

# The Psychological Clinic

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## A MONKEY WITH A MIND.

BY LIGHTNER WITMER.

It was no special interest in Peter<sup>1</sup> which took me to a performance at Keith's Theatre in Boston on the evening of September fourteenth last. I was then interested only in ascertaining the extent to which the anthropoid apes could be trained and perchance educated. Sometime during the past winter, in conversation with Dr. Furness,<sup>2</sup> I had maintained that there was no reason why an ape who could be trained to ride a bicycle might not be taught to articulate at least a few of the elements of a language, and I expressed the desire to undertake this experiment the outcome of which, whether successful or not, I thought would be an important contribution to animal psychology. As a result of this conversation Dr. Furness brought for me from Borneo an infant orang-outang, between one and two years of age, which we had begun to train as a scientific experiment. I therefore sought to discover what had been accomplished with a closely related species, the chimpanzee.

As I entered the theatre, my feelings were commingled interest and doubt. My doubts were bred from knowledge of the difficulty of judging the intelligence of an animal from a stage performance. So-called educated horses and even educated seals and fleas have made their appeal in large numbers to the credulity of the public. Can any animal below man be educated in the proper sense of the word? Or is the animal mind susceptible of nothing more than a mechanical training, and only given the specious counterfeit of an educated intelligence when under the direct control of the trainer?

My doubts were not allayed by the public announcement claiming that Peter had been "born a monkey and made himself

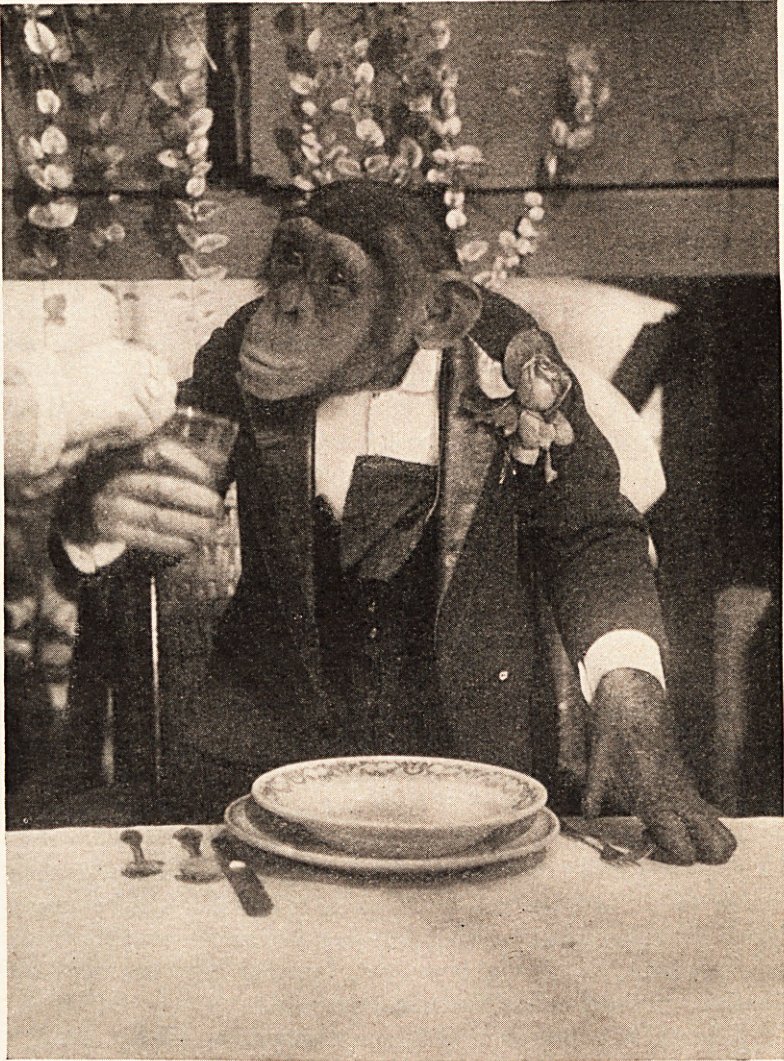
<sup>1</sup>Peter is the name of a chimpanzee who is being exhibited on the Keith circuit. The opportunity to study him was obtained through Mr. Barnes of Keith's theatre in Philadelphia, to whom I am indebted for this courtesy. My authority for calling Peter a monkey is Murray's New English Dictionary, which defines the word in its general application as "an animal of any species of the group of mammals closely allied to and resembling man, and ranging from the anthropoid apes to the marmosets."

<sup>2</sup>Dr. William H. Furness, 3d, the explorer, author of "The Home-life of Borneo Head-hunters."



A SATISFACTORY DRINK.

a man." I knew before I entered the theatre that I should be unable to judge from a mere stage performance whether Peter had been in any real sense educated or simply trained to the blind performance of a few tricks. Nevertheless the performance deeply impressed me, as it must anyone, with the expertness of the animal in skating, riding a bicycle, drinking from a tumbler and eating with a fork, threading a needle, lighting and smoking a cigarette. From such mere expertness, however, remarkable as it was and accompanied by very human changes of facial expression, I would



AN ANXIOUS MOMENT.  
"DON'T I GET MY DRINK?"

nevertheless hesitate to draw any conclusion as to the animal's intellectual appreciation of what he was doing. Idiots capable of unusual dexterity and possessed of musical or even mathematical ability, yet in other respects markedly subnormal in intelligence, are not unknown. Despite the fact that a high degree of motor training in children implies ordinarily an equivalent intellectual development, I felt inclined to do little more than marvel at an

animal who could be trained to such expertness of performance. Every feature of the stage performance might have been carefully planned and any departure from it might, as I thought, have thrown the animal on his own resources and disclosed the limitations of his intelligence.

Yet it must be admitted there were details of the public performance which suggested intelligence. For instance, in riding up an inclined plane and down a small flight of steps, he allowed himself to go very close to the flies, and to save himself put out one hand and cleverly pushed himself away, while still retaining his balance. I also saw him ride as close as possible to the side wall of the stage setting, and take a very short turn with the evident purpose of seeing whether or not he could do it. From time to time I observed that he made the work more difficult for himself than was needful, seemingly out of mere bravado and in pure enjoyment of the task.

Since that day I have seen Peter in five public performances, have tested him at my Psychological Clinic at the University of Pennsylvania, and privately on three occasions. I now believe that in a very real sense the animal is himself giving the stage performance. He knows what he is doing, he delights in it, he varies it from time to time, he understands the succession of tricks which are being called for, he is guided by word of mouth without any signal open or concealed, and the function of his trainer is exercised mainly to steady and control. At one stage performance he reached the top of the incline with insufficient speed to carry him "on even keel" down the steps. He jumped from the wheel, landing on his feet, and when the wheel fell to the floor he quickly picked it up, mounted and dashed up the incline and down the steps successfully. He gave every appearance of possessing determination, courage, and self-directed interest.

