

## Curious About Nature

### *A Passion for Fieldwork*

Notwithstanding the importance of modern technology, fieldwork remains vital, not least through helping to inspire and educate the next generation. Fieldwork has the ingredients of intellectual curiosity, passion, rigour and engagement with the outdoor world – to name just a few. You may be simply noting what you see around you, making detailed records or carrying out an experiment; all of this and much more amounts to fieldwork. Being curious, you think about the world around you, and through patient observation develop and test ideas. Fifty-one contributors capture the excitement and importance of fieldwork through a wide variety of examples, from urban graffiti to the Great Barrier Reef. Outdoor learning is for life: people have the greatest respect and care for their world when they have first-hand experience of it.

TIM BURT retired as Master of Hatfield College and Professor of Geography at Durham University in 2017. His research focuses on catchment hydrology, water quality and climate history. Tim has run the two oldest university weather stations in the UK: the Radcliffe Observatory in Oxford (dating from 1767) and the Durham Observatory (from 1850). President of the Field Studies Council and editor of its journal *Field Studies*, Tim was awarded the Linton Medal by the British Society for Geomorphology in 2017. He is an elected Fellow of the American Geophysical Union and the British Society for Geomorphology. Tim is Emeritus Professor at Durham University and Visiting Professor at the University of Bristol.

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# *Curious About Nature*

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*A Passion for Fieldwork*

Edited by

TIM BURT

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DES THOMPSON

*Scottish Natural Heritage*



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## *Dedication*

**In memory of Ian Mercer and Sam Berry**

*Stalwarts of the Field Studies Council, Ian and Sam encouraged large numbers of people to become passionate fieldworkers and curious about nature*

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## Preface

In the primeval of our time, something happened to signal the giant step taken by *Homo erectus* to emerge as *Homo sapiens*. Scientific debate fundamentally rages over this, but there is little doubt now that fieldwork marks the evolutionary transition as well as the unravelling. Quite possibly, half a million years ago, the earliest record of a ‘human’-related imprint reflects the most rudimentary of fieldwork and was revealed by a brilliant piece of field research.

In the journal *Nature*, on 3 December 2014, a large team of archaeologists, led by Josephine Joordens at Leiden University, reported a remarkable finding. But first, we have to go back to 1891, to Trinil, in east Java, Indonesia. There, the Dutch anatomist Eugène Dubois and his group discovered in a riverbank the first early remains of what is now popularly called ‘Java Man’ – they found a skullcap, tooth and thighbone. This was the first evidence of our ancestor *H. erectus*.

Re-working material in the *Hauptknochenschicht* (‘main bone layer’) of Trinil, Joordens and colleagues found a fossil shellfish assemblage. That in itself was not so unusual, for the shellfish would have been consumed and the shells used as tools. But, intriguingly, one of the shells had a geometric engraving, and in the words of the authors this suggested: ‘Although it is at present not possible to assess the function or meaning of the engraved shell, this discovery suggests that engraving abstract patterns was in the realm of Asian *Homo erectus* cognition and neuromotor control.’ In other words, quite possibly these markings gave a primitive sense of place, of an action, or even something more telling. Of course, there are cave paintings dating as far back as 40,000 years ago, essentially giving us the first detailed field observations made by people. But even the dates of the earliest paintings are being contested, and it has recently been argued that in the caves of three sites in Spain, some paintings may be 65,000 years old and of Neandertal origin (Hoffmann *et al.*, 2018, whose paper featured on the cover of *Science*, with the caption ‘Minds at work’). But how extraordinary to think that markings made half a

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million years ago may be the very first field notes recorded. While we know that tool use by human ancestors dates back to something like 3.3 million years ago, we have little evidence of observations being made so far back in time.

Field studies unravelling discoveries such as these have fired our passion and curiosity for fieldwork. Our endeavour is simple – to inspire and celebrate the fantastic range of fieldwork devoted to understanding our environment, nature and the plethora of processes. Archaeologists, earth scientists, geographers, ecologists, geneticists, land and water managers and students of soils, rocks, microbes, fungi, lichens, plants, animals and any other facet of the natural world all rely on fieldwork, and we have drawn heavily on examples of their studies.

People who observe, carry out experiments or otherwise study in the field are engaged in fieldwork. Some people are simply inspired by being in the field – they may not be making observations or carrying out experiments, but they love fieldwork, find it uplifting and draw on what they have read, heard about or seen previously to form views. Is this fieldwork? Yes it is, and often simply being in the field and being in contact with the natural world and nature is life-affirming and stimulating for senses, far beyond drawing inferences on what you see, hear, touch, smell or even remember. Curiosity is the great driving force, with passion frequently ensuing as we immerse ourselves in the art and science of discovering more about our world.

