

Every photograph that is made, whether by one who considers himself a photographer in quotes or by the tourist who points his instamatic and pushed a button, is a response to the exterior world, to something perceived outside himself by the person who operates the camera. And whatever is perceived ~~that results in~~ ^{and is translated into} a photograph is perceived visually. ^{a visual response to visual perception.} Without the visual experience there can be no photograph. Auditory ~~sensations~~ and tactile sensations singly or in combination are not sufficient to be expressed photographically. This is not to say that other ~~kinds of~~ ^{that they may not have} perception than the visual cannot have an influence on the resulting photograph and ~~maybe~~ a very significant influence. They may determine the interpretation of the visual perception of an exterior object, situation, or phenomenon but they must have something to work on that is connected with seeing. A scene may have musical or tactile connotations to a sensitive photographer; he may say there is music in these trees, these hills, this shore as Thoreau exclaimed about nature, "What is the Music I hear?"; he may say he can actually feel a place, that it is ^{moving depression} smooth or rough ^{and repellent or elevating and person} congenial or repellent to his nerve endings, but there is always the scene ~~itself~~ without which these sensations would not be aroused. Some photographers say they are inspired by inner revelations and insights that have no exterior reality, but these influences ^{too} work through the eyes on how the exterior world is appreciated.

No doubt there are those who will confuse matters by ^{raising} ~~bringing up~~ the question of the meaning of reality. I propose to scotch this philosophical red herring by announcing the premise for what I have ~~to~~ to say that a world independent of the illusions and hallucinations of the human mind does have concrete existence, and that general agreement on its physical attributes is found in the numerous catalogues of its contents - in physical, chemical, biological, geological, and astronomical classifications. To the esoteric rejoinder that all knowledge is part

of a grand illusion of universal mind, I say such an hypothesis is untestable and therefore meaningless like the question what existed before the beginning. One must live ~~live on the bedrock~~ and work on the premise of objective reality which is the bedrock of the accepted world.

It matters not what theme, what emotional commitments, or even what financial considerations motivate the photographer, he responds to the same kind of stimulus. He may find his inspiration in the social scene, in the ~~pleasures or tribulations~~ lives of people, their joys and sorrows, their accomplishments and tribulations, their ~~exhaultations~~ and sufferings in and the way they meet the vicissitudes of life. Or he may be concerned with the natural scene in all its complexity, ^{and flow of dynamic interactions} ~~and variability~~. And thirdly his interest might be purely episodic - portraiture to reveal individual character and personality; and studies of nature to demonstrate factual relationships and structure. The boundary between these categories is indefinite and fluid with much overlapping of departments.

point of view is
Which ~~influences are~~ predominant in any one person is determined very largely by the influences in his early life that preconditioned his outlook. The urban child will most likely be concerned more with the human condition than with abstract raw nature, which to him is probably chaotic, incomprehensible, and frightening. Nature lacks the simple order of human society where even the most blatant injustice ~~is~~ is more acceptable, because it can be judged in terms of moral precepts, than are the harsh realities of interspecific relationships. If he has been brought up in an intellectual atmosphere his removal from the natural world is more artificial, but simultaneously, by virtue of greater rationality, more accommodatable to it. Joseph Wood Krutch illustrates the adaptability of the city intellectual and scholar who took up rural life to become a defender of untrammelled nature. The less educated and

sophisticated regard nature with fear and suspicion, a brooding force to be subdued and tamed or more uncompromisingly conquered. To conquer means to harness, to domesticate to convert the forces of nature to useful purposes by which is meant to the enrichment of people. Resources unused are considered wasted, not by the unsophisticated alone, but especially among educated individuals whose economic interests are closely tied to the exploitive industries, the best examples of which are ~~the~~ strip-mining and lumbering. To them forests in protected areas are locked ~~up~~ out of the main stream of human endeavor and therefore worthless, worthless to the logger but not to those who are inspired by virgin forests. The point is whose use in the long run results in the greatest benefit.

Scientists, by and large, are more detached and open minded in their attitude towards ~~nature~~ the natural world than are the utilitarians. The motivation of those whose interests are in the physical and ^{biological} ~~animate~~ realms is wonder, and the search for explanations and knowledge. They seek no material advantage. The person whose formative years were spent in the country is more prone to develop an attitude akin to that of the almost unconsciously scientist. Without effort he accumulates a large store of factual information on which his wonder and curiosity operate to raise questions ~~and search for explanations~~. of causes and origins. Should he in the course of time become a photographer ~~these youthful influences will be~~ his work will reflect ~~the~~ insights from these youthful influences of his youth. His preoccupation will be with the natural scene, because there his sense of wonder was aroused. The urban person conditioned by his close contact with individuals from any walks of life is more likely to be motivated ~~by~~ in his creative activities by empathy - identification with their tribulations - than he is by wonder at the complexities of nature. Of course exceptions will always be found to this perhaps too rigid ~~My early years~~ grouping of people by their urban and rural backgrounds as to their subsequent motivations.