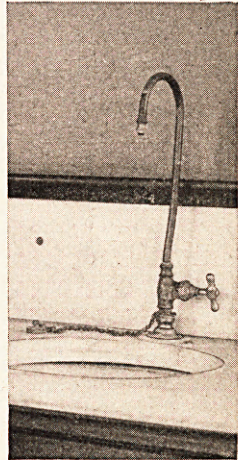
I am also prepared to accept the statement of his trainers, Mr. and Mrs. McArdle, that Peter's proficiency is not so much the result of training as of downright self-education. They assert, for example, that a few months ago, when he was brought from England to this country, roller skates were fastened to his feet for the first time. This was done merely for the purpose of keeping him on deck and out of the rigging of the ship. In two days' time he was skating all over the deck. By the time the ship reached New York, he had acquired sufficient expertness to justify them in giving a public exhibition of his skill. They also tell me that he threaded a needle the first time he tried, and further-

more, that they have never taught him to use hammer and nails, screw driver and screws, but that he has picked up their use while playing with them. He unlocks and locks a padlock on the stage, but I am told he can open any lock and is not safe in a room with the door locked, so long as the key is within his reach. Give him time and he will, from a number of keys, select the right one and undo an intricate lock. The difficulty is to restrain him, on the stage and off, rather than to urge him to display his accomplishments. At the Psychological Clinic there was a washstand with running water in an out-of-the-way corner. While I was talking with his trainers, Peter bolted unobserved to the washstand, lifted himself up on his hands, turned on the water, applied his mouth to the spigot, and drank before he was snatched away by his trainers. In these actions Peter showed an intelligent employment of acquired skill, very unlike the mechanical performance of a few carefully prepared tricks.

I hesitated long over the advisability of testing Peter's intelligence at the Psychological Clinic, fearing lest erroneous conclusions might be drawn should it become known that I had presented a chimpanzee to a clinic devoted to the examination of backward and defective children. I assumed that this ape, no matter what grade of intelligence he might show, would be inevitably compared with the human child, and consequently I might be put in the position of claiming for Peter a human intelligence which I hardly thought him to possess.

Now, however, that Peter has been tested at the clinic, I no longer fear such imputations, and am willing to assert that it is well nigh impossible to give an adequate account of the intelligence shown by this ape, who cannot be more than five or six years of age, except in terms of comparison with the abilities and disabilities of the human child. Peter not only has more intelligence than any animal hitherto reported in the annals of science,—his intelligence is not in the class of animal intelligence, as we psychologists understand the term. The study of this ape's mind is a subject fit, not for the animal psychologist, but for the child psychologist.

Speculation has at times arisen concerning the existence of a



THE FAUCET WHICH PETER DISCOVERED, OPENED FOR HIMSELF, AND DRANK FROM.

“missing link” between the higher apes and man. Such a “missing link” ought to present an anatomical form intermediate between the highest anthropoid ape and the lowest type of man. This gap has been partly filled by the discovery of the Neanderthal man and the apelike remains found in Java. The chasm between the mind of the highest anthropoids and the mind of man has been held to be not less than the chasm between their structures. This chasm Peter’s mind practically bridges. I should hesitate to report the facts disclosed at the Psychological Clinic if my individual testimony were the only evidence. The nature faker is one who accounts for animal behavior in terms of human thought and feeling. From being classed among the nature fakers I shall be saved by the fortunate circumstance that most of the tests which I shall report were made in the presence of a group of over one hundred persons, many of them scientifically interested in the study of animal intelligence, and fully capable of making an independent interpretation of the facts.<sup>3</sup>

On the morning of October ninth Peter skated into the clinic with a breezy rush. He was clad in black cloth trousers, waistcoat, and Tuxedo coat, and wore a starched shirt and collar with a red neckerchief instead of a cravat, which he later pulled off. He had on striped socks and patent leather oxfords, as well as skates, and on his head he wore a small silk hat kept on by elastic. He dashed straight for an open window, which had to be closed immediately. During his stay at the clinic he looked often at the window, apparently interested in the passing cars which he could plainly hear and just catch a glimpse of. His excursion to the window over, he skated about the room, apparently ready to shake hands with the company present. My secretary, who took stenographic notes of all that occurred, bent down and offered her right hand; he took it, and after giving it a shake, put the back of her hand to his lips in the most courtly and gallant manner. Then he skated off, round and round a platform, pursued by Mr. McArdle, turning expertly and dodging with remarkable celerity, from time to time stopping to thump the platform in apparent fun and bravado. He then climbed upon a chair and began to examine a camera with great interest, tried to turn the screws, squeezed the bulb, manipulated the shutter, and felt the bellows. These movements were executed with precision and dispatch, and with no attempt at destructiveness, but rather in a spirit of pure investi-

<sup>3</sup>Among those present and close observers of the tests were Drs. Abbott, Donaldson, Furness, Greenman, Holmes, Reichert, Twitmyer, and others.

gation. During his stay at the clinic he skated at intervals about the room, apparently for the sheer love of it. After one test which involved a considerable strain upon his attention his trainer said, "You may now get down and run around and play." He instantly darted off, skating round and round the room, from time to time inciting Mr. McArdle to pursuit by thumping upon the platform.

During the tests he sat upon a small three-legged stool, eight or nine inches high, which was placed upon a low kindergarten



POSING FOR HIS PHOTOGRAPH AT THE PSYCHOLOGICAL CLINIC.

IN HIS RIGHT HAND PETER HOLDS THE PADLOCK USED IN THE STAGE PERFORMANCE, UNDER HIS LEFT HAND IS THE CORD WITH WHICH HE TIES AND UNTIES KNOTS; HE IS SITTING ON A LOW KINDERGARTEN TABLE UPON WHICH HE STOOD TO WRITE ON THE BLACKBOARD. THE ROLLER SKATES KEEP HIM WITHIN REACH AND YET GIVE HIM REASONABLE FREEDOM OF MOVEMENT. HIS POSE IN THIS PICTURE WAS LARGELY SELF-ASSUMED AND HE GAZED STEADILY AT THE CAMERA AS THOUGH COMPREHENDING THAT HE WAS SITTING FOR HIS PORTRAIT.

table. Being on skates he was thus confined to a small area. He stood and moved about on the table from time to time, never once slipping or losing his balance.

