

I

A Singular Window



In the summer of 1954, when Winston Churchill was dwindling into his dotage as British prime minister, the beaten French were withdrawing from Indochina, and Elvis Presley was beginning to sing, my mother's mind fell apart. I was seven and my brother John was eight. Norah our mother was forty years old and was a teacher, although she had given up teaching when we were born. She came from a poor family but had won scholarships and been well educated, and was well read with a literary bent; she had corresponded with Pádraic Colum, he who wrote *She Moved Through the Fair*, after the Irish poet had struck up a friendship with her father, a merchant marine steward, on a transatlantic voyage; she had a novel sketched out (it was about a paediatrician who was wonderful with children and terrible with everybody else). She was gentle and kind to a fault, entirely unselfish and wholly honest, and a deeply religious Catholic.

Her mind had begun to fray during the long absences of my father Jack, who was a radio officer on the *Queen Mary*. These were the final glory days of the Cunard ocean liners, and it might be said that his life sailing regularly between Southampton and New York was glamorous; certainly it was more so than

the life he found when he came home to our small terraced house in Birkenhead, the town across the River Mersey from Liverpool, for two weeks every three months. He was not loving, either as a husband or a father – he did not know how to love – although he was not a bad man; but he covered up his lifelong insecurity with bluster, which too often turned into bad temper. The ten-year marriage, doctors clinically recorded later, had been ‘moderately happy’.

In her long isolations, bringing us up, my mother was closely supported by her well-meaning but bossy sister Mary and Mary’s biddable husband Gordon, who were childless, but in 1953 Mary and Gordon spent several months in America with friends – they contemplated emigrating – and it was during this time, when she was even more cut off, that my mother’s psyche began to wander. When Mary and Gordon returned they saw a change in her, and as 1953 became 1954 Norah began to behave strangely; she went missing for a day and was found twenty miles away, having walked alone for many hours. She grew increasingly troubled as the year went on and the climax came in the summer when she threw herself upon the mercy of Mother Church, which sixty years ago straitly governed the lives of the Irish Catholic families of Merseyside, and Canon Quinn, iron-fisted ruler of the parish of Our Lady, decreed she should be sent to an asylum.

No one could stand against this because no one understood what was wrong with her, other than that her mind was obviously in turmoil and that she was greatly distressed. As were the rest of the family: Jack and Mary and Gordon and other close relatives were not only at a loss but also ashamed, since this was well before R. D. Laing turned mental illness into martyrdom, and the best my father could do was borrow the money for her to go as a private patient, and off to the mental hospital she went, from whence, as was pointed out to me much later, you did not, in those days, often emerge.

So it might have been with her, for the doctors who treated her were equally perplexed and were unable to offer her anything other than electro-convulsive therapy, high-voltage shocks to the head, before each session of which she thought she would die; but after several weeks, one day, just like that, a particularly perspicacious psychiatrist suddenly grasped it, and made an opening into her anguished spirit that paved the way for her eventual recovery (circumstances I discovered forty-one years later when I contacted the hospital and found that, miraculously, they still held her notes, which they released to me).

Thus, after nearly three months, Norah came back; but when she had gone away, in the August, our family life had been blown to bits. My father could not hold it together; he was a distant, irritated figure, impatient with John and me, and anyway he was still away at sea, so Mary took us in charge. She sold our house – she sold our house! – took us into her home in Bebington, a nearby suburb, and offered us kindness, but the damage was done. John's stability was destroyed. Decades afterwards I met the woman who had been his teacher, Miss Dowling, and she told me that when he came into the class that September he would sit staring ahead and bending wooden rulers between his hands until they broke, one after another – he was eight years old – and she said she told the class, we all have to be kind to John and not make fun of him, because he is very upset because his mum has gone away. From then on his instability was life-long and meant that he struggled to cope with all aspects of existence (apart from the piano keyboard, at which he was in charge). He had paid the price for understanding. Not rationally. Nobody understood rationally what had happened to Norah, no one at all, until her hospital notes reached me half a lifetime later. But John, a sensitive boy that little bit older, had understood it fully with his emotions; he felt what she was going through and defended her fiercely against the wallowing, helpless, uncomprehending adults, and the knowledge was more than he could bear.

I was worse than uncomprehending; I was indifferent. At seven years old, I was not in the least bit concerned that I had lost my mother. How bizarre that seems, written down. Many years on, when I began to talk about it, to try to sort it all out, I learned that this was a Coping Strategy. Golly, I thought. Did I have a Coping Strategy? All I remember having is nothing. Being not bothered, not in the slightest, that she had gone away with no promise of return; and this attitude slumbered inside me through childhood, adolescence and long into manhood, until my mother died, my mother with whom I had by now built bridges and come to adore before all others, and I found that I could not mourn her. Just as I had been indifferent when she first went away, I found to my consternation that I was indifferent now when she went away for ever – and the life I had blithely put together on top of the gaping cracks, pretending they were not there, began to unravel, and I set out on the long road to somewhere else.

But in August 1954 there was no difficulty. There was no emotion. John found it difficult in the extreme, he was upset daily, he screamed out loud, but for me there was nothing, it was as if my soul had been ironed flat on a board, with not a ripple or a wrinkle in it, when we took up residence with Mary and Gordon. They lived in a short cul-de-sac called Sunny Bank, and as it was suburban, it was considerably greener than our Birkenhead terrace; the houses had front gardens, and in one of them, two doors away, hanging over the wall, was a buddleia.

