The Enchanted Glass

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LOREN EISELEY

On the roof of a building opposite the one in which I sit writing, a radar scanner is endlessly sweeping the horizon. It waits upon the coming of the Great Disaster for which it was built, but in the meantime, it records indifferently the passage of birds going about the old-fashioned business of nature. A little white cabbage butterfly passed by so close a moment ago that I was led to hope that even its tiny wings may have roiled faintly the waiting screen. Perhaps, I think, this is the way the scanners will go on into the next century, waiting, waiting for the Moment, while across the invisible beams will pass birds and butterflies and beetles until the meaning is forgotten and the current dies in the wires.

The mind itself is a kind of scanning device, picking up miscellaneous objects and passing bird wings, waiting to record the supreme joy or the ultimate catastrophe, but often, in the end, unsure for what it waited, the birds and an uncontaminated sky at evening having come, through long surveillance, to contain meaning enough for the heart. We may suspect that Bacon was right when he called the mind of man an enchanted glass, but wrong in some slight measure when he castigated it as full of superstition which should straightway be reduced and the enchantment eliminated. He wanted, he said, to put nature to the question, and with forthright Elizabethan violence, rack out of her, her secrets. That we now possess a few of those secrets is the reason for those slowly turning eyes that stare forever into night and distance from the rooftops of the city.

By contrast, all I have to report in the way of the day's marvels is that I saw an unidentified small bird drinking, upside down, from a slowly dripping faucet on an outside wall. He seemed to know very well what he was about, for he arrived with decision and wasted no time in getting his pert head thrust into the mouth of the faucet. It was a quite remarkable sight that would, I am sure, have pleased old White at Selbourne, or any one of those English naturalists who have regaled us for three centuries with the ways of bats at dusk, worms in the lawn, or the owl in the church tower.

There are two streams of thought in Western culture, and though sometimes partially commingling their courses, they have come down these last three hundred years feeding different minds, serving different purposes, and mutually eschewed by the intolerant of both parties. Bacon is the spokesman for the one point of view, and men of the caliber of Gilbert White and W. H. Hudson are representative of the other. The Baconian school is severely experimental, unaesthetic and empirical. Its opposite, deriving from such parson naturalists as John Ray and Gilbert White, is literary, personal and contemplative.

It is not necessary to take sides in this perennial controversy. The good men, like Charles Darwin, have always known the best that could be derived from either point of view, but that a difference exists is clear. The scientist is seeking the connecting links, the underlying laws controlling the disparate manifestations of the phenomenal world. He seeks to apply the principles he

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discovers to human advantage. As his technical knowledge and the severity of his discipline increases, he is apt to find himself more and more removed from visible nature and its emotional connotations, more and more preoccupied with the inner constituents of things, until he has literally dissolved them away into fields of force, warps in space, or other abstractions.

The old-fashioned contemplative naturalist, on the other hand, is telling an essentially personal story. He may make use of scientific theories, he may accept the facts of evolution or acknowledge the likelihood that we live in an expanding universe. Essentially, however, he is recording the personal element in his experience, the shifting colors in the enchanted glass of the mind which the extreme Baconians would reduce to pellucid sobriety. Hudson, speaking of the aged men in *The Land's End*, and passing from their worn faces to a vision of everlasting rest in a "remote desert land where is no sound of singing bird nor of running water," is bringing before the reader his own vision of the gray-blue color of eternity; or, in his account of a crow-scarer on a lonely heath who ran a great distance only for the pleasure of seeing Hudson cycle past, he is conveying, poignantly, a sense of the elemental loneliness of the countryman. These are personal experiences capable of being shared by every perceptive human being. They are part of that indefinable country which lies between the realm of natural objects and the human spirit which moves among them.

The recounting of such episodes may be scorned by some as trivial and unimportant, but they contain fragments of a natural history so vast, shifting and impermanent as to confound the strict empiricist. It is the natural history of the human soul itself, and it contains all the color which lies in the enchanted glass. Naturalists like Hudson, though they speak of common creatures such as birds and garter snakes, move through fields denied to ordinary men, so that on one of Hudson's memorable journeys, that companionable snake racing at his side became, for him, a mysterious mottled monster extending out of sight across the endless leagues of the South American savannah. The menace of distance had become personalized.

It is thus apparent that the naturalist of letters and the specialized scientific investigator have, in some degree, different ends in view. That they occasionally accuse each other, on the one hand of "mysticism," and on the other of dullness bred of purely factual observation and objectivity, is unfortunate and due, in some measure, to misunderstanding. The modern world does not lend itself to contemplation. Over and beyond the insatiable appetite of the public for accounts of new and miraculous discoveries—discoveries which cannot be produced with the speed at which press and public demand them—human life itself has become frenetic and excitement-loving.

