

While there are many other factors to be considered, we wish to point out that present conditions in the farm lands of the Tule Lake Basin seem unusually favorable for a mouse plague such as occurred at Buena Vista Lake in California and in the Carson Valley, Nevada. The helpful part that beneficial species like the Barn Owl play in rodent destruction in such instances should be realized by hunters, farmers and all other residents of the area involved.

Even in a region so thinly populated by people as this, the birds of prey could hardly exist in great numbers unless they were viewed with a degree of tolerance; however, there is still a good deal of room for improvement. On various visits to the area we found a number of dead hawks and owls which, judging from shot or bullet holes, were killed by firearms in the hands of hunters.

In order to secure more adequate protection for the many beneficial birds that nest there, and to protect better the important rock carvings from recurrent vandalism, it is desirable that some cliff areas which now lie largely outside the Monument, receive monument status. These areas have outstanding wildlife values which should be more adequately safeguarded and protected.

Wildlife Division, National Park Service, October 6, 1936.

COMMUNAL THOUGHT VERSUS INSTINCT

By ROBERT S. WOODS

Modern science rightly insists that when we encounter phenomena the causes of which cannot clearly be traced, we must, before definitely attributing them to influences which have not been proved to exist, demonstrate that they cannot be the results of known forces. Even the most conservative, however, can hardly object to an examination of the implications of any theory, no matter how slight its factual basis; in this task one may open other avenues of approach to a determination of the truth or falsity of the premise.

The work of psychologists of high standing has made it possible for us to speak of thought transference as an entirely natural occurrence, without any taint of the occult or ghostly. The ability to receive such mental messages is conspicuously developed in only a few persons, and it seems to be in no way a product of civilization or learning, but may well be thought of as a vestigial faculty, the need for which has largely been removed by the development of the power of speech. It may be comparable, perhaps, to the accurate sense of direction which is possessed by certain persons, but which is much more general and essential among migratory animals.

According to many credible accounts, social animals such as ants, bees, and even rats show a coordination in their efforts which would be difficult to explain satisfactorily without assuming some form of intercommunication. The performance of remarkable engineering feats further suggests that the common mind, if such there be, must be much superior to that of any single individual. In watching the flight of shore birds or other gregarious species, one is frequently impressed by the more than military precision with which their evolutions are executed. Some authorities have credited this apparent unanimity to an almost miraculous quickness and accuracy of perception and response, together, of course, with the absolute submission of all individuals to the will of some supposed leader; but the explanation would certainly be easier if we could conceive of some sort of volitional coordination among the members of the flock.

Of course the idea of a communal directing intelligence in the case of social animals is not a new one, but the possibility of a community of thought among non-gregarious individuals is one which had not occurred to the present writer, at least, until the discovery, in two different years, of remarkable similarities in the sites chosen by hummingbirds nesting at the same time and some distance apart (*Condor*, vol. 38, 1936, pp. 225-227). Even though these similarities may have had an origin entirely different from the one surmised, the mere possibility leads to speculation as to the part which this principle might play in some of the unsolved problems of bird behavior, notably those connected with migration.

Recent experiments of various ornithologists have shown that in the higher latitudes, at least, the migratory impulse has a physiological basis and is governed by seasonal changes in the length of the days and hence of the bird's daily periods of activity. That the adult birds possess an accurate memory or sense of direction and location cannot well be doubted, even though we may not understand the exact nature of the faculty which so infallibly guides them in their semiannual journeys. More difficult to explain, however, is the ability of young birds, traveling alone and sometimes in advance of their parents, to fly over an unknown course to the ancestral winter range which they have never seen. It is here that the broader conception of communal thought furnishes a plausible solution.

It may be hard to believe that any sort of communication could be maintained between adults and young when they are separated by hundreds of miles, but human experience with telepathy seems to indicate that distance is a minor factor, and that the bonds of relationship or sympathy are the most efficient conductors of thought. Or again, one might imagine the drawing up of a mental chart of the migration route in the subconscious minds of the young birds before they had left the company of their parents. In any case, this hypothesis should require the exercise of no more credulity than the alternative that the knowledge and experience of past generations are transmitted through an egg.

Certainly one of the puzzling problems of zoology has been that of instinct in general, as distinguished from reflex action on the one hand and reason or free choice on the other, and considered as a hereditary force inherent in the organism but founded upon the past experience of the species. Avoiding the greater uncertainties involved in an analysis of insect behavior, and regarding only the higher forms of life in which we may more confidently look for evidences of conscious intelligence, the whole idea of specialized instinct might perhaps be resolved into this conception that the accumulated wisdom of the past, kept ever fresh by constant application, is directly absorbed by the maturing minds of each new generation. As before intimated, it would be necessary to assume that relationship rather than propinquity is the governing factor in the transmission of knowledge, or the young of parasitic species would learn the habits of their foster-parents rather than those of their own kind.

As one of the implications of this theory, we should be justified in applying more broadly than is customary among zoologists the criteria of human psychology and behavior in evaluating the conduct of the higher animals. It is true that many of their acts seem the result of unthinking instinct rather than conscious thought, but quite possibly this inability to adjust method to circumstances is simply a manifestation of that same mental rigidity which makes it so difficult for many people ever to change the pattern of thought around which their minds were built during their formative years.

Azusa, California, January 18, 1937.