There are plants famed for their healing properties and plants notorious as poisons, and others familiar because we consume them and some because we use their fibres, but there are not many specifically known for being powerful attractants of one kind of wildlife. Yet such is *Buddleia davidii*, discovered in the mountains of China in 1869 by the wandering French Jesuit-naturalist Père David (he who introduced to Europe, among much other exotic wildlife including the deer that bears his

name, the first giant panda); and I stumbled upon this property of the plant when on a bright morning, soon after we arrived, I ran out of the house into Sunny Bank to play and encountered the tall bush covered in jewels, jewels as big as my seven-year-old hand, jewels flashing dazzling colour combinations: scarlet and black, maroon and yellow, pink and white, orange and turquoise. The buddleia was crawling with butterflies. They were mainly the nymphalid quartet of late summer in England, red admirals, peacocks, small tortoiseshells and painted ladies, the ones which take on fuel in August to hibernate or migrate for the winter – the gaudiest of all the British Lepidoptera, bumping into each other on the plump purple flower spikes in their greedy quest for nectar.

I gazed up at them. I was mesmerised. My eyes caressed their colours like a hand stroking a kitten. How could there be such living gems? And every morning in that hot but fading summer, as my mother suffered silently and my brother cried out, I ran to check on them, never tiring of watching these free-flying spirits with wings as bright as flags which the buddleia seemed miraculously to tame, to keep from visiting other flowers, to enslave on its own blooms by its nectar's unfathomable power. I could smell it myself, honey-sweet, but with the faintest hint of a sour edge. Drawing them in, the wondrous visitants. Wondrous? Electrifying, they were. Filling the space where my feelings should have been. And so, through this singular window, when I was a skinny kid in short pants, butterflies entered my soul.



That we might love the natural world, as opposed to being wary of it, or instinctively conscious of its utility, may be thought of as a commonplace; but over the years it has increasingly

seemed to me a remarkable phenomenon. For after all, it is only our background, our context, the milieu from which, like all other creatures, we have emerged. Why should it evoke in us any emotion beyond those, such as fear and hunger, that are needed for survival? Can an otter love its river? And yet it is the case, that the natural world can offer us more than the means to survive, on the one hand, or mortal risks to be avoided, on the other: it can offer us joy.

Although I strongly feel that this is one of the greatest things in our lives – never more important than now – it seems quite mysterious in its origins, and certainly in the force it can exercise. To be able to be swept up, carried away, by an aspect of nature such as butterflies; tell me, is that something in nature itself, or is it something in us? Once, Christianity offered a ready explanation: our joy in the beauty and life of the earth was our joy in the divine work of its creator. But as Christianity fades, the undeniable fact that the natural world can spark love in us becomes more of an enigma.

You can see far more easily why it engenders some other powerful emotions, with, for example, the big beasts. The first big beast I ever saw in the wild was a black rhino, in Namibia. It was about a hundred yards away, a ton of double-horned power glaring straight at me with nothing but low scrub between us; and although I knew it had poor eyesight, it was twitching its ultra-sensitive ears like revolving radar antennae, trying to pick me up and draw a bead on me, and I was transfixed: my heart pounded, my mouth dried, I looked around for shelter. But if I was afraid, there was a stronger and stranger feeling coursing through me. I felt in every way more alive. I felt as alive as I had ever been.

The next day I saw an African buffalo for the first time, a great black mass of menace which made me even more nervous than the rhino had, yet I experienced precisely the same sensation: mixed in with the anxiety, with the fear of being killed,

and buffalos will kill you, was the feeling in the animal's proximity of living more intensely, of somehow living almost at another level. And when later that day in a dry riverbed I saw, close to, my first wild elephant, the most dangerous of them all, I felt again, intermingled with the wariness, something akin to passion.

They are surely very old, these feelings. They are lodged deep in our tissues and emerge to surprise us. For we forget our origins; in our towns and cities, staring into our screens, we need constantly reminding that we have been operators of computers for a single generation and workers in neon-lit offices for three or four, but we were farmers for five hundred generations, and before that hunter-gatherers for perhaps fifty thousand or more, living with the natural world as part of it as we evolved, and the legacy cannot be done away with.

It is to those fifty thousand generations that our fascination with the big beasts harks back; their magnificence triggers an awe in us, the still surviving awe of our ancestors who pursued them, full of fear and hope, piously painting their images on the walls of caves. On the rock faces of Lascaux and Chauvet, where the fear and hope coalesce into worship, we have astonishing insights into a world of long-gone people whose lives revolved around dangerous animals and their slaughter, and who must therefore have lived, with mortality ever present, at that elevated and passionate level we still sense when we come up against the great beasts ourselves, in their natural surroundings.

Yet a stray thought plays about my mind, haunts its corners, refuses to leave: it must also be the case that the hunter-gatherers saw butterflies. Were they indifferent? All of them? Even to swallowtails? Somehow I doubt it. I think the point must have arrived where such unlikely, brilliant beings could not but register with observers, even those obsessed with survival and violence and death – that a moment must have come in prehistory when someone, for the very first time, waited for a swallowtail to

settle, the better to look on it, and then marvelled at what was there in front of them.



Childhood does not conform to a pattern, though we tend to assume it does. We have templates in our minds for human lives, how they should begin, come to maturity, and end; in short, how they should play out; and often we try to make sense of our own experience by aligning it with one template or another, and seeing how far it differs or corresponds. Yet in reality, of course, the forms of our experience are infinite.

I have lived most of my life now. I have been fortunate in learning to repair a fair amount of the damage of the early years, and maybe even more important, in learning to live in peace alongside what could not be repaired: I said to John once, as we came out of another tense Monday morning session of untangling ancient anguishes, the Greeks gave us politics, and history, and the theatre, but they never managed to come up with family therapy, and he smiled and agreed. And this idea of living in peace alongside abnormality is perhaps what has allowed me to accept the strange circumstance, that it was in a time of turmoil, involving great unhappiness, that I first became attached to nature; that while my boyhood bond with my mother was being rent asunder, I was preoccupied with insects.

