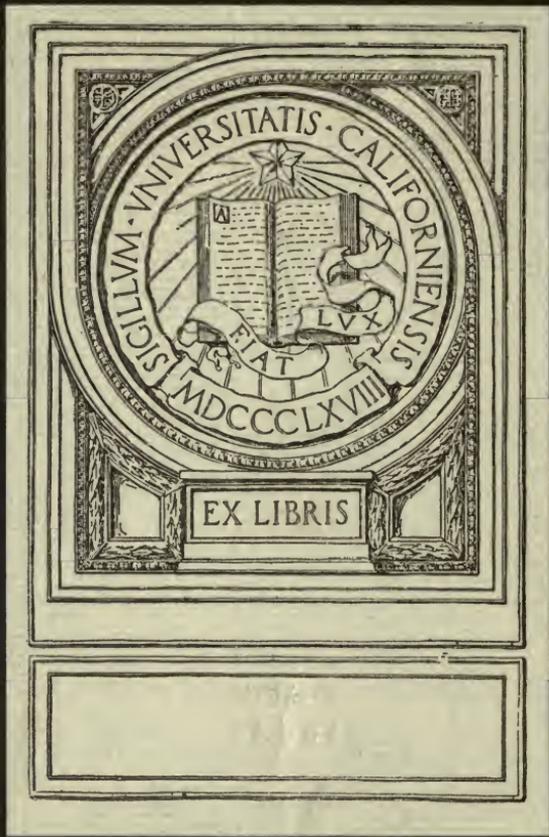
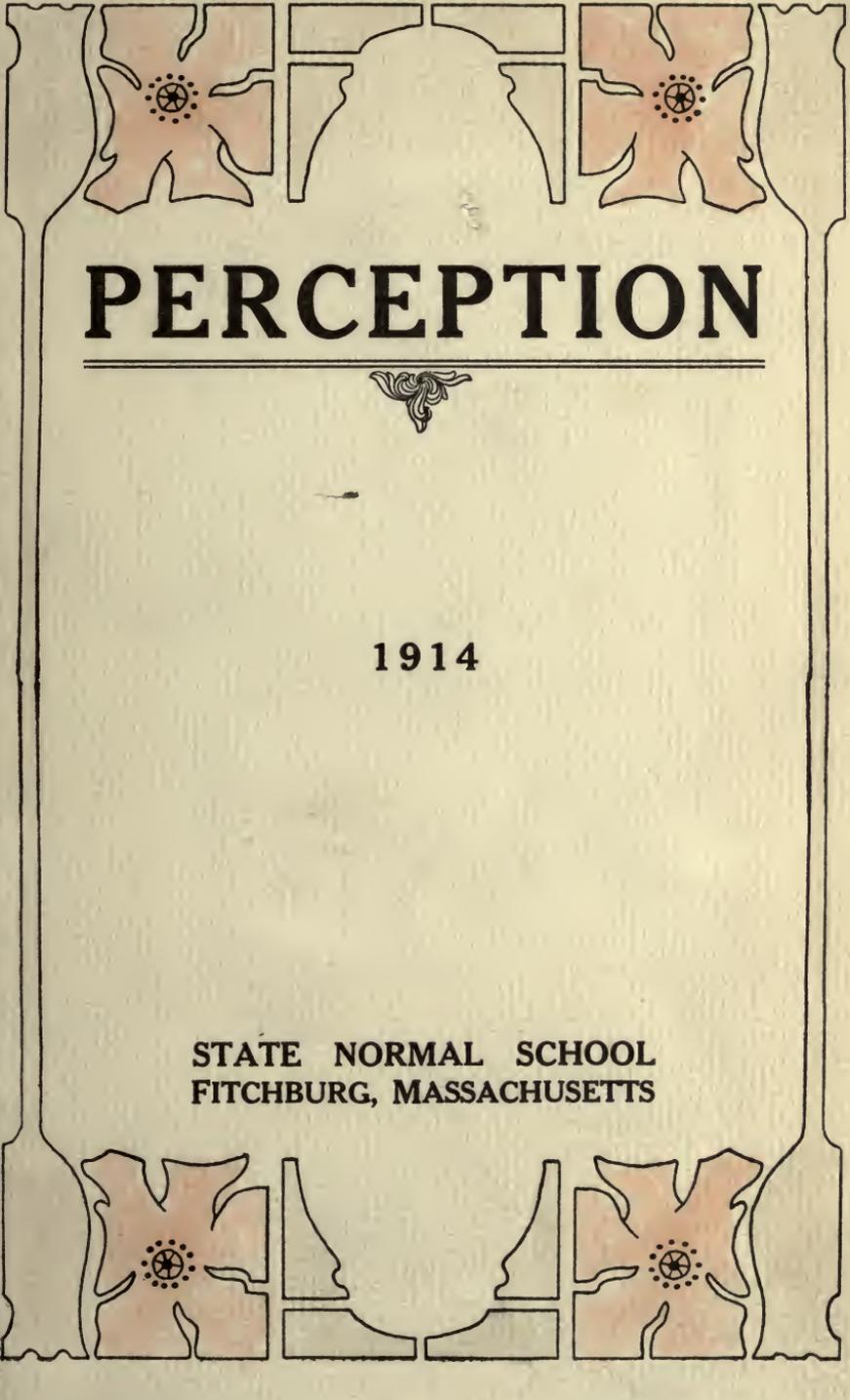