We are used to being hurled headlong by plane and motor from one natural marvel to another, upon commercialized vacations. In Gilbert White's day an intelligent villager of small, independent means read a few favorite classics, saw a few friends, and could, if he was so inclined, spend his days in unhurried contemplation. His masterpiece, if he was so gifted as to produce one, might, as in White's case, be the single incident of a lifetime. Today writers jostle each other for a few weeks of publicity, and vanish, being swept aside by an unending stream of new books which clamor for the reader's attention. In such an atmosphere tongues grow more brazen, and relatively few will prefer to meditate upon the sex life of a microscopic infusorian rather than to see what can be turned up in the daily tabloid.

Still, the great tradition has never quite been broken in English literature, and every so often the seemingly indifferent public appears to generate a passing memory of the woods and waters out of which it has so recently emerged, as in the case of *The Sea Around Us*. It will then rush forth in a body to purchase some surprisingly good book whose author may have been writing in the same vein for years without previously gaining any but the most meager

audience. Nor, to be truthful, can it be guaranteed that the successful author may not still be addressing that same small audience after the unpredictable locust swarm has streamed away in a new direction.

The past year has yielded some surprisingly fine nature books, though most would have to be designated as factual rather than contemplative in any deeply literary sense. In certain of these cases, however, there has been a kind of partial transformation of data, a light from beyond the horizon that shines through the author's work even while he practices the scientific approach. Such cases reveal the futility of precise categories in literature and even in science.

One man studies waterfowl for a lifetime and writes about their lives and migrations in such a manner that the colors in the enchanted glass, which the author sought to subdue to the purposes of sober science, are set to glimmering sympathetically by all who read his book. Another, equally devoted to rattlesnakes, writes in two huge volumes so elaborate and yet so living a treatise that every time I pass the books upon my shelf, a sound emerges—a dry and menacing rustle that takes me instantly into a year, long ago, when I slept with boxes of the creatures beneath my camp cot, and woke to their high-pitched buzz of protest when my tent mates slyly used them as a breakfast call. Another more wide-ranging professional mammalogist has sought to give us a scientific glimpse of the monkey kingdom, whose chief and most obstreperous representative is man. All are excellent books in their way, and worthy of analysis as examples of descriptive natural history at a very high level of scientific accuracy.

Afterward, we will come back to that more indefinable sort of book that contains overtones of thought which is not science, nor intended to be, and yet without which science itself would be the poorer. Decades may pass without the appearance of such a seer as Thoreau or Hudson. And if it be true that Thoreau, for example, was on occasion, weak in the identification of birds, he is cherished for quite other reasons, and these reasons, though now forced back into obscure corners of the modern mind, are still not without a certain power. They are the ineradicable shadows in the murky glass which can never be totally cleansed by Bacon's followers. For when the human mind exists in the light of reason, and no more than reason, we may say with absolute certainty that man and all that made him will be in that instant gone.

The books to which I have previously made passing reference are all the work of field naturalists: H. A. Hochbaum,[1] Laurence M. Klauber,[2] and Ivan Sanderson,[3] who, with the exception of Mr. Sanderson, are not extensively known to literary circles. Supremely honest, supremely accurate observers quick to admit a lack of knowledge concerning points on which knowledge is not available, their delight in what is truly and not speciously marvelous enhances the scientific value of their work and carries it toward the domain of literature.

Klauber's two-volume treatise on rattlesnakes is obviously a labor of love more characteristic of John Ray's era than our own; immense in scope, it dwarfs anything previously written on the subject. It has been years in the making, and is unlikely ever to be duplicated. Physically, the two volumes are an unusually fine example of good bookmaking, and a handsome addition to any bookshelf. More importantly, they are eminently readable. Even the folklore of the subject is treated extensively.

But what is so marvelous about rattlesnakes, it may be asked, that Mr. Klauber, with the unparalleled acquiescence of his wife, should have harbored them in his basement for over thirty years? Let us take just one example. In times past one used to hear occasional speculations among naturalists as to why animals did not show more variations in the sense organs with which they were equipped. As knowledge of un-

[1] *Travels and Traditions of Waterfowl* by H. A. Hochbaum, University of Minnesota Press, 1956.

[2] *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind* by Laurence M. Klauber, 2 vols., University of California Press, 1956.

[3] *The Monkey Kingdom* by Ivan Sanderson, Hanover House, 1957.

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seen radiations grew, it seemed strange that other distance receptors than those concerned with light and sound and smell should not occasionally be developed. Today we hear a great deal about homing projectiles that center in upon the heat emanating from a factory or other objective. The truth is that man has long been anticipated in this aspect of the arms race. In the rattlesnake there is a deep pit on either side of the head which is more conspicuous than the nostril. The significance of this pit had been speculated upon for over a century.

