1

Climmers and Collectors

Without the knowledge of fowles natural philosophie was very maymed.

Edward Topsell, *The Fowls of Heauen or History of Birds* (1625)

The huge, sheer limestone cliffs gleam with a startling whiteness in the bright sunlight. Following the sharp edge of the land towards the east you can see the Flamborough headland; to the north lies the holiday town of Filey, and out of sight to the south is Bridlington, another resort. Here on the Bempton cliff top, however, Filey and Bridlington might as well be a hundred miles away, for this is a wild place: benign in the sunshine, but awful on a wet and windy day. On this early summer morning, however, the sun is shining; skylarks and corn buntings are in full song and the cliff tops are ablaze with red campion. The path along the cliff top traces the meandering line that marks the fragile farmland edge and where at each successive promontory a cacophony of sound and smell belches up from below. Out over the cobalt sea birds wheel and soar in uncountable numbers and there are many more in elongated flotillas resting upon the water.

Peering over the edge you see there are thousands upon thousands of birds apparently glued to the precipitous cliffs. The most conspicuous are the guillemots packed tightly together in long dark lines. En masse they appear almost black, but individually in the sun these foot-tall, penguin-like birds are milk-chocolate brown on the head and back, and white underneath. Their dense, velvety head feathers and dark eyes suggest a wonderful gentleness, and they are gentle for much of the time, but if roused they can use their long pointed bill to great effect. Above and below the guillemots are pristine white kittiwakes, kitty-waking and squealing from their excrement-encrusted grassy nests. Less numerous and often concealed in crevices are the razorbills, known locally as tinkers for their sooty dorsal plumage. And, more sparsely still, there are the sea parrots or puffins with their glowing red beaks and feet, and which, like the razorbills, nest out of sight among the limestone fractures. The soundscape is a mix of squeaky soprano kittiwakes overlaying a tenor chorus of growling guillemots, with the occasional high-pitched hum from a contented puffin. And the smell . . . well, I love it and its associations, but – and at the risk of muddling my metaphors – it is an acquired taste.

It is June 1935 and at a point known as Staple Newk* the vista opens with the breathtaking sight of a man suspended from a 150-foot-long rope over the sea. Swinging precariously out from the sheer limestone face he glides back in towards the rock wall, stops and clings like a crab to the cliff. Watching through field glasses from a safe vantage point on the cliff top is George Lupton, a wealthy lawyer. In his mid-fifties, he is above average height, with a modest moustache, deep-set eyes and a prominent nose: his collar and tie, tweed jacket and manner all signal his affluence. Lupton watches as the man on the rope forces the guillemots to depart

* Pronounced 'Stapple Nuck', meaning a staple or pillar and a corner.

in noisy panic, abandoning their precious, pointed eggs, some of which roll away and smash on the rocks below. Most of the remaining eggs are orientated with their pointed end towards the sea. The man on the rope takes them one after another, placing them in his canvas shoulder bag that is already bulging with loot. With the ledge clear of eggs, he pushes off with his feet to swing out and back to another location slightly further along to continue his clumsy plunder. Oblivious of the climber's safety, Lupton is almost beside himself with excitement at what lies inside that canvas bag. On the cliff top three other men sit one behind the other, with the rope secured around their backs, ready when the signal comes to pull like oarsmen until the climmer emerges safely from over the cliff edge.

Yorkshire dialect has reduced these climbers to 'climmers' and past events to cliffs 'clumb'.

George Lupton has travelled by train from his home in Lancashire. He's been here for over a month and, like the other egg collectors, is staying in Bridlington.[1]

On this beautiful morning the cliff tops are busy with people and there is a holiday atmosphere. Little huddles of tourists watch in awe as the climmers descend, dangle and are hauled back up from the rock face with their bounty.

