recording skills are recounted, with particular attention given to a long-running controversy over the work of George Don, a Scottish field botanist active at the beginning of the nineteenth century. The controversy, hinging on questions of trust and credibility, had wider implications than the arbitration of disputes about the botanical mapping of Britain with connections being made to ideas of responsible citizenship. The concluding case study relays efforts to apply ‘natural divisions’ to define particular floral and faunal Scottish regions and demonstrates how the strictures of ‘scientific’ recording were related questions of social and national concern. The making and marketing of John Harvie-Brown’s *Naturalist Map of Scotland* relates how the cartographic logic of natural history fieldwork was promoted to an audience beyond a handful of more scientifically-minded naturalists.

## Fieldwork, leisure and science

Nineteenth-century natural history fieldwork did not straightforwardly translate into the language of leisure. David Allen, characterising several notable nineteenth-century British field naturalists as having ‘an almost masochistic delight in privation’, has drawn

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<sup>7</sup> Reif, op. cit. (fn. 1), 1. Reif hints at more than just the complexity of the subject matter pointing to the social and cultural concerns that can attach to natural historical work.

attention to the commonplace portrayal of fieldwork as asceticism.<sup>8</sup> Allen cites, as a canonical exemplar, William MacGillivray's 800 mile tramp from Aberdeen to London in 1819 to see the bird collection in the British Museum and to explore the natural history of his circuitous route.<sup>9</sup> Even if MacGillivray's walk was exceptional it was symptomatic of a wider expectation that the 'true naturalist' would willingly suffer all variety of deprivation in pursuit of natural history. This expectation was not only attached to fieldwork conducted in Britain but was held to be true for scientific explorations carried out further a-field. In widely read accounts of far flung expeditions, epistemic and moral credibility often dovetailed with representations of risk and, in extreme cases, martyrdom.<sup>10</sup>

The 'fieldwork as privation' motif certainly appeared in addresses given to encourage members of Scottish natural history societies to participate in useful outdoor excursions. James Howden, speaking to the Montrose Field Club in 1885, demonstrated the dedication required to do useful and scientific fieldwork by citing the example of local schoolmaster Alexander Croall. Croall's extensive explorations of the marine algae around Montrose in the 1850s and 1860s had been done, Howden argued, in 'his unbusiness – I cannot call them leisure – hours'.<sup>11</sup> Croall, who had been commended by Samuel Smiles in 1884 for giving up his position as schoolmaster for 'an ill-paid but more congenial occupation' as librarian of the Derby Museum and Herbarium and then curator at the Smith Institute, a museum in Stirling, had denied himself for science.<sup>12</sup>

Fieldwork as employing – to borrow George Levine's phrase – a 'dying to know' epistemology was not the only message given to encourage members in its pursuit.<sup>13</sup> Promoting fieldwork was more often, rather, a delicate balancing act between describing

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<sup>8</sup> Allen, op. cit. (fn. 2), 76.

<sup>9</sup> Allen, op. cit. (fn. 2), 77-8. For more on MacGillivray's long tramp, see W. MacGillivray, *A walk to London*, Stornoway, 1998 [1819]. MacGillivray was a founding member of the Aberdeen Natural History Association, instituted in 1845.

<sup>10</sup> On this, see F. Driver, *Geography militant: cultures of exploration and empire*, Oxford, 2000; M. Heffernan, "'A dream as frail as those of ancient times": the in-credible geographies of Timbuctoo', *Environment and planning D: society and space* (2001), 19, 203-25.

<sup>11</sup> J. C. Howden, 'The aims of a naturalists' field club', *Report of the Montrose Natural History and Antiquarian Society* (1885), 16. Howden's address was also published in full in the *Scottish naturalist* the editor stating that 'we believe it to deserve a more permanent record and a wider diffusion'. J. C. Howden, 'The aims of a naturalists' field club', *Scottish naturalist* (1885), 2, 50-57.

<sup>12</sup> S. Smiles, *Men of invention and industry*, London, 1884.

<sup>13</sup> G. Levine, *Dying to know: scientific epistemology and narrative in Victorian England*, Chicago, 2002.

it as skilled graft and advertising it as recreational and pleasurable activity. The language used by Croall himself, for example, to persuade people to join the Stirling Field Club in ‘working out and completing the flora and fauna of the district’ exemplified the inevitable tensions inherent in promoting fieldwork to a wider public. Lamenting at the Club’s AGM in 1882 the lack of progress towards that goal, Croall appealed to members to promote fieldwork as an ‘enjoyable and instructive employment’ for the ‘leisure hour’.<sup>14</sup> At the same time the benefits of ‘harvesting’ a wider field were enumerated and an appeal was made for more ‘labourers’ to exhaustively explore the natural history of the Stirling district.

Not surprisingly, then, natural history fieldwork was frequently regarded as in competition with other leisure activities. In a paper given to the Stirling Club in 1879 it was argued that:

we do not wish our young men to entirely relinquish the cricket and the golfing grounds, but we ask them to make a trial of the intellectual pleasures of the rambles of the naturalist in comparison with the exciting amusements of these grounds – we ask them to give but 3 hours a week to the interesting pursuits of the botanist or geologist, and we feel confident that before the expiry of a year these grounds would be less frequently visited.<sup>15</sup>

Presenting fieldwork as ‘rambling’ with intellectual intent was one way of navigating between the dangers of associating natural history pursuits with ‘mere’ pleasure or with long hours of hard scientific labour. Other clubs, who were more explicit in expressing their aim to advance, rather than diffuse, scientific knowledge were less concerned with out-competing or impersonating fashionable forms of recreation. A field excursion to Braemar in 1872 by the Scottish Alpine Botanical Club, which included as its central objective encouraging the exploration of mountain flora by ‘competent botanists’, occasioned the following lament from a Club member:

In place of the ordinary tea-dinner the party had to conform to the new arrangements at Braemar, and sit down to a table d’hote in their ordinary botanical garb amidst an assemblage of waiters, lacqueys & c. The old botanical prestige of Braemar is now gone, and the custom of putting up plants in drying-paper in the evening is at an end. In fact, botanists are voted a bore, and fashionable excursionists who pay well, eat, drink and dress well are now in

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<sup>14</sup> A. Croall, ‘Annual address’, *Transactions of the Stirling Field Club* (1882), 1; 6.

<sup>15</sup> Buchanan, ‘Hints on the flora of Clackmannanshire and surrounding districts’, *Transactions of the Stirling Field Club* (1879), 18.

vogue.<sup>16</sup>

Other societies, rather than view field excursions as antithetical to the interests and practices of the tourist, included in their reports elements that had resonance with popular excursionism.<sup>17</sup> A report of a field trip organised by the Glasgow-based Andersonian Naturalists' Society to the Trossachs in 1888 and published in the *Christian Leader* employed vocabulary reminiscent of a tourist guidebook. The account, in reporting that 'Scott was on every lip as the daughter of three mighty lakes came into view', reminded its readers of the close connections between Walter Scott's *Lady of the lake* and the Trossachs as a popular tourist destination.<sup>18</sup> One of the Society's photographers, rather than record the botanical or geological specimens discovered by the party, 'halted' the excursion 'to take a view', a practice more in keeping with a pleasure trip than a strictly scientific excursion.<sup>19</sup> Though employing camera technology, the photographers actions were in keeping with the sort of Scottish scenery painting, with its 'succession of scenic alterations', that the Victorian visitor to the highlands had come to expect.<sup>20</sup>

The tension generated between fieldwork as science and as 'mere' recreation were at times a source of considerable friction within and between societies. An example of such was precipitated by the amalgamation of the Glasgow Society of Field Naturalists with the Natural History Society of Glasgow (NHSG) in 1879, the merger provoking a dispute centring around the nature of field excursions. Several members of the Natural History Society opposed the amalgamation fearing the Field Naturalists – who promoted fieldwork as a pursuit accessible to expert and novice alike – would take over management of the older Society. The outcome, they argued, would be a lowering of scientific standards. This view was held by John Alexander Harvie-Brown, gentleman ornithologist, and James Lumsden, also an ornithologist of independent means (and son of a Glasgow Provost). Harvie-Brown, writing to Lumsden in 1879, warned that the

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<sup>16</sup> Royal Botanic Garden Edinburgh (hereafter RGBE), Minutes of the Scottish Alpine Botanical Club vol. 1, 2 August, 1871.

<sup>17</sup> On the Victorian culture of organised pleasure trips, see A. J. Durie, *Scotland for the holidays: a history of tourism in Scotland, 1780-1939*, East Linton, 2003, esp. 61-63.

<sup>18</sup> Anon, 'Naturalists' Society excursion', 20 December, 1888, *Christian leader*. For the connections between Scott's work and the Trossachs, see Durie, op. cit. (fn. 17), 45-6.

<sup>19</sup> Anon, op. cit. (fn. 18).

<sup>20</sup> J. Holloway and L. Errington, *The discovery of Scotland: the appreciation of Scottish scenery through two centuries of painting*, Edinburgh, 1978.



Field Naturalists were ‘with one or two exceptions ... a most objectionable, vulgar, uppish lot with no scientific knowledge but with one or two popular ideas’.<sup>21</sup> Harvie-Brown and Lumsden, with several others, fought to prevent a merger and, once it occurred, worked to block efforts of the ‘firebrand clique’ to pass several bye-laws relating to the organisation of summer excursions.<sup>22</sup> When five of the former Field Naturalists were elected onto the council of the NHSG in 1883, Harvie-Brown felt it serious enough to resign as President of the Society and later proposed leading 100 of the 234 members out of the NHSG and forming a west of Scotland biological society.<sup>23</sup> For wealthy gentleman naturalists Lumsden and Harvie-Brown fieldwork was less a leisure pursuit than an unremunerated vocation and they resisted association with a Society they felt would promote fieldwork as a ‘popular’ rather than ‘scientific’ endeavour.<sup>24</sup> Such a judgement was of course disputed although little direct evidence of the other side of the argument is extant. Biographical sketches of two members of the Field Naturalists suggest that Lumsden and Harvie-Brown’s objections were keenly contested. The President of the Field Naturalists, James Stirton, a lecturer in gynaecology at Glasgow’s Royal Infirmary from 1879, was later recognised, despite his commitment to medical education, as an authority on bryology.<sup>25</sup> Peter Cameron, seen by Lumsden as ‘at the end of the strings’ of the Field Naturalists’ take-over bid, was later described in an obituary as ‘a well-known entomologist’ and the regret at his death would, it argued, ‘be felt in scientific circles all over the world’.<sup>26</sup> Although working for a Glasgow printing company he had begun field research in 1873 for what became a four volume work on British hymenoptera (bees and wasps), the first volume of which was published by the highly regarded Ray Society in 1882. Stirton and

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<sup>21</sup> Royal Museum of Scotland (hereafter RMS), Harvie-Brown correspondence, Box 28/482, Harvie-Brown to Lumsden, 1 February 1879. On Lumsden, see J. Mitchell, ‘James Lumsden: a late-nineteenth-century bird recorder’, *Clyde birds* (1998), 10, 144–45. For Harvie-Brown, see K. J. H. Mackay, ‘J. A. Harvie-Brown (1844-1916): ornithologist’, *Forth naturalist and historian* (2002), 25, 37–40.

<sup>22</sup> RMS, Harvie-Brown to Lumsden, 25 September 1883.

<sup>23</sup> RMS, Harvie-Brown to Lumsden, 25 September 1883. That the Vice-president, Secretary, Treasurer and an ordinary council member also resigned in 1883 reveals that Harvie-Brown did have significant support for his proposed action.

<sup>24</sup> Harvie-Brown had attempted to secure a permanent post at the Smithsonian Institution. See Mackay, *op. cit.* (fn. 21).

<sup>25</sup> D. A. Boyd, ‘In memoriam: James Stirton, M. D., F. L. S.’ *Glasgow Naturalist* (1917), 8, 142–44.

<sup>26</sup> RMS, Lumsden to Harvie-Brown, 4 February 1879. Anon, ‘Peter Cameron’, *Glasgow Naturalist* (1912), 5, 3.

Cameron were clearly amateurs of a different sort than Lumsden and Harvie-Brown and were apparently less threatened by members who saw natural history, and fieldwork in particular, as a 'popular' leisure pursuit.

## Field club romance

Fieldwork accounts were annotated with more than negotiations between 'science' and 'leisure'. Understood as central to the social as well as scientific life of a local natural history society, working in the out-of-doors was commonly presented as engendering convivial relations among members. Such representations were frequently promoted using a Romantic vocabulary with nature displaying a harmony mirrored by the friendly relations between the field club members exploring it. The Romantic turn to nature in the late eighteenth and early nineteenth centuries has been cited as one reason why the emerging Victorian middling classes found moral meaning and beauty in out-of-door nature and saw its exploration as a means to recreation.<sup>27</sup> Although acknowledged as an initial prompt, the influence of Romantic thought in motivating scientific work is generally portrayed as having ebbed away almost completely by the time Darwin published his *The origin of species* in 1859.<sup>28</sup> Yet the ways of valuing nature and viewing society promulgated by Romantic writers such as Wordsworth and Cowper continued to inform the fieldwork ethos promoted by members of Scottish natural history societies throughout the nineteenth century.<sup>29</sup> As with Victorian literature, the 'Romantic impulse' was utilised, modified and, at other times, resisted.<sup>30</sup> Space was given in reports of fieldwork for reflections on the beauty and moral properties of 'Nature' and while such reportage tended to be deemed 'popular' rather than 'scientific' the division between aesthetics and science was not always mapped straightforwardly on

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<sup>27</sup> For the influence of Romanticism on Victorian natural history, see Allen, op. cit. (fn. 2), 74-76.

<sup>28</sup> I. Wylie, 'Romantic responses to science', in D. Wu (ed.), *A companion to Romanticism*, Oxford, 1998, 505-11. Allen has the 'final surge' of Romanticism occurring in the 1820s and 1830s. Allen, op. cit. (fn. 2), 75.

<sup>29</sup> A scan through the published transactions of Scottish natural history society turns up several instances of verse from Wordsworth, Byron and Cowper being employed for various audiences and purposes. Although not pervasive such quotations are only the more obvious marks of the influences of Romantic thought on the work of Scottish natural history societies.

<sup>30</sup> D. D. Stone, *The Romantic impulse in Victorian fiction*, Cambridge Mass., 1980. The revival of interest in Wordsworth in the 1880s is another instance of the continuing impact of Romanticism. See S. Gill, *Wordsworth and the Victorians*, Oxford, 1998, 206-34.

to those categories. As this and later sections intend to show, the relationship between pleasure, imagination and field science was differently rendered depending on the sometimes competing objectives and priorities attached to associational fieldwork.

Given that one of the messages of field club recruitment rhetoric was the egalitarian nature of associational natural history it is not surprising to find fieldwork presented as having a harmonising effect. A widely circulated example of such thinking was Charles Kingsley's representation in his popular natural history book *Glaucus; or, the wonders of the shore* (1855). Kingsley had the growing number of field clubs as a 'rapidly spreading new freemasonry of natural history'.<sup>31</sup> Echoing Kingsley's sentiments, Sheriff Scott Moncrieff, speaking to the Banffshire Field Club in 1880, explained how outdoor fieldwork united otherwise disparate individuals:

Now what can more happily and satisfactorily tend to the removal of the obstacles which thus keep brave, well-meaning truth-seekers of a character such as this open at once to scientific specialist, classical student, and orthodox divine, and inviting all alike side by side to come and enjoy a bright summer day.<sup>32</sup>

Not everyone understood fieldwork thus. Where Moncrieff saw social and epistemic harmony arising from a common outdoor appreciation of nature, A. B. Herbert, speaking to the Edinburgh Microscopical and Field Naturalists' Society (EMFNS) in 1884, pointed to the 'humanising and genial influence we derive from admitting lady members to the Club, some of whom are excellent field naturalists'.<sup>33</sup> For Herbert fieldwork was at risk of being as individualistic and competitive as other pursuits and excursions required a certain social composition to guarantee their harmonising effects. While harmony among members sat uneasily with the individualistic and hierarchical emphasis of some Romantic thought and, indeed, of certain fieldworkers, the life-giving and humanising qualities of a feminised nature were rarely questioned.

Field trips were not only argued to generate harmony among individual excursionists but also between societies. Again, this argument was strengthened by appealing to the positive effects of close contact with outdoor nature. The description of a joint

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<sup>31</sup> C. Kingsley, *Glaucus; or, the wonders of the shore*, Cambridge, 1855, 103.

<sup>32</sup> S. Moncrieff, *Transactions of the Banffshire Field Club* (1880), 1, 26. This quote might provoke the comment so far so middle class. The issue of class and natural history societies is dealt with in more detail in chapter 5.

<sup>33</sup> A. B. Herbert, 'Field naturalists', *Transactions of the Edinburgh Microscopical and Field Naturalists' Society* (1884), 1, 187.

excursion of the Dundee Naturalists' Society (DNS) and the Perthshire Society of Natural Science (PSNS) in 1875 to the Reekie Linn, a waterfall in north Perthshire, is a case in point. According to the account given in the *Dundee Advertiser*, the excursionists, along with investigating botanical and geological features, 'feasted in full in the sublime and the beautiful'.<sup>34</sup> An evocation of the sublime on encountering a granite outcrop was accompanied by a piece of Romantic verse:

Bewildering sage! Proclaim thy wisdom folly,  
And where thy reason fails let faith begin  
The rocks have sacred secrets of their own  
That teach the wise humility and praise.<sup>35</sup>

The metaphorical scientific and aesthetic feasting through fieldwork was supplemented at the end of the day with dinner in a marquee set up by the Sheriff-Clerk of Perthshire on whose land the waterfall was found. The meal concluded with a '*jeu d'esprit*' written by John Young of the Perthshire Society and celebrated the convivial relations fostered between the two societies through the day's fieldwork:

Perth    Hie to the braes of Isla's stream  
          Whose waters shine wi' crystal gleam  
          An' whare the trout, wi' silvery fin  
          Jinks round the rocks o' Reekie Linn,  
          Dundee, my dainty dearie, O

Dundee  I'll meet you there, my gently Perth  
          The fairest o' the fair o' earth  
          Together search for brake and flower,  
          Or dwell in love in Isla's bower  
          The live long day, sae cheerie, O<sup>36</sup>

In 1872, excursionists on a field trip jointly organised by the Alloa Society of Natural Science and Archaeology and the PSNS likewise expressed in the language of lovers the relations between the two societies, the Rev. Scott Matheson hoping that 'this courting will go on a very great deal further, and we shall be a great deal more intimate with each other'.<sup>37</sup> Out-of-door field excursions not only provided the setting for relations that were thought productive of local civil society but also of harmonious interaction

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<sup>34</sup> 9 August, 1875, *Dundee Advertiser*.

<sup>35</sup> 9 August, 1875, *Dundee Advertiser*. The poem was written by the Rev. John Anderson of Kinnoull. I am grateful to Lizzie MacGregor of the Scottish Poetry Library for identifying the author.

<sup>36</sup> 9 August, 1875, *Dundee Advertiser*.

<sup>37</sup> Anon, 'Grand scientific excursion to Aberfeldy district', *Proceedings of the Alloa Society of Natural Science and Archaeology* (1872), 1, 57.

between sometimes competing provincial towns.

Appreciations of outdoor excursions were also celebrated for their value as an always available means of escape from life's cares, particularly those generated by urban living. Anderson Henry, 'poet laureate' of the Botanical Society Club, instituted in 1838 to celebrate annually the anniversary of the founding of Botanical Society of Edinburgh, captured this sentimental escapism in song:

Then here's to the love, the evergreen love  
that breathes thro' nature free  
by the mountain lake and forest brake  
by the far resounding sea.<sup>38</sup>

Henry's understanding of fieldwork as outdoor escape to remote places was widely shared. Symington Grieve, for example, underlined the value of fieldwork to the EMFNS in 1886, stating that:

The name 'Naturalist Field Club' makes my mind stretch in fancy from these stone walls to breezy braes with wimplly burns, or to rugged mountain-sides with their wild cascades. In our cities we live like caged birds.<sup>39</sup>

Or, in the verse of John Young, well-known among Victorian Scottish naturalists for his songs on field clubs and natural history, fieldwork meant going to 'shady dell – out! anywhere/ away from the town'.<sup>40</sup>

There were one or two exceptions to the noted neglect in the nineteenth century of natural history found within urban boundaries.<sup>41</sup> One such was Robert Gray, Secretary of the Natural History Society of Glasgow, who argued in 1865 that 'suburban ornithology was a subject less trivial than some naturalists might suppose'.<sup>42</sup> Yet Gray, in talking of birds among the 'smoke and bustle' of Glasgow and rooks, jackdaws and magpies in the 'confusion, turmoil, and clamour of a city life' still portrayed exploring the urban landscape as a poor substitute for the harmony and serenity associated with

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<sup>38</sup> RBGE, Minutes of the Botanical Society Club, 8 February, 1870.

<sup>39</sup> S. Grieve, 'Opening address', *Transactions of the Edinburgh Microscopical and Field Naturalists' Club* (1886), 1, 271.

<sup>40</sup> J. Young, 'Out', in J. Young, *Selina and other poems*, Perth, 1878, 283. Young's book of poems were sold to raise money to furnish the natural history museum erected by the Perthshire Society of Natural Science.

<sup>41</sup> A recent account of Glasgow's flora notes that Roger Henneidy's *Clydesdale Flora* (1865), the standard flora of the area for the rest of the nineteenth century, rarely uses the word Glasgow, urban plants apparently being of little interest. J. H. Dickson, P. Macpherson and K. J. Watson, *The changing flora of Glasgow*, Edinburgh, 2000, 2.

<sup>42</sup> R. Gray, 'On the ornithology of the suburbs of Glasgow', *Proceedings of the Natural History Society of Glasgow* (1865), 1, 106.

observing nature away from the town.<sup>43</sup> George Horn's paper on plants collected from 'rubbish heaps' beside Glasgow's Great Western Road delivered to the Glasgow Society of Field Naturalists in 1874 was less concerned to admit the lack of appeal but his researches were unlikely to inspire a Society field trip.<sup>44</sup>

As well as escape from the city the affective aspects of more remote places could also be linked to nationalist sentiment. An excursion report of the Stirling Field Club to Ben Lui in 1879 had the members lying 'on the grassy slopes of the mountain shelf' reciting the lines 'O Scotland I love thee, thy hills and thy vales/ Thy cots and thy castles that peep frae the dales'.<sup>45</sup> National pride was also invoked on an excursion of the Banffshire Field Club in 1881 when 'under the lee of a huge fragment of artificial lava' members of the Club heard a recital of Lang Johnnie Moir, a Child ballad that spoke of Scottish giants taking on an English king who refused to allow the marriage of a Scot to his daughter.<sup>46</sup> The hill on which the excursionists sat, the Tap O'Noth in west Aberdeenshire, featured in the ballad and the recital discursively linked geological description with the evoking of regional and national pride.

A more dispassionate approach to fieldwork did at times interrupt accounts of fieldwork 'romance'. Descriptions of Scottish landscape that connected exploring natural history to seeing and knowing Scotland were often carefully managed so as to render romantic sentiment secondary. Euphuistic verbal portraits of panoramic views, although appearing in accounts of field excursions organised by the Inverness Scientific Society and Field Club, were qualified by reminding readers that scenic appreciation was not the main reason for the Club's outdoor work. The account of a field excursion in 1880 to the 'Lake District of Inverness', although beginning with a depiction of the 'distant peaks ... and rugged outlines of the surrounding mountains', quickly moved to a description of the objects encountered that were of 'scientific interest'.<sup>47</sup> The excursion report made clear, in other words, that fieldwork was not primarily about picturesque view-hunting. Other reports indicated the difference between casual looking and

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<sup>43</sup> Gray, op. cit. (fn. 42), 106.

<sup>44</sup> Horn's paper is only mentioned in passing. Anon, *Transactions of the Glasgow Society of Field Naturalists* (1874), 2, 71.

<sup>45</sup> Anon, 'Excursion to Ben Lui', *Transactions of the Stirling Field Club* (1898) [1879], 1, 73.

<sup>46</sup> Anon, 'Excursion to Tap O'Noth', *Transactions of the Banffshire Field Club* (1881), 1, 105. Lang Johnny More is Child ballad no. 251.

<sup>47</sup> Anon, 'The lake district', *Transactions of the Inverness Scientific Society and Field Club* (1880), 1, 326.

scientific observation. Matthew Forster Heddle, Professor of Chemistry at the University of St Andrews, remarked to the ISSFC in 1878 that learning to ‘perceive’ rather than ‘see’ the mineralogical character of Highland Scotland would take a minimum of ten years.<sup>48</sup> As argued in Chapter 2 (pp. 41-42), such rigour or sustained attention to the involved detail of a specialist area of natural history was not, however, generally opposed by members of natural history societies to a continued aesthetic appreciation of nature. While a certain way of looking could be seen as distracting from scientific work even the most disciplined observer could find beauty and moral meaning in very particular facts found in local nature.<sup>49</sup> In this sense, the ‘romance’ of nature did not evaporate under the more scientific or realist gaze of the trained naturalist; an understanding that clearly had appeal to natural history societies seeking to promote fieldwork as an improving and educative activity accessible to all.

## Fieldwork instruction

Formal instruction in fieldwork skills was given a prominent place by a number of societies. Fieldwork was offered as an effective pedagogy and didactic device for educating and improving a local public and the scientific skills appropriate to natural history were believed to be more rapidly and soundly acquired by taking students out-of-doors. Sir John Struthers, Professor of Anatomy at the University of Aberdeen, exemplified this arguing in an address to the Aberdeen Working Men’s Natural History Society in 1890 that: ‘Less of the lecture room and more in the field, and less of the examination table would all tend to give better results than we at present get, and to give a lasting inspiration’.<sup>50</sup> Struthers remarks were in keeping with the aims of the Working

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<sup>48</sup> Anon, ‘Excursion to Drumnadrochit’, *Transactions of the Inverness Scientific Society and Field Club* (1878), 1, 178.

<sup>49</sup> In this, of course, the naturalists had an ally in Wordsworth who rejected the picturesque believing it to impose the conventions of art on a nature. See N. Trott, ‘The picturesque, the beautiful and the sublime’, in D. Wu (ed.), *A companion to Romanticism*, Oxford, 1998, 77. John Young echoes Wordsworth’s sensibility in verse: ‘For what is Art but Nature’s polished child,/ And wronged when polished to a false degree/ When so, not half so lovely as when wild/ For polish oft conceals impurity’. Young, op. cit. (fn. 40), 262.

<sup>50</sup> 6 October, 1890, *Aberdeen Journal*. It is worth noting here that Struthers was at this time pushing for a five year course of study for medicine in Scottish universities which could continue to include botany, zoology, physics and chemistry as ‘pre-clinical subjects’. Struthers had long worked to restrict the teaching of botany to the first year of the medical course but supported retaining it in some form

Men's Society which recognised from its inception in 1886 the importance of educating their local public. Particular attention was given to encouraging the teaching of natural history in Aberdeen's schools hence the invitation and free entry to the Society's exhibitions for 'all the school children and teachers in the city'.<sup>51</sup>

The attempts made by the Working Men's Society to educate through fieldwork children as well as adults had precedent in older societies despite their reputation as museum associations rather than field clubs. In the 1850s, members of the Montrose Natural History and Antiquarian Society sought to increase their usefulness by running field classes for young men. Alexander Croall and James Gilchrist, who would later be instrumental in setting up natural history societies in Stirling and Dumfries respectively, instituted a series of botanical and geological classes under the auspices of the Montrose Society in 1855. The 'conversational lessons', which were thought to be 'much better calculated to convey instruction to the young', included weekly field excursions, an innovation that prompted the Society as a whole to run monthly outdoor trips for adult members in 1856.<sup>52</sup> In 1858, on the suggestion in a letter sent by Adam White of the British Museum, prizes were offered for the best collections made of local natural history with £2 given to under 20 year olds for the best collection of local shells, rocks minerals and beetles.<sup>53</sup> Such efforts promoting fieldwork as a teaching tool were continued by James Howden who, in 1873, used the occasion of an address to the Montrose Society to call for the formation of a separate field club for young novice naturalists.<sup>54</sup> Howden's long term ambition was to see the Montrose Museum, a repository for the specimens gathered by local fieldworkers, fully integrated into Montrose Academy, the local school.

The use of fieldwork to inculcate a 'taste for natural history' in the young was also later encouraged by the Kirkcaldy Naturalists' Society, a Society that had fostered from its

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against the suggestions of T. H. Huxley to remove it altogether. Struthers pointed to the lack of adequate science education in Scotland's schools to support his view. See C. Pennington, *The modernisation of medical teaching at Aberdeen in the nineteenth century*, Aberdeen, 1994, 26-33.

<sup>51</sup> G. Reay, 'Our Society', *Transactions of the Aberdeen Working Men's Natural History and Scientific Society* (1903), 2, 9.

<sup>52</sup> Angus Archives (hereafter AA), MS 292/1, Minutes of the Montrose Natural History and Antiquarian Society, 5 October 1855.

<sup>53</sup> AA, MS 292/1, Minutes of the Montrose Natural History and Antiquarian Society, 23 November 1858.

<sup>54</sup> J. Howden, *Montrose Natural History and Antiquarian Society Report of the Directors* (1874), 7.



inception in 1882 a close relationship with the Burgh school. The suggestion at the AGM held in the school in April 1883 that prizes be offered to 'boys or girls for the best collection of plants of geological specimens gathered in the neighbourhood' was indicative.<sup>55</sup> A more extensive educational scheme was initiated in 1889 that included examinations on structural botany in addition to the competition for the best herbarium. As well as a general encouragement to explore local natural history the prize and examinations also included specific advice about how and what to collect. The winner of this prize in 1890, a Miss Mary Davidson, while praised for correctly naming 93 of the 109 plants in her herbarium was advised, along with the other contestants, that with '200 common plants within easy reach of Kirkcaldy' the gathering of rarer plants should be avoided, the collecting of which would only lead to 'extermination'.<sup>56</sup>

Fieldwork instruction was also used in the treatment of the insane, a therapeutics encouraged by, and receiving direct support from, a number of Scottish natural history societies. In 1855, the Montrose Natural History and Antiquarian Society responded favourably to a suggestion by James Gilchrist, then Medical Superintendent of the Montrose Asylum, that patients thought fit to attend ordinary meetings should be admitted gratis.<sup>57</sup> Gilchrist, on transfer to the Crichton Royal Institution in Dumfries, instituted an in-house natural history association, the Omnium-Gatherum Society, for patients there. The Society, holding monthly meetings, organised lectures tackled such topics as 'the study of natural history as an aid to mental health' and 'reminiscences of a Crichton boulder'.<sup>58</sup> Gilchrist also ran 'botanical picnics', one of a number of instructional recreations that were informed by his treatment methodology.<sup>59</sup>

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<sup>55</sup> J. B. Bease, *Full ninety years and more*, vol. 1, Kirkcaldy, 1975, 7.

<sup>56</sup> Kirkcaldy Museum and Art Gallery, Uncatalogued MS, Minutes of the Kirkcaldy Naturalists' Society, 11 February, 1890.

<sup>57</sup> 5 January, 1855, op. cit. (fn. 52).

<sup>58</sup> Crichton Royal Museum Archives, Anon, 'Omnium-Gatherum Society', *New Moon Magazine*, April 1868, I am grateful to James Williams, Editor of the *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society*, for bringing to my attention material relating to the Omnium-Gatherum Society.

<sup>59</sup> C. C. Easterbank, *Chronicle of Crichton Royal*, Dumfries, 1940, 151. See also T. A. G. Balfour, 'Obituary notice of Dr James Gilchrist, Dumfries', *Transactions of the Botanical Society of Edinburgh* (1886), 17, 2-11. Perthshire District Asylum and Southern Counties Asylum also utilised natural history pursuits as a method of treatment. See, A. E. Gunther, *The life of William Carmichael McIntosh, M. D., F.R.S.*, Edinburgh, 1977, 45-46; 51. For a more detailed look at the place of 'Nature' in the treatment of the insane in the nineteenth century, see C. Philo, *A geographical history of institutional provision for the insane from medieval times to the 1860s in England and Wales: the space reserved for insanity*, Lewiston, 2004, 585ff.

As an educational pursuit involving outdoor exercise fieldwork was promoted more generally as preventative of mental breakdown, its widespread use as a treatment of patients in Scotland's mental asylums being an extension of this logic to those who already suffered from a 'diseased' mind. James Gilchrist was not untypical in advancing the view that outdoor fieldwork helped avoid the 'evils of neglecting all portions of the mind'.<sup>60</sup> Gilchrist's replacement at Montrose Asylum, James Howden, similarly argued that the outdoor work of a naturalists' field club, with its multiplicity of sights and practices, maintained 'elasticity of the mind' and prevented damage caused by 'unvarying strain in one direction'.<sup>61</sup> James Barron, President of the Inverness Field Club, arguing in a similar vein, saw fieldwork as an opportunity to prevent the damaging effects of idleness while avoiding 'heating the brain or exciting the passions'.<sup>62</sup> That the mode of exploring associated with natural history fieldwork could be understood as signalling a healthy mental state was given further support by A. B. Herbert. Addressing the EMFNS in 1884, he argued that:

Half a century ago, a person seen gazing for any length of time at a bird or insect, or gathering and examining a weed, or breaking rocks and stones, was looked upon rather as a naturalist with the last three letters omitted, or as they say in Scotland, "daft".<sup>63</sup>

Fieldwork, by then more widely recognised to be a rational pursuit, allowed Herbert to happily report that the misidentification of the fieldworker as 'absolutely insane' was no longer a danger.<sup>64</sup>

Fieldwork carried, then, a moral charge associated with stressing the various benefits of the disciplined exploration of local nature. The beauty, conviviality, instruction, science and well-being attached to fieldwork were part of the rhetorical package presented to members of Scottish natural history societies that was put to work in society field excursions. Excursions were occasions to maintain the kind of citizens necessary to create and sustain a local civil society and the rational practices of exploring an orderly and beautiful nature were considered constitutive of those capacities believed to be required for citizens to uphold the public good. Fieldwork was written up as one

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<sup>60</sup> 6 January, 1883, *Dumfries and Galloway Standard and Advertiser*.

<sup>61</sup> Howden, op. cit. (fn. 11), 18.

<sup>62</sup> J. Barron, 'Summary of the session', *Transactions of the Inverness Scientific Society and Field Club* (1881), 2, 99.

<sup>63</sup> Herbert, op. cit. (fn. 33), 189-90.

<sup>64</sup> Herbert, op. cit. (fn. 33), 190.

of a number of occupations thought necessary to create good public servants. The ways in which this portrait appeared in different fieldwork sites and projects can be further elucidated in four examples, examined below, taken from the work of several Scottish field clubs.

## Dredging discourse

Sea dredging was one type of field excursion that combined, in different ways, instruction, aesthetics, science and popular appeal. As noted by others, dredging was a pursuit given prominence by Victorian natural history popularisers Charles Kingsley and Philip Gosse. Their efforts, which also included promoting shoreline collecting and aquariums, were aided (and sometimes hindered) by the growing popularity of seaside visits.<sup>65</sup> 'Popular' as opposed to 'scientific' dredging did not, however, have a monopoly on appeals to pleasure. Edward Forbes, celebrated naturalist and dredge expert, put the experience of dredging in verse in 1840 after the formation of a dredging committee under the auspices of the British Association for the Advancement of Science. Forbes' doggerel spoke of 'dredge with its iron edge/ and its mystical triangle' and, alongside the pleasures of views from a yacht celebrated 'the braver sights the dredge delights/ As it roveth the waters under'.<sup>66</sup> Forbes's 'mystical triangle' was later invoked in an account of a dredging excursion to Arran by John Henderson of the Scottish Marine Station; a centre dedicated to the systematic and scientific exploration of Scotland's marine biology.<sup>67</sup>

In the 1870s, the Dundee Naturalists' Society, with its emphasis on diffusing rather than producing scientific knowledge, organised dredging excursions whose educational aims were given more prominence than a fully articulated research agenda. While

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<sup>65</sup> L. L. Merrill, *The romance of Victorian natural history*, Oxford, 1989, 225-27; D. Allen, op. cit. (fn. 2), 131ff. For seaside tourism in Victorian Scotland, see Durie, op. cit. (17), 65-85. On the aquarium craze, see R. Stott, *Theatres of glass: the woman who brought the sea to the city*, London, 2003.

<sup>66</sup> E. Forbes, 'The dredging song', in G. Wilson and A. Geikie, *Memoir of Edward Forbes, F.R.S.*, Cambridge, 1861, 247. The song first appeared in the *Literary Gazette*, 7 November, 1840.

<sup>67</sup> J. R. Henderson, 'A dredging trip to Arran', *Scottish naturalist* (1885), 2, 5-9. For the significance of the Scottish Marine Station as one institutional site supporting the scientific survey of Scotland, see C. W. J. Withers, *Geography, science and national identity: Scotland since 1520*, Cambridge, 2001, 216-17.

organisers struggled to get more than a handful of people to participate in summer excursions dredging expeditions were well attended. The success of such trips was put down to their affording 'not only marine specimens to museums, and profitable improvement in marine zoology but in the opinion of all who join in them a most enjoyable holiday, beneficial alike to health and energies'.<sup>68</sup> Ticketed at a cost of 6s. per member (and an extra charge of 2s. if members did not give advance notice) the dredging excursions were relatively costly to attend (1s. more than the Society's annual membership fee) and to run.

The Dundee excursions often involved more than one society. In 1882, 50 members from societies in Dundee, Perth and Kirkcaldy explored St Andrew's Bay on the Iron King, a trawler hired for the occasion.<sup>69</sup> A number of roles were assigned to members including two scientific directors, two curators, a general superintendent, two captains – one for the port dredge and the other for the starboard – a director for the dredges and another for the surface net.<sup>70</sup> Most persons attending were designated 'crew'. The specimens acquired, examined once the trawler returned to Dundee, offered an occasion for instruction by those with more expertise in identifying and dissecting marine fauna. This was aided by the fact that the excursions always involved at least one 'authority' on marine biology.<sup>71</sup> The first dredging excursion organised by the Society set the precedent inviting William Carmichael McIntosh, then Medical Superintendent at Perthshire District Asylum and later Professor of Natural History at St Andrews University.<sup>72</sup>

Two 'youthful but already distinguished' men of science, James Cossar Ewart and George John Romanes, similarly provided expertise and instruction on a dredging excursion jointly organised in August 1879 by the Inverness Scientific Society and Field Club and the Ross-shire Philosophical Society.<sup>73</sup> Ewart, then Professor of Natural History at the University of Aberdeen, had set up a marine zoological station on the Cromarty Firth and Romanes, normally based in London, worked at the station as

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<sup>68</sup> Anon, *Annual Report of the Dundee Naturalists' Society* (1880), 7, 3

<sup>69</sup> A brief account of the excursion appears in Bease, op. cit. (fn. 55), 5.

<sup>70</sup> Dundee Central Libraries, Local Studies Collection, Lamb Collection, 142(22A), Advertisement for Dundee Naturalists' Society dredging excursion.

<sup>71</sup> F. W. Young, *The coming of age of the Dundee Naturalists' Society*, Dundee, 1895, 13.

<sup>72</sup> Gunther, op. cit. (fn. 59), 54-5.

<sup>73</sup> Anon, 'Dredging expedition in the Cromarty Firth', *Transactions of the Inverness Scientific Society and Field Club* (1879), 1, 256.

Ewart's associate.<sup>74</sup> During the excursion Ewart and Romanes used the specimens hauled up by the three dredges as a basis for a series of lectures. Deemed 'not the least interesting part of the day', they included an account by Romanes of Starfish which provided, he suggested, 'the first evidence of mind as dawning in the animal kingdom', a suggestion later worked out in detail in his 1883 book on mental evolution.<sup>75</sup> The 'real work' of the excursion, however, involved lowering the dredges into the Cromarty Firth and 'securing the spoils in bottles and boxes, and ticketing each with its technical name'.<sup>76</sup> Such inductive science provided specimens with features that could be described using vocabulary that underlined their aesthetic appeal. The 'stellate embroidery of *Membranipora pilosa*' had a 'fairy like beauty', while other specimens had an 'extraordinary beauty of colour and organisation'.<sup>77</sup> The most striking example was the centipede-like body of the *Nephtys margaritacea* which 'sparkled among the muddy matter in ever-changing iridescence'.<sup>78</sup>

David Robertson, speaking to the Natural History Society of Glasgow in 1867 on dredging practicalities and equipment, also gestured towards the pleasures of dredging noting the 'glowing excitement caused by the drawing out of a well filled dredge'.<sup>79</sup> As well as indicating convivial enjoyment, however, Robertson was keen to stress that much good work could be done alone.<sup>80</sup> The bulk of the fieldwork carried out by members of the Glasgow Society was individual in nature and group excursions were not organised until the mid-1870s, and even then were not well-attended.<sup>81</sup> Robertson's

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<sup>74</sup> Romanes had all his life holidayed in Ross-shire. For more on Romanes, see E. Romanes, *Life and letters of George John Romanes*, London, 1896 and R. England (ed.), *Design after Darwin*, 4 vols, Bristol, 2003, iv.

<sup>75</sup> G. J. Romanes, *Mental evolution in animals*, London, 1883.

<sup>76</sup> Anon, op. cit. (fn. 73), 257; 259.

<sup>77</sup> Anon, op. cit. (fn. 73), 257. *Nephtys margaritacea* is now known as *Electra pilosa*. Previously described as a 'sea mat' it lives on the stipes and holdfasts of kelp plants. I am grateful to Professor Geoff Moore of the University Marine Biological Station at Millport for this information.

<sup>78</sup> Anon, op. cit. (fn. 73), 257. *Nephtys margaritacea* may have actually been a type of worm known as *Golfingia margaritacea*. Again I acknowledge with thanks the help of Professor Geoff Moore.

<sup>79</sup> D. Robertson, 'On marine dredging', *Proceedings of the Natural History Society of Glasgow* (1867), 1, 179-83.

<sup>80</sup> For a brief account of David Robertson's dredging innovations and influence on the institutionalisation of marine zoology, see Allen, op. cit. (fn. 2), 208-14 and P. G. Moore, 'Capt. Alexander Turbyne and the origins of the Marine Station at Millport', *The Linnean* (2002), 18, 25-31. For an account of Robertson's scoop dredge, see T. R. R. Stebbing, *The naturalist of Cumbrae*, London, 1890, 240-41; 367-68.

<sup>81</sup> Mitchell Library, Glasgow City Archives (hereafter GCA), TD1408/1/1/3, Minutes of the Natural History Society of Glasgow, 27 September 1877.

suggestion that, contrary to popular belief, dredging could be successfully carried out by one person 'taking advantage of both tide and wind' was thus in keeping with the fieldwork culture encouraged by the Glasgow Society.<sup>82</sup> Robertson was also keen to stress certain techniques of collecting that aided a more successful and realistic gathering of marine fauna. The boat, Robertson argued, should be from 14 to 16 feet keel. Any smaller and the dredge was likely to get stuck. The dredge itself should be 15lbs in weight, designed to fill quickly at one spot rather than trawl over a larger area. This allowed for a better description of the habitat out of which the specimens were extracted. The additional equipment to identify, separate and store specimens, included a pair of sieves, 3 or 4 glass pickle bottles, a white saucer and a hair pencil to pick out minute objects. Dredging was, in other words, a scientific sport with a growing array of specialist equipment.

## Alpine rarities and botanical ballads

While dredging appealed to expert and novice alike the exploration of Scotland's high mountain flora tended, at least at first, to be a more elite affair. Two clubs were instituted in the 1870s to explore Scottish alpine vegetation whose forms of sociability in the field were connected with the remote spaces they sought to explore. The first, in association with the Botanical Society of Edinburgh, was formed on 9 August 1870 during an excursion conducted by John Hutton Balfour, Professor of Botany at the University of Edinburgh. Modelled on clubs instituted by a number of German universities it limited the number of members to twenty-one and was designed for 'competent young botanists' to explore 'desirable districts of limited area in the Scotch Highlands with a view to the collection in fresh stations of new or rare cryptogamic and phanerogamic plants'.<sup>83</sup> Membership was restricted to those who had 'proved themselves to be pleasant *compagnons de voyage*' and had 'ascended on foot to the summit of three Scottish mountains not less than 3300 feet above the level of the sea'.<sup>84</sup> Office

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<sup>82</sup> Robertson, op. cit. (fn. 79), 179.

<sup>83</sup> 2 August, 1871, op. cit. (fn. 16) and *Transactions of the Botanical Society of Edinburgh* (1870), 11, 323.

<sup>84</sup> J. H. Balfour, 'Botanical excursions in July and August 1870, with pupils', *Transactions of the Botanical Society of Edinburgh* (1870), 11, 75.

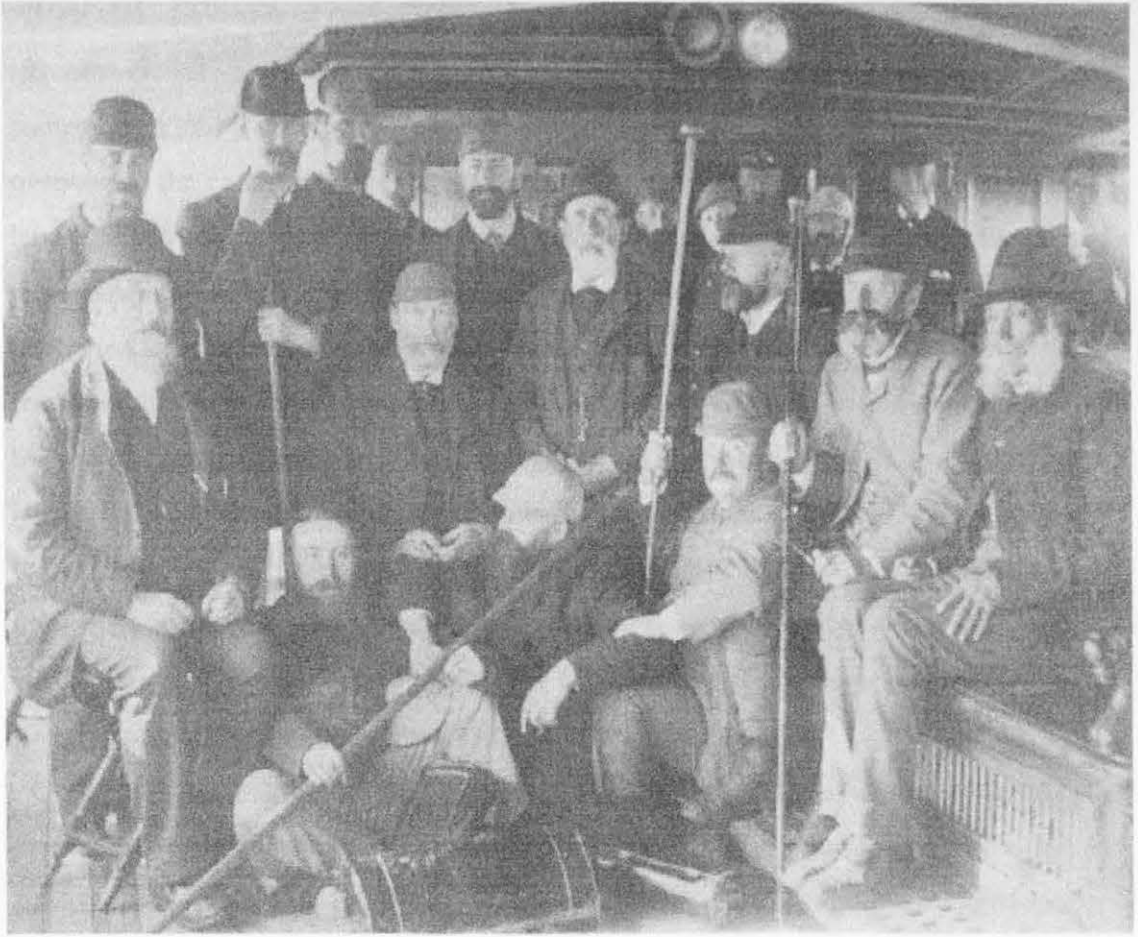


Figure 3.1. Members of the Scottish Alpine Botanical Club on a field excursion, c. 1875. Royal Botanic Garden Edinburgh, MS F19, Minutes of the Scottish Alpine Botanical Club, inserted photograph.

bearers included a Minstrel and a Chaplain as well as the more traditional President, Secretary and Treasurer. The second, the Perthshire Mountain Club, was formed in 1873, and was, in the words of James Britten, 'a laudable though somewhat Scotch appendage' to the Perthshire Society of Natural Science.<sup>85</sup> More provincial in intent than its metropolitan forerunner, its membership was restricted to those who had ascended a Perthshire mountain of over 3000 feet. Meetings for this Club were held on the summits of local mountains with a Cairnmaster, a Geometer, a Quaigh Bearer, a Scribe and Annalist and a Bard as office bearers.<sup>86</sup>

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<sup>85</sup> J. Britten, 'Local scientific societies', *Nature* (1873), 9, 98.

<sup>86</sup> Anon, 'To Ben Chonzie', *Proceedings of the Perthshire Society of Natural Science* (1886), 171. Note that this issue of the *Proceedings* was not assigned a volume number. A more formal *Proceedings* was planned for 1886 with accounts of meetings from 1881 to 1886 gathered into the above issue from the *Perthshire Constitutional* in which they originally appeared. See Chapter 6, p.

Both clubs held annual excursions and published reports in the *Transactions* of their parent societies. Scientific reportage was annotated with extensive commentary on the routes taken and weather experienced. Despite, or perhaps because of, the ‘scientific’ purpose of the excursions the camaraderie of mountain fieldwork was also recounted at length. Performances of the songs by the club bards in mountain corries, a favourite topographic site for botanical exploration, were noted. The songs, which commonly portrayed a feminised nature bravely explored by manly botanists, were a formal requirement for the annual meetings of the Perthshire Club. A number were authored by one of Francis Buchanan White’s daughters and parodied through accounts of mock heroism the hyper-masculinity that others have noted as characteristic of the ‘muscular Christianity’ widely promoted in mid-Victorian Britain.<sup>87</sup> While the songs were published in full (the longest had 61 stanzas) and sung at occasions other than mountain excursions, the Masonic-like appeal of the Club was registered by noting that proceedings of the meetings were ‘known only to the initiated’.<sup>88</sup>

On a more pragmatic note the search for inaccessible botanical rarities was also considered a means to find specimens that had not yet been recorded for the vice-county or country being explored. The works of George Don and John Lightfoot, pioneers in the exploration of Scottish alpine botany, were regularly consulted. Don’s records, as outlined below, had the additional appeal of requiring confirmation as well as supplementation. James Brebner, a Dundee headmaster, achieved fame by finding *Carex ustulata* (a rare species of sedge) on Ben Heasgarnich in 1885, giving credence to Don’s apparently dubious claim to have discovered the plant in 1810. Brebner’s find and commitment to mountain fieldwork qualified him to lead an excursion of the Mountain Club to see the plant in 1886.<sup>89</sup>

While it was rewarding to confirm old records or discover a species not yet recorded

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167 for further details.

<sup>87</sup> The contents page of the *Proceedings of the Perthshire Society of Natural Science*, 1, gives M. B. W. (Miss Buchanan White) as the author of the songs. D. E. Hall (ed.), *Muscular Christianity: embodying the Victorian age*, Cambridge, 1994, 17-44.

<sup>88</sup> F. B. White, ‘Opening address’, *Proceedings of the Perthshire Society of Natural Science* (1888), 1, 37. For the long piece of Mountain Club doggerel, see J. Young, ‘The corrie of wild flowers’, in Young, op. cit. (fn. 40), 250-62.

<sup>89</sup> F. B. White, ‘Opening address’ *Proceedings of the Perthshire Society of Natural Science* (1886), 1, 4. Anon, ‘James Brebner’, *Dundee Obituary Book No. 2*, Dundee, 195. For more on Brebner and *Carex ustulata* (now *Carex atrufusca*), see the online Perthshire herbarium hosted by the Perth Museum & Art Gallery, <http://www.pkc.gov.uk/herbarium>.



for Scotland the kudos gained for stumbling upon a new species was thought unmatched. Andrew Peebles Aitken, Professor of Chemistry at the Royal Dick Veterinary College and Minstrel of the Scottish Alpine Botanical Club, satirised this quest.<sup>90</sup> His song ‘The Howrie’ sung by the Club at the top of Ben Avon in 1878, asked:

What is the surest plan to secure immortal fame?  
Tis to gather some new species and label’t wi yer name.  
And label’t wi yer name, and label’t wi yer name  
Get Hooker bricht to describe it and label’t wi yer name.<sup>91</sup>

The quest for new species mirrored a more extensive culture of pursuing ‘firsts’ supported by societies regarded by historians as important in understanding nineteenth-century Scottish civil society and national identity. Members of bibliographical clubs, for example, were as keen as the earnest botanist to find and publish new ‘species’ of not yet known historical material.<sup>92</sup>

As well as scientific prowess the clubs encouraged small-scale political activism on issues closely related to fieldwork. In this sense, while escape to wild nature was part of the clubs’ rhetoric, civic duty and politics formed part of a wider remit. The disappearance of scarce flora was one such concern. The botanists admitted being partly to blame but it was summer visitors and ‘hawkers’ who were singled out as the chief culprits. This was the case for Charles MacIntosh at least, associate member of the PSNS, whose paper on ‘The destruction of ferns and other rare plants’ pointed the finger at ‘a set of tramps’ known to hawk rare ferns to summer visitors.<sup>93</sup> The motto of the Perthshire Mountain Club, *Salix herbacea floreat* (may the dwarf willow flourish) expressed the Club’s preservationist ethic. John Young included a stanza in a Club song expressing outrage at plant hunters plundering rare flora:

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<sup>90</sup> Aitken was said to have had a ‘sweet and sympathetic’ singing voice. Anon, ‘Andrew Peebles Aitken’, *Transactions of the Botanical Society of Edinburgh*, (1904), 23, 47-53.

<sup>91</sup> Appears in op. cit. (fn. 16), 140-41.

<sup>92</sup> I owe this point to Professor Graeme Morton. On early Victorian ‘bibliomania’ in Scotland, see M. Ash, *The strange death of Scottish history*, Edinburgh, 1980, 59-86. Scottish bibliographical and historical clubs had something of a renaissance in the later nineteenth century. See G. Morton, ‘Historical clubs and societies’, in M. Lynch (ed.), *Oxford companion to Scottish history*, Oxford, 2001, 310-11.

<sup>93</sup> Perth Museum and Art Gallery, uncatalogued MSS, Minutes of the Perthshire Society of Natural Science no. 2, 18 December 1879. MacIntosh, a rural post runner, had associate membership on account of not being able to afford the cost of ordinary membership. See H. Coates, *A Perthshire naturalist: Charles Macintosh of Inver*, London, 1923.

Oh sordid spirit! Mercenary soul!  
Would ravish beauty for a selfish joy:  
Destroy beyond remedial control,  
And glory in the means he did employ.<sup>94</sup>

If specimens were removed from the mountains the justification was they were needed for advancing science. So another Club song argues the case to ‘Mother Nature’ in the face of her wrath in seeing the botanists ‘murder’ innocent flowers. The flowers, the song argues:

Kill to live, but we that we may know  
Why such things be – why such a flower may grow  
Where others can’t.<sup>95</sup>

Despite an awareness of the importance of protecting rare alpine flora, Perthshire Club Secretary Francis Buchanan White’s policy of measuring the highest point at which a plant was found with an aneroid barometer ‘with a scale so large that a rise or fall of ten feet could be detected’ was later criticised for giving away the position of stations and thus accelerating the extermination of Scotland’s alpine botany.<sup>96</sup>

Club members also expressed concern about restrictions placed on exploring mountain flora by landowners.<sup>97</sup> An excursion to Braemar by the Scottish Alpine Botanical Club in 1884 provided an opportunity to complain that ‘no country in Europe but Scotland, with all its boasted character for freedom, shuts up its mountains from the public’.<sup>98</sup> The excursionists were particularly concerned that Ben-y-Geol, with its ‘twenty-three corries’ was ‘diligently watched so that no mountain prowlers or “herb gatherers” can ever get leave to penetrate its recesses’.<sup>99</sup> The excursionists also observed a wooden hut erected at the base of Cairn Toul to ‘keep wanderers’ off. For the reporter of the

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<sup>94</sup> J. Young, op. cit. (fn. 40), 256.

<sup>95</sup> M. B. W. ‘Apollo smiles’, *Proceedings of the Perthshire Society of Natural Science* (1889), 1, 60.

<sup>96</sup> P. Ewing, ‘The summit-flora of the Breadalbane range’, *The Glasgow Naturalist* (1912), 4, 48.

<sup>97</sup> On this theme, see R. A. Lambert, ‘In praise of mountains and the freedom to roam: Some mountaineering songs and verse from the Cairngorms, 1850 - 1960’, in *The ballad in Scottish history* (ed. E. J. Cowan), East Linton, 2000, 161-77. James Bryce, Liberal MP for Aberdeen, first put forward the Access to Mountains Bill in 1884, a Bill supported by a number of Scottish natural history societies. Bryce was the son of James Bryce Senior, a geologist who was killed in 1877 by a rock fall while preparing for an excursion of the Inverness Scientific Society and Field Club to Inverfarigaig Pass near Loch Ness. W. Carruthers, ‘Monument to Dr. James Bryce’, *Transactions of the Inverness Scientific Society and Field Club* (1878), 1, 100.

<sup>98</sup> C. Stuart, ‘Excursion of the Scottish Alpine Botanical Club to the Braemar highlands, with the ascents of Lochnagar, Corry Ceann-mohr, and Ben Macdhui, in August 1883’, *Transactions of the Botanical Society of Edinburgh* (1883), 16, 113

<sup>99</sup> Stuart, op. cit. (fn. 98), 113.

excursion, Cairn Toul was ‘the finest mountain in the Highlands’ and ‘its noble form made one wish to be more intimately connected with it’.<sup>100</sup> The Club made sure to note its gratefulness to those landowners who did give permission to explore their territory. Lord Abinger was singled out for particular praise in 1886 offering not only access but his head deer stalker, Donald Cameron.<sup>101</sup>

Beyond the inner workings of the two clubs it is important to note that Scottish alpine fieldwork had a wider set of participants and audiences. John Young’s Mountain Club song ‘*Menziesia Coerulea*’ was sung, for example, at a joint meeting of the Dundee Naturalists’ Society and the PSNS in 1875. The song, performed with ‘great éclat’ by Young, was reported as ‘now well known among botanical circles’.<sup>102</sup> Alpine fieldwork also appeared on the field excursion programmes of other Scottish natural history societies. The Andersonian Naturalists’ Society ran an ‘alpine excursion’ during the Glasgow Fair holidays (July) in 1890 conducted by Peter Ewing of the Natural History Society of Glasgow.<sup>103</sup> The subsequent account of the excursion, written up by a lady member, echoed some of the language contained in the reports of the specialist mountain field clubs. The superior beauty of high mountain flora was detailed alongside mythological descriptions of mountain scenes (the ‘waste of towering peaks’ being compared to ‘a throng of Titan vestals’), the report ending with a conventional list of plants recorded by the excursionists.<sup>104</sup> The Andersonian account did contrast somewhat with those reporting excursions of the Scottish Alpine Botanical Club in giving more space to descriptions of panoramas, poetic citations and commentary on the history of mountain names. In that sense it was more ‘popular’ than the specialist mountain clubs.<sup>105</sup> It also differed in allowing lady members to attend mountain field trips affording Miss Raymond Burden (1860-1951), member of the Society’s council, the

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<sup>100</sup> Stuart, op. cit. (fn. 98), 113.

<sup>101</sup> W. Craid, ‘Excursion of the Scottish Alpine Botanical Club to Glen Spean and Pitlochrie in 1886’, *Transactions of the Botanical Society of Edinburgh* (1886), 17, 65.

<sup>102</sup> Anon, op. cit. (fn. 34).

<sup>103</sup> Ewing was a recognised expert in alpine botany and was able to claim in 1912 that he had climbed to the summit of Ben Lawers 53 times and spent a total of 200 days on the mountain’s slopes. Ewing, op. cit. (fn. 96), 61. See also Anon, ‘Peter Ewing’, *Glasgow Naturalist* (1913), 5, 113-16.

<sup>104</sup> E. R. Burden, ‘Alpine excursion to Cam Chreag and Beinn Boireann’, *Annals of the Andersonian Naturalists’ Society* (1890), 1, 74. Burden became a member of the Natural History Society of Glasgow in 1895 and married Peter Ewing in 1901. Anon, ‘Mrs Ewing’, *Glasgow Naturalist* (1951), 17, 62.

<sup>105</sup> GCA, TD1408/6/1/1, Newspaper clipping inserted in Minutes of the Andersonian Naturalists’ Society, 29 October, 1885.

opportunity to exhibit at an indoor meeting '40 species of plants representing our highland flora' collected on the alpine excursion.<sup>106</sup>

The popularity of mountain fieldwork might be ascribed in part to the obvious parallels between the botanical exploration of the Scottish Highlands and the increasing popularity of mountaineering. It is, of course, impossible to separate the two endeavours with at least one of Scotland's early mountaineering clubs, founded in 1887, aiming 'to procure and impart scientific, topographical and historical information about the Scottish mountains'.<sup>107</sup> Indeed, the institutionalisation of high mountain botanical exploration preceded that of Scottish mountaineering by nearly two decades and the convivial and moral practices of alpine botanical exploration and mountaineering for its own sake were, not surprisingly, similar (see plate 3.2).