For I do accept it; I was seven, and not to be blamed, and besides, the allure of butterflies has worked its charm on far more significant minds than mine, although I would say, perhaps not on all that many minds more susceptible at a given moment: having shut out what was really happening, my spirit was an empty tablet, open to impressions, and the scarlet and black of the red admiral painted themselves on it indelibly, as did the brilliant colours of its cousins. I was gripped by a fervent enthu-

siasm; I babbled to Mary of it, and she obligingly bought me *The Observer's Book of Butterflies* as part of her campaign to be accepted as mother substitute. ('There'll be lots of treats!' she had announced as she scooped us up and carried us off.)

Turning its old-fashioned pages, while my real mother was somewhere else, I didn't know where, I began to marvel even more at pictures of species I could only dream about, some of them not only magnificent in appearance but possessed of awe-inspiring names: The Duke of Burgundy! The purple emperor! The Queen of Spain fritillary! O brave new world, that hath such creatures in it! And over the following weeks and months this enthusiasm flourished and deepened, even though it was a year of trauma, for in October, after the one perceptive doctor had made it possible, Norah left hospital, well enough to leave, but by no means properly well, and came to live with us all in Sunny Bank until we could once more acquire a house of our own.

This was something Mary hadn't bargained for. She had thought her sister gone for good. (Probably most people had.) She was perfectly prepared, perhaps even secretly delighted, to take on two young boys, an instant family of her own; but the new situation, which in effect meant sharing her home with a separate family that was now badly disturbed, was a quite different prospect, albeit one she was obliged to accept. She had sold our house, after all.

For her part, Norah, who had the most sensitive of spirits and was in no way robust, had not only been plunged into purgatory by her original ailment, but had been profoundly shocked by the experience itself of being incarcerated and deprived of her children. (She told me many years later that she thought she would never see us again, and the only solace she found was in the two anguished sonnets of Gerard Manley Hopkins, the ones which begin 'No worst, there is none' and 'I wake and feel the fell of dark, not day', because at least they

showed her that others had been in the place where she now found herself, and had survived.) Her equilibrium was shattered, and when she came out she was fearful and suspicious, believing people were talking about her in the street. (Perhaps they were.) Most difficult of all was to return, not to the care of a loving husband – he was off in the North Atlantic somewhere, dining at the captain’s table – but to go as a lodger to the house of a sister who, she might well think in her very unsettled state, had tried to steal her children.

The dynamics were explosive. Forced together, Mary and Norah were at each other’s throats. It was a year filled with shouting, with tormented quarrels and upset which drove John frantic with distress. I can remember flashes of it. I can remember Norah trying to push Mary on the stairs with a strange look on her face, and Gordon screaming at her *Something something, Sister!* But once again it all washed over me: coping strategy or whatever it was, what concerned me was the Butterfly Farm in Bexley, Kent, of L. Hugh Newman, Esq. – the curious caprice of the initial in front of the name somehow adding to its mystique – which would supply you with caterpillars of the most splendid British butterflies you could wish for, to be nursed into metamorphosis in your own home. In his catalogue, Mr Newman referred to the caterpillars and adult butterflies he sold as ‘livestock’, something else I found curiously engaging, and as the spring of 1955 came into view I sent off my five-shilling postal order for some livestock and duly received a cardboard tube containing two purple emperor caterpillars on a branch of sallow, their food plant. They died before their metamorphosis could take place. So did a second pair. I was clearly doing something wrong. But it wasn’t for lack of ardour. Butterflies had indeed entered my soul. They were beings I felt intensely bound to – I could have described to you, then, the row of tiny turquoise crescents on the lower edges of the wings of the small tortoiseshell – and I suppose I might have gone on to

become a lifelong butterfly obsessive, narrowly and compulsively preoccupied to the exclusion of all else, like Frederick Clegg in John Fowles' *The Collector*, had not my mother shown me the way to a wider world.

She did so shortly after she and my father finally managed to find another home of their own, in the November of 1955, and we could leave Sunny Bank after all the discord and try to begin again, and she did so with a book. It was a Christmas present that year, prompted I imagine by my butterfly enthusiasm; but whereas Mary might have found me another book on Lepidoptera, Norah chose something else, and I wonder now what sure instinct led her to this, the first real story I encountered, with fully formed characters and a narrative; for I engaged with it at once.

It was an epic, in the old-fashioned, precise sense of the term: a long account of heroic adventures. But it was not large-scale, in the way that *The Iliad* and *The Odyssey* are large-scale epics, mainly because its heroes were gnomes. It was called *The Little Grey Men*, and its author signed himself merely by initials, 'BB'; his real name was Denys Watkins-Pitchford, although it was years before I found this out.

I was from the first page lost in the world of its principal characters, Dodder, Baldmoney, and Sneezewort (all named after rather uncommon English wild flowers). They were very small people, between a foot and eighteen inches tall, with long flowing beards; Dodder, the oldest, had a wooden leg. But they were different from the sort of gnomes you might expect to come across in the genre of High Fantasy which has so obsessed us in recent years, in *Harry Potter* and *The Lord of the Rings* and their imitators. They had no magical powers. They were grounded not in fantasy but in realism. Although they were able to converse with the wild creatures around them – the author's one concession to the idea of gnomonic difference – they lived, and struggled to live, in the world just as we do, concerned about finding

enough food and keeping warm. But there was more: they were a dying race. They were the last gnomes left in England.