YC 56688



Syracuse, N. Y.
PAT. JAN. 21, 1908



PERCEPTION



1914

STATE NORMAL SCHOOL
FITCHBURG, MASSACHUSETTS



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PERCEPTION

BY THE CLASS OF NINETEEN
HUNDRED FOURTEEN OF THE
STATE NORMAL SCHOOL AT
FITCHBURG, MASSACHUSETTS

WITH AN INTRODUCTION
BY E. A. KIRKPATRICK



UNIV. OF
CALIFORNIA

FITCHBURG MASSACHUSETTS, MCMXIV
PUBLISHED BY THE CLASS, AND PRINT-
ED BY THE PRACTICAL ARTS PRESS

Introduction

This pamphlet was begun by the vote of the class after studying those prepared by previous classes. The subject was selected, outlined, discussed, and the matter formulated the first year. Each member of the class wrote on most of the topics, and nearly all served on some committee appointed to select and arrange the best of the material supplied by the class. In the second year the manuscript was revised by committees, approved by the class, and seen through the press by an editorial committee. The cover, representing the class flower, was selected from several designs prepared by members of the class. The total recitation time spent probably amounted to twenty or twenty-five periods.

E. A. KIRKPATRICK,
Head of the Department of Psychology and Child Study.

PERCEPTION

Introduction

So gradually and so naturally does the power of perception come to us that we do not stop to think how wonderful it is until psychology paves the way. To find out how perception is brought forth people should be watchful and observant.

A normal student was once asked to formulate a definition of perception without direct reference to any text book. The proposition confronting her seemed difficult. Her mind was busily engrossed with this problem on her homeward journey from the day's recitations. As she approached the doorstep, her small sister, who was busily engaged in play in the middle of the floor, called out her name. She had recognized her footsteps. On entering the house, her little sister remarked about the muddy condition of her rubbers and asked if it had been raining. Then suddenly she sniffed and ran off to the kitchen to attend to some burning food.

The student had been at home just three minutes, and within this time her little sister had been making a number of quick observations. The student at once looked upon them as material which might prove helpful as a foundation for her work, and she readily analyzed them. "My footsteps," she said, "were recognized because of previous knowledge of their sound. The fact that I was in the habit of reaching home at the same hour each day, together with the familiar sound of my footsteps helped my sister to recognize me. Through sight she was able to tell that there had been a recent rainstorm. The sense of smell brought to her mind the truth of burning substance."

The outgrowth of this analysis was the following definition, which proved to be adequate in its nature: "Perception is the power to acquire knowledge through the aid of the senses."

In preparing our pamphlet we have taken as a basis for thought the preceding definition. Our aim has been to give our readers a clear and thorough knowledge of this particular subject. The method

of procedure has been guided by the thoughts suggested in the definition. In short, we have endeavored to develop ideas of perception through the aid of selected topics, namely:

1—Sensory and motor factors; 2—Mental factors relating to perception; 3—Illusions; 4—Space perception; 5—Conditions favoring perception; 6—Development of perception; 7—Apperception.

Sensory and Motor Factors in Perception

The importance of sensory and motor factors in perception is clearly shown by the following examples.

Mary was blindfolded on Hallowe'en and asked to touch various things on a table and tell what they were. With the exception of one or two objects she was able to tell what they were — a stone, a stuffed wet glove.

Let us consider the facts involved in the perception of the stone. The stone was felt by moving and pressing the fingers against the object. The feeling caused by the pressure of the fingers upon the stone is called a sensation. Sensation is, therefore, feeling produced by contact between some object, liquid, gas, and some sense organ.

The stone felt hard and smooth, that is, the pressure was unyielding and even. Where such decision is reached in the mind, perception takes place. Perception represents sensation, plus a certain amount of additional activity.

There are several factors involved in the above illustration. The fingertips felt the stone through the aid of end organs, nerves, and nerve cells, in the brain. Without these three, no sensation or perception is received. The brain acts according to the sensations received. If the fingers come in contact with a hot radiator, the brain sends a message to the fingers ordering removal.

The different senses, touch, sight, hearing, smell, taste, motor, and organic, act to a large extent as protectors of the body. The eye and ear are the most important sense protectors of the body. The sight and sound of an approaching automobile warns the person as he is about to cross the street to wait until the machine has passed. The ear, in such a case, often causes one to look for the automobile. The eye enables one to tell more accurately how near the machine is,

and at what speed it is approaching. If the eye and ear gain the perception that the machine is not approaching near at high speed, we may judge the way safe for crossing at that time. The eye often serves to warn one against improper food. The eye prevents many accidents, as falling down stairs, burning one's self, etc. The value of the ear would not be so important did it not call the eye, as an assistant.

As knowledge is gained through the senses, the eye and ear are the sense organs most used in gaining an education. Without the eye, reading, for the normal person, is impossible. Lectures and conversations, which are such important factors in education, are made possible by the ear, and more vivid and interesting by the eye which sees the facial expressions of the speaker. Thus, the pleasures gained through the senses are generally quite well appreciated. Many pleasures are received through the senses of sight and hearing.

The senses aid one another to a great extent, thus increasing their general usefulness to the body and mind. The loss of a single sense, even with other senses highly developed, leaves some trace of incomplete mental development.

Touch

An experiment was tried with a hairpin on a blind-folded student.