The bag is emptied and the eggs are placed in large wicker baskets. The chalky clunking of the thick-shelled eggs is music to Lupton's ears. The climmer, Henry Chandler, still in his protective policeman's helmet, smiles to himself for he knows that somewhere in his bag is a specimen Lupton desperately wants and is prepared to pay good money for. Identified as the 'Metland egg' and named for the section of cliff owned by the adjacent farm, this distinctively coloured egg – described as a 'brownish ground with a darker reddish brown zone' – has been taken each year from exactly the same spot, a few inches square, since 1911 – for over twenty consecutive years.[2]

George Lupton is obsessed by guillemot eggs. The Metland egg, although special, is one of many. The climmers have known for decades, probably centuries, that female guillemots lay an egg the same colour in precisely the same place year on year. Indeed, the climmers also know that after the first 'pull' – the season's first take of eggs – females will lay an almost identical replacement egg at the same spot a fortnight later. After that is taken they'll lay a third, and very occasionally a fourth. Lupton's lust has meant that in its twenty-year breeding life, the Metland female has never once succeeded in hatching an egg or rearing a chick. The same is true for thousands of guillemots and razorbills along these cliffs, for the climmers farm the eggs here on an industrial scale.

Men have descended Bempton's cliffs to harvest seabird eggs since at least the late 1500s. The farmers whose muddy fields led down to the cliff edge assumed ownership of the 'land' – in reality a fragile rock face – that runs vertically down to the sea below. Gangs of three or four men – comprising a climmer and three anchormen – often several generations of the same family, work the cliffs, year after year, decade after decade.[3]

Initially the eggs were taken for human consumption. They are twice the weight of a hen's egg and are excellent scrambled. Boiled, they are slightly less appealing – at least to me – because the 'white' (the albumen) remains slightly blueish in colour and sets less hard than does that of a hen's egg. This didn't stop guillemot eggs being eaten in unimaginable numbers wherever they were available, not just at Bempton but across the coastal fringes of the entire northern hemisphere. In areas where guillemots bred on low-lying islands, as they do in North America, they were easily exploited and often to local extinction. It was too easy: guillemots breed in such dense aggregations that discovering a colony was like winning the lottery. Eventually, only those birds breeding in the most remote or inaccessible places had any chance of rearing offspring. One of the furthest

flung breeding colonies – forty miles off Newfoundland's north-east coast – is Funk Island, a name reflecting the foul (or fowl?) smell emanating from hundreds of thousands of birds. Prior to the discovery of the New World, the Native American Beothuk braved the treacherous seas and paddled out to Funk Island in their canoes to feast on the eggs of guillemots and great auks and on the birds themselves. Their visits were probably infrequent enough to do little harm, but, once European seafarers discovered Funk Island and the other seabird colonies along the north shore of the St Lawrence River in the 1500s, the birds were doomed.[4]

As elsewhere, the Bempton climmers ensured that the eggs they collected were fresh simply by chucking off all the eggs they found on their first visit, and then returning every few days throughout the season to remove the new ones as they appeared. Estimates of the number of eggs taken each year at Bempton are hopelessly variable. Some say more than 100,000, others a few thousand. It was certainly thousands and the best estimates from the 1920s and 1930s, when Lupton was collecting, are annual totals of about 48,000. There were once a lot of guillemots at Bempton, but as egging continued the number of birds inevitably decreased. The decline was accelerated by the creation of the railways – to Bridlington in 1846 and to the village of Bempton itself a year later – providing easy access to those from London and other urban centres seeking the cheap thrill of shooting seabirds. Shooting not only killed and maimed hundreds of birds – mainly guillemots and kittiwakes – but each shot flushed incubating birds from their ledges causing a cascade of eggs on to the rocks or into the sea below.[5]

Lupton was one of several collectors in cahoots with the Bempton climmers. It was a lucrative arrangement for those who risked possible death on the end of a rope since they quickly came to recognise the gleam in the collector's eye and their insatiable passion for particular eggs. Possession was everything and

while the collectors bartered with the climmers they also had to compete with each other. The climming gangs got on well by respecting each other's territorial boundaries, but competition between individual collectors was often intense. One was said to have pulled a gun on another in an argument over a particularly desirable egg.[6]

Sam Robson, born in 1912 and one of the climmers who supplied Lupton with eggs, recounted, with wonderful Yorkshire enunciation, what it was like:

> You went by colour a lot, for collectors' eggs: if you saw an unusually marked one, you'd take care o' that, and wait 'till these collectors came. In them days, eggs was same as coin-collecting or summat: they'd get the set, and they used to trade 'em or flog 'em. They used to come all together did collectors: you'd get as high as four or five staying in the village. It was their profession to collect eggs, and sell 'em: a lot of 'em was dealers for other collectors . . . So it was more or less like an auction at the cliff top, sometimes . . . It was a gamble, what they would pay: you demanded so much and they'd barter you if they could, to beat you down. We took what we could get, because we wanted rid on 'em: we didn't want eggs, we wanted money.[7]

The scale of the climmers' and collectors' activities is all too apparent if you check the catalogues or visit the egg collections of different European and North American museums. Almost without exception, each museum has more eggs from Bempton than almost any other location, including those in their own country. Even the modest teaching museum that I curate in Sheffield has two trays of guillemot eggs dating back to the 1830s, most of which have scrawled on them in semi-legible pencil Bempton, Buckton, Filey,

Scarborough and Speeton – all names of locations where eggs were obtained from the Flamborough headland.