The work of the two mountain clubs and the wider popularity of 'Alpine' excursions has led some to note a bias in Scottish nineteenth-century botanical research. John Burnett, commenting on the history of exploration of Scottish vegetation has argued that 'the alpine rarities of Clova, Caenlochen, and Lawers had an allure which [blinded] many botanists to the common vegetation of the hills'.<sup>108</sup> Another more substantial account of the history of botanical research in Scotland, noting in passing the work of Scottish natural history societies, gives sustained attention to the two alpine botanical clubs.<sup>109</sup> The clubs themselves had an 'allure' that suggested that, in nineteenth-century Scotland, botanical mountaineers were more common than explorers of lowland vegetation. Francis Buchanan White, apparently confirming this view, commented in 1886 that the 'penalty that is paid is that, after a run on the mountains, lowland excursions seem very dull'. This did not, however, express the official research agenda of the PSNS.<sup>110</sup> Alpine naturalising, as the clubs dubbed it, certainly offered a 'peculiar enjoyment' that was as much about derring-do and fraternal bonds as adding to a knowledge of Scotland's flora.<sup>111</sup> The aim of a natural history society, however, was to make as complete and as trustworthy an account as possible of the flora and fauna of

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<sup>106</sup> GCA, TD1408/6/1/1, Minutes of the Andersonian Naturalists' Society, 3 September 1890.

<sup>107</sup> *Rules of the Cairngorm Club*, Aberdeen, 1923.

<sup>108</sup> J. H. Burnett, *The Vegetation of Scotland*, Edinburgh, 1964, 1.

<sup>109</sup> H. R. Fletcher, 'Exploration of the Scottish flora', *Transactions of the Botanical Society of Edinburgh* (1959), 38, 30-47.

<sup>110</sup> F. B. White, 'Opening address', *Proceedings of the Perthshire Society of Natural Science* (1886), 1, 2.

<sup>111</sup> White, *op. cit.* (fn. 110), 2.

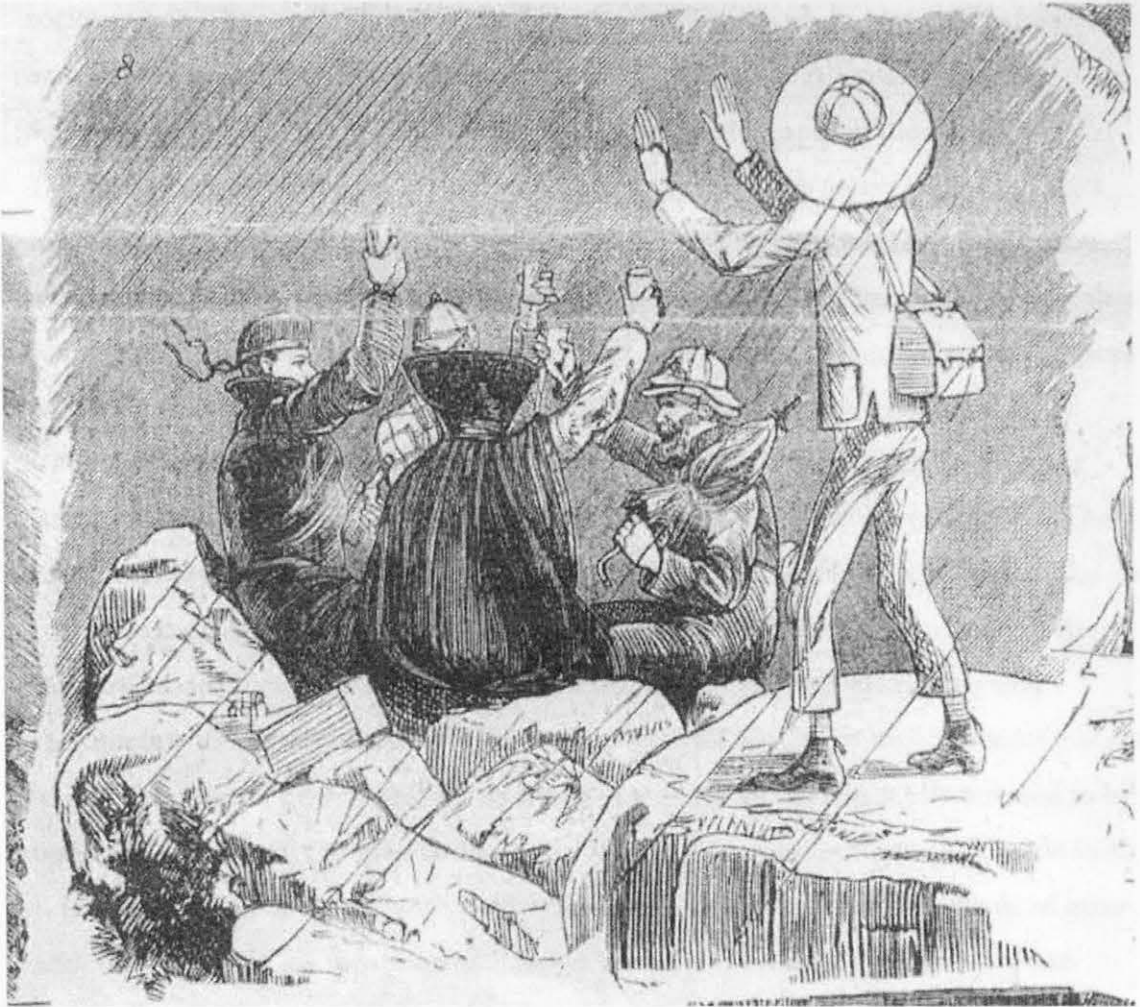


Figure 3.2. The convivial and moral practices of mountaineering were much in evidence in the excursions of Scotland's mountain botanical clubs. This illustration, depicting a group of mountaineers at the summit of Ben Macdhui, could have easily have been of a summit meeting of the Scottish Alpine Botanical Club. The caption read: 'At length we reach the top of the Ben, but are disappointed in the matter of a view. We console ourselves with toasts, the blue-ribbonite feebly protesting'. Anon, 'An ascent of Ben Macdhui', *The Graphic* (1883), 484.

their district whether mountainous or not.

### Botanical recording: accuracy, credibility and trust

Members concerned to contribute to natural history projects at a national scale were anxious to encourage their societies to do scientific work useful to those outside the society's membership. Accuracy in recording was considered the essential feature in making a society's records significant beyond the region being explored. In 1885, two years after Watson's tirade against the error strewn reports of provincial natural history

societies (see Chapter 2, pp. 24-5), the President of the Aberdeen Natural History Society James Trail, Professor of Botany at the University of Aberdeen, and the Secretary, John Roy, Aberdeen schoolmaster, published a paper in the society's *Transactions* entitled 'Additions and corrections to *Topographical botany* for the counties form Forfar to Elgin inclusive'.<sup>112</sup> The errors and gaps in Watson's own publication were pointed out by two botanists committed to just the kind of provincial society that Watson had attacked. Trail and Roy were careful to correct Watson either on the basis of 'personal investigation' or 'information supplied on trustworthy evidence'.<sup>113</sup>

The delicate problem of trust in fieldwork was written into the standard reference books carried into the field by the botanists of Scottish natural history societies. The highly involved micro-politics surrounding nineteenth-century botanical field guides was fuelled in part by debates over the accuracy of records and the efforts to underwrite their trustworthiness.<sup>114</sup> One better known instance of this was the controversy surrounding the records made by George Don (1764-1814), a Scottish horticulturist and 'pioneer' botanical fieldworker.<sup>115</sup> At least three of the works frequently referred to by botanists singled out Don for criticism.<sup>116</sup> The most acidulous critique was made in W. J. Jackson and G. A. W. Arnott's *British flora* where Don was accused not only of error and imprecision in his recording techniques but also of inventing stations for rare species by planting them in the wild after growing them in his garden. Such critiques, the motivations for which are not clear, prompted a number of naturalists working in Scotland to attempt a rescue of Don's posthumous reputation. John Knox of the Perthshire Society of Natural Science, in writing an account of Don's life, first drew attention to his stature as a Scottish botanist of repute.<sup>117</sup> Knox's article prompted George Claridge Druce, an Oxford pharmacist, to publish a lengthy paper in *The Scottish*

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<sup>112</sup> J. Trail and J. Roy, 'Additions and corrections to *Topographical botany* for the counties form Forfar to Elgin inclusive', *Transactions of the Natural History Society of Aberdeen* (1885), 2, 13-20.

<sup>113</sup> Trail and Roy, op. cit. (fn. 112), 13.

<sup>114</sup> For the reception and wider intellectual context of George Bentham's *Handbook of British flora*, see D. E. Allen, 'George Bentham's *Handbook of the British flora*: from controversy to cult', *Archives of natural history* (2003), 30, 224-36.

<sup>115</sup> For biographical detail, see J. Knox, 'The life and labours of a Scottish naturalist, George Don of Forfar', *The Scottish naturalist* (1881), 6, 62-70; 109-16; 149-53.

<sup>116</sup> W. G. Arnott and W. J. Hooker, *The British flora*, 2<sup>nd</sup> ed, London, 1855; J. D. Hooker, *The student's flora of the British islands*, London, 1870; H. C. Watson, *Compendium of the Cybele Britannica*, London, 1870.

<sup>117</sup> J. Knox, 'The life and labours of a Scottish botanist: George Don of Forfar', *Proceedings of the Perthshire Society of Natural Science* (1881), 1, 8.

*naturalist* systematically confirming the accuracy of Don's supposed errors and fabrications.<sup>118</sup> Druce's account hints at one possible reason why Don was held in disdain by Arnott in particular. A 'splitter' not a 'lumper' when it came to taxonomy, Don, unlike Arnott, was closer to mastering 'the extreme variability of animate nature'.<sup>119</sup> More than this however, the 'endowed professor', (Arnott had been Professor of Botany at the University of Glasgow from 1845 to 1868), clearly lacked the 'divine fire' that must have enlivened Don in his heroic explorations of Scottish flora.<sup>120</sup> The Don controversy, in championing someone with little formal training, may have been part of the process of amateurisation discerned by others as paralleling the professionalisation affecting the botanical world from the 1870s.<sup>121</sup> It certainly provided an opportunity to question the judgement of University-based men of science.

Don also provided an historical example useful in training novice workers in the requirements of good fieldwork. Symington Grieve, addressing the Edinburgh Microscopical and Field Naturalists' Society in 1886, presented Don as 'the greatest of our Scotch field botanists' but also pointed to his policy of not recording the exact localities where he found rare plants as the reason why so many doubts had been cast on his records.<sup>122</sup> Grieve contrasted Don's field methods to John Lightfoot, author of *Flora Scotica* (1777). Where Don was sloppy in recording, Lightfoot had noted exactly the location where he obtained his specimens. The lesson was clear. A vasculum stuffed full of rarities was useless if the place where the specimens were gathered went unrecorded. Grieve's warned his audience of the 'sorrow and regret that fill the young botanist's heart' when a specimen never before recorded could not be associated with their fieldwork due to lack of discipline in noting the exact spot where it was taken.<sup>123</sup> While its location may be given only in general terms in a publication to prevent the

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<sup>118</sup> G. C. Druce, 'The botanical work of George Don of Forfar', *Scottish naturalist* (1884), 1, 126-29; 176-8; 217-23; 258-261 and 2, 12-20.

<sup>119</sup> Druce, op. cit. (fn. 118), 2, 17. The splitter and lumper division, analogous to different types of voters, indicated either botanists who tended to discriminate more minutely between taxon (splitters) or those that promoted classification that avoided dividing up those species that seemed broadly similar (lumpers). See Allen, op. cit. (fn. 114).

<sup>120</sup> Druce, op. cit. (fn. 118), 2, 17.

<sup>121</sup> See S. J. M. M. Alberti, 'Amateurs and professionals in one county: biology and natural history in late Victorian Yorkshire', *Journal of the history of biology* (2001), 34, 115-47

<sup>122</sup> S. Grieve, 'A few suggestions to our younger members on how to equip themselves for useful botanical work in the field', *Transactions of the Edinburgh Microscopical and Field Naturalists' Society* (1886), 2, 7.

<sup>123</sup> Grieve, op. cit. (fn. 122), 6.

plants eradication by over-enthusiastic fieldworkers, the herbarium in which a specimen was kept should record the precise location. For Grieve it was more than a matter of discipline. It was the moral duty of a discoverer of a rare plant to publicise its existence to the scientific world.

Although the controversy surrounding George Don tended to focus around rarities that were hard to find, Grieve also counterpoised this with a call to botanists to remember to collect common plants. The best field botanists recorded all plants, common or not, with such records being of more use to phytogeographers like H. C. Watson. Topographical botanists would also want a complete picture of plant distribution and a note of 'the climate, soil, and the elevation at which the plant grows'.<sup>124</sup> Grieve's instructions had, then, a wider application than botanical recording instilling in the novice botanists an appropriate sense of moral duty and a refusal to be entirely parochial. That a connection could be made by Patrick Geddes several years later between botanical recording and the proper running of Britain's industry and commerce would not have been an imaginative leap lost on members of natural history societies.<sup>125</sup> Grieve for one would have been quite able to see botanical fieldwork as inculcating the moral and organisational skills necessary to be a good citizen as well as botanist.

## Dividing up Scotland

For those societies that took seriously their aim of providing for British science an exhaustive account of local flora and fauna it became imperative to properly delimit the area set for comprehensive exploration. Keeping the work of the societies 'strictly local' meant careful definition of what counted as such. Appropriate boundaries were a particular concern for naturalists eager to rationalise the work of Scottish natural history societies. The standard areal unit for botanical recording by the later nineteenth-century, the vice-county, had been proposed as a way of equalising the variation in size

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<sup>124</sup> Grieve, *op. cit.* (fn. 122), 11.

<sup>125</sup> See P. Geddes, 'A naturalists' society and its work', *Scottish geographical magazine* (1903), 19, 92. For a critical look at the connections between botanical mapping and the nineteenth-century management of Britain and its empire, see J. Browne, 'Biogeography and empire', in N. Jardine, J. A. Secord and E. C. Spary (eds.), *Cultures of natural history*, Cambridge, 1996, 305-321.



of counties. Some counties, too large to be practical for recording purposes were divided into smaller units while others, considered too small, were merged with neighbouring counties to create an appropriately sized vice-county that could be readily explored by resident botanists. While not always corresponding to the territories claimed by Scottish natural history societies, vice-counties easily related to county boundaries that had commonly been used for botanical recording in the past.<sup>126</sup> Formulated by Watson, the vice-county system was widely though not universally employed by Scottish natural history societies to record the location of botanical and faunal finds.

Despite the widespread appeal of the vice-county as a system facilitating the systematic recording of Scotland's flora and fauna a rival divisional scheme was proposed. In 1871, Francis Buchanan White suggested dividing Scotland into thirteen districts according to 'natural divisions' or river basin watersheds and his proposal had a limited but still influential impact.<sup>127</sup> White's scheme, originally formed for the purpose of cataloguing insects but later adopted by others for recording Scotland's flora and fauna more generally, was advertised as an improvement to the 'entirely artificial' Watsonian system.<sup>128</sup> The topographical divisions were not, however, easy to define. For one area at least, White had to invoke the physical geography of the 'distant past' to justify his border lines. The area drained by the Tay was enlarged to include the catchment basins of adjacent rivers in Forfarshire and Kincardineshire on the basis that during a 'distant period ... we would probably have found that these rivers were then all joined to the Tay'.<sup>129</sup> This raised the problem of how far seaward the natural areas ought to extend; a problem not limited to geomorphological reconstructions but also to the definition of what counted as 'local' marine natural history. The size of his districts could also, White worried, prove to be too large for fieldworkers hoping to explore them exhaustively and sub-division into the catchment basins of tributary rivers was proposed, but not elaborated upon, as a solution.

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<sup>126</sup> Allen, op. cit. (fn. 2), 114-15 and J. E. Dandy, *Watsonian vice-counties of Great Britain*, London, 1969.

<sup>127</sup> F. B. White, 'Insecta Scotica', *Scottish naturalist* (1871), 1, 161-2. White's scheme was similar to one proposed in 1838 by a member of the Botanical Society of Edinburgh. See Allen, op. cit. (fn. 2), 114.

<sup>128</sup> F. B. White, 'On the work of local naturalists' societies', *Scottish naturalist* (1885), 2, 101.

<sup>129</sup> White, op. cit. (fn. 128), 101.



**MAP OF SCOTLAND.** SHOWING THE NATURAL DIVISIONS ADOPTED IN INSECTA SCOTICA.

Figure 3.3. Francis Buchanan White’s original sketch of Scotland’s ‘natural’ faunal divisions. *Scottish naturalist* (1871), plate III.

It is not clear how widely White's scheme was used. A report on the progress of botany in Scotland published in 1894, noting that all work on Scottish flowering plants had been based on Watson's divisions, suggests it was largely ignored by botanists.<sup>130</sup> This was not for want of attempts to promote White's natural divisions to Scottish natural history societies. White used reviews of the societies' publications to call on local workers to confine their explorations to the area defined by his natural divisions. Two Glasgow natural history societies, whose *Proceedings* were reviewed by White in 1877 and 1878, were both reminded to restrict their work to the area drained by the Clyde.<sup>131</sup> Disappointment was expressed at the foreign and Britain-wide focus of the papers published by the Glasgow Society of Field Naturalists and the publications of the Natural History Society of Glasgow provoked the comment that 'our friends in the west still seem to labour under the illusion that Rannoch forms a part of Clydesdale'.<sup>132</sup> Members of the Stirling Natural History and Archaeological Society were also encouraged to define more precisely the district they planned to explore. In April 1884, their vice-president, J. A. Harvie-Brown wrote to the Council encouraging the Stirling Society to amalgamate with the Alloa Society of Natural Science and Archaeology so that the flora and fauna of the Forth river basin could be adequately mapped.<sup>133</sup> His letter, noting the *modus operandi* of the Perthshire Society of Natural Science of which Buchanan White was President, pressed that the 'true work' of a Society ought to restrict itself to a well-defined locality. Harvie-Brown's suggestion was voted on by members six months later, the Secretary arguing that the former arrangement of 'a district enclosed by an imaginary line of twenty miles around Stirling Castle, as a centre' was 'neither scientific nor politic'.<sup>134</sup> Such a district trespassed into White's areas of Tay and Clydesdale. Although the proposal to define the local area as the basin of the Forth and its tributaries as the principal district from which members were encouraged to

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<sup>130</sup> J. W. H. Trail, 'Progress of botany in Scotland', *Annals of Scottish natural history* (1894), 222. This appears to run counter to White's claim made in 1885 that his method of division was in 'harmony with several works, treating of the flora and fauna, that have already been published'. White, *op. cit.* (fn. 128), 102.

<sup>131</sup> F. B. White, 'Reviews', *Scottish naturalist* (1877), 4, 58. Clydesdale also included rivers between 'Culzean castle and Loch Awe' as well as the island of Arran and Islay. See White, *op. cit.* (fn. 127), 162.

<sup>132</sup> F. B. White, 'Reviews', *Scottish naturalist* (1878), 4, 215.

<sup>133</sup> Privately held, Council Minutes of the Stirling Natural History and Archaeological Society, April 1884.

<sup>134</sup> D. Chrystal, *Transactions of the Stirling Natural History and Archaeological Society* (1884), 59.

collect specimens was unanimously adopted it did mean an area for exploration of 300 square miles.<sup>135</sup> The Stirling Society thus ran the risk of loosening the connection between civic pride and 'scientific' fieldwork and of disillusioning members who saw natural history as a leisure activity carried out during 'spare time'.

Harvie-Brown, who pushed for the use of White's natural divisions in other ways, was himself faced with the problem of marketing White's topographic scheme. Harvie-Brown, who used White's 'faunal areas' as a basis for his ornithological work published in the 1890s, collaborated with John Bartholomew from 1890 to produce a map of Scotland clearly showing the boundaries first sketched by White.<sup>136</sup> As a publishing project, however, the map had to reach a wider audience than Scotland's naturalists. The advertisement for the map, appearing in Bartholomew's catalogue for 1893, made clear that it was 'valuable for sportsmen'. Only the small print described the features that might make it 'of special interest' to the naturalist. It was Bartholomew who pressed for features that would make it attractive to sportsmen, proposing in 1891 the shading of sections of rivers where salmon were fished and a designated tint for grouse moorland and deer forests.<sup>137</sup> The suggestion that small sketch maps appear on the map to illustrate the local distribution of flora and fauna appears to have been dropped due to a concern that the map already contained too much information.

The task of mapping Scotland's flora was clearly a social as well as scientific task. At a basic level it involved negotiations over who did what and where. Its social effects also included the encouragement of a certain sort of public self whose trustworthiness in botanical recording evidenced a capacity to contribute effectively to civil society. As with all the activities that were included under the rubric of associational fieldwork, mapping had to grapple with more than natural boundaries. Dividing up Scotland for the purposes of a national project of botanical or zoological recording risked reducing the significance naturalists could attach to exploring and displaying the flora and fauna of their locality. This regional and civic boosterism had scientific currency in the sense

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<sup>135</sup> This point was put to the Society by Robert Kidston.

<sup>136</sup> J. A. Harvie-Brown and J. G. Bartholomew, *Naturalist's Map of Scotland*, Edinburgh, 1893. Viewable online in the digital library of the National Library of Scotland at <http://www.nls.uk/digitalibrary/map/early/scotland.html>.

<sup>137</sup> RMS, Harvie-Brown collection, Box 3/45, Bartholomew to Harvie-Brown, 30 April, 1891. Grouse shooting was exceptionally popular at this time with half-a-million birds shot in 1893. See A. J. Durie, *George Washington Wilson, sport and leisure in Victorian Scotland*, Lancaster, 1988, 35.

that natural history societies could be encouraged out into the field on the grounds that it was a public duty to explore and make known local natural history. Over-stretching citizens with an interest in natural history risked dislocating them from one of the underlying justifications for contributing to a larger scientific project. The negotiating between social and scientific ends of larger scale projects also included carefully managing the divisions between leisure and science in ways that varied depending on where and how natural historical mapping took place.

## Summary and conclusion

This chapter has sought to untangle somewhat the apparent jumble of relations and practices that constituted the associational fieldwork of nineteenth-century Scottish natural history societies. Running field excursions meant arbitrating between different constituencies and practices and presenting out-of-door science as a useful and attractive occupation provoked negotiations between conflicting concerns. Advertising fieldwork as a leisure pursuit meant presenting it as a *via media* between the more ascetic approach of the solitary fieldworker and the easier (and therefore less rewarding) pleasures associated with popular leisure pursuits. The use of Romantic tropes, both in descriptions of nature and in accounts of social relations, intimated a concern to portray, and act out, fieldwork as a pursuit that was not only health-giving and morally improving for the individual but also for local and regional society. The potential conflict between the nominalist impulse of science and the metaphorical imaginings associated with panoramic accounts of landscape had to be managed so as to retain, along with scientific usefulness, fieldwork's moral and aesthetic appeal.<sup>138</sup>

The tangle of practices and concerns clustering round fieldwork as a means to civil society and scientific progress was made evident through 'thicker' descriptions of specific field activities. Dredging and alpine fieldwork both had specific associations unique to their favoured destinations. Dredging could appeal to widely appreciated seaside pleasures taking excursionists into deeper water literally and intellectually.

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<sup>138</sup> For more on the history of the apparent division between the metaphoric and scientific, see B. M. Stafford, *Voyage into substance: art, science, nature and the illustrated travel account, 1760-1840*, Cambridge Mass., 1984, 31-56.

Alpine ‘allure’ seemed to entrain a particularly masculinist discourse put to verse by the field club bard. It also occasioned civic protest in the face of the extirpation of rare flora and landlords’ ghillies patrolling mountains whose slopes may have supported species new to science but were also of interest to the growing population of mountaineers more concerned with conquering Scottish peaks than cataloguing their Alpine flora. The character required to ascend to Scotland’s highest mountains and risk martyrdom exploring overhangs and inaccessible corries was thought congruent with the trustworthiness of a fieldworker who correctly recorded the station and identified the name of plants. Credibility in botany lent credibility in other social spheres. Even the austere objectivism of cartographic divisions for zoological fieldwork in Scotland carried a social and cultural charge. As a contribution to an albeit loosely defined Britain-wide scientific mapping project it involved negotiating between a sense of national pride in providing scientific results from Scotland and local and regional efforts to encourage people to raise the cultural ‘pitch’ of their town by participating in fieldwork.

Although fieldwork was often described and advertised in terms of the appeal of nature discovered away from the pressures and debilitating effects of town living it was inextricably tied to a discourse that promoted citizens able to enhance urban landscape and contribute to civic affairs. As Geddes argued at the end of the late-Victorian period, teaching the naturalist’s way of looking ‘may accelerate city improvement’.<sup>139</sup> Remote spaces and specialist field practices were seen as a means to improve character and ameliorate social ills. In that sense such places and activities were seen as constitutive of, rather than as an escape from, civil society. The support given by the societies to urban initiatives including public parks, botanical gardens and, most especially, museums was material expression of a discourse that valued the improving effects of exploring local natural history. Fieldwork was, therefore, not so much a rejection of the town than a way of envisioning particular kinds of urban spaces, occupations and endeavour; a civic discourse sustained by nineteenth-century Scottish natural history societies whose effect on, and presence in, Scotland’s built environment is examined in more detail in the next chapter.

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<sup>139</sup> Geddes, *op. cit.* (fn. 128), 91.

## Chapter 4

### Natural history and civic pride

The field excursion of the third annual meeting of the Northern Scientific and Literary Societies held in Banff in 1883 provided a public spectacle for the town. The *Banffshire Journal* recorded that:

By eight o'clock [on Saturday Morning] Low Street presented a scene of unwonted animation, hundreds of spectators having turned out and lined its pavements, while carriages in great variety of form and dimension, every one drawn by at least a pair of capital horses, were driven along smartly to take their places in the procession.<sup>1</sup>

The rendezvous for the excursionists, the Fife Arms Hotel, provided a grand civic backdrop to the spectacle being adjacent to, and in architectural competition with, the Town House.<sup>2</sup> Fieldwork, for all the accompanying rhetoric of escape from the town, could provide a ceremony that drew crowds and provoked, as the report testified, public excitement. What was more often considered an event organised for members of a natural history society became a public rite that transposed science into the language of civic pride and progress.<sup>3</sup>

This chapter offers an account of the public lives of Scottish natural history societies in the civic realm and examines the ways in which their activities were orientated towards local civil society. The societies' imprint on a local urban environment was registered in numerous ephemeral and more permanent ways. The chapter investigates the various sites, occasions and advertising strategies by which the societies were made recognisable and accessible to a local public. The first section examines conversaciones and exhibitions. Society members regarded such events as useful for recruitment purposes and as a way of fulfilling educational goals. Yet conversaciones were defined not only

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<sup>1</sup> *Transactions of the Banffshire Field Club* (1883), 1, 123.

<sup>2</sup> C. McKean, *Banff and Buchan: an illustrated architectural guide*, Edinburgh, 1990, 14-15.

<sup>3</sup> On public spectacle, science and late-Victorian 'Scottish Calvinist culture', see D. N. Livingstone, 'Public spectacle and scientific theory: William Robertson Smith and the reading of evolution in Victorian Scotland', *Studies in history and philosophy of biological and biomedical sciences* (2004), 35, 1-29. On the geographical nature and contested meanings of public spectacle in a different context, see N. C. Johnson, 'The spectacle of memory: Ireland's remembrance of the Great War, 1919', *Journal of historical geography* (1999), 25, 36-56.

by the organisers but also by the attendees. As a common cultural event, the meanings attached to conversazioni thus extended beyond those associated with the aims and objectives of natural history societies. The second section looks more closely at the fundraising strategies employed by the societies beyond the small income generated by regular entrance fees and annual subscriptions. In particular, the organisation of charitable bazaars is examined. As with conversazioni, such events were organised by a wide range of local voluntary organisations and thus were a useful way of further integrating a society into local civil society. Shifting focus from analysing particular events the chapter then turns to examine the more permanent built presence of natural history societies in Scottish urban townscapes. Looking at the civic rituals that gave meaning to the design, building and function of society museums, the ways in which members combined local science and local culture are further examined. The chapter concludes by considering the participation of the societies in 'platform culture', uncovering the ways in which public lectures, newspaper reports and 'agitation' on local and national issues were used by society members to demonstrate the relevance and significance of associational science.

## Conversazioni and exhibitions

Commonly, one of the first public signs of a societies' existence, after notices in the local newspaper, came in the form of an exhibition and conversazione. Such events announced the arrival of a significant civic institution and provided a means of recruiting members and raising support. Understood as mass education and entertainment, they provided occasions for display both of the collections of the organising body and the cultural status of the attendees. Such events were not unique to Scottish natural history societies. Conversazioni were frequently organised by scientific societies active during the same period in English towns and, indeed, by a range of other urban-based voluntary associations.<sup>4</sup> The conversazioni of Scottish natural history societies were thus part of a wider 'exhibitionary complex', with the

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<sup>4</sup> S. J. M. M. Alberti, 'Conversazione and the experience of science in Victorian England', *Journal of Victorian culture* (2003), 8, 208-30.



Great Exhibition of 1851 as its apogee and inspiration.<sup>5</sup>

Not all Scottish natural history societies gave the same weight to running conversaciones. The Dundee Naturalists' Society (formed in 1874), however, specialised in them. The accounts at the close of the Society's third year show a total expenditure of £322, almost half of which was spent on conversaciones and exhibitions with the next largest sum given to the organising of public lectures. Although field excursions were run by the Society, organisers struggled to get good numbers to attend. The exhibitions, on the other hand, were popular, running for several days. The first, held in January 1876, attracted thousands of visitors enabling the Society to report that it was:

now a recognised institution in the town. It has been acknowledged by the press as one of the chief agencies engaged in the diffusion of scientific education; and it occupies a very high position in the estimation of the more enlightened portion of the community.<sup>6</sup>

The exhibitions were not, however, solely designed with a middle class and 'enlightened' audience in mind. The Society's *Annual report* claimed in 1880, for example, that three thousand schoolchildren attended a Society exhibition, the children being admitted on the basis that there was no permanent collection of scientific apparatus in Dundee.<sup>7</sup> Frank Young, reminiscing about the Society exhibitions in 1895, spoke of a conversation with a 'working mechanic' who assured him that the 'exhibitions had exerted upon himself, and a good many of his fellows an abiding influence for good'.<sup>8</sup> As well as registering a Society's concern with educating a town's population, conversaciones swelled membership. As early as 1877 the Society had 402 members making it the largest naturalists' association of its kind in Scotland.

The success of the Dundee exhibitions was aided by the use of prominent civic buildings. The Albert Institute, designed by George Gilbert Scott and built for the 1867 meeting of the British Association for the Advancement of Science, was one such venue.<sup>9</sup> As well as its obvious associations with civic pride, the size and layout made it a

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<sup>5</sup> See T. Bennett, 'The exhibitionary complex', in R. Greenberg, B. W. Ferguson and S. Nairne (eds.), *Thinking about exhibitions*, London, 1996, 81-112.

<sup>6</sup> *Fourth annual report of the Dundee Naturalists' Society* (1877), 10.

<sup>7</sup> *Seventh annual report of the Dundee Naturalists' Society* (1880), 8.

<sup>8</sup> The conversation with the mechanic is reported in F. W. Young, *The coming of age of the Dundee Naturalists' Society*, Dundee, 1895, 12.

<sup>9</sup> C. Mackean and D. Walker, *Dundee, an illustrated architectural guide*, Edinburgh, 1993, 43.

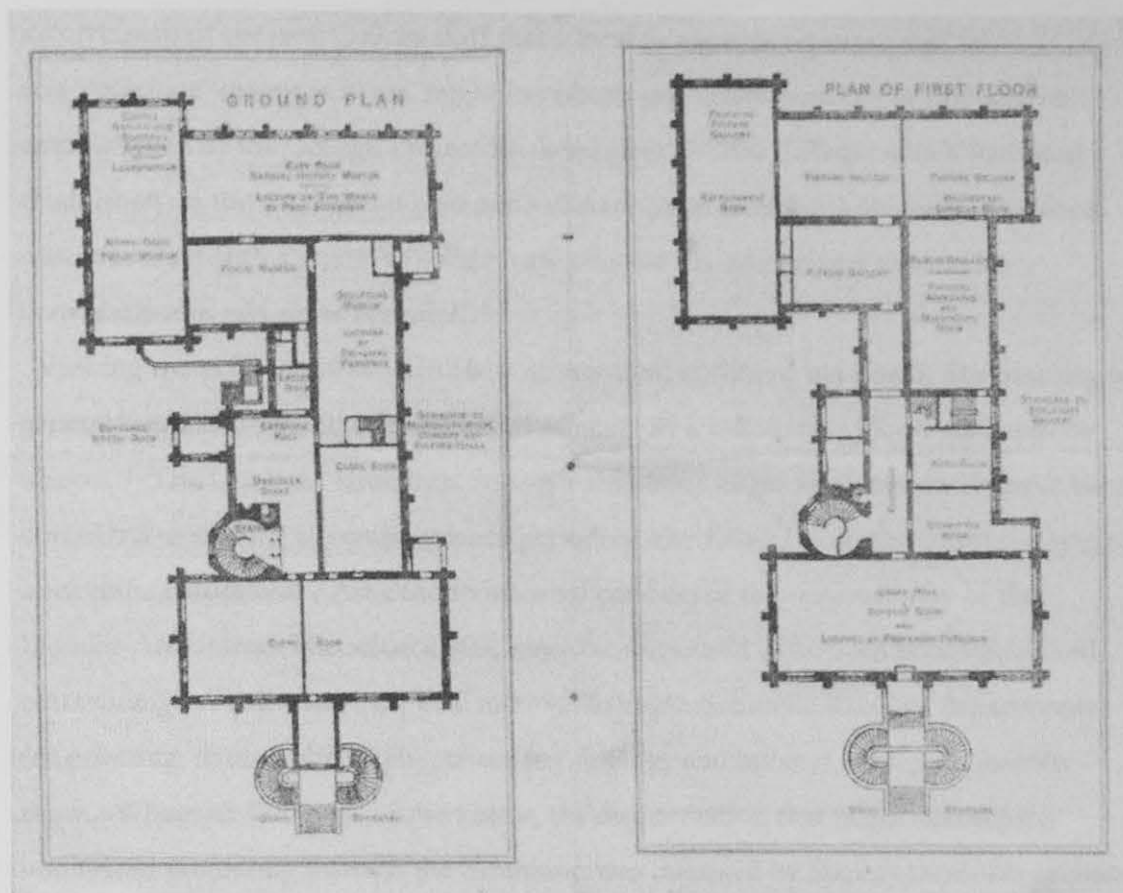


Figure 4.1. Floor plan of a conversazione organised by the Dundee Naturalists' Society and held in the Albert Institute on 14 January 1891. Copyright Dundee City Council, Central Library, licensed through SCRAN ([www.scran.ac.uk](http://www.scran.ac.uk)).

fitting place for the sprawling and popular nature of the conversazione. The grand Gothic hall was large enough so that during exhibitions 'there was not the least risk of ladies skirts being damaged' despite the crowds.<sup>10</sup> Ladies, as well as wandering around the Institute 'according to their fancy' (though they were aided by floor plans – see Plate 4.1.) were also prominent participants in the musical concert held in one of the Institute's picture galleries.

The buildings of the new University College were also borrowed for the Naturalists' Society's conversazioni and their use marked the importance of the developing relations between the Society and the College.<sup>11</sup> The first Naturalists' Society conversazione to use the College rooms was held in February 1886 and such was the

<sup>10</sup> *Dundee Advertiser*, 28 January, 1876.

<sup>11</sup> Something of these relations are explored in M. Macdonald, 'The patron, the professor and the painter: cultural activity in Dundee at the close of the nineteenth century', in L. Miskell, C. A. Whatley and B. Harris (eds.), *Victorian Dundee: images and realities*, East Linton, 2000, 135-50.

involvement of the new College staff that a local newspaper reported that the conversazione 'except in name, might have been practically regarded as one almost entirely given by the College Professors themselves'.<sup>12</sup> The College, which had been established on the condition it paid particular attention to training students in science, was in concert with a scientific society that stressed the educational aims of its conversaciones and other activities.<sup>13</sup>

Viewing the exhibitions of scientific societies was, as Alberti has noted, like perusing a general periodical with fine art displayed adjacent to a collection of local seaweeds or insects.<sup>14</sup> The Dundee Naturalists' Society exhibitions might more accurately have been compared to reading a popular science periodical like *Science Gossip*, the displays being of a scientific nature only. Art exhibitions were considered the responsibility of the Dundee Art Union. The science was, however, organised to be both educational and entertaining. A conversazione held in 1886 divided exhibitions into five departments (engineering, natural philosophy, chemistry, biology and botany), each with its own room. Whatever the tastes of the visitor, the disorientation that might accompany undirected sauntering through the exhibition was managed by Society members on hand to offer explanations of natural history specimens or demonstrate how a piece of technology functioned. It was technology, from the latest microtomes to an electric railway, that had particular appeal with a report on the natural philosophy department stating that 'as usual the greatest interest was shown in experiments in which something "worked"'.<sup>15</sup>

The conversazione was also an occasion that allowed members of the Dundee Naturalists' Society to 'play the part of the showman'.<sup>16</sup> Lectures, although not necessarily eschewing technical language, were based on topics thought to appeal to a wide audience (carnivorous plants, for example – see Chapter 7 pp. 221-24). Musical concerts were also invariably part of the programme. Like the choice of lecture topics the music performed by local and visiting musicians consisted of pieces thought to have popular appeal. The concerts were not, however, always well received with one visiting

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<sup>12</sup> *Dundee Courier and Argus*, 22 February, 1886.

<sup>13</sup> D. Southgate, *University education in Dundee: a centenary history*, Edinburgh, 1982, 39.

<sup>14</sup> Alberti, op. cit. (fn. 3), 215.

<sup>15</sup> *Dundee Courier and Argus*, 22 February, 1886.

<sup>16</sup> Young, op. cit. (fn. 8), 11.

pianist having to give up playing Chopin's *Nocturne* because of the noise created by the audience. Disappointment was expressed 'that a stranger should have been so treated by a Dundee audience' revealing the moral as well as educative impulse that informed the running of the exhibition.<sup>17</sup>

Conversazioni were also occasions used to celebrate a town's cultural advance. A conversazione, organised by the Kirkcaldy Naturalists' Society for the 1885 meeting of the East of Scotland Union of Naturalists' Societies (ESUNS, see Chapter 6, pp. 188-89), provided an opportunity to refute the charge, made in a Scottish newspaper, that Kirkcaldy 'had no soul'.<sup>18</sup> The soirée was reported in full in the local newspaper with a list of attendees (who paid four shillings to gain access) and a detailed account of speeches and toasts. The panegyric of John Forester, President of the KNS, after cataloguing the worthy activity of the town's cultural institutions, urged the 'youth of Kirkcaldy' to join in the efforts to 'study the house they live in'.<sup>19</sup> The scientific exploration of the region around Kirkcaldy was, in other words, one way in which Kirkcaldy might cultivate and boast of citizens with distinction and give evidence of a town dedicated to supporting cultural endeavour. As with the Dundee exhibitions, this message was reinforced by where the conversazione took place. Three local buildings were used including the Town Hall, the George Hotel and the Corn Exchange.<sup>20</sup> Decorated by the ladies committee, the pillars of the Corn Exchange were 'profusely decked with ivy and plants, and the usual inviting aspect of the hall transformed into an interesting and decorated museum'.<sup>21</sup>

The casting of conversazioni and exhibitions as convivial occasions often included a public dinner, a familiar civic ritual used to further celebrate the public utility of a society. Public feasting was used to effect by the Perthshire Society of Natural Science (PSNS) in its endeavour to establish itself as a recognised and leading cultural institution. In March 1872, five years after its inception, the Society organised a 'frog supper' to 'investigate into the qualities, as articles of food, of certain Perthshire

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<sup>17</sup> *Dundee Courier and Argus*, 22 February, 1886.

<sup>18</sup> *Fife Free Press*, 5 September 1885.

<sup>19</sup> *Fife Free Press*, 5 September 1885.

<sup>20</sup> See transcript of the Minutes of the Kirkcaldy Naturalists' Society, J. B. Bease, *Full ninety years and more*, Kirkcaldy, 1975, 15.

<sup>21</sup> *Fife Free Press*, 5 September 1885.

animals'.<sup>22</sup> Advertised by way of a lengthy column in the local newspaper running parallel to an extensive account of the Society's proceedings, the exposition of the supper came in the form of a gentle satire on the civic dinner and highlighted the novel but noble activities of the new Natural Science Society. The supper itself included extended eulogies conferring honour on the Society through association with leading citizens, local landowners and 'men of science'. A song for the occasion was penned by Society member John Young. Based on the popular nursery rhyme 'A frog would a wooing go' it told of the capture of a species of *rana temporaria* (common frog) to supply the gastronomic experiments and added to the convivial atmosphere.<sup>23</sup>

The frog supper was followed three years later by a Perth-based fungus show, this time organised by the newly-formed Cryptogamic Society of Scotland.<sup>24</sup> Such fungus feasts and forays had been pioneered by the Woolhope Club, a naturalists' society based in Hereford and a number of members of the English Club were present at the inaugural meeting of the new Scottish Society held in Perth in October 1875.<sup>25</sup> Under the Presidency of Sir Thomas Moncrieffe, also President of the PSNS, the show exhibited 150,000 specimens of fungi in Perth City Hall.<sup>26</sup> Claimed as 'the most comprehensive exhibition of fungi ever seen in the world', the display was accompanied by music – John Young again provided and performed another 'racy' song for the occasion – and was preceded by a dinner of edible fungi.<sup>27</sup> Toasts to 'the prosperity of Perth' and comments like 'as regards natural history ... the City of Perth stands before all others' reveal the civic capital accrued by hosting the annual meeting of the Cryptogamic Society.<sup>28</sup>

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<sup>22</sup> *Perthshire Constitutional and Journal*, 13 March, 1872.

<sup>23</sup> J. Young, 'The frog supper', in *idem*, *Selina, and other songs*, Perth, 1878, 285-9.

<sup>24</sup> See M. Noble, 'The Cryptogamic Society of Scotland 1875-1935-1975', *Transactions of the Botanical Society of Edinburgh* (1978), 42 (supplement), 11-17.

<sup>25</sup> For the origins and extended account of the Woolhope fungus forays and mycological meals, see M. P. English, *Mordecai Cubitt Cooke: Victorian naturalist, mycologist, teacher and eccentric*, Bristol, 1987, 136-39; 250-68. See also the biographical account of Worthington Smith, illustrator and mycologist who attended the Perth meeting: J. Dyer, 'Worthington George Smith', *Publications of the Bedfordshire Historical Record Society* (1978), 57, 141-79.

<sup>26</sup> W. G. Smith, 'The fungus show and conference of cryptogamic botanists at Perth', *Gardeners' Chronicle*, 9 October, 1875, 464.

<sup>27</sup> Smith, *op. cit.* (fn. 26), 465-6. Also appears in Young's collection of songs. Young, *op. cit.* (fn. 23), 267-9.

<sup>28</sup> Royal Botanic Garden Edinburgh, uncatalogued MS, Minutes of the Cryptogamic Society of Scotland, 30 September, 1875.

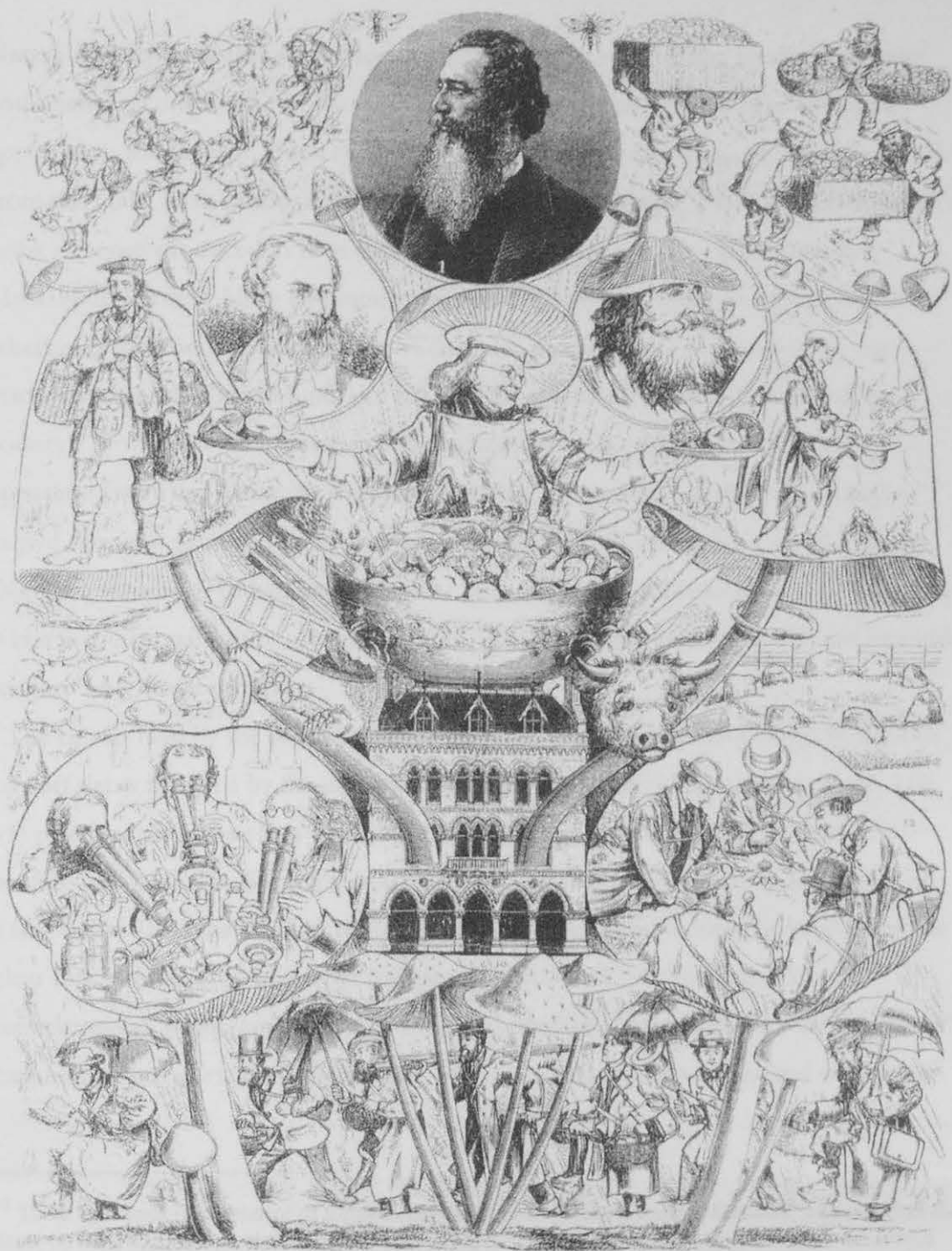


Figure 4.2. The Perth and Hereford fungus meetings from *The Graphic*, 13 November, 1875, 473. Convivial feasting, fieldwork and civic pride were among the components of fungus forays. The meal is served by the Rev. Miles Berkeley, ‘the prince and high-priest of fungology’ (*The Graphic*, 13 November, 1875, 475) and the whole scene unfolds beneath a portrait of Sir Thomas Moncrieffe.

## 'Pillaged for the public good': funding civic science

Natural history societies were concerned not only with establishing locally their civic and scientific credentials but also with creating a sympathetic public who could be appealed to for support. Such efforts, important because little financial aid was available from the State, took various forms.<sup>29</sup> A more unusual example was the publication of a book of songs produced to raise money for the erection of a new natural history Museum in Perth.<sup>30</sup> More common were polite appeals for donations from local elite, whether landowners or industrialists. Charitable bazaars were also among the more standard methods used to fundraise and had the added advantage of heightening a society's profile. These events, often including a limited exhibition of scientific apparatus, were not dissimilar to conversaciones. In the hope of attracting a large crowd they also provided popular entertainment and held raffles for a range of items from fire screens to Indian jewellery. The bazaar, like the conversazione, was part of a wider associational culture and provided an occasion to display civic pride and inculcate 'culture' and moral propriety.

The bazaar held by the Alloa Society of Natural Science and Archaeology in 1874 to pay off debts incurred by the erection of a new museum building (see below, pp. 110-11) provided an occasion to celebrate the Society's progress and contribution to the welfare of Alloa. The Society's credibility was enhanced by the level of support, with £630 raised.<sup>31</sup> As the account of the bazaar appearing in the Society's *Proceedings* made clear this sum bettered two other bazaars previously held in the town. Alloa's reputation as a progressive urban centre also benefited. For the report's author 'Alloa's capabilities' were evidenced by the sale of local industrial productions and the 'articles

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<sup>29</sup> There is at least one instance of a direct, though unsuccessful, appeal for financial support from the State on behalf of natural history societies in Scotland. David Milne-Home, speaking to the Royal Commission of Scientific Instruction in 1872, appealed for 'direct aid' or the setting up of a Scottish board or commission to help pay for the publication of local scientific society transactions. *Royal commission on scientific instruction and the advancement of science, appendices and analyses of evidence*, 2 vols., London, 1874, vol. 2, 251.

<sup>30</sup> Young, *op. cit.* (fn. 23). See D. H. Edwards, *Modern Scottish poets with biographical and critical notes*, Brechin, 1881, 160. Young's publication was not without precedent. In 1878 Mordecai Cooke, an English mycologist, published a book of songs to be sung at the dinners of the Quekett Microscopical Club. See English, *op. cit.* (fn. 24), 126.

<sup>31</sup> Anon, 'Grand bazaar and loan exhibition in aid of the building fund of the museum hall', *Proceedings of the Alloa Society of Natural Science and Archaeology* (1874), 48-68.



Figure 4.3. Photograph of the Swiss-themed Perth bazaar taken by Magnus Jackson, photographer and member of the Perthshire Society of Natural Science. Copyright Perth Museum and Art Gallery, licensed through SCRAN ([www.scran.ac.uk](http://www.scran.ac.uk)).

of vertu' exhibited in the main hall donated by local élite. That 'a perfect galaxy of beauty and fashion' were present further underlined the fact that Alloa and its scientific society included cultured citizens.

The same stress on civic pride engendered through associational science was in evidence at a Swiss-themed 'grand fancy bazaar' held in the newly-erected public hall in Perth in December 1881 (see Plate 4.3).<sup>32</sup> Run over three days, the bazaar aimed to raise money to furnish the new natural history museum erected by the PSNS and to allow free entrance for the people of the town. Advertisements in the local newspapers billed it as arranged 'in a manner never before seen in Scotland' and talked up the various forms of amusements which were to include performances by marionettes,

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<sup>32</sup> For more on Magnus Jackson, see S. Payne, 'Magnus Jackson and the black art', *Journal of the Perthshire Society of Natural Science* (2003), 17, 51-63.



music by Pullar's band, a gipsy tent, a fairy fountain (jets of water illuminated by limelight) and a phonograph ('never before seen in Perth').<sup>33</sup> Tickets for admission were obtainable from local booksellers and money was also raised through purchase of goods at the bazaar and through numerous raffles.

Departing somewhat from the more overtly educational intent of the *conversazione* the bazaar included entertainments and activities that were more akin to the fair than the museum. It provided an occasion where Perth's well-off citizens could enjoy the delights of the fair without the concern that it would encourage inappropriate behaviour.<sup>34</sup> It also allowed indulgences otherwise frowned upon. Mr C. S. Parker, M.P., who opened the second day of the bazaar, was able to promote the bazaar as providing 'ample opportunities' for any who had 'a gambling turn of mind'.<sup>35</sup> The organisers of the bazaar, an occasion when all attending were 'pillaged for the public good', avoided the disparaging of gambling and lavish spending appearing in society celebrations of natural historical fieldwork (see chapter 2 p 40). Rectitude was demonstrated at the bazaar by 'extravagant' spending.

Much of the work in organising and running the bazaar was done by lady members and the wives of male members. This was not unusual. The charitable bazaar has been generally noted as revealing a greater participation of women in the Victorian 'public sphere' than has commonly been supposed.<sup>36</sup> The Perth bazaar, in keeping with standard practice, had the names of the chief stallholders placed above the ladies in charge and published a list of the organisers in the advertising section of the local newspaper. The same recognition of the role of 'ladies' was evident at the Alloa bazaar, its success being ascribed to 'the ladies who had made such exertions in providing such

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<sup>33</sup> *Perthshire constitutional and journal*, 5 December 1881. Pullar's band was formed as a work band for a large dyeing and dry-cleaning business. The owner of the business, Robert Pullar, a member of the PSNS, had donated £500 towards the erection of the museum. See *Perthshire constitutional and journal*, 7 December, 1881.

<sup>34</sup> Tony Bennett has pointed out that by the later nineteenth century fairs were no longer seen as opposed to the more ordered spaces of the museum. Rather they could be regulated to promote values thought to uphold public order. The Perth bazaar, as a kind of adapted fair, was safe enjoyment and supported a museum built for the public good. Bennett, *op. cit.* (fn. 5), 96.

<sup>35</sup> *Perthshire Constitutional and Journal*, 9 December, 1881.

<sup>36</sup> E. Gordon and G. Nair, *Public lives: Women, family and society in Victorian Britain*, New Haven, 2003, 225, M. Gorsky, *Patterns of philanthropy: charity and society in nineteenth-century Bristol*, Woodbridge, 1999, 169.

a variety of beautiful objects for sale'.<sup>37</sup>

Such a role was not accepted everywhere without protest. The resolution by the Council of the Stirling Natural History and Archaeological Society to form 'for the public good, a complete collection illustrative of the natural history and archaeology of the district' provoked a row over the role of women members.<sup>38</sup> The collection was to be housed, at a cost of £200, in the Smith Institute, a building opened in 1874. In a discussion during an ordinary meeting it was suggested that lady members might 'materially aid' the efforts to raise funds. The proceedings record Christian Maclagan, one of the few lady 'associate members' who contributed papers to the meetings, rejecting this call on the grounds that 'until lady members of the society were placed upon the same footing as gentlemen, they had no right to be appealed to for assistance'.<sup>39</sup> Lady members paid no subscription (at least until 1888), had only been allowed to vote since a change in the rules in 1881 (and even this was contested thereafter) and could not serve as council members.<sup>40</sup>

Disputes about the running of bazaars could go beyond who was responsible for their organisation. Philanthropic etiquette was enrolled in clashes between rival scientific societies intent on raising funds for their work. The different museum schemes advertised to a Perth public in the late 1870s and early 1880s by the Perthshire Society of Natural Science and the Perth Literary and Antiquarian Society (PLAS) generated disagreement, among other things, about the timing of bazaars. Members of both societies, after issuing the standard best wishes, qualified their conciliatory note by citing the neglect by the other society of the tacit rules of civic fundraising. The PSNS was accused of circulating advertisements for their bazaar too soon after another town bazaar, organised to raise money for a Children's Church, had been held.<sup>41</sup> The PLAS, according to a history of the society published in 1881, deliberately delayed its bazaar on

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<sup>37</sup> Anon, op. cit. (fn. 30), 68. For more on the 'visibility' of women members and their different roles see Chapter 5, pp. 154-59.

<sup>38</sup> D. Crystal, *Transactions of the Stirling Natural History and Archaeological Society* (1884), 6, 34.

<sup>39</sup> C. Maclagan, *Transactions of the Stirling Natural History and Archaeological Society* (1884), 6, 35.

<sup>40</sup> Privately held, Council Minutes of the Stirling Field Club, 7 November, 1882. The Club's name was changed at this meeting to the Stirling Natural History and Archaeological Society.

<sup>41</sup> 'Hardly had the bazaar for the Children's Church closed (which was the reason for the delay of the PLAS bazaar) that the beady circulars of the opposition announced their bazaar, which, by and by, was fixed for the spring.' C. McIntosh, *History of the Literary and Antiquarian Society of Perth*, Perth, 1881, 77.

account of clashes in the local fundraising calendar. The PLAS was in turn accused by members of the PSNS of postponing its bazaar without warning so that it ended up clashing with the PSNS's own fundraising efforts. To show their honourable intent the organisers of the PSNS bazaar delayed their event so that the two fundraising occasions would not be held within a few days of each other.<sup>42</sup>

Disagreement over which scientific society best represented the civic interests of Perth underlines the significance attached by members to integrating their scientific pursuits with civic culture. The histrionic language used to describe the Alloa bazaar further testifies that such events were regarded as a performance of a 'high culture' that included science. Speaking of the hall's decoration and the contents of the stalls, the author of the Alloa Society's report noted that:

the stranger while promenading about might have fancied himself transported to some El Dorado of enchantment instead of being the beholder of a temporary spectacle got up in a little, unpretending, but rising town on the banks of the noble estuary of the Forth.<sup>43</sup>

Exotica were mingled with more familiar objects, including collections of local natural history and science was yoked to the image of a 'rising town'. The bazaar, partly because it was not subject to the same demands for 'order' issued in the museum or in the field, was a useful tool in facilitating the desired mutual relations between civic culture and associational science.

## Museums: architecture, arrangements and audiences

The museum, whether in a permanent building or housed in rented rooms, formed an enduring monument to the civic worth of a local natural history society. This section seeks to highlight several aspects of the societies' museum cultures by examining the social as well as scientific roles granted provincial museums in Victorian Scotland by members of natural history societies. Museums have long been thought of as institutions with agendas and meaning surplus to the mere display of certain objects. Although art museums have been regarded as the canonical example of institutions

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<sup>42</sup> J. Geikie, 'Opening of the Perthshire natural history museum', *Proceedings of the Perthshire Society of Natural Science* (1881), 41.

<sup>43</sup> Anon, op. cit. (fn. 30), 55-6.

productive of national and civic identity, natural history collections have also been understood as encoding a narrative of national and civic pride and progress. Tony Bennett in particular has argued that natural history and ethnological displays in later nineteenth-century Britain partially replaced art museums as a means by which ideas of citizenship were promoted in accordance with the logics of a 'new liberalism'.<sup>44</sup>

Bennett, while questioning an understanding of nineteenth-century museum displays as confirming the social position of the viewer or effecting a sense of national superiority and perfection, argues that they invariably encoded certain messages about citizenship. Displays organised according to an evolutionary schematic in late-nineteenth-century natural history museums provided, Bennett contends, a 'cultural technology' that promoted a view of self, citizen and nation as corrigible, disciplined and progressive.

Bennett's analysis does not straightforwardly apply to the provincial museums established by nineteenth-century natural history societies. According to Bennett's reading, created outside the 'formal structures of the state', provincial natural history museums were of less interest to those concerned with improving a whole populace.<sup>45</sup> Certainly, the complicated historical geography of Scotland's provincial natural history museums does not on the whole reveal the components cited by Bennett (owned by local or national government and displays arranged along evolutionary lines) that constituted a natural history museum useful to liberal government.

In terms of ownership, of the 27 Scottish 'provincial' museums identified by an 1887 survey organised by the British Association for the Advancement of Science, ten remained in the hands of a local scientific society while only four were supported by local or national government.<sup>46</sup> At least one, the museum of Thomas Grierson, a prominent member of the Dumfriesshire and Galloway Natural History and

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<sup>44</sup> T. Bennett, 'Regulated restlessness: museums, liberal government and the historical sciences', *Economy and Society* (1997), 26, 157-90. See also H. G. Penny, 'The civic uses of science: ethnology and civil society in Imperial Germany', *Osiris* (2002), 17, 228-52.

<sup>45</sup> Bennett, op. cit. (fn. 44), 165.

<sup>46</sup> V. Ball et al, 'Report of the committee for the purpose of preparing a report upon the provincial museums of the United Kingdom', *Report of the British Association for the Advancement of Science* (1881), 97-130. As the report itself admitted, its list of museums was incomplete. In addition to neglecting to mention, for example, the Arbroath Museum run by the Arbroath Natural History, Antiquarian and Scientific Society, it did not include the collections amassed by local natural history societies but not housed in a public museum. Another seven Scottish provincial museums, some of which included natural history collections, were identified in a survey, listing 27 'local' museums, by the Scottish Antiquarian Society in 1888. J. Anderson and G. F. Black, 'Reports on local museums in Scotland', *Proceedings of the Scottish Antiquarian Society* (1888), 22, 331-421.

Antiquarian Society, was privately owned and run.<sup>47</sup> This was despite the Public Libraries and Museums Act (1850, Ireland and Scotland, 1853) which allowed municipal authorities to levy a half-penny in the pound rate to support museum provision. It would appear that, with respect to changing patterns of ownership, Scotland contrasted with England where a larger proportion of provincial natural history collections had been transferred to local government control by the end of the nineteenth century.<sup>48</sup>

In terms of display, natural history societies did not employ an evolutionary arrangement consonant with certain conceptions of society and governance. Rather, a complete collection of local flora and fauna was the aim, if not the reality, of local natural history society museums. This was certainly the advice contained in a widely circulated 1885 address on 'the aims and uses of provincial museums'.<sup>49</sup> Authored by James Trail, the address was first given at the annual meeting of the East of Scotland Union of Naturalists' Societies and offered an outline of what the ideal provincial natural history museum should look like. The ways in which provincial natural history collections were argued to be useful to a local public and a more scattered scientific community was contrasted with the assumed functions of 'national' museums. For Trail, the collections of natural history society museums ought to be restricted to natural history specimens acquired locally on the basis that it was the role of the national museum to subordinate local to general collections. A 'provincial' museum that sought to compete with a 'national' collection was not only doomed to 'deserved failure' but, given an inevitable lack of finance necessary for the upkeep of a general collection, would allow important specimens of national importance to be lost through unavoidable neglect. The outcome of Trail's argument was a policy of refusing any donations to a provincial museum that were non-local in nature. Trail did, however, qualify the local-only message. The educational function of provincial museums supported by local Scottish scientific societies would be improved, he argued, by having a small index collection illustrating the 'great groups of animal and plants'. The ultimate

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<sup>47</sup> A. E. Truckwell, 'The Grierson collection, Thornhill, and its dispersal', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1966), 43, 65-72.

<sup>48</sup> S. J. M. M. Alberti, 'Placing nature: natural history collections and their owners in nineteenth-century provincial England', *British journal for the history of science*, (2002), 35, 291-311.

<sup>49</sup> J. W. H. Trail, 'On the aims and uses of provincial museums and their relation to provincial scientific societies', *Scottish naturalist* (1886), 2, 153-60. Trail's paper was probably much the same as a talk he gave on local museums at the annual meeting of the East of Scotland Union of Naturalists' Societies in Kirkcaldy. See *Fife Free Press*, 5 September, 1885.

aim, however, was to make a complete collection of a region's flora and fauna.