The student was asked to tell when he felt but one point of the hairpin. The experiment was tried on the fingers several times, and in every case the two points were felt until they were less than a sixteenth of an inch apart. When the experiment was tried on the neck, the two points had to be separated a half inch before they were distinguished. The fingers were far more sensitive to the experiment than the neck. This is due to the fact that the nerve ends are located more thickly in the fingers than in the neck.

The nerve endings of the sense of touch are located most thickly in the tip of the tongue, the lips, and the finger tips. These sensitive spots, you will notice, are the most movable parts of the body. The sensitiveness of these organs is due to the muscular movements of the organs, to experience, and to the thickness of the end organs.

The sensations brought about by pressure vary to quite an extent. The varying degrees of pressure bring about perception. The perception of hardness and softness depends upon intensity of pressure,

while perceptions of roughness and smoothness are caused by variations of pressure. The pressure of a polished surface is even, therefore we perceive that the surface is smooth. The pressure of sandpaper upon the fingers is uneven, therefore perception says that sandpaper is rough. Yielding surface, as cotton batting, is perceived as soft.

Touch, as we ordinarily think of it, depends upon pressure plus other movements. If we move our fingers over a velvet surface, we gain a much clearer idea of the texture or quality of the velvet than if we simply lay the fingers upon the surface. We need only to watch people at counters as they buy things to see to what a great extent the muscular movements of the fingers aid the sense of touch.

Excessive stimulation by pressure causes pain. If the hand be brought down hard upon the surface of a table, pain is the result of the act. In the case of a needle, slight pressure is painless, while hard pressure is the opposite.

Heat and cold stimuli are received through the skin. Cold often carries with it the perception of dampness. A cold, dry cloth is often felt to be cold and damp. Whether an object be perceived as wet or dry is largely determined by temperature. If water be colder than the surrounding air it is distinguished as cold water easily. But if the temperature be like the temperature of the air, perception, by the skin, is somewhat baffled.

The following experiment was tried on a blindfolded student: the subject was touched on different parts of the hand and face with a pencil. On some places the lead felt cold, on others warm, thus causing the student to think that she was touched with different objects.

The feeling of the varying temperatures is due to the fact that there are hot and cold spots on the body which respond to heat and cold sensations especially.

This sense is of great value, not only to man, but to animals as well. All animals possess this sense, and many of the lower animals could not live without it. The amoeba, for example, closes upon that which he feels is fit for assimilation, and shrinks from that which does not appeal to his sense of touch.

Thus it has been shown that the sense of touch serves as a valuable protector, as an aid to the other senses, and as a source of knowledge and, to the child especially, of pleasure.

Sight

A student, on retuning to her room after her first visit to another suite was asked by her roommate, "How is the suite furnished?" The girl questioned was able to give a general description as to size, form, and color of the suite and its furnishings. All this was perceived through the eye. Primarily size and form perceptions are received through the sense of touch, but this is largely done away with after early childhood. The child is often deceived in regard to solids or rounded objects and needs to feel of them to understand their real shape and size. Light and color perceptions are received through the eye alone. Color perceptions are produced by the vibrations of ether waves. The varying vibrations produce colors and their many shades and hues. A combination of all colors produce white and light.

The movability of the eye gives one power to receive sensations and perceptions more rapidly. Thus in reading a book, one would naturally raise the eyes, at least in reading at the top of the page, and lower them at the bottom of the page. With out moving the eye there is quite a range in which one may perceive. For example, one student writes, "I am now facing a wall on which I can see several pictures. But besides the wall I can see out of a window which is on my right. By merely moving the eyeballs, I can see out of another window which is at right angles with the wall. If I move my head I can see more easily out of the window." The movability of the head and body greatly aids the eye. By movements of the head and body, a bird may be followed as it otherwise would not be possible.

Objects may be placed in a better range for the eye. A reader changes the position of his book or paper as he reads, so that he may perceive most easily and rapidly. Various changes of position affect the perceptions of the eye. For instance, a plate appears oval in some positions and round in others.

In very few animals does sight play as important a part as in man. The senses of touch and hearing are more valuable to animals, though without sight most animals would not be so quick in their movements.

This sense is a wonderful gift to man. However, if a person has never been blessed with it, he does not feel the loss to such an extent as one who has had it, and has later been deprived of it. His loss is partly made up by the keenness of his other senses.

Hearing

In a parlor were three girls. One was playing the piano, the other two were talking. Suddenly a strong gale came in through the open window and knocked over a flower pot. A crash was heard. This may illustrate the different kinds of sound which may strike the ear drum. The first, that of playing the piano, may be called music, because music may be called rhythmical sound which is pleasing in pitch and key. The second, speaking, is unrhythmical sound, which may vary in pitch and tone. The noise produced by the crashing of the flower pot is still another illustration of sound.

Helen Keller can perceive music by touching her fingers to the instrument being played, showing that it is possible to receive vibrations through the nerves of the fingers as well as through the ear drum.

Experiments have proven that one may perceive very accurately through the ear drum alone. After a deal of experience, a person accustomed to the sound of a train whistle can recognize the whistle of any train at a great distance and can estimate that distance by the degree of intensity of sound. This is aided to a great extent by movement. If we do not hear distinctly we will invariably move our body into a position where we may hear better. Watch a person trying to locate a sound. Does he not move his head and body so that he may measure sound in various ways and locate it?