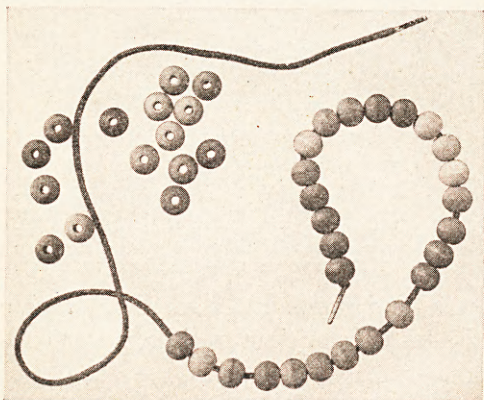
#### *The Cigarette and Match Test.*

The trainer gave him a cigarette and offered him a box of matches. The cigarette was tipped with cork; without hesitation Peter placed the tipped end in his mouth, took a match from the box held out to him, and struck it on a side of the box. I then had the trainer take this cigarette from him and I handed him one of another make with a hollow tube as a mouth piece, which I purposely offered with the wrong end towards him. He at

once reversed it and put the tube in his mouth. It was taken from him and again presented in the same fashion. He again turned it. This time he tasted both ends and recognized the tobacco end, either by the sense of taste or touch. I gave him a match from a box of my own and held the smooth top of the box toward him. He rubbed the match twice on the top of the box, then tried to strike the match on the rough side which I was partly covering with my finger. It was difficult for him to find enough surface whereon to strike it, and after one attempt he sought with the head of the match the opposite side of the box, which was either partly or wholly concealed from his view. There can be no doubt that Peter lights and smokes his cigarette as intelligently as a man. While smoking, his poses and facial expressions are very human and assumed without any self-conscious intent.

Told to spit by his trainer, he leaned forward and spat on his shoe. The trainer remonstrated with him and told him to spit over the edge of the table. He leaned farther forward and spat on the table. The trainer then passed him a handkerchief and ordered him to wipe the spit off the table. He directed his efforts first to his shoe, but with the same indifference and half attention which a child might show under like circumstances. When he had wiped off his shoe, the trainer pointed to the table

and said, "Now off the table," whereupon he reached down and wiped the table clean.



#### *Stringing Beads.*

I took a shoe string on which had been strung a number of wooden beads, such as are used in kindergartens. This is one of the tests wherewith I determine the intelligence of children brought to the clinic. I held the string and the beads before Peter, and taking a bead from the box, strung it before his eyes and said, "Look, Peter, this is what I want you to do." I repeated this with two other beads; then handing him the string and a bead I said, "Now string one of these for me." The monkey promptly put the bead in his mouth, feeling it with his lips and tongue. The trainer said, "No, no, it's not a cherry," whereupon



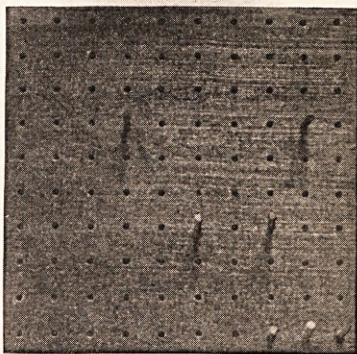
Peter took the bead out of his mouth and strung it. I held the box toward him and he took one bead after another from the box, feeling each one first with his lips and seeming to assist himself in this way to get the hole in the bead into the proper position for stringing. When the beads were taken away he clapped his hands as if applauding his achievement. The spectators joined in the applause, and then at the trainer's verbal suggestion he kissed his hand to the ladies. The trainer objected to my making the test so easy, saying I ought merely to have passed him the string and the beads and told him, without demonstrating it, what I wished done.

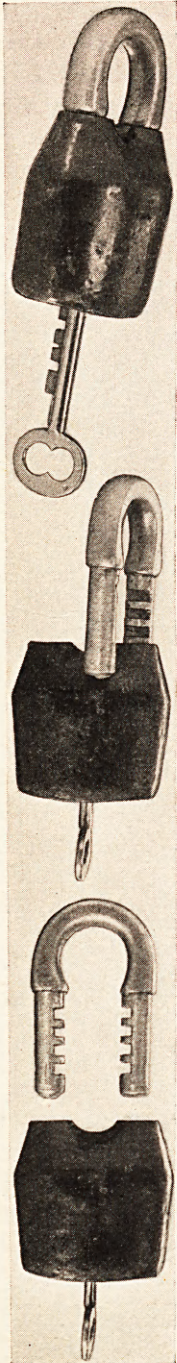
#### *The Pegging Board.*

I gave him one of the large pegging boards used in kindergarten work. He immediately passed it over his face. I put three pegs in a row. Peter instantly wanted to pull them out, but stopped when told to let them alone. Then I gave him the pegs one by one, and he put them into the board. He did not place them in a row, as I had done, but irregularly over the board. I am confident, however, that a few trials would suffice to teach him to peg regularly in rows.

#### *Opening a Lock.*

At my request the trainer had brought the lock which Peter used in public performances, an old-fashioned padlock with a large key; he is seen holding it in his hand in the photograph of him taken at the clinic. He locked and unlocked this swiftly and without any apparent interest in his work, gazing in the meantime about the room and forced to resume the task from time to time by his trainer. It might have seemed to those who did not know Peter well, that the task was a difficult one and he was being forced to exercise unusual attention to accomplish it. As a matter of fact, the task is too easy to occupy his mind. This was brought out clearly when I offered him a smaller padlock of a different type, one with a bar like a staple, which must be pulled entirely off at the end of the lock opposite the key hole. The key was a small one,





difficult to insert and difficult to turn after it had been inserted. As soon as Peter saw this lock, it absorbed his entire attention. He reached for it and even partly rose from his chair in his eagerness to get it. I unlocked it for him and took out the staple attachment. I put the staple back and locked it, withdrawing the key. I was about to reinsert the key, thinking it too difficult a test to start him with, when he reached for the key, and turning the lock into the correct position, promptly inserted it, and unlocked it more rapidly than I had done a moment before; he then pulled out the staple with a look I cannot but term triumphant, expressing, "There! you see I have done it." I then told him to put the staple back and lock it. He inserted one prong of the staple, but unfortunately had not solved the problem of putting the two prongs in at once. He kept turning the staple around, but it would not go into place. Mrs. McArdle said, "Don't be stupid," and boxed his ears, adding, "That's not right." I then employed a test which demonstrated his intelligence most clearly. Holding the lock before him, I pulled the staple slowly out, moved it several inches away, and reinserted it. I repeated this performance two or three times, and then passed the lock to Peter. He seized it eagerly, slowly and carefully pulled out the staple until it was not more than a quarter of an inch beyond the lock, and then carefully reinserted it in place, shoving it home with a smack of his hand. There could be no doubt that he appreciated the danger of losing the combination and was taking no chances on getting the staple too far away from the body of the lock. He then turned the key in the lock and at my verbal request handed the lock back to me.

#### *Opening a Box.*

I brought out a small wooden box with a tiny keyhole. The key was on a ring containing a number of different sized keys. The key which opened the box was the smallest on the

ring. I was about to show him the key when the trainer said, "Let Peter pick it out. When he was given the box he turned the keyhole toward him immediately. He then tried the largest key first, holding it momentarily in his mouth. He then tried the next largest, and then a third large one. He did not proceed deliberately to try one key after another until he had found the right one. It must be remembered, however, that he was excited, and the tests were made in rapid succession and with quite a crowd standing close



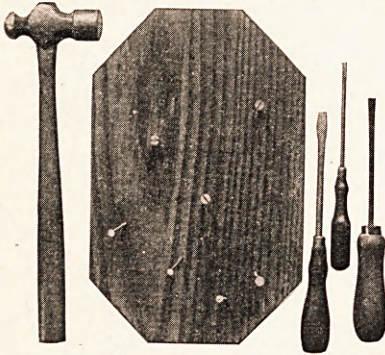
I then opened the box, showing him a few lumps of sugar inside, and pointed out the small key on the ring which opened it. As I was about to close the lid, Peter put his hand on the edge of the box to keep it from being locked again, apparently wishing to investigate its contents. The box was locked, the bunch of keys shaken up and handed to him. He tried to find the small key but without success. The key was shown to him again and he was allowed to put it in his mouth. He then opened the box with the key and obtained a lump of sugar. When the keys were handed to him for a third test, he failed again to find the right key, but his attention was no longer on the work. He wanted to play with the keys. The sugar which I thought would inspire him to open the box lid did not prove to be much of an incentive. A new and difficult problem stimulated him more than sweets.