Our principal aim is to inspire you to carry out fieldwork, and to enjoy it. Part I has five overview chapters. Chapter 1 is an introduction to the great range of studies and techniques employed in the field. In Chapter 2, Mike Church places field studies in the wider context of environmental science. The next two chapters provide biographies of some of our heroes in the geophysical and life sciences, with Andrew Goudie and Steve Trudgill giving vent to their enthusiasm for their areas of interest. Outdoor learning is growing in appeal, as much for educationalists as part of core curricular approaches to learning, as for students enjoying learning. Learning is a gift we should treasure, and if we can we should benefit from it every day. So, why confine it to a stuffy, soulless classroom, when we can be outside, moving, seeing, hearing and thinking as we learn. Michael Reiss traces the educational benefits of such learning in Chapter 5.

In Part II, we have a fantastic array of essays by no less than 45 fieldworkers. Our ask was simple – write about a person, topic, place, technique, publication, finding or a simple moment, which derives from



fieldwork. The response has been terrific, and we believe the collection amounts to a truly enjoyable and stimulating read. In the final part of the book we try to draw some threads together on what has motivated fieldworkers and the discoveries made. We look ahead to emerging approaches and techniques and try to anticipate developments that should help embolden and strengthen the foundations of fieldwork and fieldworkers.

We are very grateful to a large number of people who have worked with us during the book's gestation and emergence. We are both trustees of the Field Studies Council (FSC) and thank the staff and fellow trustees for helping to inspire the book's contents; some are contributors. On a more practical note, we thank Rebecca Farley-Brown at FSC Publications for providing a number of photographs. We thank all our authors, not least Steve Trudgill, who stepped into the breach when the late Sam Berry passed away before he could start work on his chapter; Sam was one of those who inspired this book in the first place, and we miss his wisdom. Our authors have been marvellously patient and tolerant of our questions, and we thank them all.

Des is very grateful to Hatfield College, Durham University, for a Visiting Fellowship in Easter Term 2016, which provided a marvellous opportunity to develop with Tim the ideas underpinning this book. Janet Raine, the Master's Secretary at Hatfield College, has provided prodigious support over the years. We remain grateful for continued encouragement from the present Master, Professor Ann MacLarnon. We thank Chris Orton, cartographer in the Geography Department at Durham University, for drawing a diagram. Durham University, the FSC and both Scottish Natural Heritage and the Joint Nature Conservation Committee have provided a core influence for us, as reflected in the authorship.

At CUP, Michael Usher has been a wonderfully enthusiastic and encouraging editor, offering us a fund of ideas and suggestions. Dominic Lewis, Aleksandra Serocka and Annie Toynbee at CUP have also been very supportive; we thank Aleksandra and Annie in particular for dealing with our many questions and queries with good humour and prompt responses. We are very grateful to Zoë Lewin for her very careful copy-editing. We thank Ian Newton, doyen of field studies of raptors and bird migration, for writing the Foreword, and giving support and advice in other ways. Several colleagues have offered us frequent advice as we have worked on the book and others have inspired us through their writings, and it is a pleasure to acknowledge them: John and Hilary Birks,

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Terry Burke, Ingvar Byrkjedal, Colin Campbell, Mike Church, Mark Cocker, Nick Davies, Miguel Ferrer, Alan Fielding, Bob Furness, Colin Galbraith, Andrew Goudie, Jeremy Greenwood, Bill Heal, John Atle Kålås, Ron Macdonald, David O'Brien, Robert and Stuart Rae, Steve Redpath, Chris Spray, David Stroud, Bill Sutherland, Pat Thompson, Steve Trudgill, Paul Walton, Phil Whitfield, Jeremy Wilson, and the late Chris Barnard, Richard Evans, Paul Haworth, Aubrey Manning, Simon Thirgood, Desmond Nethersole-Thompson, Dick Potts, Derek Ratcliffe and Adam Watson.

Both of us have had lives full of fieldwork! The two photos show us in our youth, already curious about nature. The sooner, the better: we are both convinced that fieldwork should start at a young age, which is why we are both strong supporters of the FSC, which has given young people the opportunity to get into the field for the past 75 years.

Finally, we thank our wives, Elizabeth and Dawn, for their strong support, tolerance and advice throughout this project.

To the late Ian Mercer, former President of the Field Studies Council, and Sam Berry, former trustee and Honorary Vice-President, we dedicate this book.

### References

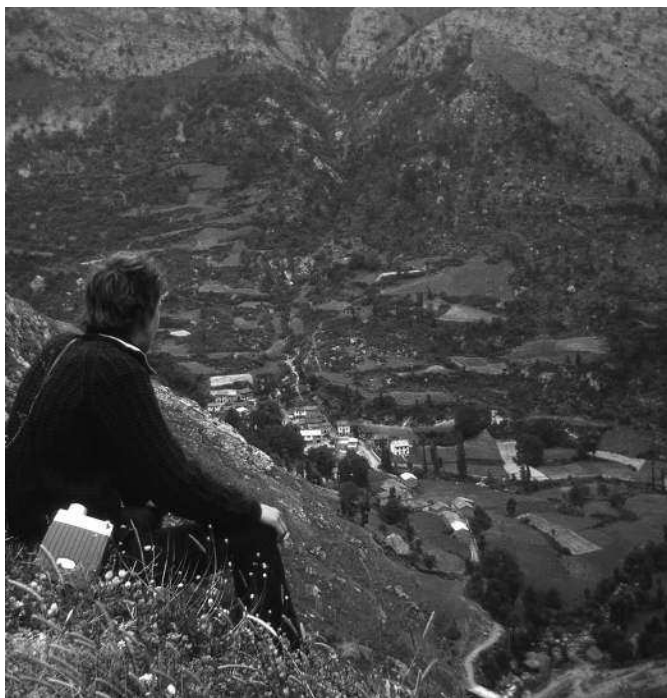
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Eleven-year-old Des Thompson (on right) with his brother Pat Thompson and father Desmond Nethersole-Thompson inspecting a greenshank's nest, found by the photographer. June 1969 (Derek Ratcliffe).