I remember the shiver I experienced when I first read those words. I think it was an inchoate sense, even in a boy of eight, of the transfixing nature of the end of things. It was clear that they could not survive the creeping urbanisation and the modernisation of agriculture which even then were starting to spread across the countryside. They were anachronisms. The world had moved on from them: like Butch Cassidy and the Sundance Kid, their time was done. So much the braver, then, their decision to undertake a great adventure, to make an expedition to find their long-lost brother Cloudberry – ah, Cloudberry! So sad! – who had never returned after setting out one day to discover the source of the small Warwickshire river, the Folly Brook, on the banks of which they lived, in the capacious roots of an oak tree.

I was wholly captivated by their quest, and by its unexpected denouement; I was likewise captivated by *Down the Bright Stream*, the sequel, which I asked for and was given for Christmas the following year. (In the second book, the gnomes' existential crisis reaches its climax; they address it in a most original way, ultimately successfully.) But I took in more than the story. I internalised, at first reading, the milieu in which the adventures took place. It was the very opposite of the milieu of *The Lord of the Rings*, with its dark lords and wizards, its fortresses and mountains, its vast clashing armies; it was merely Warwickshire, leafy Warwickshire, Shakespeare's county, and the Folly Brook, with its kingfishers and otters and minnows, and its kestrels hovering above, a small and intimate and charming countryside with its small and intimate and charming creatures, vivid in their lives and their interactions; and I fell in love with them, and I fell in love with the natural world. I went beyond butterflies into the fullness of nature.

I was immensely lucky: I discovered it right at the end of what one might call the time of natural abundance (at least, in

my own country of England). It was several years before intensive farming would take a stranglehold on the land – before the detestable tide of organochlorine and organophosphate pesticides began to wash over it and burn it like acid burns a body – and something taken for granted but wonderful persisted still: natural profusion. There had been *lots* of butterflies on the buddleia, in the August when I first encountered them.

This is not childhood seen through rose-tinted binoculars. I remember it clearly. It was somehow at the heart of the attraction. I don't think I could have been affected in the same way by a solitary red admiral, marvel of creation though it is. There were lots of many things, then. Suburban gardens were thronged with thrushes. Hares galumphed across every pasture. Mayflies hatched on springtime rivers in dazzling swarms. And larks filled the air and poppies filled the fields, and if the butterflies filled the summer days, the moths filled the summer nights, and sometimes the moths were in such numbers that they would pack a car's headlight beams like snowflakes in a blizzard, there would be a veritable snowstorm of moths, and at the end of your journey you would have to wash your windscreen, you would have to sponge away the astounding richness of life.

It was to this world, the world of the moth snowstorm, that I pledged my youthful allegiance.



Yet the twenty-first century will be terrible for the natural world to which as a young boy I became so bound.

I am a baby boomer; I am of that generation born in the rich West in the aftermath of the Second World War, the generation which came to adulthood in the explosion of new freedoms of the 1960s and thought it had inherited the mastery of the universe simply by being young. And perhaps it had. So heady

were its early years that my generation has been wholly defined by them, till now; we were as sharply marked by rock and roll as our parents and grandparents were by the two world wars (the music let everyone be communicants, it let everyone join in and feel they were partaking together of this sacrament, which was youth). But as we come to the end of our time a different way of categorising us is beginning to manifest itself: we were the generation who, over the long course of our lives, saw the shadow fall across the face of the earth.

Let us set it out. Our world is under threat, as it has never been before, from a malady previous generations did not anticipate: the scale of the human enterprise. Down the centuries, in considering human affairs, our attention has been fixed on their direction, on the implausible, wondrous journey from the flint hand-axe to the moon, via literacy and medicine and the rule of law; gripped by the exhilarating course of the venture, we have not noticed its sheer dimensions creeping up on us. We have been the casual watchers of the waterlily pond, that celebrated pond where the lilies, barely noticeable at first, double in extent every day; they may take fifty days to cover half the surface, but we have not grasped the fact that to cover the remaining half, of course, then takes but a single day only.

This is the sudden headlong rush of exponential growth. It took us all by surprise. After the long unfolding of the human story, after all the millennia of history and of prehistory, it happened in a mere four decades, well within a single human lifetime, indeed within my own: between my teenage years and my middle years, between 1960 and 2000, the world's population doubled, from 3 to 6 billion. (Then it added another billion in the next decade, and will grow by a further 3 billion in the four decades to come.) And not only did the numbers mushroom, in the poorer countries especially; consumption exploded in the richer nations as they grew richer still and the baby boomers, the luckiest generation who ever lived, lapped it up;

and while population doubled, the world economy in the same period grew more than six times bigger. Looking back, this now seems much the most consequential historical event of the second half of the twentieth century, of more fundamental import even than the development and spread of nuclear weapons, or the retreat from empires, or the Arab–Israeli conflict, or the failure of the socialist project.

When did humans, creatures of the genus *Homo*, first begin to modify the world in a measurable way? Almost certainly when anatomically and behaviourally modern people, that is, members of the species *Homo sapiens*, emerged out of Africa some time perhaps around sixty thousand years ago, and began to spread eastwards across the world, to Asia, then down to Australasia, then back north-westwards into Europe, and finally over the Bering Strait land bridge from Siberia into the Americas. Formidably advanced through their possession of language, they – *we* – displaced and almost certainly annihilated the earlier species of humans which had spread out of Africa long before them, *Homo erectus* in Asia and the Neanderthals in Europe (who may not have possessed fully developed speech); and while they were at it, they visited a similar fate on the enormous animals which, over millions of years, had everywhere evolved as the top layer of the mammal and marsupial fauna which we still possess today. We do not accord much imagining to these vanished behemoths. We should. It was a massacre unparalleled. By the end of the Pleistocene, the long epoch of the ice ages, whole continental guilds of great beasts had been extirpated by humans, by the hunter-gatherers, such as the Australian megafauna with its two-tonne wombat, diprotodon, or the megafauna of South America with its colossal ground sloths whose fossils Darwin found, or the megafauna of Eurasia with its giant Irish elk whose ten-feet wide and ten-feet high antlers make you gasp in surprise when you encounter them in the atrium of the biological sciences department at the University of Durham.