This sense of hearing has a very important place in our education, pleasure, and association with other people. We are able to converse quickly, to listen to lectures, music, etc. By the ear we are inspired to read and study, and in other ways to develop our mental faculties. We may say hearing is the most important sense in the social world, for even though one may be blind, if he can hear and speak he may gain a great deal from people with whom he comes in contact. A deaf and dumb person does not know what other people are talking about, and cannot join the happy association of conversing with them.

Smell

One student writes: "In passing through the corridor of the normal school, I often inhaled agreeable odors of food that were being cooked. It was not until further approach to the kitchen of the

dormitory that I was able however to distinguish what it was that was being prepared.”

Smell is the sense by which we perceive odors. Odors are classified as being agreeable and disagreeable. It is impossible to state how many qualities of smell the nose can distinguish. Odors are results of vapors or gases present in the atmosphere. When we open an orange we inhale the gas which is given off, and can very easily tell what it is. In some animals, and even people, the sense of smell is very acute, while in others it is not as keen. It may be highly developed, especially where there is a deficiency in other senses.

A girl working in a drug store said that at first the odors gave her a headache. Now she has become so accustomed to them that she does not mind their strong smell. Therefore the first scent of anything seems always the most acute. We recognize a pineapple by its delicious smell even before we taste it.

The delicacy of this sense is much greater in many of the lower animals than in man. To the animal smelling is believing. Smell to many animals is like sight to us. The sense of odors gives information as to the character of food and drink, and to the purity of the air.

If a man were to enter a room filled with gas, and he were not able to smell it, he would very likely stay in the room long enough to be overcome, or even suffer death, proving that smell is a very important sense. People who have been deprived of it are the only ones who can realize what a great loss it is.

Taste

A piece of sweet chocolate was placed on the tongue of a student who held her nostrils so that no air could be admitted.

Do you think she knew what it was she was tasting? The only impression she got was that a foreign or new substance came in contact with the mucous membrane of her tongue. The quality she perceived by this special sense of taste was that of sweetness. But as soon as she was aided by the sense of smell she could perceive that it was chocolate, and not peppermint.

So long as the chocolate remained solid, no matter how bitter a brand of chocolate it might be, it would be impossible to perceive the taste until it was allowed to melt. After any substance becomes a liquid its taste may easily be distinguished. The qualities in taste are

bitter, sweet, salt and sour. Moving the object from one part of the mouth to another also aids in perceiving the taste. It determines the grade of food as well as the taste of it. By moving a piece of apple from one part of the mouth to another we may feel its crispness.

The different parts of the tongue respond to different tastes. The sides of the tongue are particularly responsive to sour, the tip of the tongue to sweet and to salt, and the center is generally senseless to taste. Some substances, such as saccharine, produce one taste in one part of the mouth and a different taste in another part. This crystalline substance, which is a form of uncrystallized sugar, is sweet to the tip, and bitter to the base of the tongue. All these facts are easy to explain, provided there are taste cells which always respond, with a special sensation.

Organic Sensations

To the sensations mentioned so far must be added those which come from the internal organs of the body. Hunger, thirst, and nausea are sensations perceived from the stomach. From the heart, lungs and other organs come numerous sensations which play an important part in making up the feeling tone of our lives.

Mental Factors in Perception

There are other factors which aid perception, besides the sensory and motor factors just discussed. We will try to show by the following illustrations what these factors are:

Knowledge

A little girl who had been away visiting returned home and said, "Oh, mother, when I saw the electric car, I knew what it was right off. No one told me." How did this little girl, who had never seen an electric car, recognize it? Her parents had given her a description of it. With this knowledge she was able to recognize it instantly.

Memory

A little child of three, although told repeatedly not to touch the hot stove, did so, and burned his fingers. Whenever he went near the stove after that he always said, "No touch, burn baby's fingers."

He remembered his past experience, and was able through this memory to make his perception more accurate than it could have been under other circumstances.

Habit

One day, a class of normal school students were confronted for an instant with a card on which were found many of the letters found in the word Fitchburg. They were printed in the following order: Fetchbhurg. Glancing at it quickly, nearly all of the pupils called it Fitchburg. How was this to be accounted for? Without a doubt, every pupil knew that those letters did not spell Fitchburg. The only way it can be accounted for is that because the pupils had given a word this name, several times, which had the same general appearance. Through repetition, it had become a habit and was finally perceived without any thinking.

Conceptions

One day the normal school class observed a third grade geography lesson on Havana, Cuba. It was a review lesson and the children were questioned about the Columbia Cathedral. They had been told about the tablet on which was written a memorial to Columbus. When a little boy was asked what interesting thing this cathedral contained, he said, "a pill." The child's only knowledge or conception of a tablet was a pill. If he had had more knowledge on the subject his perception would have been more accurate.

Imagination

As the girls left the observation class, Mary Brown and her friend became engaged in an interesting conversation. "Oh, Louise, the strangest thing occurred. I received a letter from cousin Edith a week ago. She told me that she had purchased a new party dress while in New York. In a later letter, I asked her to describe it to me, but she refused, saying that she would show it to me when I called at her house. Immediately I began to imagine the color and make of the dress. To my surprise, when I beheld the dress, I found that my imagination had enabled me to picture it almost exactly."

Inference

During the next recitation the fire gong sounded. All of the pupils immediately inferred that this was a fire drill, and passed out of the building quietly. By drawing such an inference quick perceptions were obtained. If no inferences were drawn the fire drill would have failed in its purpose.