My early years places me in the natural world group, not entirely because I was brought up in the country, but equally because of strong paternal influence in the sciences. As a child I was introduced to many of the then current concepts in the fields of geology and astronomy, and to the affinities within the living world encompassed by the biological disciplines, Zoology and botany. My father was an uncompromising Darwinian. His belief in evolution was fierce and comprehensive, including with all its geological and biological features not just the planet earth/but the solar system and the entire universe as well. When he was a young man many of the theories on the origin geological history of the earth and the origin of life were vigorously disputed by vitalists and theologians and contrary to all their arguments he insisted on a purposeless world, a world ruled by chance. It is not surprising, therefore, that such a materialistic outlook had a profound influence on my thinking and that I became a materialist too, although possibly ultimately a less dogmatic one. It is very difficult to live ~~by~~ entirely by abstract principles; conflicts and contradictions constantly arise and one is forced to compromise or compartmentalize ~~by~~ the manner in which one faces irreconcilable points of view. My father was a very moral man but the apparent contradictions between his belief in a purposeless universe and his moral convictions never seemed to disturb him.

Thus my devotion to the natural world was the inevitable consequence of childhood environment and family influence, and when I became interested in Photography the subjects that occupied my attention were those primarily connected with the natural scene. At the same time my perception of beauty became intimately associated with nature. This feeling has persisted throughout my life although with maturity my sense of what is beautiful has vastly expanded. And so the aspects of nature that I perceive as beautiful in the conventional sense as well as in a phenomenal sense are what I attempt to record photographically.

A feeling for beauty as a determinant in photography is I believe a more important consideration to photograpgers of nature than to photographers of the human scene. A famous photographer whose work I know well and have greatly admired was once quoted to me as having pontificated in a careless, off the record moment that color is vulgar, nature is trivial, and beauty is unimportant. This man's work deals exclusively with the human scene. Most of his photographs are beautiful to my eyes, but then we all know the old ^{aphorism} ~~saw~~ about beauty. Perhaps it's also a matter of definition.

Nature is not to be ~~disparaged~~ thoughtlessly disparaged for it holds a venerable place in the arts. Nature was the inspiration of prehistoric man ^{as evidenced by} ~~from~~ the cave paintings of Lascaux and the pictographs of primitive men in Africa, America, and Australia. The preColumbian temples of Middle America are decorated with sculptures of snakes, birds, and jaguars. ~~In the eastern Mediterranean the columns of the Middle and Late Kingdoms of Egypt. The columns of Egyptian temples~~ columns of the Middle and Late Kingdon periods were designed after the lotus flower, and the orders of Greek temple architecture were partly stylized natural forms: the echinus of the Doric capital ~~from~~ derived from the seaurchin; and the modillion of the Corinthian capital ~~from~~ decorated with acanthus leaves. And landscape painting has a long and venerable history.

But ~~justification of influence and inspiration in a work of art~~ ^{an account of the} ~~that~~ ^{goes} into the creation of a work of art is not necessary for its justification which is ^{rests on its} ~~an inherent/~~ property judged by ^{for me} inherent merit.

After photography became/a full time occupation in place of an avocation certain concepts began to take root in my thinking which I was eventually able to recognize as general criteria ~~of excellence.~~for acceptance by others. They are two: photographs must be convinceng and they must be appealing. The conviction a photograph carries is related to the choice by which its content was abstracted from the total scene that remains implicate beyond the explicite image. The appeal of a

photograph resides to a great degree in its subject matter, but here organization is especially important^{too} as it is for the first criterion.

Very early in my life I became interested in birds and spent much time during summer vacations photographing the larger conspicuous varieties such as gulls, herons, and hawks. But during the years when I was obtaining an education for a career ~~as a scientist~~ in science I gradually lost interest in photography, which revived when I became a postgraduate. Probably because I never felt completely comfortable or competent in research I began to spend more time in photography in general and of birds in particular. With the invention of flash bulbs in them the I saw ~~their~~ potential for making close up photographs of small birds of a quality comparable to what could be done ^{with} of other nature subjects. Most bird photographs that were being published at this time were quite inferior to the best ^{general} photography ~~of less active subjects~~. The reason for this was that to stop motion high shutter speeds were necessary, and high speeds required large apertures which in turn reduced depth of field. To obtain a photograph of a small bird equal ~~to~~ in quality to what is possible of more general subjects small apertures as well as high shutter speeds are essential. With flash ~~bulbs~~ illumination bulbs because the illumination was many times brighter than close to the subjects this was possible. Most bird photographers were satisfied with images of a bird, and rather poor ones at that, without regard for the whole picture, which in many cases contained grossly out of focus foliage. They didn't seem to understand that the whole picture is important. By judicious placing of the lights in relation to the camera very natural effects can be obtained. My first pictures, and these of Sam Grimes of Jacksonville Florida who used the same technique, were an eye opener to ornithologists, who, however, felt that placing so much equipment close to a bird's nest put its welfare at an unacceptable risk. This never proved to be the case. Ornithologists did not realize how adaptable ~~birds~~ most birds are.

