

## ORANG UTAN DEVELOPMENT (BRANDES).

## REVIEW

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The birth of a man ape, during the shipping of the mother from Sumatra through the Red Sea, gave an unusual opportunity to follow his development. Prof. G. Brandes, formerly director of the Dresden Zoological Garden, recorded his detailed observations during the early months and years of his growth, in the book "Buschi," Quelle & Meyer, Leipzig, 1939 (in German). Dr. Brandes discusses interestingly, with 155 original illustrations, not only the physical and mental development of one orang baby to an adult man ape, but relates his experience and reflections concerning the behavior of other apes as well, contrasting it and their development with those of man. Animals, he emphasizes, cannot act against their nature, but must behave according to their inherited instincts.

## GROWTH.

*Development:* The first 3 months represented the actual babyhood, or nest stage; the first 6 months led to the formation of "milk teeth," the first year to their completion. Growth was rapid, although with  $3\frac{1}{2}$  months the young man ape was only half the size of an equally old human baby. The average weight of 1500 grams at birth was doubled within 6 months, at which time, as said, teeth for cutting and grinding the food were formed; this compared to a useful development in a human baby, about  $2\frac{1}{4}$  years old. From one to four years the development proceeded gradually, the ape weighing almost 15 kilos, when  $5\frac{1}{2}$  years old, thus having gained in 5 years appr. 15 grams daily. The first menstruation, occurring subsequently monthly in a female orang utan, was observed at an age of 3-4 years. After an abortion this ape bore her first child, following a preceding 9 months pregnancy period, when appr. 6 years old. The orang utan is considered grown up with 10-12 years, weighing then about 75 kilos. He normally attains an age of 30 years, or more under rational care.

His similarity in appearance to man is greatest in the baby stage (see fig. 1., for skulls of almost equal size in the new born.) The surprising likeness and then subsequent differentiation in the development of teeth is of particular interest (see Fig. 2, 3). Brandes believes

that man's tooth formation suffered a set back, when he changed to soft food.

*Food*: While the mother nursed the baby ape at least 6 years, first the liquid and later also solid food was transferred directly, the mother pressing her lips between those of the young one. Brandes copied this method in feeding cakes successfully to his "Buschi." For food, Brandes advises against meat proteins and cereals, but found vegetables such as green peas and beans, carrots, spinach, celery, cauliflower, onion and garlic, old wheat bread, boiled and unboiled rice quite satisfactory. As fruits, he used those domestic in Europe, as well as bananas, oranges, dates, figs, and grapes. As beverage, he provided water and basic salts, rice water, thin oatmeal porridge, but neither milk, nor alcohol. No tobacco was allowed. Fresh branches of trees, such as those of a mulberry tree placed into the cage, proved a very welcome addition.

#### INSTINCT AND INTELLIGENCE.

*Thumb Sucking and Lulling to Sleep*: By the frequently observed sucking of his thumb the ape but displayed an animal instinct, though following a child-like practice. Equally, falling asleep, under the gentle stroking of his dorsal hairs with a wire brush, was but displaying an instinctive reaction, observed also in children, enslumbered by a periodically returning stimulation, the rhythmic swinging to and fro, the repeated quieting touch to the back, the soft recitation or the singing of a lullaby.

*Body Punishment*: Quick, emphatic slaps were effective, in preventing, for all times, the reaching for, and grasping of Dr. Brandes' eye-glasses. The punishment was not resented by the orang utan Buschi, nor was his confidence in his caretaker and human friend reduced. Infants, reflects Brandes in this connection, have, particularly in the first 20 months, no reasoning power and should therefore be taught what is acceptable or what is undesirable—the earlier the reprimand is administered, the more fixed its effect!

*Play*: In contrast to the general belief that adult orang utans do not play in nature, Brandes is convinced that they do. He observed this playing not only occasionally in the cages, but encouraged it by providing a platform, several square meters in diameter, on the floor



of the cage. . . . A regular rough house, with laughter, hair pulling, and extreme animated-action of the older man apes soon followed, with young Buschi always in the midst of the commotion.

*Behavior in Sickness:* Undoubtedly the animals know instinctively, says Brandes, what they can consume without danger; "if it were not so, some poisonous plants would kill all plant eaters." While castor oil was thoroughly disliked by all orang utans, and while none could be induced to take a second portion, cod liver oil was readily taken, as was medicine, containing creosote, probably well known to the animals of the Sumatra jungle from chewing of pungent tree barks. Instinctively only, (although the highest developed animal), the orang utan uses plants and other things of his environment for the removal of pain or other like disturbances. Likewise, records Brandes, meat eaters among the lower animals consume large quantities of grass; and plant eaters, like elephants, swallow at times large amounts of moist soil. A "medically minded" orang utan licked his wounds from a fight with his tongue (as dogs will do), and afterwards washed them out with wet leaves of the betel nut palm, never using leaves of other trees or grasses which were abundantly available to him. An inflamed jaw was treated by him, uninfluenced, with moist clay, which was placed both externally against the jaw, as well as in the mouth. With his own hands he removed a painful tooth. In contrast to the author's conclusion, one may well see in these actions an evidence of reasoned thinking.