#### *Hammer and Screw Driver.*

While skating about, two or three rubber balls were thrown at him. He picked them up but made no effort to throw them back. When I bounced one on the floor, he seized it and thumped it on the platform, but did not throw it down. He put the rubber balls in his mouth and bit them with an air of satisfaction, probably owing to the fact that his second teeth were just coming through, and his gums ached.

He was brought back to the table and allowed to sit cross-legged upon it. A hammer and a piece of board, on which were some nails and screws, were given him. The hammer had a reversible head, a round one for buffing and a flat one for driving nails. It differed from the hammer which I saw him use at a

private interview in Mr. McArdle's room at the theatre, and probably was unlike any he had ever seen. I gave him the hammer in such a way that when he grasped it in his hand he held it in position for striking with the round head. Hesitating a moment, he brought the round head to his mouth, felt it with



his lips, turned the head about, felt the flat end, and instantly proceeded to drive several nails into the board with the proper head. He never mistook a screw for a nail. He soon threw down the hammer and jumped to the floor, plainly signifying that he had had enough.

Again he was brought back to the table and given a screw instead of a nail. He stuck the screw into a small hole in the board and at once selected a screw driver, paying no attention whatever to the hammer lying on the table. The screw was a long one and wobbled as he tried to turn it. There were three screw drivers on the table and he first picked out a medium sized one, which was a little too large for the purpose. He next tried the smallest one and made several turns of the screw, always turning the screw driver in the right direction. He did this as a child might do it, or an adult not very expert in handling tools. He used both hands on the screw driver instead of employing one hand to steady the screw.

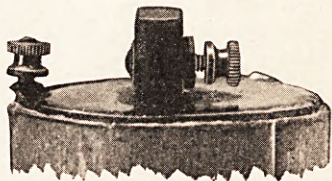
While hammering in the nails he steadied the nail between two fingers of his left hand, using the hammer with the right hand. Once he pounded one of his fingers, which he instantly put in his mouth, and afterwards exercised great care in hammering the nail, moving his fingers away quickly whenever he brought the hammer head down.

#### *Reason or Instinct?*

Perhaps it is only man's self-conceit which inclines him to assume that he is distinguished from the other animals by the possession of reason. He denies reason to the lower animals, and explains their behavior, when remarkable or even intricate, as the result of a blind and invariable instinct. The experiments of the animal psychologists are doubtful on this point, and of relatively small value. An animal confined in some unaccustomed environment and required when half starved and acting under the stimulus

of hunger to work his way out of a maze or into some curiously contrived box, can hardly be expected to display the powers of reason which he might employ readily enough to solve equivalent difficulties if he were in a normal environment and better physical condition.

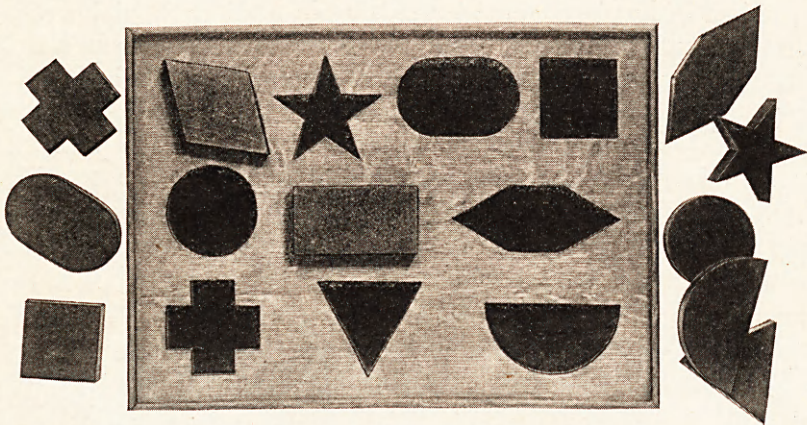
The animal psychologists appear to be discovering that reason plays but a small part in controlling the actions of the lower animals. But the human psychologist in turn is arriving at the conclusion that man, too, reasons very little. When we present a human being with a new problem, his reason may show itself as impotent before the new conditions as is the animal in some cunningly contrived maze. Not more than a month ago a graduate student in my department ruined an electric motor because he went to a great deal of unnecessary trouble in order to attach the conducting wires to a part of the apparatus not intended for that purpose, and overlooked two binding posts which stared him straight in the face on the top of the machine. Another student, a woman, possessed of ample powers of reasoning in her own specialty, was asked to connect a small dry cell with a bell and a key, as an introductory laboratory exercise. The battery has two binding posts, around which the ends of the wire are first twisted, and then a thumb screw projecting from the top is turned so as to push the screw down upon the wire and hold it in place. To test her ingenuity I gave her the battery and the requisite pieces of wire, and said, "Attach one piece of this wire to each binding post of the battery." After working with it half an hour, she reported she could not make the wire stay on. She had been laying the end of the wire on top of the post, and naturally as soon as she left it, it fell off. She had not even sense enough, if I may so express it, to take the wire, bend it near the end, and hang it around the neck of the screw, which would have enabled her to keep it in place and get a current through it. I explained, "You want to bend the end of the wire around the post," and went away and left her with it. After a while I came back to see how she was getting on, and she reported, "Well, it seems to work a little better, but I have trouble in getting it to stay in place." She had bent the wire once about the post, but had still failed to solve the use of the screw which she might have turned once or twice and thus held the wire firmly in place. I had to show her every stage of the process, as I showed



Peter how to string the beads or put pegs in the board. She never acquired facility in the manipulation of apparatus. She lacked what is called "mechanical ability". The impotency of reason when some persons are confronted with a simple mechanical task teaches us as much concerning the ability of man to reason, but no more, than do maze and trap experiments in the laboratory inform us as to the natural intelligence and reasoning of the lower animals.

