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Page(s): Page 145, Page 146, Page 147, Page 148, Page 149, Page 150, Page 151, Page 152, Page 153, Page 154, Page 155, Page 156, Page 157

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THE
POPULAR SCIENCE
MONTHLY.

DECEMBER, 1888.

THE PSYCHOLOGY OF DECEPTION.

BY JOSEPH JASTROW, PH. D.,

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THE saying that appearances are deceptive is an inheritance from very ancient times. To Oriental and to Greek philosophers the illusory nature of the knowledge furnished by the senses was a frequent and a fertile theme of contemplation and discussion. The same problem stands open to the psychologist of to-day; but, profiting by the specialization of learning and the advance of technical science, he can give it a more comprehensive as well as a more practical answer. The physiological activities underlying sense-perception are now well understood; the experimental method has extended its domain over the field of mental phenomena; and in every way we have become more expert in addressing our queries to the sphinx, Nature, so as to force a reply. To outline the position of modern psychology with reference to this interesting problem of deception is the object of the present essay.

In a sensation we recognize a primitive element in the acquisition of knowledge. The deprivation of a sense results in a dwarfed and incomplete mental development. This is due, not to the mere sense-impressions that the organ furnishes, but to the perception and co-ordination of these by inferential processes of the higher faculties. It is not the eye of the eagle, but the brain directing the human eye, that gives intellectual supremacy. Physiology recognizes this distinction as one between lower and higher brain-centers. A man may lose his retina, or may have his optic nerve injured, and so be blind in the ordinary sense of the word. He is prevented from acquiring further knowledge by this avenue; but,

unless he become blind in early childhood, he will retain a good memory for visual images, will be able to more or less clearly imagine pictorially the appearances of objects from verbal descriptions, and in the free roamings of his dream fancy will live in a world in which blindness is unknown. On the other hand, cases occur where, owing to the disordering of certain portions of the finely organized cortex of the brain, the patient, though retaining full sight and understanding, is unable to derive any meaning from what he sees. The same group of sensations that suggest to our minds a book, a picture, a face, and all the numerous associations clustering about these, are as unmeaning to him as the symbols of a cipher alphabet. This condition is termed "psychic blindness," and what is there lost is not the power of vision, but of interpreting, of assimilating, of reading the meaning of visual sense-impressions.

In the experiences of daily life we seldom have to do with simple sensations, but with more or less complex inferences from them; and it is just because these inferences go on so constantly and so unconsciously that they are so continually and so persistently overlooked. It has probably happened to the reader that, upon raising a pitcher of water which he was accustomed to find well filled, the vessel has flown up in his hand in a very startling manner. The source of the difficulty was the emptiness of the pitcher. This shows that one unconsciously estimates the force necessary to raise the vessel but only becomes conscious of this train of inference when it happens to lead to conclusions contradictory of the fact. The perception of distance, long thought to be as primitive a factor in cognition as the impression of a color, is likewise the result of complex inferences; and the phenomena of the stereoscope furnish unending illustrations of the variety and complexity of these unconscious reasonings. These, it must be noted, are drawn by all persons alike; but, like the man who was unaware that he had been talking prose all his life until so informed, are not recognized as such until special attention is directed to them.

The simplest type of a deception occurs when such an inference owing to an *unusual disposition of external circumstances*, leads to a conclusion which other and presumably superior testimony shows to be false. A typical case is the observation, described already by Aristotle, that a ball or other round object held between two fingers crossed one over the other, will seem double. Under ordinary circumstances a sensation of contact on the left side of one finger and on the right side of the finger next to it (to the right) could only be produced by the simultaneous application of two bodies. We unconsciously make the same inference when the fingers are crossed and thus fall into error—an error, it is important to observe, which we do not *outgrow* but *antagonize* by

more convincing evidence. Again, the stimulation of the retina is ordinarily due to the impinging upon it of light-waves emanating from an external object. Accordingly, when the retina is disturbed by any exceptional cause, such as a blow or electric shock, we have a sensation of light projected outward into space. In brief, we are creatures of the average; we are adjusted for the most probable event; our organism has acquired the habits impressed upon it by the most frequent repetitions; and this has induced an inherent logical necessity to interpret a new experience by the old, an unfamiliar by the familiar. As Mr. Sully well expresses it, these illusions "depend on the general mental law that when we have to do with the unfrequent, the unimportant and therefore unattended to, and the exceptional, we employ the ordinary, the familiar, and the well known as our standard." Illusion arises when the rule thus applied fails to hold; and whether or not we become cognizant of the illusion depends upon the ease with which the exceptional character of the particular instance can be recognized, or the inference to which it leads be opposed by presumably more reliable evidence.

