

PSYCHOLOGY

An Ape For a Baby Sister

In an Astonishing Experiment an Infant Chimpanzee Grows up With a Little Boy as a Member of the Family

By MARJORIE VAN de WATER

STORIES of ape children or wild babies—human infants who have been nurtured by wild beasts—have persisted in their appeal to popular imagination since long before the time that Kipling wrote of the wolf-boy Mowgli in his "Jungle Book." Or even before the ancient Romans repeated the myth of Romulus and Remus, sons of Mars, who in their infancy were rescued from a watery grave by a she-wolf and suckled by her along with her own cubs.

You may yourself have wondered what would a child be like who had never heard the sound of human language, never seen any creature walk upright, never learned the complex social customs that even primitive humans have developed.

Scientists, too, have a great interest in this question because of the light it might throw on the vexing problem of the relative importance of heredity and early training in the development of the human mind. Psychologists are anxious to determine by some scientific test whether you are born bright or dull. Whether neither parents nor teachers are able by taking thought to add one cubit to your mental stature. Or whether, on the other hand, the early impressions of your home and school can make or mar you, whatever you are.

Scientists cannot, however, deliberately take a child from his mother and place him with wild beasts for his upbringing. And no case of the nurturing of human young by wild creatures is as yet sufficiently well authenticated and investigated to serve as evidence for the psychologists.

But a psychologist has now evolved a novel attack on the problem.

If it is not possible or desirable to bring up the young human removed from human surroundings—why not test the effects of civilization in the reverse manner? Why not bring up an ape infant in a human home—place him in a human baby's bed, dress him in infant's clothes, bathe him, feed him, fondle him and teach him just as you would a human child?

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If the human being's humanity is the result of his training and his human association and environment, not his heredity, would not the young ape respond to these things by becoming "humanized?"

Dr. W. N. Kellogg, of Indiana University, was the scientist who raised these questions. But he did better than just to theorize about it—he actually performed the experiment. He adopted into his own home a little baby chimpanzee, and brought it up in the company of his own small son who was very nearly the same age. The results are reported by Dr. Kellogg and his wife, Mrs. L. A. Kellogg, in a remarkable new book, "The Ape and the Child," just published by McGraw-Hill.

The children, ape and human, played together, ate together of the same foods, slept at the same hours, and together learned to wear shoes, to eat with a spoon, and to play with rubber dolls and toy wagons.

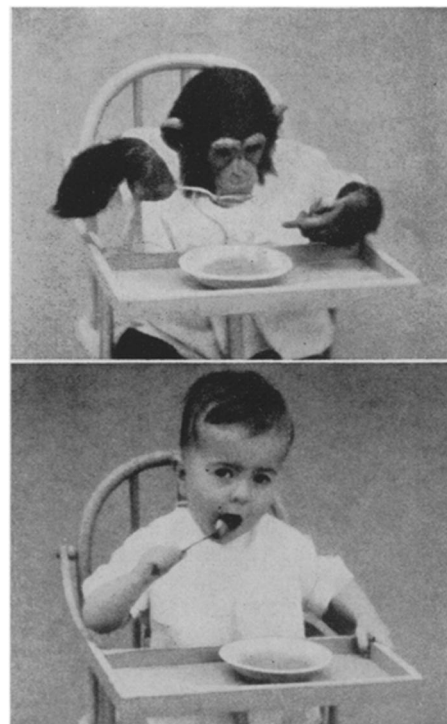
And the little ape learned to walk upright hand in hand with her adopted "brother" and matched, or in many cases exceeded, his development in quite a surprising way.

Little Gua, as the ape child was called, was taken into her human home when she was seven and a half months old, just two and a half months younger than the human child, Donald.

Further Developed Than Baby

At that time she was considerably further developed physically than was Donald. She had 16 of her quota of 20 milk teeth, and already the infantile opening in the skull was closed and the skull hard, something which does not take place in the human until about the eighteenth month.

Gua was also amazingly strong. Her biceps when relaxed felt nearly as hard as the tensed muscle of many men. She could chin herself with one hand and skin the cat with ease. And it took the best efforts of Dr. Kellogg to hold her against the measuring instrument while he noted her height. Yet she weighed but a mere 12 pounds, and was less than two feet tall!



BABY CHIMP WINS

Donald often turned his spoon over and lost its contents. Adopted Gua learned to handle her spoon with greater skill than the human baby.

Introducing this husky ape child to human ways was not always an easy matter. Gua often considered the ape ways more satisfactory, and had many very definite means of signifying this. She, in common with other chimpanzees, was subject to violent tantrums. These have generally been interpreted as temper tantrums, but the Kelloggs believe from their close association with Gua, that they are really more fear than anger. Gua was terribly afraid of all new objects and new procedures.