*Hearing:* All sounds are carefully guarded by the man apes. Every action, such as eating, drinking, playing or walking was immediately interrupted as the mother of Buschi awaited the closer approach, as well as the recognition of the cause of a noise, in order to determine the danger for herself and child. Certain sounds, such as the singing of birds, are greatly enjoyed by orang utans. In quantitative sound tests, carried out with various animals, including a chimpanzee, Elder of the Lab. of Psychobiology (Yale University) concluded that this ape's hearing was just a little more acute, but not necessarily better than the best records of man. The difference, in favor of the ape, appeared to be due to his superior power of attention.



*Speech*: While Brandes discusses in detail the formation and nature of guttural sounds, characteristic of orang utans under his observation, he made no attempt to obtain an imitation of human sounds. An American named Furness, by diligent example, caused his young orang utan to utter, parrotlike, the words "Pappa" for the guard, and "cup" for the drink container. Spontaneous sounds, comparable to the talk of one year old babies, or to the whistling attempts of youngsters, were not uncommon.

*Memory*: After 2 years of complete separation from his caretaker and friend, Buschi instantly recognized the voice and facial features of Dr. Brandes and remembered his feeding with the lips. Tropical fruits such as mangoes and rambuttans were readily recognized and eaten by orang utans in captivity, even after one year of European isolation.

*Reflection*: Separation of man apes through an electrically charged barrier, rather than the usual gate, led to the following interesting observations. The gorilla fled from the mysterious fence; the chimpanzee returned to it again and again, each time jumping back horrified, after grasping it. The orang utan, in contrast, approached the metal barrier, charged with high voltage alternating current, carefully, touched it first with his fingernails, then his finger tips, then with both hands, letting the current pass through his body, until it became too uncomfortable. The experimental reflective attitude, here displayed by the highest developed animal—the orang utan, Brandes compares to the human attitude under like circumstances.

#### BLOOD RELATION AND INDIVIDUALITY.

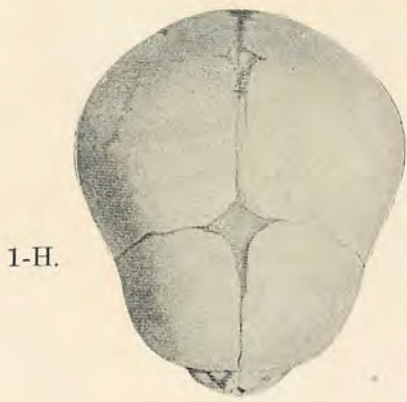
*Blood Tests and Finger Prints*: The blood of the man ape, from a physiological consideration, shows closer relation to the human blood than it does to the blood of other apes, including the gibbon. Individuality in man apes plays a similar role to that in men. The lower the scale, the more uniform are the individuals; the facial expressions in men as well as in orang utans give them an individual personal distinction. The differentiation of fingerprints, made of orang utan fingers, when compared with human fingerprints, was found so difficult that it could not be done with certainty—even by schooled observers. (see Fig. 4).

*Orang Utan and Man* : For reasons here indicated, and others discussed in detail in his entertaining, thought-provoking and informative treatise, Brandes selects the tribe of his man ape orang utan, —though not their living representatives—as the group of animals, which has come closest of all groups of animals in its development to man. The orang utan may thus even occupy the very rung which led to the human race.





Characteristics of Man and Man Apes.



1-H.



1-O.



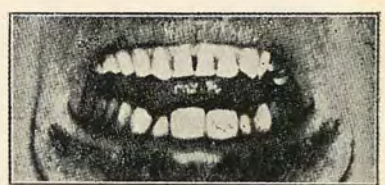
1-O.



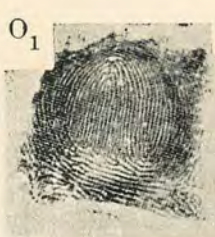
3-O.



2-H.



3-H.



- 1.—Skulls of new born. H: Human; O: Orang Utan.
- 2.—Tooth Arrangements. O: Orang Utan; H: Human.  
 White: First Half of Milk teeth, usable—O: in ½ year; H: in 1 year.  
 Punctated: Second Half of Milk teeth, usable—O: in 1 year; H: in 2¼ years.  
 Black: Permanent Teeth, used together with Milk teeth.  
 O: M'—usable from 4th year; M'—usable from 6th year.  
 H: M'—usable from 6th year.
- 3.—Jaws with Teeth. O: Orang Utan; H: Human.
- 4.—Finger Prints of Human and of Man Apes (Tips of Left Ringfingers).  
 O<sub>1</sub> and O<sub>2</sub>: Orang Utans; G: Gorilla; H: Human. (After Brandes).