As our present purpose is to investigate the nature of real deception, of the formation of false beliefs leading to erroneous action, it will be well to note that even such elementary forms of sense-deceptions as those just noted fall under this head. No one allowed the use of his eyes will ever *believe* that the ball held between the crossed fingers is *really* double, but children often think that a spoon half immersed in water is *really* bent. Primitive peoples believed that the moon *really* grew smaller as it rose above the horizon, and the ancients could count sufficiently upon the ignorance of the people to make use of mirrors and other stage devices for revealing the power of the gods. The ability to correct such errors depends solely upon the possession of certain knowledge, or a confidence in the existence of such knowledge.

Still confining our attention to deceptions produced by exceptional external arrangements, let us pass to more complex instances of them. These, as so many of the types of deception, are found in great perfection in conjuring tricks. When ink is turned into water and water into ink; when a duplicate coin or other article is skillfully introduced in place of the one that has disappeared; when two half-dollars are rolled into one; when a box into which you have just placed an article is opened and found to be empty; when the performer drives a nail through his finger, or when a card which you have just assured yourself is the ace of hearts on second view becomes the king of spades—you are deceived because you are unaware that the addition of a chemical will change the color of liquids; that the piece you now see is different from the one you saw a moment ago; that the one half-

dollar is hollow and the other fits into it; that the box has a double bottom; that the nail has been substituted for one that fits around the finger, and that one half of the card is printed on flap which by falling down shows another aspect. All these are technical devices which amuse us by the ingenuity of their construction and provoke about the same kind of mental interest as does a puzzle or an automaton. Ignorance of this technical knowledge or lack of confidence in its existence may convert these devices into *real deceptions* by changing the mental attitude of the spectator. However, the plausibility of such performances depends so much upon their general presentation that they seldom depend for their effectiveness *solely* upon the objective appearances they present. Asking the reader, then, to remember the very great number and ingenuity of such devices, and insisting once more that the only complete safeguard against being deceived by them is the acquisition of the purely technical knowledge that underlies their success, I will cite in detail a trick combining illustrations of several of the principles to be discussed. A number of rings are collected from the audience upon the performer's wand. He takes the rings back to the stage and throws them upon a platter. A pistol is needed, and is handed to the performer from behind the scenes. With conspicuous indifference he hammers the precious trinkets until they fit into the pistol. A chest is hanging on a nail at the side of the stage. The pistol is fired at this chest, which is thereupon taken down and placed upon a table toward the rear of the stage. The chest is unlocked and found to contain a second chest. This is unlocked and contains a third; this a fourth. As the chests emerge they are placed upon the table; and now from the fourth chest there comes a fifth, which the performer carries to the front of the stage and shows to contain bonbons, around each of which is tied one of the rings taken from the audience. The effect is indescribably startling. Now for the real *modus operandi*. In the hand holding the wand are as many brass rings as are to be collected. In walking back to the stage the genuine rings are allowed to slip off the wand and the false rings to take their places. This excites no suspicion, as the walking back to the stage is evidently necessary, and never impresses one as part of the performance. The pistol is not ready upon the stage, but must be gone for, and as the assistant hands the performer the pistol, the latter hands the assistant the true rings. The hammering of the rings is now deliberately undertaken, thus giving the assistant ample time to tie the rings to the bonbons, and, while all attention is concentrated upon the firing of the pistol, the assistant unobtrusively pushes a small table on to the rear of the stage. This table has a small fringe hanging about it, certainly an insignificant detail, but none