I'm Yorkshire born and bred, and when Skomer Island was inaccessible during the winter months of my PhD years, I came to Bempton to see what guillemots get up to during their mysterious out-of-season visits. Leaving my parents' home near Leeds at 3 a.m., I drove through the dark, arriving at the cliffs as it was getting light, just before the guillemots began to fly in from the sea. They would appear very suddenly en masse in the half-light and their noisy ensemble sounded like a celebration, and that's what it was: a raucous, rapturous meeting of partners and neighbours – guillemots reunited.

It was always unbelievably cold on these visits, usually with a strong wind whipping in off the North Sea forcing me to huddle below the cliff top in a pathetic attempt to retain some body heat. Notebook in hand and peering through my retina-wrecking Hertel & Reuss telescope, I kept notes on the birds' activities, thrilled by what was – and still is – an extraordinary wildlife spectacle. In contrast to the birds, for me this was an intensely solitary experience since at that time there was no reserve building, no car park and no people – especially in midwinter. I have an immense affinity for Bempton and indeed for the entire Flamborough headland whose history oozes and drips into my imagination like the guillemot guano from the cliffs themselves. I particularly like the fact that between them the climmers and collectors – amateur ornithologists – created the scientific foundations of guillemot biology.

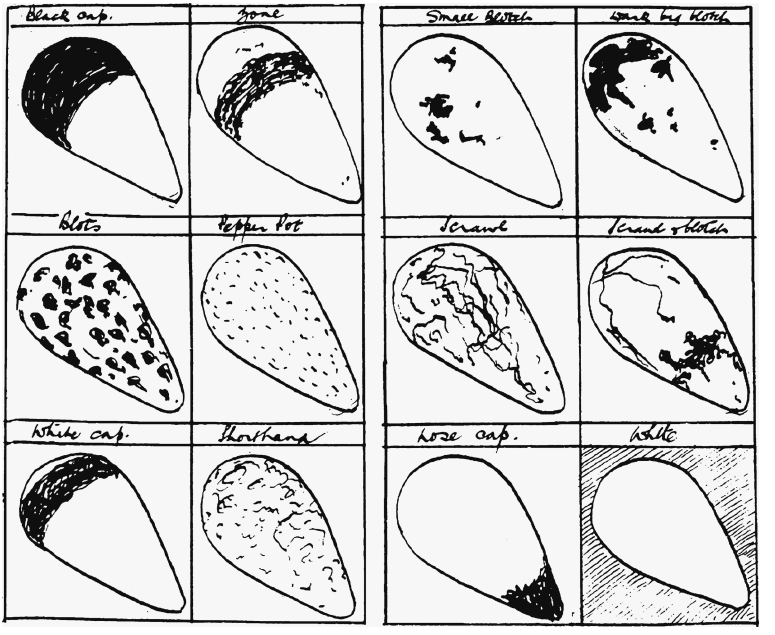
In Lupton's day climming was a tourist spectacle and you could buy postcards in the nearby resorts showing the climmers dangling on the end of a rope or with basketfuls of eggs on the cliff top, with captions like 'a good bag' or 'a good pull'. Climming was also a business catering to a varied clientele, from the casual visitor who merely

wanted a guillemot egg as a souvenir, to the more daring tourist – mostly women, apparently – who went over the edge to collect an egg for themselves, to the fanatical collectors like Lupton patrolling like a predator along the cliff top and waiting impatiently for the climmers to produce unusual specimens. Lupton even allowed his eleven-year-old daughter Patricia to be lowered over the edge to collect eggs for herself.[8]