No one really knows what happened, of course, and some palaeontologists believe changes in climate may have been responsible, but the most persuasive arguments strongly suggest that humans took them out; we did it. Twenty thousand, thirty, even forty thousand years ago, we were already transforming the world around us, we were destroying on a grand scale; and our populations were minuscule. What must be the effect, then, when not only has the technology for earth modification advanced, in our stirring journey upwards, from the hand-axe to the chainsaw, from the deer shoulder-blade to the bulldozer, from the fish-hook to the mile-long driftnet and from the throwing spear to the automatic rifle, but when we ourselves have undergone an upsurge in numbers which can only be described as gargantuan?

It is extraordinary: we are wrecking the earth, as burglars will sometimes wantonly wreck a house. It is a strange and terrible moment in history. We who ourselves depend upon it utterly are laying waste to the biosphere, the thin, planet-encircling envelope of life, rushing to degrade the atmosphere above and the ocean below and the soil at the centre and everything it supports; grabbing it, ripping it, scattering it, tearing at it, torching it, slashing at it, shitting on it. Already more than half the rainforests are gone, pesticide use has decimated wild flowers and the insect populations of farmland and rivers, the beds of the seas are deeply degraded and most of the fish stocks are at danger levels, the acidity of the ocean is steadily rising, coral reefs are under multiple assault, 40 billion tonnes of climate-changing carbon are loading the atmosphere every year and currently one-fifth, and rising, of all vertebrates – mammals, birds, fish, reptiles, and amphibians – are threatened with extinction. Many are on the brink, if not already gone. The Vietnamese rhinoceros was discovered in 1988, one of the thrilling secrets of the Indochinese jungles which war had for so long kept out of reach; it was extinct by 2010, slaughtered for its horn, believed

in traditional Asian medicine, quite erroneously, to be a cancer cure. We knew the dodo for three times as long. The nightingale, the world's most versified bird, was revealed in 2010 to have declined in England by 90 per cent in forty years; that is, to have vanished from nine out of every ten sites where it sang as the Beatles were breaking up. The Mediterranean bluefin tuna, a fish glorious in form and function but unfortunately glorious too in taste, is starting to look doomed by the appetites of sushi eaters; all seven species of sea turtle are endangered, three of them critically; and amphibians are sliding in a bunch down the steep slope to oblivion, with the golden toad of the cloud forests of Costa Rica famous for its disappearance, while the golden frog of Panama may not be famous, but has disappeared just the same. Loss is everywhere, and the defining characteristic of the natural world in the twenty-first century is no longer beauty, nor riches, nor abundance, nor, if you like, life force, but has become vulnerability.

It cannot be stressed enough: these losses are not caused by natural events, such as tsunamis or volcanic eruptions. They are the work of people – of us – and as we continue to grow, and our needs continue to expand, so will the devastation. The proximate causes can be easily enumerated – we can see that they are habitat destruction, pollution, over-exploitation or over-hunting, the havoc caused by invasive species and, increasingly, a changing climate – but the ultimate cause of the great spreading ruination remains *Homo sapiens*: just one of the earth's great array of millions of radiated life forms, whose numbers, having exploded beyond the planet's ability to carry them, are now firmly on course to wreck it.

In a curious historical coincidence, at the very time when the explosion in numbers was beginning, a new vision of the earth it was so direly to affect was vouchsafed to us. We can put a precise date on it: Christmas Eve 1968. The person directly responsible was William Anders, an American astronaut, one of

the crew of Apollo 8, the first manned spacecraft to leave the earth's orbit and circle the moon. When, on 24 December, he and fellow crewmen Frank Borman and Jim Lovell emerged in their craft from behind the moon's dark side, they saw in front of them an astounding sight: an exquisite blue sphere hanging in the blackness of space. The photograph Anders took of it is known as *Earthrise*, and its taking was without doubt one of the profoundest events in the history of human culture, for at this moment, for the first time, we saw ourselves from a distance, and the earth in its surrounding dark emptiness not only seemed impossibly beautiful but also impossibly fragile. Most of all, we could see clearly that it was finite. This does not appear to us on the earth's surface; the land or the sea stretches to the horizon, but there is always something beyond. However many horizons we cross, there's always another one waiting. Yet on glimpsing the planet from deep space, we saw not only the true wonder of its shimmering blue beauty, but also the true nature of its limits. Seen in the round, not really very big at all – the Apollo 8 astronauts could cover it with a thumbnail – and most assuredly, isolated. Only the one. Nowhere else for us to decamp to, in the never-ending blackness. Thanks to *Earthrise*, we now understand it in the intuitive way, in our souls: what we are wrecking is our home.



The idea that something might be done about this, that a way might be found to hold back the tide of human destruction across the globe, has been one of the great moral and intellectual challenges of the last quarter of a century, given that the pressures involved are intractable and that the problem itself is fully acknowledged by relatively few. They are usually classed as environmentalists or conservationists. They are in every country,

and they are often loud, and sound influential, but they are small in number in global terms. Most ordinary individuals do not care, because the consequences are not yet visited upon them (although they will be), and also because people are quite naturally focused on their own concerns, which often seem harmless enough, and do not grasp that the essence of the trouble to come is their own individual choices, multiplied seven billion times.