Tim Burt on a school expedition to Portugal and Spain. Seen here in a valley above Cain de Valdeón in the Picos de Europa mountains, 1 August 1969.

## *Foreword*

It is a great pleasure to introduce a book on field studies. Every branch of science has its manuals of methodology, but this welcome volume is unusual in pulling together information on field studies from an exceptionally wide base, embracing both the physical and biological sciences, and beyond. No less than 45 fieldworkers have contributed to the text, working under the capable editorship of Professors Tim Burt and Des Thompson.

But what is it that compels us all to study nature in the great outdoors? Most importantly, we are all driven by a passion and curiosity about the natural world, a deep-rooted desire to understand the underlying workings of nature. What we see, hear and record during our work is crucial. But in practice, it is often the unexpected, the puzzling or the surprising that fires our imagination, adding interest to every day in the field, and leading us on to new ideas and new discoveries.

Fieldwork has been central in my own life for as long as I can remember, beginning as a small boy with an interest in natural history and continuing through my professional life as an ornithologist. Without the possibility of working outdoors, I would probably have never become a biologist, but taken up some more applied subject, such as agriculture or forestry which, in those days, did not involve a life in an air-conditioned cab.

For biologists like me, the outdoor world is the only place where wild plants and animals can be studied in their natural settings, behaving as they should, interacting with other plants and animals around them. Without field studies, biology would be little more than laboratory-based anatomy and physiology – for the scientist, life in a white coat. But for me fieldwork involves much more than this. It gives the sheer pleasure of being outdoors, escaping the claustrophobic and pressurised human world for a while, feeling the warmth of the sun or the chill of the wind, and facing the physical challenges which some types of fieldwork present. My own work on birds of prey involved countless hours of

walking and searching through interesting landscapes, and hundreds of tree-climbs every year (the sort of work that would now be constrained by health and safety measures). In addition, this type of fieldwork provides endless surprises and rare glimpses of nature. It also satisfies hunting instincts, not so easily achieved in today's world.

For this book, the editors have clearly struck a chord in securing so many enthusiastic and revealing contributions from scientists in various disciplines, hooked on field studies. Like me, both editors were ensnared by fieldwork in their early lives, and both were inspired by key people in their formative years. Tim Burt was brought up in Somerset and fell under the spell of a charismatic geography teacher called Jim Hanwell, from whom he developed a deep curiosity about landforms, including the valleys and quarries in the eastern Mendips. So began a life-long journey as an academic physical geographer and meteorologist, leading Tim to co-author a fascinating book recently published on *Oxford Weather and Climate Since 1767* (2019).

The second editor, Des Thompson, I have known since he was a teenager in Sutherland. Both he and I were heavily influenced by two exceptional field naturalists. One was Des's father, ornithologist Desmond Nethersole-Thompson and the other was botanist-ornithologist Derek Ratcliffe. Both were renowned naturalists whose field craft was legendary; they had a deep knowledge of the natural world, and both had a profound influence on the two of us. For Des as a youngster, escaping schoolwork allowed him to spend time nest hunting and observing waders in the hill country. In due course, he became a professional ecologist and went on to write and edit a number of key research volumes on upland birds and ecology, the most notable in his early career being a special publication of the British Ecological Society, edited with Michael Usher, *Ecological Change in the Uplands*, in 1988. Almost this entire volume was based on fieldwork of one sort or another.

In recent years, we have been increasingly witnessing the effects of human population growth and activities on the natural world, bringing enormous detrimental changes to flora, fauna and climate. Nowadays, these issues are continually in the news, making depressing reading for all who care about life on Earth. In May 2019, we saw the declaration of a 'Climate Emergency' in several countries, in part in response to the UN 'Summary for policymakers of the global assessment report on biodiversity and ecosystem services'. That document, based on around 15,000 scientific and government sources, points to an impending environmental calamity, largely or entirely of our own making.

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The underlying evidence for most of these conclusions stems from field studies. The observers, experimentalists, modellers, analysts, synthesisers and advocates involved deserve massive recognition for their efforts. In conversation, many of them will point to their concern for the natural world and their abiding enjoyment in connecting with nature as their main motivation. Passion, curiosity and an ethos of care will all be needed as we face the challenges we have created for the future of our planet, with its much-loved lands, waters and diverse life forms. We will again rely on field studies and fieldworkers to monitor further change, whatever it may bring. In this endeavour, no doubt many future fieldworkers will gain inspiration from the contents of this book.

**Ian Newton OBE FRS FRSE**