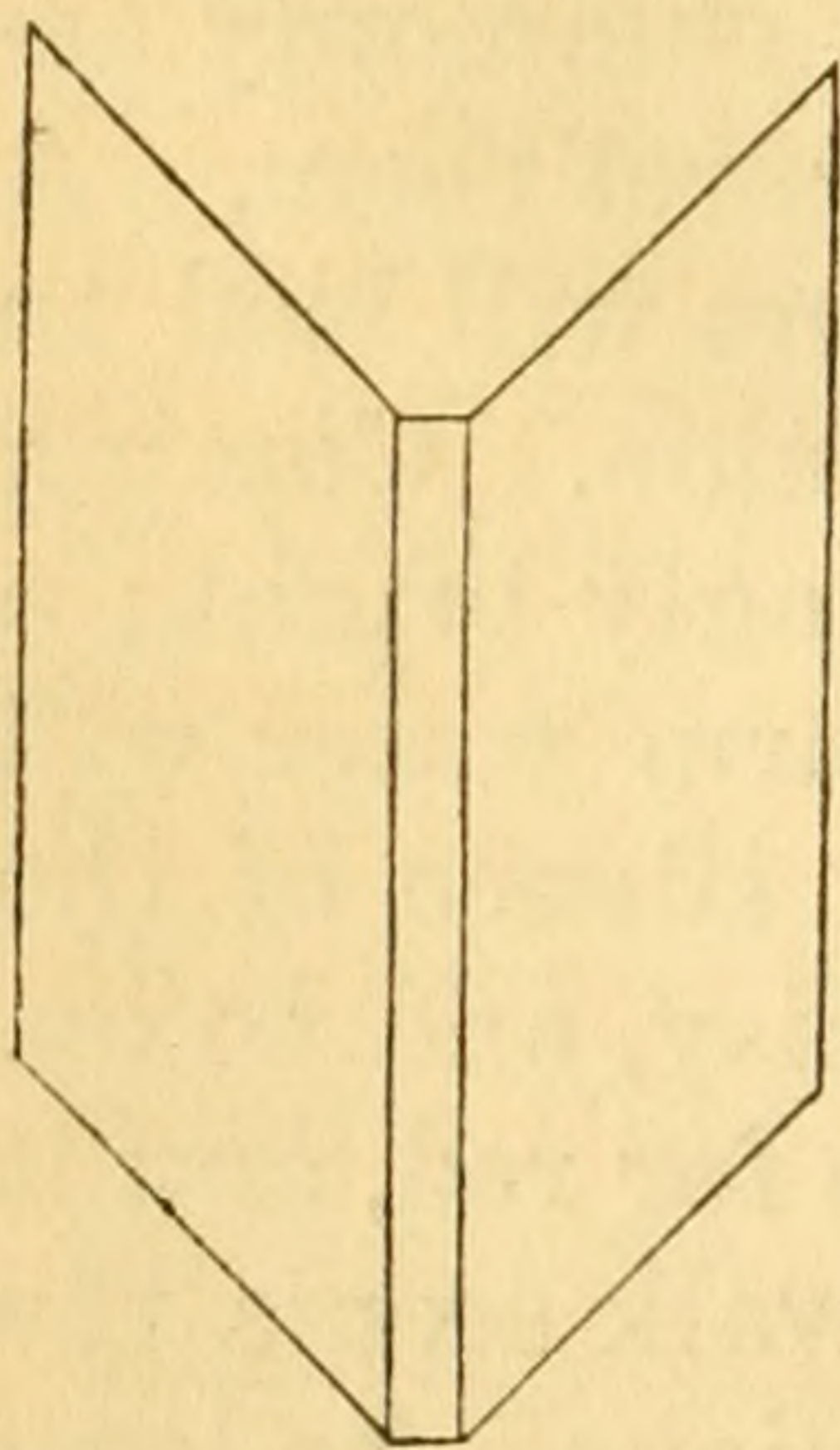
the less worth noting. The chests are now opened, and, after having shown the audience that the second chest comes out of the first, the third out of the second, and so on, he can very readily and quickly draw the last smallest chest from a groove *under* the table and bring it out as though it *had come* out of the next larger chest. This is opened and the trick is done. So thoroughly convinced is the observer by the correctness of his first three inferences that the last box came out of the one before it, that I venture to say this explanation never occurred to one in ten thousand, and that most of the audience would have been willing to affirm on oath that they saw the last box so emerge. The psychology of the process, then, consists in inducing the spectator to draw the natural logical inference, which in this case will be a wrong one.

The more closely the conditions that lead to correct inferences in ordinary experience are imitated, the more successful will be the illusion; and one great principle of conjuring illusions is to *first actually do* that which you *afterward* wish the audience to *believe you have done*. Thus, when coins are caught in mid-air and thrown into a hat, a few are really thrown in; but the others palmed in the hand holding the hat, and allowed to fall in when the other hand makes the appropriate movements. Some of the rings to be mysteriously linked together are given to the audience for examination and found to contain no opening, the audience at once concluding that the rings which the performer retains are precisely like them. In general, to gain the confidence of the person to be deceived is the first step alike in sleight of hand and in criminal fraud.