Association

About an hour after Mary reached home, she decided to have ginger bread and whipped cream for supper. She soon had the ginger bread in the oven. About fifteen minutes later when she opened the oven door, she found much to her dismay that her ginger bread had failed to rise. Her mother asked her which dish she got the soda out of. Mary said, "the blue dish." She was then told that she had put in cream of tartar instead of soda. Both the cream of tartar and the soda looked alike and Mary could not tell the difference. Her mother knew the difference because she associated the blue dish with the cream of tartar and the white dish with the soda. If Mary had associated her ideas of the cream of tartar with some definite thing, she would have had a correct perception of it and would not have spoiled the ginger bread.

Classification and Identification

These mental factors are in turn aided by certain processes which make our perception even more perfect. One of the normal instructors met a girl on the street one day and knew her to be a normal student. A few days later he met the same girl and recognized her as Miss Smith. The first time he classified her, and the second time he identified her.

Assimilation and Discrimination

"Oh dear, some one has put all of our rubbers in one heap. How will we ever find our own?" This was what I heard when I went into the cloak room. Eventually however, everyone found his own rubbers. How was this done? I suppose they all found theirs as I found mine. I had certain fixed ideas of how my own rubbers looked. I knew that they had low heels, that they had a rolled edge, that they were new, and I knew the size. By the process

of assimilation, I gathered all these ideas together and finally recognized my own rubbers. If I picked up a rubber which did not belong to me, I would know it was not mine because it had high heels or because of some other difference. That is how I discriminated mine from the others. My perception in this case was aided by the processes of discrimination and assimilation.

Summary

The above illustrations and examples show how imperfect our perceptions would be if they were not aided by our mental factors, namely, knowledge, imagination, memory, habit, conception, inference and association.

We also see how much stronger, clearer and more complete our perceptions are when the mental factors are aided by the processes of classification, identification, assimilation, and discrimination.

Illusions

Some of our classmates were playing tennis. One stood waiting to receive the ball. She raised her racket and to the surprise of her companions ran forward and then stopped in the center of the court, looking surprised. The ball she was running for was still in the hand of the girl on the other side of the net. She had mistaken a sparrow for the ball. "That was an illusion," they told her. She had had a false perception, as was evident, and a false perception is an illusion.

If we look up "illusion" in our pocket dictionaries, we may find "hallucination" as a synonym, but they are not synonymous.

Hallucination

A business man who frequently had telephone calls at night, sprang out of bed one night, and shouted, "Hello," into the telephone which had not rung, and was surprised to hear central asking for a number. His room-mate told him that there had been no call. There was no foundation for this mistake, as in the case of the bird, hence it was an hallucination. Disordered minds frequently form hallucinations.

Causes of Illusions

A man especially interested in birds, took his camera into a meadow and awaited the appearance of some birds, that had just flown into a clump of bushes. Soon a brown object flew up from the bushes and as he tried to focus his camera on it, he discovered that it was merely a dried leaf. Expectation caused this illusion. The man expected to see the birds fly from the bushes, and the brown object moving in a similar way deceived him.

One spring, many beautiful flowers were sent to a girl suffering from a nervous breakdown. Her windows were open, and the gentle breeze caused the flowers to sway to and fro. She noticed them and thought that they were faces of friends nodding to her. This was due to the disordered condition of her mind. Physical conditions cause illusions.

A member of our class tried on a pair of glasses which were thicker on one side of the lens than the other. She then tried to pick a small object quickly from the table, and later from the floor. She placed her hand about ten inches from the object, and then with another movement succeeded in obtaining it. The result was the same when she tried to touch a chalk mark quickly with a piece of chalk; her mark would be at one side of the real mark. The longer she tried, the nearer she came to the real object. The reason for this was that light always travels in a straight line and the uneven thickness of the glasses reflected the rays so that the objects appeared at one side of their true position. In correcting this illusion she reached to one side of where the object appeared to be, and when she took off the glasses, recency of habit caused her still to make the correction, thus reaching the other side of the object. How many times have you looked into the edge of a mirror and seen yourself with three eyes or two noses? The reason is that you saw a reflection in the bevelled edge of the glass, and another in the mirror itself. A baby not used to a mirror will reach behind it, expecting to find another baby there. External conditions cause these illusions.

On the first of April a child received a piece of candy. Biting through the candy she found it stuffed with cotton. Because the appearance was favorable she inferred that the candy would taste good. How often inference causes illusions.

We have seen that illusions may be caused by expectation, habit, physical conditions, external conditions and inferences.

Senses Concerned with Illusions

A class mate tells me that her small brother once dropped a piece of ice down her back, making her think for a few seconds, that she was burned. The stimulus was so strong that an illusion of touch resulted. A girl arriving home after a nature walk declared that a pin was pricking her arm, a burdock was picked from her sleeve, and the pricking ceased.

A story is told of a fraternity boy who awoke one night, and to his horror saw what he thought to be his roommate hanging from the chandelier. When he turned on the light he found only a dress suit. It was an optical illusion that made him mistake the suit for his friend. Illusions of this kind are very common.

One windy night one of our class mates sat in her room and called out "Come in." No one had knocked at the door but the wind had rattled the window. A boy, whose name is Chester, thought his father called him, and answered, only to find that his father was telephoning and had said, "Yes, sir." These are illusions of hearing.

A girl was blindfolded and had some hot water and pepper put on her tongue, she was asked what it was and promptly answered, "Wintergreen." The slight resemblance between the two caused the illusion of taste.