When having such an emotional disturbance, Gua would give vent to a series of shrill shrieks which could be heard at a great distance. These would continue until her windpipe was completely closed with cramp. Her hair would stand on end, and she would seem blind, running about without direction and bumping into bushes and other obstacles.

Like a baby, Gua was soothed by a rocking motion or the swaying motion of being carried. At first the sight of Dr. Kellogg frightened (*Turn Page*)

her, and she could be reconciled to being in his arms only when she had her back turned so that she couldn't see him, but after he had carried her about for a time, she became greatly attached to him.

By the third day, she would pull at his clothing to be taken up.

The first of her garments were then put on her while she was being carried. Diapers and a bib were thus introduced without undue emotion.

Continuously Dressed

"By the end of the first week she was continuously dressed in diapers and shoes," the scientists report. "And on one or two occasions she had been clothed in a romper suit as well. Within the same period she began to sleep in her crib (although at first without a full equipment of bedding), and she was regularly fed from a spoon and a cup in her high chair.

"By the end of the second week she permitted the cutting of her finger nails and before the fourth was over she was daily submitting to the application of a toothbrush."

New foods were received in unkindly fashion by both Donald and Gua. Gua drank willingly, although clumsily, from a cup from the first, and since she showed no interest in the nursing bottle, and obviously did not at all understand its function, the cup was used entirely for feeding her liquids.

But when solids were first administered, considerable ingenuity was required on the part of both Dr. Kellogg and Mrs. Kellogg to get Gua to accept them. Strong-arm methods never won. Although she possessed a ravenous appetite, Gua once went without eating a morsel for 43 hours because she refused at each presentation a special kind of infant's soup.

"Be it said to the credit of the little animal that she ultimately won her fight for independence in this respect and was never thereafter given exactly the same dish," the investigators commented.

More effective was the plan of letting her have her own way at the first meal and then serving the dish again a meal or two later. With quiet persistence it would be worked into the diet. Another device was to disguise the new food by mixing it with milk or other more familiar foods.

Soon Gua was eating the same diet as was Donald, but in addition she was allowed some raw vegetables such as lettuce or celery for which she had demonstrated her preference by pilfering them from the kitchen.



OUT FOR A WALK

She would also help herself with great delight, unless forbidden, to the leaves of plants and bushes, to flowers, and to the bark of young saplings.

At first she would also catch insects and chew them for their juices, but she later abandoned this practice. She never showed any other inclination for a raw or cooked meat diet.

The matter of the first bath offered but little difficulty, for Gua discovered that soap suds had for her a pleasant taste. She would bite the generous lather from her arms and hands, and even took a chew off the cake of soap with apparent zest. After a little mastication, however, it was rejected and further offers of soap were received with less enthusiasm.

Under Bed Linen

After about two months, Gua had progressed sufficiently in her humanizing to be introduced to the clean linen of the human bed and a full assortment of sleeping garments and bed clothing. She was delighted. And when the bedding was temporarily removed a few days later, she cried persistently until, for the peace of all concerned, it was promptly replaced.

It was when she had had the soft bed and bed clothing for a few weeks that she displayed what might be interpreted as nest building behavior. Each night when she was put to bed she

would proceed to pull out the covers, wad them into balls, throw them over her head, and generally make a complete mess of the bed. Although serious measures were taken to prevent this, she persisted in it until the end of the experimental period. There was no observable pattern, even of the crudest sort, in her rearrangement of the covers.

This bed tumbling was not shared by Donald, and might be considered the manifestation of some ape instinct. On the other hand, it might be a display of the almost universal tendency of infants for bedtime play, Dr. Kellogg points out. If Gua was very drowsy when she went to bed, there was no blanket tossing. And when the bed was straightened after she went to sleep, she did not again upset it.

Another type of "instinctive behavior" of the ape was watched for but was not observed in Gua. She never did any of the skin searching or skin picking so commonly observed in caged apes and monkeys.

Her affectionate behavior was striking. She was much more dependent upon human society than was the boy Donald. She would cry pitifully when her "parents" would leave her, and no punishment was quite so terrible to her as to be shut in a room by herself.

When she was naughty and was punished or even gently rebuked, she would

rush to the person offended and try to kiss for forgiveness. If held off or repulsed she would cry with great emotion until the disciplinarian relented and accepted her kiss. Then she would heave a great sigh of relief.

Although she would forget admonitions much more quickly than would Donald, she was much more ready to obey when first spoken to. Never would she deliberately persevere in misbehavior, although she did develop a sly way of getting into mischief when not observed.