Guillemot eggs are extraordinary in many different ways, but especially in size, colour and pattern. Most early writers said that no two were alike and it was this seemingly infinite variety of colour that mesmerised George Lupton. He was not alone. Dozens of collectors were greedy for guillemot eggs, but Lupton was unusual in being the only collector, or oologist, as they called themselves, to focus almost his entire nervous energy, and the contents of his wallet, on the guillemot's ovarian output. Another Bempton collector, George Rickaby of Nottingham, in 1934 described Lupton's collection of over a thousand unusual guillemot eggs as being 'the world's best'.[9]

The 1930s, when Lupton, Rickaby and others were active along the Bempton cliff tops, was the heyday of egg collecting in Britain. We look back on those times with both wonder and dismay. Once deemed a harmless part of every country boy's childhood that occasionally swelled into an adult preoccupation, egg collecting is now unacceptable and illegal. The irony is that in the past egg collecting was just one of many ways of connecting with nature. For individuals like Lupton who failed to outgrow their juvenile pursuit, egg collecting became an obsession. He sold his collection of guillemot eggs a decade before the Protection of Birds Act of 1954 made criminals out of those who had previously been mere eccentrics.[10]

Collecting birds' eggs began in the 1600s when physicians, savants and others interested in the natural world started to acquire



The names used by the Bempton climmers to categorise the patterning on guillemot eggs. Top row (from left to right): black cap, zone, small blotch, dark big blotch; middle row: blots, pepper pot, scrawl, scrawl and blotch; bottom row: white cap, shorthand, nose cap, and white. From George Rickaby's diary: Whittaker, 1997.

artefacts and create cabinets of curiosities. Among the first of these was the great Italian naturalist Ulisse Aldrovandi, whose museum opened in 1617. His collection contained – among many other things – an ostrich egg, amazing for its sheer size, but also several monstrously large and deformed hen's eggs. Also part of his collection was an oversized (presumably double-yolked) goose egg and an egg from a hen that had once been a cockerel.[11]

Another Renaissance man who had eggs in his cabinet was Thomas Browne, a brilliant physician based in Norwich, England. Browne's wide range of interests included the new scientific natural history, and among his many achievements was the first account of the birds of Norfolk. After visiting Browne in 1671, John Evelyn, writer, gardener and contemporary of Samuel Pepys, reported in his diary on 18 October 1671:

> Next morning I went to see Sir Thomas Browne (with whom I had sometime corresponded by letters tho never saw before) whose whole house & garden being a paradise and cabinet of rarities, & that of the best collection, especialy medails, books, plants, natural things, did exceedingly refresh me after last nights confusion: Sir Thomas had amongst other curiosities, a collection of the eggs of all foul and birds he could procure, that country (especialy the promontorys of Norfolck) being (as he said) frequented with the severall kinds, which seldome or never, go farther into the land, as cranes, storkes, eagles etc. and a variety of water-foule.[12]

Perhaps the most significant of these early naturalists with an interest in eggs was Francis Willughby, who, together with John Ray, published the first 'scientific' book on birds in 1676. It was written by Ray and entitled *The Ornithology of Francis Willughby* in honour of his friend and collaborator who died in 1672 at the tender age of

thirty-six. Published first in Latin in 1676 and in English in 1678, I refer to this important book simply as *Ornithology*.

Willughby knew of Browne and they may have corresponded, but we don't know if they ever met or whether Browne encouraged Willughby to collect eggs and other natural history artefacts. But we do know that Willughby once had a cabinet of curiosities because his daughter Cassandra refers to it in a letter, after collecting her late father's belongings, saying that they included: '. . . a fine collection of valuable meddalls, and other rarities which my father had collected together of dryed birds, fish, insects, shells, seeds, minerals and plants and other rarities . . .'[13]

As I read this, I assumed that Willughby's collection of biological curiosities, like those of Aldrovandi, Thomas Browne and many others, was long gone – rotted away or simply thrown out. Imagine my utter amazement when I discovered that Francis Willughby's cabinet, including his eggs, has survived as part of the family estate.

The cabinet comprises twelve drawers, most of which contain botanical specimens, and it was while I was photographing these for a friend that I pulled open the bottom drawer. As I did so, I was dumbfounded to see birds' eggs. Like the plant specimens above them, these were held – loosely, it has to be said – within different shaped compartments. Many of the eggs were broken, and all were covered by a sticky layer of grime, reflecting the fact that the family home had once been in the heart of an English coal-mining area. Some of the eggs had the species name written on them in brown ink: *Fringilla* [chaffinch], *Corvus* [carrion crow, or rook], *Buteo* [common buzzard], *Picus viridis* [green woodpecker] and herne [grey heron].