Collections could be displayed in ways that went beyond the basic thrust of Trail's advice. Rock and mineral specimens could be arranged to show the geological history of a district and the index collection of the Perthshire Society of Natural Science contained a few fossils of extinct species for each sub-Kingdom.<sup>50</sup> Curators of geological displays remained more concerned with forming a comprehensive stratigraphical account of a district, however, than offering the kind of scenes through "deep time" that might evoke in the viewer the sort of restrained 'restlessness' identified by Bennett. One other variation to the straightforward display of local flora and fauna was suggested by D'Arcy Wentworth Thompson to the Natural History Society of Glasgow in 1890. Zoological specimens, Thompson argued, ought to be arranged in ways illustrative of their life histories. The visitor could then appreciate 'habit' as well as 'form' and the collection itself would be elevated from a 'mere storehouse' to a properly educative display.<sup>51</sup>

Whatever the diversity in the practices of display, education through a local natural history collection does not appear to have been encoded with the kind of messages Bennett discerns in arrangements designed to draw attention to the slow but steady progress that was as relevant to the self as to 'nature'. The making of an orderly and 'complete' local natural history museum could, however, be understood as inculcating good habits useful beyond the herbarium or zoological display. It was, in part, a recognition of the value of local natural history museums as supplying skills relevant to managing social affairs that made buildings to house them a welcome addition to a town's civic centre. In addition, a local collection, given the apparent attainability of completion, was also considered the best means to motivate members of societies to participate in such work. Such common and useful field and museum work was seen as constitutive of the sorts of bonds between members that exemplified those relations necessary for a strong and progressive civil society.<sup>52</sup> The making of a local natural history collection was, in that sense, thought of as a contribution to a slow, steady and

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<sup>50</sup> See, for example, H. Coates, 'On the arrangement of the Perthshire geological collections in the museum', *Transactions of the Perthshire Society of Natural Science* (1889), 1, 105-10; and F. B. White, 'The Perthshire Natural History Museum', *The Scottish naturalist* (1883), 7, 103.

<sup>51</sup> D'Arcy W. Thompson, 'Museum methods', *Proceedings of the Natural History Society of Glasgow* (1890), 2, 55.

<sup>52</sup> See Trail, op. cit. (fn. 49), 159.

progressive social evolution.

It was, in part, because provincial museums were attached to narratives of social progress that the collections of the Perthshire Society of Natural Science earned, in 1885, the praise of two leading men of science, Sir William Flower, Director of the British Museum (Natural History) and Canon Tristram, lauded for his explorations of the natural history of Palestine.<sup>53</sup> Flower, after spending two hours examining the museum declared it ‘one of the best arranged he had seen’ while Tristram considered it ‘my *beau-ideal* of what a local museum should be’. The pride Society members themselves took in their museum was underlined by Henry Coates in 1896 who offered the following observation made by Professor Brown-Goode, then Director of the National Museum in Washington:

The degree of civilisation to which any nation, city, or province has attained is best shown by the character of its public museums, and the liberality with which they are maintained.<sup>54</sup>

The civilised state of Perth, Coates believed, was well evidenced by the excellent character of its Natural History Museum with its ordered display of local natural history. Its educational value for training in natural science and good citizenship was behind Henry Coates’ own efforts to encourage children to use the museum. From 1899 Coates ran an annual competition for the best essay on the museum with the first year asking for an essay on the title ‘A visit to the Perthshire Natural History Museum’.<sup>55</sup>

Beyond issues of ownership and arrangement of displays, the places natural history collections amassed by Scottish societies were housed reveals the *ad hoc* nature of the bodies’ use of civic and private buildings. For a local natural history society, creating a museum did not have to mean constructing a permanent building and the relations between buildings, collections and ownership varied. Some societies, like the Stirling Natural History and Archaeology Society and the Banffshire Field Club, met in, and contributed to, pre-existing museums formed by endowment or fees. By contrast, societies like the Dumfriesshire and Galloway Natural History and Antiquarian Society

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<sup>53</sup> F. B. White, ‘Opening address by the president’, *Proceedings of the Perthshire Society of Natural Science* (1885), 222-3.

<sup>54</sup> H. Coates, ‘Address’, *Proceedings of the Perthshire Society of Natural Science* (1896), 2, 105-6.

<sup>55</sup> H. Coates, ‘President’s address’, *Proceedings of the Perthshire Society of Natural Science* (1898), 2, 169.

were granted space to display collections by other local scientific associations.<sup>56</sup> More ambitious schemes were initiated by members of natural history societies in Alloa and Perth where substantial funds were raised to construct buildings designed to hold and display collections and provide meeting rooms and other workspaces. Collections stored in a variety of spaces from private houses to the games room of working men's clubs were not always visible or accessible to visitors and townspeople. Yet such collections could still be talked up as contributing to civic advance. In 1891, the herbaria of the Dumfriesshire and Galloway Natural History and Antiquarian Society, held privately by a Miss Hannay, was judged 'one of the very best collections of British plants in Scotland'.<sup>57</sup> The specimens, mounted on over 500 sheets by four of the lady members of the Society, removed the 'disgrace' that botanical specimens collected in Dumfriesshire had until that point been sent to England for comparison with private herbaria.

Yet it was also the case that collections, given the messy acquisition routes sustained by local natural history societies, could lack the kind of discipline that was used to link natural history to the improvement of a local public. It was the building projects in Alloa and Perth that most clearly signalled the civic as well as scientific meanings attached to the societies' collections. Even before the museums were opened the buildings were used to display the societies' worth. Through civic ritual and newspaper coverage the societies' public image was enhanced and the buildings erected were 'marked off' as spaces carrying the expectation of self-improvement and civic advance.<sup>58</sup> The construction of a museum building by the Alloa Society of Natural Science and Archaeology in 1873 provides one example. Framed by three events and prompting lengthy reports in local newspapers the construction of the building was a means to display the Society's and the town's civic worth. The Society's President, Sheriff William Bennett Clark, laid the foundation stone on 17 July 1873, watched by 120 ladies

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<sup>56</sup> See *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1881), 2, 82-4.

<sup>57</sup> G. F. Scott-Elliot, 'Report on herbarium', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1891), 7, 142.

<sup>58</sup> An emphasis on civic ritual has been found a fruitful means of inquiry for urban and cultural historians. See S. Gunn, 'Ritual and civic culture in the English industrial city, c. 1835-1914,' in R. J. Morris and R. H. Trainor (eds.), *Urban governance: Britain and beyond since 1750*, Aldershot, 2000, 226-41. For more on the public lives and meanings of buildings, see N. Harris, *Building lives: constructing rites and passages*, New Haven, 1999.



and gentlemen forming a circle around him. The stone's cavity, containing a copy of the Society's constitution and rules, a volume of the Society's *Transactions* and a list of the subscribers to the building fund amongst other paraphernalia, further signalled the occasion's civic importance. In 1874, the placing of the final piece in the Museum pediment, supported by four columns and influenced by Alexander 'Greek' Thomson, provided a second occasion to use the building to display civic pride (see Plate 4.4).<sup>59</sup>

Civic discourse defined, in part, the terms of the disagreement in the late 1870s and early 1880s between the Perthshire Society of Natural Science and the Perth Literary and Antiquarian Society. Purportedly about the location and purpose of a new Museum for Perth the debate centred around which society best supported the interests of the 'Fair City'.<sup>60</sup> The tensions between two prominent Perth naturalists, William Carmichael



Figure 4.4. Placing the final piece in the Alloa Museum pediment in 1874. The exterior design was described as 'characterised by quiet dignity of composition and simplicity of detail'. *Proceedings of the Alloa Society of Natural Science and Archaeology* (1874), 50. The picture has previously appeared in I. Murray, *Alloa in old picture postcards*, 1994, Zaltbommel and is used in D. A. Finnegan, 'Natural history societies in late-Victorian Scotland and the pursuit of local civic science', *British journal for the history of science* (forthcoming).

<sup>59</sup> A. Swan, *Clackmannan and the Ochils: an illustrated architectural guide*, Edinburgh, 2001, 43.

<sup>60</sup> I am grateful to Michael Taylor, Head of Arts and Heritage, Perth and Kinross Council, for letting me see his unpublished account of this dispute.

McIntosh and Francis Buchanan White, added to the rivalry. McIntosh, Superintendent of the Perth District Asylum and member of the Perth Literary and Antiquarian Society (PLAS) and White, 'independent of profession' and member of the Perthshire Society of Natural Science (PSNS), had competed for several university positions in the 1870s.<sup>61</sup> Personal rivalry thus worked alongside institutional rivalry to attenuate an apparently intractable dispute. It certainly was not solved by a 'representative committee of the public', convened in 1879, which favoured the plans of the PSNS. Members of the Antiquarian Society, believing the meeting *not* representative of public opinion, went ahead with their own plans. McIntosh deemed the collections of the PSNS insufficient for a good museum and it was the PLAS which had been 'the central depository' in Perth of 'rarer works, antiquities, animals and plants, coins, pictures, and other objects of art' for more than half a century.<sup>62</sup> For James Geikie, however, speaking in 1881 as President of the PSNS, the building proposed for the Antiquarian Society's museum was 'ugly and awkward', the collections 'a confused heap of valuable and worthless odds and ends'.<sup>63</sup> Although McIntosh agreed that 'a marked feature of the Perth Museum must be the local animals and plants', the PSNS doubted whether the Antiquarian Society could either supply or properly arrange a local collection.<sup>64</sup>

Built as a reduced-size Roman Pantheon, the design of the building of the PLAS, constructed in 1824 as a memorial to former Perth Provost Thomas Hay Marshall, was in keeping with the monumentality characteristic of mid-Victorian towns.<sup>65</sup> Yet this did not convince members of the PSNS of its appropriateness as a site for the proper

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<sup>61</sup> McIntosh was eventually successful, obtaining the Chair of Civil and Natural History at the University of St Andrews in 1882. He had earlier competed with White, among others, for the same Chair in 1875. Both unsuccessfully applied for an equivalent post in Aberdeen in 1878. See A. E. Gunther, *The life of William Carmichael McIntosh, M. D., F.R.S.*, Edinburgh, 1977; M. A. Taylor, 'Francis Buchanan White (1842-1894) and Scottish Botany', *Scottish naturalist* (1986), 157-73. James Trail's obituary described White as 'independent of profession' although he graduated with an M. D. from the University of Edinburgh. J. W. H. Trail, 'Francis Buchanan White', *Annals of Scottish natural history* (1895), 74.

<sup>62</sup> McIntosh, *op. cit.* (fn. 41), 4.

<sup>63</sup> J. Geikie, 'The Perthshire natural history museum', *Proceedings of the Perthshire Society of Natural Science* (1881), 10.

<sup>64</sup> McIntosh, *op. cit.* (fn. 41), 4.

<sup>65</sup> On monumentality, see R. J. Morris and R. Rodger, 'An introduction to British urban history, 1820-1914', in R. J. Morris and R. Rodger (eds.), *The Victorian City*, London, 1993, 21. For more on the architecture of scientific societies, see S. Forgan, 'Context, image and function: a preliminary enquiry into the architecture of scientific societies', *British journal for the history of science* (1986), 19, 89-113.

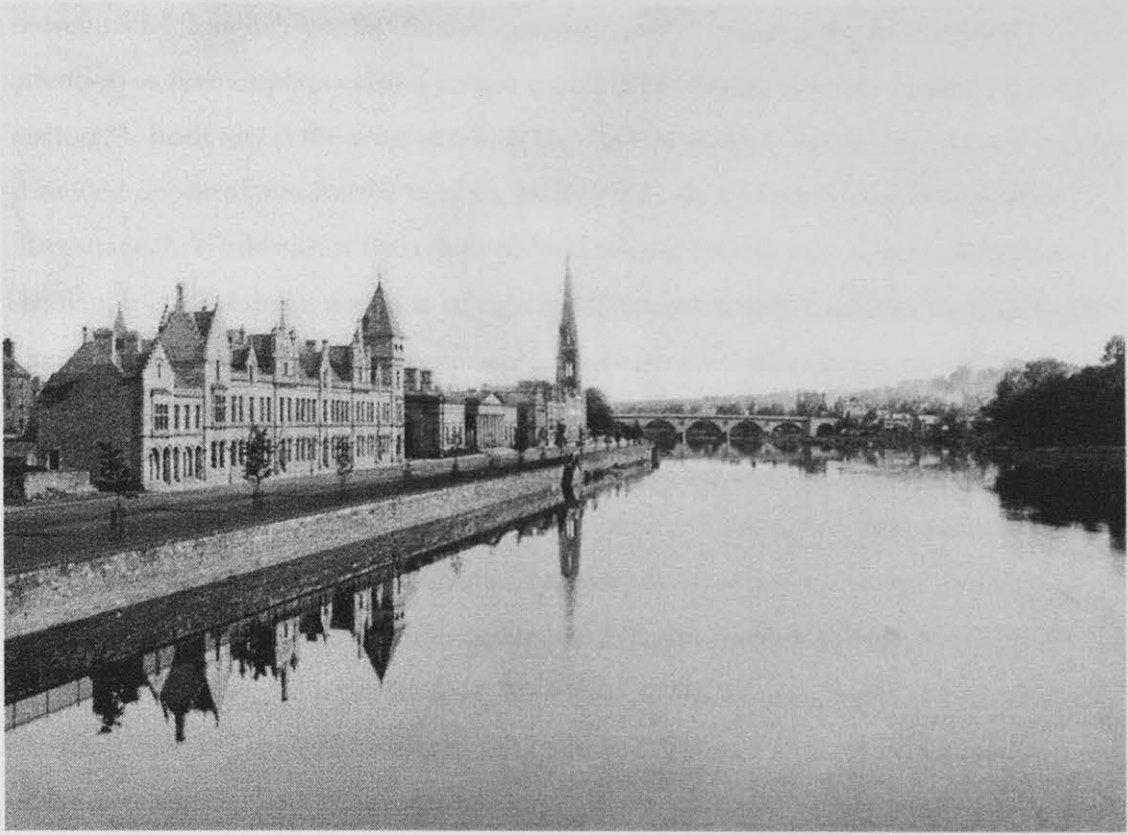


Figure 4.5. Tay Street in the 1890s, the ‘grand civic face of Perth’. A photograph taken by Magnus Jackson of the new museum building of the Perthshire Society of Natural Science. Copyright Perth Museum and Art Gallery, licensed through SCRAN ([www.scran.ac.uk](http://www.scran.ac.uk)).

display of Perthshire’s natural history. The PSNS’s own museum building, erected on Tay Street in 1881, was not, however, only concerned with scientific display. Designed by the civil engineer and architect John Young, a leading member of the PSNS and ‘one of the best known and genial of citizens’, the Teutonic Romanesque architecture had its own civic overtones.<sup>66</sup> Perhaps more important than the architecture was the location of the PSNS building. Adjacent to the Perth Sheriff Court, it was centrally placed on Tay Street, the new ‘grand civic face’ of Perth.<sup>67</sup> The disagreement between the two societies was thus conducted in the shared understanding of a local museum as presenting and encouraging not only scientific but also civic progress.

Beyond the policies of display and the local politics of buildings, the museums of Scottish natural history societies were shaped by their intended audiences and the tacit rules of museum conduct. Kate Hill and Geoffrey Swinney, by examining the use of

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<sup>66</sup> *Perthshire advertiser*, 4 December, 1895.

<sup>67</sup> N. Haynes, *Perth and Kinross: an illustrated architectural guide*, Edinburgh, 2000, 13-14.

museums by ‘roughs’, ‘youths’ or the ‘unrespectable’ working class, have drawn attention to how displays carried certain moral codes transgressed by certain types of visitors.<sup>68</sup> Both reveal the ways in which the ‘official viewing rituals’ expected of visitors provided opportunities for the very kinds of behaviour museums were designed to discourage.<sup>69</sup> While visitor behaviour in local natural history museums is difficult to recover, it is clear that custodians of provincial natural history museums were anxious to check conduct considered inappropriate to the museum’s educational, scientific and civic purposes.<sup>70</sup> A supplement to the 1887 report of the British Association on provincial museum estimated that 20% of visitors to a provincial museum could be expected to be ‘loungers’ or those who ‘care only to be amused’.<sup>71</sup> The majority, the ‘observers’, were expected to be those who ‘have enough general culture to wish for more’. Students, true information seekers, were only expected to constitute 5% of visitors. Yet it was often the student, in contrast to the ‘lounger’, who was considered the ideal visitor. James Howden, speaking to the Montrose Natural History and Antiquarian Society in 1874, argued that a museum which aimed to compete with the popular entertainment of ‘itinerant penny shows, with their fat ladies, Norfolk giants, and six-legged pigs’ would ‘invariably be a commercial failure’.<sup>72</sup> It was the aim of teaching natural science that, for Howden, ought to inform the content and arrangement of the collections, with ‘gaudy but useless specimens’ put aside in favour of ordered displays of local natural history and a limited display of general natural history.

There was, of course, a difference between the intentions represented by Howden and Trail and the content and arrangement of collections that visitors actually saw. It was the gap between the rhetoric of the leadership of Scottish natural history societies and

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<sup>68</sup> K. Hill, ‘Roughs of both sexes: the working class in Victorian museums and art galleries’, in S. Gunn and R. J. Morris, *Identities in space: contested terrains in the western city since 1850*, Aldershot, 2001, 190-203; G. N. Swinney, ‘“I am utterly disgusted ...”: the Edinburgh Museum of Science and Art effecting moral decline?’, *Review of Scottish culture* (2004), 16, 76-84.

<sup>69</sup> For an account of museum visiting as a set of viewing rituals, see C. Duncan, *Civilizing rituals: inside public art museums*, London, 1995. See also N. Prior, *Museums and modernity*, Oxford, 2002, 171-208.

<sup>70</sup> For account of visitor experiences at the museum of Charles Waterton in the mid nineteenth century, see V. Carroll, ‘The natural history of visiting: responses to Charles Waterton and Waterton hall’, *Studies in the history and philosophy of biological and biomedical sciences* (2004), 35, 31-64.

<sup>71</sup> V. Ball, et al, ‘Report of the Committee for the purposes of preparing a further report upon provincial museums of the United Kingdom’, *Report of the British Association for the Advancement of Science* (1888), 124-32.

<sup>72</sup> J. Howden, *Report of the Montrose Natural History and Antiquarian Society* (1874), 6-8.

the reality of collection acquisition and display that led to serious criticism of provincial museums. James Trail's admission that refusing non-local donations 'may seem needless, or even hurtful' revealed the difficulties faced by those managing a local natural history museum.<sup>73</sup> There could be, that is, a tension between the civic pride of citizens and émigrés donating unsystematically 'every kind of object' to their local museum, and the civic pride associated with a properly 'scientific' collection of local natural history. Those concerned with the scientific reputation of a society museum or, by extension, the nation had little sympathy with the long-established culture of donation that welcomed any kind of object. An 1888 report prepared under the auspices of the Scottish Antiquarian Society on local museums in Scotland was particularly critical:

The principal defects of local Museums are: 1. that they are not sufficiently local in character, and 2. that they have not been systematic in the formation of their collections. They have not made it their business to tell any particular story from beginning to end, either of science, or history, or locality, and the fragmentary stories they do try to tell are so incompletely and unsystematically set forth, that they are unintelligible to the public.<sup>74</sup>

The museum projects of Scottish natural history societies were not exempt from tensions within public discourse and practice and contributed much to the material and discursive forms that culture took. Given the tensions, constructing a public museum could prove counter-productive for a natural history society. A museum might become a civic 'disgrace' undermining the public reputation of a society and of a town. That this was so only underlines the importance attached to the formation of a museum by natural history societies intent on proving their worth to a local public in scientific and in social terms.

## Natural history and platform culture

A more episodic but still significant intervention in civic life came in the form, as we have seen, of public meetings and fundraising events recruiting a local public to commit in some way to the causes celebrated by natural history societies. Such events can be

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<sup>73</sup> Trail, *op. cit.* (fn. 49), 160.

<sup>74</sup> Anderson and Black, *op. cit.* (fn. 46), 421.

further explored with reference to what has been termed 'platform culture'.<sup>75</sup> The more obvious form was the public lecture but it could include public dinners or outdoor speeches made at the laying of a museum or lecture hall foundation stone. Oration could be employed at a bewildering variety of sites and occasions raising questions concerning (and linking) content, rhetoric, context and reception. Particular attention is given in this section to lecture series organised and run by Scottish natural history societies and to the efforts of society members to petition local and national government on issues of public concern. Such 'agitation' was part of the understanding that a natural history society had a moral duty to offer science as a means to a better society.

Martin Hewitt has recently called for more attention to be paid to public speech by historians of the Victorian era.<sup>76</sup> Noting that 'At mid-century, even a relatively modest town would have been the venue of an average of more than one public meeting a night', Hewitt underlines the apparently insatiable appetite that existed among middle and working classes for all kinds of public speech.<sup>77</sup> While the presence of public lecture series appeared to diminish through to the mid-Victorian period it experienced something of a renaissance in the last quarter of the century. The audiences and purposes of lectures and addresses varied, and relatively little is known about access to platforms, lecture content and audience behaviour. Historians of science, as Hewitt notes, have, more than others, addressed this neglect. Yet while this is true for the early nineteenth century less attention has been given to science lectures after the 1840s. Ian Inkster's argument that the combined effects of a growing culture of expertise and the 'bifurcation' of society and science education along class lines 'reduced the educational value of the public [science] lecture to the level of insignificance' perhaps indicates one reason for overlooking the science lecture in the second-half of the nineteenth century.<sup>78</sup> The science lecture post-1840 became, Inkster maintains, more an instrument of entertainment for the middle classes than an effective pedagogic device for

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<sup>75</sup> M. Hewitt, 'Aspects of platform culture in nineteenth-century Britain', *Nineteenth century prose* (2002), 29, 1-32.

<sup>76</sup> Hewitt, op. cit. (fn. 75).

<sup>77</sup> Hewitt, op. cit. (fn. 75), 2.

<sup>78</sup> I. Inkster, 'The public lecture as an instrument of science education for adults – the case of Great Britain, c. 1750-1850', in *idem*, *Scientific culture and urbanisation in industrialising Britain*, Variorum collected studies series, Aldershot, 1997, II, 101.

cultivating the capacity of a not yet fully class-differentiated populace for technological invention and industrial advance.

That provincial science went into decline after the 1840s is difficult to contest when posing Inkster's diagnostic questions. The natural history society, for Inkster, was one among a number of 'specialised' voluntary associations which 'primarily served the middles classes' and were generally unconcerned with the immediate utility of science to engineering innovation.<sup>79</sup> They were, in other words, disconnected from the rest of society. Yet those same institutions organised lecture programmes the value of which was frequently measured not in terms of 'entertainment' but of 'educational' impact. Part of the philanthropic burden of natural history societies was generated by a concern for the scientific literacy of the local working classes. Not all public lectures organised by natural history societies were specifically designed to be accessible in cost and content for the 'working classes' but some at least were motivated by the belief that it was a moral and public duty to diffuse knowledge across social divides. While some of the more detailed questions of class, reception and economic impact cannot be adequately addressed here, asking why and how public lectures were organised by natural history societies is relevant to the attempt to recover their participation in local platform culture.

As Hewitt notes in passing, one of the causes of the revival of the public lecture from the 1870s was the financial aid given by the Gilchrist Educational Trust. The Trust was instrumental in supporting a series of lectures given in a number of Scottish towns through the 1880s and 1890s and was cited as the reason for the founding of the Kirkcaldy Naturalists' Society. The lecture series supported by the Gilchrist Trust was also supplemented by the lectures supplied by the Combe Trust.<sup>80</sup> Such lecture programmes highlight among other things funding bodies that were independent of government support at a time when the State has been seen as encroaching on a

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<sup>79</sup> I. Inkster, 'Cultural enterprise: science, steam intellect and social class in Rochdale c. 1833-1900', in *idem*, *Scientific culture and urbanisation in industrialising Britain*, Variorum collected studies series, Aldershot, 1997, XI, 320.

<sup>80</sup> The Combe Trust sponsored lectures given by Dr. Andrew Wilson on human physiology. the locations of which included, among others, Dundee, Greenock and Dalkeith. See for example Anon, 'A retrospect of fifty years work', *Annual report of the Greenock Philosophical Society* (1912), 50, 14.

relatively autonomous civil society.<sup>81</sup> In a retrospect on the work of the Gilchrist Trust Lord Shuttleworth, a longstanding Gilchrist trustee, despite arguing that the increasing State support given to education through the nineteenth-century had been an important advance on purely voluntary endeavour, suggested that non-governmental bodies continued to have a vital role to play. The Gilchrist Trust had performed, Shuttleworth contended, an important supplementary role to State-sponsored education, providing a space for innovative educational projects.<sup>82</sup> The lectures aided by the Gilchrist Trust were presented as a continuation of the pioneering work of John Borthwick Gilchrist, who, in association with George Birkbeck, established the London Mechanics' Institute in 1824.<sup>83</sup> Between 1878 and 1910 1402 lectures were delivered in 231 towns around Britain and Ireland with a total recorded attendance of 713,761.<sup>84</sup> The aim of the Trustees had been that the lectures would increase the accessibility of scientific knowledge, natural and technical, for populations in 'industrial centres' thus inculcating a taste for science and prompting the establishment of more permanent institutions of 'popular higher education'.<sup>85</sup>

The number of Gilchrist lectures held in Scotland was disproportionately small but, from 1881, they were nevertheless a conspicuous part of the civic calendar. The lecture series were run and supported locally by Scottish natural history societies with other bodies, such as the Greenock Philosophical Society, also providing backing. Naturalists' societies, although aiming to support 'practical work' and the investigation of local natural history, saw the diffusion of more general scientific knowledge as part of their remit particularly where there were no other local bodies engaged in such work. The Stirling Natural History and Archaeological Society in applying for and running Gilchrist lectures in 1885 is one example. Although not financially successful, with an attendance estimated at around 900, the council of the Stirling Society argued that the

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<sup>81</sup> See for example, S. Gunn, 'The public sphere, modernity and consumption: new perspectives on the history of the English middle class', in A. Kidd and D. Nicholls (eds), *Gender, civic culture and consumerism: middle class identity in Britain, 1800-1940*, Manchester, 1999, 12-29.

<sup>82</sup> U. J. K. Shuttleworth, *Gilchrist Educational Trust: pioneering work in education*, Cambridge, 1930, [1910].

<sup>83</sup> For more on the London Mechanics' Institute and early-nineteenth-century lecture circuits, see J. N. Hays, 'The London lecturing empire, 1800-1850', in Inkster and Morrell, *Metropolis and province: science in British culture, 1780-1850*, London, 1983, 91-119.

<sup>84</sup> Shuttleworth, op. cit (fn. 82), 29.

<sup>85</sup> Shuttleworth, op. cit (fn. 82), 13.



value of the lectures ‘could not be over-estimated’.<sup>86</sup>

The difference the support given by the Trust made to efforts of natural history societies to ‘diffuse a taste’ for science and, more specifically natural history, was particularly apparent in the experience of the Dundee Naturalists’ Society. The efforts of the Society to attract a working-class audience for a public lecture series given in Kinnaird Hall in 1877 was deemed a failure ‘utterly unworthy of a town like Dundee’ with the cheapest tickets (6d.) experiencing the poorest sales.<sup>87</sup> The lectures, designed to ‘enlighten the mind and improve the morals’ of the audience were poorly attended despite including such acclaimed speakers as Archibald Geikie, Professor of Geology at the University of Edinburgh, (who spoke on the ‘Geological history of Forfarshire’) and Henry Nicholson, Professor of Natural History at the University of St Andrews, (who tackled ‘geology and evolution’). After a series of disappointing attendance figures over several years the annual report for 1880-81 noted with concern the serious ‘pecuniary loss incurred by the Society’ in running ‘popular lectures’.<sup>88</sup> It made sense, then, to seek support from the Gilchrist Trust not only to relieve the Society’s financial problems in keeping up their ‘popular’ lecture series but also because funding from the Trust would allow (and require) a minimum of 800 tickets priced at 1d. Along with four other east of Scotland towns (Brechin, Kirkcaldy, Montrose and Perth) the Dundee Naturalists’ Society was successful in securing Gilchrist funds in 1881 and the subsequent lectures were deemed a success:

one remarkable feature in the audiences noticed by the lecturers as well as by your council being the great preponderance of our working classes for whom the lectures were mainly instituted.<sup>89</sup>

Although no attendance figures are given, Frank Young later recalled ‘enormous’ crowds gathering to hear the six lectures delivered by Gilchrist Trust lecturers.<sup>90</sup>

Despite the success of the Dundee lectures, a third attempt to obtain funds from the

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<sup>86</sup> D. Crystal, ‘Secretary’s report’, *Transactions of the Stirling Natural History and Archaeological Society* (1886), 8, 89. The figure of 900 was quoted in the Minutes of the Gilchrist Educational Trust. University College London, Manuscript Room (hereafter UCL), Gil 1/1, Minutes of the Gilchrist Educational Trust, 14 January, 1886.

<sup>87</sup> *Annual report of the Dundee Naturalists’ Society* (1877), 4, 12. The more expensive tickets were priced at 1s. and 2s.

<sup>88</sup> *Annual report of the Dundee Naturalists’ Society* (1881), 8, 5.

<sup>89</sup> *Annual report of the Dundee Naturalists’ Society* (1882), 9, 5.

<sup>90</sup> Young, *op. cit.* (fn. 8), 9.

Gilchrist Trust was, like the first, unsuccessful.<sup>91</sup> The prioritisation of those towns without any established institute for promoting science to the industrial classes may have been the reason why the Dundee Society's third application was rejected. This did not mean public lectures on science in Dundee ceased. From 1882, a lecture series on scientific and other topics was organised annually by the Armitstead Trust. The Trust, an organisation financed by money resulting from the dissolving of the Dundee Working Men's Club, had been persuaded by the success of the lectures organised by the Naturalists' Society that the money was best spent in continuing that form of public education.<sup>92</sup> As a result of the work of the Armitstead Trust, the Dundee Naturalists' Society discontinued their public lecture series which, despite the importance attached to it, had never been regarded as the Society's primary aim.<sup>93</sup>

Another 'site' where natural history was embedded in practices shared with other local associations was the newspaper. Martin Hewitt has drawn attention to their role as 'civic Hansards', reporting verbatim the political speeches of municipal government.<sup>94</sup> Such detailed recording was also extended, as we have seen, to the activities of natural history societies. Despite the occasional mention in popular and scientific journals much of the public face of Scottish natural history societies was constructed through accounts of their activities in local newspapers. Although the proceedings of ordinary meetings did appear it was conversazione and exhibitions that were given the most column space. The complaint made at the lack of any newspaper account of a natural history conversazione organised by the Perth Literary and Antiquarian in 1878 typified the value placed on newspaper reportage to establish a society's civic worth. The conversazione was held during a dispute over the construction of a Perth Museum between the Literary Society and the Perthshire Society of Natural Science (see above) and it was thus deemed by some to be impolitic to highlight the activities of one Society at a time when both were competing for civic capital rather than co-operating for the public good. An account of the conversazione later appeared in a short history of the Literary Society published in 1881 which, detailing the ethnographical and natural

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<sup>91</sup> UCL, Gil 1/1, Minutes of the Gilchrist Educational Trust, 19 May, 1882. The first application was unsuccessful due to the impact on the Trust of the Scottish banking crisis (1878-79). *Annual report of the Dundee Naturalists' Society* (1880), 7, 6.

<sup>92</sup> Young, *op. cit.* (fn. 8), 10. Armitstead Trust, *Lecture list*, Dundee, 1887.

<sup>93</sup> Dundee Naturalists' Society, *Lecture scheme*, Dundee, 1879.

<sup>94</sup> Hewitt, *op. cit.* (fn. 75), 11.

## Lectures for the Years 1882-1888.

DATE.	LECTURER.	SUBJECT.
Nov. 12, 1883.	HIS GRACE THE DUKE OF ARGYLL, .. .. .	The connection between the Scenery of Scotland and its Geology.
Oct. 27, 1884.	MATTHEW ARNOLD, LL.D., formerly Professor of Poetry, Oxford University, ..	Literature and Science.
Nov. 26, 1887.	CARL ARMBRUSTER, London, .. .. .	Modern Composers of Classical Song.
.. 9, 1882.	Sir ROBERT S. BALL, LL.D., F.R.S., Astronomer Royal for Ireland, .. .. .	The Revelations of the Spectroscope.
.. 12, 1889.	Sir FREDERICK BRAMWELL, F.R.S., M. Inst. C.E., London, .. .. .	Our Big Guns.
.. 4, 1897.	B. BAKER, Member of Council Inst. C.E., London, .. .. .	The Forth Bridge.
Dec. 14, 1898.	SAMUEL BRANDRAM, M.A. Oxon, London, .. .. .	Shakespearean and other Readings.
Nov. 23, 1883.	EMIL BEHNKE, London, .. .. .	Photographs of the Throat in Singing—How they were taken, and what they teach.
.. 2, 1883.	JOHN STUART BLACKIE, LL.D., Emeritus Professor of Greek, Edinburgh University, ..	The Wit and Wisdom of Scottish Song.
Dec. 9, 1887.	A. CRUM BROWN, D.Sc., M.D., Professor of Chemistry, University of Edinburgh, ..	Our Sensations of Motion.
.. 17, 1889.	JOHN CAIRD, D.D., LL.D., Principal, Glasgow University, .. .. .	The Study of History.
Nov. 21, 1881.	W. E. CARPENTER, M.D., LL.D., late President of the British Association, ..	The Gulf Stream—What it does, and what it does not.
Dec. 4, 1885.	T. S. CLOUSTON, M.D., Lecturer on Mental Diseases, Edinburgh University, ..	Modern City Life, from a Medical point of view.
.. 5, 1884.	W. H. DALLINGER, LL.D., F.R.S., President of the Royal Microscopical Society, ..	Protoplasm and the Laws of Life, as shown in lowly living things.
.. 15, 1882.	W. BOYD DAWKINS, M.A., F.R.S., Professor of Geology, Owens College, Manchester, .. .. .	The Channel Tunnel and the Silver Streak.
.. 10, 1890.	JAMES DONALDSON, LL.D., Principal, St Andrews University, .. .. .	The Position of Women in Ancient Rome.
Nov. 28, 1881.	HENRY DRUMMOND, F.R.S.E., F.R.S.; Professor of Natural Science, Free Church College, Glasgow, .. .. .	Tropical Africa.
.. 16, 1889.	Mrs AMELIA B. EDWARDS, Ph.D., L.H.D., LL.D., Hon. Secretary, Egyptian Exploration Fund, London, .. .. .	The Social and Political Position of Women in Ancient Egypt.
Feb. 26, 1886.	F. W. FARRAR, D.D., F.R.S., Archdeacon of Westminster, .. .. .	Daute.
Nov. 19, 1886.	Mrs HENRY FAWCETT, London, .. .. .	The Social Progress of Women during the last Hundred Years.
Dec. 22, 1886.	E. A. FREEMAN, M.C.L., Regius Professor of Modern History, Oxford University, ..	History and its kindred Studies.
Feb. 17, 1888.	LAWRENCE GANE, Q.C., M.P., London, .. .. .	Charles Kingsley—Preacher, Poet, and Novelist.
Nov. 20, 1886.	J. E. HODGSON, R.A., Professor of Painting, and Librarian to the Royal Academy, ..	The Life and Works of Hogarth.
.. 9, 1888.	Sir WILLIAM WILSON HUNTER, K.C.S.I., LL.D., Oxford, .. .. .	The New India.
.. 30, 1888.	Rev. H. R. HAWES, M.A., Incumbent, St James' Church, Marylebone, London, ..	Musical and Moral (with Musical Illustrations on various Instruments).
Dec. 14, 1884.	R. G. JEBB, LL.D., Professor of Greek, Glasgow University, .. .. .	The Study of Greek Literature.
.. 8, 1882.	VIRIAMU JONES, R.A., B.Sc., Principal of Fifth College, Sheffield, .. .. .	The Electric Light.
Nov. 24, 1882.	J. NORMAN LOCKYER, F.R.S., London, .. .. .	The recent Eclipse of the Sun.
Feb. 2, 1888.	A. MACALISTER, M.D., F.R.S., Professor of Anatomy, Cambridge University, ..	The Mechanism of Speech.
Nov. 25, 1887.	JUSTIN MCCARTHY, M.P., London, .. .. .	Modern Fiction—The Real and the Ideal.
.. 27, 1883.	JOHN G. MCKENDRICK, M.D., LL.D., F.R.S., Professor of Inst. of Med., Glasgow University, .. .. .	The Molecular Machinery of Life.
.. 22, 1888.	Sr GEORGE MIVART, Ph.D., M.D., F.R.S., London, .. .. .	Darwin and Darwinism.
.. 29, 1886.	ALEXANDER NICOLSON, LL.D., Sheriff-Substitute of Galloway, .. .. .	Past and Present.
Dec. 1, 1882.	W. PETERSON, LL.D., Principal of University College, Dundee, .. .. .	Agrarian Agitation in Ancient Rome.
.. 12, 1884.	CHARLES RAMPINI, F.S.A., Sheriff-Substitute of Caithness, Orkney and Shetland, ..	The Norsemen in Scotland.
Nov. 17, 1882.	J. M. ROBERTSON, M.A., Demonstrator of Physiology, Glasgow University, ..	The Ear: Its perception of Musical Sounds.
.. 16, 1883.	G. J. ROMANES, LL.D., F.R.S., Secretary of the Linnæan Society, .. .. .	Animal Instinct.
.. 19, 1882.	W. ROBERTSON SMITH, LL.D., Professor of Arabic, Cambridge University, .. ..	Mecca.
Dec. 3, 1886.	H. B. TRISTRAM, D.D., LL.D., F.R.S., Canon of Durham, .. .. .	The Key to the Distribution of Bird Life.
.. 7, 1888.	FRANCIS H. UNDERWOOD, M.A., LL.D., U.S. Consul, Glasgow, .. .. .	Cambridge (Mass.) Thirty Years Ago, with Glimpses of its Literary Society, including Longfellow, Lowell, and Holmes.
Nov. 30, 1888.	W. CRAWFORD WILLIAMSON, LL.D., F.R.S., Professor of Natural History, Anatomy, and Physiology, Owens College, Manchester, .. .. .	Earthquakes and Volcanoes.

Figure 4.6. Lectures of the Armitstead Trust 1882-1888. The list shows that the Trust was able to attract speakers of national reputation. Notice, as well, the two lectures given by women. Source: Dundee City Council, Central Library, L119(18).

history exhibits and putting the number of visitors at 8000, maintained that the conversazione had indeed merited a public report. The later account was seen as 'a simple act of justice' in view of the lack of any public appreciation of the efforts of the Literary Society.<sup>95</sup>

<sup>95</sup> McIntosh, op. cit. (fn. 40), 61.

Promotion in the local newspaper clearly shaped the form and content of speeches at the larger-scale public events and the relationship between civic science and local journalism was intimate. This can be demonstrated in various ways not least the number of members of natural history societies who worked at a local newspaper office. Some rose to prominence in the societies. James Barron, for instance, whilst Editor of the *Inverness Courier* was elected President of the Inverness Scientific Society and Field Club in 1880. Barron revealed the importance attached to the local newspaper by noting that he had not been elected on the basis of his 'scientific attainments'. It was, rather, his position as 'middleman ... translating the knowledge and ideas of other men into what the members were pleased to consider a popular form'.<sup>96</sup> Barron also edited the Society's *Transactions* and had them printed at the office of the *Inverness Courier*. The practice of using the local newspaper as the printer and publisher of the society's proceedings and transactions was common to a number of societies with the annual volume being a reproduction of accounts already made public in local press reports.

Accounts in local newspapers reveal that lectures were not the only oratorical form used to demonstrate the usefulness of civic natural history. As others have pointed out in relation to political culture in late-Victorian Britain, speeches and toasts were employed to sway and persuade the listening public.<sup>97</sup> Political techniques of persuasion and publicity helped natural history to be regarded as a matter for public and civic concern and natural history societies provided a context where oratorical skills could be honed for more explicitly political use.

Yet, as a dispute over the election of Office Bearers to the Council of the Dumfriesshire and Galloway Natural History and Antiquarian Society (DGNHAS) made clear, party politics had no place at the meetings of scientific societies. In 1882, Alfred Truckwell, who put opposition to his re-election as joint Secretary down to 'the misfortune of being a Tory', provoked the reaction that 'politics was not part of the business of the Society'. Truckwell was, therefore, 'brought to order' by James Gilchrist, the Society President.<sup>98</sup> Municipal politics, on the other hand, was on occasion deemed an appropriate concern for members of a natural history society. In

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<sup>96</sup> J. Barron, 'Opening meeting', *Transactions of the Inverness Scientific Society and Field Club* (1880), 2, 20.

<sup>97</sup> M. Bevis, 'Volumes of noise', *Victorian literature and culture* (2003), 32, 577-91.

<sup>98</sup> *Dumfries and Galloway Standard and Advertiser*, 11 October, 1882.

1883, for example, the DGNHAS launched a ‘successful agitation’ to prevent the Town Council from making changes to the Old Bridge of Dumfries.<sup>99</sup> The Society, which heard at least three papers on the subject in the 1880s, saw the bridge as an important part of Dumfries’ heritage.<sup>100</sup>

The same willingness to intervene in debates primarily the concern of municipal authorities was evident among members of the Perthshire Society of Natural Science. In 1875, anxiety over the supply of clean water to Perth prompted the Society to call an extraordinary meeting to discuss the issue. Looking back thirteen years later Francis Buchanan White noted that ‘some people were very angry at the Society’s taking up such a subject, and said that we had no business to interfere with anything but bugs and beetles!’. Yet White also noted that the meeting ‘resulted in a great extension of the supply’.<sup>101</sup> In 1892, a paper by Hugh Robert Mill and James Coates on the physiography of the Tay Basin, presented to the Society as part of a series on the ‘natural history of the banks of the Tay’, further underlined why the Society had felt justified to intervene.<sup>102</sup> The paper itself was included on the basis that ‘the study of geography is of paramount importance to the naturalist’, the physiography of the Tay Basin being intimately linked with its botany and zoology.<sup>103</sup> The ‘water supply and movement’ of the Tay was an essential component not only in understanding local natural history but also in appreciating the river’s utility for Perth’s bleaching and dyeing industries.<sup>104</sup>

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<sup>99</sup> H. S. Gladstone, ‘The history of the Dumfriesshire and Galloway Natural History and Antiquarian Society’, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1912), 1, 27.

<sup>100</sup> W. McDowall, ‘The size of the old bridge of Dumfries’, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1883), 4, 45-8; J. Barbour, ‘The dimensions of the old bridge of Dumfries’, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1884), 4, 37-9; J. C. Aitken, ‘Notes on the bridge of Nith’, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1886), 5, 18-26.

<sup>101</sup> F. B. White, ‘President’s address’, *Proceedings of the Perthshire Society of Natural Science* (1888), 1, 30.

<sup>102</sup> H. R. Mill and J. Coates, ‘Physiography’, *Transactions of the Perthshire Society of Natural Science* (1893), 2, 33-40. Mill was then Librarian to the Royal Geographical Society having worked for the Scottish Marine Station and as a lecturer in Physiography at Heriot-Watt College. David E. Pedgley, ‘Mill, Hugh Robert (1861-1950)’, *Oxford Dictionary of National Biography*, Oxford, 2004.

<sup>103</sup> H. Coates, ‘Opening address’, *Proceedings of the Perthshire Society of Natural Science* (1892), 1, 152. By geography Coates meant ‘not not the acquirement of a string of names, but the training which will enable us to realise, in a series of mental pictures, the contour of any given part of our country, and the relations of its several physical features’.

<sup>104</sup> Mill and Coates, op. cit. (fn. 101), 36-7; 40.

Scottish natural history societies also lobbied for issues of national concern including the provision of science teaching in schools, the threat of restricted access to the Royal Botanic Garden in Edinburgh, trespass laws and legislation on the protection of birds. In 1888, the Kirkcaldy Naturalists' Society, for example, was urged by Isaac Bayley Balfour, then Keeper of the Royal Botanic Garden and Professor of Botany at the University, to 'use what influence it possessed' to prevent the proposed Universities (Scotland) Bill permitting only matriculated students to use the garden for scientific study.<sup>105</sup> Acting on this request, the Society presented a petition to Parliament via the Kirkcaldy MP, Sir George Campbell, asking that the clauses effecting a restriction of access be omitted. Such 'political' agitation demonstrated the extent to which members of natural history societies held convictions about the relevance and usefulness of their scientific pursuits and their interest in upholding those freedoms that allowed natural history to remain an activity accessible to people outside more elite institutions or social circles.

If science was to be an agent of change in towns and cities it was necessary that citizens were made aware of its methods, insights and improving effects. Natural history was never only about 'bugs and beetles' or 'willows and wasps', a pejorative image deployed by those who opposed the local political power of civic science. For members of naturalists' societies, the study of natural history had much to contribute to the improvement of Scotland's towns. While the limitations of voluntary endeavour were acknowledged, the belief that associational natural history ought to be an activity that was politically, culturally and socially engaged directed and informed the civic projects and events that the societies promoted and ran.

## Summary and conclusion

This chapter has examined only some of the more conspicuous ways in which members engaged a local public through the use of events, rituals and buildings that had wider resonance than esoteric scientific projects. *Conversazione* and exhibitions displayed the social and scientific ambitions of the societies and in some cases made them institutions that evidenced the high standing of a Scottish town. It was not only a case of science in

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<sup>105</sup> Bease, *op. cit.* (fn. 20), 25-6.

service of civic and middle-class culture with members of societies displaying natural history merely as an indicator of social status. Such a reading misses the ways in which organisers of *conversazione* regarded science as a set of social and epistemological practices that could transform civic culture. This vision of science was evident in the organisation of fund-raising bazaars. Here an ‘enlightened’ public served science through the donation and display of ‘articles of vertu’. The exhibition of art objects alongside collections of natural history blurred the distinction between ‘scientific’ and ‘cultural’ productions. Yet the image of science as public and open to all could serve to undermine the restriction of the appropriate public role for ladies to the organisation of the bazaars. Logically, as Christian Maclagan of the Stirling Natural History and Archaeological Society argued, no distinction ought to be made between lady members and male members in terms of participating in science, which, by its very nature, was public knowledge. The logic of civic science meant that the gender norms of civic culture were open to question and the role of women in civil society had to be re-assessed.

Provincial museums left a more material imprint on local civic society. This was more obviously the case in Perth and Alloa where local natural history societies erected buildings designed to hold their collections and host their meetings. The importance attached to such projects was nowhere more clearly demonstrated than in Perth where competition between two local scientific societies over civic capital accrued through the construction of monumental buildings was conducted in the language of civic pride as well as scientific authority. Both societies saw their museum buildings as the face of progress in Perth. The Alloa museum was likewise considered ‘a great public benefit and an ornament to Alloa’.<sup>106</sup> The museums, inside and out, carried messages about science and about urban improvement, with the moral economy of collections revealed in concerns about the right kind of visitor.

Like the museums, public lectures run by societies were organised on the basis that they appeal not only to the ‘educated classes’. While the lectures, along with other kinds of society meetings, were occasions for members to develop oratorical skills useful for public life and for asserting their status as leading citizens, they were also informed by a philanthropic impulse that shaped their content and purpose. The help sought by

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<sup>106</sup> Anon, *op. cit.* (fn. 31), 49.

societies from the Gilchrist Trust demonstrated the sympathy members had with 'popular' education initiatives. Packed lecture halls were evidence for members of the social implications of their understanding of science as the egalitarian pursuit of knowledge. Such lectures were thought of as effecting moral improvement among the 'unruly' classes but were also considered recruiting grounds for workers in the scientific cause. The practices of 'platform culture' also allowed members of Scottish natural history societies to employ the instruments of political agitation to remonstrate against ventures that would restrict the ability of 'amateur' naturalists to participate in science or the workings of local civil society. By so doing they demonstrated publicly their convictions about the social and scientific relevance of their work and upheld the important function it was believed to serve in progressing local civic culture.

Bazaars and soirees, lectures and museums revealed the public face of natural history societies and involved the participation of those who may have only occasionally encountered the local activities of natural history societies. The next chapter turns to look in more detail at the effect on lives intimately tied up with the everyday practices and persistent rhetoric of Scottish field clubs. What did it mean to belong to, or be recruited for the cause of, civic science? In terms of the individual naturalist, matters of 'character' were yoked in different ways to questions of scientific conduct intimating a particular 'persona' thought fit for the 'true citizen-naturalist'.



## Chapter 5

### Self-culture, character and the 'true naturalist'

The fact is, if every individual in Great Britain were a naturalist, there would be no rascals and vagabonds. (Sir Thomas Moncrieffe, *Perthshire Constitutional and Journal*, 18 March, 1872)

Chapters 3 and 4 have indicated the ways in which associational natural history was construed as part of mid- to late-nineteenth-century Scottish civil society. Presenting the natural history society as a significant local cultural enterprise involved, it has been argued, a complex set of negotiations between conceptions of scientific work and conduct and activities deemed appropriate and relevant for a civic culture in flux. This chapter, in keeping with the focus of Section II on science as civic culture, aims to further situate the activities of natural history societies by looking at the kind of individual who epitomised the 'true naturalist'. In particular, it examines the ways in which representations of prominent members resisted a characterisation of the naturalist as 'neither particularly godly, nor particularly virtuous, nor particularly polite', an image that others have argued was on the ascendancy in mid- to late-nineteenth century Britain.<sup>1</sup> Participants in associational natural history, it is proposed, continued to view their pursuits not only as the dispassionate exploration of local flora and fauna but also as a means to self-culture.

Investigation of Victorian ideas on character has been considered by a number of historians of science a central task in developing an understanding of the shifting relations between 'science' and 'society', and in uncovering changing notions of what it meant to be a 'man of science'.<sup>2</sup> Most attention has been given to élite men of science who acquired a national reputation. For such, state endowment of scientific research and the moral authority of scientific work on a national stage were among the issues of

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<sup>1</sup> S. Shapin, 'The image of the man of science', in R. Porter (ed.), *The Cambridge history of science: eighteenth-century science*, Vol. 4, Cambridge, 2003, 183.

<sup>2</sup> For recent work on science and character, see A. Secord, "'Be what you would seem to be": Samuel Smiles, Thomas Edward and the making of a working-class scientific hero' *Science in context* (2003), 16, 147-73 and P. White, *Thomas Huxley: making the "man of science"*, Cambridge, 2003.

primary concern.<sup>3</sup> In contrast, members of natural history societies were more often concerned with how character ideals functioned in recommending natural science to a local public. Distanced, but not disconnected, from the projects of élite men of science, the provincial setting reveals other aspects of the interplay between ‘character’ and ‘science’ in Victorian Britain.

Methodologically, though sharing historiographical concerns associated with prosopographical analysis, the approach taken here is closer to what Steven Shapin has recently termed ‘characterology’.<sup>4</sup> Prosopography, in the hands of the historian of science, by examining the background characteristics of large groups of scientific practitioners and their supporters, uncovers the social contexts important to scientific knowledge in the making, and resists the tendency to focus on a limited number of scientific élite.<sup>5</sup> Though sympathetic to that agenda, this chapter has a more restricted empirical focus. Rather than detail the collective biographies of each individual society – a task beyond the scope of this thesis – it asks how particular biographical accounts of Scottish naturalists were constructed, and functioned, in relation to debates about the utility of natural history in Scottish civic society.<sup>6</sup> A key concern, then, is to examine the images of exemplary naturalists that circulated among Scottish natural history societies, and investigate the ways in which these representations mediated discussions about the place and practice of Scottish natural science in a provincial or ‘non-élite’ setting.

Recovering images of the ‘civic naturalist’ influential amongst natural history societies involves investigating a range of sources. Widely read biographies of autodidact naturalists, which underscored the value of natural history in producing good character,

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<sup>3</sup> For example, R. Barton, ‘Men of science’: Language, identity and professionalization in the mid-Victorian scientific community’, *History of science* (2003), 41, 73-119; R. Bellon, ‘Joseph Dalton Hooker’s ideals for a professional man of science’, *Journal for the history of biology* (2001), 34, 51-82; L. Daston and H. Otto Sibum, ‘Introduction: scientific personae and their histories’, *Science in context* (2003), 16, 1-8; F. Turner, *Contesting cultural authority*, Cambridge, 1993, 201-28.

<sup>4</sup> Shapin, op. cit. (fn. 1), 160.

<sup>5</sup> D. Allen, ‘Arcana ex multitudine: prosopography as a research technique’, *Archives of natural history* (1990), 17, 349-59; L. Pyenson, ‘“Who the guys were”: prosopography in the history of science’, *History of science* (1977), 15, 155-188; S. Shapin and A. Thackray, ‘Prosopography as a research tool in history of science: the British scientific community, 1700-1900’, *History of Science* (1974), 12, 1-28. On biography and science more generally, see M. Shortland and R. Yeo, *Telling lives in science: essays on scientific biography*, Cambridge, 1996.

<sup>6</sup> Such an approach has been applied to more prominent men of science precisely in order to understand how such prominence was made, maintained and consumed. See in particular, J. Browne, ‘Charles Darwin as a celebrity’, *Science in context* (2003), 16, 175-94.

provided a way of imagining resolutions of class tensions and offered natural history societies one model of the exemplary naturalist. The account given of self-culture by John Stuart Blackie, particularly in his widely read vade mecum for young men, recruited natural history pursuits as a means to *Bildung*. Although Blackie's connections with natural history societies were limited, outlining his widely publicised ideas on self-culture illuminates some of the ways in which members of natural history societies fashioned themselves as men of culture. Occupying a more conspicuous place in the natural history societies' own publications, as well as in local newspapers, were obituaries of the bodies' more prominent members. These eulogies provided idealised sketches of naturalists that underlined the value of their pursuit, and revealed how an interest in natural history evinced characteristics worth emulating. The portraits that sometimes accompanied such laudatory obits were an important component of attempts to present both the character of the deceased naturalist and the aspirations of the institution to which he (sic) belonged. These visual forms, establishing naturalists as local 'worthies', also provided another means by which natural history and the concerns of an imagined local public were intertwined. The fact that the ideal images were constructed almost exclusively from accounts of male naturalists also had a bearing on the how the participation of women was understood and encouraged. Examining the less conspicuous references to lady members and female naturalists shows how the gendered nature of the 'images' may have influenced the character and extent of women's involvement in Scottish natural history societies. The chapter examines each 'source' in turn, understanding them less as a repository of prosopographical information and more as sets of negotiations between different conceptions of natural history and civil society. The intended result is a cumulative account of how the relations between natural history and individual character were advanced and how these implied relations served to ameliorate tensions generated by the pursuit of natural history in the civic sphere.

### 'One thing is needful': natural history and self-culture

In 1882, James Geikie, member of the Geological Survey and resident of Perth, used the platform afforded him as President of the Perthshire Society of Natural Science (PSNS) to sketch the traits of the 'true naturalist'. His counterpoint was the 'mere collector of curiosities' or the 'pseudo-naturalist' and the museums which had resulted from the

‘mania of collecting’. Collections composed of every kind of curio might evoke ‘occult musings’ but they could not impart knowledge of the ‘wonderful adaptations and harmonies of nature’.<sup>7</sup> In contrast, the true naturalist as a specialist in a particular subject carefully revealed the ordered laws of nature. The true naturalist was not ‘a mere one-idea’d man ... but a philosophical specialist whose mind is open to light from all quarters’. The cultivation of one of the several subjects described as natural science would ‘quicken the observing faculty, sharpen the reasoning powers, and expand the imagination’. In short, the focused but ‘philosophical’ study of natural science was, for Geikie, ‘admirably adapted ... for the purposes of self-culture’.

By invoking the concept of self-culture Geikie connected natural history to a discourse on the self with a long and involved genealogy. The concept of self-culture had appeared in the writings of Thomas Carlyle and Samuel Taylor Coleridge. A more ‘democratic’ version, promoted by William Ellery Channing and the transcendentalists in the 1830s, influenced Samuel Smiles, a number of whose biographies were found in the PSNS library.<sup>8</sup> This diverse set of writers had themselves borrowed and modified the German idea of *Bildung*, a concept attached in early nineteenth-century Germany to a classical, not scientific, education.<sup>9</sup> The association of classical learning with self-culture was challenged by members of early nineteenth-century German natural history associations who argued that the ‘bookishness’ encouraged by Wilhelm von Humboldt’s *Gymnasien* (high schools) hindered rather than aided the ideal of a cultivated self.<sup>10</sup> Like their German equivalents earlier in the nineteenth century, Scottish natural history societies had an obvious stake in showing that their favoured pursuit, with its associated skills and out-of-doors pedagogy, was one way of cultivating a self competent – physically, morally and intellectually – in the art of living.

One important ally for Scottish societies was John Stuart Blackie, Professor of Greek at the University of Edinburgh. Blackie, a much-loved public figure as well as

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<sup>7</sup> J. Geikie, ‘Annual address’, *Proceedings of the Perthshire Society of Natural Science* (1882), 66-7.

<sup>8</sup> For the influence of Channing on Smiles, see R. J. Morris, ‘Samuel Smiles and the genesis of self-help: the retreat to a petit-bourgeois utopia’, *Historical journal* (1981), 24, 95.

<sup>9</sup> For a useful overview of this concept, particularly as it appeared in the work of Schiller, Hegel and Wilhelm von Humdolt, see S. E. Nordenbo, ‘Bildung and the thinking of bildung’, *Journal of philosophy of education* (2002), 36, 341-52.

<sup>10</sup> See D. Phillips, ‘Friends of nature: urban sociability and regional natural history in Dresden, 1800-1850’ *Osiris* (2003), 18, 55-6 and A. Daum, ‘Science, politics and religion: Humboldtian thinking and the transformations of civil society in Germany, 1830-1870’, *Osiris* (2002), 17, 107-40.

University Professor, was perhaps best known for his advocacy for Gaelic teaching in Highland schools, his championing of the cause of crofters and his interventions in university reform.<sup>11</sup> A self-styled man of letters, Blackie was known for his love of German culture and philosophy. Reminiscing about his Edinburgh student days Scottish geologist Sir Archibald Geikie noted that John Stuart Blackie, Professor of Greek, ‘had been so much in Germany, and was so well versed in German life and literature, that he seemed naturally to assume the manner of a German professor’.<sup>12</sup> A piece of travel advice, offered by Blackie in a report of one of his trips to Göttingen, that ‘no person professing “*Bildung*” – and I do profess that kind of thing – could allow himself to be in Göttingen without visiting Hildesheim, the Nuremberg of North Germany’ was symptomatic of his long running and personal concern with self-culture.<sup>13</sup> The series of reports of his 1873 Göttingen visit also revealed his enthusiasm for geologising. His account of a geological excursion in the Harz mountains with a group of German students made it clear that for Blackie natural history could be a principal means of cultivating a self skilled in observing beauty in nature and providing, therefore, a means to *Bildung*.

The implied contiguity of self-culture, with its emphasis on broad learning, and natural history pursuits in the nineteenth century has been noted by others. Roy Porter has shown, for example, how gentlemanly ‘respect for literary culture’ persisted among the ‘professional’ members of the British Geological Survey, such as James Geikie and Benjamin Peach, well into the twentieth century.<sup>14</sup> Blackie’s friendship with such ‘gentlemanly geologists’ further indicated his interest in geology, and the relations he sketched between it and a cultured self. He dined and corresponded with the Geikie brothers, Sir Archibald and James, and used his fellow Gaelic enthusiast, William Jolly, as the basis for a character – a ‘genial and jolly’ geologist named Hilarius – in his

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<sup>11</sup> For his place in mid-nineteenth-century debates about Scottish university reform, see G. Davie, *The Democratic Intellect*, 2<sup>nd</sup> ed., Edinburgh, 1964, 232-46.

<sup>12</sup> A. Geikie, *Scottish reminiscences*, Glasgow, 1904, 176. George Davie describes Blackie as ‘the apostle of German Romanticism’. Davie, op. cit. (fn. 11), 235.

<sup>13</sup> *The Scotsman*, 16 September 1876.

<sup>14</sup> R. Porter, ‘Gentlemen and geology: the emergence of a scientific career, 1660-1920’, *Historical journal* (1978), 21, 827. See also D. R. Oldroyd, ‘Sir Archibald Geikie (1835-1924), geologist, romantic aesthete, and historian of geology: the problem of Whig historiography of science’, *Annals of science* (1980), 37, 441-62.

‘ambulatory dialogues’ on the Highlands.<sup>15</sup> A throwaway remark in a letter in 1887 to James Geikie, on receipt of the latter’s book of translated German songs by Romantic poet Heinrich Heine, that, ‘without poetry science is dry bones or dead stones’, revealed a shared concern to maintain a view of the naturalist as someone who could pursue in tandem a Germanised humanist learning and natural history.<sup>16</sup>

Blackie’s view that natural history was an important aid to learning was popularised and elaborated in his *On Self-Culture*, a book first published in Edinburgh and New York in 1874. Blackie later commented that this work was the ‘only one of my books that was a decided commercial success’.<sup>17</sup> The central message of the handbook was summed up by Blackie’s declaration that:

“One thing is needful.” Money is not needful; power is not needful; cleverness is not needful; fame is not needful; even health is not the one thing needful: but character alone – a thoroughly cultivated will – is that which can truly save us.<sup>18</sup>

In a number of ways natural history was, for Blackie, a means to character. Pursuing natural history, both in the field and the local museum, was an obvious candidate for countering the damaging effects of indoor learning, and for developing the capacity necessary to personally acquire, rather than borrow second hand, a wide knowledge of nature and culture. The rich results of observing in the field needed to be appropriately ordered and such classificatory skills could be acquired, Blackie contended, by frequent visits to local museums. Blackie thus gave a moral rather than scientific justification of the collecting policy of Scottish natural history societies, advising that visitors to local museums should ‘confine their attention generally to that one thing which is most characteristic of the locality. Looking at everything and nothing generally ends in

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<sup>15</sup> J. S. Blackie, *Altavona: fact and fiction from my life in the Highlands*, Edinburgh, 1882. Hilarius provides an account of the geology of the Oban district, written by Jolly. Jolly’s account had been passed to Archibald Geikie to correct before being published in Blackie’s book. Edinburgh University Library, Special Collections (hereafter EUL), Gen 524/9, Correspondence of Archibald Geikie, Blackie to Geikie, 12 March, 1882.

