International Journal of Comparative Psychology, Vol. 6, No. 4, 1993

INTRODUCTION

Siegfried Jaeger
Free University of Berlin

By the end of the last century expeditions to all regions of the earth had filled the biological, anthropological and archeological collections of museums and scientific institutes with the remains of extant organisms. Then, with the growing interest in comparative studies in connection with Darwin's theory of evolution, biological research stations were founded as near to the living research subjects as possible. The establishment of anthropoid stations at the beginning of this century is part of these more general efforts to create better conditions for the study of living beings in their natural environment and made possible a qualitative improvement of biological, psychological and medical research. New areas of research, especially dynamic processes, were made accessible. The shortcomings of unsystematic observations in the colonies, the problems of animal keeping in the northern countries and the inadequacy of observations of single animals with unknown case histories, held in zoos or circuses under conditions not appropriate to their species, could be overcome. Apart from a more general interest in the endangered species of the closest relatives to humans, proposals for the establishment of anthropoid stations were rooted in a variety of scientific interests, which even included questions about the natural foundations of ethics, morals and social order. While in the United States questions of comparative psychology were of dominating interest, neurophysiological problems were at the forefront in Germany, and in France and the Soviet Union syphilis research and the breeding of animals for medical use were the main fields of interest. The creation of research stations of an international interdisciplinary character planned in Germany to correspond to the Marine Zoological Station in Naples founded in 1910, was prevented by World War I.

Most important in choosing the location of a station was its accessibility, good working conditions and, especially, convenient climatic conditions suitable for the researcher and for the different species of an-

Address correspondence to Siegfried Jaeger, Psychologisches Institut, Free University, Habelschwerdter Allee 45, 1000 Berlin 33, Germany.

thropoids. In those days before the first World War this could only be achieved through compromises with regard to the natural environment and the free movement of the animals. Therefore, proposals to carry out observations in preserves located in the animals' habitats were set aside. Instead of preserves such installations were set up as the Anthropoid Station of the Prussian Academy of Sciences, on Teneriffe in the Canary Islands, in 1912; G. V. Hamilton's Animal Laboratory in Montecito, California, in 1910, which in 1915 acquired its first anthropoid ape, an orang on which Yerkes published a report in 1916; the Pasteur Institute's Station, Kindia, in French Guinea in 1923; the Yale Primate Laboratory of the Institute of Psychology of Yale University in 1925, which was completed by the Southern Division of the Yale Laboratories of Primate Biology at Orange Park, Florida, in 1930; and the Ape-Breeding Station of the Academy of Science of Georgia in Suchumi, Soviet Union, in 1927. Besides, there were also a few private collections of primates, like that of Mrs. Rosalie Abreu near Havana, Cuba, where occasional research was done. Seen from our present time, in which we have easier access to the natural habitats of the animals and can maintain them in locations of our choice, the stations appear to have been only a transitional step toward wild life observation and now have no purpose apart from breeding animals for essential medical experiments.

The psychological publications which originated in the research done in the anthropoid stations, like those of Robert Mearns Yerkes and Wolfgang Koehler, have essentially corrected and altered our view of the primates. In part, they even have had a formative effect on psychology and other disciplines, and they have made the authors prominent beyond scientific circles. However, the paper I am going to discuss here was not published during the lifetime of the author, when his influence was at its peak.

The manuscript of *The Mentality of Orangs*, which is now published in English, belongs to the literary estate of Wolfgang Koehler. Up to its publication not even persons closely connected with him knew that he had also done research on orangs when he worked at the Anthropoid Station of the Prussian Academy of Science, 1914–1920. This raises the questions: Why did he not finish the revised and almost completed manuscript? And why did he not publish it as planned, in continuation of his *Intelligenzprufungen an Anthropoiden, I*, of 1917 (the English translation of which has the title *The Mentality of Apes*, 1925), in which he presented his famous observations and experiments with chimpanzees? This would have been well in accord with the concept of the station, which from its beginnings included comparative psychological and neurological research on chimpanzees, orangutans, gorillas, and gibbons in its program. Later, through contacts with Henry Fairfield Osborn, director or the American Museum of Natural History, attempts were made to keep even New World apes there.