That the eggs had survived was a miracle: that the eggs were labelled was an even greater miracle, for it allowed me to verify their authenticity. Many twentieth-century collectors, including

George Lupton, failed to mark their eggs in a way that would allow anyone other than themselves to explore their history. But many of Willughby's eggs had the name of the bird written directly on the shell and in his unmistakable hand.

I arranged for Douglas Russell, the curator of eggs at the Natural History Museum, to accompany me to examine Willughby's cabinet and offer his expert opinion. Like me, he was amazed by the collection. Most of the eggs were frighteningly fragile, and even those of the larger species had aged to such an extent that, notwithstanding the grime, they were virtually transparent. Douglas was quickly convinced of the collection's originality, and hence its historical value. He told me that there is no other collection in the world as old. Prior to this moment he said, the oldest known egg in any scientific collection was probably that of a great auk, once belonging to the great Italian priest-cum-scientist Lazzaro Spallanzani and dating back to 1760. Willughby's eggs are a century older.

Private cabinets of curiosities metamorphosed into public museums in the 1800s, fuelling a passion for collecting birds' eggs. Acquisition, in the name of national pride, meant that eggs and birds (in the form of study skins and skeletons) were accumulated on an unimaginable scale. From this period onwards, the science of ornithology – conducted mainly by wealthy amateurs – became synonymous with both museums and collecting.

The same was true of other types of natural history specimens, and the acquisition of butterflies and birds' eggs had much in common. Both types of collector were driven partly by aesthetics but also by the idea of capturing the full swathe of variation that

existed within a particular species: 'a passion for beauty and a lust for curiosities'. There were even some butterfly collectors who, like Lupton, focused almost exclusively on a single species. And there were others, again like Lupton, whose motivation was to use their lifeless biological trophies to create a visual spectacle without even a nod to the demands for data. The huge collections of butterflies, many still in private hands, others in provincial and national museums, are testament to that insatiable quest. It is curious, though, that despite the numbers of specimens taken the collectors of butterflies have not been demonised in the same way as egg collectors.[14]

Alfred Newton, founding member of the British Ornithologists' Union (BOU) in the 1850s, and a collector, extolled the virtues of egg collecting in his typical long-winded Victorian way: 'the fascination with this boyish pursuit has maintained its full force even in old age – a fact not so much to be wondered at when it is considered that hardly any branch of the practical study of Natural History brings the enquirer so closely into contact with many of its secrets.'[15] As Newton points out, the collecting of eggs by boys (it was never girls) was an essential part of the study of natural history. Well-known naturalists and conservationists of the twentieth century, including David Attenborough, Bill Oddie and Mark Cocker, all admitted to collecting eggs when they were young, but this merely emphasises just how important it was to their later careers.[16]

Some of the original justification for collecting birds' eggs was that, together with the skins or skeletons of birds, they would provide material from which the natural order of birds could be deduced. Indeed, identifying God's great plan was the main goal of scientific ornithology, epitomised by Willughby and Ray's *Ornithology*. The same was true for the whole of

biology – zoology and botany both – in what ways are different species related to each other? It was obvious that a pattern existed: greenfinches and goldfinches are more similar to each other than they are to either dotterel or dabchicks, but the basis for those relationships was often elusive. At that time the only clues for visualising the arrangement of birds were their external and internal features: plumage colour and pattern on the one hand, gut, cranium or syrinx on the other. But eggs: their colour, shape and structure – it was thought – might also contribute to this scientific endeavour.

Had God not been hell-bent on moving in mysterious ways and creating interesting intellectual challenges for his followers, the pattern might have been obvious. But, of course, the arrangement of birds is not a product of God's wisdom. It is the result of millions of years of evolution, which also works in ways that often seem mysterious. Evolutionary processes are particularly striking in the manner in which they sometimes create similar structures in unrelated species. Hummingbirds in the New World and sunbirds in the Old World both feed on nectar which they extract from flowers using their long tongue and bill and they both have iridescent plumage. Despite their physical similarity hummingbirds and sunbirds do not have an immediate common ancestor – they have evolved completely independently. Similar environments create similar selection pressures and result in similar body forms through a process known as 'convergent evolution'. Long after the idea of God's wisdom in the form of natural theology had been replaced by Darwin's natural selection, convergent evolution continued to be not only the best evidence for natural selection, but also the bugbear of those trying to understand the relationships between birds. It wasn't until molecular methods – the examination of genetic signatures – provided a truly objective way of doing so in the early twenty-first century that scientists finally felt they had

a reasonable picture of the evolutionary history of birds and the relationships between them.[17]