After many theories had been discarded, it was discovered, some twenty years ago, that the pits were actually heat-receptor organs. Experiments revealed that the sensitive diaphragm in the pit reacted to radiating heat impinging upon it. Thus rattlesnakes are aided in locating warm-blooded prey, or potential enemies at night, by a receptor totally lacking in most forms of life, but extremely advantageous, over short distances, to a nocturnal hunter. The stereoscopic centering of the sensations enables the snake not only to sense the warm object but to judge its direction with great accuracy. Ingenious experiments with covered light bulbs showed that the snakes would strike at them quite accurately, although they could not detect the same bulbs when these were cooled to the prevailing temperature.

There is something intriguing about the fact that the human precursor and the rattlesnake seem to have entered the world at the same time, though in opposite hemispheres. Thoreau, in his voluminous journals, would scarcely have resisted philosophizing on so appealing a point had the facts been available to him; but here we pass into another landscape—the wavering and elusive world of water and clouds.

For many years Albert Hochbaum has lived on the south shore of Lake Manitoba in a district celebrated for its wildfowl marshes. As director of the research station organized by the North American Wildlife Foundation, he has devoted his life to the study and protection of migratory water birds. I know of no recent book on the subject which is more original, more stimulating to thought, or—in the delicate tracery of Mr. Hochbaum's line drawings—more appealing. As his title indicates, this book deals exclusively with the travels of the wildfowl of the inland waterways. Instead of the nook-and-cranny world of the reptile, we are following the geese over vast marshes and through floating cloud wisps as the turning face of the planet rolls beneath us. Mr. Hochbaum believes that in addition to the instinctive elements of the migratory habit there remains a residiuum of behavior which is learned and, as he puts it, "traditional."

Man, as the biologist is slowly learning, is not the only creature who transmits acquired behavior. Every season now there pass above the ponds and sloughs of the Middle West, geese and ducks who never think of nesting in places which might prove attractive to them. Yet we know that historically these areas once contained an indigenous wildfowl population. Today the birds all head northward not because of pure instinct but because a tradition, like a human culture cut short by some catastrophe, has been wiped from their memory. The offspring of the more southward nesting ducks were destroyed with their parents in the unrestricted slaughter of the nineteenth century. The birds that still pass on the great migrations have a traditional memory only for the places of their northland birth. We may speak of this as tradition rather than instinct because it has been satisfactorily demonstrated that if, when young, fledgling birds are shipped to an area far from their original birthplace and allowed to gain their first experience in this new region, they will return in later years if not molested. If they nest successfully, a home tradition will be renewed in successive generations. Like some human beings, the birds have a passionate attachment to the surroundings of their birth and will come pitifully back to them through a hail of gunfire. As Mr. Hochbaum remarks, the salvaging of wasteland and destruction of small bodies of water bodes ill in the com-

ing years, even for waterfowl which are still numerous.

We shake our heads over the unmerciful slaughter that destroyed the passenger pigeon, but there are many aspects of today's legalized hunting which are still far from satisfactory. Even under control there is something revolting about man's eagerness to kill for no purpose. Yet even man, restless denizen of the monkey kingdom though he may be, has not, in all cultures, evinced such heartless proclivities. Here in the West a tradition has arisen which has been subtly encouraged past the pioneer period by the arms and sports equipment industries. There is about it some of the same artificiality that is so painfully evident in the commercialized modern Christmas.

Mr. Sanderson's *Monkey Kingdom* is one of the best popular treatments of the existing primate order which has appeared in some years. It is beautifully illustrated in color and the text is tastefully augmented by the personal anecdote and observation which Mr. Sanderson knows so well how to handle unobtrusively. One may differ here and there upon detail—I, for one, do not place as much stock in the Himalayan snow man as Mr. Sanderson, nor do I regard *Homo heidelbergensis* as a "near giant"—but these are small quibbles. The real impact of the book lies in the impression which it gives of that multifaced group of creatures who bear, in so many and, to our minds, distorted ways, the features of man.

Hidden mostly in the dense rain-forests of the tropics, so that they are little known to the layman, is an array of creatures, sad, volatile, gentle and pugnacious, creatures which, if they were all arranged in a single room, would give us the impression that we were walking through a hall of distorting mirrors. Here is man in almost all his guises, with appropriate colors to match. To a discerning mind there is just a touch of the satanic lurking beneath this innocent natural history. It is, perhaps, the uncanny satanism of the line which gave rise to man. Still, if there are too many flashes of scarlet, too many morbid blues and projecting fangs, there are also soft-furred, innocent-eyed creatures whose hands alone remind us of the way we have come. It is a strange magic—that of the monkey kingdom—and most frightening, for now the whole earth has fallen into the hands of one member of that order. It is as if in him the full range of the room of mirrors were represented—terror and arrogance, greed and cruelty—and, caught, like some echo from another world, a rare vast pity.