Throughout the experiment both ape and human infant were given scientific tests of their mental development and the results recorded in precise form in a journal, or scientific diary. Twenty-eight special tests and experiments were devised for comparing the progress of the two babies, and well-known psychological tests for babies were administered to ape as well as child.

On many of these tests, the little ape distinguished herself for her superior ability. When the problem was to secure a bit of apple from beyond a fence by pulling it forward with a hoe, little Gua had no difficulty in getting the idea of making use of the tool. Neither had Donald, but to him the hoe was of more interest as a plaything than as a means for securing the apple.

Donald at 17½ months was able to point to the "bow-wow" in a set of pictures used for testing knowledge of words. Gua at 15 months could point out not only the "bow-wow" but also the shoe. Gua, as well as Donald, would respond correctly to such simple direc-

tions as: "Show me your nose," "Hand me your bib," and "Not in your mouth."

Physically, Gua matured much more rapidly than did Donald. This the Kelloggs expected.

But this superior rate of physical development was also accompanied by a superior ability to learn what we consider human behavior.

This chimpanzee infant was able to eat with a spoon, drink from a glass, walk upright, skip, and practice desirable toilet habits, all much better than the average child of her age.

Does this mean that the chimpanzee infant is more intelligent than is the human child of the same age? Not at all, Dr. Kellogg warns us. We still do not know what the ape's capacity for mental development is—what is the limit beyond which she cannot grow.

What we do know is that when a mental test is given an ape—or a child—more than just native capacity is tested.

This background of training or lack of it, of human or un-human treatment, of confinement and petting, or of freedom with responsibility and respect—this is all a part of what is tested along with the inborn capacity handed down to the creature by heredity.

And if the environment means so much to the development of an ape—a child must receive tremendous influences from his surroundings and early training. This finding, Dr. Kellogg believes, has important applications for education, child psychology, biology, and sociology.

Science News Letter, August 26, 1933

ing up all the measured energies over all heights from the surface of the earth to the top of the atmosphere they have obtained definite information on the total cosmic ray energy intercepted by the earth.

The estimates of the density of starlight energy in the universe were made by Dr. S. A. Korff, also of the California Institute of Technology. The uncertainty as to the exact amount depends upon the uncertainty as to the exact number and brightness of all the stars and luminous matter in the universe.

Science News Letter, August 26, 1933

BOTANY

Century-Old Collection Yields New Plant Species

PLANT species entirely new to science, though they were collected, pressed and dried over a century ago, are being turned up daily at the U. S. National Herbarium. The collection of botanical specimens which is yielding these new scientific treasures has had a romantic history.

In 1783 a noted Spanish botanist and physician, José Celestino Mutis, was sent by his king, Carlos III, to make a great collection of plants in northern South America. Establishing what he called a "scientific factory" in Bogota, with a staff of assistants and artists, he accomplished a tremendous amount of work, but he was interrupted by death in 1808 with his ambitious project still unfinished.

During the Colombian revolution in 1816 the collection and paintings of flowers were sent to Spain. They have been in Madrid ever since, with nothing much done about them, although a couple of abortive attempts were made to resurrect the collection and complete Mutis' work.

Last year Ellsworth P. Killip, of the Smithsonian Institution, visited the botanic garden at Madrid, and together with Dr. Arturo Caballero, director of the garden, made a cursory examination of the collection. It became apparent that there was much material of high scientific interest in it. Mr. Killip brought home duplicate specimens of many of the plants, and is working on them in Washington at the National Herbarium, while Dr. Caballero is examining the specimens in the main collection in Madrid. Thus far, more than a hundred new species have been discovered among the old pressed plants.

Science News Letter, August 26, 1933

PHYSICS

Cosmic Rays Supply Most of Energy For Universe

COSMIC RAYS are the chief source of energy in the universe. From 30 to 300 times more energy is shooting through celestial space in the form of cosmic rays than in all other radiant energy forms combined. This is the conclusion of Drs. I. S. Bowen, Robert A. Millikan and H. V. Neher of the California Institute of Technology, expressed in a communication to the *Physical Review*.

Their estimates of the energy falling on some body millions of light years away from the earth is based on new high-altitude measurements of cosmic

ray intensities. They conclude that the energy falling on the earth from the stars is only twice as great as that coming from space as cosmic rays.

The earth is located not far from a huge group of stars that astronomers call our galactic system so that the earth is in a region of highly energized space. A body located in inter-galactic space would receive from 60 to 600 times less starlight than the earth.

The California scientists have taken measurements on the decrease in strength of the cosmic rays as these rays plow through the atmosphere. By add-