Did you ever hear any one say "I smell smoke," and then go in search of the fire, when really the odor came from something near at hand? This is an olfactory illusion, or one of smell.

Space Perception

Space perception is the ability to localize objects and sounds, to judge size and form, and to estimate distances, through the aid of the senses and certain mental factors. All the senses, with the exception of taste, have been found to play some part in space perception. These senses are, namely: sight, hearing, touch and smell.

Sight

The normal students, knowing the directions from the building, are now able to point out and give the directions of several places

when asked about them. When these places and their surroundings were new to the students, they were not able to do this. They have used their power of sight in the perception of these new objects and their direction.

A bird is seen many feet away. Approximately, with the aid of facts already stored up in our minds, we are able to perceive the exact distance between ourselves and the bird. On the other hand, if our perception had been made through the sense of hearing alone, we would only have known whether it was quite a distance away. Our sense of sight and hearing let us know quite accurately where the bird was.

One of the members of the class, who lives near an observatory says that she can tell whether the people in the observatory are children or adults by their size. She knows what a child looks like at that distance, and so uses her knowledge in her discrimination. Magnitude aids in estimating distances and the knowledge of distance aids in finding magnitudes.

Therefore, sight is the most important sense in space perception, and it is the most accurate sense. If we perceive space through touch or any of the other senses and we are in doubt about our conclusions, we generally refer the specific case to sight and accept it as our final authority. With the knowledge of direction we may perceive with the eye, almost correct locations of places.

Hearing

A person was blindfolded and told to point to, as nearly as possible, the exact location of a sound. The materials used in making the sounds were an empty ink well and a pencil. It was found that sounds could be located correctly, in most cases, when made on either side of the ear, but when the sound was directly in front or in back, the subject could not tell accurately at all.

There are three different planes about the ear. The first plane passes at the side of the ear. The second plane passes in front of the ear and the third plane passes above the ear.

The above examples prove that sound vibrations in the first plane are more distinct than those in the other planes. This may also explain why people turn their heads to either side, in order to hear better.

If we are crossing the street and hear the honk of an automobile we can tell from which direction it is coming, and by using our sense of sight we confirm what we have heard, and act accordingly. Therefore, hearing and sight together give us more accurate perceptions of space, and the two together save time.

Touch

An experiment was tried by touching the skin with a wire hairpin. First the points were placed together and then gradually separated. The person was unable to tell the two exact places touched until they were quite a distance apart.

Several persons were touched with a pencil point on their hands, arms, faces and necks. The hands could locate the places touched more accurately, and the right hand did even better than the left. The places touched on the neck were not located accurately. This experiment proves that all parts of the skin do not produce the same sensations, or in other words, the same qualities.

These experiments prove that we do not perceive accurately by touch unless aided by sight.

Smell

If a hunter wishes to go very near to a deer he must go against the wind. If he should go with the wind, the deer would know that he was coming and get out of his way long before he could see the hunter. Thus the deer, as do many other animals, uses his sense of smell in perceiving distance.

The hunter who is out in the forest uses his sense of sight and hearing to find out whether there is a deer near him. He does not use his sense of smell in order to find the deer.

If a person should smell smoke and could not tell by using his sense of sight where it was coming from, he would use his sense of smell to tell him whether it was near or far away. Thus the sense of smell in perceiving distance is used more by animals than by people.

Smell does not play as great a part in space perception as the sense of sight, hearing, and touch,

Conditions Favoring Perception

There are times when a person perceives better than at others under certain favorable conditions. When the physical conditions of an individual are poor, his senses will not be as keen as they otherwise would be, for all the senses are affected by the general health of a person. These facts are proved by the examples given under the following topics:

Health

A teacher used the blackboard for a great deal of her work. A little boy who never had his lesson told the teacher that he could not see the board. Finally it was discovered that he had nearly lost his eyesight, and had not been able for some time to see the board. Thus he was not able to perceive by means of his sight. A certain little girl was very backward in her lessons, and did not appear to be interested in any way. Finally her parents took her to a physician and had her examined. The doctor found that she had adenoids. After removing them she was a different child, and became one, if not the best of the scholars in her class.

If a person eats a banana after having his teeth extracted, he finds that it does not taste as it ordinarily should, but like some unknown substance. This is probably due to whatever was taken before having the teeth extracted, and of course changes one's taste. One student says: "After opening a bottle of medicine I smelled of it, as I usually do, to find out its ingredients, but to my misfortune, I was unable to smell anything because of a bad cold."

Intensity of Stimulus

When the skin becomes extremely cold a warm object placed on it will give a burning sensation. A very cold temperature numbs the skin, and pressure upon it at that time cannot be felt. A cold object feels larger than a hot object, even though the two be equal in size.

The greater the intensity of the stimulus the greater the sensation of touch. The sense of touch is affected by the temperature and intensity of the stimulus.

When a person enters a greenhouse there are usually several fragrant odors, but there is one which prevails over all others, that of the carnation. A strong, fragrant or pungent odor is more quickly perceived than a light odor, and more readily recognized.

One day as I stood on the street waiting for a car, a girl asked me if I saw those two normal students pass by dressed in blue suits. I replied, "No." Then she said, "Did you see that girl go by with that exceedingly bright dress on?" "Yes," was my reply. I began to question myself as to the reason that I did not notice the girls dressed in blue. I found that the sense of sight was greatly affected by the intensity of the stimulus. An exceedingly bright object will attract the attention of one much sooner than a dull object.