Furthermore, the destruction of humanity's home by humanity's own actions is not something that can be coped with adequately – and that means, confronted – by our current belief system, which we might term liberal secular humanism. This creed, which has held sway since the Second World War, has a single, honourable aim: to advance human welfare. It wants people everywhere to be free from hunger and fear and disease, and in so far as is possible, to be happy and to live fulfilled lives. It is principled and upright. It is admirable. But there is a gap at its core: the failure to acknowledge that humans are not necessarily good. Still less does it admit that, more, there may be something intrinsically troubling about humans as a species: that *Homo sapiens* may be the earth's problem child.

Many, indeed, would be outraged by the suggestion, for poverty and hunger and disease are terrible enough without proposing that people as a whole are in some way flawed. Yet for the Greeks, the founders of our culture, this idea was central to their morality. There was a continual problem with man. Man was glorious, almost godlike, and continually striving upwards; yet only the gods were actually Up There, and if man tried to get too high, as he often did, the gods would destroy him. The gods represented man's limits. We think of Icarus, of course, but there are deeper lessons to be learned. The principal fault of Oedipus in Sophocles' *Oedipus Rex*, remember, was not that he murdered his father and married his mother; those were the incidentals of his fate. His real fault was that he thought he

knew everything, he had answered the riddle of the Sphinx, he was beyond peradventure wise. The gods showed him he was not (and in the greatest of all tragic ironies, he puts out his eyes to punish himself for having been blind to his true situation, which now he can see).

In the modern consensus, in liberal secular humanism, this spiritual view of man as having limits, as not being able to do everything he chooses, and of potentially being a problem creature – for what else is a species which destroys its own home? – is missing entirely. There is no trace of it whatsoever. To suggest it, is absolute anathema. For with the dying of religion and the vanishing of spirituality we have become our own moral yardstick: at the heart of our notions of good and bad lies human suffering, and what we can do to avoid it. This is so deep-rooted in us now, so instinctive, that it has been internalised in the language: one of our most prized virtues is humanity, one of our deepest tributes to another person, that they are humane. He, or she, is a humane human. It's only one letter, one squiggle away from saying he, or she, is a human human. Our morality now is entirely anthropocentric: we automatically define objective good by what is best for ourselves. So where humanity's interests clash with other interests, the other are likely to get short shrift from us, even when they involve the proper functioning of the planet, which is the only place we have to live.

This has made the effective defence of the natural world very difficult in recent decades, especially in the face of development imperatives which may seem overwhelming. Environmentalists and conservationists, the people concerned with the fate of the earth's natural systems, have often been contemptuously dismissed by the development movement as middle-class birdwatchers, and it has long been hard to counter the assertive battle-cry of those turning rainforest, with its miraculous numbers of species, into nutrient-poor, soon to be exhausted farmland: *We Need It!*

What the defenders have tried to do, therefore, is construct

a convincing response, to find an answer to the simplistic mantra of human necessity, which might bring to a halt the unthinking destruction of the natural world. There have been two serious attempts at this. The first has been the theory (or the project) of sustainable development. It has been a failure.

Mothered into the world by Gro Harlem Brundtland, sometime prime minister of Norway, via the 1987 United Nations' report on linking environmental and developmental concerns, 'Our Common Future', sustainable development seeks to let the mammoth human enterprise carry on growing, essentially to relieve poverty, without trashing its natural resource base. Sometimes referred to as 'green growth', it is officially 'development which meets the needs of the present, without compromising the ability of future generations to meet their own needs'. Again, this is admirable, and it can probably be done, as long as you think hard about it, and try; moreover, the theory accurately diagnoses both the problem and the potential solutions. The weakness is in the implementation. For sustainable development relies on the goodwill of people, and by extension, governments, to be put into practice; it relies on them changing their behaviour. It does not take into account that people are not necessarily good – and as such it was a perfect fit for liberal secular humanism, which does not take that into account either – and that people do not voluntarily change, if that means, stop acting out of self-interest. You might as well ask cats to stop chasing birds.

It would of course be unthinkable to dismiss out of hand the efforts of thousands of dedicated people, and the pursuit of sustainable development has made a real difference: above all, it has embedded, in governments and companies, the crucial idea, as a policy objective, that the environment must be taken into consideration, which was not there before. But what it has not done is alter fundamentally the general direction or the pace of the destruction of the natural world. It was thought that that

might be possible when, at the Earth Summit in Rio de Janeiro in 1992, more than one hundred world leaders came together to endorse the theory and the gigantic work programme put together to implement it around the globe, Agenda 21; there was a moment of high hope and self-congratulation, as if drawing up the detailed solution to the problem were the same as carrying it out. I remember it vividly. I was there. But two decades later, in the follow-up conference, Rio+20, nothing was clearer than how complete, in terms of Saving The World, had been sustainable development's inability to deliver.

By 2012 little if anything had got better: with an additional 1.5 billion people added to the world, annual emissions of climate-changing carbon dioxide had increased by 36 per cent and were rushing upwards, another 600 million acres and more of primary forest had been chainsawed, pollution was soaring, especially in the developing world, and more species than ever were being threatened with extinction. Although there might have been successes at the margins, the main direction of destruction had not been diverted, and Rio+20, which convened in the Brazilian city once again and was the biggest meeting ever held by the UN – attended by 45,000 delegates, observers and journalists, including 130 heads of state and government – made a very weak, renewed commitment to sustainable development as a principle, and then was forgotten the instant it was over.

However, the second attempt at finding the answer is not yet a failure, and is currently sweeping the globe.