<sup>16</sup> EUL, MS 2594/1, Correspondence of James Geikie, Blackie to Geikie, 20 October, no year. J. Geikie, *Songs and lyrics by Heinrich Heine and other German poets*, Edinburgh, 1887.

<sup>17</sup> J. S. Blackie, *On self-culture intellectual, physical, and moral: a vade mecum for young men and students*, Edinburgh, 1874. For his comments on the success of the book, see J. S. Blackie, *Notes of a life*, Edinburgh, 1910, 203. By 1910 there were thirty-seven English editions available and the book had been translated into nine languages.

<sup>18</sup> J. S. Blackie, *Self-Culture intellectual, physical, and moral: a vade mecum for young men and students*, 11<sup>th</sup> edn., Edinburgh, 1878, 59.

remembering nothing'.<sup>19</sup>

Blackie's address to a *conversazione* run by the Kirkcaldy Naturalists' Society (KNS) in 1883 revealed the appeal Blackie's ideas held for members of a natural history society. The local newspaper gave Blackie's appearance as the cause of the presence of a 'large company of the elite of the district' who assembled in the town's public buildings at eight o'clock.<sup>20</sup> His characteristically eccentric and aphoristic address, 'looking the audience direct in the face', did not appear to disappoint.<sup>21</sup> The superabundance of the journalistic insertions of 'laughter', 'hear hear' and 'applause' after such comments as 'nature's beauties were far better to worship than all the Greek books' and 'Begin with a dry parchment; end with dry parchment' signalled Blackie's rapport with his audience.

Blackie's enthusiastic reception can be given a local reading. Kirkcaldy's residents struggled to represent their town as a place of culture against the dominant image that portrayed it as a 'linopolis' concerned only with industrial advance (see Chapter 4, p. 98). The Society itself was a microcosm of Kirkcaldy's middle classes. In 1885 the Council of the Society included two linoleum manufacturers, three civil engineers and a chemist and of the hundred or so members of the KNS whose occupations could be identified in 1895, 14 were employed in manufacturing (mainly linoleum) and 7 were engineers.<sup>22</sup> Members of the Kirkcaldy Naturalists' Society had, therefore, good reasons for welcoming Blackie's alignment of natural history and self-culture.

Blackie's address also had resonance beyond the cultural politics of Kirkcaldy. Underlining a widespread concern with 'physical culture' as an important component in character formation, Blackie pointed to the link between natural historical fieldwork and bodily vigour, a connection often cited by members of Scottish field clubs as a reason for the merit of their activities. Mental and moral health could also be cultivated through out-of-doors field work or, as Blackie termed it, 'enterprising pedestrianism'. Missing in book instruction, Blackie urged, was access to the 'living epos of nature', a training in observation and the health-giving effects of 'filling the lungs with the fresh

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<sup>19</sup> Blackie, *op. cit.* (fn. 18), 3.

<sup>20</sup> *The Fife Free Press*, 28 April, 1883.

<sup>21</sup> For Blackie's advice on public speaking, see Blackie, *op. cit.* (fn. 18), 22-5.

<sup>22</sup> Sources for these figures come from: J. B. Bease, *Full ninety years and more*, vol. 1, Kirkcaldy, 1975, 14; *The Kirkcaldy Directory, 1894-95*, Kirkcaldy, 1895; Kirkcaldy Museum and Art Gallery, Uncatalogued Records of the Kirkcaldy Naturalists' Society, Printed list of members, 1894-95.

air of heaven'.<sup>23</sup> These sentiments were shared by others elsewhere. As Robert Stirton put it to members of the Glasgow Society of Field Naturalists in 1874, 'the schoolman, with his dream of intuitive knowledge to be obtained by the mind purified by severe privation has vanished, and in his place we have got the healthy, vigorous naturalist and inductive philosopher'.<sup>24</sup>

Capacity for strenuous fieldwork was often accompanied by a naturalist's well-exercised 'aesthetical faculties' and it was Blackie's view that beauty 'should be sought after by everyone who wishes to achieve the great end of existence'.<sup>25</sup> Blackie's belief that natural history pursuits were a way of appreciating the beautiful in nature was a late-nineteenth-century expression of a claim with a much longer history. Emma Spary has shown, for example, how, for French naturalists and their publics in the late-eighteenth-century, 'natural history was the science of sensibility *par excellence*'.<sup>26</sup> As Spary also notes, however, natural history as a way of perceiving the sublime and the beautiful in nature was – particularly by the nineteenth century – widely contested. For some science and sentiment were in opposition and science was only distracted by concerns about beauty. It was this image of science that John Ruskin opposed and led to his formulating an alternative natural history or 'scientific' method that could legitimately claim to be wedded to aesthetics.<sup>27</sup> Typical of his opposition to the dominant view of scientific method was Ruskin's outburst in 1886, when he castigated the negative effects of an obsession with a certain form of scientific investigation associated, in his mind, with the supporters of Darwin:

Darwin has a mortal fascination for all vainly curious and idly speculative persons, and has collected in the train of him every impudent imbecility in Europe, like a dim comet wagging its useless tail of phosphorescent nothing across the steadfast stars.<sup>28</sup>

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<sup>23</sup> Bease, op. cit. (fn. 22), 7.

<sup>24</sup> R. Stirton, 'Presidential address', *Transactions of the Glasgow Society of Field Naturalists* (1874), 2, 73-4.

<sup>25</sup> Blackie, op. cit. (fn. 18), 15.

<sup>26</sup> E. C. Spary, *Utopia's garden: French natural history from old regime to revolution*, Chicago, 2000, 194.

<sup>27</sup> On this, see F. Kirchhoff, 'A science against sciences: Ruskin's floral mythology', in U. C. Knoepfelmacher and G. B. Tennyson (eds.), *Nature and the Victorian imagination*, Berkeley 1976, 246-58.

<sup>28</sup> J. Ruskin, 'The choice of books' *The Pall Mall Gazette*, 15 February 1886, 2. Ruskin was giving his reasons for including Darwin's books in a list of works that evoked the 'misereries' rather than 'pleasures' of reading.



One response among members of Scottish natural history societies was to uphold the view Blackie articulated to naturalists in Kirkcaldy that fieldwork could expand a person's capacity for sensing beauty in the natural world. In addition to an extended commentary on the utility of science to industrial progress, Dundee Provost Hugh Ballingall, responding directly to Ruskin's remarks, reminded an audience assembled for a Dundee Naturalists' Society *conversazione* that 'our studies have already taught us the vastness, the many sidedness, the great calm tolerance of nature'.<sup>29</sup> Nature was the source, remarked Ballingall, of the beauty found in art, or 'nature's counterfeit'. The claim that the careful observation of natural history heightened an appreciation of beauty was a central apologetic for the relevance of associational natural history to a local audience (Chapter 2, pp. 41). It also carried an image of the naturalist as alert to natural beauty and thus cultured rather than 'narrow'.<sup>30</sup>

Without maintaining a wide view the devoted naturalist risked becoming like Blackie's 'merely professional man' who was:

Always a narrow man; worse than that, he is in a sense an artificial man, a creature of technicalities and specialities, removed equally from the broad truth of nature and from the healthy influence of human converse. In society the most accomplished man of mere professional skill is often a nullity. He has sunk his humanity in his dexterity; he is a leather-dealer, and can talk only of leather.<sup>31</sup>

For members of natural history societies, associational natural history supplied both a wide view of nature and an encouragement of 'human converse' without risking the opposite error of superficial knowledge. In address to the PSNS delivered in 1893, Henry Coates, by showing how the 'interchange of opinion' characteristic of a scientific association offered a way to avoid the dangers of 'narrow specialism' and 'vague generalism', thereby underlining the social and scientific value of the Society and the sort of persona fitting for a naturalist.<sup>32</sup>

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<sup>29</sup> *Dundee Courier and Argus*, 22 February, 1886.

<sup>30</sup> On this, see A. S. Matheson, 'The beautiful in nature', *Proceedings of the Alloa Society of Natural Science* (1871), 52-62.

<sup>31</sup> Blackie, *op. cit.* (fn. 18), 30.

<sup>32</sup> H. Coates, 'President's address', *Proceedings of the Perthshire Society of Natural Science* (1893), 1, 166.

## Obituaries: the naturalist as public servant

The various modes of memorialisation employed by members of nineteenth-century Scottish natural history societies to celebrate the contributions of prominent members further reveal how good character was aligned with the pursuit of local natural history. Obituaries and portraits in particular support this claim. As Dorinda Outram has pointed out in relation to the early-nineteenth-century *éloges* by George Cuvier, obituaries could be a particularly effective literary form to construct a public image of the man of science.<sup>33</sup> Eulogies were a conspicuous feature of the publications of the Scottish natural history societies and carried messages about what it meant to be a 'naturalist' active in mid- to late-nineteenth-century Scottish civil society. In the publications of Scottish natural history societies portraits also worked alongside obituaries to reinforce the most worthy characteristics of deceased naturalists. Not every member, of course, was granted an obituary and still fewer were honoured with a portrait. This very process of exclusion and elevation, however, revealed the sorts of character and characteristics thought worthy of a 'true naturalist'. It also highlighted the ways in which eulogy could be an expression of institutional as well as individual identity, the recurrent themes in obits demonstrating unity of purpose and agreement about the role and significance of a provincial natural history society.<sup>34</sup>

At least four themes – muscularity, 'wide sympathies', sociability and 'public spiritedness' – are evident in the eulogies. These themes are traced here through the obituaries of members of the Perthshire Society of Natural Science (PSNS) and in memorials that appeared in the *Annals of Scottish natural history* among other sources. Obituaries appearing in the publications of the PSNS were particularly influential given the portrayal of that Society as a leading institution of provincial science in late-Victorian Scotland.<sup>35</sup> Buchanan White, the most prominent member of the Society, was widely regarded as the epitome of the dedicated civic naturalist being acclaimed in two

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<sup>33</sup> D. Outram, 'The language of natural power: the *éloges* of Georges Cuvier and the public language of nineteenth-century science', *History of science* (1978), 16, 153-78.

<sup>34</sup> Louis Purbrick has made this point in relation to the portraits of Councillors in early-Victorian Manchester. L. Purbrick, 'The bourgeois body: civic portraiture, public men and the appearance of class power in Manchester, 1838 – 1850' in A. Kidd and D. Nicholls (eds), *Gender, civic culture and consumerism: middle class identity in Britain, 1800-1940*, Manchester, 1999, 81-98.

<sup>35</sup> For the PSNS as ideal natural history society, see J. Britten, 'Local scientific societies', *Nature* (1873), 9, 24-5; 38-40; 97-9.

general scientific periodicals as ‘*the Scottish naturalist*’ and the ‘prince of field naturalists’ shortly after his death.<sup>36</sup> The *Annals of Scottish natural history*, originally titled the *Scottish naturalist*, had a wide readership among members of naturalists’ associations – indeed, was dependant on them for continued economic viability – and provided a national forum to publish and discuss the results of work by individuals and societies on Scottish natural history.<sup>37</sup>

One of the first characteristics mentioned in obituaries was the capacity of the subject for demanding fieldwork. The connections between natural history and muscularity were particularly prominent in obituaries by James Trail appearing in the *Annals of Scottish Natural History*. Francis Buchanan White was described as ‘powerfully built, and of great physical endurance’.<sup>38</sup> White’s vigour was, for Trail, a pre-condition of his ‘knowledge of Scotland so thorough as has perhaps never been attained by any other man’.<sup>39</sup> The Rev. George Gordon, acclaimed in Morayshire as the ‘father of science’ in that district, and John Roy, an Aberdeen botanist, were likewise eulogised for their capacity for physical exertion. Gordon, who exemplified the ‘truest and best kind of manhood’, had had a lifelong ‘love and fitness for outdoor exercise’.<sup>40</sup> Roy’s robust nature meant ‘few persons were better acquainted with Mid and Northern Scotland, from the sea level to the corries and summits of the highest mountains’.<sup>41</sup>

Expectations of physical endurance were closely related to the value placed on outdoor fieldwork. Trail’s obituary of Morris Young, taxidermist, ‘pioneer of the scientific study of natural history in Paisley’ and founder of the Renfrewshire

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<sup>36</sup> These were *Science gossip* and *Natural science*. See M. A. Taylor, ‘Francis Buchanan White (1842-1894) and Scottish botany’, *Scottish naturalist* (1986), 157-73.

<sup>37</sup> *The Scottish naturalist* was first issued in 1871 in the form of a quarterly magazine under the auspices of the Perthshire Society of Natural Science. Francis Buchanan White was Editor from 1871-1883. Apart from a short period (1878-1883) when it was published (at a loss) by the Edinburgh firm Blackwoods & Sons, it was produced in Perth. The connection between the *Scottish naturalist* and the Perthshire Society of Natural Science was officially severed in 1878 but White and other members of the Society continued to be among the most regular contributors. From 1883 the Editor was Professor James William Helenus Trail (1851-1919). The journal became, from the start, an important forum for Scottish naturalists (particularly those attached to provincial societies). In late 1891 the name was changed to *The Annals of Scottish natural history* and was then edited jointly by John Alexander Harvie-Brown (1844-1916), William Eagle Clarke (1853-1938) and Trail, and was from that time published in Edinburgh.

<sup>38</sup> J. W. H. Trail, ‘The late Francis Buchanan White’, *Annals of Scottish natural history* (1895), 74.

<sup>39</sup> Trail, *op. cit.* (fn. 38), 74.

<sup>40</sup> J. W. H. Trail, ‘The late Rev. George Gordon, M.A., LL.D.’, *Annals of Scottish natural history* (1894), 66; 71.

<sup>41</sup> J. W. H. Trail, ‘The late John Roy, LL.D.’, *Annals of Scottish natural history* (1894), 72.

Naturalists' Society, pointed out that he been lame since boyhood.<sup>42</sup> Young's weakened physical constitution had not, however, prevented 'active service' in the field, and his pursuit of 'Alpine beetles' on the top of Ben Lomond in particular demonstrated that he had been able to 'walk with any sound-limbed person'.<sup>43</sup> The importance placed on physically demanding fieldwork had, of course, a currency beyond Trail's encomia. To give one example, James Gilchrist, at an annual meeting of the Dumfriesshire and Galloway Natural History and Antiquarian Society, offered the diminished vigour of old age as a disqualification from consideration for the office of President. No longer 'able to climb the hills as he ought to do', he requested, despite the protests of his supporters, that someone else be found to fill the post.<sup>44</sup>

The outdoor nature of natural history pursuits, and the rewards of committing oneself to demanding fieldwork, were further underlined by portraits accompanying a number of obituaries. Such images 'gathered meaning' from the texts of obituaries of the subject but also brought into focus traits by which a naturalist would particularly be remembered.<sup>45</sup> A portrait of Francis Buchanan White, showing him in tweed kilt suit and holding a Balmoral bonnet, appeared alongside his obituary in *Annals of Scottish natural history* (Figure 5.1).<sup>46</sup> The photograph from which the portrait derived was taken of White on an excursion of the East of Scotland Union of Naturalists' Societies and underlined his physical stature and commitment to fieldwork. The image of White, with his sartorial display emphasising his dedication to Scottish provincial science, was one that was familiar to members of the PSNS, and to a wider network of naturalists. Mycologist Worthington Smith, for example, had sketched White's distinctive field dress in 1875 for the fungus foray of the Cryptogamic Society of Scotland commenting that White, whom he knew 'only by name and repute', was learned, hearty and hard-working – the 'Macbeth' of Scottish natural history (See Figure 5.2).<sup>47</sup>

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<sup>42</sup> J. W. H. Trail, 'The late Morris Young, F.S.E.', *Annals of Scottish natural history* (1898), no. 25, 1-6. Trail incorrectly has Young as the founder of a Paisley natural history society instituted in 1862. Young formed a local naturalists' society in 1847. See Appendix I.

<sup>43</sup> Trail, op. cit. (fn. 42), 2.

<sup>44</sup> *Dumfries and Galloway Standard and Advertiser*, 11 October, 1882. Gilchrist's protests were unsuccessful and he was President of the Society when he died in 1885. See Anon, 'Dr. J. Gilchrist', *The Scottish naturalist* (1886), 8, 242.

<sup>45</sup> L. Jordanova, *Defining features: scientific and medical portraits, 1660-2000*, London, 2000, 27.

<sup>46</sup> Trail, op. cit. (fn. 38).

<sup>47</sup> Worthington Smith's comments are from his report on the Perth fungus meeting of 1875. *Gardeners' Chronicle*, 9 October, 1875.



Figure 5.1. Francis Buchanan White in his field gear on excursion of the ESUNS in 1890. From *Transactions of the Perthshire Society of Natural Science* (1895), 1, 132. The portrait also appeared in *The Annals of Scottish natural history*.



Figure 5.2. A sketch of White on a fungus foray in 1875, by Worthington Smith. The kilt and bonnet had become part of White's distinctive field dress. Taken from an illustration appearing in *The Graphic*, 13 November, 1875.

Portraits could also reveal the value placed upon work that prepared specimens from the field for public display. White's out-of-doors persona was complemented by an indoor shot of Colonel Drummond Hay, which appeared in the *Annals of Scottish natural history* and the *Proceedings of the Perthshire Society of Natural Science* in 1897 (see Figure 5.3). Shown with right hand lifted towards a stuffed Shelduck the photograph depicted Hay's contributions as honorary curator of the collections of the PSNS, a position he held for the last eleven years of his life. His death, coming just after the public opening of an extended and refurbished Museum of Perthshire Natural History, meant his 'labour of love' was made evident not only in his photograph but also in the museum displays. The accompanying obituary noted that: 'Of the thousands of people who have examined [the collections] with delight during the past week, probably few have realised what an immense amount

of time, labour, and thought were expended in their arrangement'.<sup>48</sup>

Both fieldwork and preparing displays, deemed worthy activities in themselves, were supplemented with references to a 'companionable' nature and 'wide sympathies'. In his obituary of Buchanan White, Trail worked hard to convey him as someone with a 'wide range of interests' – a kind of naturalist more common, Trail noted, in 'the past generation' – while at the same recording his appreciation of the gains made by specialist laboratory practices. Henry Coates, speaking to the Perthshire Society of Natural Science a few days after White's death on 3 December 1894, remarked that White not only had exhibited 'the keen eye of the trained naturalist ... but also the eye of the artist and the feeling of the poet, to admire and reverence all that is beautiful of

<sup>48</sup> H. Coates, 'Obituary notice', *Proceedings of the Perthshire Society of Natural Science* (1896), 2, 95.



Figure 5.3. 'A labour of love'. Photograph of Colonel Henry Maurice Drummond Hay, Curator of the Museum of the Perthshire Society of Natural Science. From *Proceedings of the Perthshire Society of Natural Science* (1887), 1, inserted 94-95.

form or colour in nature'.<sup>49</sup> While White's obituary in the local newspaper depicted White as a zealous collector it also remarked on his daughters' inheritance of 'their father's literary talent' and the publications of their 'prose and poetry in various magazines and journals'.<sup>50</sup> Taken together, White's obituaries presented a figure who could move with ease between specialist, generalist and local public – the ideal persona for the citizen-naturalist.

White's own views on the connections between natural history and beauty, refracted through the notion of the 'born naturalist', were in evidence in his obituaries of Sir Thomas Moncrieffe, Perth landowner, Chairman of the Perthshire Conservative Association and entomologist. In noting that 'it may be said of the naturalist, as of the poet, that *nascitur non fit*' (born not made), White set Moncrieffe apart from the 'mere collector', designating him instead a 'lover of nature'.<sup>51</sup> It was his delight in nature and his native curiosity that, for White, made Moncrieffe a 'true naturalist'.<sup>52</sup> Similar sentiments were expressed in two obituaries of John Sadler, one time assistant gardener to Sir Thomas Moncrieffe and later Curator of the Royal Botanic Garden, Edinburgh. Writing in the *History of the Berwickshire Naturalists' Club*, William Craig underlined Sadler's 'innate love of native plants' and his 'purest daily delight' on finding wild flowers on Moncrieffe Hill (the 'glory of Scotland').<sup>53</sup> Bayley Balfour, then Professor of Botany at the University of Glasgow, also noted, in the *Transactions of the Botanical Society of Edinburgh*, that Sadler had been 'a born naturalist' with a love of nature cultivated early.<sup>54</sup>

The cultural work carried out by employing the category of the born naturalist was not everywhere marked by a concern to tie a lifelong commitment to natural history with a heightened capacity for the beautiful. Matthew Arnold's widely influential 'literature and science' address, delivered in 1882 as a friendly riposte to Huxley's earlier plea for science education, used the concept to reveal the unhealthy narrowness of someone

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<sup>49</sup> H. Coates, 'Obituary notice', *Proceedings of the Perthshire Society of Natural Science* (1894), 2, 45.

<sup>50</sup> *Perthshire Constitutional and Journal*, 5 December, 1894.

<sup>51</sup> F. B. White, 'In memoriam: Sir Thomas Moncrieffe, Bart.', *Scottish naturalist*, 5, 1880, 145.

<sup>52</sup> *Perthshire Constitutional and Journal*, 25 August, 1879

<sup>53</sup> W. Craig, 'The late Mr John Sadler', *History of the Berwickshire Naturalists' Club* (1882), 10, 72. Sadler was a member of at least three natural history societies (not including his membership of the more elite Edinburgh scientific societies) and corresponding member of several others.

<sup>54</sup> I. Bayley Balfour, 'John Sadler', *Transactions of the Botanical Society of Edinburgh* (1883), 16, 14.



overly occupied with the natural sciences:

But what do we mean by a born naturalist? We mean a man in whom the zeal for observing nature is so uncommonly strong and eminent, that it marks him off from the bulk of mankind. Such a man will pass his life happily in collecting natural knowledge and reasoning upon it, and will ask for nothing, or hardly anything, more. I have heard it said that the sagacious and admirable naturalist whom we lost not very long ago, Mr. Darwin, once owned to a friend that for his part he did not experience the necessity for two things which most men find so necessary to them, – religion and poetry; science and the domestic affections, he thought, were enough. To a born naturalist, I can well understand that this should seem so. So absorbing is his occupation with nature, so strong his love for his occupation, that he goes on acquiring natural knowledge and reasoning upon it, and has little time or inclination for thinking about getting it related to the desire in man for conduct, the desire in man for beauty.<sup>55</sup>

The point of Arnold's use of the 'born naturalist' was not to argue, like Ruskin, for a radically different scientific methodology or, more specifically, plant taxonomy.<sup>56</sup> It was instead to call for more 'naturalists' to follow the example of Michael Faraday who had developed in conjunction with his scientific work a deep religious and aesthetic sensibility. Rather than locate their 'elevated sensibilities' in an innate love of nature, a number of obituaries of Scottish naturalists, sensitive to charges of narrowness, give evidence of their subjects wide sympathies independent of their interest in natural history. Robert Turner, one of the Natural History Society of Glasgow's 'most esteemed members' was noted as having a 'good knowledge of ancient classical literature' and had 'a strongly poetic instinct' that allowed him to 'present scientific facts in a fresh and attractive form'.<sup>57</sup> Whatever tactic was employed, Arnold's address revealed the criticisms of natural history that the writer of obituaries of Scottish naturalists needed to be alert to in order to maintain their subjects position as a cultural figure worthy of local, if not national, public acclaim.

In addition to representing naturalists as acute observers of beauty and of nature,

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<sup>55</sup> M. Arnold, 'Literature and science', in R. H. Super (ed.), *Complete prose works of Matthew Arnold*, Ann Arbor, 1960-77, vol. 10, 65. For more on the Huxley-Arnold exchanges, see R. H. Super, 'The Humanist at Bay: The Arnold-Huxley Debate.' in U. C. Knoepfelmacher and G. B. Tennyson (eds.), *Nature and the Victorian imagination*, Berkeley 1976, 231-45; M. Thein, "'Scientific wooing": Constance Naden's marriage of science and poetry', *Victorian poetry* (2003), 41, 151-69 and White, op. cit. (fn. 2), 81-94.

<sup>56</sup> Kirchhoff, op. cit. (fn. 27).

<sup>57</sup> Anon, 'In memoriam: Robert Turner', *Transactions and proceedings of the Natural History Society of Glasgow* (1894), 4, 73; 76.

obituarists were also anxious to show that science had not eclipsed the public spirit of the subject of their commemoration. In this respect, Buchanan White was not, perhaps, an ideal candidate for demonstrating a naturalists' commitment to public duty. 'Apart from his favourite studies', his obituary in the local newspaper noted, he had not entered 'into any forms of public life'. He had, however, been 'one of the most prominent of our citizens at all important social gatherings'.<sup>58</sup> His role in the creation of the PSNS and the Natural History Museum, his involvement in the local Curling Club and membership of St Ninian's Cathedral all demonstrated his commitment to community life. There were other members who, though they did not contribute to a knowledge of local natural history, were nevertheless offered as examples of citizens marked by a commitment to public duty. John Young, a Perth civil engineer, had not been, his obituarist observed, 'a skilled naturalist', but his contributions as Honorary Secretary of the PSNS and architect of the Society's Natural History Museum had demonstrated his considerable contributions to the Society and to Perth.<sup>59</sup> Andrew Coates, also a longstanding member of the PSNS and trustee of the Natural History Museum, though 'not a working naturalist' had, in his 31 years as member, played a crucial role in administering the activities of the Society. Yet for both membership of the PSNS was a only small part of their contributions as citizens of Perth. Young's newspaper obituary, while mentioning his involvement in the PSNS, concentrated on his role in solving Perth's drainage problems.<sup>60</sup> Coates' obituary in the *Proceedings of the Perthshire Society of Natural Science* noted that 'every association in the town which worked for the welfare of the community ... has lost in him a powerful and steadfast friend'.<sup>61</sup>

It was perhaps Thomas Moncrieffe who best exemplified the combination of public spirit and commitment to natural science. This was demonstrated, according to his newspaper obituary, by his support of efforts to create a natural history museum and educational institute for Perth. It was his persistent attempts to make such a scheme a reality that prompted a call, issued alongside his newspaper obituary, for a museum to

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<sup>58</sup> *Perthshire Constitutional and Journal*, 5 December, 1894.

<sup>59</sup> H. Coates, 'Obituary notice of the late Mr John Young, C. E.', *Proceedings of the Perthshire Society of Natural Science* (1895), 2, 94.

<sup>60</sup> *Perthshire Constitutional and Journal*, 4 December, 1895.

<sup>61</sup> W. Barclay, 'The late Mr. Andrew Coates', *Proceedings of the Perthshire Society of Natural Science* (1900), 3, 51.

be created as a fitting monument.<sup>62</sup> Moncrieffe, 'a public-spirited man' and 'a great deal more than a politician', had been an entomologist with 'a knowledge of his subject which many specialists might envy' and one committed to the 'small knot of naturalists in our midst'. He displayed, in other words, the wide sympathies, public-spiritedness and sociability that were the desiderata of the true naturalist. As 'Cairnmaster' of the Perthshire Mountain Club his zeal for demanding fieldwork was not in doubt, a point reinforced by one obituarist telling of his ascent of a Perthshire Mountain, 'on a very hot and fatiguing day', while ill.<sup>63</sup> Moncrieffe's reputation as a landowner committed to the welfare of Perth found its most effective expression in his identity as a true citizen-naturalist. Moncrieffe's commitment to science as public duty and improving pursuit was commemorated by local photographer Magnus Jackson in a view taken from Moncrieffe Hill, the favoured entomological 'hunting ground' of Sir Thomas, in the

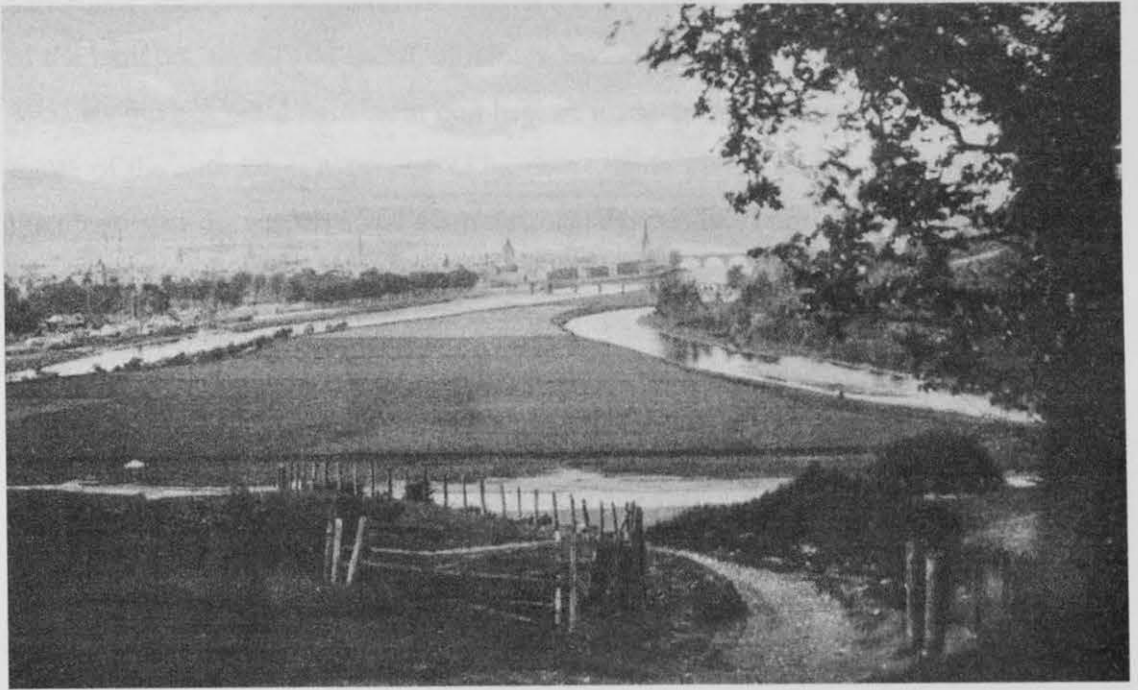


Figure 5.4. The view from Moncrieffe Hill to Tay Street and the Museum of the Perthshire Society of Natural Science by Magnus Jackson, 1890s. The photograph epitomises the 'life geography' of Perth's 'true naturalist' Sir Thomas Moncrieffe. Frontispiece in P. Macnair, *The Geology and Scenery of the Grampians and the valley of Strathmore*, 2 vols., Glasgow, 1908, vol. II.

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<sup>62</sup> *Perthshire Constitutional and Journal*, 25 August, 1879.

<sup>63</sup> White, *op. cit.* (fn. 51), 148.

1890s (see Figure 5.4).<sup>64</sup> With the museum buildings erected in Moncrieffe's memory visible in the middle distance, the photograph epitomised Moncrieffe's 'life geography', or the combination of science in the field and science for the town of a true naturalist.<sup>65</sup>

## Scottish associational science and the autodidact

The yoking of public duty and natural history was guided by a philanthropic impulse registered in a concern to diffuse a knowledge of science to the working classes. This took several forms, including the running of cheap science lectures, aided by the Gilchrist Trust (Chapter 4, pp. 117-20). It also encouraged a fascination with the autodidact naturalist. Most evident in the work of Samuel Smiles, such a fascination was also apparent among members of natural history societies. In common with naturalists' societies elsewhere, the case of the self-taught naturalist as a leading example of the benefits, moral and social, of natural history was often cited.<sup>66</sup> Although Scottish societies did not enrol significant numbers of working-class naturalists as members, the figure of the autodidact naturalist 'of humble origins' played an important role in how the identity of the associational naturalist, and the conduct appropriate for the collective pursuit of natural history, was constituted. This section examines the involvement of the societies in the production and reception of accounts of autodidact Scotch naturalists. In particular, attention is paid to how such accounts were deployed in sometimes contrasting ways to present the pursuit of local natural history both as a school of character and a reason for regarding associational natural history as a vital social and scientific pursuit.

In giving an account of their history or local 'genealogy' members of natural history societies frequently referred to naturalists who, with little or no formal educational support, had already heroically explored local flora and fauna. William Gardiner,

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<sup>64</sup> 'Oftentimes at night when others were busy with indoor amusements, the twinkling of his lantern among the trees of Moncrieffe Hill would indicate where Sir Thomas was assiduously on the hunt after his favourite lepidoptera', J. Geikie, 'President's address', *Annual Report of the Perthshire Society of Natural Science* (1880), 13, 8.

<sup>65</sup> On biography as 'life geographies', see S. Daniels and C. Nash, 'Life paths: geography and biography', *Journal of historical geography*, in press.

<sup>66</sup> S. J. M. M. Alberti, 'Field, lab and museum: The practice and place of life science in Yorkshire, 1870-1904', PhD thesis, University of Sheffield, 2001, 178-9.

Dundee umbrella maker and botanist active in the working-class naturalists' association Gleaners of Nature in the 1820s and 1830s, was viewed by members of the Dundee Naturalists' Society (DNS) as an important figure in the history of natural history exploration of the district around Dundee. Frank Young, in an anniversary address to the DNS in 1895, identified the Society with the Gleaners, stating that 'the members [of the Gleaners] did not pretend any more than we do, "to be men of science, but learners".<sup>67</sup> Members of the Natural History Society of Glasgow (NHSG) identified themselves with the 'old botanists of the East End of Glasgow' in lamenting the death of member Joseph Christie. Christie, it was noted, had known as a boy the 'school of botanists' that had existed among the Camlachie weavers in the 1840s.<sup>68</sup> Despite his 'arduous' duties as a foreman moulder for the ironmongers and pump makers Kesson & Campbell, Christie had himself displayed the same devotion to natural history as the old weavers had. His 'iron frame', acquired in foundry and field, supplied the physical strength that aided his exemplary exploration of the flora and fauna of the Glasgow area. For both the Dundee and Glasgow societies the efforts of working-class naturalists provided a proximate historical example of the moral and social value of their natural historical work.

In Victorian Britain it was the literary productions of Samuel Smiles that more widely disseminated the view of the autodidact naturalist as an example of good character and as proof of the beneficial effects of natural history. From his *Self Help*, published in 1859, the self-taught working-class naturalist occupied a central place in Smiles' hall of social heroes. His biographies of two Scottish naturalists, Thomas Edward, shoemaker (1876) and Robert Dick, baker (1878), were particularly effective in demonstrating that natural history could be a means to happiness and good character. Smiles' ideas on character formation allowed natural history to be seen as a 'most delightful of hobbies' that sustained a sense of purpose thought crucial to a growing moral and aesthetic capacity.<sup>69</sup> Edward's and Dick's natural history pursuits could thus be presented by Smiles as indicative and constitutive of a well-cultivated self.

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<sup>67</sup> F. W. Young, *The coming of age of the Dundee Naturalists' Society: a retrospect and a prospect. an address*, Dundee, 1895, 3.

<sup>68</sup> S. M. Wellwood, 'Obituary of Joseph Christie', *Proceedings and Transactions of the Natural History Society of Glasgow* (1898), 5, 300-1.

<sup>69</sup> S. Smiles, *Life of a Scotch naturalist*, London, 1882, 385.

Smiles' biographies resonated with the ambitions, social and scientific, held by members of Scottish natural history societies. Yet the relationship between Smiles' books and society members was not straightforward. Smiles' own apparent disillusionment with educating the working classes by means of formal institutional aid has been seen as one reason why he first employed the notion of 'self-help'.<sup>70</sup> The idea allowed for optimism in the face of no improvement in the material conditions, and access to proper education, of society's 'lower ranks'. Whether or not Smiles had become disillusioned with formal educational initiative or not, his narratives of perseverance in the face of difficulty were often supported by a portrayal of local educational associations as failing the nevertheless determined self-taught naturalist.

The uneasy relationship between Smiles' work and Scottish natural history societies was apparent among members of the Banffshire Field Club (BFC); a Club in which Edward was an active member.<sup>71</sup> Members of the Club worked to capitalise on the cachet associated with the shoemaker naturalist and repeatedly presented themselves as grateful beneficiaries of Edward's scientific reputation and good character. In 1885, John Horne, member of the Scottish branch of the Geological Survey and one of the founders of the BFC, remarked that the town museum, to which the Club regularly contributed natural history specimens, had attained its 'wide celebrity through the researches of Mr Thomas Edward'.<sup>72</sup> The importance attached to Edward by Club members was also reflected in the fact that he was the only member to be honoured with an obituary in the Club's *Transactions* before 1900.<sup>73</sup> Yet quickly passed over in the Club's publications was mention of the dispute between Edward and the 'people of Banff'. The dispute, centring on the lack of a remunerative reward granted to Edward for his work as Assistant Curator of the town's museum, had featured in Smiles' account. It received further publicity in a *Punch* cartoon in 1877 picturing, in contrast to the Queen's generosity, the meanness of Banff's citizens.<sup>74</sup> Undermining the moral authority attached to the town's scientific institutions the dispute had continued into the 1880s. In 1885, John Horne attempted to persuade Edward to return to his position as

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<sup>70</sup> See R. J. Morris, 'Samuel Smiles and the genesis of self-help: the retreat to a petit-bourgeois utopia', *Historical journal* (1981), 24, 95; 108.

<sup>71</sup> Edward read three papers to the Field Club between 1879 and 1881. Smiles, *op. cit.* (fn. 10), xi.

<sup>72</sup> *Transactions of the Banffshire Field Club* (1886), 2, 16.

<sup>73</sup> *Transactions of the Banffshire Field Club* (1886), 2, 16; 59.

<sup>74</sup> Fuller details of this dispute appear in Secord, *op. cit.* (fn. 2).

museum Curator. It was, Horne stated, Edward's 'duty still to take an interest in the Museum'.<sup>75</sup> The general recognition of Edward's scientific and moral reputation nevertheless remained at the forefront of the Field Club's concern. At the same meeting one member, while politely wondering if Edward had not 'misunderstood the community here', reaffirmed the singular praise that the Club reserved for their 'distinguished townsman'.<sup>76</sup>

Away from the local politics of Banff's scientific institutions, the figure of the autodidact naturalist could be more straightforwardly deployed to advertise a society's willingness to welcome working-class members. By this means, natural history was presented as a socially inclusive pursuit. Speaking to the Perthshire Society of Natural Science in 1895, Henry Coates noted:

There is, I fear, a feeling amongst some working men that they would not be welcomed in our midst. I think however, that I speak the mind of all the Members of Council when I say that this feeling is entirely groundless . . . . I need hardly remind you that from this class have come some of our very ablest naturalists, such as Hugh Miller, amongst geologists, and Thomas Edwards [sic], among biologists.<sup>77</sup>

It has not been possible to recover what the grumbles of the 'working men' were. Nor has it been possible to gauge the reaction of 'working men' to the widespread practice of offering a lower membership fee for 'associates' and free entry to meetings. What can be suggested is that Edward or Miller are unlikely to have subscribed to the social optimism attached to their life stories. Miller, despite his own success as journalist and geologist, recognised how hard, if not impossible, it was for the working classes to overcome impoverishment, material and moral, simply by means of self-help, even in the guise of natural history.<sup>78</sup> Edward retained a more pessimistic view of the supposed benefits of natural history, his interest in which he ascribed more to the result of an irresistible calling reminiscent of the Calvinist doctrine of predestination than an acquired taste.<sup>79</sup> For Edward, an interest in natural history was independent of character. He would not have concurred with Sir Thomas Moncrieffe's remark to a

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<sup>75</sup> *Transactions of the Banffshire Field Club* (1885), 2, 20.

<sup>76</sup> *Transactions of the Banffshire Field Club* (1885), 2, 19-20.

<sup>77</sup> H. Coates, 'President's address', *Proceedings of the Perthshire Society of Natural Science* (1895), 2, 53.

<sup>78</sup> See, J. Henry, 'Palaeontology and theodicy: religion, politics and the asterolepis of Stromness', in M. Shortland (ed.), *Hugh Miller and the controversies of Victorian Science*, Oxford, 1996, 151-70.

<sup>79</sup> *Second, op. cit.* (fn. 2), 166-7.

meeting of the Perthshire Society of Natural Science: ‘that if every individual in Great Britain were a naturalist, there would be no rascals and vagabonds’.<sup>80</sup> For Edward it was quite possible to be both a naturalist and a rogue.

Despite such contestation it was Smiles’ version of Edward that provided a useful comparison to underwrite the worthy character of less well-known autodidact naturalists. Associating individuals with Edward conferred on them his well-established moral and scientific reputation, and strengthened the identification of natural history with a form of character-training. William Simpson’s 1878 account of the Glasgow botanist and long-standing member of the Natural History Society of Glasgow, Roger Hennedy, was one that made explicit its debt to the work of Smiles.<sup>81</sup> Placed at the beginning of an ‘In Memoriam’ edition of his *Clydesdale flora*, Simpson – himself a ‘celebrity’ of humble origins, achieving fame through his sketches of the Crimean War and his work for the *Illustrated London News* – linked Hennedy’s botany to his persevering spirit and worthy character.<sup>82</sup> Simpson noted that in

reading the Life, lately published, of Thomas Edward the Naturalist, it had an interest to me from finding so much in it that resembled what I knew in the career of my friend. The German term of “Doppelgangers” might be applied to them, for there is much that is similar in their histories. There must be a resemblance in the lives of all self-made men. The fight with hard circumstances is often the same, and the thirst for knowledge, impelling the struggle to supply that thirst, has been an oft-repeated tale.<sup>83</sup>

The ‘oft-repeated tale’ could, of course, be adapted in ways that challenged some of its underlying assumptions without undoing the link between natural history and good character. Thomas Stebbing, in his book length account of the life of the ‘Cumbrae Naturalist’, David Robertson, used the friendship between Edward and his subject to show the ‘obvious resemblance’ but also to mark a contrast between the two characters.<sup>84</sup> Stebbing noted that, while ‘skilfully’ constructed, Smiles’ accounts placed

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<sup>80</sup> *Perthshire Constitutional and Journal*, 18 March, 1872

<sup>81</sup> R. Hennedy, *The Clydesdale flora*, Glasgow, 1878.

<sup>82</sup> ‘Crimean Simpson’ was born in Glasgow in 1823 and befriended Hennedy in 1848 after attending a botany class run by Hennedy in the Glasgow Atheneum. See W. Simpson, *The autobiography of William Simpson, R. I.*, London, 1903, 11.

<sup>83</sup> W. Simpson, ‘Biographical sketch. Roger Hennedy’, in Hennedy, op. cit. (fn. 80), 20.

<sup>84</sup> T. R. R. Stebbing, *The naturalist of Cumbrae*, London, 1891, 168. Robertson had been a member of the Natural History Society of Glasgow from shortly after its inception to his death in 1896. He contributed more to the Society’s *Transactions* than any other member.



‘something of sombre gloom over scientific pursuits’.<sup>85</sup> Robertson’s ‘love of nature’ did not, pace Smiles, have to have a ‘necessary connection’ with poverty and Robertson’s success in moving from poverty to financial security revealed that the business of science was not incompatible with commerce. The lengthy obituary of Robertson in the *Transactions* of the NHSG – almost wholly derived from Stebbing’s account – noted that Robertson had explicitly aimed to rise above ‘the position of the common labourer’ and that, after years of determination, succeeded.<sup>86</sup> The same obituary retained the emphasis on perseverance, ranking Robertson among those Scotsmen who had, from the ‘humblest ranks of life’, risen to the ‘highest places of honour’, but rejected the Smilesian view that natural history was a means to happiness even in the midst of abject poverty.<sup>87</sup> Robertson’s good character was established through telling his success as a shopkeeper and his interest in natural history was associated with economic sagacity and entrepreneurial flair.

An adjusted Smilesian formula was also in evidence in William Jolly’s life of John Duncan (1794-1881), a Scotch weaver and botanist.<sup>88</sup> Jolly’s life of Duncan shared with Smiles the view of natural history as eminently suited to for the purposes of self-culture but, if anything, laid more stress on the unique ability of natural history to improve a person’s character:

The cultural and educative value of the sciences connected with external nature, when rightly studied, is surpassed by none; they exercise, so healthily and fully, such a wide range of the perceptive and reflective faculties, and, where broadly studied, the moral and aesthetic, while energising and strengthening the physical, in a way that promotes general mental and bodily health.<sup>89</sup>

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<sup>85</sup> Stebbing, op. cit. (fn. 84), 168.

<sup>86</sup> Anon, ‘In memoriam: David Robertson, LL.D., F.L.S., F.G.S.’, *Transactions and Proceedings of the Natural History Society of Glasgow* (1897), 5, 18-42.

<sup>87</sup> Anon, op. cit. (fn. 86), 18.

<sup>88</sup> W. Jolly, *The life of John Duncan Scotch weaver and botanist*, London, 1883. Shorter accounts of John Duncan also appeared in the monthly magazine *Good Words* and in H. A. Page’s *Leaders of Men: a book of biographies especially written for youth*, London, 1880. Like Edward, Duncan was elected an honorary member of several Scottish natural history societies. These societies also, along individuals such as Charles Darwin and the Queen, donated money to a fund set up on hearing he had become a pauper.

<sup>89</sup> Jolly, op. cit. (fn. 88), 503. Jolly’s concern with showing the value of natural history can also be found in his works on education. In 1894, Jolly argued that Scottish educational authorities had ‘shown reprehensible callousness and blindness’ in making no progress on introducing the study of nature, a ‘delectable field of human development’, in schools. W. Jolly, *Ruskin on education*, London, 1894, 93.

Jolly was also willing, because of his confidence in the beneficial effects of natural history, to talk about the failings of Duncan's character. An interest in natural history helped correct a 'defect' in the weaver, namely, a 'deficiency of poetical feeling'.<sup>90</sup> Duncan's growing appreciation for the beauty and 'poetry of nature' made up for the lack of literary works among his small library of botanical books and the dearth of 'high art' in the garret in which he lived.

Natural history also provided a pursuit that generated friendship and the skills necessary for fruitful co-operation with others and Jolly used the example of Duncan's life to celebrate institutions like the Inverness Scientific Society and Field Club to which Jolly belonged. The solitary pursuit of natural history was tantamount to 'scientific selfishness'. Jolly alerted his reader to this in writing about Duncan's friend, the gardener Charles Black. Black had built up a large collection of 'native plants' from around Alford but, without an appropriate place to store them, the collection was destroyed by damp. For Jolly, the loss of Black's herbarium to moths and damp was:

a loss to science, for it would have been a valuable possession to any institution that owned it. This only furnishes another proof of the unwisdom of private persons hoarding up such treasures, whether frail as plants or hard as stones; instead of making them, in their best state, public property, for public instruction and for the progress of popular and exact science. Happily, this refined kind of selfishness is becoming less common than it has been. Both private endowments and private collections are now being more wisely and generously gifted during life to some of our numerous and yearly increasing scientific and educational institutions, for permanent preservation and for the immediate education of our people.<sup>91</sup>

Black's lack of concern with the connections between a well-stocked herbarium and the public good was, in Jolly's account, due to 'intense retiredness and superabundant humility' rather than the selfish hoarding of a private collector. The lesson nonetheless remained that collections should be donated to scientific institutions for the progress of 'exact and popular science'.

Jolly's scientific selfishness could reappear in different form. Attempts to deprive 'amateur' naturalists the right to regard their pursuits as properly scientific was one that increasingly concerned members of Scottish natural history societies. The

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<sup>90</sup> Jolly, *op. cit.* (fn. 87), 489.

<sup>91</sup> Jolly, *op. cit.* (fn. 87), 193.

professionalisation of science could be viewed as State-sponsored scientific selfishness, with the laboratory specialist denying access to knowledge by casting it in the esoteric terms apparently appropriate to results produced from expensive and complicated laboratory procedures. This provided another reason for members of natural history societies to celebrate the work of autodidact members. In 1886, an anonymous obituary of Thomas Edward in a Glasgow newspaper bemoaned the fact that now:

the modern zoologist, like some modern poets, is made, not born. He is the outcome of lectures and laboratories, of the 'endowment of research' and the coddling of the schools.<sup>92</sup>

Edward, as he himself maintained, had been born a naturalist rather than made one. Natural history was thus accessible to all who were endowed not with a professional qualification but with an innate love of nature. The case of the autodidact testified to the need to protect natural history studies from being the domain only of trained professionals, a fact that underlay the very possibility of a natural history society with scientific as well as social credibility.

If members of natural history societies supported an image of the naturalist that sustained the inclusive and popular nature of natural history, that same image could nevertheless foreclose certain political options. Speaking to the Aberdeen Working Men's Natural History Society – a Society instituted in 1886 and 'managed by working men' but thoroughly connected to both town and gown – Sir John Struthers, Professor of Anatomy, remarked that:

we are here not as a trade union, declaring at what wage we ourselves shall work, though that might be a legitimate object ... this society exists for the encouragement of the pure and elevating pursuit of the beautiful world around us.<sup>93</sup>

It was just this sort of vision that artisan naturalists had earlier rejected on the ground's that it emanated from a 'gentry's' view of nature as benign and beautiful rather than filled with horror, struggle and pain.<sup>94</sup> For the labouring classes a view of nature as beautiful, and of natural history study as improving character, was regarded as reinforcing an elitist view that ignored the ugliness of inequality in nature and in society.

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<sup>92</sup> *Mitchell Library, Glasgow City Archives* TD1408/11/1/5, Records of the Natural History Society of Glasgow, unidentified newspaper cutting, April 1886.

<sup>93</sup> Anon, Aberdeen Working Men's Natural History Society, *Aberdeen Journal*, 6 October, 1891.

<sup>94</sup> See A. Desmond, 'Artisan resistance and evolution in Britain, 1819-1848', *Osiris* (1987), 3, 85-88.

## Manly naturalists and lady members

The politics of character and of natural history were also evident in the portrayal and activities of women in Scottish natural history societies. The image of natural history as self-culture accessible to all was clearly gendered. Blackie's *vademecum* was written for young men and no obituaries or biographies appeared of female autodidacts in society proceedings. Yet natural history, as promoted by society members, was not straightforwardly gendered male. Natural history as an outdoor pursuit could be connected to a version of masculinity as muscular, courageous, dispassionate, and strongly independent. This version did not, however, exhaust the ways in which masculinity could be conceived in relation to the pursuit of natural history. The descriptors 'lovers of flowers' or 'lovers of nature' frequently applied to naturalists did not immediately signal athletic prowess or an aversion to sentiment. They indicated instead alternative understandings of a 'Christian manliness' marked by devotion, kindness, self-effacement and a 'manly' strength that resisted recourse to violence.<sup>95</sup> John Sadler's devotion to flowers, for example, was matched by his commitment to friends and his love of nature was tied to a 'genial' and sociable character.<sup>96</sup> None of this was thought of as unmanly.

The gendered nature of associational science was further complicated by the fact that natural history could be partitioned along gender lines. Speaking to the PSNS in 1879 Sir Thomas Moncrieffe stated his belief (as an entomologist) that:

I have always thought that the female sex are naturally more addicted to the study of botany than the male. I mean that young girls have a greater fondness for wild flowers than boys; but I imagine the latter take more interest in entomology. Perhaps the make of their dress causes them to be more successful in chasing a butterfly, and their headgear is more convenient for its capture.<sup>97</sup>

Moncrieffe's whimsical comments were, perhaps, mildly ironical given the celebration of botanical bravery associated with the exploration of Alpine flora by the Society's all male Mountain Club (see Chapter 3, pp. 75-82). In view of recent accounts of botany

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<sup>95</sup> For a brief discussion, see S. Collini, *Public moralists: political thought and intellectual life in Britain, 1850-1930*, Oxford, 1991, 186-7.

<sup>96</sup> Craig, *op. cit.* (fn. 53).

<sup>97</sup> Perth Museum and Art Gallery, uncatalogued MSS, Minute Book of the Perthshire Society of Natural Science, 6 March, 1879.

and gender, they could also be described as residual, the remains of a late-Enlightenment account of botany.<sup>98</sup> Yet Moncrieffe's remarks did not appear to translate into the conspicuous involvement of women members in mapping the flora of Perthshire. Although lady members were permitted for the first time two years earlier, there is little evidence that they had been recognised as contributing to the more 'scientific' aims of the Society.<sup>99</sup>

The argument that the uncoupling of female botany from mainstream botanical science was effected by an increasing emphasis on (economic) utility and the expertise of the specialist, does not have the same purchase when dealing with Scottish natural history societies.<sup>100</sup> Society members preserved, in tandem with a concern with scientific standards, a strongly non-utilitarian account of their activities and warned against the dangers of over-specialisation. This suggests that women members would have been welcome and active because the criteria for their participation was different from other more specialist or professional scientific organisations.<sup>101</sup> The value placed on autodidact naturalists by natural history societies also suggests the society membership was not restricted to those with formal scientific qualifications. Although changes to women's access to education in science were changing the restrictions that remained meant that women naturalists were likely to be self-taught.<sup>102</sup> Before considering this further, whether or not women were welcomed and what sort of scientific roles they played requires further investigation.

The variation between societies with respect to the proportion of lady members was considerable. Table 5.1 gives a synoptic overview of the percentage of women members of ten Scottish natural history societies during the 1880s and indicates the date when lady members were first permitted. A high proportion of women members did not automatically translate into an increase in participation. For women, membership of the Stirling Field Club was free until 1882, and, of the ten societies surveyed, the Club

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<sup>98</sup> See A. B. Shteir, 'Gender and "modern" botany in Victorian England', *Osiris* (1997), 12, 29-38.

<sup>99</sup> This is, of course, not the same thing as arguing that they did not, in fact, make important 'scientific contributions'.

<sup>100</sup> Shteir, *op. cit.* (fn. 97), 30.

<sup>101</sup> See for example Alberti, *op. cit.* (fn. 66), 180.

<sup>102</sup> On women's education from the mid-nineteenth-century, see L. Moore, 'Women in education', in H. Holmes (ed.), *Scottish life and society. Institutions of Scotland: education*, East Linton, 2000, 316-43.

Table 5.1 The percentage of lady members by society

Society	Established	Lady members: year first admitted	Ordinary membership (year)	% lady members
Andersonian Naturalists' Society	1885	1886	139 (1891)	13.7
Berwickshire Naturalists' Club	1831	1831	387(1885)*	2.1
Botanical Society of Edinburgh	1836	1836	315 (1887)†	3.2
Dumfriesshire and Galloway Natural History and	1862	1862	196(1884)	12.8
Dundee Naturalists' Society	1874	1880	305 (1881)‡	6.5
Edinburgh Field Naturalists and Microscopical Society	1869	1869	146 (1883)	26.0
Inverness Scientific Society and Field Club	1875	1876	125 (1881)	7.2
Natural History Society of Glasgow	1851	1887	310 (1890)	4.2
Perthshire Society of Natural Science	1867	1874	241 (1882)	12.8
Stirling Field Club	1878	1878	124 (1881)	35.5

\*Honorary (lady) and ordinary members

†Lady associates and ordinary (resident and non-resident) fellows

‡Ordinary and associate members

had the highest proportion of lady members.<sup>103</sup> Yet few attended any meetings – ladies were dubbed by one member as ‘phantoms on the roll’ – and only one contributed papers to the Society.<sup>104</sup> The percentage of lady members of the Edinburgh Field Naturalists and Microscopical Society (EFNMS) averaged 20.2% between 1882 and 1898 and women were, in this Society, more active in the scientific work and monthly

<sup>103</sup> By 1894 the proportion of ordinary members who were female had fallen by 15%.

<sup>104</sup> See Dr. Galbraith, *Transactions of the Stirling Natural History and Archaeological Society* (1883), 10. Christian Maclagan, ‘Notices of the fortresses and dwellings of the ancient peoples who inhabited the valley of the Forth’, *Transactions of the Stirling Natural History and Archaeological Society* (1883), 13-25. On Maclagan, see A. H. Millar, ‘Maclagan, Christian (1811-1901)’, rev. H. C. G. Matthew, *Oxford Dictionary of National Biography*, Oxford, 2004. See also Chapter 4, p. 107.

meetings.<sup>105</sup> Similarly, the records of the Andersonian Naturalists' Society (ANS) show evidence of a more active female membership. One of the first lady members, Miss E. Raymond Brown, wrote reports of field excursions and published papers on alpine botany.<sup>106</sup>

Membership fees did not dictate the number of lady members. Although the lady members of the Berwickshire Naturalists' Club were exempt from paying a membership fee they remained few in number. Those that were members could not attend the Club's field excursions until 1872 and did not obtain the status of ordinary members until 1901.<sup>107</sup> Nevertheless, a number of the BNC lady associates published papers in the Club's *Transactions*, though most were on archaeological or literary subjects.<sup>108</sup> Although the Natural History Society of Glasgow permitted women members from the 1860s it was not until 1887, when a change in the constitution meant ladies no longer had to pay entry money, that any appeared on the roll. Even with that change, the number of lady members remained low (3.3% in 1896) although this does not account for eleven of the twenty five associates being female (associates paid an annual membership fee of 2s 6d).

The low numbers of lady members can be explained in part in relation to how a person became a member of a society. To become an ordinary member of the Natural History Society of Glasgow, an application had to be submitted along with a recommendation signed by two members. The Botanical Society of Edinburgh also had strict membership criteria, a fact that earned the Society William Jolly's rebuke when the members refused to elect John Duncan an honorary member on the grounds that he had not contributed any papers to the Society.<sup>109</sup>

Women could not, on the whole, hope to meet the kind of criteria for membership

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<sup>105</sup> See for example, Miss Craigie, 'Geological notes on a few of the excursions', *Transactions of the Edinburgh Field Naturalists and Microscopical Society* (1883), 1, 115-18.

<sup>106</sup> E. Raymond Burden, 'Alpine excursions to Cam Chreag and Beinn Doireann', *Annals of the Andersonian Naturalists' Society* (1893), 1, 71-7.

<sup>107</sup> C. H. McCreath, 'Two aspects of the Berwickshire Naturalists' Club in the nineteenth century', *History of the Berwickshire Naturalists' Club* (1990), 45, 1-6.

<sup>108</sup> To take one volume: J. Hardy and Miss S Dand, 'Incised rocks at Morwick', *History of the Berwickshire Naturalists' Club* (1882), 10, 343-47; Miss Russell, 'Notes on some historical and literary matter bearing on the works called the Catrail', *History of the Berwickshire Naturalists' Club* (1882), 10, 89-105 and *idem*, 'Notes on British and other coins', *History of the Berwickshire Naturalists' Club* (1882), 10, 375-84.

<sup>109</sup> Jolly, *op. cit.* (fn. 30), 428.

adopted by the NHSG and the BSE. That did not mean that prominent members of the societies were against educating women in science or encouraging their active participation. John Young, President of the NHSG in the 1870s, ran geology classes for women in the 1860s and had been ‘all his life an earnest advocate of the higher education of women’.<sup>110</sup>

The level of involvement in the NHSG and BSE can be understood, then, in terms of the difficulties women faced in demonstrating their scientific credentials at a time when increasing emphasis was put on academic qualifications. Yet even where lady members with a reputation for careful scientific work did participate their contributions were not clearly acknowledged in society publications. Elizabeth Gray, who corresponded with a number of prominent naturalists, particularly palaeontologists, and was well regarded for her knowledge of Scottish fossils, was one example.<sup>111</sup> Gray contributed information for papers given by her husband, the ornithologist Robert Gray, and supplied fossils for display at the start of ordinary meetings.<sup>112</sup> Yet little recognition was given of her exhibits beyond her surname appearing in parentheses identifying her as the (possible) donor. Only occasionally did her full name (Mrs Robert Gray) appear.<sup>113</sup>

The male culture sustained by Scottish natural history societies was in some places resisted. Although not a member, a daughter of Francis Buchanan White contributed songs for the meetings of the Perthshire Mountain Club; songs which were then published in the *Proceedings* of the PSNS. Miss Buchanan White’s whimsical verse lampooned the idea that competent naturalists were male. One, written for a mountain excursion on 28 July, 1888 had the alpine botanists demanding that their wives:

“Get breakfast ready – quick! We cannot wait!”  
While sleepy wives turn round, and hate the hour  
That calls their husbands to the mountain bower  
To serve the altar of the hill-top flower.  
They (not the husbands, but the wives I mean)  
Were never asked to climb the hill, I ween.

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<sup>110</sup> Young played an important role supporting the efforts of Queen Margaret College for ladies to merge with the University of Glasgow. Yellowlees, ‘Biographical sketch’ in J. Young, *Essays and addresses*, Glasgow, 1904, xxxvi.

<sup>111</sup> R. J. Cleevely *et al*, ‘Mrs Elizabeth Gray (1831–1924): a passion for fossils, *Bulletin of British Museum Natural History (historical series)* (1989), 17, 167–258.

<sup>112</sup> Cleevely, *op. cit.* (fn. 111), 172.

<sup>113</sup> See, for example, *Proceedings of the Natural History Society of Glasgow* (1868), 1, 207. Mr John Young exhibited ‘a new brachiopod shell ... recently discovered in the Silurian strata of the Girvan valley, by Mrs Robert Gray’.



But breakfast must be ready, and the cup  
With sparkling mountain dew filléd up,  
And rest must be forsaken till the men  
Haste to the train and seek the mountain glen.<sup>114</sup>

The mock-heroism of the male naturalists, played out ‘not where fair ladies crowd the street’, was rendered farcical, being reduced to drinking rituals on the mountain summit: ‘He held the Quaich, he paused a little – then/ a shout of manly voices rent the air/ And echoed down the hillside stern and bare’. The verses were written only a year after the first appearance of a lady member on one of the excursions organised by the Perthshire Society of Natural Science.<sup>115</sup> Until that point fieldwork in particular had been the preserve of male members.