Throughout the entire 400-year period that ornithologists struggled to understand the relationships between different groups of birds, museum specimens were vital. Skins and skeletons were crucial for at least it was possible to see some patterns there. But in this respect eggs proved to be almost entirely useless. Realising this late in life, Alfred Newton wrote: 'I must confess a certain amount of disappointment as to the benefits it was expected to confer on systematic ornithology . . . Oology taken alone proves to be a guide as misleading as any other arbitrary character.'[18] It soon became increasingly difficult to justify the continued collecting of eggs on scientific grounds.

There is something sensual about eggs. Of course there is: they are part of sexual reproduction, but birds' eggs have an erotic aura all of their own. Perhaps their wonderful curves trigger deep-rooted visual and tactile sensations among men. As though to confirm this, one book I found on egg collecting drew parallels between eggs and the female form, illustrated in a series of seductive ovals and spheres.[19] This may also be one reason Fabergé's eggs are so popular: an expensive nuptial gift that fuses sensuality of form with the ultimate symbol of fertility.

More than a hint of something sexual is apparent in Philip Manson-Bahr's recollection of Alfred Newton: 'Although a confirmed misogynist he could be charmingly polite to the opposite sex, but he held firmly to his principles that his museum and its treasures were not for feminine eyes and he would never vouchsafe them even so much as a peep at his egg collection . . . To watch Newton ogling his eggs was another cameo. He adored them.'[20]

There's an additional reason for thinking that it is the three-dimensional shape or form of eggs that encapsulates their beauty. Compared with the birds that feature so extensively in works of

art, paintings of eggs are extremely scarce, suggesting that rendering them in two dimensions simply doesn't do it for most people. In contrast, egg-shaped sculptures – like those of Barbara Hepworth and Henry Moore, for example – have huge appeal.[21]

On a cold winter's day early in 2014 I visited the ornithology department at the Natural History Museum in Tring, Hertfordshire, to look at Lupton's assemblage of over one thousand Bempton eggs. Since most egg collectors kept records of where and when they obtained their specimens, I naively assumed Lupton would have done the same. Far from it! Lupton seems to have relied largely on his memory to tell him where and when he had acquired each specimen. In a few cases there are uninformative notes on scraps of paper lying alongside the eggs, but what they mean is anybody's guess. To put it bluntly, Lupton's collection is a shambles, but this is what it was like when the museum acquired it.[22]

As a scientist it almost made me weep: so much information so carelessly lost! Perhaps data cards were irrelevant to someone like Lupton whose focus was aesthetic rather than scientific. Some of his cabinets in Tring are indeed beautiful. There are trays of almost identical twos, threes and fours, apparently from the same female guillemots in the same year; or from the same female in different years. Another tray holds thirty-nine extraordinarily scarce completely white unmarked eggs, which Lupton says, in a carelessly scrawled note, came from three different females all on the same Bempton ledge! Another box contains twenty unusually coloured eggs: white ground overwritten in what looks like red Pitman shorthand, but this time – improbably – from widely separated locations around the British coast, contradicting the belief that no two guillemot eggs are alike.

It is with a mixture of disappointment and awe that I look at Lupton's eggs. I'm disappointed because, with no data cards, this vast array of wonderful eggs has almost no scientific value. On the other hand, I'm amazed by the sheer diversity of eggs, by the scale and nature of his obsession and by his artistic inventiveness. When I express my frustration about the lack of data to Douglas, the curator, he responds by asking whether my glass is half empty or half full, for without Lupton's collection, he says, there'd be nothing to write or think about. My glass is half full. More than half full in fact, because I can see Lupton's aesthetic enjoyment of his eggs. I can also see how fortunate it is that no one has bothered to curate Lupton's collection for this would have inevitably destroyed their beautiful arrangements.