It is this last, this final flower of civilized intelligence which brings us to Joseph Wood Krutch's latest book.[4] Here description, analysis, have become secondary to understanding. If understanding is not to be had, then wonder. Even the little *Volvox* rolling through its minute world is touched by a fragile sympathy which is neither sentimental nor exaggerated. John Ray, one of the first of the parson naturalists, knew this feeling. Charles Darwin, associated in our minds with the raw struggle for existence, jotted similar sentiments into his notebook as a young man in his twenties. All of Krutch's many essays upon natural history show this quality, but *The Great Chain of Life*, which draws us up the evolutionary ladder in Mr. Krutch's own urbane and gentle way, should have a great civilizing influence among those not too closely wedded to the routine of the laboratory.

It has always struck me that something about the tradition of their literary natural history has given the English field observers a special quality which we are just beginning to emulate. In a book published a few years ago[5] Richard Perry recounted his stay on Lundy to study the island sea birds. In this book, which can be commended to all students of bird behavior, I want to touch upon just one point which has pertinence to our theme, and which illustrates once more the way in which pure science in a sensitive hand can begin to pass imperceptibly into literature.

Mr. Perry gives a graphic picture of the

[4] *The Great Chain of Life* by Joseph Wood Krutch, Houghton Mifflin, 1956.

[5] *Lundy: Isle of Puffins* by Richard Perry. London: Lindsay Drummond, 1946.

life of the black-headed guillemots and razor-bills that nest along the island cliffs. Through sympathetic eyes one is led to see both the beauties and follies of their instinctive behavior—unmated birds going through the process of feeding imaginary chicks under their bellies—all the tangle of blocked and opposing instincts seeking expression on the crowded ledges of rock that look sheer into the sea. From those cliffs hovered over by huge chick-eating gulls, the young birds must make their first unstable flight down to the sea. At the close of the nesting season the last chicks run a risk of being deserted as the call of the sea begins to take command over fading parental instincts. With visible sympathy Mr. Perry follows the tumbling flight of the last birds that may end in a gull's beak or in a smash on the rocks below. The lives of these birds are desperate beyond belief, desperate in their birth, their infancy, their confused service to life. From babyhood they have only their mother's wing to protect them from the gulls. The parental instincts are often confused, and confusion is death.

Santayana once observed that the universe is familiar and limited, or at least that this is our experience of it "in spite of its agitation like a cage full of birds." Perhaps, intricately entwined with this observation, lies something of the paradox between science and literature. Science is constantly striving to reduce that cage of agitated birds which is the universe to some kind of comprehensible order. In this it has achieved striking successes. In its applied phase, however, it is increasingly subjecting man to disruptions and interferences which have shaken his reliance upon the ancient continuity of things—the round of seasons, the solidity of the small social groupings that once made up his life and for which his nerves and body have been adjusted for a million years. He is now his own neurotic rat caught in the maze of an experiment over which he has well nigh lost control, and which progresses at a furious pace to some unknown and increasingly fearful destination. He may read desperately more and more facts —whether it be the habits of *Crotalus horridus* or the state of matter in the dark beyond Aldebaran. But this in itself will not restore his sanity or the confidence that was once entertained in green leaves or ducks going northward in the spring—things he demands for security, yet eternally destroys.

It is only when the great artist speaks familiarly in his ear—the great magician who knows intuitively the true nature of the magic glass, that its imposture may be indeed reduced. It does not lie within the power of science alone to make life or the shadows everywhere confronting it acceptable. Rather, it can be achieved only in that supreme synthesis of knowledge and emotional insight which is typified in one letter of the ill-fated John Keats. "If a sparrow," he wrote, "comes before my Window I take part in its existence and pick about the Gravel."

It is in the rarity, yet persistence, of such writing that one may occasionally grasp the fact that the evolution of humanity may still, even in our modern day, be nearer its beginning than its culmination. "For," Keats wrote again, "Men of Genius are great as certain ethereal chemicals operating on the Mass of neutral intellect." They and they alone have a power to create the worlds that permeate the enchanted glass of the social mind. It is for this, if for no other reason, that the flight of a guillemot chick in autumn should be observed by those to whom it can be doubly seen as a scientific event and at the same time as containing that marred quality of imperfection which makes man and the instinct-baffled guillemot a part of a drama only to be understood in sympathy and full catharsis when a great naturalist has shown us that man and the guillemot are one.

It is then that the flight of man down the dark crags of his own destiny takes on nobility. In that moment he knows and contains within himself leaf, man and falling bird. And if he cries out in protest, as the great poets have cried, it is not for himself, it is pity for a world that falls with him, and that loves, as he loves, the sunlight wrinkling the dark waters of oblivion.