Despite the resistance to certain professionalising moves in the natural sciences and support of science education for women, members of Scottish natural history societies were tardy in accepting the full participation of lady members. The reasons for the exclusion of women from membership or from certain forms of participation by the leadership of Scottish natural history societies was in part due to the concern of naturalists’ with ‘scientific standards’. Perhaps more important, however, was the significance attached to an image of the ‘true naturalist’ as public spirited and manly. The involvement of women weakened the associations between an interest in natural history and the qualities thought necessary for public service. I want to suggest, therefore, that understanding the exclusion of women from scientific societies only in terms of scientific culture neglects the consequences of efforts to make naturalists prominent in the civic realm.

## Summary and Conclusion

Victorian Scottish associational science had a dual character defined by the changing concerns of a scientific and a local civic constituency. This chapter has been concerned with the character of the individual naturalist participating in a local scientific society. The persona of the true naturalist, it has been argued, reflected and helped constitute

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<sup>114</sup> Miss Buchanan White, *Proceedings of the Perthshire Society of Natural Science* (1888), 1, 37-9.

<sup>115</sup> See, F. B. White, ‘President’s address’, *Proceedings of the Perthshire Society of Natural Science* (1887), 1, 22.

the twofold nature of provincial science. Being concerned with the compatibility of natural history studies with a commitment to public duty and civic pride, members of Scottish natural history societies were anxious to offer examples of those who had successfully combined an interest in science with a reputation as a leading citizen. Employing the malleable notion of self-culture enabled naturalists to present science as suited to furthering civic culture and civic culture as enabling the proper conduct of science.

The strategies employed to render the character of the local naturalist apt for both participation in science and in local civil society had implications for the portrayal of certain social groups. Working-class naturalists were lauded by societies anxious to show the reformist effects of an involvement in associational science. Integration into science meant integration into middle-class society where questions of labour and wages was not considered relevant or appropriate. Science was done as a 'labour of love', for the public good, and not for remuneration. It is not perhaps surprising that despite arguments for the relevance of natural history pursuits to the working classes most societies struggled to attract more than a handful of 'labouring' men. The same was true of attempts to encourage the participation of women. Not willing or not able to grant the same degree of local public credibility to lady naturalists, male members struggled to negotiate between allowing ladies on field excursions and maintaining the status of male excursionists, associated as that status was with a dedication to strenuous scientific fieldwork and a public image caught up in the politics and culture of a male-dominated civic sphere.

The politics of character evident in the activities of Scottish natural history societies was strongly influenced by concerns associated with local civic culture and society. It was also related to the place of provincial naturalists in scientific circles. Discussions about the 'wide sympathies' of naturalists and their ability to retain a general outlook while acquiring expertise in a particular field were as relevant to forming a reputation among men of science as it was to gaining the sympathy of a local public. It is the 'scientific' audience that looms large in the next two chapters which turn from examining appeals to local residents to investigating the strategies of society members to render themselves true citizens of a growing republic of science.

## Section III

Field clubs and the republic of science

## Chapter 6

### Geographies of exchange: organising provincial science

Scottish natural history societies, situated in civic culture and orientated towards a local public, were also characterised by connections with a wider scientific community. One ruling objective of the societies, to explore and catalogue local natural history, was taken as an endeavour of interest to a scientific as well as a 'non-scientific' audience. In order to render such activities 'useful to science', certain procedures and lines of investigation were promoted to secure scientific credibility. The recommendation of certain methods and projects was supplemented by fostering links, formal and informal, with other scientific bodies and by creating a library of scientific texts to keep pace with wider developments. Such links in terms of strength, number and duration varied from society to society and in ways connected with, but also distinct from, the relations between naturalists' associations and local civic society. This chapter examines the ways in which the societies were organised, and functioned, in relation to a concern with contributing to scientific advance. The content of the science produced and published by natural history society members, and the ways in which the societies engaged with certain bodies of theory central to the development of nineteenth-century natural science, is left to the next chapter. Here I analyse the basic organisational features that connected the societies to a wider scientific world, and investigate members who were closely involved in maintaining their society's scientific reputation.

The chapter is divided into three parts. Part one examines informal links set up between societies and other scientific constituencies. Of particular importance in this regard were transactions published to make available the results of a society's scientific labour. While other links were developed and maintained by corresponding members, and by individuals who were members of more than one body, it was society transactions which were taken as a key indicator of a society's scientific status. Part two considers the authors of papers published in the transactions. The key role of more active members in defining a society's scientific agenda is explored by comparing the publications of societies in Dumfries, Inverness and Perth. The final part details the formalisation of inter-institutional networks, and examines attempts to provide guidance

to societies from authoritative scientific ‘centres’ such as the British Association for the Advancement of Science and the East of Scotland Union of Naturalists’ Societies.

## Transactions and exchange

Natural history has long been reliant on the creation and maintenance of a dense network of communication and exchange. Understanding how this network developed and functioned has been of increasing interest to historians of science. The importance of epistolary exchange in particular has attracted attention.<sup>1</sup> Naturalists’ correspondence networks have provided historians with one neglected source to better understand conventions and strategies central to the making of natural historical knowledge. Beyond issues of scientific epistolary etiquette, and the trust secured thereby, uncovering the vast scientific correspondence underlying the making of scientific knowledge has also brought to view a large number of scientific informants that had been previously overlooked. More generally, investigating the vast collections of correspondence associated with individual naturalists has shown that, particularly from the eighteenth century, natural history was a global industry, a science of networks *par excellence*.

Networks were not only constituted by written correspondence. For naturalists, the swapping of specimen’s was a vital accompaniment to written correspondence.<sup>2</sup> Standing in a long tradition of obtaining natural historical information from a distance was an 1870 resolution, unanimously agreed to, of the Perthshire Society of Natural Science. It stated that

the society should follow the example of other scientific societies throughout the country and petition the Postmaster General that the privilege of sending small parcels at the simple post rate be restored to

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<sup>1</sup> D. S. Lux and H. J. Cook, ‘Closed circles or open networks?: communicating at a distance during the scientific revolution’, *History of science* (1998), 36, 179-211; A. Secord, ‘Corresponding interests: artisans and gentlemen in nineteenth-century natural history’, *British journal for the history of science* (1994), 27, 383-408; E. C. Spary, *Utopia’s garden: French natural history from old regime to revolution*, Chicago, 2000, 49-98; C. W. J. Withers, ‘Writing in geography’s history: *Caledonia*, networks of correspondence and geographical knowledge in the late enlightenment’, *Scottish geographical journal* (2004), 120, 33-45.

<sup>2</sup> On this, see J. Endersby, ‘“From having no Herbarium”. Local knowledge vs. metropolitan expertise: Joseph Hooker’s Australasian correspondence with William Colenso and Ronald Gunn’, *Pacific science* (2001), 55, 343-58.

the public.<sup>3</sup>

There were numerous reasons why the Society felt its success depended, in part, on a cheap postal service. Sending specimens difficult to identify, even ‘new to science’, to acknowledged experts was one. Beyond specific rationales the resolution underlined the importance to the PSNS of what David Lux and Harold Cook have called ‘the proliferation of weak ties’, namely the importance of fostering and maintaining a loosely defined community that stretched well beyond a local group of practitioners.<sup>4</sup>

Acquiring scientific knowledge, particularly new scientific knowledge, relied less on strong social bonds with proximate men of science (or, indeed, with local civic society), and more on loose connections with an ever-expanding array of scattered researchers.

Most of the arguments about scientific correspondence and exchange have been formulated in relation to science in the eighteenth century and earlier. Perhaps because of this, the arguments appear imprecise when applied to the more specialised and diverse scientific scene that had developed by the nineteenth century. Nevertheless, the general thrust remains instructive, and points to the continued importance for naturalists of maintaining as wide and diverse a circle of informants and experts as possible. For nineteenth-century natural history societies network building had particular pertinence given the charges brought against them of being parochial, and doing little to advance genuine scientific knowledge of Britain’s natural history.<sup>5</sup> To be scientific it was important that the knowledge produced by societies could travel across epistemic and geographical space.

While letters were the dominant means of transferring and acquiring knowledge for the individual naturalist, published transactions were the primary expression of the corporate desire of a natural history society to connect, and be seen to connect, with wider scientific circles. ‘It seems to be perfectly necessary, if we are to maintain our position as a scientific society’, argued Henry Coates, editor of the *Proceedings* of the PSNS, ‘to publish the results of our work in some permanent form’.<sup>6</sup> The outcome of Coates’ argument for the PSNS, who had published their *Proceedings* since 1870, was the

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<sup>3</sup> Perth Museum and Art Gallery, uncatalogued MSS, Minutes of the Perthshire Society of Natural Science 1867-1878, 2 November, 1870.

<sup>4</sup> Lux and Cook, *op. cit.* (fn. 1), 183.

<sup>5</sup> See Hewett Cottrell Watson’s invective outlined in Chapter 2 (p. 25). See also D. E. Allen, ‘The natural history society in Britain through the years’, *Archives of Natural History* (1987), 14, 249.

<sup>6</sup> H. Coates, *Proceedings of the Perthshire Society of Natural Science* (1886), 1, 5.

production of a series of *Transactions* for scientific rather than popular papers. To take a place in the 'commonwealth' of science it was important that the Society publish papers based on original research. Such research, for a 'local' audience at least, might have been considered 'dry' but it was deemed appropriate for a scientific readership.<sup>7</sup>

Not all Scottish natural history societies were able to publish their proceedings. Still fewer were able to produce transactions of the type promoted in Perth. Nevertheless, virtually all societies obtained some local newspaper coverage, and most intended to produce their own transactions. An obvious reason for the failure to produce a regular publication was the expense involved. Apart from one volume of *Proceedings* published in 1851, the Natural History Society of Glasgow struggled until 1869 to find the finance required to produce its own periodical.<sup>8</sup> In June 1852, a note in the Minutes stipulated that 'after paying room rent and other necessary expenses with their present income, the balance would not be sufficient to print even one sheet'.<sup>9</sup> For the first three years the Society's proceedings appeared in brief in *The naturalist*, a general scientific periodical, and the Society afterwards tried and failed to obtain space in the *Edinburgh new philosophical journal*.<sup>10</sup> An offer from the editors of the *Dublin natural history review* was rejected by the Society in 1856, on the grounds that 'the charge proposed was most exorbitant'.<sup>11</sup>

Even with the relatively lower cost of publishing by the later nineteenth century, other societies producing a regular publication consistently made a loss. The Stirling Field Club, for example, paid, in 1881, £6 16s to the *Stirling Journal* to produce a volume of *Transactions* and received only £2 7s 9d from subscribers. The Dumfriesshire and Galloway Natural History and Antiquarian Society (DGNHAS) paid £25 17s in 1888 to produce its *Transactions* and recouped only £3 4s 6d from sales.<sup>12</sup> The policy, followed by most societies, of not charging members for published proceedings meant a large

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<sup>7</sup> F. B. White. 'President's address', *Proceedings of the Perthshire Society of Natural Science* (1886), 1, 20.

<sup>8</sup> J. A. Gibson, 'Proceedings of the natural history society of Glasgow: the missing years, 1851 to 1859', *Glasgow naturalist* (2001), 23, 74-9.

<sup>9</sup> Mitchell Library Glasgow (hereafter ML), MS TD1408/1/1/1, Minutes of the Natural History Society of Glasgow, 2 June, 1852.

<sup>10</sup> ML, MS TD1408/1/1/1, Minutes of the Natural History Society of Glasgow, 29 January, 1856.

<sup>11</sup> ML, MS TD1408/1/1/1, Minutes of the Natural History Society of Glasgow, 27 January, 1857.

<sup>12</sup> Privately held, Council Minutes of the Stirling Field Club, 1881, printed syllabus inserted p.38. J. S. Thomson, 'Treasurer's report', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1888), 6, 82.

deficit was almost inevitable; a situation made worse by the fact that transactions were often a society's biggest regular expense.

The actual form regular society publications took varied. For some societies it was enough, in their early days at least, to re-issue reports that had already appeared in the local newspaper. The readership, we may assume, was predominantly local. Societies concerned to reach a scattered scientific audience were anxious to move beyond a dependence upon the local newspaper printing office. The Inverness Scientific Society and Field Club, on discovering that a number of important papers had been omitted from the volumes of *Proceedings* produced by the *Inverness Courier*, arranged to print 'all the most important' Society papers in different type and in octavo form.<sup>13</sup> Funding permitting, illustrations were to be included, but Society members were warned the volume may not be made available free of charge. For Buchanan White, the problem with the newspaper format of the *Proceedings of the Perthshire Society of Natural Science*, ran deeper than omission of papers. There was, he argued, a double 'evil' involved.<sup>14</sup> First, the newspaper, concerned to reach and interest a local audience largely unschooled in science, published only papers that were 'popular'. Second, and in direct consequence of this, members had no encouragement to produce and publish papers of greater scientific merit. White was, in other words, concerned with the 'geography of reading' associated with his Society's publications.<sup>15</sup>

On occasion, readers views of the content of society publications could be influential. The appearance in 1869 of the fifth issue of the *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* provoked one local reader to complain that: 'If the Dumfriesshire antiquaries wish to make the world acquainted with what they are doing they should contrive to come before it in a rather more intelligible way'.<sup>16</sup> The anonymous reviewer added the further slight that there was not much of interest in

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<sup>13</sup> J. Fraser, 'President's address', *Transactions of the Inverness Scientific Society and Field Club* (1883), 2, 306-7.

<sup>14</sup> F. B. White, 'President's address', *Proceedings of the Perthshire Society of Natural Science* (1887), 1, 20.

<sup>15</sup> For more on the 'geographies of reading' and science and nineteenth-century print culture, see J. A. Secord, *Victorian Sensation: The extraordinary publication, reception, and secret authorship of Vestiges of the natural history of creation*. Chicago, 2000. See also D. N. Livingstone, 'Science, religion and the geography of reading: Sir William Whitla and the editorial staging of Isaac Newton's writings on biblical prophecy', *British journal for the history of science*, 2003, 36, 27-42.

<sup>16</sup> Privately held, Dumfriesshire and Galloway Natural History and Antiquarian Society, Scrapbook vol. 1, newspaper clipping.



the publication except for a 'local antiquary'. Another review in *The Scottish naturalist*, this time of the first issue of the Society's new series of *Transactions* instigated four years after the Society re-formed in 1876, encouraged the Society to concentrate on local natural historical and archaeological research.<sup>17</sup> For the *Scottish naturalist* reviewer – carrying more authority as a scientific commentator than an anonymous writer in a local newspaper – it was precisely the local that was interesting and, more importantly, appropriate for the research focus of a provincial natural history society. The review prompted the Society to re-assess how it might 'extend its operation', members deciding to produce a flora and fauna of the district and eschew the eclectic focus criticised by the reviewer.<sup>18</sup>

Efforts to expand the readership of the publications of Scottish natural history societies were primarily focused on establishing a system of mutual exchange. This was a common practice but there was significant variation in the extent to which it was actually carried out. The NHSG was successful in setting up an extensive network of mutual exchange with national and international bodies. As a well-established Society operating in a large city which itself was renowned for its increasing global connections, the NHSG had little difficulty in interesting other societies to swap *Transactions*.<sup>19</sup> Figure 6.1. below shows the dramatic increase in the number of institutions with which the NHSG exchanged publications, from 29 (28 British and Irish and one foreign) in 1875 to 219 (77 British and Irish and 142 foreign) in 1899.

It is difficult to find a Scottish scientific society that equalled the NHSG in terms of the number of societies with which transactions were exchanged. In 1889, for example, the Botanical Society of Edinburgh exchanged publications with 26 British and Irish and 58 foreign institutions.<sup>20</sup> A year earlier the NHSG had exchanged publications with 56 British and Irish and 96 foreign institutions. Provincial societies, though not matching the numbers of exchanges of the large metropolitan societies, nevertheless worked along the same lines. The Berwickshire Naturalists' Club, for example, exchanged its

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<sup>17</sup> Anon, *The Scottish naturalist* (1879), 5, 96.

<sup>18</sup> Privately held, Minutes of the Dumfriesshire and Galloway Natural History and Antiquarian Society, 1876-1883, 5 April, 1879.

<sup>19</sup> On late-nineteenth-century Glasgow as global city, see J. M. Mackenzie, 'The second city of the empire – imperial municipality', in F. Driver and D. Gilbert, eds., *Imperial cities: landscape, display and identity. Studies in imperialism*, Manchester, 1999, 215-37.

<sup>20</sup> *Transactions of the Botanical Society of Edinburgh* (1889), 17, 540-42.

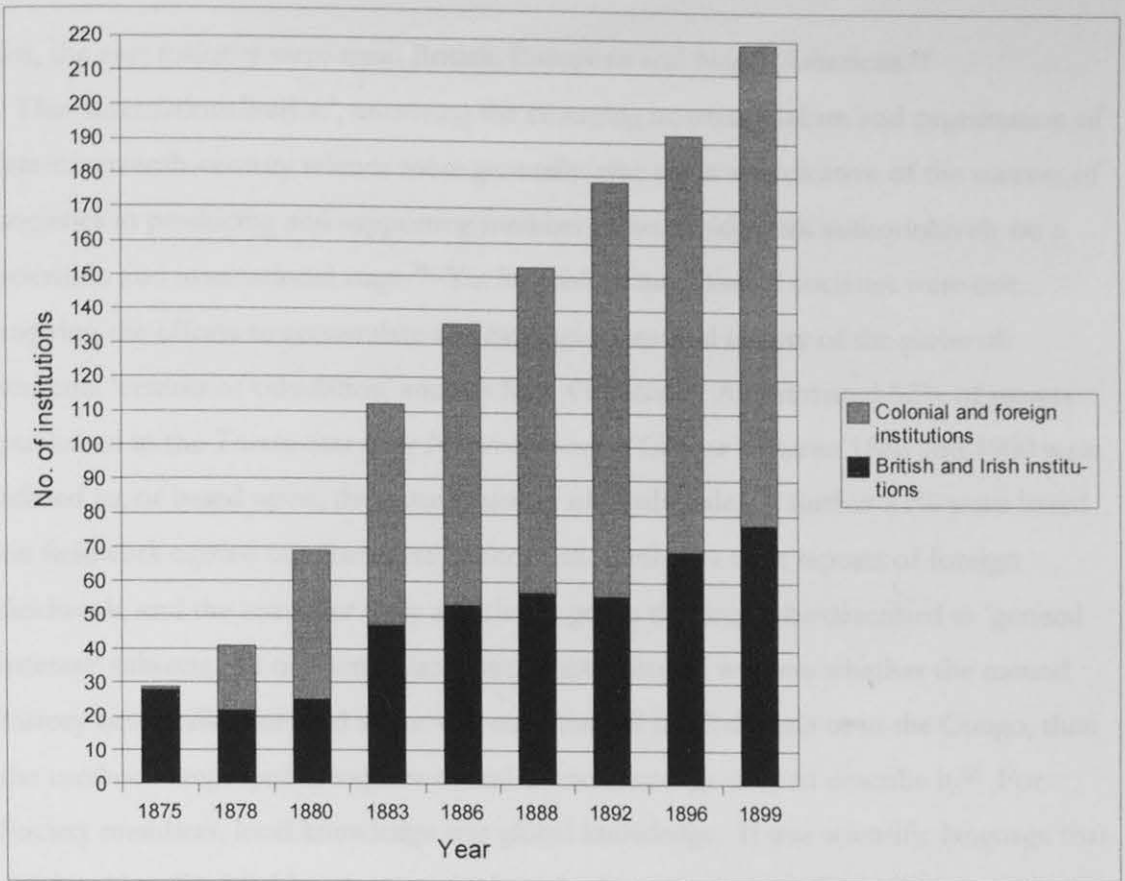


Figure 6.1. Number of institutions exchanging publications with the Natural History Society of Glasgow. Source: *Transactions and Proceedings of the Natural History Society of Glasgow* (1875-1900).

transactions, *History of the Berwickshire Naturalists' Club*, with 22 British and Irish societies and 8 foreign institutions in 1884-85.<sup>21</sup>

The basic statistics of exchange masked the diverse range of institutions involved. The British and Irish societies swapping publications with the NHSG ranged from local field clubs to the various Royal Societies, and institutions like the British Museum. Most of the foreign societies were European or North American (53% European and 35% North American in 1896) and were larger metropolitan institutions, including museums and universities as well as general scientific societies.<sup>22</sup> This pattern was repeated in other societies. 23 of the 30 societies exchanging publications with the BNC in 1885 were also exchanging with the NSHG in 1888. Although, in 1885, over half of the societies with which the BSE exchanged were different from those on the 1888 NHSG

<sup>21</sup> *History of the Berwickshire Naturalists' Club* (1885), 10, 614-16.

<sup>22</sup> *Transactions of the Natural History Society of Glasgow* (1896), 4, 400-03.

list, the vast majority were again British, European and North American.<sup>23</sup>

This ‘internationalisation’, mirroring the emerging internationalism and organisation of late-nineteenth-century science more generally, was taken as indicative of the success of societies in producing and supporting members who could speak authoritatively on a scientific and international stage.<sup>24</sup> Yet Scottish natural history societies were not copying the efforts to accumulate and catalogue a natural history of the globe of imperial ‘centres of calculation’ such as Kew Gardens.<sup>25</sup> An estimated 52% of papers published in the *Transactions of the Natural History of Glasgow* between 1886 and 1900 were related to, or based upon, the natural history of Clydesdale. A further 21% were based on fieldwork carried out elsewhere in Scotland. Only 7% were reports of foreign fieldwork, and the remainder were an eclectic group that might be described as ‘general interest’ subjects. In one sense, however, what mattered was less whether the natural history being talked or read about was encountered in Clydesdale or in the Congo, than the methods employed to explore it, and the terminology used to describe it.<sup>26</sup> For Society members, local knowledge was global knowledge. It was scientific language that rendered localised fieldwork comparable and relevant to a scientific audience elsewhere.<sup>27</sup> Natural history specimens collected locally could be shown to have a ‘global’ relevance. So John Smith, corresponding member of the NHSG, could use specimens of Carboniferous crinoids acquired from ‘shale banks’ in Dalry parish, Ayrshire to speculate on the behaviour of ancient marine invertebrates found in geological strata across the globe.<sup>28</sup>

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<sup>23</sup> *Transactions of the Botanical Society of Edinburgh* (1885), 16, 501-03.

<sup>24</sup> On the British Association for the Advancement of Science and internationalism, see G. Pancaldi, ‘Scientific internationalism and the British Association’, in P. Collins and R. MacLeod, *The parliament of science*, Northwood, 1981, 118-44; For internationalism and science more generally, see B. Schroeder-Gudehus, ‘Nationalism and internationalism’, in R. C. Olby et al (eds.), *Companion to the history of modern science*, London, 909-19. On the internationalisation of phytogeography, see K.S. Fischdeick and T. Shinn, ‘The international phytogeographical excursions, 1911-1923: intellectual convergence in vegetation science’, in E. Crawford, T. Shinn and S. Sörlin (eds.), *Denationalizing science: the contexts of international scientific practice*, Dordrecht, 1993, 107-31.

<sup>25</sup> For Kew, see R. Drayton, *Nature’s government: science, British imperialism and the ‘improvement’ of the world*, New Haven, 2000.

<sup>26</sup> Thomas Chapman’s paper on lepidopterous insects from Congo was an exception to the rule that papers were either of a local nature or short. T. Chapman, ‘On some lepidopterous insects from Congo’, *Transactions of the Natural History Society of Glasgow* (1869), 1, 325-78.

<sup>27</sup> On the importance attached to local geological fieldwork, see M. Rudwick, ‘Geological travel and theoretical innovation: the role of ‘liminal’ experience’, *Social studies of science* (1996), 26, 143-59.

<sup>28</sup> J. Smith, ‘On the grasping power of Carboniferous Crinoid “fingers” or “branches” and a

This was the argument behind Frederick Coles' paper 'local names of plants' given in 1883 at a meeting of the DGNHAS. Rather than encouraging members to recover the provincial names of local flora, Coles exhorted them to learn the 'nomenclature of science'.<sup>29</sup> With 72% of the papers published in their *Transactions* between 1880 and 1890 based on fieldwork in Dumfriesshire and Galloway – a reflection of a local-only policy issued at the start of the Society's existence – it was important that they heeded this advice.<sup>30</sup> Like the NSHG, then, the DGNHAS rarely published papers on fieldwork based abroad. Only two papers of this nature, both by George Scott-Elliot (also a member of the NSHG), appeared between 1880 and 1890.<sup>31</sup> Despite Thomas Grierson's 'long and interesting lecture on what and how to send from distant lands' given to members in 1878, foreign fieldwork played a very minor role in the societies' affairs.<sup>32</sup> Grierson's own paper can, perhaps, be explained by the fact that Joseph Thomson, then a member of the Society, was preparing for his post as naturalist and geologist on an expedition to East Africa, a venture funded by the Royal Geographical Society.<sup>33</sup> Thomson, however, chose other channels than his 'home' society to report his findings. The international and transnational intent of the DGNHAS was more frequently found in employing scientific terminology and donating its *Transactions* to overseas scientific institutions. Often included among donations to ordinary meetings were the publications of the sorts of foreign institutions that the NSHG had set up more formal exchange agreements with.<sup>34</sup> Between 1890 and 1898 the Society received

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speculation as to whether the bulk of Carboniferous Crinoidea were fixed or floating animals', *Transactions of the Natural History Society of Glasgow* (1897), 5, 58-61. For more on John Smith, see L. Alcock et al, *John Smith of Dalry: geologist, antiquarian and natural historian*, parts 1 and 2, Ayr, 1995, 1996.

<sup>29</sup> F. R. Coles, 'Local names of plants', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1883), 3, 57.

<sup>30</sup> W. Jardine, 'Opening address', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian society* (1863), 1, 27-44.

<sup>31</sup> G. F. Scott-Elliot, 'Diamond mines and gold fields of South Africa', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1890), 6, 197-202 and *idem*, 'Flora of Madagascar', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1890), 6, 236-40.

<sup>32</sup> Privately held, Minutes of the Dumfriesshire and Galloway Natural History and Antiquarian Society, March, 1878.

<sup>33</sup> R. I. Rotberg, *Joseph Thomson and the exploration of Africa*, London, 1971.

<sup>34</sup> To take a random sample of donations of publications to the DGNHAS on the 7 October, 1887: the *Annual Report of the Smithsonian Institution*; *Annual Reports of the Elisha Mitchell Society* (a North Carolina scientific society); *Transactions of the Natural History Society of Glasgow*; *Transactions of the Belfast Naturalists' Club*; *Transactions of the New York Academy of Sciences*; *Report of the*

by donation 44 publications from British (24) and foreign (20) societies.<sup>35</sup>

The extent to which the ‘internationalism’ indicated by transaction exchange was evident in the activities of individual members of a society is difficult to recover. One diagnostic, the use of the foreign publications, suggests that, at least for members of the NHSG, the numerous international journal exchanges did not mean extensive usage of the library facility such exchange afforded. From 1888 to 1900, the period when the NHSG was exchanging with over 100 overseas institutions, only seven foreign journals were borrowed from the library, and only two were taken out more than once.<sup>36</sup> The borrowers were a ‘professional’ scientist (James Stirton, Professor of Mid-Wifery, St Mungo’s College), a member on the cusp of taking up a professional post (Robert Broom, who, before becoming Professor of Geology and Zoology at Victoria College Stellenbosch (South Africa), had visited Australia and South Africa in the 1890s for the purpose of natural historical research) and the Society’s Librarian, entomologist James J. F. X. King.<sup>37</sup> In contrast, British and Irish scientific society publications were more widely and frequently used.<sup>38</sup>

An examination of the form and movement of transactions cannot claim to offer a complete picture of societies’ efforts to correspond with the wider scientific world. Transaction exchange was supplemented by donations of books and general science periodicals that provided resources both for general science education and specialist research and described another untidy set of connections between the ‘local’ and the ‘global’. In addition, although transactions were by far the most significant means for

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*British Association for the Advancement of Science; Journal of the Linnean Society; Proceedings of the Society of Antiquaries* (‘for which the Committee had exchanged ethnological specimens from New Zealand’). See ‘Annual meeting’, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1887), 6, 1.

<sup>35</sup> I am grateful to James Williams, Editor of the *Transactions of the Dumfriesshire and Galloway Natural History Society*, for providing this information.

<sup>36</sup> ML, TD1408/1/9/1/2-3, NHSG library borrowers’ book. These were *Annales de la Société Entomologique de Belgique; Annual Report of the Smithsonian Institution; Annual Report of the United States Geological Survey; Bulletin de la Société Impériale des Naturalistes de Moscou; Bulletin du Jardin Botanique National de Belgique; Journal of the New York Microscopical Society; and Proceedings of the Boston Natural History Society*.

<sup>37</sup> Anon, ‘In memoriam: Professor Thomas King’, *Transactions of the Natural History Society of Glasgow* (1896), 5, 1-17; D. A. Boyd, ‘In memoriam: James Stirton, M. D., F. L. S.’ *Glasgow naturalist* (1917), 8, 142-4; G. Findlay, *Dr. Robert Broom, F.R.S., palaeontologist and physician, 1866-1951: a biography, appreciation and bibliography*, Cape Town, 1972. Details of one other borrower, C. O. Sonntag, could not be traced.

<sup>38</sup> Volumes of the *History of the Berwickshire Naturalists’ Club*, for example, were borrowed twenty-four times between 1888 and 1900.

reporting society activities, other publications were occasionally produced. A guide to the flora and fauna of the West of Scotland published by the Glasgow Society of Field Naturalists in 1876 – made possible by funding from the British Association for the Advancement of Science – was a rare example of an occasional publication venture instigated by an individual society.<sup>39</sup> Most regional floras were the work of single authors who received help from members of their local natural history society.

In terms of important inter-society networks, the flows of natural historical specimens also deserve mention, and merit more attention.<sup>40</sup> What is possible to suggest here, without being able to offer a comprehensive survey of the museum catalogues of provincial natural history museums (many of which are no longer extant), is that collectors frequently dissented from the call issued by leading society members to concentrate on local exploration. This was the conclusion of two surveys in the 1880s. In 1890, James Trail, reporting on the BAAS survey of provincial museums, noted that only 16 of Scotland's 31 provincial museums had collections that were 'chiefly or entirely local'.<sup>41</sup> A survey organised by the Scottish Antiquarian Society in 1887 lamented that one 'principal defect' of the 33 Scottish museums visited was that the collections (both archaeological and natural historical) were 'not sufficiently local in character'.<sup>42</sup> It was arguably more difficult to police the donations of specimens than the publishing of papers. The scientific leadership of Scottish natural history societies viewed this wider movement of specimens from collectors to provincial museums as unscientific. For a local society, it was expertise in local natural history that was considered appropriate. The acquisition of non-local specimens was viewed as a threat to a society's scientific status because it could not be done in a sufficiently systematic manner and on a large enough scale by a provincial institution. The economy of reciprocal interchange of transactions focused on local natural history was more

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<sup>39</sup> Glasgow Society of Field Naturalists, *The fauna and flora of Clydesdale and the west of Scotland*, Glasgow, 1876.

<sup>40</sup> This subject is a vast one. The collections of Scottish natural history societies were clearly only a part of a larger set of natural science collections accumulated in Scotland during the nineteenth century. On this, see H. E. Stace, C. W. A. Pettitt and C. D. Waterson, *Natural science collections in Scotland (botany, geology, zoology)*, Edinburgh, 1987.

<sup>41</sup> J. W. H. Trail, 'The British Association and its relation to local natural history museums', *Scottish Naturalist* (1890), **10**, 349-59.

<sup>42</sup> J. Anderson and G. F. Black, 'Reports on local museums in Scotland', *Proceedings of the Scottish Antiquarian Society* (1888), **22**, 421.

positively viewed as an appropriate institutional expression of a desired internationalism. It therefore more clearly indicated the corporate concern with promoting science as a transnational practice than the 'messier' geographies of specimen exchange.

If the ideal model for a local natural history society was the international exchange of scientific information acquired through local fieldwork then the ideal member was someone literate in the nomenclature of science and committed to exploring the natural history of their local district. Those publishing papers had, therefore, a high profile among members and were influential in setting the scientific agenda of the societies. Their identity as local naturalists was composite (see Chapter 5) but was defined in part in terms of their scientific abilities. It is to the contributions made by publishing members, and the connections with their biographies, that are examined next.

### The science of 'active members'

In an attempt to discriminate between the different forms which participation in scientific culture took during the eighteenth and nineteenth century Steven Shapin and Arnold Thackray proposed three distinct modes of involvement.<sup>43</sup> The first was associated with individuals who published scientific papers, the second with individuals who disseminated scientific knowledge without contributing 'original' research, and the third with individuals who acted as patrons of scientific work. This rudimentary typology is helpful in signalling the different levels of participation evident among members of nineteenth-century natural history societies. There were members, sometimes called 'friends of science', who were active in terms of society administration and finance but who did not contribute in intellectual terms to a society's scientific work. There were members who offered only 'popular' papers yet were valued for the connections they made with an interested but non-scientific public. Finally, there were relatively few members who contributed 'original research'. It was they who were viewed as securing the scientific status of a society.

There are at least two problems with this typology. First, 'original research' did not always find its way into the publications of the societies and defining scientific

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<sup>43</sup> S. Shapin and A. Thackray, 'Prosopography as a research tool in history of science: the British scientific community, 1700-1900', *History of science* (1974), 12, 1-28.

membership on the basis of publication alone ignores the contributions of those who helped create museum collections but who did not, for whatever reason, contribute to society transactions. Few women members, for example, published papers, but a number were involved in forming and arranging local collections. To take just one example, a Miss Robertson, member of the PSNS, donated a large number of specimens of Perthshire flora to the Perthshire Natural History Collection and, apart from a general acknowledgement in the Society *Proceedings* that a number of the lady members were not 'ornamental' but instead were 'assiduous workers' little notice was given of their contribution.<sup>44</sup>

A second problem with discriminating among and between members in terms of the content of publications is the difficulty in deciding what was 'popular' and what 'scientific'. Recent work on popular science and science popularisation in nineteenth-century Britain has called into question the simple distinction between 'pure' and 'popular' scientific knowledge.<sup>45</sup> Such questioning has led to an examination of how certain terms of discrimination were used, where and for what purpose. It has already been shown that for Buchanan White popular papers were those that appealed to a local public untrained in science whose content was accessible but not original. For a society's *Transactions* to be scientific the papers had to include research that was both original and reported using specialist scientific language. This ideal distinction did not always work in practice, both in terms of the content of the papers published and their impact and audience. Yet it remained the case that research published and thus sanctioned by a society's scientific leadership was considered sufficiently 'scientific' for inclusion. By comparing the authors of papers in the *Transactions* of three societies, it is possible to explore the ways in which the 'scientific' ambitions of the societies were constructed and maintained while at the same time indicating the local contingencies that were inevitably involved in research output and interests.

Recovering the composition of the more 'scientific' membership of a society raises more general questions about nineteenth-century scientific identity. Others have shown

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<sup>44</sup> See J. Geikie, 'Opening of the Perthshire Natural History Museum', *Proceedings of the Perthshire Society of Natural Science* (1881), 41. For a record of Miss Robertson's donations, see Perthshire Herbarium, <http://www.scran.ac.uk/fcgi-bin/herbarium/view.pl>

<sup>45</sup> R. Cooter and S. Pumfrey, 'Separate spheres and public places: reflections on the history of science popularization and science in popular culture', *History of science* (1994), 32, 237-67.



how amateurisation elsewhere among associational botanists kept pace with professionalisation, and offers an important corrective to the view that professionalisation in the natural sciences entailed the demise of the amateur. Rather than the museum and the field being sites increasingly overshadowed by the biologists' laboratory such spaces and the practitioners that worked in them were, to borrow Kraft and Alberti's terminology, 'equal though different'.<sup>46</sup> Like the life sciences, professionalisation in the earth sciences did not rapidly erode the place of the amateur. On the contrary, the ethos of the gentlemanly amateur geologist persisted even among those who had 'professional' posts, and the avocational pursuit of geology continued to be a significant force in British geology until after the Second World War.<sup>47</sup>

More needs to be done, however, to recover, what Adrian Desmond has termed, 'an embedded, localised definition of "professional" in Victorian times' and the situated relations between amateurs and paid scientific workers.<sup>48</sup> One example from the historiography of geology shows the importance of attending to the historical geography of professional-amateur relations. Qualifying Roy Porter's thesis that nineteenth-century geology remained undifferentiated because of the persistence of the gentlemanly geologist, James Secord argued that the formation of the British Geological Survey in the early-Victorian period introduced a division between the Survey geologists and the gentlemen members of the Geological Society.<sup>49</sup> As with distinctions between different kinds of scientific knowledge, asking what kind of professional or amateur, where and for what purpose is a relevant concern in recounting the collective biographies of the

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<sup>46</sup> A. Kraft and S. J. M. M. Alberti, 'Equal though different': laboratories, museums and the institutional development of biology in late-Victorian Northern England', *Studies in history and philosophy of biological and biomedical sciences*, (2003), 24, 203-36. The relationship between late-nineteenth-century laboratories, field stations and field work in the North American context has been examined by Robert Kohler. R. E. Kohler, 'Labscares: naturalizing the lab', *History of science* (2002), 40, 473-501.

<sup>47</sup> On the persistence of a gentlemanly 'amateur' ethos among academic professional geologists, see R. Porter, 'Gentlemen and geology: the emergence of a scientific career', *The historical journal* (1978), 21, 809-36. On professionalisation in geology more generally, see J. G. O'Connor and A. J. Meadows, 'Specialisation and professionalisation in British geology', *Social studies of science* (1976), 6, 77-89.

<sup>48</sup> A. Desmond, 'Redefining the X Axis: 'Professionals', 'amateurs' and the making of mid-Victorian biology – A progress report' *Journal of the history of biology* (2001), 34, 3-50.

<sup>49</sup> J. A. Secord, 'The Geological Survey of Great Britain as a research school', *History of science* (1986), 24, 223-75. Ruth Barton makes this point in her study of the various uses made of the terms 'amateur' and 'professional' in the 1860s and 1870s. See R. Barton, "'Men of science': Language, identity and professionalization in the mid-Victorian scientific community', *History of science* (2003), 41, 78.

scientific 'core' of Scottish natural history societies.

The occupation of authors of published papers was a significant factor in their individual identity and indicates the heterogeneity of 'amateur' and 'professional' workers. Figure 6.2 shows the occupations of authors of papers published in the transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society (DGNHAS), the Inverness Scientific Society and Field Club (ISSFC) and the Perthshire Society of Natural (PSNS) Science in the 1880s.

Looking beyond the occupations of those who contributed at least one paper to a given society's proceedings, the number of papers contributed by individuals of different occupation offers a contrasting profile of a societies 'active members'. Figure 6.3 compares the number of papers contributed by authors of a given occupation to the *Proceedings of the Perthshire Society of Natural Science* (1881-86). The disproportionate number of papers authored by two members of independent means is almost wholly explained by the prolific output of Francis Buchanan White, a significant proportion of which was made up of excursion reports and presidential addresses. White's 'private

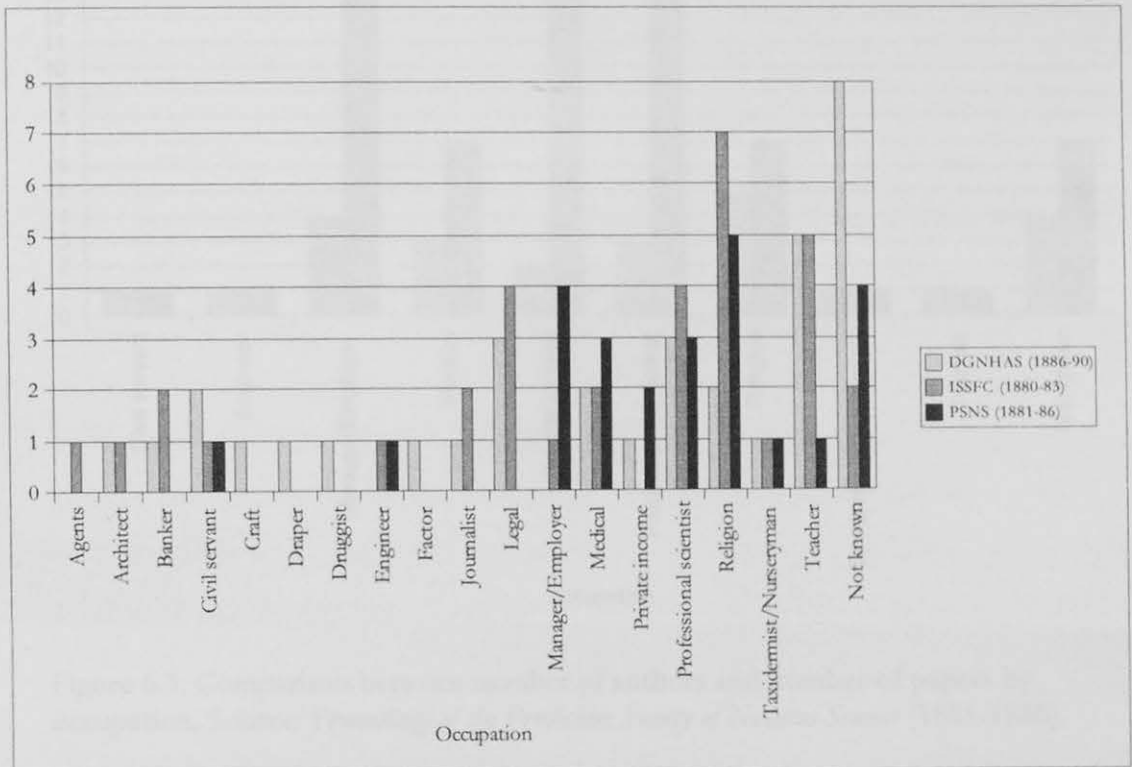


Figure 6.2. Number of authors of papers published in proceedings by occupation. Sources: The transactions and proceedings of the DGNHAS, ISSFC and PSNS. Additional information was obtained from local Post Office directories.

income' status needs to be set alongside the training in botany received while a University of Edinburgh medical student. His undergraduate thesis, 'On the relations, analogies and similitudes of insects and plants', indicates a student more interested in natural history than medical practice.<sup>50</sup> That White was able to devote all his time to natural history pursuits later in life was due to the large legacy inherited by his wife-to-be.<sup>51</sup> Apart from White, other significant contributors can be signalled. The thirteen papers contributed by the four managers or employers – Henry and James Coates, Robert and Rufus Pullar – involved in local family-run businesses (weaving and dyeing respectively) show that, for already successful local worthies, natural history was a significant part of their public image.<sup>52</sup> Henry Coates in particular made numerous

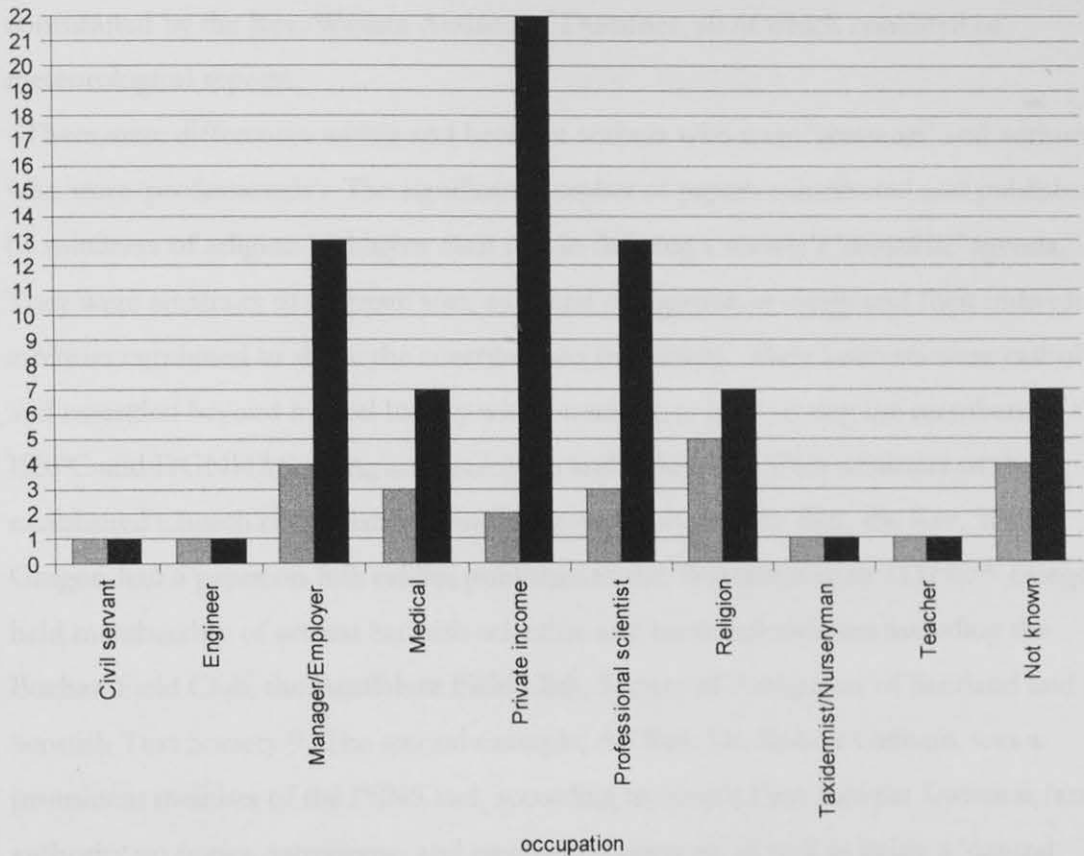


Figure 6.3. Comparison between number of authors and number of papers by occupation. Source: *Proceedings of the Perthshire Society of Natural Science* (1881-1886).

<sup>50</sup> M. A. Taylor, 'Francis Buchanan White (1842 – 1894) and Scottish botany' *Scottish Naturalist* (1986), 157-73.

<sup>51</sup> Taylor, op. cit. (fn. 50), 159.

<sup>52</sup> The other major contributors, the 'professional scientists', are dealt with below.

contributions to later volumes of the Society's *Transactions*.

Although the papers published in the *Proceedings* of the PSNS were dramatically skewed by the contributions of Buchanan White, the pattern changed with the publication in 1893 of the ostensibly more scientific *Transactions*. In this publication, which appeared along with the Society's published proceedings, nine authors contributed a total of 34 papers, only one of which was by White.<sup>53</sup> Three local headmasters – William Barclay, Robert Dow and Robert Meldrum – wrote a total of 13 papers. What remained unchanged was the tendency of a few individuals to dominate the published output of the Society. This contrasted with the pattern of authorship of papers in the publications of the ISSFC and DGNHAS. In neither society did one or two individuals dominate the published output with the most papers written by one person being the five contributed by the Rev. William Andson of Dumfries, all of which consisted of meteorological reports.

There were differences within and between authors who were 'amateurs' and authors who were 'professionals'. The significant number of papers contributed and published by ministers of religion highlights their role in defining a society's 'scientific' agenda. They were amateurs of a certain sort, and their occupation as clergy and their individual interests combined to shape the contributions they made. Their interests were catholic and extended beyond natural history with a number, at least among the members of the ISSFC and DGNHAS, being archaeologists and folklorists. Two ministers of the established Church of Scotland exemplify this catholicity. The first, the Rev. Walter Gregor, had a paper on folk riddles published in the *Transactions of the ISSFC*.<sup>54</sup> Gregor held membership of several Scottish scientific and historical societies including the Buchan Field Club, the Banffshire Field Club, Society of Antiquities of Scotland and the Scottish Text Society.<sup>55</sup> The second example, the Rev. Dr. Robert Graham, was a prominent member of the PSNS and, according to Scott's *Fasti Ecclesiae Scotivanae*, 'an authority on optics, astronomy, and mechanical sciences' as well as being a 'natural

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<sup>53</sup> White, as well as his many contributions to the Society *Proceedings*, was also publishing substantial papers for more prestigious journals. For example, F. B. White, 'A revision of the British Willows', *Journal of the Proceedings of the Linnean Society of London: botany* (1890), 27, 333-457.

<sup>54</sup> W. Gregor, 'Folk riddles', *Transactions of the Inverness Scientific Society and Field Club* (1883), 2, 334-37.

<sup>55</sup> See D. Buchan and I. A. Olson, 'Walter Gregor (1825-97): A life and preliminary bibliography', *Folklore* (1997), 108, 115-17.

philosopher of some repute'.<sup>56</sup> His paper on 'the afterglow or extraordinary sunsets of 1883-4' caused by the Krakatoa eruption was published in the *Proceedings of the Perthshire Society of Natural Science*.<sup>57</sup>

Members working in law, medicine or teaching were also well represented among authors of papers. A look at the contributions of these members reveals a number of divisions between different 'amateur' members. First, like members who were clergy, their interests were catholic. The 'mental bias' of James Stewart, a Perth dentist was said to be 'zoological and comparative anatomy', a fact consonant with his training and profession.<sup>58</sup> Other members in the medical profession contributed papers on subjects ranging from local archaeology through horticulture to marine zoology. Second, as with all 'active' members, the relationship between the individual and their societies in terms of scientific reputation varied. The scientific credentials of Thomas Miller, Rector Emeritus of the Perth Academy and Fellow of the Royal Society of Edinburgh, were largely independent of his involvement in the PSNS. Other members, like Dumfries botanist and schoolmaster James Mc'Andrew, saw their membership of a local natural history society as a primary expression of their status as 'amateur' scientists.<sup>59</sup> Thirdly, a member's profession may have had a significant bearing on the nature of their commitment to a society's scientific reputation. Inverness's Town Clerk, the solicitor Kenneth Macdonald, who contributed three papers on local geology, marine zoology and local history to volume two of the ISSFC's *Transactions*, may have had specific career-related reasons to be so involved.

Despite their diversity, the 'amateur' members who published papers tended to be, in terms of their occupations, professionals. They were, as teachers, civil servants, clergy, engineers or doctors, members of those professions whose organisational structures and licensing systems were more 'professionalised' than was the case for most full-time and salaried scientific practitioners.<sup>60</sup> A larger sample would of course show exceptions, and even the limited examination carried out here reveals significant contributions from

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<sup>56</sup> H. Scott, *Fasti ecclesiae scoticanæ: the succession of ministers in the Church of Scotland from the Reformation*, 11 vols., Edinburgh, 1915-1981, vol. 4, 208.

<sup>57</sup> R. Graham, 'The after-glow or extraordinary sunsets of 1883-4', *Proceedings of the Perthshire Society of Natural Science* (1885), 228-32.

<sup>58</sup> Anon, 'James Stewart', *Transactions of the Perthshire Society of Natural Science* (1926), 8, 180-1.

<sup>59</sup> Mc'Andrew was also a corresponding member of the Natural History Society of Glasgow.

<sup>60</sup> This was true for mid-Victorian science more generally. See Barton, *op. cit.* (fn. 49), 79.

what might be termed non-professional amateurs. John Rutherford, described in his Society obituary as a 'self-educated man' with interests in astronomy, meteorology, horology, geology and electricity, contributed a total of 38 papers given over the 51 years he was a member of the DGNHAS.<sup>61</sup> Another member of the same Society, James Dairon, was a plasterer based in Glasgow.<sup>62</sup> Three of his papers were published in the DGNHAS's *Transactions* on the geology of the Southern Uplands between 1885 and 1892. As a Fellow of the Geological Society, co-worker of Charles Lapworth, and member of the Geological Society of Glasgow, Dairon was an expert on graptolites, an important fossil group used by Lapworth to aid his attempts to map the geological structure and evolution of the Southern Uplands.<sup>63</sup>

A more detailed look at those contributors who might be described as 'professional scientists' again reveals diversity. In terms of subject matter, archaeology, botany, geology and zoology are all represented. The three 'professional scientists' identified as authors of papers in the *Transactions* of the DGNHAS perhaps best illustrate the diversity not only in subject matter but in the 'professional' posts they held. The first, Joseph John Armistead, was not, strictly speaking, a professional scientist, but is included in that category because his work at the Solway Fishery involved extensive and pioneering research into pisciculture; research which he published in the *Transactions* of the DGNHAS. Armistead was founder of the Fishery and wrote two popular books on the subject of angling and fish culture.<sup>64</sup> The second, George Black was more unambiguously a professional being Assistant Keeper at the National Museum of Antiquities of Scotland. The Keepership of the Museum, created in 1869, was at the

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<sup>61</sup> Anon, 'Mr John Rutherford of Jardington Semple', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1925), 5, 265. See also J. Williams, *Index to the articles, authors and major topic items: Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society (1862-2000)*, online at <http://users.quista.net/dgnhas/>.

<sup>62</sup> See James Dairon & Sons, *Post office Glasgow directory*, Glasgow, 1889, 215. His business address is given as 6 Garden Street, the same as that given for Dairon in the list of members that appears in the *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* (1890), 6, 276.

<sup>63</sup> On Dairon, graptolites and Charles Lapworth, see P. Macnair and F. Mort (eds.), *History of the Geological Society of Glasgow, 1858-1908*, Glasgow, 1908, 52; 93ff; 120ff. On Charles Lapworth and his use of graptolites for stratigraphical purposes, see D. R. Oldroyd, *The Highlands Controversy: constructing geological knowledge through fieldwork in nineteenth-century Britain*, Chicago, 1990, 225-34.

<sup>64</sup> J. J. Armistead, *An angler's paradise and how to obtain it*, London, 1895; *idem*, *A handy guide to fish culture, or, fish culture made easy: being specially designed for the use of amateurs, and for guidance in the improvement of fisheries*, London, 1897.

time, 'the only professional archaeological post in Scotland' and was central to efforts to provide Scottish archaeology with a scientific basis.<sup>65</sup> As a member of the DGNHAS, Black contributed a total of eight papers to the *Transactions* in the 1880s and 1890s. In 1896, he was replaced as Assistant Keeper by another member of the DGNHAS, Frederick Rhenius Cole.<sup>66</sup> The third 'professional scientist' among the authors identified in the DGNHAS *Transactions* was George Francis Scott-Elliot. During the period surveyed for the DGNHAS, Scott-Elliot was between African expeditions. In 1887, he travelled to South Africa and Madagascar for the purposes of botanical exploration and, in 1891-92, he worked in Sierra Leone as botanist on the French and English Boundary Commission.<sup>67</sup> Scott-Elliot had previously worked as an Assistant at the Royal Botanic Gardens in Edinburgh and taught a class of practical botany at the University of Edinburgh. In 1893, he received the Cuthbert Peck Grant from the Royal Geographical Society and, in 1896, was appointed Lecturer in Botany at the Royal Technical College in Glasgow. In terms of his work as a member (and later President from 1902 to 1909) of the DGNHAS, Scott-Elliot contributed 40 papers to the *Transactions* and acted as curator of the Society's herbarium.

The 'professional scientists' who made significant contributions to the *Transactions* of the ISSFC were, in terms of their occupations, less diverse. All three – John Horne, James Linn and Hugh Miller (junior) – were members of the Scottish Branch of the Geological Survey. Not all of the papers given by them were on geological subjects with Hugh Miller and James Linn contributing papers of archaeological and historical interest.<sup>68</sup> It was Horne who saw the Inverness Club as one of a number of local

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<sup>65</sup> Cole was an artist, archaeologist and botanist who, as well as being involved in the DGNHAS, was active in the Kirkcudbright Field Naturalists' Club and the Kirkcudbright Fine Arts Association. I am grateful to David Devereux, Curator of the Stewarty Museum, for this information. Cole as Assistant Keeper is mentioned in R. B. K. Stevenson, 'The museum, its beginnings and its development. Part II: the National Museum to 1954', in A. S. Bell (ed.), *The Scottish antiquarian tradition*, Edinburgh, 1981, 154-6. For the relations between amateur and professional archaeologists in nineteenth-century England, see P. Levine, *The amateur and the professional: antiquarians, historians and archaeologists in Victorian England, 1838-1886*, Cambridge, 1986.

<sup>66</sup> Stevenson, *op. cit.* (fn. 65), 176.

<sup>67</sup> Anon, 'Obituary notice. Mr G. F. Scott Elliot, author, soldier and explorer', 23 June, 1934, *Dumfries and Galloway Standard and Advertiser*. Available online at [http://users.quista.net/dgnhas/Image\\_pages/Images\\_Presidents/gfscottelliot.htm](http://users.quista.net/dgnhas/Image_pages/Images_Presidents/gfscottelliot.htm). See also D. Gledhill, 'G. F. Scott-Elliot and his plant localities', *Taxon* (1969), 18, 425-28.

<sup>68</sup> J. Linn, 'Peer-men', *Transactions of the Inverness Scientific Society and Field Club* (1883), 2, 341-46; H. Miller, 'A well on the Roman wall', *Transactions of the Inverness Scientific Society and Field Club* (1881), 2, 53-63.

scientific societies that ought to be part of the geological exploration of the North of Scotland. Horne's work with the Survey mapping the Moray Firth area in the late 1870s and early 1880s provided opportunities to encourage the work of local field clubs.<sup>69</sup> Horne also looked to encourage local men of science to support the work of the clubs. Writing to George Gordon in 1880 about the first field excursions of the Banffshire Field Club Horne intimated that he was 'extremely anxious to secure the presence of one or two well known men in the north who have taken a kindly interest in scientific work'.<sup>70</sup> By 1886, Horne was President of the ISSFC and had contributed a number of papers on local geology including a 'popular account' (as he described it) of the Old Red Sandstone controversy, delivered in 1885.<sup>71</sup> As with the other occasions when he involved himself in the activities of the North East clubs, Horne was anxious that leading men of science attend. Those invited for the Old Red Sandstone paper included George Gordon, Matthew Heddle, William Stables and James Joass.<sup>72</sup>

The 'professional scientists' involved in the Perthshire Society of Natural Science shared Horne's enthusiasm for field clubs. One, James Geikie, was President of the PSNS from 1880 to 1882, and was District Surveyor for the Scottish branch of the Geological Survey – a position second only to the Director.<sup>73</sup> Geikie, who lived for six years in Perth, was said to have taken 'a great interest in the PSNS' contributing a number of papers and giving the address at the opening of the Society's museum in 1883.<sup>74</sup> By then he had moved to Edinburgh as Professor of Geology at the University, and had been made an honorary member. His active involvement with the Society ceased after a contribution to a collection of papers on the natural history of Kinnoull Hill (a mile east of Perth) published in the *Proceedings* of the Society in 1886.

The other two professional scientists who contributed papers to the PSNS *Proceedings* between 1880 and 1886 were James Allen Harker and James Trail. Harker, a founding

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<sup>69</sup> Oldroyd, op. cit. (fn. 63), 271.

<sup>70</sup> Elgin Museum, George Gordon Correspondence (hereafter GGC), MS80.28, J. Horne to G. Gordon, 14 July, 1880. For further details, see M. Collie and S. Bennett, *George Gordon: an annotated catalogue of his scientific correspondence*, Aldershot, 1996.

<sup>71</sup> GGC, MS85.1, J. Horne to G. Gordon, 2 January, 1885.

<sup>72</sup> Of the three, only Heddle is included by Oldroyd as part of the 'core set' of geologists in the 'Highlands controversy'. Oldroyd, op. cit. (fn. 63), 347-8. For biographical information on Gordon, Stables and Joass, see M. Collie and J. Diemer, *Murchison in Moray: A geologist on home ground*, Philadelphia, 1995.

<sup>73</sup> M. I. Newbigin and J. S. Fleet, *James Geikie: the man and the geologist*, Edinburgh, 1917, 20.

<sup>74</sup> Newbigin and Fleet, op. cit. (fn. 73), 71.



member of the PSNS, had continued his involvement as a corresponding member on moving to Cirencester to take up the position of Professor of Natural History at the Royal Agricultural College. Harker published two papers in the *Proceedings* of the PSNS on invertebrate zoology but contributed no further articles between 1886 and his death, aged 47, in 1894.<sup>75</sup> Trail, also a corresponding member, was more involved, contributing a total of six papers to the Society publications between 1881 and 1895. Trail was the academic naturalist most involved with Scottish natural history societies in the nineteenth century. As a 'professional scientist' he continually championed natural history societies and the sort of natural historical practices that they supported. He was the author of 41 papers published by several Scottish natural history societies between 1878 and 1919 and was a member of at least six.<sup>76</sup> His work as Editor of the *Scottish naturalist* between 1882 and 1891 allied him closely with naturalists' societies, and, as detailed below, his involvement in the East of Scotland Union of Naturalists' Societies prompted him to call, in 1907, for a Scotland-wide federation.<sup>77</sup>

While the input and influence of the 'professional scientist' in the three societies compared was important it was not as crucial as might have been expected. Of the 183 papers reviewed here, 28, or 14%, were by the nine professional scientists identified. Geikie, Horne and Scott-Elliot were all involved in the general running of the societies and each was, at one time, President of his respective society.<sup>78</sup> Given the relative paucity of professional posts in natural history and, more especially, in archaeology, and the fact that all three societies compared here were based in towns without universities, the contributions made by members in salaried scientific posts would not be expected to be as numerous as those societies with close links to universities.

Comparing the *Transactions* or *Proceedings* of the three societies to the publications of the Natural History Society of Glasgow (NHSG) and the Aberdeen Natural History Society (ANHS) gives some indication of the difference having closer links to a University could make. Of the fifteen papers published in the first two volumes of *Transactions*

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<sup>75</sup> J. Morison, 'Obituary notice of Prof. Allen Harker', *Proceedings of the Perthshire Society of Natural Science* (1895), 2, 47.

<sup>76</sup> This information is taken from the bibliography of Trail's publications which appears in J. W. H. Trail, *James William Helenus Trail. A memorial volume*, Aberdeen, 1923, 33-55.

<sup>77</sup> J. W. H. Trail, 'Wanted – the Natural History Society of Scotland', *Annals of Scottish natural history* (1907), 16, 1-9.

<sup>78</sup> Scott-Elliot was President of the DGNHAS from 1902-09.

published by the ANHS in 1878 and 1885, eight were authored or joint-authored by James W. H. Trail. Over the same period Trail was President of the Society and James Nicol, Professor of Natural History at the University of Aberdeen was vice-President until his death in 1879. The imprint of 'professional scientists' was less obvious in the publications and organising of the NHSG, a fact explained in part by its size (310 members in 1890). Nevertheless, members with salaried scientific posts were conspicuous. In 1886, for example, the President was James Stirton, Lecturer in Mid-Wifery at Glasgow Infirmary and one of the three Vice-Presidents was Thomas King, Lecturer in Botany at the Glasgow and West of Scotland Technical College. Thirteen of the 64 papers in Volumes 2 and 3 (new series) of the *Transactions of the Natural History Society of Glasgow*, were by authors who could be described as 'professional scientists', a somewhat higher proportion than the three provincial societies considered above.