Rare hints make clear that Koehler still planned to publish the manuscript many years after the station was closed in 1920 because of financial troubles. In July 1919, he reports to the secretary of the Akademie der Wissenschaften Berlin-Brandenburg, that "after the orang had finished an experimental series, the *Intelligenzprufungen, II,* can be regarded as basically completed." The report is now in the Academy's archives. First and second drafts of the manuscript were completed the same year and further revisions followed in 1921/22; they may be seen in the library of the American Philosophical Society, in Philadelphia. The last hint known to me can be found in a 1928 letter of Koehler's to his American colleague and predecessor in scientific orang research, Robert M. Yerkes, with whom he had had contacts with only a few breaks since 1914, when Yerkes had planned to do research for a year at the Teneriffe Station.

> My last paper on anthropoids, of which the greatest part is already written, is also not published. Each time I was prevented by more urgent work; and because the situation now is the same, I hardly believe I can finish it before the beginning of 1929.

The letter is now in the Yerkes papers in the manuscripts and archives division of the Yale University Library.

Aside from his time consuming work as director of the Psychological Institute at the University of Berlin and his reorientation to specific research problems in human psychology (his last paper from the Anthropoid Station, "On the Psychology of Chimpanzees," was published in 1921) there are several problematic points in the manuscript which could have prevented publication, but none is sufficient by itself. The most important fault of the orang manuscript—which Koehler himself notes—can be seen in the fact that only two of seven young orangs destined for the Station arrived at Teneriffe in June 1916, and because one died after the first observations, the experiments were restricted to only one animal. But a sole anthropoid, says Koehler, in his awareness of the methodological consequences, is totally different from the very same animal in a group of the same species. One cannot understand its behavior patterns completely, because there are no other animals to react to it, and a human is only a meager substitute. Furthermore, it is impossible to distinguish between individual psychic characteristics and achievements and those common to the species. Secondly, Koehler had planned to end the *Mentality of Apes II* with a more general theoretical discussion in answer to earlier critics of his work and as clarification of his position opposing other theoretical approaches to animal psychology of the time. This theoretical part remained fragmentary, and is therefore omitted in the translation. Also omitted are his often incomplete footnotes.

What is left is a phenomenological description of the young orangs

which display to Koehler, who had never seen orangs before, astonishing differences from chimpanzees in their anatomy, behavior, temperament, and so forth; and a research report from the year 1916 to 1919 of a female orang named Catalina. The latter is still worth reading, and not only from the perspective of a historian of science. The methods described in the report, which, as far as the specific anatomy of the orang made it possible, run parallel to the methods used in his well-known studies of chimpanzees. Koehler carefully describes how Catalina learned to use the stick, and engaged in problem solving experiments with a rope, a detour box and other tools. A section in which Koehler planned to show how she learned the double stick method is, unfortunately, missing. (See p. 75, Koehler.) At the same time he names the differences and common features of both species of anthropoids. In some examples he also makes comparisons with human beings. This is not astonishing, because all his observations and experiments aim for a better understanding of the structure of the human psyche, with respect to the laws of human psychology. According to Koehler, methodologically, the anthropoids have the advantage of being close enough to humans, albeit of lesser complexity, and are enough unlike them to allow a more objective judgment.

A strong point of Koehler's paper lies in his observation and interpretation of very basic mechanisms of behavior in situations of emotional stress. Catalina presented many occasions for such observations, for example, stick biting after unsuccessful trials, a behavior which in Koehler's opinion is widely neglected in human psychology. As he sees it, these mechanisms are not only primitive regression phenomena, but also, potentially, beginnings of tool making under the emotional pressure of a specific problem situation.

His report shows that he rejected psychological explanations that too quickly argue that associations are drawn from cumulative experience. From his standpoint of gestalt theory his interpretation is that the dynamic forces of the perceptual situation or the psychological field determine the behavior through neuronal correlates, which in extreme cases can involve the total organism by neural stimulation. Under the directive pressure of the situation such behavior can appear "meaningful" or "goal directed" without prior experience.

The results of his orang research, which are verified by recent orang studies using Koehler's methods, indicate that orangs are not inferior to chimpanzees in perception and spontaneous intelligence. Although there are immense differences in temperament, and though learning processes seem to be much slower in orangs—it remained unclear to Koehler, if this was due to Catalina's individual characteristics—the orang attains achievements which are similar to or even better than those of the most advanced chimpanzees.

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The translation of the manuscript was a difficult and laborious task, for which I want to express my sincere thanks to Ruth M. Newman. The original German manuscript is in some parts very hard to follow because of detailed descriptions of research conditions; in other parts it contains brilliant formulations, whose play upon words is hardly translatable. I also want to express my thanks to the editor of this Journal, Ethel Tobach. It was her inititive that made a piece of the history of comparative psychology available to a broad international readership.