*The Form Board.*

The form board is one of the best tests rapidly to distinguish between the feebleminded and the normal child. To place the various blocks in position with rapidity and precision, requires that the form of the space into which the block is to be inserted shall be associated visually with the form of the block. Peter did not succeed with this test. There was quite a crowd about him at the time, the room was not well lighted, and Peter himself obscured the form board by casting a shadow. It is difficult to see the



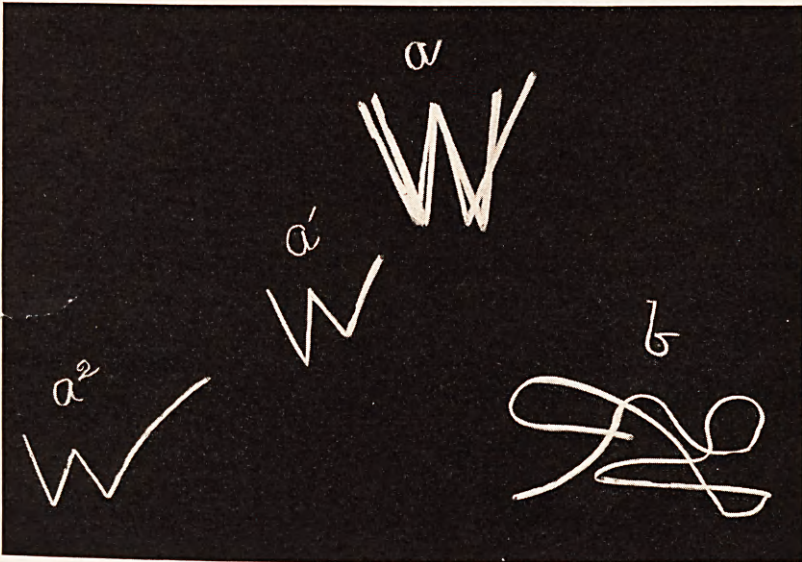
A SIMPLE DEVICE FOR TESTING INTELLIGENCE.

MADE IN THE SHOP OF THE PSYCHOLOGICAL LABORATORY AND USED AT THE PSYCHOLOGICAL CLINIC TO DISTINGUISH THE NORMAL AND THE FEEBLE MIND.

shallow spaces or grooves into which the blocks are to be fitted, and Peter moreover appears to be near sighted; I have no doubt that he was unable to see clearly and distinctly the spaces let into the board.

This test, however, was a noteworthy illustration of Peter's ability to imitate and perform an action which he supposes to be the one desired. After I had placed two of the blocks in position, I removed one of them, the oblong in the center of the board, and gave it to him; he fitted it in place, and then thrust it home by

pounding it down with his fist. But this success was apparently an accident, for when I took the block out and gave it to him again to place in position, he failed as does many a child tested at the Psychological Clinic, shoving the block aimlessly over the board. The trainer then picked it up, placed it in the right groove, and for emphasis struck the board with it twice in rapid succession before handing it to Peter with the words, "That's it, Peter." He immediately took the block and rapped the proper groove twice, exactly imitating her movements, but without trying to make it fit. He then looked up into her face as if proud of what he had



WRITING ON THE BLACKBOARD.

(A) THE LETTER W DRAWN TWICE, ONE TRACING OVER THE OTHER; (B) A SCRAWL FOLLOWING THE FIRST TRACING;  $\alpha^1$ , PETER'S COPY AFTER THE SECOND TRACING;  $\alpha^2$ , PETER'S SECOND EFFORT WHEN TOLD TO MAKE A W AGAIN.\*

done. Now that he had accomplished what he thought was required of him, he seemed to lose all interest in the task, and refused to give his attention to further repetitions of the test. He became excited, jumped to the floor, and skated about in his usual exhilarated manner. His close imitation of the movements of his trainer prepared me for the more remarkable result of the next test.

#### *The Writing Test.*

I drew forward a blackboard, the writing surface of which he could easily reach when standing upon the table. He took a piece

\*Drawn and photographed by Dr. E. B. Twitmyer, to whom I am indebted for the other photographs used in this article, except those of Peter which were made by W. H. Rau.

of chalk eagerly, and before I had made any mark upon the board, began to scrawl in a corner of it. I took the chalk from him and said, "Peter, I want you to do this," and rapidly made the letter W in four strokes. Peter's attention had not been fully given while I made the letter. He took the chalk and scrawled beneath in much the same manner as he had done before. I picked up another piece of chalk and said, "Now look, this is what I want you to do," and traced another W over the one which I had just drawn. Peter watched the operation intently, then with the chalk in his hand, he quickly made the four movements and drew a fairly perfect letter beneath the W which I had traced. After a brief interruption due to the excitement of the spectators at this performance, Peter's interest in the board still remaining as appeared from his continued scrawling, I asked him to try again, and he made at some distance from the first letter another W, somewhat less perfectly formed.

From his general behavior, and especially from his manner of executing this test, I believe that Peter is what the psychologist calls "motor minded". He imitated the movements of my writing hand. I doubt whether he could copy a W on the board if he had not first seen me make it. In this, however, he does not differ from the child whose writing usually begins as an imitation of movements, and only becomes secondarily a copying of the visual form.

#### *Articulation.*

Peter is able to articulate the word "mama". He does this apparently with great effort, and it is the one task which he performs with seeming unwillingness. At the Psychological Clinic, and also at the private examinations, a tumbler of water was employed to force him to this effort. He seemed always ready for a drink. Mrs. McArdle would hold a tumbler of water in her hand and order him to say "mama". He would make many efforts without succeeding. The trainer would then say, "Well, I am going away," and make a feint of starting. At this Peter always became much distressed, whimpered, and at the clinic fairly wrung his hands. The trainer would turn back and say, "Now will you say 'mama'?" He would then make a very evident effort, and always succeeded in saying fairly distinctly, "mama". At the clinic, she pretended to be dissatisfied with his first effort, and asked Mr. McArdle if he thought it was good enough. Mr. McArdle shook his head, and Mrs. McArdle then turned to Peter with, "He says it's not good enough, Peter, try again." Peter tried



again and articulated "mama" with great distinctness. He was then given a drink, and said "mama" several times. The articulation of the *m* sound is perfect. I am somewhat doubtful whether the *ah* is voiced or not. It seems to be usually a vowel produced by an inspiration, possibly at times an expiration, of the breath without bringing the larynx into action. He uttered the word in



A DIGNIFIED PLEADER.

PETER'S EXPRESSION AND POSE SUGGEST THE AFTER-DINNER SPEAKER. HE IS PROBABLY ASKING FOR A DRINK OF WATER OR SOMETHING TO EAT.

a loud whisper, rather than with voiced articulation. During one test, however, I thought I heard more than once a distinct, high-pitched, voiced vowel, sounding more like *ah-ee* than *ah-aa*.

Peter's chief fault is one I have found occasionally in young children showing an arrest of speech development. He tries to speak with the inspired and not with the expired breath. At a private examination I taught Peter to articulate the sound of *p*

with the expired breath. I am confident from his behavior as well as from what his trainers told me, that he had never before been practiced in this. I first obtained the proper position of the lips by getting him to blow out a match, which he could do readily enough. I then blew into Peter's face and he blew into mine. I made the puffs shorter and the action of the lips more vigorous until I was saying *peh-peh* with breath but without voice. Peter imitated this exactly, using no voice but a breathed, *i. e.* whispered, *peh-peh* sound. To accomplish this took but five minutes. I tried him with no other articulated elements, as this experiment was enough to convince me that Peter can be taught to articulate a number of consonantal sounds and probably to voice correctly some of the vowels.