When I tried to interest a publisher in my bird photographs, which in the beginning were all black and white, I was told that they should be in color so that the birds could be identified, and this criticism is what got me into color photography. I began to see other subjects because of their color, and when my wife said they reminded her of Thoreau and suggested that I illustrate Thoreau I gave up black and white photography almost entirely.

And so I was led into color photography by largely chance circumstances. ^{the natural world was} My ~~interest and preoccupation with nature had its~~ ^{the influence of a} rooted in boyhood country life and ~~paternal influence~~ ^{interests} which in science and nature, which, in the milieu of close family ties, was inevitable.

A photograph is an abstraction from space and time. Its content is both explicit and implicit, ^{indefinitive} explicit within the framework of its limited ^{ing} boundaries and implicit in that it suggests ~~a~~ wider relationships than those depicted, a scene outside evokable through the imagination of the viewer. In a sense the ^{area} ~~space~~ ^{recorded} encompassed by the camera, although optically consistent and logical, is a compression into a small ^{area} ~~space~~ of a vastly greater reality, is a miniturization of the world we know, which has the effect of enhancing the abstraction and creating a feeling of ^{the} unreality ~~in the viewer~~ of the subject, in the viewer and even in the photographer who made it. But the photograph as an object by itself remains real enough. A photograph, more than a painting, is an abstraction in time. It celebrated the past. ^{to abstract} It is a record of an instant in time, unique and unrepeatable. Whether of a particular combination of atmospheric conditions or of the behavior of a living ~~creature~~ being, man or creature. Because the flow of time is apparently unidirectional the instant is never repeated. The difference between a painting and a photograph is found in the fact that the former is a synthesis of many moments perceived in succession by the artist whereas the photograph is only one moment possibly, ~~not~~ and especially

^{the}
~~true~~ for moving subjects, not even recognized by the photographer.

The situation in which photographs of small objects are blown up larger than life is the same, they acquire also ^{the} ~~a~~ quality of the unbelievable.

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 A house fly ~~depicted/as~~ magnified to the size of a bird becomes a monster from a world we can never experience, but the sense of ~~unreality~~

~~and~~ remoteness from reality is even greater in these pictures ~~of~~ made by electron microscopes of ~~bacteria/of~~ the internal structures of cells.

To me, because ~~of~~ the special optics of the machine, sharply defines everything within the field of view, these pictures are the most mysterious and awesome of any that have ever been made not excluding the more spectacular astronomical photographs ~~of/these~~. Their awesomeness may ~~have something to do w~~ be because they are subjects that one will never be able to see with his own eyes.

As the photographer of the social scene records human emotions and behavior, normal and abnormal, man's relationship to his fellow men and to his environment, and the impact of his activities on his surroundings, how he alters them to his advantage or disadvantage and how he copes with the situations he creates, so the photographer of the natural world - the world that exists independently of humans - is concerned with the interrelationships between other living things and to their physical environment. The study of these relationships is ecology. Ecology, in its broadest sense includes man too, but in this dichotomy between man and nature, man is considered in a separate category which could be called human ecology. To generalize: ecology is the study of life.

With the development of my interests in photography in the realm of nature and as I became increasingly concerned with the colors of the world through bird photography, I began to appreciate the complexity of the relationships that drew my attention, which I saw were more clearly illustrated in color than in tones of gray. It was this complexity in nature that I found most irresistible and which, at first, in a very

fumbling way, I tried to capture meaningfully on film. I focused on the details, and when on occasion I made pictures of the same subject in both color and black and white it was always the color photograph that carried the message because it contained the information that attracted my attention in the first place. The color of natural objects, as I learned from a publisher in the case of birds' plumage, is an important feature of them, as important as shape and arrangement, and in fact influences one's appreciation of composition. This is especially true for detail pictures. In landscapes the bolder forms are less dependent for emotional effect on color, which may partly explain my preference, except in exceptional circumstances, for small subjects. One exceptional condition I found in Antarctica where the wide view seemed to express better the feelings of desolation and loneliness one gets on that vast empty continent. There too photographs made from helicopters and airplanes of mountain ranges buried in ice, range behind range and peak after peak projecting through the polar plateau needed the pale sky to create that sense of insignificance and isolation in a hostile environment.