Given the heterogeneity of publishing members, the scientific output of Scottish natural history societies is difficult to explain in terms of an overarching and shared project or goal. The societies can be understood, that is, 'as a question of local geographies of scientific and civic enterprise'.<sup>79</sup> Yet it was also the case that these 'local geographies' were influenced by a number of initiatives instigated in the 1880s and 1890s to persuade provincial societies to adopt research subjects and strategies defined elsewhere. It is to these efforts to centralise and standardise the work of the societies that the following section turns.

## Regional rivals and national science

By the late nineteenth century, voluntary associational activity in general was marked by moves to rationalise, consolidate and federate. In Scotland, the creation of four regional federations of political associations in 1876-7 to advise and inform local associations, particularly at election time was one example.<sup>80</sup> Attempts to organise late-Victorian philanthropic endeavour along systematic lines and encourage co-operation between

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<sup>79</sup> C. W. J. Withers, *Geography, science and national identity: Scotland since 1520*, Cambridge, 2001, 201.

<sup>80</sup> I. G. C. Hutchison, *A political history of Scotland, 1832-1924: parties, elections and issues*, Edinburgh, 1986, 145-6

institutions was another.<sup>81</sup> The desire to create regional or national associations that offered guidance on the running of local voluntary organisations was evident among the more active members of local natural history societies. The history of the creation of federations of British natural history societies has been documented by others.<sup>82</sup> The first such body, the Yorkshire Naturalists' Union (YNU), originally named the West Riding Consolidated Naturalists' Society, was formed in 1861 and, by 1883, had 38 societies affiliated.<sup>83</sup> Meeting annually in different locations and producing a regular publication, the YNU has been described as a regional 'replica' of the British Association for the Advancement of Science.<sup>84</sup> In 1879, a second federation, the Midland Union of Natural History Societies, was instituted. By the end of the century, there were at least eight regional federations of scientific societies in Britain and Ireland.<sup>85</sup>

Moves to rationalise and, in some measure, centralise the activities of local scientific societies were delicate operations. As with those involved in organising political federations and philanthropic endeavour, naturalists concerned to standardise and co-ordinate the *ad hoc* nature of voluntarism had to take account of the need to preserve the independence of local bodies. Directions offered from a 'non-local' institution were sometimes unpopular given the importance placed on associational natural history as an expression of civic pride. Opposition to the suggestion made by a sub-committee of the British Association for the Advancement of Science was one example. To prevent the results of local investigations by field clubs from being 'lost to science' the committee

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<sup>81</sup> O. Checkland, *Philanthropy in Victorian Scotland*, Edinburgh, 1980, 314-16.

<sup>82</sup> S. J. M. M. Alberti, 'Amateurs and professionals in one county: biology and natural history in Late-Victorian Yorkshire' *Journal of the history of biology* (2001), 34, 115-47; D. E. Allen, *Naturalist in Britain*, 170-2, *ibid.*, 'The natural history society in Britain through the years', *Archives of natural history* (1987), 14, 243-59; P. D. Lowe, 'Amateurs and professionals: the institutional emergence of British plant ecology', *Journal of the Society for the Bibliography of natural history* (1976), 7, 517-35. P. D. Lowe, 'The British Association and the provincial public' in P. Collins and R. MacLeod, *The parliament of science*, Northwood, 1981, 118-44; D. M. MacLeod, J. R. Friday and C. Gregor, *The corresponding societies of the British Association for the Advancement of Science, 1883-1929*, London, 1975.

<sup>83</sup> Lowe, *op. cit.* (fn. 82), 'Amateurs and professionals', 518-19.

<sup>84</sup> Lowe, *op. cit.* (fn. 82), 'The British Association', 132.

<sup>85</sup> Along with the YNU and the MUNHS, these included East Anglia Natural History Societies (1898); the East of Scotland Union of Naturalists' Societies (1884); Irish Field Club Union (1894); Lincolnshire Naturalists' Union of Scientific Societies (1896); Northern Association of Literary and Scientific Societies (1887); South-Eastern Union of Scientific Societies (1896). See Lowe, *op. cit.* (fn. 82), 'Amateurs and professionals', p. 519. Both Lowe and Allen (*op. cit.* (fn. 82), 'The natural history society through the years') do not include the Northern Association in their list.

proposed an annual publication for the best papers of British provincial scientific societies.<sup>86</sup> According to Walter Elliot, the sub-committee Chair, 'some of the leading societies, especially those of which the Transactions have attained some celebrity, object to the proposal, as tending to detract from the value of their own publication'.<sup>87</sup>

Despite the rejection of some aspects of its early proposals, the British Association went on to organise a large scale project designed to effect co-operation among provincial scientific societies and provide scientific leadership. Beginning in York in 1881, the Association made a concerted effort to enrol the support of local scientific societies and offer ways of organising, directing and recognising their scientific work. In 1883, a Committee chaired by Francis Galton circulated a report carrying recommendations for an initiative to formalise communication between the BAAS and local societies. The Final Report, which, according to the account given of it in *The Scottish naturalist*, had the 'general approval of the scientific opinion of Great Britain' made it possible for a local scientific society to apply to the British Association to become a Corresponding Society.<sup>88</sup>

Obtaining the title meant, in theory at least, wider recognition of a society's scientific work. A Conference of Corresponding Societies, to be held during the Association's annual meeting, and publication of titles of papers read at provincial society meetings in the annual *Report* of the BAAS, was intended as a way of increasing co-operation and encouraging greater levels of scientific activity. A Corresponding Society, by nominating a member to represent them on the General Committee of the British Association, could also share in the running of the Association itself. All such benefits would allow the British Association to become 'an organising centre' for the scientific investigations of local societies to achieve 'permanent value' and 'stimulating societies to greater activity'.<sup>89</sup> The Final Report was careful to stress, however, that alongside the 'influence in harmonising the action of [the] societies' the initiative would not 'in any

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<sup>86</sup> W. Elliot 'On the advantages of systematic co-operation among provincial natural history societies', *Report of the British Association for the Advancement of Science* (1871), 124-5. W. Elliot, 'Subcommittee C: On the question of scientific organization as regards local scientific societies', *Report of the British Association for the Advancement of Science* (1873), 506; 509.

<sup>87</sup> Elliot, op. cit. (fn. 86), 'Subcommittee C', 509.

<sup>88</sup> Anon., 'On the relation of the scientific societies of Britain to the British Association, and on the best means of giving a more permanent value to the work of these societies', *Scottish naturalist* (1884), 7, 145-49.

<sup>89</sup> Anon., op. cit. (fn. 88), 145.

way tend to compromise their independence'.<sup>90</sup> Indeed, evidence of independent initiative was one of the criteria for eligibility, provincial societies only being allowed to join if they published results of local scientific investigations.

Both Lowe and Allen argue that the Conference of Corresponding Societies was created as a response to the popularity enjoyed by the annual meetings of regional federations of natural history societies. The federations, in other words, were viewed as 'regional rivals' and the BAAS, looking to regain local support lost during the 1870s, needed to find ways of appealing to the institutions of provincial science. This needs to be qualified in the case of Scottish federations. The first formal federation of Scottish scientific societies, the East of Scotland Union of Naturalists Societies (ESUNS), was proposed after the Report on the Corresponding Societies initiative had been circulated. In the *Scottish naturalist*, the manifesto for the ESUNS appeared directly after a detailed introduction to the Corresponding Society scheme, and described the proposed regional Union as 'closely akin to the proposals discussed by the Committee of the British Association ... , and intended to promote the same end'.<sup>91</sup> In general, the instigators of the ESUNS – chief among them Francis Buchanan White – were careful to portray the ESUNS as a supplement and complement to the BAAS.

There were signs, however, that the ESUNS was created partly as a response to the apparent neglect of Scottish biology or geology noted in the proceedings of the Southport meeting of the BAAS in 1883. A report of the meeting in the *Scottish naturalist* noted that 'it can hardly be said that there were any subjects ... of a nature specially interesting to Scottish students of science'.<sup>92</sup> Tensions between the BAAS and regional federal activity were also evident among other Scottish societies. At the 1884 meeting of the scientific and literary societies held in Nairn the suggestion of John Struthers, Professor of Anatomy at the University of Aberdeen, that the next meeting should be held in Aberdeen in conjunction with the meeting there of the British Association was rejected. Rather than being dictated by the agenda and timetable set by the BAAS Dr. Thomas Aitken, Superintendent of the Inverness Asylum, 'urged that the

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<sup>90</sup> Anon, op. cit. (fn. 88), 149.

<sup>91</sup> Anon, 'Federation of the Natural History Societies in the East of Scotland', *Scottish Naturalist* (1884), 7, 149.

<sup>92</sup> Anon, 'British Association meeting at Southport', *Scottish Naturalist* (1883), 7, 129.

joint meeting should be held as usual'.<sup>93</sup>

Although a certain rivalry was felt between the institutions of Scottish provincial science and the BAAS, a number were willing to participate in the Corresponding Societies scheme. In 1887, Dr. Thomas Aitken, despite his opposition to a combined meeting of the Northern societies and the British Association, was the Inverness Scientific Society and Field Club delegate to the BAAS.<sup>94</sup> The presence of Scottish societies among the Corresponding Societies in 1887 is indicated by Figure 6.4, with Scottish societies making up 26% of the total membership (17,982). This figure does not, however, accurately indicate the participation of natural history societies with a sizeable proportion of the Scottish membership (4475) being made up of members of the Glasgow Philosophical Society (729 members) and the Royal Scottish Geographical Society (1102 members). In addition, the 320 members of the Perthshire Society of Natural Science (PSNS) were counted twice, being included in the 1152 members of the ESUNS. The other natural history societies represented were the Dumfriesshire and Galloway Natural History and Antiquarian Society, the Inverness Scientific Society and Field Club and the Natural History Society of Glasgow. The geological societies of Edinburgh and Glasgow were also members.

The ESUNS, as the largest Society representing natural history work being done in Scotland, provided an institutional context for the reiteration of BAAS directives on what might constitute useful and appropriate scientific work for provincial societies. At the 1889 meeting of the Union in Alford, Professor James Trail submitted a paper on 'the work of the British Association in 1889 in relation to Scottish scientific societies'.<sup>95</sup> Coming after a lengthy report by the Union's delegate to the British Association of the Association's meeting in Newcastle, Trail's paper included details of a circular containing a list of 18 BAAS research projects to which provincial societies might contribute. In terms of the scientific work of individual societies, however, there is little evidence that the Conference of Corresponding Societies had a significant impact. Apart from one or two exceptions, the reports of society delegates to the Conference of

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<sup>93</sup> Anon, 'Meeting of the scientific societies at Nairn', *Transactions of the Inverness Scientific Society and Field Club* (1884), 3, 63-4.

<sup>94</sup> See *Report of the British Association for the Advancement of Science* (1887), 459.

<sup>95</sup> J. W. H. Trail, 'On the worth of the British Association in 1889 in relation to Scottish Scientific Societies', *Proceedings of the East of Scotland Union of Naturalists' Societies* (1889), 68-78.

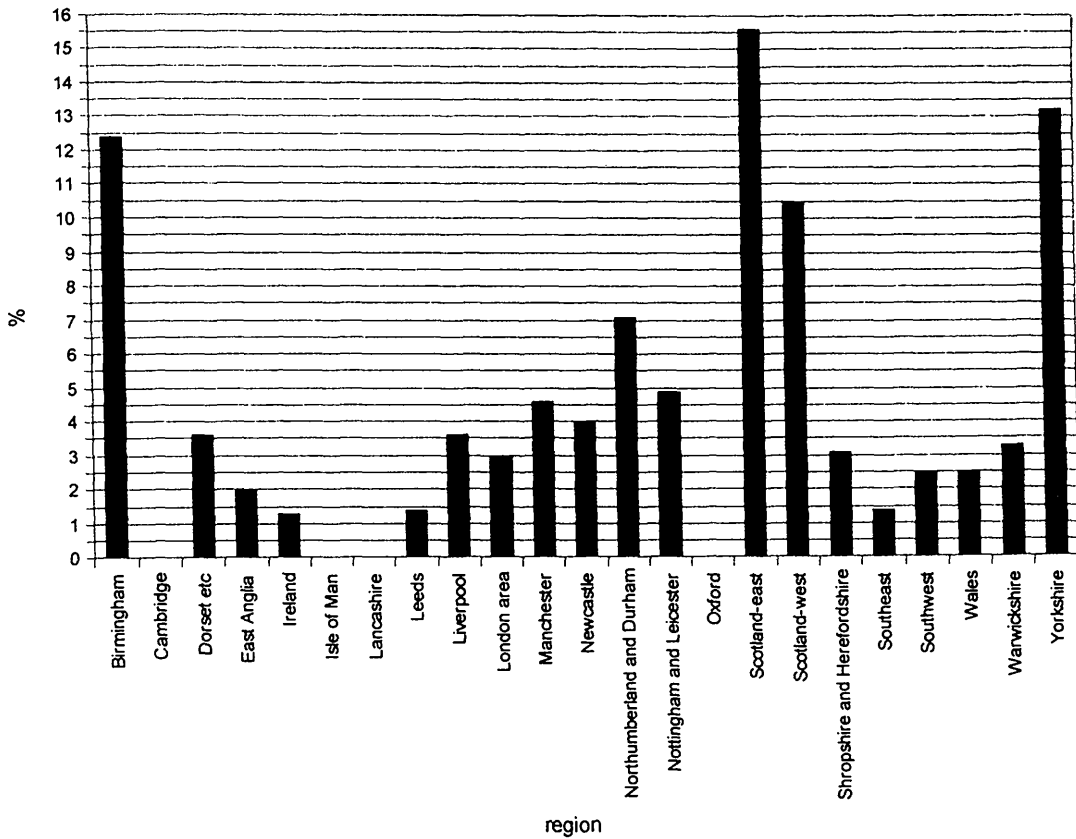


Figure 6.4. Membership of the Corresponding Societies of the BAAS by region in 1887. Source for data: D. M. MacLeod, J. R. Friday and C. Gregor, *The corresponding societies of the British Association for the Advancement of Science, 1883-1929*, London, 1975, 140-1.

Corresponding Societies were indicated in published proceedings by title only.

In terms of generating co-operation and offering scientific leadership the ESUNS did not succeed where the BAAS failed.<sup>96</sup> Founded in 1884, it met annually until 1895. Although the Kirkcaldy Naturalists' Society continued to elect representatives to the ESUNS Council until 1899, the Minute Book of the Union stops after a report of an AGM at Perth in November 1895.<sup>97</sup> While it issued annual *Proceedings* reprinted from the *Scottish naturalist* between 1884 and 1890, and produced one volume of *Proceedings* for the years 1891-1895, it did not provide the stimulus and increased activity originally hoped for. Nevertheless, its demise did not signal the end of a federal impulse in

<sup>96</sup> I am grateful to Mike Taylor, Head of Arts and Heritage, Perth and Kinross Council for allowing me to see his unpublished paper on the ESUNS. M. A. Taylor, 'The East of Scotland Union of Naturalists' Societies: a study in failure', Unpublished paper.

<sup>97</sup> See J. B. Bease, *Kirkcaldy Naturalists' Society: full ninety years and more*, vol. 1., Kirkcaldy, 1975, 66 and Perth Museum and Art Gallery (PMAG hereafter), Minutes of the East of Scotland Union of Naturalists' Societies, 30 November, 1895.

Scottish provincial science, and even while the ESUNS Council was struggling to obtain membership fees from most of its affiliated societies calls for a Scotland-wide federation were being issued.<sup>98</sup>

The Northern Association of Literary and Scientific Societies (NALSS) was another indication that federative endeavour continued to be a significant part of Scottish provincial science. Originating in 1881 as an annual meeting of literary and scientific societies held at different towns in north east Scotland, NALSS held its first meeting as a formal body at Huntly in 1888.<sup>99</sup> Like an 1866 proposal, never acted upon, to form in Glasgow an association of arts, philosophical and scientific societies active in the city, the meeting of literary and scientific societies in the north east was concerned with encouraging co-operation among societies embracing a wide range of intellectual and cultural endeavour.<sup>100</sup> Two of the societies involved in the Association, the Gaelic Society of Inverness and the Nairn Literary Institute, were not explicitly scientific societies. In terms of defining the region that the federation looked to as its own, the constitution stated that: 'Every scientific society and field club in the counties of Aberdeen, Banff, Elgin, Nairn, Inverness, Ross, Sutherland, Cromarty, Caithness, and Orkney and Shetland will be eligible for membership of the Association'.<sup>101</sup> This meant that members of the Edinburgh Naturalists' Field Club, the Edinburgh Geological Society and the Kirkcaldy Naturalists' Society, who had attended a number of the Northern meetings in the 1880s, were not eligible for membership. Significant overlap nevertheless remained with the geographical territory associated with the ESUNS. The Aberdeen Natural History Society and the Alford Field Club were two Aberdeenshire societies that held membership of both the ESUNS and the NALSS. James Trail personified this overlap being Editor of the *Proceedings* of the ESUNS and President of the NALSS in 1889.

As well as occupying different but overlapping geographical territories, the two regional federations inhabited different but overlapping intellectual terrain. These differences

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<sup>98</sup> PMAG, Minutes of the ESUNS, 3 June, 1893.

<sup>99</sup> Anon, 'Joint meeting at Huntly', *Transactions of the Inverness Scientific Society and Field Club* (1888), 3, 407-08. The NALSS was active until at least 1911. See *Transactions of the Inverness Scientific Society and Field Club* (1911), 7, 251-59.

<sup>100</sup> ML, TD1408/1/5/1.

<sup>101</sup> Anon, 'Constitution', *Transactions of the Northern Association of Literary and Scientific Societies* (1888), 1.



may have been behind the criticism made of the joint meeting of the Northern societies in the manifesto of the ESUNS. Commenting that ‘the ties uniting the societies [meeting in the North] have been very loose’, the authors stated that a ‘closer bond of union’ would mark the gatherings of the East of Scotland societies. In intellectual terms it was true that the Northern meetings were characterised by a catholicity that reflected the nature of the societies that participated. Figure 6.5 shows the number of papers by subject given to the joint meetings of northern literary and scientific societies between 1881 and 1899. This compared to the dominance of botanical and the dearth of archaeological and geological papers contributed to the meetings of the ESUNS between 1885-1895. The geological focus of the NALSS may be partly explained in relation to the ‘professional scientists’ involved. Of the eight professional scientists contributing 16% of the papers given to the NALSS, five were members of the Geological Survey and the other, J. G. Goodchild, was the curator of the Geological Survey’s collection in the Edinburgh Museum of Science and Art.

It was as much in relation to each other as in relation to the British Association that the regional federations of scientific societies active in late-Victorian Scotland can accurately be described as ‘regional rivals’. In terms of longevity at least, the NALSS was arguably the more successful of the two Scottish federations (it continued until 1911). The scope given to members to follow their own interests rather than, as with the ESUNS, calling for work on a more circumscribed set of research projects may have helped the NALSS survive longer. The lower membership fees may also have been a factor. The former explanation tallies with David Allen’s suggestion that regional and national federations of scientific societies in the late-nineteenth-century, in trying to tidy up an associational scene ‘in all its sprawl and clutter’, were driven by a ‘unitary fallacy’.<sup>102</sup>

The ‘success’ of the NALSS raises questions for the dominant interpretation of the so-called rationalisation of the organisation of late-nineteenth-century British provincial science. This process has largely been explained in relation to the need for institutional mediation between the increasing number of professional scientists and amateur naturalists. The regional federations are interpreted by Alberti as part of moves among members of natural history societies to increase the scientific standing of their

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<sup>102</sup> Allen, *op. cit.* (fn. 82), 256.

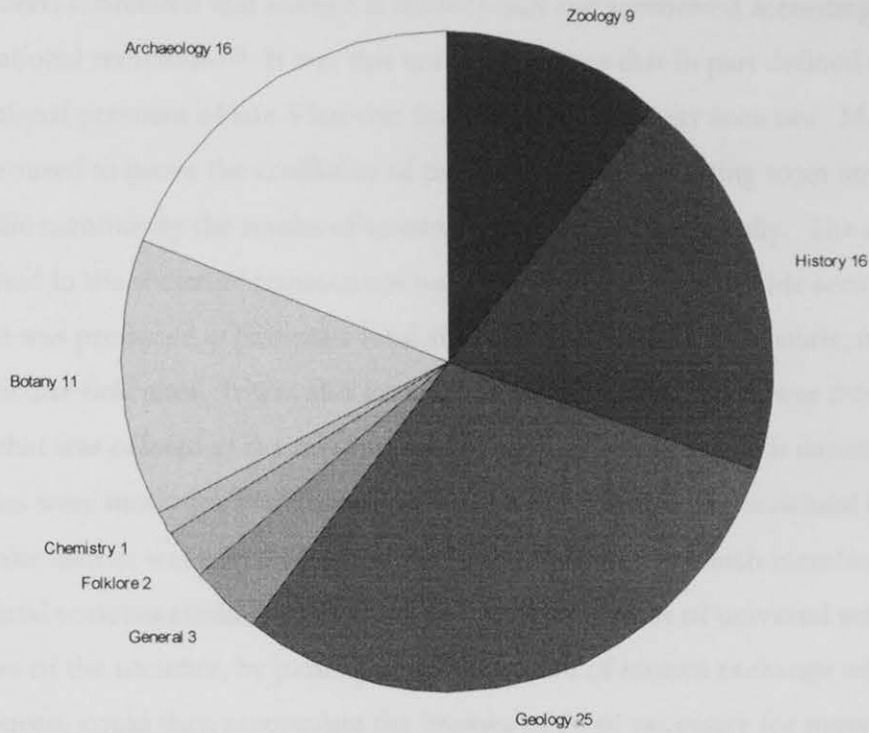


Figure 6.5. Number of papers by subject given at the meetings of the NALSS 1881-1899. Source: *Transactions of the Inverness Scientific Society and Field Club (1881-1889)*, 2-5.

investigations in ways that allowed amateurs and professionals to collaborate. Likewise, the Corresponding Societies initiative has been seen as a move supported by professional scientists who, by the 1880s, had come to dominate the direction of the BAAS. The initiative provided, argues Lowe, ‘a new accommodation between the professional leadership of science and its large amateur following’.<sup>103</sup> While the relations between professional and amateur were no doubt influential, there is a risk of missing other reasons why particular societies choose to federate. The NALSS, as a largely amateur-led endeavour, was less concerned with meeting the expectations of professional scientists than with the cultural and social benefits of joint meetings.

<sup>103</sup> Lowe, *op. cit.* (fn. 82), ‘The British Association’, 132.

## Summary and conclusion

It has been contended that science is made locally but scrutinised according to transnational standards.<sup>104</sup> It was this image of science that in part defined the institutional practices of late-Victorian Scottish natural history societies. Members endeavoured to prove the credibility of their societies by reporting to an international scientific community the results of scientific work carried out locally. The science published in the societies' transactions was, however, local in a double sense. At a basic level, it was produced *at* particular local sites whether in the private study, museum, or at particular field sites. It was also knowledge *of* a given locality. It was this second sense that was offered as the reason why the publications of Scottish natural history societies were useful for scientific practitioners. Knowledge of the natural history of a particular district was regarded as the most beneficial way in which members of provincial societies could contribute to the general progress of universal science. The libraries of the societies, by participating in a system of mutual exchange with other institutions, could then accumulate the 'masses of facts' necessary for more general scientific advance. Participating in extensive networks of publication exchange was necessary to avoid the charge of being 'mere mutual improvement associations'.<sup>105</sup>

The relationships between publishing members and the scientific reputation of their societies varied in ways not straightforwardly related to a division between the 'professional' and 'amateur' scientist. A number of members, for example, had occupations that were somewhere between the 'professional' scientist and 'amateur' naturalist. Joseph Armistead of Solway Fisheries and James Gossip, an Inverness nurseryman, for example, both occupied this borderland. Some members, not all 'professional' scientists, saw their scientific reputation as largely independent of their involvement in a local natural history society. Others saw their local society as an opportunity to establish themselves as naturalists of repute. Most were professionals in terms of occupation and their scientific authority was constituted in part through their individual careers.

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<sup>104</sup> L. Pyenson, 'An end to national science: the meaning and the extension of local knowledge', *History of science*, **40**, 251-90.

<sup>105</sup> Francis Buchanan White worried that this could be the fate of the PSNS. F. B. White, 'President's address', *Proceedings of the Perthshire Society of Natural Science* (1886), **1**, 6.

Efforts to standardise and rationalise the work of societies foundered in part because of the difficulties of organising such a diverse scientific ‘workforce’. The more successful co-operative initiatives were those which left decisions about the most appropriate scientific research to the leadership of local societies. This fact did not prevent ambitious proposals for co-operation at a national level. At the same time as an increase in traffic across national boundaries by way of publication exchange, efforts were made to encourage projects carried out at a national scale. Although a Scotland-wide federation never materialised those behind the East of Scotland Union of Naturalists’ Societies had intended that such a national body eventually emerge. The efforts of others to undertake Scotland-wide oceanographic, bathymetric and botanical surveys from the late 1890s was an indication of the increased profile of national scientific endeavour.<sup>106</sup> Scottish natural history societies, with their concern to map the natural history of given regions, were well placed to be enrolled in attempts to provide a complete scientific survey of the nation.

The organisation of the scientific knowledge produced by members of Scottish natural history societies was not only, then, a matter of local sites and global norms. It included a national dimension not only in terms of the territory explored but also the institutions involved in supporting national scientific endeavour. Yet while such matters of organisation were important, the science of nineteenth-century Scottish natural history societies was also shaped by other concerns. The emergence of scientific disciplines meant that societies could contribute to one or several departments of knowledge. Yet particular projects demanded expertise in a variety of specialities. As such, they involved co-operation arranged on a more *ad hoc* basis than that forged by regional federations. Coming to terms with changes in scientific theory was an additional challenge for members concerned with maintaining the scientific standing of their societies. By examining such issues, the next chapter offers additional reflections on the ‘scientific’ ambitions that shaped the activities of nineteenth-century Scottish natural history societies.

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<sup>106</sup> Withers, *op. cit.* (fn. 79), 210-25.

## Chapter 7

### Field club science: specialisation, induction and grand theory

This thesis has argued that natural history societies were shaped simultaneously by an overriding aim to interest local publics and contribute to science. Yet we know little as to whether or not members kept both a local and scientific constituency equally in mind when reporting the results of their research or pursuing and supporting a particular scientific project or theory. This chapter, in continuing the claims explored in Chapter 6, further examines the scientific ambitions of members of Scottish natural history societies and places such aspirations in particular scientific and social contexts. In so doing the intention is not to ignore the ways in which the ‘dry facts’ of the societies’ science were modulated by the desire to maintain local support. Rather, by looking more closely at how members worked to establish the scientific reputation of their societies, a more specific set of negotiations between social and scientific agendas is brought into view. At the same time the distance that could open up between the work of the members to present their societies as significant bodies in local civil society, (Chapters 3 to 5) and their efforts to offer work that was scientifically credible, (Chapter 6), is further highlighted here.

The chapter is divided into three sections. The first deals with the relationship between Scottish natural history societies and scientific ‘disciplines’. This discloses something of the geography of disciplinary affinities as manifested by the scientific activities of society members. The section aims to show that local contingencies and individual interests meant the scientific pursuits of society members tended to cluster around certain natural history ‘departments’. So the Natural History Society of Glasgow, for example, is shown to have been, up until 1883, an important local centre for ornithological research. Examining such ‘dominant interests’ in the light of wider disciplinary contexts allows the scientific ambitions of the societies to be further situated in the world of mid- to late-Victorian scientific endeavour. Section two, focuses on one particular scientific project, namely the investigation of the Clava shell beds near Inverness. This shift in focus is designed to show that while the relationship between Scottish natural history societies and the making of particular scientific disciplines was

important the pragmatics of certain research projects entailed the transgression and re-drawing of disciplinary, institutional and social boundaries. The final section, turning from the specificities of a particular field project, examines the multiple ways in which Darwinism was employed and represented by Scottish natural history societies. Studying the reception of a body of scientific theory associated with a particular set of inquiries underlines connections members of the societies made between scientific praxis and cultural concerns. That is to say, although Darwinism, understood as a set of investigative practices as much as a body of ideas, was often used to re-affirm a commitment to separating 'science' from other sorts of interests it could also be translated into a set of discourses that reinforced particular social and religious aspirations.

## Disciplinary histories

The role of Victorian natural history societies in the specialisation of scientific knowledge and the formation of particular disciplines has been signalled by others.<sup>1</sup> The early history of ecological studies in particular has been presented as one shaped by co-operation between amateurs and professionals; alliances supported by local field clubs and scientific societies. In contributing to a scientific research programme, 'amateurs' conferred upon their societies a greater degree of scientific respectability. 'Professionals' concerned with mapping plant associations across extensive areas required a large army of volunteers. The set of intellectual and practical imperatives associated with ecological mapping were thus defined in part through the large numbers of local society botanists already skilled in locating, naming and cataloguing regional flora.

Philip Lowe, in his study of the relations between field clubs and regional surveys of plant associations, has argued that natural history societies provided resources and an

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<sup>1</sup> For ornithology, see D. E. Allen, 'On parallel lines: natural history and biology from the late Victorian period', *Archives of natural history* (1998), 25, 361-71; For ecology, see P. D. Lowe, 'Amateurs and professionals: the institutional emergence of British plant ecology', *Journal of the Society for the Bibliography of natural history* (1976), 7, 517-35; A.S. Mather, 'Geddes, geography and ecology: the golden age of vegetation mapping in Scotland', *Scottish geographical journal* (1999), 115, 35-52; C. W. J. Withers, *Geography, science and national identity: Scotland since 1520*, Cambridge, 2001, 215.

‘alternative’ setting for the enactment of programmes of research that would give the new form of botanical mapping substance and coherence. Given the advantages of enrolling the help of scientific societies, professional biologists worked towards ‘cornering’ the associational market.<sup>2</sup> While Lowe’s account is a corrective to narrating the history of biology as one of the increasing and inexorable alienation of ‘amateurs’ the focus largely remains on how society members serviced ‘professionals’ and the scientific agendas largely set by them. More recent work has stressed the need for greater sensitivity to the contingent and unstable nature of the categories ‘professional’ and ‘amateur’ focusing attention on the local contingencies that in part defined how, and for what purposes, such labels were used.<sup>3</sup>

Ecology as a distinct discipline and set of practical procedures, emerged at the end of the nineteenth century. David Allen has directed attention to a number of other ‘disciplines’ that were marked by the continuing involvement of non-professionals or non-academics in an earlier period. Ornithology and marine biology were, for Allen, areas of research that retained significant ‘popular’ appeal.<sup>4</sup> While Allen focuses rather more on individuals than institutions, his work nevertheless suggests that the societies remained an important context for the development of disciplines apparently more hospitable to the ‘non-professional’. Members of natural history societies could, in other words, employ research practices that remained valuable to the specialist in marine biology or ornithology.

As Allen argues, ornithology in particular, as the non-utilitarian science *par excellence*, was of interest to a large and inclusive research community despite a struggle to secure public funds and academic recognition.<sup>5</sup> This did not mean, however, that there were no institutions supporting work in ornithology or a lack of efforts to define what counted as scientifically useful ornithological research. While ornithology did not receive the same academic attention given to botany and geology, the founding of the British Ornithologists’ Union (BOU) in 1858 and support from the British Association (particularly from 1880) provided the subject with institutional backing.<sup>6</sup> Sportsman and

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<sup>2</sup> Lowe, *op. cit.* (fn. 1), 532.

<sup>3</sup> See footnotes 47-49, Chapter 6, p. 175.

<sup>4</sup> D. E. Allen, *The naturalist in Britain*, London, 1976, 207-43; Allen, *op. cit.* (fn. 1).

<sup>5</sup> Allen, *op. cit.* (fn. 3), 214.

<sup>6</sup> Harvie-Brown’s migration studies of birds was given support by the formation of a British

gentleman ornithologist John Alexander Harvie-Brown and museum curator William Eagle Clarke were among the chief architects of the promotion of ornithology through the BOU and in the British Association and both were central in efforts made to support the study of ornithology in Scotland.<sup>7</sup>

While individuals like Harvie-Brown – corresponding with a large and scattered community of ornithologists and lobbying for scientific studies of birds through the BOU and in the British Association – constituted one ‘centre’ for Scottish ornithological research, local societies also provided assistance.<sup>8</sup> The Natural History Society of Glasgow (NHSG) was, until 1883 at least, an important local centre of Scottish ornithological research. Between 1858 and 1883 25 per cent of all papers published (in summary or in full) by the Society dealt with ornithological subjects. The majority were supplied by Harvie-Brown and the banker, Robert Gray. A smaller number of papers were written by local landowner James Lumsden and city art dealer William Craibe Angus.<sup>9</sup> Almost from its inception the Natural History Society of Glasgow was effectively a zoological society with little botanical work done by members.<sup>10</sup> The botanical papers that were published, rather than reports of the floristic mapping of local flora, consisted of observations on the effect of weather on the vegetation in Glasgow’s public parks. Palaeontology, entomology and marine zoology all received significantly more attention particularly through the work of John Young, Peter

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Association Committee set up to obtain and assess observations contributed by lighthouse keepers. Less has been written about the history of British ornithology after 1850 than for the earlier period. For a general overview of the period prior to 1850, see P. L. Farber, *The emergence of ornithology as a scientific discipline*, Dordrecht, 1982. On individual ornithologists in Scotland pre-1850, see J. Chalmers, *Audubon in Edinburgh and his Scottish associates*, Edinburgh, 2003.

<sup>7</sup> William Eagle Clarke became an assistant to Ramsay Traquair, Keeper of the natural history collections in the Edinburgh Museum of Science and Art in 1888. He also co-edited with Harvie-Brown the *Annals of Scottish natural history* (previously the *Scottish naturalist*) from 1891. Anon, ‘William Eagle Clarke’, *Ibis* (1939), 2, 248-54.

<sup>8</sup> For a record of Harvie-Brown’s substantial correspondence, see J. Pitman, *Manuscripts in the Royal Scottish Museum Edinburgh, part 3: J. A. Harvie-Brown papers*, Edinburgh, 1983.

<sup>9</sup> On Lumsden, see J. Mitchell, ‘James Lumsden: a late 19<sup>th</sup>-century bird recorder’, *Clyde birds* (1998), 10, 144-45. His obituarist in the *Lennox Herald*, (3 June, 1911) noted that Lumsden had inherited land from his father, businessman and former Lord Provost of Glasgow, and ‘followed the ideal of the country gentleman in a model way’. I am grateful to Graham Hopner, Information Service Librarian, West Dunbartonshire Council, for providing these references. William Craibe Angus is listed as an art dealer in the *Glasgow Post Office directory*, Glasgow, 1886.

<sup>10</sup> In this sense the NHSG mirrored the work of the Royal Physical Society of Edinburgh which also published a disproportionate number of papers on zoology (a number of which were by Harvie-Brown).



Cameron and David Robertson respectively.<sup>11</sup> This zoological focus culminated in a series of longer papers that aimed to catalogue Scotland's fauna.<sup>12</sup> Yet despite the range of zoological interests among members, between 1858 and 1883 the number of papers on ornithology (67) far exceeded the number on the next most popular zoological subject, entomology (41).<sup>13</sup>

The geography of institutional support for ornithology in Scotland did not remain fixed. The period after 1883 saw a marked decline in the number of papers on the subject published by the NHSG with only 13 appearing in the Society's *Transactions* between 1883 and 1896. The subjects dominating proceedings after 1883 included marine and freshwater biology and botany. Robert Gray's move to Edinburgh in 1875 and the resignation of Harvie-Brown and James Lumsden after an internal dispute about the Society's constitution in 1883 (see Chapter 3, pp. 62-4) both contributed to a growing neglect of ornithology. After the appointment of William Eagle Clarke as assistant keeper of the natural history department of the Edinburgh Museum of Science and Art in 1888 Edinburgh became the major centre for Scottish ornithological research. Provincial Scottish natural history societies were unable to provide the kind of contributions previously made by members of the NHSG. The Perthshire Society of Natural Science, although including among its members a former President of the BOU, Colonel Drummond Hay, concentrated on the ornithology of Perthshire. Although much was done to create a complete collection of Perthshire birds for the museum, ornithology received less support than might have been expected in terms of papers in the Society's publications. The first volume of the Society's *Transactions* was dominated by work on local botany and geology. Although the second volume included nine papers on ornithology, most were short 'popular' pieces rather than contributions shaped by the research agendas of the BOU and the British Association.

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<sup>11</sup> John Young was Assistant Keeper in the Hunterian Museum, Robertson was, for some of the period at least, a shopkeeper and Peter Cameron was a junior clerk. For Young and Robertson, see P. Macnair and F. Mort, *History of the Geological Society of Glasgow, 1858-1908*, Glasgow, 1908. For Cameron, see G. H. Findlay, *Dr Robert Broom, F.R.S. Palaeontologist and Physician, 1866-1951. A biography, appreciation and bibliography*, Cape Town, 1972, 3.

<sup>12</sup> These appeared at the back of volumes of the Society's *Proceedings* the last being E. L. Alston's list of mammalia and D. Robertson's list of ostracoda (minute aquatic crustaceans) which appeared at the back of volume 4 (1878-1880).

<sup>13</sup> These are necessarily fairly rough estimates that do not include papers that are recorded in the *Transactions* and *Proceedings* by title only. Some papers, of course, combined different 'disciplines' and are not easily categorised.

The sporadic nature of contributions to ornithological research made by Scottish natural history societies was, for some, symptomatic of a neglect of local zoological research more generally. Summarising the work of the Inverness Scientific Society and Field Club in 1896, schoolteacher Thomas Wallace noted that ‘the birds, fishes, insects, molluscs, reptiles, and wild animals [of the district] had yet to be caught, caged, and labelled’.<sup>14</sup> The Secretary of the Kirkcaldy Naturalists’ Society noted in 1891 the lack of attention to zoological subjects by members and invited Harvie-Brown to give a lecture on birds as part of a larger series on zoological subjects. The series was intended, by ‘making special endeavour to secure the services of some of our leading zoologists as lecturers’, to interest members in a neglected branch of natural history.<sup>15</sup> A similar neglect of faunal studies around Aberdeen had been earlier noted by James Trail in an address to the Aberdeen Natural History Society in 1878.<sup>16</sup> While the volume of the *Transactions* of the Society in which the address appeared went some way to rectifying this, the coverage was uneven. Ornithology was not among the subjects investigated. The subsequent volume of the Society’s *Transactions*, published in 1885, contained a number of papers on zoological subjects but again ornithology was neglected. As a natural-historical pursuit well placed to retain ‘amateur’ enthusiasm the lack of attention paid to ornithology in the societies’ publications was perhaps surprising. Ornithologists did not have to compete with university practitioners. Yet academicisation in a given speciality did not necessarily exclude the participation of the ‘non-professional’ practitioner.<sup>17</sup> As attention to the reasons for the level of support of ornithology among Scottish natural history societies has suggested, factors other than the degree of competency necessary to contribute to the science of birds could be equally or more influential in determining the support given to ornithological research by members of Scottish natural history societies.

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<sup>14</sup> T. D. Wallace, ‘The 21<sup>st</sup> Anniversary’, *Transactions of the Inverness Scientific Society and Field Club* (1896), 5, 140.

<sup>15</sup> Royal Museum of Scotland, Harvie-Brown correspondence, Box 28/268, William D. Sang to Harvie-Brown, 6 November, 1890. Harvie-Brown’s paper ‘The Isle of May: its bird life and bird migration’ was read on 10 March 1891 by the Rev. John Campbell. J.B. Bease, *Full ninety years and more*, vol. 1, Kirkcaldy, 1975, 36.

<sup>16</sup> J. W. H. Trail, ‘On the progress of zoology in Aberdeen and its neighbourhood’, *Transactions of the Natural History Society of Aberdeen* (1878), 7-24.

<sup>17</sup> A good example of an ‘amateur’ who kept pace with technical developments (and equipment) in the late-nineteenth and early-twentieth century was the palaeobotanist Robert Kidston. See A. D. Boney, *Botanists and botany in the University of Glasgow, July 1704-July 1994*, Glasgow, 1994, 149.

One more obvious reason why certain societies and field clubs give less attention to zoology in general, and ornithology in particular, was the dominance of other research interests. As noted earlier, geology in particular dominated the work of several societies in the north east of Scotland. As the breakdown of the topics of papers delivered to the northern meeting of scientific and literary societies revealed (see Chapter 6, Figure 6.5), among natural historical subjects geology was by far the most popular. Such prevalence can be explained in part by the role played by John Horne and other members of the Geological Survey in setting up and supporting several of the field clubs in the north east during the 1880s. As the *Transactions of the Banffshire Field Club* put it in 1882: ‘Wherever Mr [John] Horne had been, whether it was Inverness, Banff, or Huntly, Field Clubs had sprung into existence and in every case they knew that they owed their origin to Mr Horne’.<sup>18</sup> Horne was also a prominent member of the Inverness Scientific Society and Field Club (ISSFC) while resident in Inverness (early 1880s to 1896) and the

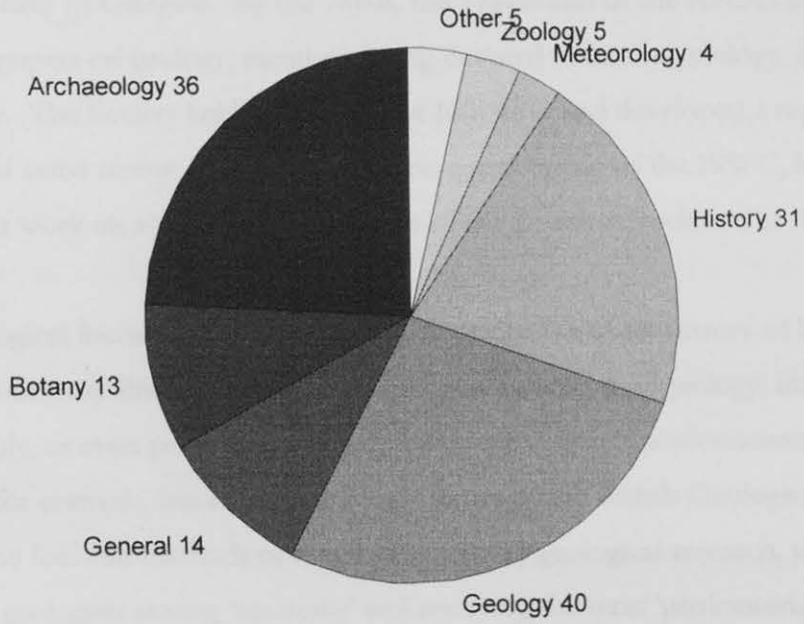


Figure 7.1. Inverness Scientific Society and Field Club: The number of published papers by subject, 1875-1899. Source: *Transactions of the Inverness Scientific Society and Field Club* (1875-1899).

<sup>18</sup> Anon, *Transactions of the Banffshire Field Club* (1881), 2, 20.

combination of his contributions and those of other local geologists meant that the published transactions, in terms of natural historical subjects, were dominated by papers on structural or glacial geology (see Figure 7.1).<sup>19</sup>

Along with the input from Horne, three other reasons can be suggested as explanations for the dominance of geology. First, the idea of forming a local scientific society in Inverness was originally suggested during a geological excursion lead by John Young, Professor of Geology at the University of Glasgow (see Chapter 2, p. 50) and the Inverness Society undoubtedly influenced in turn the work of the smaller field clubs that later emerged in the region around Inverness. Secondly, the reputation of the north of Scotland as ‘classic ground’ for geological exploration made geology an attractive option for members of the region’s field clubs. Thirdly, unlike Edinburgh and Glasgow, the north of Scotland did not have a specialist society devoted to geology despite the interest the area held for Scottish geologists. It is revealing to note that William Jolly, a prominent member of the ISSFC, on moving to Glasgow in 1881 joined the Geological Society, becoming Vice-President in 1885, but did not enrol as a member of the Natural History Society of Glasgow. By the 1880s, the *Transactions* of the NHSG contained almost no papers on geology, members being devoted to marine zoology, entomology and botany. The Society held less appeal for Jolly who had developed a reputation as a geologist of some repute not only through his membership of the ISSFC, but also through his work on a geological committee of the British Association in the 1870s and 1880s.

The geological focus of the ISSFC can be related to the wider history of late-nineteenth-century British geology. The professionalisation of geology, like ornithology, was not only, or even predominantly defined by the subject’s academicisation. David Oldroyd, for example, has stressed the importance of the British Geological Survey in defining the foci and methods of nineteenth-century geological research, including university geologists among ‘amateurs’ and reserving the term ‘professional’ for Survey

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<sup>19</sup> Horne’s contributions to the Inverness Society were celebrated at a 21<sup>st</sup> Anniversary celebration in 1896. Anon, ‘The 21<sup>st</sup> anniversary’, *Transactions of the Inverness Scientific Society and Field Club* (1896), 5, 139-44. Of the 40 papers on geology between 1875 and 1899 18 dealt with glacial geology and 9 with structural geology. Most of the rest might best be described as ‘general’ and the remaining handful as dealing with dynamical geology or petrology.

employees.<sup>20</sup> For Oldroyd, the paradigmatic example of this amateur-professional division was the relationship between the Survey Geologists and Charles Lapworth.<sup>21</sup> Lapworth, who began his career as a geologist while a schoolteacher in Galashiels, carried out important research on the Scottish North West Highlands in the 1880s while holding the Chair of Geology and Mineralogy at Mason's College, Birmingham. Nevertheless, for Oldroyd Lapworth remained an 'amateur' in the eyes of the Survey. The role of the BGS as arbiter on matters geological was such that Lapworth's 'professional' post did not appear, at least at first, to lead to recognition by the Survey geologists of his substantial interventions in accounting for Scotland's geology. The leadership of the Survey defined themselves as the authors of the appropriate scientific and professional standards necessary for the study of scientific geology.

The dominance of the Geological Survey in defining what was and was not significant geological work did not prevent members of the ISSFC from considering their work as having the potential to make significant contributions to the exploration and elucidation of Scotland's complicated geology. The *Transactions* of the Inverness Society reveal an interest in the high profile geological work of the Survey in the north of Scotland with debates about the geological structure of the Northwest Highlands of Scotland, the focus of much of the fieldwork and publications of the Scottish Branch of the Geological Survey during the 1880s, reported and commented on several times through the 1880s. While Horne offered two papers on the subject in 1885 and 1888 others not employed by the Survey also contributed to the debate.<sup>22</sup> A paper by William Jolly in 1882 expressed optimism about the input members of the Society could make to resolving the geological conundrum. Jolly, who had 'studied the subject for many years' with the aid of local geologists Alexander Ross (architect) and Alexander Stables (a factor at Cawdor), reviewed the progress on working out the succession of rocks and called on members to 'help towards the solution of this great question at their very

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<sup>20</sup> D. R. Oldroyd and B. M. Hamilton, 'Themes in the early history of Scottish geology', in N. H. Trewin (ed.), *The geology of Scotland*, London, 2002, 30.

<sup>21</sup> D. R. Oldroyd, *The Highlands Controversy: Constructing geological knowledge through fieldwork in nineteenth-century Britain*, Chicago, 1990, 217ff.

<sup>22</sup> For full account of this episode in the history of geology, see Oldroyd, op. cit. (fn. 20). Horne's papers to the Inverness Society on the subject were: J. Horne, 'The North-West succession', *Transactions of the Inverness* (1885), 3, 91-97 and *idem*, 'Geological discoveries in North-West Highlands', *Transactions of the Inverness Scientific Society and Field Club* (1888), 4, 151-58.

door'.<sup>23</sup> By so doing they could 'not only gain themselves fame, but lead to the settlement of what involved the whole problem of the geological structure of the West Highlands'.<sup>24</sup> The field club, in Jolly's account, was not only there to politely receive Horne's papers on the subject and applaud the efforts of Survey geologists. Despite Jolly's exhortations, a later summary of the history of the exploration of structure of the NW Highlands appearing in the Society's *Transactions* was offered to 'keep readers in touch with the geological discovery of the district' rather than report the Club's own involvement in the controversy.<sup>25</sup> Only by then it was clear that members had not made significant contributions to a debate largely resolved and the names mentioned were those of the professional surveyors.

Although Jolly's challenge had not been met by members of the Inverness Society his comments revealed a desire to participate in scientific work considered significant by more elite bodies. As the example detailed in the next section shows members could and did make contributions of this sort. Yet it is also interesting to note that a paper singled out at the 21<sup>st</sup> anniversary celebrations of the ISSFC as making a significant contribution to science was an article which went against the apparent grain of field club science. Members were reminded that Thomas Aitken's paper on the formation of granite, delivered in 1880, had been 'pronounced by an eminent scientific man to be the best monograph on the subject'.<sup>26</sup> The paper's detailed petrological analysis and theoretical character, relying on close observation and a specialist literature, were clearly not viewed as contributions which deferred speculative concerns to others more qualified.<sup>27</sup>

The examples of ornithology and geology demonstrate that disciplinary identity was not only defined by professional or academic practitioners but played an important role in influencing the articulation and organisation of the scientific ambitions of Scottish natural history societies. Sam Alberti, in examining the relationship between field club

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<sup>23</sup> W. Jolly, 'The succession of rocks in the North-West Highlands', *Transactions of the Inverness Scientific Society and Field Club* (1882), 2, 199-201.

<sup>24</sup> Jolly, *op. cit.* (fn. 23), 201.

<sup>25</sup> J. Barron, 'Preface', *Transactions of the Inverness Scientific Society and Field Club* (1902), 5, iii-ix.

<sup>26</sup> Anon, *op. cit.* (fn. 18), 140.

<sup>27</sup> Thomas Aitken was Superintendent of the Inverness District Asylum. The paper referred to was T. Aitken, 'The formation of Granite', *Transactions of the Inverness Scientific Society and Field Club* (1880), 2, 1-21.

members and laboratory biologists in late-nineteenth-century Yorkshire, has argued that ‘the heterogeneity of amateurs and the local contingency of practice and identities is key to any analysis of amateur-professional relationships’.<sup>28</sup> As argued in Chapter 6 (pp. 180-84), it is important to emphasise as well the heterogeneity of professional identities which, in the case of geology and ornithology, could be defined in relation to national institutions like the BOU or the Geological Survey rather than in relation to the research agendas and practices promoted by university or college scientists. To establish oneself as an expert in a particular ‘department’ members of Scottish natural history societies had to employ a range of strategies depending on how, and by whom, expertise in a particular discipline was established and defined. Deciding where to publish, what societies to join, what field practices to employ and what questions to address were all answered differently depending on the disciplinary affiliations member’s wished to foster.

While an identification with particular ‘disciplines’ was important in securing scientific reputation, members of Scottish natural history societies also regarded the ability to effect inter-disciplinary co-operation as paramount. Disciplinary identity was complicated by a belief in the significance of pooling different individual skills and expertise to resolve a specific scientific problem that demanded an understanding of a range of ‘disciplinary’ knowledge.<sup>29</sup> In examining the involvement of several Scottish natural history societies in one particular research project the following section considers the criss-crossing of disciplinary and other boundaries by members concerned with making original contributions to scientific knowledge.

## The problem of the Clava shell beds

In 1881, the discovery by James Fraser of arctic marine shells in a layer of ‘blue clay’ at the bottom of a disused pit at Clava six miles east of Inverness prompted a series of investigations that involved members of several Scottish natural history societies. It implicated Fraser and the ISSFC in a wider debate about reconstructions of the glacial

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<sup>28</sup> S. J. M. M. Alberti, ‘Amateurs and professionals in one county: biology and natural history in late-Victorian Yorkshire’ *Journal of the history of biology* (2001), 34, 116.

<sup>29</sup> On this, see J. A. Secord, ‘Natural history in depth’, *Social studies of science* (1985), 15, 187ff.

epoch.<sup>30</sup> Fraser, an Inverness civil engineer with an interest in local archaeology and geology, had already explored the superficial deposits around Inverness reading a paper on the subject to the Society on 4 March 1879.<sup>31</sup> In concluding his 1879 paper, Fraser expressed the hope that his contribution to mapping the ‘moraines’, ‘tills’, ‘boulders’ and ‘ice grooves’ would ‘induce some more skilled and experienced geologists to examine the ground I have gone over’.<sup>32</sup> It was not until his discovery of the shell bed in 1881 that ‘more experienced’ geologists became involved. On first unearthing the shells Fraser wrote to the President of the Club, James Barron, informing him of the find and suggesting that the shells were *in situ* and not ‘drifted by the ice’.<sup>33</sup> Fraser’s letter was subsequently communicated by Barron to the first meeting of the northern scientific and literary societies at Elgin on 29 July 1881 and later developed in two papers on the subject which appeared in the *Transactions* of the ISSFC and the Edinburgh Geological Society. In 1892, Fraser’s investigations led to a more detailed examination by a team of researchers of the area proximate to the original find funded by the British Association and the Royal Society (London) and by private subscriptions.<sup>34</sup> This episode provides, I want to suggest, a way of examining in more detail the workings of the individual and organisational networks that characterised the scientific cultures of Scottish natural history societies.

Fraser’s find acquired significance through – because it later became embroiled in – wider debates about how evidence for glaciation was to be interpreted. As Fraser was

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<sup>30</sup> J. Fraser, ‘The shell-bed at Clava’, *Transactions of the Inverness Scientific Society and Field Club* (1882), 2, 169-78 and *idem*, ‘First notice of a post-Tertiary shell bed at Clava in Nairnshire, indicating an arctic climate and a sea-bed at a height of 500 feet’, *Transactions of the Edinburgh Geological Society* (1882), 4, 136-142.

<sup>31</sup> J. Fraser, ‘Recent formations and glacial phenomena of Strathnairn’, *Transactions of the Inverness Scientific Society and Field Club* (1879), 1, 211-23.

<sup>32</sup> Fraser, *op. cit.* (fn. 31), 223.

<sup>33</sup> J. Barron, ‘The work of the Inverness Field Club’, *Transactions of the Inverness Scientific Society and Field Club* (1881), 2, 124. Fraser later stated categorically, on the basis that the shells were ‘entire’, his view that there was ‘no doubt that the shells are *in situ* in this bed’. See Fraser, ‘The shell-bed at Clava’, *op. cit.* (fn. 30), 171. Strictly speaking, this was never contested. The disputed issue was whether the ‘blue clay’ or ‘shelly clay’ deposit in which the shells were preserved had been *in situ* or transported by ice.

<sup>34</sup> J. Horne et al., ‘The character of the high-level shell-bearing deposits at Clava, Chapelhall, and other localities’, *Report of the British Association for the Advancement of Science* (1893), 483. The funds from the Royal Society were secured by Archibald Geikie, then Director-General of the Geological Survey. For a brief survey of research on the Clava shell beds, see J. E. Gordon, ‘The high-level ‘arctic’ shelly clay of Clava, Inverness-shire: a century of research’, in C. A. Auton, C. R. Firth and J. W. Merritt (eds.), *Beauty to Nairn field guide*, Coventry, 1990, 17-20.



aware, his 'discovery' came at a period when the 'marinism' espoused by a number of prominent British geologists from the 1850s had been challenged by the astronomical theories of James Croll. This challenge was lent support by James Geikie in the second edition of his *The Great Ice Age* published in 1877.<sup>35</sup> Rather than posit a double glaciation sandwiching a period of 'great submergence' and floating icebergs, Geikie, following Croll, suggested a succession of glacial and interglacial episodes. Geikie's position, although stressing the sufficiency of land-ice to explain most superficial deposits (thus dispensing with floating ice and distinguishing his reconstructions from 'marinism') still argued for a significant change in sea level. By the third edition (1894) of *The Great Ice Age*, Geikie espoused a maximum sea level rise (land depression) of up to 500 feet partly based on the evidence found by Fraser at Clava. This reconstruction was challenged by others who argued that the extent of sea level rise posited by Geikie was exaggerated. The controversy crystallised around two crucial and connected components. First, the extent of sea level change between periods of glaciation and secondly, the efficacy and mechanics of ice-transport. One central question linking them was whether the layer of clay containing the shells found at Clava was *in situ* or had been transported from another location at a lower level. The debate extended well beyond this and involved more than Geikie, his supporters and their opponents. What is of interest here, however, is not a 'full' account of the late-nineteenth-century debates over inter-glacial sea level change. Instead, I am concerned to show the ways in which natural history societies were involved in, and shaped by, a particular set of scientific debates.

A starting point is to investigate the nature and significance of Fraser's membership of the ISSFC. Before his discovery, Fraser's reputation as a geologist was already well established and was later consolidated by a record of some of his professional duties as a civil engineer. In 1885, an article appearing in the Club's *Transactions* recorded Fraser's efforts in lowering the level of Loch Moy. Fraser's work on the Loch, the report showed, had required an intimate knowledge of local surface phenomena and the geological history of the site.<sup>36</sup> Fraser's scientific reputation was thus established both

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<sup>35</sup> On this, see D. Oldroyd, 'Early ideas about glaciation in the English Lake District: the problems of making sense of glaciation in a glaciated region', *Annals of science* (1999), 56, 175-203; and J. K. Charlesworth, *The Quaternary Era with special reference to glaciation*, London, 1957, 628.

<sup>36</sup> Anon, 'Lowering the level of Loch-Moy', *Transactions of the Inverness Scientific Society and Field*

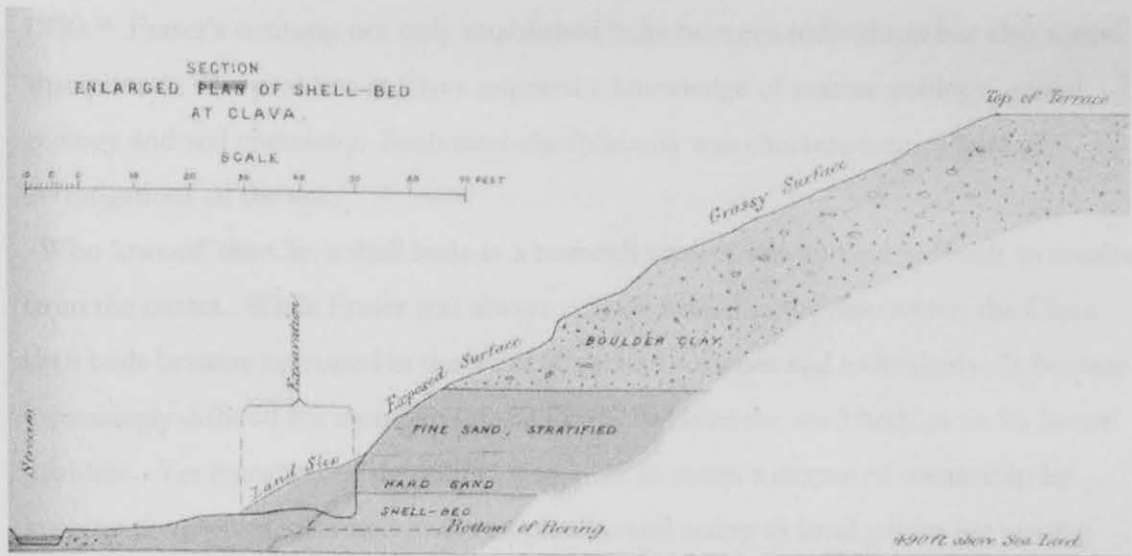


Figure 7.2. Fraser's first published sketch of a section showing the location of the shell-bed in relation to other strata. Source: J. Fraser, 'First notice of a post-Tertiary shell bed at Clava in Nairnshire, indicating an arctic climate and a sea-bed at a height of 500 feet', *Transactions of the Edinburgh Geological Society* (1882), 4, 136-142.

by his observations as an 'amateur' geologist and archaeologist and by his 'professional' reputation as a civil engineer. His membership of the Edinburgh Geological Society also helped to extend his standing beyond that of a geologist of only local repute.

Fraser's connections with other geologists proved important in establishing his authority to account for the Clava shells found in the layer of 'blue clay' lying beneath 'sand' and 'boulder clay' horizons (see Fraser's original section drawing in figure 7.2). In order to establish the identity of the shells and the nature of the 'blue clay', Fraser enrolled the help of David Robertson, Thomas Francis Jamieson and William Ivison Macadam. Robertson and Jamieson identified the shells while Ivison Macadam, Professor of Chemistry at the Edinburgh Veterinary College, analysed the chemical constituents of the clay.<sup>37</sup> Fraser also consulted the Rev. Henry Crosskey, geologist and Unitarian minister. Crosskey had been an active member of several of Glasgow's scientific societies, including the Glasgow Geological Society, while resident in the city (1852-1869) and had published a paper in 1865 on a shelly deposit found at a similar level at Chapelhall near Airdrie and first reported by James Smith of Jordanhill in

*Club* (1881) [1885], 2, 114-19.

<sup>37</sup> Macadam was Secretary of the Edinburgh Geological Society and a member of the Edinburgh Field Naturalists' Society.

1850.<sup>38</sup> Fraser's contacts not only established links between individuals but also across 'disciplines'. The problem at Clava required a knowledge of marine zoology, glacial geology and soil chemistry. Such inter-disciplinarity was characteristic of later investigations of the site.

