

in boyhood country life and influenced by my father's scientific interests 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, explicit and definitive within the framework of its limiting boundaries and implicit in its suggestion of wider relationships than those depicted - a scene outside evocable through the imagination of the viewer. The area recorded by the camera, optically consistent and logical, is a compression into a small space of a vastly greater reality, a miniaturization of the world we know, which has the effect of enhancing the abstraction and creating a feeling in the viewer, and even in the photographer who made it, of the unreality of the subject. The situation in which photographs of small objects are blown up larger than life is the same, they acquire also the quality of the unbelievable. A house fly magnified to the size of a bird becomes a monster from a world we can never experience. The sense of remoteness from reality is even greater in pictures made by electron microscopes of the internal structures of cells. Because the special optics of the machine sharply defines everything within the field of the instrument, these pictures of things infinitely small, like astronomical photographs of things infinitely far away, are mysterious, fictional, and beyond experience. But the photograph in itself remains real enough.

A photograph, more than a painting, is an abstraction in time. It celebrates the past. Whether of a particular combination of atmospheric conditions or of the behavior of a living being, man or creature, a photograph is a record of an instant in time, unique and unrepeatable, because the flow of time is apparently unidirectional. A painting on the other hand is a synthesis of many moments perceived in succession by the artist. The photograph freezes the instant, and in the case of moving subjects such as the flight of birds, often in surprising positions not recognized at the time by the photographer himself.

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

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life.

T With the development of my interest in photography in the realm of nature, and as I became increasingly concerned with the colors of the world [through bird^{out} 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. When photographers reject the significance of color, they are denying one of their most precious biological attributes - color vision - which they share with relatively few other animal species. The exploitation of color vision, one would suppose, would be of paramount importance. 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 details, and when on occasion I made pictures of the same subject in both color and black and white it was usually 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^{out} in the case of birds' plumage] is an important feature of them, as important as shape and arrangement, and in fact influences one's evaluation 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 under exceptional circumstances, for close-up subjects. One exceptional situation I found in Antarctica where the wide view seemed to express better my feelings of desolation and loneliness on that vast empty continent. There photographs made from the air of mountain ranges buried in ice, peak after peak and range behind range projecting through the polar plateau, needed the pale sky to create a sense of insignificance and isolation in a hostile environment.

In the Colorado River canyons the big view conveys less information about the qualities of the young canyon, its origin and life, and expresses 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, of thundering torrents brown with silt and sand that carried all before them down side canyons. In those wetter days the river and its tributaries cut rapidly into the Mesozoic sandstone carving narrow, winding slots hundreds of feet deep before the slower processes of erosion could widen the walls at the top. The effects of this wild dramatic period were clear for anyone to see, and they were the evidences I tried to record because they were the record of

the history of the canyon which the comprehensive view did not reveal so clearly.

My concern for the protection and preservation of wild lands grew out of my interest in and photography of nature, beginning with birds, and because of the way I felt about birds, the first conservation organization I joined was the National Audubon Society. In those days, more than a generation ago, the Audubon Society's concern was almost exclusively the protection of birds against human predation, and so I thought of conservation in those terms - to prevent the economic exploitation of birds by market hunters and plumage collectors, and from sportsmen. After killing a sapsucker with an air rifle at the age of ten, I could never again 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 root, and I gave these purposes little thought. My indignation was directed against the self-serving apologists who gave lip service to the protection of migratory birds but defended the shooting of ducks, quail and shore birds because they enjoyed doing it and rationalized the harmlessness of the practice for themselves. Even some members of the Audubon Society were sportsmen. When the population of a species which is the target of the hunters' guns declines, it is amazing how universally the cause is attributed