In the Colorado River canyons the big view conveys less information about the qualities of a young canyon, its origin and life; and express less adequately for me the evidence for the powerful forces that combined in its creation than does closer focusing on cliffs and ~~seeps~~ and alcoves. What I saw on the many trips I made through Glen Canyon and on which I focused my camera evoked visions of centuries of rain near the end of the last continental glaciation, thundering torrents brown with silt and sand ^{that carried} ~~carrying~~ all before them ^{down} ~~by~~ the narrow side canyons. ~~gouging~~ ^{eroding} ~~so~~ ~~rapidly into the mesozoic sandstone to produce slots hundreds of feet deep before the walls could be widened at the top~~ In those wetter days the river and its many tributaries ^{rapidly} cut into the mesozoic sandstone ~~so rapidly~~ carving narrow, winding slots hundreds of feet deep before the slower processes or erosion could widen the walls at the top. The ^{effect} ~~results~~ of

period
 this wild dramatic ~~events~~ were clear for anyone to see and they were
 the evidences I focused on because they were the record of the history
 of the canyon which the ^{comprehensive} long view did not reveal.

My concern for the protection and preservation of wild lands
 grew out of my interest in nature and ^{the} photography of nature beginning
 with birds, and because of the way I felt about birds the first
 conservation organization I became ^{your} connected with was the National
 Audubon Society. In those days more than a generation ago the Society's
 concern was almost exclusively ^{the} to protect birds against human predation
 and so I thought of conservation in those terms - to protect birds
 from ^{game} being economically exploited by market hunters and plumage collectors,
 and from sportsmen. After killing a sapsucker with a beebe gun at the
 age of eight, I never again could see the sportsmanship in shooting birds.
 The idea that conservation could have a much broader meaning to include
 wild land, rivers, seashores, and wilderness was just beginning ~~to take~~
 to take root and I gave these issues little thought. My indignation
 was directed against the self-serving apologist who gave lip service to
 the protection of migratory birds ~~and~~ but defended shooting ^{the} ducks, quail,
 and shore ^{game} birds because they enjoyed ~~the~~ doing it, and rationalized
 the harmlessness of the practice for themselves. Even some ^{supported} members of
 the Audubon Society were sportsmen. When the population of a species,
 which is the target of ~~the~~ hunter, declines it is amazing how
 universally the cause is attributed to factors other than the activities
 of the hunter. ^{See} ~~and~~ sometimes conservationist ^{were} ~~are~~ blamed.
^{limitations}

Not until World War II ended did the ~~finite~~ ^{limitations} of the resources
 of the ~~planet~~ earth begin to be recognized. During the first few
 postwar years a number of books appeared warning of disaster ahead.
 Among these were Road to Survival and Our plundered Planet. Other works
 celebrating nature and wildness but carrying no ^{political over-} ~~message~~ were published,
 intending to produce no

the more famous being A ^and County Almanac, The Twelve Seasons, The Immense Journey, and The Web of Life. The authors of these books were indirectly informing their readers that the world beyond human activities was a rich and beautiful place with a worth ~~be~~ not measurable solely by its utility, ~~to~~ people. detailed in content

As the photography of the natural scene, ~~not~~ more/than the classic ~~records~~ ^{picture} of spectacular scenery made by Jackson and Sullivan, became popular, appreciation for nature was stimulated. Pictures became almost as influential as words, and when expressing sensitively a feeling for nature were equal to a thousand words. Then with the development of color ~~photography~~ ^{processes} the effectiveness of ~~color~~ photography became still greater. The publication of the Sierra Club exhibit format series of books/called coffee table books, beginning with This is the American Earth and continuing ~~through~~ ^{often} for more than twenty volumes, most of them in color, had a tremendous influence on the public's attitude towards nature and its non-material values. Because photographers adapted their seeing to the potentials of color film, the subjects that attracted their attention changed drastically. The closer horizons suddenly became more interesting by virtue of subtle color content, which in conventional black and white was lost. The great diversity of color of tree bark, of lichens, and of geological structures could now be captured by the camera. These are the subjects that have continued, with increasing obsession, to entice my eyes ever since I ~~began to read the journals of Henry David Thoreau.~~ and charm my spirit ever since I began to read the journals of Henry David Thoreau. Thoreau more than one hundred years ago expressed his despair over the insensibilities of his fellow men when he said, Most men, it seems to me, do not care for nature, and would sell ~~all~~ their share in all her beauty for a ~~given~~ ^{trivial} sum, or a glass of beer. *Thou God men cannot as yet*

as long as they may live, for

fly, and lay waste the sky as well as the earth.