*Comprehension of Language.*

When Peter is asked, "Where is Mama?" he points to Mrs. McArdle. When asked, "Where's Dada?" he points to Mr. McArdle. When asked, "Where's Peter?" he taps his shirt front.

At the clinic he tried once to jump down from the table and run away. The trainer cuffed him over the ears because he was naughty, and said, "Now beg pardon." She whispered in his ear for a second, while he listened penitently and with that exaggeration of rapt attention which may be seen on the face of any child in whose ear we whisper. "Kiss Mama," she then said, and he turned his face toward her and did it like a child. "Kiss Dada," and he leaned over and kissed Mr. McArdle. "Now Peter, hit Dada," and he slapped Mr. McArdle two or three times with his hands. All this was done without any observable gestures being made by the trainers, simply in obedience to spoken commands which were instantly carried out, without waiting for any other signal.

While drinking from a tumbler the trainer said, "Give Mama a drink," and he extended the tumbler to her and held it while she drank. When she said, "Give Dada a drink," he held it for Mr. McArdle in the same way. "Now aren't you going to give the Doctor a drink?" turning towards me. Peter promptly handed me the tumbler, all the more willingly perhaps because no water remained in it. When I passed the tumbler back to him, he took it readily.

During a private examination, Mrs. McArdle showed Peter a scratch on her finger, and said, "Oh, Peter, it hurts," with the sharp indrawing of the breath which is customarily used to express

pain. Peter looked at the hand with an expression of human sympathy. "Now kiss it, Peter, and make it well," without a gesture of any sort. Peter leaned forward, put his lips to the spot and kissed it.

*The Interpretation.*

The ascent of man to higher levels of intellectual attainment has been conditioned by the discovery and use of tools. From the first use of the club, on through the invention of one weapon of offense and defense after another, down to the modern aerial warship, man supplanted brute force with the force of intellect and thereby made intellectual achievement a controlling factor in natural selection and survival. His discovery and use of fire carried him far beyond the merely animal intellect and made possible human civilization and culture. Steam and electricity have initiated a new era of intellectual development.

A tool may be the product of organic evolution. The foot, the hand, the binocular eye, these are all instruments with which man is better equipped than any of the lower animals. Of no small importance, also, was the acquisition of right-handedness, the development of a dextrous or preferred member for the execution of the more intricate manual operations. Last in order but not least in importance is the development of that faculty which most serves to distinguish man from the lower animals, and which has been and remains his chief instrument for the acquisition of power whether by the individual or the race. It is the possession of an articulated language, the peculiar tool of the intellect, employed to convey and even to develop thought, which has made man what he is and raised him to such heights above the mere animal. Reason develops from many sources but chiefly on foundations which are built upon the use of language. Reason may appear as an attribute of the animal mind, but in the absence of language its manifestations must remain so insignificant as to be practically negligible in comparison with its varied employment by man.

Considering his age and opportunities, Peter reasons well enough within the range of his understanding and activities. He can use a club; he can use even a hammer. He knows the use of fire, and can strike a match and light a cigarette. There are indications that he is right-handed. Right-handedness is resident within the brain. It is the manifestation of a superior functional use of one side of the brain. Speech also is dependent upon a congenital physiological function of the brain. The human child

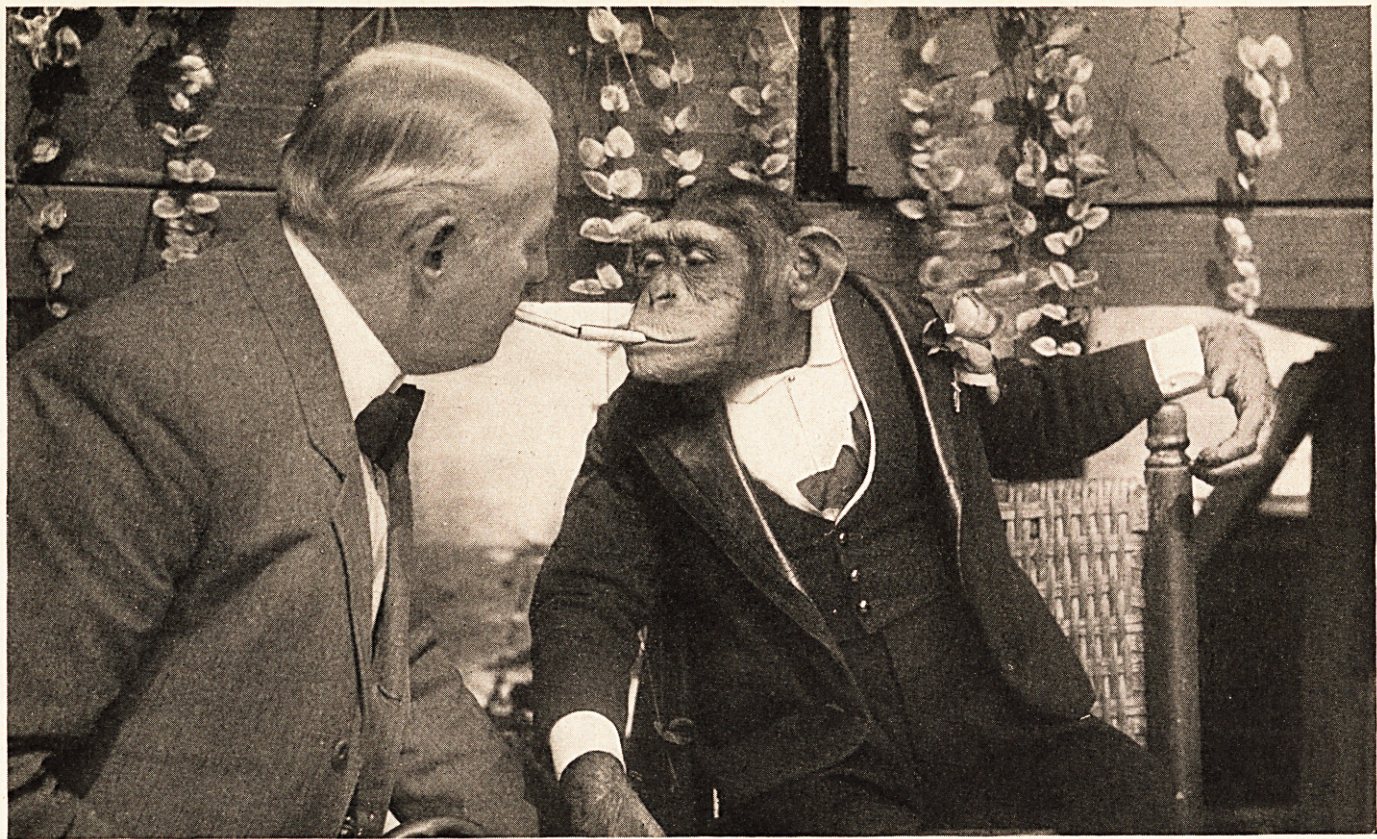
comes into the world with a brain ready to initiate speech when the proper stimuli act upon it, just as he comes fully equipped to breathe and cry. A child is encouraged to talk, but is no more taught to talk than a bird is taught to fly. It would be more difficult to keep him from talking in his normal environment than it is to induce him to talk. Peter shows every sign of failing to possess this natural faculty. What might have happened if from his birth he had associated freely with human beings and if he now associated with them as children do, it is impossible to say. But until such an experiment is made we must believe that a chimpanzee is born without the instinct or physiological faculty of speech.