If someone later discovers Lupton's data cards, then possibly, just possibly, we will be able to match them to the eggs and start to explore how much year-to-year variation there was in egg size; how similar the colour and shape remains across different eggs laid by the same female within a season, or, as in the case of the Metland eggs, across much of a female's lifetime.[23] There are many ways we could gently interrogate Lupton's eggs. It may still be possible.

I suspect there *are* no cards and no master data sheet that would allow us to crack the code. Everything I can see of Lupton's collection exudes aesthetics and excludes science. Perhaps most telling are torn scraps of light-green paper with almost illegible pencil scribbles placed inside the cabinet drawers – many of them signed with his initials. The messages on these pieces of paper, such as 'x4' or 'x3', are as brief as they are cryptic; and why would anyone place *signed* notes in their trays of eggs if they also had data cards or a master sheet?

Lupton's glass-topped egg trays, measuring two foot by two foot (60 x 60cm), now lie within the white plastic drawers of the British

Museum's cabinets. At Douglas's suggestion, we got them out – all thirty-seven of them – and laid them against each other on tables, benches and the floor. Only then was the full visual impact apparent. Lupton must have spent months sorting his eggs, deciding on different arrangements, and then seeking those eggs that would make the arrangement complete, for the whole purpose of this was display. Lupton's egg trays were the individual feathers of a peacock's train; each egg an eye-spot on the peacock's tail, and a display just as daring, just as spectacular and every bit as difficult to interpret.

Lupton's collection is organised according to almost every conceivable oological criterion one could think of: colour, size, shape and texture. But these terms don't do the display justice, for colour encompasses ground colour, type and hue of markings and the distribution of marks across the surface of the egg. One of his most subtle arrangements is of twelve groups of four horizontally arranged eggs, all of which have fine pepper and salt speckling on different coloured grounds; pale blue, pale green, yellow ochre and white, and with adjacent groups arranged as mirror images of each other. It is art.

In another drawer there is something more extraordinary still: pairs comprising one guillemot and one razorbill egg, obviously different in their shape (the razorbill's egg is much less pointed), but absolutely identical in colour and patterning. This is remarkable. Razorbills, which typically breed among guillemots, but always in isolation and in crevices, produce much less variable, less colourful eggs than guillemots. If asked, I reckon I could correctly identify well over 90 per cent of eggs to razorbills or guillemots based simply on their colour and their pattern. But Lupton found that minuscule proportion of both species whose eggs resembled the other species, making me wonder what proportion of the egg-colour genes the two species have in common.

I tried to imagine Lupton building up these arrangements year on year. Pacing the Bempton cliff tops, seeing a haul of climmers' eggs, and knowing which ones he needed for his collection. Over the winter months he must have spent long hours examining his eggs to know exactly what he'd got, and what he needed. I can also imagine him reliving the moments of breathless excitement as he acquired particular eggs whose addition brought the collection a step closer to perfection.

Lupton is history; egg collecting is largely history, too. Although its scientific worth may be limited, collections like Lupton's still have a value. Several museum curators I spoke to while I was writing this book told me how in the past they had destroyed hundreds of guillemot eggs – mostly from Bempton – because they had no accompanying data, and were therefore 'scientifically worthless'. It made me cringe. So often, something once thought of as useless is – seen in a different light or with different technology – actually valuable. In ways that could not have been imagined by the original collectors, it is now possible to take a minute fragment of eggshell and extract the DNA from it, allowing us to identify the genotype of the female that laid it.[24] And who knows: as molecular methods continue to develop it might even be possible to reconstruct Lupton's missing data from the genetic notation embedded within his eggs.

Collections like Lupton's also have a cultural value. I'm acutely aware as a scientist that it is all too easy to view the world through a single lens – a lens scientists often assume to be superior. The artistic arrangements of Lupton's guillemot eggs are unique; they are worthy of an exhibition in themselves, and I can easily see that if taken from the dark confines of Tring's Natural History Museum they would inspire artists and others to see the natural world in a different light.

Not only would they see the aesthetic perfection of eggs; they might also ask about their biological perfection: how they are

constructed and how the seemingly endless variations in colour are applied; why eggs vary so much in shape and size; why their yolk and albumen, which superficially seem so uniform, are in reality so variable; how that single female cell is fired into life by one or more sperm; and how after a matter of a few weeks a new life breaks free from the fragile yet robust structure we call the shell.

And the shell is where we start our exploration and make our way from the outside to the inside of the bird's egg.