Who 'owned' the Clava shell beds as a research project was an issue difficult to resolve from the outset. While Fraser was always acknowledged as the discoverer, the Clava shell beds became entrained in the work of several societies and individuals. It became increasingly difficult for members of the ISSFC to claim the shell beds as an 'in-house' problem. Yet members of the ISSFC were able to retain a degree of ownership by keeping themselves informed of developments and acting as local guides for visiting geologists. When the Rev. Henry Crosskey visited the shell beds in 1887, for example, he was accompanied by three members of the ISSFC including James Fraser.<sup>39</sup> As an acknowledgement for the 'very kind hospitality', Crosskey posed several questions for future research on the shell beds and called on the Field Club to 'finally settle the question'. In so doing the Club, Crosskey maintained, would 'render a great service to glacial geology'. In Crosskey's view 'as a visitor', his questions would be best answered 'at the hands of far better informed local geologists'.<sup>40</sup>

As it turned out, local geologists did not take up Crosskey's polite challenge. Instead it was the British Association which provided the institutional support for a re-examination of Fraser's clay pit. In 1892, several geologists dissented from Fraser's conclusion that the shell bed had been deposited on the spot arguing instead that it had been transported by ice. As a response a Committee was formed to excavate the site more thoroughly. The Committee was chaired by John Horne, in recognition of his status as a Survey geologist and his several papers on the glacial geology of the north of Scotland. The other members included those already familiar with Clava and who supported the *in situ* hypothesis (James Fraser, David Robertson and Thomas Jamieson), and two other geologists, Percy Fry Kendall (lecturer at Yorkshire College) and Dugald

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<sup>38</sup> H. W. Crosskey, 'Of the succession of geological changes in Scotland from the glacial epoch to the present day', *Proceedings of the Natural History Society of Glasgow* (1865), 1, 112-5. The Airdrie site was at that time the only other instance in Scotland where 'arctic' marine shells were found at a such a high level. For more on Crosskey, see Macnair and Mort, op. cit. (fn. 11), 194-5.

<sup>39</sup> H. W. Crosskey, 'The Clava shell bed', *Transactions of the Inverness Scientific Society and Field Club* (1887), 3, 277-85

<sup>40</sup> Crosskey, op. cit. (fn. 39), 285.

Bell (cashier and member of the Glasgow Geological Society).<sup>41</sup> It had been Bell and Kendall who had publicly challenged the consensus about the 'shelly clay'.

The fieldwork of the Committee (excluding Percy Kendall who was unavoidably absent) at Clava took place in 1892 and involved excavating two pits and making several bores to ascertain what lay below the gravel on which the shelly clay layer sat. Several workmen were employed along with a photographer (a Mr Whyte of Inverness) and a Mr Pollock, 'an experienced mineral borer from Airdrie'.<sup>42</sup> Fraser's role, amongst other things, was to measure the height above sea level at the surface of each bore. As with Fraser's original investigations, David Robertson analysed the animal remains extracted from the pits and the bores concluding that their Arctic character was not in doubt. Although concern was expressed at the unsatisfactory nature of the bore samples and the possibility that some had been contaminated by the workmen's tools, the report carefully recorded the results obtained and noted the extent of the shelly clay horizon (190 yards in length). The report also included a map showing the direction of ice flow as indicated by striations, data for which was submitted by John Horne (with permission from Archibald Geikie of the Geological Survey) and by James Fraser. The conclusion from this more general survey was that the ice had travelled from the Great Glen (including Loch Ness) southwest of the field site at Clava.

The general conclusions reached by the committee varied. James Fraser, John Horne, Thomas Jamieson and David Robertson all subscribed to the view that the shelly clay deposit was *in situ*. The tentative nature of their view was underlined, however, by noting that the 'evidence' was not as good as it could be. The other possibility, that it had been transported from Loch Ness by land-ice was noted. In that case, rather than a sea level rise of over 500 feet, only a limited amount of submergence would have been necessary for Loch Ness to have formerly been a marine environment. Dugald Bell and Percy Kendall, in a note attached to the report as an appendix, argued that resting the case for a 500 foot submergence on the evidence supplied by the shelly clay deposit alone was a mistake. Without indications of extensive marine beds across Scotland they concluded, 'we have not yet reached a solution of the difficulties connected with the

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<sup>41</sup> Anon, 'Percy Fry Kendall', *Proceedings of the Geologists' Association* (1937), 48, 109-10; Macnair and Mort, *op. cit.* (fn. 12), 234-35.

<sup>42</sup> Horne et al, *op. cit.* (fn. 34), 485.

Clava deposit'.<sup>43</sup>

Although unresolved and involving a larger set of institutions and personnel, the Inverness Club remained closely connected with the Clava shell bed investigations. The report of the Committee was published in full in the *Transactions* of the ISSFC 'through the courtesy of the Council of the British Association'.<sup>44</sup> In some ways it added rather than detracted from the credibility of the Club that the Clava shell bed problem had become a crucial and contested glacial field site. In addition, the fact that the team appointed to re-examine the site included 'amateur' geologists also meant that the Clava shell bed could continue to be offered as an example of a problem accessible to members of the ISSFC. Speaking at the annual meeting of the Club in 1893, James Barron cited the Clava bed investigations to encourage members to thoroughly explore the 'surface phenomena of the district'.<sup>45</sup>

The Clava shell beds took on even more significance after a failed attempt by the British Association Committee to re-locate the high level shell beds at Chapelhall near Airdrie.<sup>46</sup> After a survey of the literature on the Chapelhall site the Committee concluded that the only evidence for the existence of the shell-bed now rested on the reported discovery of it by James Russel, an operative miner, some time prior to 1850. As Dugald Bell put it, the Chapelhall shell bed was 'quietly dropped by geological writers who formerly made much of it'.<sup>47</sup> It was not long, however, until other discoveries of high-level marine shells were being reported. A paper appearing in the *Transactions* of the ISSFC in 1896 by John Smith, a retired Ironworks manager and member of the Geological Society of Glasgow, reported discoveries of several high level deposits containing shells in Ayrshire.<sup>48</sup> On the suggestion of James Fraser the paper was invited by Thomas Wallace, Secretary of the Northern Association of Literary and

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<sup>43</sup> Horne et al, op. cit. (fn. 34), 514.

<sup>44</sup> Anon, 'The Clava shell bed. Report of Committee of British Association', *Transactions of the Inverness Scientific Society and Field Club* (1893), 4, 300.

<sup>45</sup> J. Barron, 'Annual address', *Transactions of the Inverness Scientific Society and Field Club* (1893), 4, 288.

<sup>46</sup> J. Horne et al, 'The character of the high-level shell-bearing deposits at Clava, Chapelhall, and other localities (Chapelhall section)', *Report of the British Association for the Advancement of Science* (1894), 307-315.

<sup>47</sup> D. Bell, 'Alleged proofs of submergence in Scotland', *Transactions of the Glasgow Geological Society* (1893), 10, 118.

<sup>48</sup> J. Smith, 'The drift of glacial deposits in Ayrshire', *Transactions of the Inverness Scientific Society and Field Club* (1896), 5, 95-105. On Smith, see R. B. Wilson et al, *John Smith of Dalry. Geologist, antiquarian and natural historian, Part 1 – Geology*, Ayr, 1995.

Scientific Societies, to be delivered at their 1896 meeting in Forres. Smith was by then an ardent advocate of the 'great submergence' hypothesis having found marine shells at heights of over 1000 feet and his paper, in fuller form, had been read to the Geological Society of Glasgow (GSG) and to the Liverpool meeting (1896) of the British Association. His views represented one side of a debate conducted within the GSG where Dugald Bell continued to oppose the notion of a significant variation in sea level in the glacial past.<sup>49</sup>

As part of a wider set of debates about glacial geology it is not surprising that the contest between Bell and Smith registered itself in papers given to other Scottish natural history societies. Following the debate through the transactions of societies based in Inverness, Glasgow and Perth reveals connections sustained by the interests of individuals who attended or were members of several societies. A paper by Peter Macnair delivered to the Perthshire Society of Natural Science in April 1898 offers an example how the debate travelled and developed.<sup>50</sup> Macnair's paper addressed the issue of the distribution of Alpine flora in Perthshire, explaining it in relation to local geology and the former presence of land-ice. Macnair noted that the 'principal evidence in favour' of a significant submergence of Scotland in the past was provided by the Clava shell bed. He also reminded members of Buchanan White's view, stated in a paper given at a meeting of the East of Scotland Union of Naturalists' Societies in 1884, that the evidence from the high altitude plants of Scotland did not support the theory of a great submergence. In particular, the existence of maritime plants at high altitudes, sometimes cited as evidence of submergence, was 'exceedingly unreliable'. The presence of the plants could be explained, White had argued, not in terms of having previously been a marine environment but because a mountain environment reduced competition from other species. Macnair, who had been present at a meeting of the GSG at which Dugald Bell had disputed John Smith's interpretations of the Clava shell-bed, was aware of the recent finds of high level marine deposits in Ayrshire.<sup>51</sup> He

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<sup>49</sup> Much of this at times acrimonious debate (the 'neo-glacialists' pitted against the 'submergers') was carried out in the pages of the *Geological Magazine* between 1895 and 1898. See for example, D. Bell, 'The "great submergence" again: Clava', *Geological Magazine* (1897), 4, 27-30; 63-68.

<sup>50</sup> P. Macnair, 'The geological factors in the distribution of the alpine plants of Perthshire', *Transactions of the Perthshire Society of Natural Science* (1898), 2, 240-49.

<sup>51</sup> Anon, 'Proceedings of session 1895-96 (38<sup>th</sup> session)', *Transactions of the Geological Society of Glasgow* (1896), 10, 376.

noted, therefore, the contested nature of Buchanan White's preference for limited submergence and judged that the evidence for and against a great submergence was 'about equally balanced'.<sup>52</sup> Macnair's contribution, however, was to contend that it was more probable that the distribution of alpine plants, instead of being explained by the agency of floating icebergs during a period of submergence, was better understood as reflecting the effects of local geology. The migration of the plants at the end of the last period of glaciation, Macnair argued, had been made possible by an elevation of the land allowing a connection between Britain and the Continent.<sup>53</sup> Once the climate warmed the plants could only survive at a high elevation on summits composed of bands of 'sericite schist'.

The Clava shell bed controversy involved individual and institutional activities that described a set of connections closely linked to the pragmatics of glacial fieldwork and the wider sets of debates about the recent geological history of Scotland. It is not clear that such debates, as they appeared in the published *Transactions* of Scottish natural history societies, were translated into a 'cultural nationalism' or 'regional identity' in the same way that Christer Nordlund has noticed for related research on land elevation and glacial geology in late-nineteenth-century Sweden.<sup>54</sup> The telling of the problem of the Clava shell bed does uncover, however, patterns of co-operation and *ad hoc* scientific practices that could disrupt as well as constitute the more tidy categories like 'discipline' and 'amateur'. Fraser may have considered himself an amateur geologist but his knowledge of the Clava shell beds was possible because of his professional activities as an engineer. In addition, answering the questions raised by his arctic marine shell discovery cut across disciplinary affiliations requiring expertise in chemistry, botany and marine zoology.

## Field clubs and evolution

If the Clava shell bed controversy reveals the anatomy of a specific but sprawling

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<sup>52</sup> Macnair, *op. cit.* (fn. 50), 246.

<sup>53</sup> In another section Macnair also challenged the view of James Geikie on the related issue of the existence of alpine botany on the Faroe Islands. Geikie's view was that the sea bottom had been raised to the 500 fathom line, a speculation Macnair considered extreme.

<sup>54</sup> C. Nordlund, "On going up in the world": nation, region, and the land elevation debate in Sweden', *Annals of science* (2001), 58, 17-50.

scientific project and the position and role of certain Scottish natural history societies and their individual members in it, the reception and use of evolutionary ideas by members of Scottish natural history societies signals connections made between the societies' 'science' and other 'cultural' concerns. That is not to suggest an *a priori* distinction between what members of the society regarded as science and what they considered extra-scientific.<sup>55</sup> This final section seeks to investigate the ways the language and practices associated with 'Darwinism' and other forms of evolutionary theory appeared in publications of Scottish natural history societies and some of the functions of, and reasons for, appeals to (or rejections of) evolution.

Darwin's theory of the origin of species by natural selection was not an issue that Scottish natural history societies frequently debated or regularly cited in their published papers. Yet when it was mentioned, its revolutionary and pervasive effects on scientific and social thought was acknowledged. Commander Francis Martin Norman, addressing the Berwickshire Naturalists' Club in 1884, noted that 'so engrossing has been this theme [of Darwinism] that a more or less intimate acquaintance with it may confidently be assumed in the case of many of our members'.<sup>56</sup> Henry Coates, speaking in 1898 to the Perthshire Society of Natural Science, asserted that 'it is impossible to exaggerate the importance of this event [the appearance of *The Origin of Species*] in its bearing on the history of human thought'.<sup>57</sup> The significance attached to Darwinism by naturalists did not lead, as David Allen points out, to a 'recognisable 'line' on the matter in natural history circles'.<sup>58</sup> As with the reception of Darwinism in other institutional and regional contexts, the engagement with Darwinian theory among members of Scottish natural history societies had a discernable historical geography.<sup>59</sup>

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<sup>55</sup> On this, see J. H. Brooke, 'Religious belief and the content of the sciences', *Osiris* (2001), 16, 3-28; and D.N. Livingstone, 'Science and religion: foreword to the historical geography of an encounter', *Journal of Historical Geography* (1994), 20, 367-83.

<sup>56</sup> F. M. Norman, 'Darwinism and natural religion', *History of the Berwickshire Naturalists' Club* (1884), 10, 426.

<sup>57</sup> H. Coates, 'The progress of natural science during the Victorian era', *Proceeding of the Perthshire Society of Natural Science* (1898), 2, 180.

<sup>58</sup> Allen, *op. cit.* (fn. 4), 177.

<sup>59</sup> D. N. Livingstone, 'Darwinism and Calvinism: the Belfast-Princeton connection', *Isis* (1992), 83, 408-28; *idem*, 'A chapter in the historical geography of Darwinism: a Belfast-Edinburgh case study', *Scottish geographical magazine* (1997), 113, 51-7; *idem*, 'Science, region, and religion: the reception of Darwinism in Princeton, Belfast, and Edinburgh', in R. L. Numbers and J. Stenhouse, *Disseminating Darwinism: the role of place, race, religion and gender*, Cambridge, 1999, 7-38; J. Scowen, 'A study of the historical geography of an idea: Darwinism in Edinburgh 1859-1875',



Official pronouncements on Darwinism were rare among Scottish natural history societies perhaps because they invariably raised ‘metaphysical’ and ‘speculative’ questions officially excluded from the ‘proper’ work of a scientific society. Indeed, when ‘Darwinism’ was addressed, it was often staged in a way that affirmed a strict division between scientific and non-scientific knowledge. The Alloa doctor John Duncanson, in presenting Darwinism to the Alloa Society of Natural Science as ‘fully established’, was able to speak of the inappropriateness of appealing to religious concerns when dealing with science.<sup>60</sup> This was also the message of the Rev. Wynn Peyton whose address on evolution in the Free Church Hall in Huntly in 1887, first appearing in the *Huntly Express*, was later published in the *Transactions* of the Huntly Field Club.<sup>61</sup> Although billed as an examination of ‘Mr Darwin’s theory of the origin of species’, Peyton enumerated his ‘syllabus of evolution’ by employing Lamarckian as well as Darwinian terms and recommended against reading ‘Darwin’s book’ as an introductory evolutionary text.<sup>62</sup> Yet Peyton also quoted with approval the view of William Henry Dallinger, Methodist and ‘experimental’ Darwinian, that ‘Darwin’s great law of the Origin of Species . . . underlies as a necessity all our widest and deepest biological knowledge’.<sup>63</sup> Using Dallinger as an example, Peyton urged that evolution was compatible with Christian faith, belief or unbelief being ‘a psychologic problem’ not related to the veracity of evolutionary theory. By arguing thus Peyton denied science a role in establishing and maintaining a religious conviction; that task belonged

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*Scottish geographical magazine* (1997), 113, 148-56.

<sup>60</sup> J. Duncanson, ‘The strictly scientific character of the Darwinian theory’, *Proceedings of the Alloa Society of Natural Science* (1867), 34-45. Duncanson had earlier published a book arguing that God acted through natural laws not supernatural interference. J. Duncanson, *The providence of God manifested in natural law*, London, 1861.

<sup>61</sup> W. W. Peyton, ‘Syllabus of evolution’, *Transactions of the Huntly Field Club* (1887), 69-74.

<sup>62</sup> Peyton recommended instead a text by Thomas Henry Huxley entitled *Physiology* but this seems to be a mistake either on the part of Peyton or of the publishers of his address. It was perhaps intended to be T. H. Huxley, *Physiography: An introduction to the study of nature*, London, 1877. Peyton also spoke of the ‘laws of use and disuse’ giving the Larmackian example of transmutation by the adult exercise of particular anatomical features (such as the fins of fish) and cited an example of aquatic lizards who developed lungs ‘in a few weeks’ on being ‘brought up on land’. On the not-always-clear-cut distinction between and within Darwinian, Lamarkian and other evolutionary ideas in the late-nineteenth and early-twentieth centuries, see P. Bowler, *The eclipse of Darwinism*, London, 1983.

<sup>63</sup> For more on Dallinger, see J. W. Haas, ‘The Rev. Dr. William H. Dallinger F.R.S.: early advocate of theistic evolution and foe of spontaneous generation’, *Perspectives on science and Christian faith* (2000), 52, 107-17.

‘to another realm altogether’.<sup>64</sup>

Even where Darwinism was not taken as ‘fully established’ or where it was deemed, as Peyton had it, the only available research ‘instrument’ for guiding fieldwork, it was possible to present the theory of natural selection in a manner that reinforced a division between science and religion. In a talk given to the Perthshire Society of Natural Science on evolution in 1884 the Rev. Adam Milroy, cleaving much closer to Darwinian vocabulary than had Peyton, presented Darwinism as ‘only a theory very probable, but not yet absolutely demonstrated’ and made it clear that establishing Darwinism as a true account of nature was a matter for inductive science.<sup>65</sup> What was needed was exactly what natural history societies like the one to which Milroy spoke continually encouraged and Darwin exemplified – the patient collection of ‘facts’. While Milroy could countenance the possibility that Darwin’s theory of descent with modification was true it could only be fully corroborated by careful research.

While the ‘accumulation of facts only’ approach was also used by Milroy to retain a belief in a Creator, the overriding message was the need for careful observation. For Milroy this was no more than Darwin himself affirmed. Citing Darwin’s closing appeal in *On the origin of species* to ‘the Creator’ to explain the appearance of primordial life, Milroy demonstrated the sort of ‘modesty of statement’ necessary when dealing both with the theory of natural selection and more especially with the theory of spontaneous generation.<sup>66</sup> Castigating the views on the origin of life of German physicist Johann Carl Friedrich Zöllner and Gilchrist lecturer and evolutionist Andrew Wilson, Milroy sought to demonstrate the difference between speculation and science. It was Darwin who exemplified the patient observer or ‘index learner’ rather than vocal supporters of life arising by purely material processes whose views were ‘mere assertion’, ‘guesses and imaginations’. Although Milroy had religious reasons for subscribing to an inductivist

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<sup>64</sup> Peyton, op. cit. (fn. 61), 74.

<sup>65</sup> A. Milroy, ‘Evolution, and some things said regarding it’, *Proceedings of the Perthshire Society of Natural Science* (1884), 146-50. Milroy’s denominational affiliation was Church of Scotland. H. Scott, *Fasti Ecclesiae scoticae: the succession of ministers in the Church of Scotland from the Reformation*, Edinburgh, 1915-1981, vol. 4, 226.

<sup>66</sup> The term ‘the Creator’ was inserted by Darwin in this paragraph in the second and retained in later editions of *On the origin of species*. As has been often noted, and made clear in letter written in March 1863 to Joseph Hooker, Darwin regretted ‘truckling to public opinion’ by using the ‘Pentateuchal term of creation’ when he meant only to signify ‘some wholly unknown process’. Cited in (among other works) J. Strick, *Sparks of life: Darwinism and the Victorian debates over spontaneous generation*, London, 2000, 49.

appraisal of Darwinian ideas the overall effect was to make a clear distinction between scientific epistemology and other forms of knowing.

Milroy, Peyton and Duncanson, despite their different renderings of 'Darwinism' and religion, each adhered to a view of natural historical work as substantially or completely autonomous of theology. Yet for others, by undermining an understanding of natural history as a route to the immediate apprehension of God in nature, natural historical pursuits were separated from religious concerns in a manner that endangered a central *raison d'être* of a naturalists' club. In his address to the Berwickshire Naturalists' Club in 1884, Commander Francis Martin Norman set the claims of Darwinism alongside what was for him the crux of the matter; God's intention '*to reveal himself in nature*'.<sup>67</sup> This, he argued, was an essential part of the ethos of the Berwickshire Club which more than any other scientific society, had 'made prominent the desire ... of seeing the hand of God in all the works of nature'.<sup>68</sup> The vital point for Norman was that although the 'business' of natural science might be 'quite distinct from theology' its 'bearing' was towards a knowledge of goodness, power and wisdom of the Creator. By repudiating, like Milroy, attempts to give a materialist explanation of the origin of life Norman conceded that Darwinism was not necessarily atheistic. Unlike Milroy, Norman felt that 'evolution theory' amounted to 'a virtual elimination of God from the Natural World'.<sup>69</sup> Norman thus emphasised the provisional and unproved nature of Darwinism believing that it was more likely than not that it would in the end be shown to be false. In noting that, apart from one exception, Darwinism had not been 'mentioned in the literature of our club', Norman intimated his hope that it would not have to be considered again. Instead members would be allowed to get on with the business of being amazed at the 'astonishing contrivances' of nature that were the 'direct inventions of an Inventor'.<sup>70</sup>

Norman's explicitly anti-evolutionary sentiments may have been uncharacteristic of the leadership of Scottish natural history societies but his desire to conceive of nature as a repository of religious meaning had wider currency. The clear boundary lines drawn between religion and science by Duncanson, Peyton and Milroy were, in theory and practice, often transgressed. Milroy's empiricism, which apparently left little room

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<sup>67</sup> Norman, *op. cit.* (fn. 56), 431. Emphasis in the original.

<sup>68</sup> Norman, *op. cit.* (fn. 56), 427.

<sup>69</sup> Norman, *op. cit.* (fn. 56), 432.

<sup>70</sup> Norman, *op. cit.* (fn. 56), 431.

to view natural history pursuits as a set of practices simultaneously scientific and religious, was supplemented by an analogical approach that re-invested nature and nature study with spiritual meaning. Milroy argued, for example, that ‘in the spiritual world there is the bitter struggle to maintain life – there is the survival of the fittest – there is the development from a lowly beginning to a state whose glory it has not entered into the heart of man to conceive’.<sup>71</sup> The ‘doctrine of evolution’ could function, in other words, as a metaphor (or set of metaphors) for the ‘origin and progress of spiritual life’. Milroy’s address does not indicate whether he subscribed to Free Churchman Henry Drummond’s much vilified view, enunciated in *Natural law in the spiritual world*, that there was a ‘deeper unity’ than mere analogy between natural and spiritual phenomena but was nevertheless able to perceive in an evolving nature spiritual meaning.<sup>72</sup>

Evolution and various forms of natural theology, particularly as articulated in relation to the aesthetic appreciation of an evolving nature, not only appeared in the kinds of ‘position statements’ represented by Milroy and Norman but also in the botanical and zoological subjects investigated and reported by society members. As David Allen has argued, Darwin’s ‘array of evidence’ opened up a whole new set of questions and subjects for investigation and not only for the ‘new’ biologist.<sup>73</sup> Darwin’s ‘grand and almost untrodden field of inquiry’ raised the profile and changed the direction of natural history studies.<sup>74</sup> Yet in emphasising the importance of Darwinism in prompting a move from the taxonomic and floristic studies to the laboratory work of the biologists, it is possible to miss the ways in which Darwin’s researches influenced the investigations of ‘field’ or ‘amateur’ naturalists. Darwin himself, as Lynn Nyhart has pointed out, was an example of a naturalist who, though not identifying himself as a ‘field’ botanist or plant taxonomist, did not use the kinds of technical instruments and language that

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<sup>71</sup> H. Scott, *Fasti Ecclesiae scoticanae: the succession of ministers in the Church of Scotland from the Reformation*, Edinburgh, 1915-1981, vol. 4, 226.

<sup>72</sup> H. Drummond, *Natural law in the spiritual world*, London, 1883. An 1883 edition of Drummond’s book was found in the library of the Perthshire Society of Natural Science. See Perthshire Society of Natural Science, *Library Catalogue*, Perth, 1903, 53. For more on Drummond’s views and the reception of his book, see D. W. Beddington, ‘Henry Drummond, evangelicalism and science’, in T. E. Corts, (ed.), *Henry Drummond: a perpetual benediction*, Edinburgh, 1999, 19-38.

<sup>73</sup> Allen, op. cit. (fn. 4), 179ff.

<sup>74</sup> C. Darwin, *The Origin of Species*, 2<sup>nd</sup> ed., Oxford, 1996 [1860], 392.

alienated those without the necessary resources and training.<sup>75</sup> Darwin was an ‘experimenter’ whose botanical investigations were ‘perhaps neither more nor less than any other natural historian or amateur botanists might have pursued for amusement during the early summer months’.<sup>76</sup> Of course, as Janet Browne points out, Darwin’s experiments were pursued in the context of ‘an over-riding pre-occupation with the consequences of his results’; his work on orchids, for example, were, as Darwin put it, ‘a flank movement on the enemy’.<sup>77</sup> Members of Scottish natural history societies alert to that agenda understood Darwinism as a set of experimental investigations as much as a body of ideas. Darwinism could thus appear in the publications of Scottish natural history societies in ways that did not explicitly raise more theoretical or theological concerns.<sup>78</sup> Yet the inspiration for such studies was in part derived from the bearing they had on the theory of natural selection and the cultural cachet gained from association with the work of Darwin. The studies could also be used to address, indirectly at least, the challenges posed by the theory of natural selection to the methods and meanings of associational natural history.

By the 1870s and 1880s certain natural history studies had achieved something of an iconic status, through a complicated inter-weaving of cultural and scientific concerns. Culturally charged before Darwin’s intensive research, studies of orchids and insectivorous plants, for example, became botanical ‘sites’ for metaphorically and scientifically working out the consequences of living in a post-Darwinian world.<sup>79</sup> Such

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<sup>75</sup> L. K. Nyhart, ‘Natural history and the ‘new’ biology’, in N. Jardine, J. A. Secord and E. C. Spary (eds.), *Cultures of natural history*, Cambridge, 1996, 433.

<sup>76</sup> J. E. Browne, *Charles Darwin: the power of place*, London, 2002, 168.

<sup>77</sup> The enemy being, of course, the anti-Darwinians. Browne, op. cit. (fn. 76), 174.

<sup>78</sup> To name only a few examples: bee behaviour, coloration and mimicry in insects and plants, the distribution of alpine flora, insectivorous plants, life history studies and orchids. See, for example, P. Cameron, ‘Caterpillars, on the use of coloration and markings of, and on, the development of the insect’, *Transactions of the Natural History Society of Glasgow*, 4, 224-6 and 256-7; H. Coates, ‘The life history of a garden snail’, *Proceedings of the Perthshire Society of Natural Science* (1884), 140-43; J. A. Gossip, ‘Insectivorous plants’, *Transactions of the Inverness Scientific Society and Field Club* (1882), 2, 244-52; J. A. Gossip, ‘Orchids’, *Transactions of the Inverness Scientific Society and Field Club* (1888), 4, 5-8; J. Lindsay, ‘Mimetic plants’, *Transactions of the Edinburgh Naturalists’ Field Club* (1882), 1, 33-9; Macnair, op. cit. (fn. 50); G. W. Ord, ‘The constancy of the Bee’, *Transactions of the Natural History Society of Glasgow* (1896), 5, 85-8.

<sup>79</sup> On Darwin, insectivorous plants and poetry, see J. Smith, ‘Une fleur du mal? Swinburne’s “The sundew” and Darwin’s *Insectivorous plants*’, *Victorian poetry* (2003), 41, 131-50. On his botany more generally, see *idem*, ‘Grant Allen, physiological aesthetics, and the dissemination of Darwin’s botany’, in G. Cantor and S. Shuttleworth, *Science serialised: representations of the sciences in nineteenth-century periodicals*, London, 2004, 285-305.

subjects were useful for members of natural history societies with a concern to sponsor projects and papers on subjects simultaneously popular and scientific. This desire, fostered in the context of a scientific society, reflected Darwin's own more individual efforts to promulgate his science through subjects already carrying a pronounced cultural charge. As James Gossip put it in his paper on orchids to the Inverness Scientific Society and Field Club in 1888:

Casting about for a suitable subject for an address, I selected that of "Orchids" mainly because the collection of these peculiar plants, being a modern mania, any remarks on such a subject may fairly be considered as popular; and also because what is known on the subject is exceedingly interesting, and has a high scientific value. Darwin says of it, "As orchids are universally acknowledged to rank amongst the most singular forms in the vegetable kingdom, I have thought that the facts to be given might lead some observers to look more curiously into the habits of our several native species. An examination of their many beautiful contrivances will exalt the vegetable kingdom in most persons' estimation".<sup>80</sup>

As Gossip's comments reveal, aesthetics was a key concern, not least because of the challenges to contemplating nature's beauty posed by Darwinism. That such comments had a wider resonance has been shown by a recent study of the late-Victorian Darwinian populariser Grant Allen and his accounts of beauty in nature.<sup>81</sup> Allen's work implicated him heavily in the polemical debates between John Ruskin and Darwin on the meaning and ground of beauty and such debates demonstrated that Darwinism, both as a theory and as a research programme, threatened Ruskin's approach to appreciating beauty in nature. Members of Scottish natural history societies were certainly familiar with this wider debate and at times felt themselves the target of Ruskin's invectives against experimental botany (see Chapter 5, pp. 134-5).

Support for the kind of approach taken by Darwin, and Darwinian popularisers such as Allen was apparent in a number of papers by members of Scottish natural history societies on the beauty discovered by physiological or anatomical studies. Henry Coates, by choosing to speak on shells and leaves, demonstrated to members of the PSNS how such familiar and popular topics could be thoroughly investigated through close and experimental observations.<sup>82</sup> Describing the physiological processes behind

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<sup>80</sup> Gossip, *op. cit.* (fn. 78), 'Orchids', 5.

<sup>81</sup> Smith, *op. cit.* (fn. 79), 'Grant Allen'.

<sup>82</sup> H. Coates, 'Autumn tints', *Proceedings of the Perthshire Society of Natural Science* (1883), 88-91;

the 'rich colours and mellow shades' of autumn, Coates encouraged an approach to nature studies in tune with Darwinian science. For Coates, a knowledge of physiological processes was not a denial of the reality of beauty. Quoting Grant Allen's observation in his *Vignettes of Nature* on the withdrawal of pigment that masks the autumn colours, Coates noted that 'in this withdrawal we may observe a most beautiful provision of nature'.<sup>83</sup> Beauty, in other words, was detected not only in outward appearances but also in internal chemical changes. The physiology of leaves and the micro-anatomy of shells revealed, for Coates, 'God's workmanship'.<sup>84</sup> By so speaking Coates concurred with Gossip's view in his paper on orchids: 'their mere external loveliness sinks into comparative insignificance compared with the wonder and delight to which their internal mechanism gives rise'.<sup>85</sup> Indeed, for Gossip this took precedence over the question of 'adaptation' versus 'interposition'. That is to say, the fact that the contrivances of orchids 'transcended what man could either imagine or invent' was of more consequence than whether orchids were products of direct creation or the slow processes of evolution.<sup>86</sup>

For Gossip, order as well as beauty was apparent in nature, a conclusion reached in his report of experiments on insectivorous plants presented to the Inverness Scientific Society and Field Club in 1883.<sup>87</sup> While acknowledging the debt owed to Darwin and his son Francis in furthering a scientific knowledge of 'insect devouring plants', Gossip noted an 'uncharacteristic' neglect by Darwin ('to whom detail was everything in science') in not studying the effects of preventing insects being captured and 'digested'. Gossip's own experiments, suggested by similar investigations reported by Thomas Alexander Goldie Balfour to the Botanical Society of Edinburgh in 1878, were designed to see if the absence of insects made any difference to the plants' growth.<sup>88</sup> While acknowledging the provisional nature of his experiments Gossip speculated that, although 'by a long course of natural selection' the insectivorous plants had acquired a

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H. Coates, 'Shells: their structure, growth and uses', *Proceedings of the Perthshire Society of Natural Science* (1885), 195-8.

<sup>83</sup> Coates, op. cit. (fn. 82), 'Autumn tints', 91.

<sup>84</sup> Coates, op. cit. (fn. 82) 'Shells', 198.

<sup>85</sup> Gossip, op. cit. (fn. 78), 'Orchids' 8.

<sup>86</sup> Gossip, op. cit. (fn. 78), 'Orchids', 8.

<sup>87</sup> Gossip, 'Insectivorous plants', op. cit. (fn. 78).

<sup>88</sup> See T. A. G. Balfour, 'President's address', *Transactions of the Botanical Society of Edinburgh* (1878), 13, 353-77. Gossip quotes from p. 371.

capacity to capture and feed off insects, they were not dependent on that adaptation for their survival or flourishing. Rather, deprived of insects, the plants reverted to 'law-abiding subjects to the ordinary laws of the vegetable kingdom'.<sup>89</sup> Gossip's position on whether the plants had, in fact, acquired their ability to feed off insects by natural selection was ambiguous. Natural selection was satirised by Gossip who suggested that if the leaves did 'root and leaf duty', the plants, with no need for roots, would eventually 'roam at large by their own sweet wills in search of prey'.<sup>90</sup> Yet his conclusions were contrary to those reached by Balfour who was concerned that finding no function for the 'contrivances' of insectivorous plant endangered an anti-evolutionary natural theology.<sup>91</sup> Gossip himself had cited Balfour's concern that 'the wonderful structure of the *Dionaea* (Venus Flytrap), and the admirable adaptation of all its parts for their allotted functions' made it impossible to think that such 'contrivances' were not designed.<sup>92</sup> Gossip's ambiguity towards the theory of natural selection and Balfour's need to find utility for all 'contrivances' did not, however, detract from his argument that nature displayed order.

The papers by Coates and Gossip rendered microscopic investigations of nature and Darwinism palatable by showing that studies of the natural world could retain a concern with beauty. Coates and Gossip could portray 'Darwinism', and the wider investigative practices with which it was closely associated, as a gain for appreciating the beauty of the natural world.<sup>93</sup> In this they paralleled attempts by authors of 'popular' science in the late-nineteenth-century to recount, by employing new visual technologies, the beauty discerned in nature.<sup>94</sup> What such attempts avoided or sidelined were the 'darker' conclusions reached by Darwin about violence and waste in nature. Insectivorous plants were particularly notorious, being viewed by some as plants that 'used' beauty to

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<sup>89</sup> Gossip, *op. cit.* (fn. 78), 'Insectivorous plants', 252.

<sup>90</sup> Gossip, *op. cit.* (fn. 78), 'Insectivorous plants', 252.

<sup>91</sup> Balfour elsewhere made it clear that he did not subscribe to an evolutionary view. T. A. G. Balfour, 'Observations on Mr Darwin's views of climbing plants', *Transactions of the Botanical Society of Edinburgh* (1876), 12, 451.

<sup>92</sup> Gossip, *op. cit.* (fn. 78), 'Insectivorous plants', 249.

<sup>93</sup> Coates himself subscribed to something like the theological views of Kingsley and quoted with approval Archbishop Frederick Temple's comment that 'It seems more majestic ... thus to impress His will, once for all, and His creation, and provide for all its countless varieties by this one original impress, than by special acts of creation'. Coates, *op. cit.* (fn. 57), 181.

<sup>94</sup> B. Lightman, "'The voices of nature': popularizing Victorian science", in B. Lightman (ed.), *Victorian science in context*, Chicago, 1997, 187-211; *idem*, 'The visual theology of Victorian popularizers of science: from reverent eye to chemical retina', *Isis* (2000), 91, 651-80.



lure unsuspecting insects to a violent death. As Jonathan Smith has shown, Swinburne's poem "The Sundew" (1860) – a poem based on the plant experimented on by Gossip – drew out sexual and violent associations. By the late 1870s, the poem and the plant had been 'swept into discussions of the ethical, philosophical, and cultural implications of Darwin's work'.<sup>95</sup>

Aside from the theological and cultural uses of experiments, the fact that such studies were pursued by members of natural history societies and published in society transactions confirms and extends the arguments made by Lynn Nyhart about the misrepresentation of late-nineteenth-century natural history as 'merely descriptive' and 'non-explanatory'.<sup>96</sup> The designs and outcomes of Darwin's natural history experiments, were followed, replicated and expanded by members of Scottish natural history societies. Members of the Edinburgh Naturalists' Field Club, for example, contributed to research on insectivorous plants in way that Gossip's paper did not.<sup>97</sup> The discovery in 1884 by Dr. John Macfarlane, Vice-President of the Field Club, that the 'outer surfaces of the pitcher' secreted honey (the pitchers being the 'containers' into which insects are lured and trapped found in plants in the genus *Nepenthes*) was first announced in the pages of the club's *Transactions* before being published in *Nature* and in the *Transactions of the Royal Society of Edinburgh*.<sup>98</sup> With a large community of 'experimentalists' and popular microscopical section, the Society was particularly pleased that Macfarlane's work had received wide recognition in scientific circles.

Away from microscopic and experimental interests, the influence of evolutionary views on more 'traditional' fieldwork practices was also apparent. For the Perthshire Society of Natural Science, the retrieval of spiritual meaning by way of analogy was not limited to Milroy's address but was also found in the language used to represent the spiritual significance of mountain fieldwork. Such fieldwork, particularly popular among members of the Perthshire Society, had close connections with the working out of Darwin's theory of natural selection and was an activity encouraged by the translation of Darwinian terms into a spiritual idiom.

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<sup>95</sup> Smith, op. cit. (fn. 79), 'Une fleur du mal?', 141.

<sup>96</sup> Nyhart, op. cit. (fn. 75), 426-43.

<sup>97</sup> See, for example, A. D. Richardson, 'The structure and habits of carnivorous plants', *Transactions of the Edinburgh Field Naturalists' Society* (1884), 1, 151-63.

<sup>98</sup> J. Lindsay, 'Note on the distribution of honey-glands in pitched insectivorous plants', *Transactions of the Edinburgh Field Naturalists' Society* (1884), 1, 200-1.

In devoting several pages to the distribution of flora as an effect of the climatal and physiographical changes associated with the glacial period Darwin had aimed to demonstrate both that appeals to individual acts of independent creation were unnecessary and that the modifying effects of the struggle for existence between different plants could be clearly discerned in the flora of mountainous regions.<sup>99</sup> Darwin's suggestions, in other words, meant mountain environments or 'islands on the land' were key sites for demonstrating and investigating the law of natural selection.<sup>100</sup> Francis Buchanan White, 'Cairnmaster' of the Perthshire Mountain Club and alpine botany enthusiast *par excellence*, was certainly familiar with Darwin's use of biogeography to support his evolutionary theory and did not see a contradiction between his own interests in mountain environments and a belief in a Creator. As one obituarist of White put it, despite his 'unobtrusive devout belief in Him who is the Author of Nature', White had been a 'thorough-going evolutionist' and had determined that evolution was 'but creation under a new name'.<sup>101</sup> White had himself contributed to research that substantiated Darwin's biogeographical and evolutionary claims in a paper on the insects of St Helena; a paper described by Darwin as 'a delightful triumph'.<sup>102</sup> In his article White explicitly rejected the theory of special creation of the hemiptera ('true bugs') of St. Helena arguing that it was 'contrary to, as far as we can judge, the whole scheme of creation, and that, while many things can be urged against it, there is nothing to support such a belief'.<sup>103</sup> White went on to give an account of the migration of hemiptera consistent with Darwin's own views.

There was an obvious parallel between the remote island of St. Helena and Buchanan White's beloved Ben Lawers, a Perthshire mountain famous for its uniquely rich alpine flora. The exploration of the mountain, and others round about it, could be regarded as a contribution to Darwinian theory. The scientific connections between mountain

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<sup>99</sup> Darwin, op. cit. (fn. 74), 295-309.

<sup>100</sup> Darwin uses the 'island on the land' as a description of mountains in his *Origin*. Darwin, op. cit. (fn. 74), 307.

<sup>101</sup> H. Coates, 'Obituary notice', *Proceedings of the Perthshire Society of Natural Science* (1894), 2, 46.

<sup>102</sup> F. B. White, 'Contributions to a knowledge of the hemipterous fauna of St Helena, and speculations on its origins', *Proceedings of the Zoological Society of London* (1878), 444-477. Darwin's letter to White is cited in M. Taylor 'Francis Buchanan White (1842 – 1894) and Scottish Botany' *Scottish naturalist* (1986), 164. It also appears in F. Darwin and A. C. Seward, *More letters of Charles Darwin*, vol. 2, London, 1903, 20.

<sup>103</sup> White, op. cit. (fn. 102), 451.

fieldwork and Darwinism were, for example, hinted at in Peter Macnair's 1898 paper on the distribution of Perthshire's alpine flora. By determining the reasons for the distribution of alpine species away from the 'struggle for existence' that exterminated them on the lowlands and hills, Macnair reminded members that alpine botanising contributed to research that had featured prominently in Darwin's famous work.<sup>104</sup> The Darwinian associations also allowed a parallel to be drawn between the object of investigation – alpine botany – and the subjectivity of the investigators. There was a meaningful homology for mountain botanists between the escape alpine botanising brought from the struggles and 'sordid' affairs of the town and the picture of a more peaceful highland environment where maritime and alpine botany could live and thrive away from the overcrowded and competitive plains. As one of the poems written for the Perthshire Mountain Club shows, this escape to a less competitive environment was also spiritual exercise. Penned by one of Buchanan White's daughters and read on an excursion to Ben Laoigh, the poem included the line: 'the soul has room to move and grow up here/The Maker's voice comes sounding on the breeze'.<sup>105</sup>

The more popular engagement with Darwinism among members of Scottish natural history societies was revealed by songs sung on other occasions. 'The Darwinian theory', a song written by Mountain Club bard John Young, was a popular choice for the entertainment organised during social meetings of several Scottish natural history societies. The Dundee Naturalists' Society, for example, sang it on their way home from a joint excursion with the Perthshire Society of Natural Science in 1875 and it was sung, to loud applause, at a conversazione of the Dundee Society in 1876 by John Young himself.<sup>106</sup> The song was later incorporated into the third edition of *Scottish Students' Song Book* in 1892, a collection that went through six editions in as many years and was widely used in schools and universities.<sup>107</sup>

The 'Darwinian Theory' was set to the tune 'The King of the Cannibal Islands' which, as Anthony Bennett has shown, had achieved 'runaway popularity' since its performance

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<sup>104</sup> Macnair, op. cit. (fn. 50), 241.

<sup>105</sup> Miss Buchanan White, 'The hill is our life', *Proceedings of the Perthshire Society of Natural Science* (1891), 2, 127. See also F. B. White, 'The beatitudes of Breadalbane', *Proceedings of the East of Scotland Union of Naturalists' Societies* (1893), 57-61.

<sup>106</sup> *The Dundee Advertiser*, 9 August 1875 and 28 January 1876.

<sup>107</sup> I am grateful to Mr. Peter Freshwater, formerly Deputy Librarian at Edinburgh University Library, for providing this information.

at London concerts in the early 1830s.<sup>108</sup> Bennett lists forty-one nineteenth-century songs (not including Young's) that used the tune in a variety of contexts from fashionable assembly halls to the street and working class homes. The original song told the story, in gruesomely racist terms, of a cannibal king and his one hundred wives. The fourth verse of Young's version makes direct reference to the original lyrics:

Such murderers we - far worse than Cain,  
For darker deeds our characters stain;  
For thousands of brothers we've eaten and slain,  
By the grand Darwinian theory.  
When sitting at breakfast, and picking the wing  
Of a pigeon, or grouse, or of some other thing;  
Or dining on mutton or lamb, if in spring;  
Or on salmon, or trout, or on cod, or on ling -  
Gaze into the future, and say, can't you see  
What horrible cannibals we must be,  
Devouring the flesh, which may yet become we,  
By the grand Darwinian theory?<sup>109</sup>

Yet despite references to the violent natural history associated with evolution, the song rendered the theory comic and anodyne. Young's lyrics were not so much for or against Darwinian theory as they were about enrolling a contested scientific idea for the purposes of urban conviviality.<sup>110</sup> Young's song, like the Darwinian verse and caricature of other Victorian humorists, provided, as Janet Browne puts it, 'a nonspecialist, vernacular idiom' for familiarising a local public with Darwin's ideas.<sup>111</sup> More than this, however, by lampooning Darwinian theory along with bourgeois taste and advantage, Young's song, set to a popular tune, interpolated middle class civic culture in popular evolutionary tropes in ways that echoed the Bohemian scientific satire found in *Punch* and other popular periodicals.<sup>112</sup> It also employed certain stereotypes creating comedy by comparing a lady's carriage with that of her common ancestor: "Those sparkling eyes a monkey did lend,/ That graceful form from one did descend,/ From a monkey you

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<sup>108</sup> A. Bennett, 'Rivals unravelled: a broadside song and dance'. *Folk music journal* (1993), 6, 420-45.

<sup>109</sup> J. Young, *Selina and other poems*, Perth, 1878, 265-6.

<sup>110</sup> Young's own views on evolution are not known although he did second a motion put to the Perthshire Society of Natural Science to record regret at the death of Darwin in 1882 and express an 'admiration of his work'. Anon, 'The late Mr Darwin', *Proceedings of the Perthshire Society of Natural Science* (1882), 76.

<sup>111</sup> Browne, op. cit. (fn. 76), 158.

<sup>112</sup> On this, see J. G. Paradis, 'Satire and science in Victorian culture', in B. Lightman (ed.), *Victorian science in context*, Chicago, 1997, 150.

borrowed the Grecian bend,/By this grand Darwinian theory'.<sup>113</sup>

Whether in reports of experiments, valedictory addresses, songs or mountain fieldwork, evolutionary theory was worked into the scientific culture of Scottish natural history societies. Although its form, effects and reception varied, there is little evidence to support the suggestion that evolutionary theory 'undermined the mid-Victorian natural history movement' and thus led to an increase in the amount of antiquarian fieldwork in natural history societies.<sup>114</sup> Rather than undermine natural history as an associational activity, Darwinism shaped, and was in turn shaped by, the activities of Scottish natural history societies. As this section has demonstrated, 'evolution' could be used to re-affirm an epistemic and social boundary between scientific practice and religious concerns and to promote a particular vision of what constituted strictly 'scientific' work as opposed to 'speculation'. Yet it was also the case that natural theological concerns persisted, or re-surfaced in different form, depending on the particular scientific and social activities being pursued by members of different societies. The understanding of Darwin's own work during the 1860s and 1870s as situated within an experimental culture accessible to, and sustained by, amateur naturalists points to aspects of the work of Scottish field clubs often neglected by historians. Like Darwin's experimental work the field club members were drawn to subjects that had a cultural and a scientific currency and were thus well suited to their purposes.

## Summary and Conclusion

This chapter, by looking in more detail at how the scientific ambitions of natural history societies were constituted, has highlighted the ways in which local contingencies and the interests of prominent members shaped the disciplinary affiliations, research projects and engagement with 'grand theory' that characterised nineteenth-century Scottish natural history societies. An important component of the historical geographies of nineteenth-century Scottish natural history societies was the tendency for one particular

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<sup>113</sup> Young, *op. cit.* (fn. 109), 265.

<sup>114</sup> This suggestion was made by A. J. Kidd, 'Between antiquary and academic: local history in the nineteenth century', R. C. Richardson, *The changing face of English local history*, Aldershot, 102. Antiquarian endeavour did become more prominent in a number of Scottish societies later in the nineteenth century (for example the Berwickshire Naturalists' Club) but there is no indication that enthusiasm for natural history pursuits waned due to the 'impact' of Darwinism.

department or specialism to become the dominant focus of a given society's research. The Natural History Society of Glasgow was almost exclusively zoological in its focus during the first 30 years of its existence with a particular emphasis placed on ornithological research. Members of the Inverness Scientific Society and Field Club, along with several other smaller bodies in the north east of Scotland, tended to interest themselves in geological questions, rather than in botanical or zoological investigations. The leadership of a number of other societies noted a neglect of faunal studies. In addition to such variation, different trajectories of individual disciplines in terms of professionalisation and academicisation meant the relations between members of natural history societies and discrete 'departments' of knowledge varied. The institutionalisation and increasingly technical nature of particular disciplines was not, however, the only, or even the main, factor in the choice of research projects for individual members.

The argument that the relationship between 'professionals' and 'amateurs', as well as between particular disciplinary formations, was more complicated than hitherto thought has been suggested by an examination of the Clava shell bed controversy. The actors involved in the controversy cannot readily be designated amateur or professional. Fraser was an example of an 'amateur' geologist whose professional vocation was crucial in providing the intellectual and practical skills necessary for establishing a reputation as a careful and trustworthy observer. Horne instanced a 'professional geologist' who could be contrasted to Kendall, a college lecturer. In addition, Horne, unlike a number of other professional scientists in the late nineteenth century, was fully supportive of local field clubs and was a leading member of the ISSFC. The example of the Clava shell bed investigations also revealed the form and function of the more informal connections that existed between Scottish natural history societies and with the British Association. Fraser's membership of the Edinburgh Geological Society made it possible for him to enrol the help of naturalists' in detailing the composition of the shell bed. Peter Macnair used his multiple memberships to advantage in addressing particular scientific problems. These informal linkages were in part due to the need to involve individuals and institutions whose expertise was associated with different scientific disciplines.

The Clava shell bed investigations also revealed the difficulties faced when knowledge acquired through inductive field research did not provide the sort of scientific guarantee

that the ‘accumulation of facts’ approach was believed to (eventually) provide. Such difficulties were part of the reason for the differences in the engagement with Darwinism and other evolutionary theories. For some, Darwin’s notion of descent with modification by means of natural selection was worthy of being considered fully scientific precisely because Darwin was the master of massing facts about nature. Where such facts could not be obtained, as in the case of the origin of life, space opened up for a religious reading of the natural world; a reading regarded by some, if not most, members of Scottish natural history societies as crucial to their activities. Others worried that Darwinism undermined a direct apprehension of God in nature and removed the theological underpinning of associational science. One route out of a de-spiritualised inductivism was to grant the truth of a Darwinian view and, rather than finding theological truth in the exterior beauty of nature, discover instead the similitude between the internal mechanisms of nature and the ‘interior realities’ of Christian life. This solution, which found its way into the everyday practices of out-of-door fieldwork as well as formal statements on the meaning of associational science, was attractive because it maintained a distinction between the territories of science and religion while upholding the immediate experience of the Divine in the exploration of local nature.

An increasing emphasis on nature’s ‘hidden architecture’ rather than nature’s external appearances translated into a valuing of an experimental culture that flourished alongside the floristic mapping carried out through fieldwork.<sup>115</sup> The reception of Darwinism by Scottish natural history societies included a growing interest in experiments. In particular, carefully controlled investigations of insectivorous plants became popular; a popularity due in part to the plant’s iconic status. Highlighting the impacts of ‘Darwinism’ thus reveals a set of practices not always given prominence in accounts of nineteenth-century ‘popular’ and associational natural history.

The aim of chapters 6 and 7 has been to attend more closely to those institutional practices that members of societies considered in the domain of science rather than of local civil society. They have asked how, in other words, claims to scientific authority were upheld by local bodies anxious to demonstrate their relevance to a wider scientific constituency alongside retaining an appeal for local publics. The answers given to that

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<sup>115</sup> The term ‘hidden architecture’ is Michel Foucault’s. M. Foucault, *The order of things*, London, 2002 [1966], 249.

question by members of Scottish natural history society has further revealed the changing social and cultural agendas that were intimately linked to a concern to support the cause of science.



## Chapter 8

### Conclusion: utility, identity and civic science in Victorian Scotland

In 1896, J. T. Merz wrote of ‘the individual greatness, but also the isolation of English men of science and their discoveries’.<sup>1</sup> For Merz, it was only in the final third of the century that the ‘machinery of science’ exemplified by French institutions and Germany universities began to be more widely developed in England.<sup>2</sup> Before this England ‘possessed no well-trained army of intellectual workers’ needed to carry forward the pioneering work of the individual ‘genius’.<sup>3</sup> Although Merz suggested that science in Scotland had benefited from a more continental university system, a successful publishing industry and well-run parochial schools, it was Scottish individuals and not institutions that held Merz’s attention. Scottish ‘lovers of nature’ like Hugh Miller, Thomas Edward and David Robertson, along with their English counterparts, were portrayed as nursing new sciences like geology and zoology ‘in their unpretentious infancy’.<sup>4</sup> Merz’s stress on individual ‘genius’ and his conception of scientific method as ‘exact and mathematical’ was in keeping with other commentators who, from the 1850s, had increasingly stressed the ‘fortunate cast of intellect’ and theoretical knowledge required to do advanced scientific work.<sup>5</sup> While he still saw a role at the end of the nineteenth century for the ‘scientific amateur’ it was as a heroic individual producing new ideas.

Six years after Merz’s reflections on English (and Scottish) science were made, evolutionist, geographer and city planner Patrick Geddes offered a more positive assessment of the past contributions and future possibilities of British associational science. Speaking to the newly-formed Dunfermline Naturalists’ Society, Geddes pointed to the example of the Perthshire Society of Natural Science with its regional

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<sup>1</sup> J. T. Merz, *A history of European thought in the nineteenth century*, 4 vols., London, vol. 1, 1896, 294.

<sup>2</sup> Merz, *op. cit.* (fn. 1), 280.

<sup>3</sup> Merz, *op. cit.* (fn. 1), 252, 296.

<sup>4</sup> Merz, *op. cit.* (fn. 1), 286-87.

<sup>5</sup> See R. Yeo, ‘Scientific method and the rhetoric of science in Britain, 1830-1917’, in J. A. Schuster and R. Yeo (eds.), *The politics and rhetoric of scientific method: historical studies*, Dordrecht, 1986, 270-71.

museum ('the best in the country') and the devotion of its members to the cause of local science.<sup>6</sup> The Perthshire Society epitomised for Geddes the advantages of provincial science not only for increasing a knowledge of local flora and fauna but for training citizens for a new age. A simple herbarium, in Geddes' holistic syntax, was a possible beginning for global improvement. Botanical methods could be applied with advantage to commercial ventures. Associational fieldwork, more than individual genius, could transform a public's vision of urban space and thus lend support to efforts to improve urban life. Provincial science contained the seeds of an 'applied biology' that would, Geddes urged, transform social and commercial life. Not only was there room in Geddes' vision for a generous assessment of the contributions of Scottish natural history societies in the past, those same institutions, he contended, would prove indispensable in the 'neo-technic age' of the future.

The 'reality' of nineteenth-century Scottish associational science lay somewhere in between Merz's *fin-de-siècle* snub of the 'army' of scientific volunteers active in Victorian Britain's scientific societies and the socio-economic and scientific ambitions of Geddes' provincial prognostications. Where Merz stressed a narrowly defined field of scientific endeavour and Geddes effused grandiose social aspirations, members of Scottish natural history societies, less sanguine about a social impact on a global scale and more positive about their collective contributions to science, had worked to hold together both the scientific and social duties of a local naturalists' association.

Analysing how members of Scottish natural history societies positioned themselves in relation to larger narratives of scientific progress while maintaining connections with local civil society has been the central aim of this thesis. The activities of the 70 or so Scottish natural history societies extant between 1830 and 1900 have been presented as a complex set of situated concerns – social and epistemological – tied to the collective pursuit of natural historical knowledge. My purpose has not been to itemise the scientific contributions of nineteenth-century Scottish natural history societies. Neither has it been to comprehensively and individually situate each society in its local or national context. I have, however, looked to understand both the difference scientific work made to the social and cultural impacts of the societies and to tease out some of

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<sup>6</sup> P. Geddes, 'A naturalists' society and its work', *Scottish geographical magazine* (1903), 19, 89-95; 141-7.

the mutual relations between local cultural ambitions and scientific concerns. The thesis is offered, then, both as redressing a neglect of Scottish institutions which had not agreed to ‘divorce natural knowledge [from] general culture’ – a ‘divorce’ some have regarded as characteristic of late-Victorian science – and more broadly as a contribution to the historical geographies of nineteenth-century civic science.<sup>7</sup>

The aims suggested by the work of others on nineteenth-century associational science have been addressed and modified through a close reading of the sites and spaces inhabited and produced by members of Scottish natural history societies. If anything, I have concentrated on the more immediate horizons of concern that defined nineteenth-century Scottish civic science rather than asking how such science was a means to national identity or political authority at the level of the state. Given the empirical focus on the micro-practices of local society, there has been a danger that the scientific and social ambitions of nineteenth-century Scottish natural history societies appear exaggerated at the expense of the complexity of Victorian scientific culture and civil society. While it has not always been possible to keep in view this sprawling ‘backdrop’ and sense of perspective, I have tried to offer glimpses of that larger world without becoming the equivalent of the ‘view hunter’; a personage that Victorian field club excursionists regarded as a threat to their aim of a detailed scrutiny of the natural history of a local district. Given the emphasis on the practices more than the products of nineteenth-century Scottish natural history societies it has seemed appropriate to go along with this inductivist sensibility without, I hope, capitulating to a naïve form of empiricism. The historical geographies of the societies sketched here, though intersecting with conceptual concerns about the nature of nineteenth-century civil society and science, emerge from a concern to take seriously the influence and meanings of local circumstance.

In the paragraphs that follow I reiterate the central findings of the thesis and relate them to the general aim of positioning Scottish naturalists’ associations in relation to nineteenth-century science and civil society. Rather than move from chapter to chapter I want to re-visit the various sites, spaces, practices and personalities of the societies in

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<sup>7</sup> Arnold Thackray and Steven Shapin have speculated that the ‘divorce’ of science from culture occurred in the period between 1870 and 1900. S. Shapin and A. Thackray, ‘Prosopography as a research tool in history of science: the British scientific community, 1700-1900’, *History of science* (1974), 12, 11.

relation to two particular concerns. The first concern centres around the question of utility. The issue of the benefits and advantages of associational natural history was, I contend, of central importance to society members in their efforts to be exemplary citizen-naturalists. Following this, I return to the question of identity, underlining the composite and situated natures of the public personae fostered by members of the societies.

## Utility

A focal point for the debates engendered by the 'dual identity' taken here to typify nineteenth-century Scottish natural history societies was the notion of utility. The advantages of associational fieldwork were reflected upon at length in presidential addresses and formed a central thrust of the recruitment rhetoric of the societies' leadership. Natural historical fieldwork was marketed to a local public in the verbal compositions and textual performances of local naturalist-worthies; addresses which spoke of their commitment to literary as well as scientific sensibilities. The benefits of 'subscriber science' were also enacted in the form and content of the societies' excursions which were designed to be significant cultural events as well as valuable scientific expeditions. The trick for field club members was to show the superior cultural and social fecundity of 'strictly scientific' activities.

Two forms of fieldwork proved particularly attractive to members interested in generating both popularity and scientific results. Dredging, drawing on the discourse of hidden depths and promises of rare and beautiful marine fauna, attracted large numbers of excursionists. At once a matter of education and of research, dredging excursions provided delights for tyro and expert alike. The allure of deep water was matched by the draw of high mountains. Alpine botanising provided a heady mix of conviviality and science, mountaineering skills and a rhetoric of an improving social and spiritual environment. In addition, highland fieldwork provided the opportunity to enact both a scientific programme linked to Darwinian science and a reconciliation of evolutionary nature and spiritual meaning. Fieldworkers thus returned to the town equipped to engineer civic improvement.

The utility of natural history display and instruction was more materially expressed in buildings and popular events and symbolically linked to civic pride through the familiar

rituals of Victorian provincial urban life. Fungus forays and frog suppers may have been Perth (and Hereford) innovations but all the societies made use of public dinners alongside a suite of other urban rituals to communicate the cultural contributions of their local scientific pursuits. The arrangement of museum displays, in theory at least, carried a moral and scientific charge. A local-only policy was deemed an appropriate ambition for a provincial society since it allowed members to contribute to science through careful induction and standardised cataloguing and provided the sort of focus for students of natural history that avoided the moral and social dangers of being either a narrow specialist or ineffective generalist.

This thesis would, I contend, offer a lopsided portrait if all the activities of the societies were represented as fully charged with moral and social meaning defined in relation to local civic culture. The practical encounter with nature in the field often involved a much more pragmatic and technical approach. The Clava shell bed controversy, at least in its later stages, was not explicitly formulated in relation to issues of civic relevance and cultural purpose. The almost stubborn refusal to yield surplus meaning that marked the fieldwork down around Clava and the debates held on the subject in the several societies revealed an impulse within Scottish associational science that saw science for science's sake as the proper reason and advantage of a field club's existence. The shell bed debates relied in part on the sorts of 'practices of place' and the traffic of specimens, methods and personnel between field and laboratory that Robert Kohler has argued was characteristic of much late-nineteenth-century fieldwork endeavour, at least in North America.<sup>8</sup> Yet the Clava debates were conducted less in terms of the merits and demerits of laboratory investigations over fieldwork – both were acknowledged as essential in solving the conundrum – and more as a question of which particular reconstruction of Scotland's glacial past best explained the limited traces found by James Fraser.

The same concern with maintaining as the crux of field club activities their scientific worth was behind attempts to communicate local natural knowledge to an international scientific constituency. Arguably, the usefulness of published transactions was increasingly defined by the extent to which the content of papers were 'scientific' as

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<sup>8</sup> R. E. Kohler, 'Place and practice in field biology', *History of science* (2002), 40, 189-210; *idem*, 'Labscales: naturalizing the lab', *History of science* (2002), 40, 473-501.

opposed to 'popular'. There may be a case for understanding this more narrowly defined notion of 'science' as a cultural product and social world in itself. That is, a 'culture' of science rather than science in 'culture'. This would not be to argue, however, that investigations and knowledge of a glacial past or a local field site were immune from entrainment in wider cultural concerns. The point I want to make here, however, is that this scientific 'impulse' on occasion threatened to undo the settlements made between associational natural history and local civic culture. Although Fraser's find at Clava was seen as a boon for the Inverness Scientific Society and Field Club, ownership of the social capital accrued through the scientific value of the discovery was transferred in large part to the British Association and to members of geological societies active outside the north east of Scotland. There could, then, be an almost inevitable tension between the practices of science and the practices of civil society because of the need for scientific work to be validated in ways apparently free from 'local' interest.