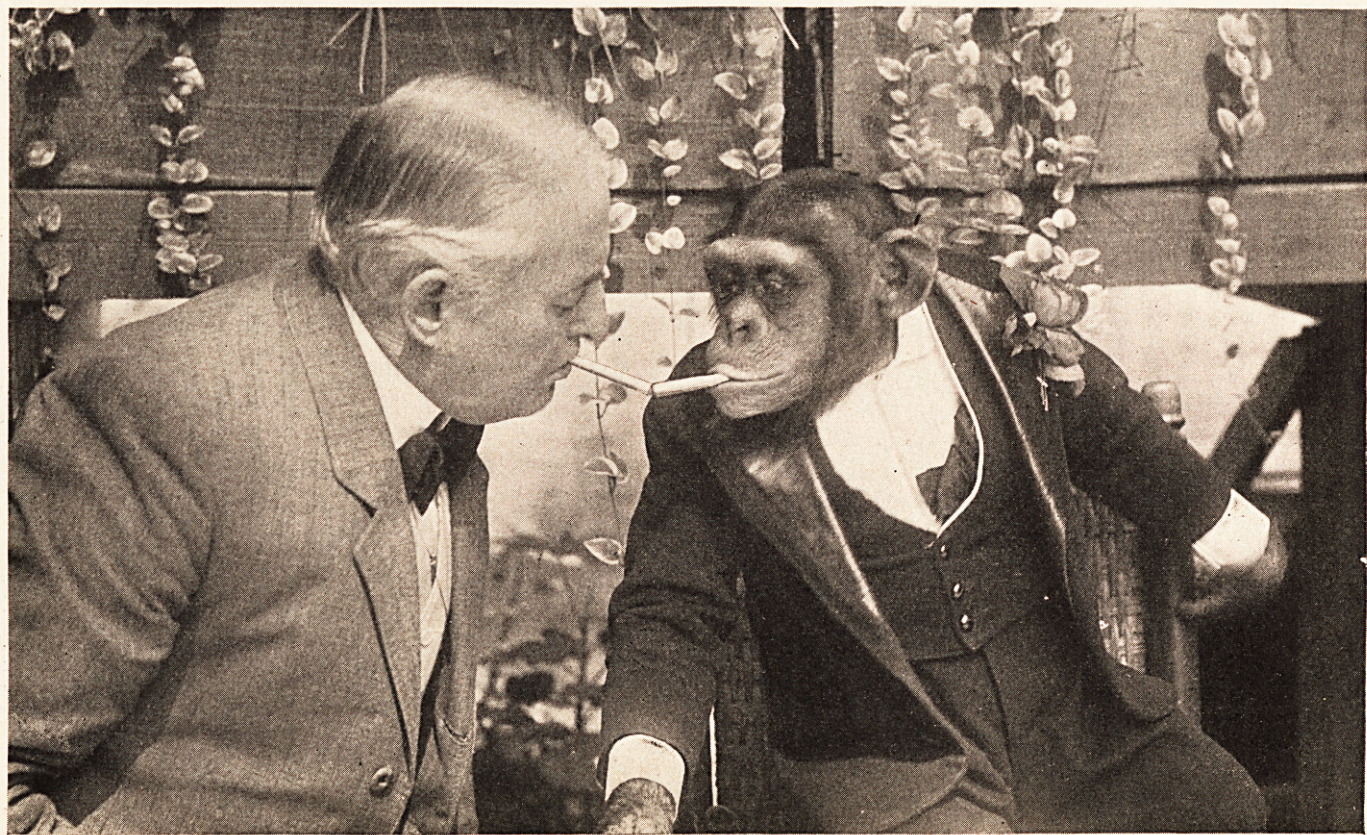
Could he nevertheless be taught to talk? There are children of five, six, or even older who have never talked. Deafness and sometimes even adenoids and enlarged tonsils will cause an arrest of the development of speech. The deaf child need no longer be mute, because the methods are now known by which he may be taught without hearing the sounds to move the organs of speech into the proper position for their articulation. Where adenoids or enlarged tonsils have caused an arrest of speech development and have not been removed till late in the child's life there is often unusual difficulty in acquiring articulate language. If a child without language were brought to me and on the first trial had learned to articulate the sound of *p* as readily as Peter did, I should express the opinion that he could be taught most of the elements of articulate language within six months' time.

The results of the writing test, during which Peter's imitative capacity enabled him to form the letter W, justify the opinion that he could be taught to write at least a few words after a year of training. There can be no doubt that to some extent he already understands spoken language. The mere possibility of acquiring the three modes of language, *i. e.*, articulation, hearing, writing, and let us add, reading, does not suffice, however, to indicate that he could be taught to employ language as the human being employs it. Helen Keller tells how she first grasped the idea that certain touches upon the palm of her hand were the name of the object water. Peter has already reached the stage where he comprehends, even though it be only to a limited extent, that certain sounds are the names of objects. If he can be made to comprehend that certain symbols traced upon the board represent these sounds and are also the names of objects, and if he can also be taught to articulate these symbols, then he will be prepared, as the child is, to use speech as the staff by whose aid he may climb the pathway of intellectual development.

While my tests of Peter give no positive assurance that he can acquire language, on the other hand they yield no proof that he cannot. If Peter had a human form and were brought to me as a backward child and this child responded to my tests as creditably as Peter did, I should unhesitatingly say that I could teach him to speak, to write, and to read, within a year's time. But Peter has not a human form, and what limitations his ape's brain may disclose after a persistent effort to educate him, it is impossible to foretell. His behavior, however, is sufficiently intelligent to make this educational experiment well worth the expenditure of time and effort.

The ability to talk, to write, and to read is a prerequisite for the intellectual development of a child. They do not, however, assure us that such intellectual development will take place. Many a child is able to perform these tasks more or less mechanically without being able to employ them as the instruments of an education. Such a child remains in the mental status of a low or middle grade imbecile. We grade children with respect to their ability to develop in the peculiarly human way. If we judge Peter in this fashion, it must be acknowledged that there is no evidence that Peter could rise above the level of a low grade imbecile, though his behavior suggests that he could attain the level of at least the middle grade imbecile. Above the middle grade imbecile is the high grade imbecile, capable of acquiring much of the education that a normal child receives in arithmetic, history, geography, but incapable of exercising normal mental activity in free association with his fellows. To predict the outcome of the educational process with a normal child is often a hazardous proceeding. To do this with certainty for a defective child requires usually some associated physical symptoms, a malformed or under-sized head, for example. It has been my experience that some children present the appearance of a limited capacity for mental development, owing perhaps to a malformed head or other physical stigma, who yet are capable of a surprising development which contradicts the original diagnosis. If in such cases there is reason for holding our final judgment in suspense until a satisfactory educational experiment is undertaken, so it would be unfair to Peter to define the natural limits of his mental development until a consistent effort has been made to educate him. With our present knowledge of the mental quality of the anthropoid apes, however, it would be safe to say that Peter is very unlikely to understand and acquire the recognized subjects of the school curriculum.