Repetition and Frequency

Repetition affects the sense of taste. When food is first taken into the mouth, the sense of taste is very keen. But constant repetition dulls the sense of taste. Frequency of the stimulus tires the nerve endings to such an extent that the sensations are less easily felt.

Frequency also affects the sense of sight, making the person more accurate with the use of that organ. In looking at a picture for the first time we see only the general outline, but on seeing it again we notice the details, and so on until the very minute points of the picture are recognized.

Attention

When a student is studying a lesson in the same room where other students are conversing it will take him much longer to prepare his lesson than it would if he had been alone.

If a person concentrates his mind on any subject he will become acquainted with it more quickly than when his mind is taken up with two or three other things.

Atmospheric Conditions

On a day when the air is very heavy the children are very restless and difficult to control, while on a pleasant day they are usually very quiet. Therefore atmospheric conditions in the room affect pupils and teachers. Children going to school on a day that the air is very heavy often are unable to see the schoolhouse, but can hear the bell.

Development of Perception

Perception plays such an important part in the life of every individual that it should be developed to its fullest extent.

The difference between a child and a man in their ability to perceive is that a child is just beginning to develop his powers of perception, while the man by association and experience has developed his powers to a greater extent, so that he is able to adapt himself to his surroundings.

The Use of Objects as an Aid to Perception

A child was given a block to play with. He looked at it, pounded it, tasted it, and brought every sense into action until he knew it. If the block had been placed in a different position he would have still recognized it as the same block, although its appearance was changed.

Harry, one and one-half years of age, was given a small cart at Christmas time. He had never seen a cart before, but now he had one of his own. The boy's father was very much interested in Psychology and noticed the development of the child's perception. By observation the boy had formed a usual image of the cart, by touch he perceived that it was hard, and by drawing it across the floor, he noticed that a noise was made. Thus through the senses the various characteristics of the cart were perceived. Soon after the child saw one of his little friends pulling a toy. He called it a cart because it looked like his, and was used the same as his toy. The boy formed a general class for carts, having to a certain extent, the characteristics of his own toy. Thus assimilation aids one in perceiving classes of objects.

Later the boy learned that there were many types of vehicles classed as carts. By discrimination he was able to recognize the individual from the class.

Richard, a very small child, was given a kitten to play with. He became very fond of the pet. One day when playing out of doors, he saw a caterpillar crawling along the walk. He ran into the house and said to his mother: "See the pretty kitten I found out there on the walk." He had placed both objects in the same class because he noticed the fur on each and thought they looked alike. After his mother explained the differences between the two objects he was able to recognize the class of caterpillars from the class of kittens. Although the child could classify kittens or caterpillars he would not know the particular general species of kitten or caterpillar. Many times the class name for objects is known, although its individuals of the class cannot be identified.

A boy had just entered school. He knew many words but had not learned to read. He learned words by rote and later was able to recognize them by sight. Soon he was able to think out words for himself because he found some familiar characteristic in the new words. For example the boy knew the word "rat" and was able to make out the word "mat" by recognizing the known phonic and adding it to the first sound.

By assimilation the boy was able to recognize the sound "at" in both words. By discrimination he was able to notice that the first letters were not alike and as he knew the sound of "m" he was able to make the new word.

A little girl was walking with her sister. She stopped and plucked a flower. "See my lovely flower," she said. The sister asked the color of the petals, but the child could not tell. If the child had previously studied the flower and analyzed its parts she would have noticed its color, petals, stem, etc., and would have been able to answer her sister's question.

A man entered a store, tasted some coffee, and immediately stated the grade to which it belonged. His perception of coffee, many years previous, was that of an ordinary person, its pleasing taste. By observation and practice he was able to associate various tastes to special grades of coffee. Special training along that line had made his perceptions strong and accurate.

The children in a certain class were drawing and coloring pictures of toys which were to be placed on a calendar to be taken home. The children noticed the size, shape and color of the toys and were very careful with their work, because they were doing it for a special purpose. Sense discrimination may be improved if it is involved in gaining some specific end or purpose.

There are so many ways by which our perceptions are developed, that it is well for us to choose the most beneficial and accurate aids in order that our general knowledge may be of a helpful nature.

The important aids to the development of perception are these: assimilation, discrimination, association, special training and study, and specific purpose.

Apperception

We have found that only very young children have pure sensations. These sensations leave perceptions and ideas in the mind. When the number becomes great enough we begin to classify them, and each new sensation and idea is classified and connected with something old.

For example, a child has seen a great many square tables. When he sees a round table he groups the new perception with the old and knows that this new object is also a table. This grouping of old ideas with new ideas to gain new perceptions is called apperception.

The relation of the words perception and apperception in form suggest their meaning. Apperception is perception carried further. Perception and apperception are so closely related that it is difficult to tell where one stops and the other begins. The main difference is that in perception the mind gains perceptions through the senses. In apperception the mind is active and by means of attention groups the old ideas so as to form new ones.

It has already been mentioned that if one hand is placed in hot water and the other in cold water and then both are placed in luke warm water, the water feels cold to one and warm to the other, respectively. This is due to the different previous experience of the two hands. The mind acts in the same way. The same sensation or stimulus will produce different results in minds that have had different experiences and masses of ideas.