Sir Arthur Tansley is by no means a household name, certainly nothing like as familiar to us as his inventive contemporaries Ernest Rutherford, John Logie Baird and Alexander Fleming;

yet in the period of scientific ferment between the wars when all were active, Tansley, Professor of Botany at Oxford, conceived and popularised a concept which was to be just as influential as Rutherford's nuclear physics, Baird's television or Fleming's penicillin: it was the ecosystem.

It had taken natural scientists, obsessed with classifying things, a long time to realise that individual species of plants and animals do not exist in isolation, but in close communities formed with other living organisms, which all interact not only with each other but also with their surroundings; it was a perception not formalised, as the new science of ecology, until the beginning of the twentieth century. Tansley was one of the first prominent ecologists, and his introduction of the *ecosystem* term (in a 1935 paper devoted to an abstruse argument about ecological terminology) made graspable, even to non-specialists, the powerful idea of a living complex of animals and plants, working together with non-living parts of the environment such as the soil or the climate, as a functional unit.

Such units could be as large as a lake or as piddling as a puddle, they could be a forest or a single tree, but it was clear that they were real and they did indeed have functions, and in the sixties, seventies, and eighties, as they began to be studied intensively, biologists started to appreciate that they played major roles in modulating the way water, and nutrients, and sediments, and carbon all flowed through landscapes, from living things to the soil and the sea and the atmosphere and back again.

This understanding eventually crystallised into the even more pertinent perception that ecosystems and their associated wildlife did things for *us*, things which were vital: they provided life support services which we might always have taken for granted, but which we could not do without. Pollination of crops by bees and other insects is perhaps the most obvious example: without it, swathes of global agriculture would collapse. But by the 1990s scientists were starting to list more and more of these

services: they included climate regulation, composition of the atmosphere, provision of fresh water, flood defence, control of erosion, maintenance of soil fertility, detoxification of pollutants, pest control, provision of fisheries, waste disposal, nutrient recycling, and more subtly, provision of a vast genetic library offering potentially life-saving new drugs and other products.

All that and more, we took from nature, without a thought. We had been doing so for aeons, because it was all free and so it was unnoticeable. The elucidation of the real role of ecosystem services, and even more, of our absolute dependence on them, has been one of the greatest breakthroughs in our understanding of the natural world, and what gave it peculiar force and relevance was that it came just as many of these services, for the first time in history, were under threat or actually being degraded.

Take the toppling rainforests. They could no longer be dismissed by their destroyers as mere pleasure gardens for bourgeois birdwatchers. Now we understood that they not only provided fuel and water and food, but also helped to regulate climate for us, and in a time when human carbon emissions were threatening to alter the atmosphere with disastrous consequences, they constituted a colossal carbon store which, many scientists and policymakers began to argue, it would be suicidal to sacrifice. (And their myriad plant species might very well hold an undiscovered substance which would save your child's life, like the rosy periwinkle from the forests of Madagascar, which gave us vincristine, a cure for childhood leukaemia.)

Our utter dependence on nature: here was nature's best possible defence, potentially far more effective than the hopeful pieties of sustainable development. The significance was seized on by conservationists, and the science of ecosystem services quickly grew into a discipline of its own: we might say it was formalised with the publication in 1997 of a compendium of essays entitled *Nature's Services: Societal Dependence on Natural Ecosystems*,

edited by Gretchen Daily, a biologist at Stanford University in California. Since then it has exploded, being brought to popular attention globally by the United Nations with its Millennium Ecosystems Assessment, a vast survey published in 2005 which looked at twenty-four natural support systems for human life across the world, and asserted that at least fifteen of them were in serious decline. But our dependence upon them, vital though it may be, is not the only aspect of ecosystem services which has caught people's imagination. There is another perception abroad about nature which is exciting many: there's money in it.

Across the globe an extraordinary exercise is being carried out, one of the most remarkable society has ever undertaken: a great universal pricing. All over the planet, price tags are being affixed to grand chunks of nature, just as they are affixed to items on the shelves by a supermarket worker with a label gun, yet these are not the prices you might see on a can of beans or a packet of cornflakes, these are of a quite different order and say things like Pollination, 131 billion dollars, Coral Reefs, 375 billion dollars, Rainforests, 5 trillion dollars.

For the developing science of environmental economics has enabled us to accord ecosystem services value, real-world financial value, and this has woken up even more people than has the knowledge that we rely utterly on them. Take the example of mangroves, the salt-water woodlands found fringing many coastlines in the tropics. Imagine that the authorities in coastal zone X, with a rapidly expanding city behind it, decide to cut down its mangrove swamps because the shallow waters in which they are rooted provide an ideal site for shrimp farms, and if developed properly, those shrimp farms might produce, let us say for the sake of argument, 2 million dollars' worth of exports over five years.

But mangroves aren't just floppy trees with their feet in the water. They provide substantial natural protection against storms

and tidal surges. Let us say that after the mangroves have gone, a tidal surge occurs, perhaps even a tsunami, which sweeps effortlessly over the shrimp farms and inundates the coastal region, and its city, to disastrous effect, and leaves the authorities of X with no alternative but to provide future protection by building a long sea wall. How much will the sea wall cost you? Say it's 200 million dollars, over five years.

The mangroves did it for nothing. So 200 million dollars is their replacement value.

And you got rid of 200 million dollars' worth of mangroves for 2 million dollars' worth of shrimp farms?

That sort of calculation has made people stop and think. It's the kind of arithmetic which can stay the chainsaws when *Please don't do it!* falls on resolutely deaf ears.