Peter's age and life history have naturally an important bearing on his possibilities of development. I know nothing of Peter's origin excepting that he probably came from the west coast of Africa and the McArdules say they have had him under training for two and a half years. They think he was three or four years old when they got him, but they have not informed me how they obtained him nor do I know whether he is male or female. I only know that he is called Peter. He certainly has not from birth been subjected to the educational and formative treatment of the human child. Much of his time is passed locked up in a box. His environment is of necessity extremely limited, and before the McArdules got him his life was probably that of an animal in strict confinement, excepting for the brief period of infancy before his capture. His training has been mostly directed to the performance of tricks on the stage. Peter has therefore not only his birth to contend against, but also his bringing up.

Fortunately his age can be determined within somewhat narrow limits. When I first saw him at a private interview, Monday, October 4, 1909, he had lost one and was just losing the second of his two temporary central upper incisors. When I last saw him, one of the permanent central upper incisors was wholly through, projecting about an eighth of an inch and the other was just showing. A child gets his permanent or second teeth at about the age of seven years. Peter's physiological age is therefore about the same as that of a seven-year-old child. This does not determine, however, the number of years Peter has lived. A chimpanzee's life is supposed to be shorter than man's. If the chimpanzee lives to be about thirty years of age, he probably acquires his permanent teeth at four years. If, however, the chimpanzee averages more than thirty years, the permanent teeth may be acquired later. Peter is certainly not less than four nor more than seven, and probably is in his sixth year. His mental life is therefore measured by not more than five or six years; in physiological development he is at the stage of a seven-year-old child. This ape equals if he does not exceed what is known of the average child of six or seven in his ability to skate, to ride a bicycle, to tie a knot, and he executes other movements requiring a high degree of coördination and motor development. In view of the treatment to which he has been subjected, Peter within the limited sphere of his activities is precocious in comparison with the normal child. In imitative capacity also he is the equal if not the superior of many a child of his own age. In language and in the peculiarly



human sphere of activities he about equals a child in its second year. As time goes on, the natural process of development will undoubtedly increase the distance between Peter and the child.

*Personality.*

Peter is a downright engaging personality. He possesses energy, initiative, and a fair amount of persistence. His constant activity impresses itself upon the spectator like the grace of an accomplished dancer. He is vital, the most mobile individual I have probably ever seen. Apathy is the most hopeless and least attractive characteristic of child or animal. The active child who will do things, however objectionable they may be to his elders, engages our interest and can be developed. Peter's activity is not the result of mere animal spirits; he is mentally alert and possessed of unusual power of concentration, not merely for an animal but for a child of his own age. He exhibited at the clinic the exuberant vivacity of an obstreperous boy. On the stage he performs difficult feats in skating or bicycling with nonchalance and seeming indifference to the possibility of failure. Left to himself he will usually seek some sort of occupation.

The play of interest and emotion can be read upon his face as readily as, I was about to say, upon that of a human being. The six illustrations in this article give some idea of the human changes in his expression. At the Psychological Clinic he posed himself to be photographed, and his pose in a human being would be called dignified, unconstrained and alert. At the flare of the calcium light he fell back and threw his hand up as though to protect his head from a blow, but showed his courage by remaining seated and watching with intent interest the cloud of smoke. In giving his trainer a light from his cigarette his expressions are those we often see on the faces of our friends under like circumstances, and the two expressions are quite dissimilar. His expression in the picture on the third page of this article is one of inquiry, protest and distress; when his distress increases, if for example he is long deprived of a drink, the lips protrude in a pitiful but to us ridiculous pout, he then begins a curious gruff whimper, and eventually may even wring his hands. He does not laugh, to be sure, but at times he has something very like a momentary grin of humor, albeit ghastly because of the cavernous mouth and huge jaw.

He is affectionate and demonstrative. In playing about the room during a private examination, while I was talking with his

trainers, he amused himself with one occupation or another, coming up reassuringly to me from time to time to take hold of my hand. Once while I was seated on a box talking with his trainers, he jumped up beside me and put his arm confidently on my shoulder, sitting quietly thus for many minutes. His behavior at every private interview was more remarkable than on the stage. Given a tumbler of water to drink while sitting on his box, he emptied the glass and then in a quite indifferent manner, barely turning his head, reached far out to one side and partly behind him and placed the tumbler on a shelf. Many a child would have thrown it on the floor. Happening to find a cigarette on the floor he picked it up while we were paying no attention to him, struck a match, lit the cigarette and after a few puffs reached back and laid it down beside the tumbler.

It would be hazardous to conclude from Peter's demonstration of affection or his general behavior that he would be susceptible to moral training. He responds to verbal commands, but he is only to a very limited extent submissive to the kind of discipline which we think appropriate for the child. A whip is still the constant incentive to good behavior. He is the aboriginal, primeval truant. When taken abroad, roller skates are put on his feet to keep him from escaping. When placed in the automobile after leaving the clinic, he was out over the other side in an instant, scurrying across the lawn as rapidly as his skates would permit. Nevertheless, his trainers assert that they brought him back not by forcible capture but by holding a pocket handkerchief to their eyes and calling out that they were going to leave him.

While there can be no doubt from Peter's examination that there is in him the basis for something like moral discipline and training, it is not to be expected that he could ever reach that stage of development where moral character begins in recognition of the difference between right and wrong. Even though we may grant a fair prospect in the direction of intellectual development, we must assume from our present knowledge of men and apes that Peter is and will remain morally imbecile. It would be a nightmare flight of the imagination to suppose that an ape could acquire a will determined consciously by moral motives.

#### *A Genius among Apes.*

Is Peter the one genius among apes? The McArdules believe that he is. They have trained others, they say, and they maintain that in their experience he far exceeds any other chimpanzee in

initiative, courage and tenacity of purpose. The attitude of the McArdles toward Peter is no less noteworthy than Peter himself. They are naturally interested in his performance as a valuable financial asset, but more than this they show in their relationship towards him the attitude of fond parents towards an infant prodigy. They claim that no one really knows how intelligent Peter is and they appear to believe that Peter excels the human being in quickness of action, thought and comprehension. If they are right, Peter should become the ward of science and be subjected to proper educational influences. He has been trained, he is partly educated, but no effort has yet been made to give him what an education really stands for. I venture to predict that within a few years chimpanzees will be taken early in life and subjected for purposes of scientific investigation to a course of procedure more closely resembling that which is accorded the human child.