This is well illustrated by an example taken in a class of normal students. Four students were asked to answer a question. The question was the same to all four, "What was the result of the contest?" The first girl answered, "The Clinton girls won." The second reply was, "The Athletics won the final one." The third replied, "The Overland finished with the best score," while the fourth girl stated, "Miss B— won the first prize." The first girl was captain of the girls' basket ball team. The second was a base ball "fan," and referred to the recent "World's Series." The third one questioned was an ardent automobilist and referred to an endurance test. The fourth girl was interested in elocution and referred to the result of a recent prize-speaking contest. The word "contest" called up different ideas because of different previous experiences.

Two men standing on the street corner observed a friend boarding a street car with a suit case in his hand. "Evidently Jones is going on a vacation," remarked the first. "No, I think he is going to the wash woman's with his clothes. This is Monday, you know," replied the second. The latter had been in the habit of going to the laundry on Monday.

Summary

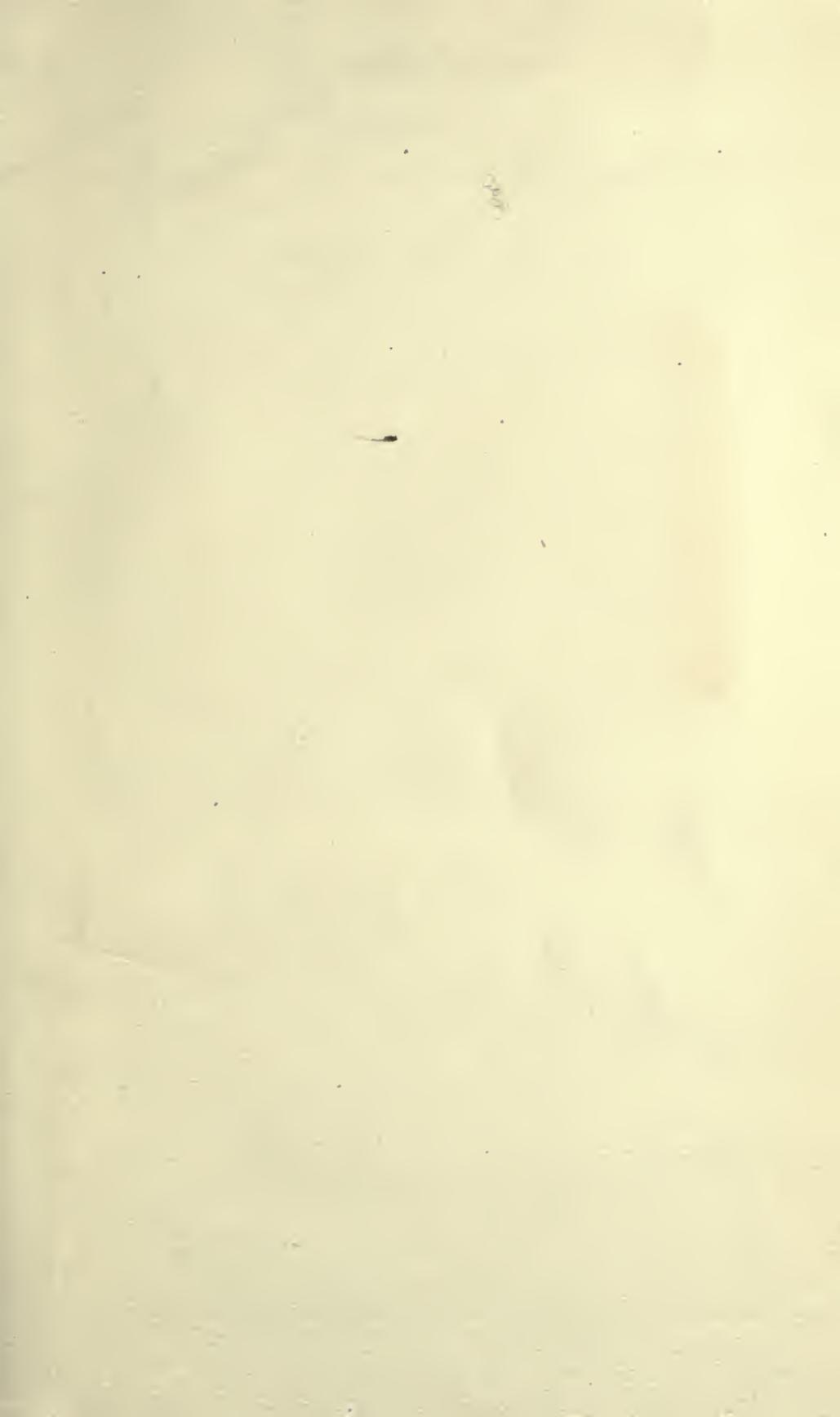
What one will perceive will depend, therefore, on his nature and stock of ideas, or, in other words, his character, habits, memory, education, previous experience and momentary mood.

Apperception, or association of ideas, is of great importance in teaching. It is back of the familiar recommendation, "proceed from the known to the unknown." A good teacher always considers previous experience and the present state of the pupil's mind when preparing a new lesson.

Sometimes, in beginning a new lesson, a teacher asks a great many simple questions which every member of the class is able to answer. This seems a waste of time, but is really necessary to secure the proper state of mind for the new lesson.

Good teaching consists in fitting the stimuli to the child's knowledge for the purpose of adding to it. We must not only start with the known, but also proceed to the unknown as well. To simply elaborate the review is a violation of the laws of apperception that is worse than to give facts that cannot be understood.

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