Environmental economists and many conservationists have been seized by it, and echoing in their minds is the biggest calculation of all, the sum worked out by a team led by Robert Costanza, then at the University of Maryland, which sought to put a financial value on all the principal natural systems of the planet which support human life. Published in the journal *Nature* on 15 May 1997, and attracting startled attention from all around the world, the paper by Costanza et al. estimated the central worth of seventeen of the earth's major ecosystem services at 33 trillion dollars annually – that's 33,000 billion, remember, 33 followed by twelve noughts – at a time when global GDP (all the goods and services produced by everybody in the world together) had an estimated annual value of 18 trillion dollars only. There it was. The value of nature to human society. Worth more than everything else put together. Nearly twice as much, in fact.

You can understand why many of those seeking to defend the natural world from destruction in the century to come, now see the economics as the answer; not least, it is far more aligned, than is sustainable development, with the hard-faced reality of

the human condition as Adam Smith unforgettably expressed it: 'It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but from their regard to their own interest.' While sustainable development, alas, principally appeals to people's better natures, the concept of ecosystem services appeals to their self-interest directly. Follow the money, as Deep Throat told Bob Woodward.

Governments in the rich world have proceeded to do just this. As a sequel to the Millennium Ecosystems Assessment, they have been enthusiastic in setting up the TEEB project, a major global study of the economics of ecosystems and biodiversity, which reported convincingly in 2010 that saving the earth's wildlife from the crisis engulfing it would cost far less than letting it disappear (because replacing the services it provides would be unthinkably expensive) – the sort of statement which makes finance ministers, the people holding the real levers of power in many governments, everywhere sit up.

Yet just as I cannot be the only person who thought that something was lost to us when Neil Armstrong plonked his great fat boot down upon the moon, despite being in awe of the daring and the technological triumph (why? Because the mystery was no more), so I cannot be the only one who views these developments, powerful aids to saving the planet though they may be, with deep unease.

It is partly that the commodification of nature may strike many people as intensely unpleasant, not to say sinister: putting cash prices on rivers and mountains and forests is not a noble undertaking. To treat the elements of the natural world as commodities paves the way for them to be traded, speculated on, and ultimately owned and controlled by multinational corporations. The jargon of the financial world has begun to attach itself, and they cease to be places to delight in and become instead Natural Capital and Green Infrastructure.

But it isn't just that. It's even more, that the value which is

accorded by the commodification of nature is highly selective. Worth is attributed only to services whose usefulness to us can be directly measured. For example, a recent innovative study suggested annual values for four ecosystem services in the USA: dung removal (\$380m annually), crop pollination (\$3.07bn), pest control (\$4.49bn), and wildlife nutrition (\$49.96bn). These values are based on human society trying to supply artificial replacements. But if it hasn't got a measurable, utilitarian value to us, it's nowhere, and by implication, not worth protecting.

For what value, in all this exciting new endeavour, do we give to butterflies, the creatures which, when I was seven, captured my soul? What value do we give, for that matter, to birdsong, which has captured countless spirits more? Are they just to be written off, as the great ruination of nature gathers pace? And the appearance of spring flowers or autumn mushrooms, and the unfolding of ferns, and the rising of trout, they have no value either do they, and is there now to be only one worth for wildlife, the one recognised by accountants?

Here we are at a peculiar moment in history, when the natural world is mortally threatened as never before, and those who love it are crying out for a defence. Yet while a new defence is being offered – one which is far more realistic and hard-headed than previous defences, one which must stand a better chance of succeeding – as we examine it, we realise that it too is deeply, crucially, fatally flawed.

What are we to do?



In a famous preface to one of his short novels, Joseph Conrad pointed out that the enterprise of the scientist or the intellectual may have more immediate impact, but that of the artist is more enduring because it goes far deeper; the statement of fact,

however powerful, does not take hold like the image does. I believe that in defending the natural world, the time has come to offer up the images.

What I mean is, it is time for a different, formal defence of nature. We should offer up not just the notion of being sensible and responsible about it, which is sustainable development, nor the notion of its mammoth utilitarian and financial value, which is ecosystem services, but a third way, something different entirely: we should offer up what it means to our spirits; the love of it. We should offer up its joy.

This has been celebrated, of course, for centuries. But it has never been put forward as a formalised defence of the natural world, for two reasons. Firstly, because the mortal threat itself is not centuries old, but has arisen merely in the space of my own lifetime; and secondly, because the joy nature gives us cannot be quantified in a generalised way. We can generalise or, indeed, monetise the value of nature's services in satisfying our corporeal needs, since we all have broadly the same continuous requirement for food and shelter; but we have infinitely different longings for solace and understanding and delight. Their value is modulated, not through economic assessment, but through the personal experiences of individuals. So we cannot say – alas that we cannot – that birdsong, like coral reefs, is worth 375 billion dollars a year in economic terms, but we can say, each of us, that at this moment and at this place it was worth everything to me. Shelley did so with his skylark, and Keats with his nightingale, and Thomas Hardy with the skylark of Shelley, and Edward Thomas with his unknown bird, and Philip Larkin with his song thrush in a chilly spring garden, but we need to remake, remake, remake, not just rely on the poems of the past, we need to do it ourselves – proclaim these worths through our own experiences in the coming century of destruction, and proclaim them loudly, as the reason why nature must not go down.

It is only through specific personal experience that the case

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can be made, which is why I will offer mine. I will explore why, remarkably, we as humans may love the natural world from which we have emerged, when the otter does not love its river, as far as we know, and I will explore how it can offer us joy, through my own encounters with it over many years, touching on the ways it has touched me, just as it may have touched you; and I will do so, not just as a celebration of it, but as a conscious, engaged, act of defence. Defence through joy, if you like. For nature, as human society takes its wrecking ball to the planet, has never needed more defending.