Testimony of the sometimes discordant discourses called upon to support the field activities of the societies was given at the Jubilee celebrations of the Natural History Society of Glasgow (NHSG) in 1901.<sup>9</sup> Held in the Masonic Hall, West Regent Street, the festivities took the form of a *conversazione* attended by city worthies and representatives of twenty-one other societies. The answers of prominent members and esteemed well-wishers to the question of the Society President 'Has our existence as a Society been justified', varied considerably.<sup>10</sup> Glasgow's Lord Provost saw the Society's existence being for 'the good of the city, for the good of the citizens', and providing an associational activity that 'took members away from the city into some of the brightest and fairest scenes of nature'.<sup>11</sup> John Gray M'Kendrick, Professor of Physiology at the University of Glasgow, eschewing the Lord Provost's romanticism, saw value in the members' commitment to scientific progress and willingness to pursue studies of the life-histories of specimens over the older tradition of collecting and cataloguing. His was a plea for less of the field and more of the laboratory. For all that, character still mattered to M'Kendrick and studying the works of nature gave, to quote the Professor of Physiology, 'a kind of certificate of sincerity to character that nothing else can

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<sup>9</sup> Anon, 'Special meeting to celebrate the Jubilee of the Society', *Proceedings and Transactions of the Natural History Society of Glasgow* (1901), 6, 363-78.

<sup>10</sup> Anon, *op. cit.* (fn. 8), 367.

<sup>11</sup> Anon, *op. cit.* (fn. 8), 369.

communicate'.<sup>12</sup> Sharing M'Kendrick's concerns with appropriate scientific practice Sir John Murray, the Scots-Canadian marine zoologist, with an eye to Lord Kelvin on the platform, called for the training of citizens who would possess a 'kinetic scientific efficiency'. This, Murray maintained, would lay the foundations of 'commercial and industrial prosperity upon the sure bed-rock of science'.<sup>13</sup> It was not civic pride that mattered to Murray as much as 'national greatness', and societies like the Glasgow body kept the public alert to the importance of new scientific knowledge, understood as a national product. Scientific societies, if Murray's comments are taken at face value, were primarily popularising bodies mediating between a national scientific elite and a general public.

The Glasgow celebrations revealed some of the various and sometimes competing demands placed upon Scottish natural history societies. It was incumbent upon members, given the competition for civic capital in a crowded associational realm, to demonstrate the benefits a natural history society could bring to a local town. It was a local rather than 'scientific' public who would provide the financial aid to purchase anything from display cases to buildings. Yet the authority to speak as members of a *scientific* society was constituted in part by the ability of local naturalists to demonstrate their wider reputation as competent scientific practitioners. Usefulness to a local public, understood in terms of rational recreation, morally acceptable pleasure and accessible and leisure-time science was not always easy to justify alongside utility defined in relation to the demands, organisation and strictures of mid- to late-Victorian science.

## Identity

Both the institutional identity of Scottish societies, and the identity of individual members was another 'site' where the demands of provincial associational science were worked out. The question of 'what can we, as a formalised group of local naturalists, offer' was closely linked to the question about 'who do we think we are'. No single answer was given to either question. Yet, discernable amongst the different responses was a shared concern with maintaining a place for natural history pursuits in civil society

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<sup>12</sup> Anon, op. cit. (fn. 8), 371.

<sup>13</sup> Anon, op. cit. (fn. 8), 372.

and in the 'republic of science'.

Ruth Barton, in her study of the identity language of men of science in mid-Victorian Britain has directed attention to the vocabulary used to indicate just who qualified for inclusion in a British scientific community.<sup>14</sup> One of Barton's proposals is that the categories professional and amateur were not, in fact, particularly important to men of science in determining who was deemed qualified to participate in significant scientific research. Instead, certification of scientific authority had more to do with character and conduct, along with publications, memberships and connections. If there was a hierarchy, it was not based on formal professional qualifications but on reputation of 'genius' and philosophical acumen, and in ways related to class and gender.

Barton's work has proved helpful in approaching the question of identity with respect to members of nineteenth-century Scottish natural history societies. Members participated in the sorts of claims that Barton identifies as crucial to men of science more generally, namely a commitment to 'truth', the 'public good' and sacrifice of time and money. What differed were the ways in which such commitments manifested themselves. A commitment to 'truth' was linked to a commitment to a particular style of scientific inquiry that forwarded the aims and concerns of local natural history societies. The 'public good' was more often defined in relation to a local rather than a national public. Self-sacrifice had to be demonstrated in relation to local concerns such as planning and funding buildings for a museum or serving on the council of the town's scientific society. It has been these manifestations, closely tied as they were to the institutional identity of Scottish natural history societies, which have been investigated in this thesis. In many ways, such manifestations, and the accompanying rhetoric, confirms Barton's conclusion that a 'shared rhetoric and a shared identity' defined the mid- to late-Victorian scientific community. Yet as Barton points out, the audiences of 'science' and the alliances made in different sorts of contexts at different times mattered in terms of what or who was considered properly scientific. Provincial naturalists could appear as practitioners on the edges of a 'scientific community', a peripheral status linked to their concern to appear as central characters in the unfolding drama of Scottish civic life.

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<sup>14</sup> R. Barton, "Men of science": Language, identity and professionalization in the mid-Victorian scientific community', *History of science* (2003), 41, 73-119.



The confluences between scientific activities and civic identity articulated by Stirling Town-Clerk David B. Morris at the Jubilee celebrations of the NHSG were typical of the sorts of connections members of societies made between scientific pursuits and citizen formation throughout the period studied by this thesis. Noting his concern with the teaching of science, and of nature studies in Scottish schools, Morris pointed to five 'faculties of mind' activated and enhanced by the scientific study of nature. These included the faculties of observation, judgement, imagination, artistic sense and 'the feeling of worship' that revealed the mind's 'higher instincts'. Such faculties could be interpreted as crucial to effective scientific work. They also described those capacities thought desirable and necessary for civil society. Nature study, in Morris's account, was an effective form of self-culture and therefore linked to questions of citizenship, self-governance and social progress. Morris' rhetoric, as I have noted, chimed with a longer tradition of regarding science as a form of self-culture. It was a useful strategy for members of natural history societies given the onus placed on demonstrating the social benefits of science. It was also a contested strategy characterised by a number of tensions both between science and the social and, as noted above, between the science that was thought a means to self-culture and the science regarded as qualifying the practitioner for membership of a wider scientific community.

Science conferred local cultural distinction but also, it was claimed, blurred the social boundaries between members of a local natural history society. As a result there was an uneasy relationship between the popularity of autodidact naturalists and the image of the provincial associational naturalist as men of culture defined in relation to largely middle-class values. The particular prominence given to the 'autodidact' in the discourse of associational natural history was due in part to the emphasis placed on making science 'popular' as well as making a populace scientific. The autodidact also revealed, at least in the accounts read and produced by members of natural history societies, the sorts of virtues thought to attach to the pursuit of natural history.

Privation, innate love of nature and a passion of collecting were all regarded as qualities of the working-class naturalist. Yet, at other times, the 'pauper' naturalist was regarded as endangering efforts to portray the benefits of studying natural history. For some, it was better to show how an interest in natural history was compatible with, and aided, the pursuit and management of commerce.

The ways in which the public persona of the civic naturalist was constructed had

implications too for the place of women within nineteenth-century Scottish natural history societies. It is difficult to discern anything other than a thorough-going masculinist discourse undergirding the claims of social and scientific value of civic science. Again, however, there was an uneasiness about presenting 'scientific' natural history as fulfilling a role of equipping male citizens with the faculties that qualified them for service in Scottish civic society. It was imperative, at least for societies in smaller urban centres, that science was presented as accessible to all in order to retain 'popular' support. Championing the autodidact meant resisting the more formal certification of scientific ability beginning to emerge in the later part of the nineteenth century. It also meant allowing lady members to take an active part in a society's scientific work. This challenged the gendered nature of civic culture as well as science and suggests that debates about exclusion of women from field club science were not always conducted in terms of the specialisation and academicisation of natural science. My contention has been that the gendered nature of nineteenth-century Scottish civic culture needs to be investigated further as a factor in understanding both the exclusion, and the indications of increasing inclusion, of women in associational science in the late-Victorian period.

The argument is, then, that the identity of the 'civic naturalist' was fashioned both in relation to civic concerns and in relation to 'scientific standards'. If this is correct, it is not possible to ignore the relationship between the professionalisation of science and the identity of field club naturalists. By the late-Victorian period at least, the number of professional science practitioners, however defined, was on the increase. This thesis is in substantial agreement with the conclusions reached by Sam Alberti in his study of amateur-professional relationships in late-nineteenth-century Yorkshire. It concurs, for example, with his suggestion that the historian of natural history should be 'wary of assuming a necessary mapping of *professional* onto *laboratory* and *expert*, and *amateur* onto *field* and *non-expert*'.<sup>15</sup> It does, however, supplement that analysis by paying less attention to the relations between academic biologists and amateur naturalists, focussing instead upon a more diverse set of associations among amateurs and between amateurs and different sorts of professionals. It also offers a comparative study, albeit one that places

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<sup>15</sup> S. J. M. M. Alberti, 'Amateurs and professionals in one county: biology and natural history in late Victorian Yorkshire' *Journal of the history of biology* (2001), 34, 142.

more emphasis on the ways in which science was recruited in service of civic society.

As Alberti's work makes clear, precisely because the term 'professional scientist' had not attained a definite meaning even by the end of the nineteenth century, it can only be used to help define the identity of associational naturalists when understood within particular contexts to which certain natural history societies were closely connected. In late-Victorian Dundee, as in late-Victorian Yorkshire, it made sense for members of the local Naturalists' Society to lend their full support to the new College and its science professors. The Dundee Naturalists' Society was regarded as a popularising and 'popular' body diffusing rather than producing scientific knowledge. With a large membership it could provide for the College the kind of local support needed for its success. It was the Dundee Working Men's Field Club, (instituted c. 1890) that sought to 'work up' the natural history of the district. Among the members of that Club were staff of the new College. For field clubs in the north east of Scotland, the issue was not so much the relations between academic professionals and amateur naturalists as it was between members of the Geological Survey and members who pursued geology in their 'leisure hours'. Professionalisation in nineteenth-century geology had more to do the activities of the Geological Survey than the growth of geology as an academic subject. Thus disciplinary identity needs to be taken into account in understanding what exactly constituted a 'professional' man of science. It was to groups of different sorts of 'professionals' that an even more diverse group of 'amateurs' sought to relate.

What further complicates describing members of nineteenth-century natural history societies using the categories 'amateur' and 'professional' is the fact that 'amateur' members were themselves divided in terms of those of professional and those of 'non-professional' occupations. The title 'professional amateur', although not perhaps an actor's category, is not necessarily an oxymoron. James Fraser is one striking example of a professional engineer who was also highly regarded as a naturalist and, indeed, an antiquarian precisely because his professional duties required geological and more general scientific expertise. Other members such as pisci-culturist Joseph Armistead and Inverness nurseryman James Gossip were 'amateurs' who could also claim to be professionals in the sense that they had a salaried post dedicated to 'scientific' research. Armistead in particular, who was a pioneer of studies on the life history of fish, was

dedicated to professional scientific standards in the private fishery business.<sup>16</sup> The twist in that individual's tale was the fact that his scientific work was viewed as a way of fulfilling a divine call to use his natural history interests to 'benefit his fellow men'.<sup>17</sup> His composite scientific identity was thus closely linked to his religious convictions; an association not of course uncommon among members of nineteenth-century Scottish natural history societies.

One of the striking parallels between the processes of 'amateurisation' in late-nineteenth-century Yorkshire and the formation of amateur identity in Scotland during the same period was the contrast made between the 'mere collector' and the 'true' or 'scientific' naturalist. This may have had less to do with wishing to uphold scientific authority in relation to anti-amateur professionals as with maintaining scientific standards that were shared by 'amateurs' and 'professionals' alike. As with the coterie of Yorkshire amateurs concerned with scientific standards, 'collecting' as a description of their field activities was rejected by Scottish naturalists concerned with the scientific reputation of their societies. In Scotland, as Chapter 6 makes clear, there were efforts similar to, and indeed inspired by, those in Yorkshire to standardise, centralise and make more efficient the field activities of Scottish societies. There is also evidence to suggest that chastisement of 'carefree elements' was on the agenda of the societies' leadership. Yet it should also be stressed that it was not ever a question of *either* pleasure *or* science. The individual considered the doyen of Scottish field naturalists, Francis Buchanan White, while concerned with the scientific contributions of field clubs, was also represented as preserving exactly that 'combination of faculties' outlined by David Morris and connected to civic culture as well as to science.<sup>18</sup> He had, one obituarist noted, 'a wholesome dread of ... excursions becoming mere pleasure picnics' yet his papers were infused with 'picturesque touches of description and ... gleams of humour'.<sup>19</sup> While White had forcefully urged that 'the primary of object of [society]

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<sup>16</sup> See J. Armistead, *Piloted: being a series of notes and experiences from the author's life*, London, 1906.

<sup>17</sup> Armistead, *op. cit.* (fn. 16), 18.

<sup>18</sup> The phrase 'combination of faculties' is used by Henry Coates in his notice of White's death. He was referring to White's appreciation of 'nature as a whole', his genial character and his having the 'eye of the artist and the feeling of the poet to reverence all that is beautiful ... in nature'. H. Coates, 'Obituary notice of the late Dr. F. Buchanan White', *Proceedings of the Perthshire Society of Natural Science* (1894), 2, 45.

<sup>19</sup> H. Coates, 'The late Dr. F. Buchanan White', *Proceeding of the Perthshire Society of Natural*

excursions was scientific research' he rejected a necessary antithesis between science and pleasure. Strictly scientific endeavour *was* a (true) pleasure. The fieldwork of an 'expert' brought a greater appreciation of nature's intricate and ordered beauties.

## Postscript

This study is offered as a contribution to the historical geography of nineteenth-century civic science. It has explored a wide range of spaces, practices and people associated with the collective pursuit of natural history carried out in relationship with civic culture. Many spaces of nineteenth-century Scottish science outside the elite institutions and universities have been investigated by recounting the rich and diverse tradition sustained by natural history societies. Yet many remain unexplored. Those familiar with the sheer range and volume of the scientific interests of nineteenth-century associational naturalists will know that much more remains to be said about their contributions. There were 'amateur' scientific practitioners who did not associate and whose work remained obscured by civic pride and prejudice. The lack of attention to calls to keep provincial natural history collections local meant that museum catalogues carry records of donators who have not been profiled here but whose explorations forged connections between unsung imperial projects and the practices of provincial science. And then there are Geddes' turn-of-the-century prognostications. What happened to the cultures and spaces of nineteenth-century Scottish civic science, particularly after the ravages of the First World War? Figures indicate that the membership of the Perthshire Society of Natural Science, that oft-cited exemplar of provincial associational science, continued to grow increasing from 200 in 1880 to 442 in 1905. By 1917, however, this had fallen to 310. Not a drastic but still significant fall. Did this signal the 'strange death' of Scottish civic science? Stories elsewhere of moth-balled collections and the transformation of the museum buildings to billiard halls suggest that it did. The continuing existence of many nineteenth-century field clubs suggest otherwise. No

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*Science* (1895), 2, 59.

doubt, as ever, local contingency played a part and an answer cannot be given here.

As this thesis has maintained throughout, nineteenth-century Scottish natural history societies shared a dynamic dual identity worked out in, and contributing to, different civic contexts. They looked to secure a place for science in civic culture and enrol civic culture in the cause of science. Yet what was meant by 'science' and 'civic culture' did not remain static and the relations between the two can only be examined by attending to the complicated historical geography of local contexts, different audiences and wider networks. There was a shared rhetoric, epitomised by Morris's five faculties, that aided members of natural history societies in the task of maintaining their position as citizens in a local urban setting and an imagined republic of science. Yet, as the different combinations of factors involved in the fashioning of individual and institutional identity show, attention to the geography of the relationships between scientific and civic concerns is crucial to understanding the many-sided nature of Scottish nineteenth-century associational science.

## Appendix I

### Alphabetical list of Scottish natural history societies, c. 1831-1900

This appendix does not aim to give a definitive list of all Scottish natural history societies active between 1830 and 1900. An exhaustive survey of local post office and street directories would undoubtedly reveal others. The following list, constructed from nineteenth-century surveys of local scientific societies, and from other contemporary sources, indicates the diversity and abundance of societies during the period with which this thesis is concerned. The list is divided into two sections. Section 1 lists those provincial societies (or societies with a provincial 'character') that included the study of natural history, local and general, as a central aim. Where possible a brief synopsis of the history each society is given including the frequency of meetings, the number of members in a representative year, publications and the location of archival material. No attempt has been made to systematically provide this information for the period after 1900. Section 2 lists those societies which were either specialist bodies or did not have the 'provincial character' of those listed in section 1. It also includes a number of philosophical societies which, while often including natural history as part of their remit, had interests more catholic than most natural history or scientific societies and were distinct enough to merit being placed in a different but 'related' category. Mechanics' institutes have not been included.<sup>1</sup>

The appendix adopts symbols and abbreviations used by a recent survey of Scottish medical societies active between 1731-1939 (see sources). So:

1. < before or > after a date indicates the first or last known reference to a society and signifies that the body in question may have pre-dated or post-dated the years given here.
2. The abbreviations N.I. (none identified) and N.L. (none located) are also employed. Not all records for these bodies are listed by the National Register of Archives and complete runs of society publications are not always readily available or even extant.

#### Section 1: natural history societies

##### 1. Aberdeen Natural History Association (1845-1852)

###### *History*

First proposed by William Macgillivray, Professor of Civil and Natural History, University of Aberdeen. Little is known about why this society lasted only 6 years.

###### *Meetings*

Fortnightly. Included indoor meetings and excursions.

###### *Membership*

Original members included Professor William Macgillivray, Rev. Simon Mackintosh, Dr. William Temple and Alexander Mitchell. Honorary Members included Robert Jameson,

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<sup>1</sup> For Scottish mechanics' institutes see W. H. Marwick, 'Mechanics' institutes in Scotland', *Journal of adult education* (1933), 6, 292-309.

Professor of Natural History, University of Edinburgh and Rev. Dr. John Fleming.

*Publications*

N.I.

*Records*

Aberdeen University Historical Collections, MS544, Minute Books.

## **2. Aberdeen Natural History Society (1863-1931>)**

*History*

James William Helenus Trail 'chiefly instrumental' in founding the Society.<sup>2</sup> The Society changed names to the Aberdeen Natural History and Antiquarian Society some time after 1895.

*Meetings*

Met 'regularly during the winter months'.<sup>3</sup>

*Membership*

Founded by six Aberdeen Professors and 35 other members. By 1873 there were 80 members. This decreased to 60 by 1891.

*Publications*

*Transactions of the Aberdeen Natural History Society*, three volumes published 1869, 1878 and 1885. Occasional publications were produced thereafter.

*Records*

N.L.

## **3. Aberdeen Working Men's Natural History Society (1886-1916>)**

*History*

Formed by 'a small band of working men for the study of natural history'.<sup>4</sup> Held several public exhibitions aimed at school children. Attracted the support of Professor James Trail in 1899 after appealing to the University Senatus for permission to meet in Marischal College. The Society's name was changed to the Aberdeen Working Men's Natural History and Scientific Society in the mid-1890s.

*Meetings*

In addition to the public exhibitions an annual programme of winter lectures was organised.

*Membership*

40 members in 1890.

*Publications*

*Transactions of the Aberdeen Working Men's Natural History and Scientific Society*, three volumes covering years 1901-1916.

*Records*

N.L.

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<sup>2</sup> J. W. H. Trail, *James William Helenus Trail: a memorial volume*, Aberdeen, 1923, 30.

<sup>3</sup> J. Roy, 'Introduction', *Transactions of the Aberdeen Natural History Society* (1878), 3.

<sup>4</sup> Anon, 'Our Society', *Transactions of the Working Men's Natural History and Scientific Society* (1901-1906), 1, 9.



#### 4. Airdrie Natural History Society (<1890>)

##### *History*

Mention of the Society appears in an article on the Botany of the New Monkland Parish but nothing is known of the circumstances or exact date of foundation.<sup>5</sup> From 1894 the Society met in the newly formed Museum and Observatory.<sup>6</sup>

##### *Meetings*

N. I.

##### *Membership*

N. I.

##### *Publications*

N. I.

##### *Records*

N. L.

#### 5. Alford Field Club and Scientific Society (<1883-1895>)

##### *History*

Was involved in the annual meetings of the Northern Scientific and Literary Societies from 1883 and the East of Scotland Union of Naturalists' Societies from 1884.

##### *Meetings*

N. I.

##### *Membership*

50 members in 1884. 21 members in 1889.

##### *Publications*

N. I.

##### *Records*

N. L.

#### 6. Andersonian Naturalists' Society (1885-1931)

##### *History*

Founded by sixteen gentlemen in continuance of botany evening classes held at Anderson's College and run by Rev. Alexander Stoddart Wilson. It did not set out to rival the Natural History Society of Glasgow (see below) and appealed to 'learners' rather than experts. It merged with the NHSG and the Microscopical Society of Glasgow in 1931.

##### *Meetings*

Summer excursions and winter indoor meetings.

##### *Membership*

47 members in 1886. 108 members in 1890.

##### *Publications*

*Annals of the Andersonian Naturalists' Society*, 1893-1908.

##### *Records*

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<sup>5</sup> A. B. Motherwell, 'Botany of the parish', in John Macarthur, *New Monkland Parish*, Glasgow, 1890, 371-73.

<sup>6</sup> J. Knox, *Airdrie: a historical sketch*, Airdrie, 1921, 121.

Mitchell Library, Glasgow, TD1408/6/1. Minute Books, Scrapbook, Lists of members etc.

## **7. Alloa Society of Natural Science and Archaeology (1863-1914>)**

### *History*

Founded by 12 local gentlemen, the Society raised money for a museum building in 1873. The building opened in 1874 after a three day bazaar.

### *Meetings*

Indoor meetings. One annual excursion on the Queen's birthday.

### *Membership*

60 members in 1865. 97 members in 1873.

### *Publications*

*Transactions of the Alloa Society of Natural Science and Archaeology*, one volume for years 1863/64. *Proceedings of the Alloa Society of Natural Science and Archaeology*, annual volume from 1865-1876.

### *Records*

N. L.

### *Secondary Literature*

A. Wilson, *The Alloa Society of Natural Science and Archaeology a review of the Society's doings, January, 1863-1900*, Alloa, 1901.

## **8. Arbroath Horticultural and Natural History Association (1880-1938>)**

### *History*

Formally combined horticultural interests and natural history pursuits from 1883 when the Arbroath Natural History Association merged with the Horticultural Association. This combination disassembled in 1905 when the name was changed to the Arbroath Scientific and Natural History Association.

### *Meetings*

Held regular indoor meetings. The Society's field club also organised outdoor excursions.

### *Membership*

68 members in 1889.

### *Publications*

*The Flora of Arbroath and its neighbourhood*, Arbroath, 1882.

### *Records*

Angus Archives, MS 91, Minute Books.

### *Secondary Literature*

Anon, *Celebration of Jubilee of Arbroath Scientific and Natural History Association*, Arbroath, 1930.

## **9. Arbroath Natural History, Antiquarian and Scientific Society (1843-1918)**

### *History*

Known locally as the museum society, the Arbroath Association aimed to construct a local museum not restricted to the display of local natural history. 21 directors solicited the aid of locals to build up the collections. In 1865 the Society acquired the use of a large room in Arbroath's new Public Hall. The Society also organised public lectures in

1884.

*Meetings*

Director's meetings and public lectures.

*Membership*

N. I.

*Publications*

*Annual report of the directors of the Arbroath Scientific and Literary Association, 1855-1860.*

*Records*

N.L.

*Secondary Literature*

G. Zealand, *Halcyon days*, Arbroath, n.d.

## **10. Archaeological and Physical Society of Bute (1872-1901)**

*History*

Set up to investigate local natural history and archaeology, the Society included a meteorologist and recorder among its office bearers. The Honorary President was the Marquess of Bute and local M.P. Charles Dalrymple was one of the Vice-Presidents.

*Meetings*

N.I.

*Membership*

N. I.

*Publications*

N. I.

*Records*

Bute Museum, uncatalogued MSS, Minute Books.

## **11. Ayrshire Naturalists' Club (1850-54)**

*History*

Associated with the Rev. David Landsborough (Sr.) who died of cholera in 1854. An effort was made to revive the Club in 1860.<sup>7</sup>

*Meetings*

Regular monthly excursions

*Membership*

N. I.

*Publications*

N. I.

*Records*

N. L.

## **12. Banffshire Field Club (1880-extant)**

*History*

The Club's first excursion was conducted by John Horne of the Geological Survey. Horne's influence in the formation of the Club was acknowledged by members. Other

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<sup>7</sup> See *Annals of the Kilmarnock Glenfield Ramblers Society* (1907), 5, 25-31.

founding members included Rev. Aeneas Chisholm, a local Parish Priest and Thomas Edward, subject of a Samuel Smiles biography. The Club worked closely with the town's museum providing specimens and storage cases.

*Meetings*

Regular indoor meetings.

*Membership*

76 members in 1884.

*Publications*

*Transactions of the Banffshire Field Club, 1880-1931*

*Records*

N. L.

*Secondary Literature*

M. G. Anton, *The Banffshire Field Club 1880-1980: a short history*, Banff, 1980.

### **13. Berwickshire Naturalists' Club (1831-extant)**

*History*

Founded by George Johnston and Andrew and John Baird among others the Club was viewed by members as the first bona fide field club in Britain. Its modus operandi was certainly novel but, despite being termed the 'original ancestor' of local natural history societies, the Club remained in many respects unique. The idea of holding no property and running day long meetings was not widely copied and, perhaps ironically given the 'post-aristocratic' ethic, the Club was able to produce a substantial regular publication only because of continuing support from landed proprietors such as, for example, Sir William Jardine.<sup>8</sup> That said, there is no doubt that the Club was influential and helped propagate the notion that associational natural history was an egalitarian pursuit open to all. The subjects pursued in the early years of the Club were mainly natural historical but later an increasing amount of space in the Club's periodical was taken up by reports of antiquarian research.

*Meetings*

Regular day-long field meetings

*Membership*

Always large with some members anxious to limit numbers to a more manageable size. 238 in 1873. 387 in 1885.

*Publications*

*History of the Berwickshire Naturalists' Club*, published annually from 1831.

*Records*

Uncatalogued archives of the Club held in the Berwick-upon-Tweed Borough Museum. Diaries of Club Secretary James Hardy, grangerised volumes of the Club's *History*.

*Secondary Literature*

D. E. Allen, *Naturalist in Britain*, London, 1976, 160-2.

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<sup>8</sup> This was the point made in 1874 by Club member David Milne-Home when pointing out the general lack of funds available to local societies to produce a regular publication. *Royal Commission on Scientific Instruction and the Advancement of Science*, 2 vols., London, 1874, vol. 2, 251.

#### 14. Buchan Field Club (1887-extant)

##### *History*

The idea of the Club 'originated with James Spence of the Institute, Peterhead'.<sup>9</sup> In addition to the Peterhead base the Club included a Fraserburgh 'branch' from 1890. The Club in encouraging the study of the natural science, archaeology, folklore, history and literature of Buchan had a broader official remit than most. Two members, John Gray and James Tocher, carried out Scotland-wide anthropometric surveys.

##### *Meetings*

Regular monthly meetings and summer excursions.

##### *Membership*

124 in 1890.

##### *Publications*

*Transactions of the Buchan Field Club*, 1887-. Ten volumes produced between 1887 and 1913.

##### *Records*

Aberdeenshire Archives, PD 25, Minute Books, Cash Book.

##### *Secondary Literature*

H. Winlow, 'Anthropometric cartography: constructing Scottish racial identity in the early twentieth century', *Journal of historical geography* (2001), 27, 507-28.

#### 15. Caithness Field Club (<1873-1883>)

##### *History*

Virtually nothing is known of this Club except that it was listed in *The Scottish naturalist* in 1873 and participated in the 1883 meeting of the Northern Literary and Scientific Societies. The representative named for the 1883 meeting was a Mr Docherty.

##### *Meetings*

N. I.

##### *Membership*

N. I.

##### *Publications*

N. I.

##### *Records*

N. L.

#### 16. Crieff Botanical Club (1879-1881)

##### *History*

Formed by local doctor, Alexander Thom, the Club made several excursions including ascents of Ben Chonzie and Ben Vorlich.

##### *Meetings*

N. I.

##### *Membership*

'A number of ladies and gentlemen'.<sup>10</sup>

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<sup>9</sup> Anon, 'Introductory notice', *Transactions of the Buchan Field Club* (1887), 1, 1.

<sup>10</sup> A. Porteous, *The history of Crieff*, Edinburgh, 1912, 378-9.

### *Publications*

A list of the Flora of Strathearn

### *Records*

N. L.

## **17. Dalkeith scientific association (1835-1890>)**

### *History*

Founded for the purpose of providing popular lectures on scientific topics which included, for example, an address on the geology around Dalkeith.

### *Meetings.*

Lectures

### *Membership*

N.I.

### *Publications*

A. Mitchell, *The geology of Dalkeith and district around: lectures read, in 1867, to the Dalkeith Scientific Association*, Edinburgh, 1888.

### *Records*

Midlothian Council Archives, MM/7/36, Minute Books, 1835-1848.

## **18. Dollar Scientific and Literary Society (1877-1888>)**

### *History*

The idea of forming a natural history society 'originated with Dr. Barrack, Principal of Dollar Institution' (Minute Book, 14 June 1877). First named the Natural History Society of Dollar Institution, the Society was composed of pupils of the Institution and inhabitants of Dollar. On 12 November 1878 the name was changed to the Dollar Scientific and Literary Society.

### *Meetings*

Monthly indoor meetings. Occasional excursions

### *Membership*

N.I.

### *Publications*

N.I.

### *Records*

National Library of Scotland, Acc. 5192, Minute Books.

## **19. Dumfriesshire and Galloway Natural History and Antiquarian Society (1862-extant)**

### *History*

Dr. James Gilchrist, medical superintendent at the Crichton Royal Institution, along with two others, issued the first statement of intent to form a natural history society. The first President of the Society was Sir William Jardine (1800-1874). The Society was re-constituted in 1876 after a decline during the early 1870s.

### *Meetings*

Regular indoor meetings and summer excursions

### *Membership*

196 in 1884.

### *Publications*

*Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society*, 1863- .  
*Records*

Privately held, Minute Books, Scrapbooks etc.

## **20. Dundee Naturalists' Association (1847-1848>)**

### *History*

The first President was George Lawson (1827-1895) who later became Professor of Natural History at Dalhousie College, Nova Scotia.

### *Meetings*

Held in Watt Institution.

### *Membership*

N. I.

### *Publications*

N. I.

### *Records*

Dundee Central Library, Local Studies Collection, MS magazines written and illustrated by members of the Association in 1847 and 1848.

### *Secondary Literature*

F. W. Young, *The coming of age of the Dundee Naturalists' Society: a retrospect and a prospect. An address*, Dundee, 1895.

## **21. Dundee Naturalists' Field Club (1869-1884>)**

### *History*

Nothing is known of this Club except that it appeared in the list produced by James Britten in *Nature* (see sources). In 1873, an anonymous commentator in *Nature* characterised the Club as 'one small struggling society of young men'.<sup>11</sup> An entry for the Club appears in the *Official year-book of the scientific and learned societies of Great Britain and Ireland* (1884), 1 (see sources).

### *Meetings*

N. I.

### *Membership*

12 in 1873

### *Publications*

N. I.

### *Records*

N. L.

## **22. Dundee Naturalists' Society (1874-extant)**

### *History*

The Dundee Naturalists' Society was 'first organised in the back shop' of local optician George Lowdon by a group of Dundee gentlemen.<sup>12</sup> Stephen Cooke, lecturer in science

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<sup>11</sup> Anon, *Nature* (1873), 9, 72.

<sup>12</sup> Anon, *George Lowdon, optician and scientist*, Dundee, 1906.

at the YMCA, issued a circular calling for a meeting to form a naturalists' society. The Society ran popular conversazioni on an annual basis. The Society had close connections with the University College founded in 1881 and was deemed one of the town's 'chief agencies' in disseminating scientific knowledge. In terms of the number of members, the Society became one of the largest, and for a number of years the largest, in Scotland.

#### *Meetings*

Regular indoor meetings and summer excursions. Annual exhibitions and occasional lecture series.

#### *Membership*

305 in 1881. 452 in 1883.

#### *Publications*

*Annual Report of the Dundee Naturalists' Society*, 1874-1885, *Proceedings of the Dundee Naturalists' Society*, 1912-15.

#### *Records*

Dundee Central Library, Local Study Collections, GD/Mus 11, Annual Reports, Conversazione programmes, excursion programmes, rules and regulations etc. Archive Services, University of Dundee, MS 80, annual reports, programmes, rules and regulations.

#### *Secondary Literature*

F. W. Young, *The coming of age of the Dundee Naturalists' Society: a retrospect and a prospect. An address*, Dundee, 1895.

### **23. Dundee Working Men's Field Club (<1890-1935>)**

#### *History*

Founded for the purpose of 'working up' the natural history of the district. Among its members were D'arcy Wentworth Thompson, Professor of Natural History at the University College, Dundee, his assistant William Thomas Calman and Robert Smith, 'father of British ecology'.

#### *Meetings*

Fortnightly meetings. Summer excursions.

#### *Membership*

N.I.

#### *Publications*

N.I.

#### *Records*

Archive Services, University of Dundee, MS 155, Scrapbooks, Conversazione programme.

### **24. East of Fife Naturalist Society (<1895>)**

#### *History*

Mentioned in the minutes of the East of Scotland Union of Naturalists' Societies (see below).

#### *Meetings*

N.I.

#### *Membership*

N.I.



*Publications*

N.I.

*Records*

N.L.

## **25. East Lothian Naturalists Club (<1884)**

*History*

Listed in *Year-book of the scientific and learned societies of Great Britain and Ireland* (1884).

*Meetings*

N.I.

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

## **26. East of Scotland Union of Naturalists' Societies (1884-1896)**

*History*

Modelled on the Yorkshire Naturalists' Union (YNU), the ESUNS was a federation of Scottish natural history societies that met annually in different East of Scotland towns. Representatives of ten societies were present at a meeting in Perth in February 1884. Francis Buchanan White was considered the chief architect of the federation and the Union did not continue long after his death in 1894. The ultimate goal of a Scotland-wide federation remained and the ESUNS failed at a time when an increasing number of societies outside the East of Scotland region were expressing interest in joining. This ambitious vision was not realised with many of the original members of the ESUNS not able to keep up their annual membership fee.

*Meetings*

Like the YNU, and the British Association on which it was modelled, the ESUNS was peripatetic. The meetings were widely reported in the local press and involved exhibitions and entertainment as well as scientific papers.

*Membership*

A combined membership of 1098 in 1884 and 863 in 1889.

*Publications*

*Proceedings of the East of Scotland Union of Naturalists' Societies*, issued annually between 1885-1891. The period between 1891-1895 was covered by a single volume.

*Records*

Perth Museum and Art Gallery, Uncatalogued MS Minute Book

*Secondary Literature*

M. Taylor, 'The East of Scotland Union of Naturalists' Societies: a study in failure', unpublished paper.

## **27. Edinburgh Field Naturalists' and Microscopical Society (1869-1921)**

*History*

The Society's first President was Robert Brown, botanist and head of the Vancouver

Island Exploring Expedition in 1864. John Hutton Balfour, Professor of Botany at the University of Edinburgh, and Joseph Lister, Professor of Clinical Surgery, University of Edinburgh were two of the original council members. This connection with the University did not characterise the later history of the Society. The Society changed its name in 1885 from the Edinburgh Naturalists' Field Club to the Edinburgh Field Naturalists' and Microscopical Society. The original constitution of the Society, which stated that the Club would have no property and not publish transactions was modified before 1881 to allow the Society to produce a regular publication. The Society eventually merged with the Scottish Natural History Society in 1921 to form the Edinburgh Natural History Society.

#### *Meetings*

6 field meetings a year according to the original constitution. Later included winter indoor meetings

#### *Membership*

Originally limited to 100 but had increased to 221 in 1886.

#### *Publications*

*Transactions of the Edinburgh Naturalists' Field Club*, one volume 1881-1885; *Transactions of the Edinburgh Naturalists' and Microscopical Society*, five volumes 1885-1912.

#### *Records*

National Archives of Scotland, GD434/1/1, Minute Books of Edinburgh Naturalists' Field Club.

## **28. Edinburgh Practical Naturalists' Club (<1885>)**

#### *History*

Apart from its appearance in a list in *The Scottish naturalist* (1885), 7, 160 nothing has been discovered about this Club. It may have been part of a wider movement that adopted the name 'practical naturalists' club'.

#### *Meetings*

N.I.

#### *Membership*

N.I.

#### *Publications*

N.I.

#### *Records*

N.L.

## **29. Elgin Field Club (<1888>)**

#### *History*

Apart from an announcement in the *Elgin Courant*, 22 May, 1888, nothing has been discovered about this Club. It may have been attached to the Elgin and Morayshire Literary and Scientific Association (see below).

#### *Meetings*

N.I.

#### *Membership*

N.I.

#### *Publications*

N.I.

*Records*  
N.I.

### **30. Elgin and Morayshire Literary and Scientific Association (1836-extant)**

#### *History*

Originally named the Elgin and Morayshire Scientific Society it merged with the Elgin Literary Society in 1858. The Society's founding aim was to establish a museum and a building was completed in 1842. The Association also ran lectures series by local naturalists including Rev. George Gordon of Birnie. Gordon had been a member of the Edinburgh Plinian Society and was an influential member of the Association, being President from 1864-1872.

#### *Meetings*

Regular indoor meetings. Occasional excursions particularly after 1880.

#### *Membership*

c. 40 in 1836 and 165 in 1884.

#### *Publications*

N.I.

#### *Records*

Elgin Museum, uncatalogued MSS, miscellaneous Association records.

#### *Secondary literature*

M. Collie, *George Gordon and the Elgin Museum*, Elgin, 1993.

M. Collie and S. Bennett, *George Gordon: an annotated catalogue of his scientific correspondence*, Aldershot, 1996.

### **31. Forres Field Club (<1888>)**

#### *History*

Proposed formation in *Forres Gazette*, 18 April, 1888.

#### *Meetings*

N.I.

#### *Membership*

N.I.

#### *Publications*

N.I.

#### *Records*

N.I.

### **32. Galashiels Scientific and Antiquarian Society (1860-1873>)**

#### *History*

Mentioned in Britten's list of British scientific societies published in 1873 (see sources). Britten's note that it was 'recently formed' may have been an attempt to revive the defunct Galashiels Scientific and Antiquarian Society established 13 years previously. This Society was primarily a museum society and the resulting collection was handed over to the local Mechanics' Institute in 1867 after the 'want of interest shown by the

public'.<sup>13</sup>

*Meetings*

N.I.

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

### **33. Glasgow Naturalists' Literary Club (1888-1900>)**

*History*

Thomas King, Professor of Botany at Glasgow Veterinary College, was one of 14 original members. King contributed papers on popular and scientific names of plants, early English botanists and South American naturalists.<sup>14</sup>

*Meetings*

N.I.

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

### **34. Glasgow Naturalists' Society (1858-1866)**

*History*

Probably an extension of a natural history class run at Anderson's University the Society amalgamated with the Natural History Society of Glasgow in 1866.

*Meetings*

Originally met at Anderson's University but also at the Glasgow Athenaeum and member's houses.

*Membership*

30 in 1858.

*Publications*

N.I.

*Records*

Glasgow City Archives, Mitchell Library, TD1408/2, Minute Books, MS Magazine.

### **35. Glasgow Practical Naturalists' Society (1883-1890)**

*History*

Specialised in entomology. Minutes indicate that it may have been part of a wider

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<sup>13</sup> R. Hall, *The history of Galashiels*, Galashiels, 1898, 134.

<sup>14</sup> Anon, 'In memoriam: Professor Thomas King', *Transactions of the Natural History Society of Glasgow* (1896), 5, 12.

movement of naturalists' societies using the name 'practical naturalists' society'. If so, it distanced itself from that movement by changing names to the Clydesdale Naturalists' Society in 1885. The Society dissolved in c. 1890 after a series of poor attendances at meetings.

*Meetings*

Met at the Kelvingrove Museum. Also held regular excursions (sometimes joint with the Edinburgh Naturalists' Field Club – see above).

*Membership*

22 in 1884. 47 members in 1887.

*Publications*

N.I.

*Records*

Glasgow City Archives, Mitchell Library, TD1408/5, Minute Books.

### **36. Glasgow Society of Field Naturalists (1868-1879)**

*History*

Originally the Glasgow Botanical Society (see Society Minute Book, 3 December, 1878). Placed a particular emphasis on fieldwork and produced a list of the fauna and flora of Clydesdale for the 1876 Glasgow meeting of the British Association for the Advancement of Science. Amalgamated in 1879 with the Natural History Society of Glasgow.

*Meetings*

Summer excursions. Indoor meetings

*Membership*

45 in 1879.

*Publications*

*Transactions of the Glasgow Society of Field Naturalists*, 1874-77, two volumes.

*The fauna and flora of Clydesdale and the west of Scotland*, Glasgow, 1876.

*Records*

Glasgow City Archives, Mitchell Library, TD1408/3, Minute Books; Address Book; Field Notebook.

### **37. Greenock Natural History Society (1878-1910)**

*History*

Had close connections with the Greenock Philosophical Society and agreed to affiliate in 1910.<sup>15</sup>

*Meetings*

Excursions, exhibitions.

*Membership*

33 in 1884.

*Publications*

*Annual Report*, 1878-

*Records*

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<sup>15</sup> Watt Library, Uncatalogued MSS, Greenock Philosophical Society, Minute Book no. 4, 8 December 1910.

N.L.

### **38. Hamilton Field Club (1891-1894)**

#### *History*

The Club's President was local headmaster, John McCabe. The Club was revived in 1904 as the Hamilton and District Field Club which eventually became the Hamilton Natural History Society.

#### *Meetings*

Summer excursions

#### *Membership*

N.I.

#### *Publications*

N.I.

#### *Records*

N.L. for the original Field Club. Hamilton Central Library, uncatalogued MSS, Hamilton Natural History Society, Minute Books, 1904-1929.

#### *Secondary Literature*

W. Wallace, 'Hamilton: its naturalists and natural history societies', *Report of the Hamilton Natural History Society* (1969), 1,

### **39. Helensburgh Naturalists' and Antiquarian Society (1894-1900>)**

#### *History*

Dominated by reports on local archaeology but included papers on geology and meteorology.

#### *Meetings*

N.I.

#### *Membership*

71 members in 1897 including 9 lady members.

#### *Publications*

*Annual Report of the Helensburgh Naturalists' and Antiquarian Society*, 1894-

#### *Records*

N.L.

### **40. Huntly Field Club (1883-extant)**

#### *History*

Name changed to Strathbogie Field Club some time after 1890.

#### *Meetings*

Regular indoor meetings, summer excursions (occasionally with Keith Field Club)

#### *Membership*

N.I.

#### *Publications*

*Transactions of the Huntly Field Club*, 1883-1890.

#### *Records*

Privately held, Minute Books, 1883-1891.

#### **41. Innerleithen Alpine Club (1889-1897>)**

*History*

A ramblers' society interested in exploring local natural history.

*Meetings*

Regular excursions

*Membership*

N.I.

*Publications*

*Principal excursions of the Innerleithen Alpine Club during the years 1889-94, Galashiels, 1895.*

*Records*

N.L.

#### **42. Inverness Scientific Society and Field Club (1875-extant)**

*History*

Emergred from a series of annual lectures first held in 1874 made possible by a local bequest. The second set of lectures, held in the music hall and accompanied by a field excursion to a local quarry, were delivered by John Young, Professor of Geology at the University of Glasgow on the geology of Scotland.

*Meetings*

Regular indoor meetings. Summer excursions.

*Membership*

125 in 1881.

*Publications*

*Transactions of the Inverness Scientific Society and Field Club, 1875-1926, 8 volumes.*

*Records*

Highland Council Archive, D 30, Minute Books, Membership Lists, Correspondence.

#### **43. Keith Field Club (1882-1891>)**

*History*

Participated in meetings of the Northern Scientific and Literary Societies. Formation of the Club mentioned in *Banffshire Advertiser*, 9 March, 1882.

*Meetings*

Excursions, exhibitions.

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

#### **44. Kilmarnock Glenfield Ramblers Society (1884-extant)**

*History*

Traced its origins to an informal rambling club organised by employees of Glenfield Works, a hydraulic engineering company, after a change to working hours. In 1884 it was proposed that a Society be instituted 'for the purpose of recreation and the

enjoyment of its members by country rambles, the study of natural history, and for mutual improvement'.<sup>16</sup> For the first two years membership was restricted to employees of Glenfield Works. The Rev. David Landsborough, son of the founder of the Ayrshire Naturalists' Club (see above) led the first excursion of the Club. The second President, Andrew Sinclair, discovered several fossils 'new to Scotland' and another member, Robert Linton discovered a 'cockroach' which was named after Benjamin Beach (*Etolblatina PeachŪ*) after he forwarded it to Henry Woodward of the British Museum.

*Meetings*

Winter meetings, excursions.

*Membership*

818 in 1904.

*Publications*

*Annals of the Kilmarnock Glenfield Ramblers Society*, 1884-1934.

*Records*

Dick Institute, Kilmarnock, uncatalogued MSS, Cash and Minute Books 1884-1892.

*Secondary Literature*

D. L. Richardson, *Centenary annals Kilmarnock Glenfield Ramblers Society, 1884-1984*, Kilmarnock, 1983.

#### **45. Kintyre Scientific Association (1890-1914>)**

*History*

The objects of the Association were 'the promotion of science' and 'the formation of a museum'. A new museum building was erected in 1898 after a bequest from businessman James Macalister Hall. The Kintyre Antiquarian and Natural History Society, formed in 1921, traces its origins to the earlier Society.

*Meetings*

Monthly indoor meetings.

*Membership*

N.I.

*Publications*

N.I.

*Records*

Campbeltown Museum, uncatalogued MSS, Minute Books, 1890-1898.

#### **46. Kirkcaldy Naturalists' Society (1882-extant)**

*History*

Instituted after a series of Gilchrist lectures in the town.

*Meetings*

Regular indoor, excursions.

*Membership*

161 in 1891.

*Publications*

N.I.

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<sup>16</sup> Anon, 'The history of the Society', *Annals of the Kilmarnock Glenfield Ramblers' Society* (1893-94), 2.



*Records*

Kirkcaldy Museum and Art Gallery, uncatalogued MSS, Minute Books.

*Secondary Literature*

J.B. Bease, *Full ninety years and more*, Kirkcaldy, 1975.

**47. Kirkcudbrightshire Field Naturalists' Club (1882-1887>)**

*History*

Held joint excursions with the Dumfriesshire and Galloway Natural History and Antiquarian Society (see above).

*Meetings*

Excursions and indoor meetings

*Membership*

N.I.

*Publications*

N.I.

*Records*

Stewarty Museum, records of communications and papers, 1882-1887.

**48. Largo Field Naturalists' Society (1863-1896>)**

*History*

Instituted in connection with the district museum. Purchased the old Parish School for accommodation and with a plan to construct a miniature botanic garden.

*Meetings*

Monthly meetings and summer excursions.

*Membership*

53 in 1884.

*Publications*

N.I.

*Records*

Fife Library Service, Pamphlet Collection, *Rules of the Largo Field Naturalists' Society*, Largo, 1863.

**49. Lossiemouth Field Club (<1888)**

*History*

Mentioned as 'dissolved' and specimens handed to Keith Field Club in *Banffshire Advertiser*, 22 November, 1888.

*Meetings*

N.I.

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

## **50. Moffat Naturalists' Field Club (<1887>)**

### *History*

Mention of the Club is made a newspaper cutting found in scrapbook no. 4 in the archives of the Dumfriesshire and Galloway Natural History and Antiquarian Society (see above).

### *Meetings*

Summer 'rambles'

### *Membership*

N.I.

### *Publications*

N.I.

### *Records*

N.L.

## **51. Montrose Natural History and Antiquarian Society (1836-extant)**

### *History*

Established with the aim of forming a museum managed by 24 Directors. The foundation stone of a new museum building was laid on 5 May 1841 and the building was opened to the public on 27 October 1842. £500 of the £847.9s.4d. was donated by Lord Panmure. From the start Society members were anxious to make the Museum accessible and useful to local schoolchildren. Botany classes were run in the 1850s by Alexander Croall and included weekly excursions.

### *Meetings*

Monthly indoor meetings. Exhibitions and occasional excursions.

### *Membership*

100 in 1889.

### *Publications*

*Report of the Directors*, 1858-1914.

### *Records*

Angus Archives, MS 292/1 Minute Books of Montrose Natural History and Antiquarian Society

## **52. Montrose Scientific and Field Club (1883-1896>)**

### *History*

Associated with the Montrose Natural History and Antiquarian Society. Member of East of Scotland Union of Naturalists' Societies (see above).

### *Meetings*

Indoor and excursions.

### *Membership*

10 in 1889.

### *Publications*

N.I.

### *Records*

N.L.

### 53. Natural History Society of Glasgow (1851-extant)

#### *History*

Most of the original members had been active in the botanical section of the Glasgow Philosophical Society. Perhaps surprisingly, then, the publications of the Society were dominated by zoological subjects until after 1883. The largest of Glasgow's numerous natural history societies it amalgamated with several through the nineteenth century.

#### *Meetings*

Monthly indoor winter meetings. Excursions were not held on a regular basis until the late 1870s but field meetings were nonetheless important from the start.

#### *Membership*

310 in 1890.

#### *Publications*

*Proceedings of the Natural History Society of Glasgow*, 1852, one volume.

*Proceedings of the Natural History Society of Glasgow*, 1858-1883, five volumes; *Proceedings and Transactions of the Natural History Society of Glasgow*, 1883-1908, eight volumes.

#### *Records*

Mitchell Library, Glasgow, TD1408/1, Minute Books, Council Books, Letter Books, Scrap Books, Printed lists of members, Cash Books, Library Borrowing Book etc.

#### *Secondary Literature*

*The Glasgow naturalist* (2001), 23(6), historical supplement, 57-117.

### 54. Nairn Naturalists' Club (<1872>)

#### *History*

Mentioned in Britten's list (see sources). May have been associated with the Nairn Literary Institute.

#### *Meetings*

N.I.

#### *Membership*

N.I.

#### *Publications*

N.I.

#### *Records*

N.L.

### 55. Northern Association of Literary and Scientific Societies (1887-1911>)

#### *History*

Federation of societies active in Aberdeen, Banff, Elgin, Nairn, Inverness, Ross, Sutherland, Cromarty, Caithness, and Orkney and Shetland. Emerged from the informal meeting of literary and scientific societies in the North of Scotland from 1881.

#### *Meetings*

Annual at different towns in North East of Scotland.

#### *Membership*

N.I.

#### *Publications*

*Transactions of the Northern Association of Literary and Scientific Societies*, 1887-1898, two volumes.

*Records*  
N.L.

### **56. Old Kilpatrick Naturalist and Antiquarian Society (1889>)**

*History*

Founded by local archaeologists John Bruce and William Donnelly. The latter was author of a history of the parish of Old Kilpatrick.<sup>17</sup>

*Meetings*

N.I.

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

### **57. Orkney Natural History Society (1837-extant)**

*History*

Instituted to promote natural science and to establish a museum.

*Meetings*

Quarterly meetings.

*Membership*

30 members in 1884.

*Publications*

N.I.

*Records*

Stromness Museum, uncatalogued MSS, Minute Book

### **58. Pentland Field Club (1893-1895)**

*History*

Met in the house of Hugh Miller (Jr.). William Thomas Finlayson was Club President.

*Meetings*

Indoor meetings and excursions

*Membership*

N.I.

*Publications*

N.I.

*Records*

Edinburgh Central Library, MS. Journal.

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<sup>17</sup> I am grateful to Graham Hopner, Information Services Librarian, West Dunbartonshire Council for supplying this information.

## 59. Perthshire Society of Natural Science (1867-extant)

### *History*

From 14 original members in 1867 the Society became known as one of the most successful provincial natural history societies in Scotland. In 1883, a museum building was opened on Tay Street was frequently singled out as a model provincial natural history museum. The Society also included under its auspices the Perthshire Mountain Club, a Club devoted to exploring the natural history of Perthshire's high mountains.

### *Meetings*

Monthly indoor meetings. Summer excursions.

### *Membership*

325 in 1884.

### *Publications*

*Proceedings of the Perthshire Society of Natural Science*, 1880-1886, one volume; *Transactions and Proceedings of the Perthshire Society of Natural Science*, 1886- .

### *Records*

Perth Museum and Art Gallery, uncatalogued MSS, Minute Books of the Perthshire Society of Natural Science.

## 60. Renfrewshire Naturalists' Society (1847-1864)

### *History*

Local naturalist Morris Young founded this Society which merged with the Paisley Philosophical Institution in 1864. It re-emerged from the PPI as the Paisley Naturalists' Society in 1892.

### *Meetings*

Indoor meetings and excursions

### *Membership*

N.I.

### *Publications*

N.I.

### *Records*

N.L.

### *Secondary Literature*

J. A. Gibson, 'The reptiles and amphibians of Renfrewshire', *Western naturalist* (1973), 2, 13.

## 61. Ross-shire Naturalists Club (<1894>)

### *History*

A small field club linked to the Ross-shire Philosophical Society.

### *Meetings*

N.I.

### *Membership*

N.I.

### *Publications*

N.I.

### *Records*

N.L.

## 62. Scottish Natural History Club (1881-1921)

### *History*

Alexander Craig-Christie, member of the Botanical Society of Edinburgh, proposed that a Club be formed 'on the plan of the English Field Clubs'. The gap in the Club's Minutes between 1882 and 1893 suggest that it stagnated and a proposal that the Club be dissolved was circulated by three office bearers in 1893. The Club was effectively re-constituted as the Scottish Natural History Society in 1894 with Benjamin Peach of the Geological Survey as one of the Vice-Presidents. A scheme to survey the natural history of the Forth Valley was proposed by the Society President, Sir John Murray, in 1901 and read before Section E of the British Association by Marion Newbigin. In 1921 the Society joined with the Edinburgh Field Naturalists' and Microscopical Society (see above) to form the Edinburgh Natural History Society.

### *Meetings*

N.I.

### *Membership*

By 1901 the Society had 230 ordinary members.

### *Publications*

N.I.

### *Records*

National Archives of Scotland, GD434, Minute Books, 1881-1921.

### *Secondary Literature*

M. Newbigin, 'Sir John Murray's scheme for the investigation of the natural history of the Forth Valley', *Scottish geographical magazine* (1901), **17**, 644-51.

## 63. Shetland Literary and Scientific Society (1861-1948)

### *History*

Established to form a museum of the natural history and antiquities of the Shetland Islands and to run lectures on literary and scientific subjects.

### *Meetings*

Winter lectures series.

### *Membership*

240 at end of 1861.

### *Publications*

*Laws and regulations of the Shetland Literary and Scientific Society*, Lerwick, 1862.

### *Records*

Shetland Archives, MS D.5, Minute Books, financial records, library records.

## 64. Selkirk Alpine Club (1890-1926>)

### *History*

A rambling club and a natural history society.

### *Meetings*

Indoor meetings and excursions

### *Membership*

31 members

### *Publications*

N.I.

### *Records*

Scottish Borders Archive and Local History Centre, SC/S/12/2, Minute Books and other records.

## **65. Stirling Field Club (1878-1939)**

### *History*

The Club was proposed by Alexander Croall, Curator of the museum of the Smith Institute, and A. F. Hutchison, Rector of the High School of Stirling. The name was changed to the Stirling Natural History and Archaeological Society in 1882.

Ornithologist John Alexander Harvie-Brown was a Vice-President from 1878 to 1893 and Robert Kidston, who achieved scientific fame through his palaeobotanical work, was a long standing member.

### *Meetings*

Indoor meetings and excursions

### *Membership*

129 in 1880. 79 in 1893.

### *Publications*

*Transactions of the Stirling Field Club*, 1878-1882 (volume covering the year 1878-9 was not published until 1898); *Transactions of the Stirling Natural History and Archaeological Society*, 1882-1939.

### *Records*

Privately held, Minute Books.

### *Secondary Literature*

K. J. H. Mackay, 'On the centenary of the Stirling Field Club', *Forth naturalist and historian* (1978), **3**, 3-9.

## **66. Stonehaven Natural History Society (<1873>)**

### *History*

Identified by Britten (see sources) but no information given.

### *Meetings*

N.I.

### *Membership*

N.I.

### *Publications*

N.I.

### *Records*

N.L.

## **67. Sutherland Field Club (1879>)**

### *History*

Instituted 'for the promotion of scientific study of the natural history and archaeology of the district, and the formation of illustrative collections for preservation in the County Museum'.<sup>18</sup> The Club's rules were based on those of the Inverness Scientific

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<sup>18</sup> J. Joass, 'Sutherland Field Club', *Transactions of the Inverness Scientific Society and Field Club*

Society and Field Club (see above).

*Meetings*

Monthly indoor meetings and excursions

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

#### **68. Thurso Natural Science Association (<1867-1880>)**

*History*

Mentioned in local newspapers (e.g. *Caithness Courier*, 5 January 1867; *John O'Groat Journal*, 1 January 1874).

*Meetings*

Indoor meetings

*Membership*

N.I.

*Publications*

N.I.

*Records*

N.L.

#### **69. Tweedside Physical and Antiquarian Society (1838-1900>)**

*History*

Founded 'for the promotion of the study of the Natural History and Antiquities of the district traversed by the Tweed and its tributary streams'.

*Meetings*

Quarterly

*Membership*

90 in 1838

*Publications*

*Rules and List of Members of the Tweedside Physical and Antiquarian Society*, Kelso, 1838.

*Records*

N.L.

#### **70. Union Jack Field Club (Glasgow No. 1; Glasgow Western Branch; Ayr Branch) 1880-1883**

*History*

Part of a nationwide movement of natural history clubs for young men started by

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(1881), 2, 124-6.



George Alfred Henty. A member of the Glasgow Western Branch was instrumental in setting up the Glasgow Practical Naturalists' Society (see above).<sup>19</sup>

*Meetings*

Regular 'field days' and indoor meetings

*Membership*

N.I.

*Publications*

*The Union Jack Naturalist*, 1881-1882, two volumes.

*Records*

N.L.

## Related/Specialist Societies

### 1. Botanical Society of Edinburgh (1836-extant)

An important Scottish Society which included among its members those influential in many Scottish natural history societies. Also included the Scottish Alpine Botanical Society which was the national equivalent of the Perthshire Mountain Club (see under Perthshire Society of Natural Science above).

### 2. Cairngorm Club (1887-extant)

A mountaineering Club that also encouraged the study of highland natural history.

### 3. Caithness Club of Deir (1868-1902)

A historical society which included occasional papers on local natural history. See A. Milne, *The story of Two Buchan Clubs: the Old Deer Club, 1792-1837, the Club of Deir, 1868-1902*, Peterhead, 1904.

### 4. Cryptogamic Society of Scotland (1875-1935)

See, M. Noble, 'The Cryptogamic Society of Scotland 1875-1935-1975', *Transactions of the Botanical Society of Edinburgh* (1978), 42 (supplement), 11-17.

### 5. Dundee Microscopical Society (<1870>)

Mentioned in F.W. Young, *The coming of age of the Dundee Naturalists' Society: a retrospect and a prospect. An address*, Dundee, 1895.

### 6. Edinburgh Geological Society (1836-extant)

### 7. Geological Society of Glasgow (1858-extant)

See P. MacNair and F. Mort, *History of the Geological Society of Glasgow, 1858-1908*,

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<sup>19</sup> See Anon, 'James McGrouther', *The Young Naturalist* (1887), 8, 50.

Glasgow, 1908.

**8. Glasgow Eastern Botanical Society (1876-1898)**

Formed from a botany class run at Bridgeton Mechanics' Institution.

**9. Glasgow Field Geological Society (1889>)**

**10. Glasgow and West of Scotland Zoological Society (<1890>)**

**11. Gleaners of Nature (1828-1831>)**

A small artisan field club based in Dundee. William Gardiner, umbrella maker, was a celebrated member.

**12. Greenock Philosophical Society (1861-extant)**

**13. Hawick Archaeological Society (1856-extant)**

Though not a natural history society by name, members of the Hawick Archaeological Society intermittently contributed papers on local natural history including a series on the flora of Teviotdale. See, J. J. Vernon, *Historical sketch of the Hawick Archaeological Society, 1856-1906*, Hawick, 1906.

**14. Kilmarnock Philosophical Institution (1823-1953>)**

**15. Literary and Antiquarian Society of Perth (1774-1915)**

**16. Microscopical Society of Glasgow (1886-1931)**

**17. Paisley Philosophical Institute (1808-extant)**

Included a geology, botany and ornithology section.

**18. Philosophical Society of Glasgow (1802)**

See D. Primrose et al, *'No mean society': 200 years of the Royal Philosophical Society of Glasgow*, Glasgow, 2003.

**19. Ross-shire Philosophical Society (<1883>)**

Participated in the meetings of the Northern Scientific and Literary Societies.

**20. Royal Physical Society of Edinburgh (1771-1965>)**

An important but neglected Edinburgh-based Society which emphasised the study of natural history without giving the same emphasis to the study of local natural history as other Scottish provincial societies.

21. Royal Scottish Geographical Society (1884-extant)
22. Royal Society of Edinburgh (1783-extant)
23. Scottish Microscopical Society (1889-1921>)
24. Trifontal Scientific Society (1821-1826>)

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*Royal Botanic Garden Edinburgh*

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Uncatalogued MS Minute Book of the Scottish Alpine Botanical Club  
Uncatalogued MS John Hutton Balfour Correspondence

*Shetland Archives*

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