As we turn from the objective to the subjective conditions of deception, we enter the true domain of psychology; for the most scientific deceiver is he who employs least external aids, and counts most upon his power of captivating the intellect. Just as we interpret appearances by the forms they most commonly assume, so it is our average normal selves that interpret them. A variation in our sense-organs or our judging powers will lead to illusion. The effects of contrast are an apt illustration. Coming from a dark to a light room, the light seems glaringly bright; a hand immersed in hot water and then in lukewarm water will feel the latter as cold; when accustomed to the silence of the country the bustle of the city seems unusually noisy, and so on. Fatigue produces similar results. Fatigue the eye for red, and it sees white light as green; the last mile of a long walk seems the longest; the last hour of a long wait, the most tedious. So long as we recognize our unusual condition and allow for its effects, we are not deceived; but under the influence of emotion this power is easily lost. The delusions of the insane are often misinterpretations of abnormal sensations under the guidance of a dominant

idea. One patient, with abnormal skin-sensibility, believes he is made of glass or stone; another, for similar reasons, believes he has an invisible persecutor constantly at his side. But for the present we will assume that the judging powers do not vary beyond their normal limits.

In every perception two factors contribute to the result. The one is the nature of the object perceived, the other that of the percipient. The effect of the first factor is well recognized, the importance of the second factor is more apt to be overlooked. The sunset is a different experience to the artist from what it is to the farmer; a piece of rocky scenery is viewed with quite different interests by the artist and the geologist. The things that were attractive in childhood have lost their charm, and what was then considered stupid, if noticed at all, has become a cherished hobby. Even from day to day our interests change with our moods, and our views of things brighten with the weather or the good behavior of our digestive organs. Not only will the nature of the impression change with the interests of the observer, but even more, *whether or not* an object will be *perceived at all* will depend upon the same cause. The naturalist sees what the stroller entirely overlooks; the sailor detects a ship in the distant horizon where the landsman sees nothing; and this is not because the naturalist and the sailor have keener vision, but because they know what to look for. Whenever an impression is vague or an observation made under poor conditions, this subjective element comes to the front. The vague and changing outline of a cloud is "almost in shape of a camel," or "like a weasel," or "like a whale." Darkness, fear, any strong emotion, any difficulty in perception show the same thing. "La nuit tous les chats sont gris." Expectation, or expectant attention, is doubtless the most influential of all such factors. When awaiting a friend, any indistinct noise is readily converted into the rumbling of carriage-wheels; the mother hears in every sound the cry of her sick child. After viewing an object through a magnifying-glass, we detect details with the naked eye which escaped our vision before. When the answer in the book happens to be wrong, nine tenths of the students will be able to get it none the less. We can regard the accompanying outline either as a book with the back protruding toward us or receding from us.



Everywhere we perceive what we expect to perceive, in the perception of which we have an interest. The process that we term sensation, the evidence of the senses, is dual in character, and depends upon the eyes that see as well as upon the things that are seen.

Accordingly, the conjurer whose object it is to deceive does so by creating an interest in some unimportant detail, while he is performing the real trick before your eyes without your noticing it. He looks intently at his extended right hand, involuntarily carrying your eyes to the same spot while he is doing the trick with the unobserved left hand. The conjuror's wand is extremely serviceable in directing the spectator's attention to the place where the performer desires to have it.* So, again, when engrossed in work, we are oblivious to the knock at the door or the ringing of the dinner-bell. An absent-minded person is one so entirely "present-minded" to one train of thought that other impressions are unperceived. The pickpocket is psychologist enough to know that at the depot, the theatre, or wherever one's attention is sharply focused in one direction, is his best opportunity for carrying away your watch. It is in the negative field of attention that deception effects its purpose. Houdin gives it as one of his rules never to announce beforehand the nature of the effect which you intend to produce, so that the spectator may not know where to fix his attention. He also tells us that whenever you count "one, two, three," as preliminary to the disappearance of an object, the real vanishing must take place before you say "three," for the audience have their attention fixed upon "three," and whatever is done at "one" or "two" entirely escapes their notice. The "patter" or setting of a trick is often the real art about it, because it directs or rather misdirects the attention. When performing before the Arabs, Houdin produced an astounding effect by a very simple trick. Under ordinary circumstances the trick was announced as the changing of the weight of a chest, making it heavy or light at will. The mechanism was simply the attaching and severing of a connection with an electro-magnet. To impress the Arabs, he announced that he could take a man's strength away and restore it again at a moment's notice. At one time the man could raise the chest with ease, but the next he would not have power enough to move it an inch. The trick succeeded as usual, but was changed from conjuring to sorcery—the Arabs declaring him in league with the devil.

The art of misleading the attention is recognized as *the* point of good conjuring, the analogues of the diplomacy that makes the object of language to conceal thought; and a host of appropriate illustrations might be derived from this field. The little flour-

* "Again, a mere tap with the wand on any spot, at the same time looking at it attentively, will infallibly draw the eyes of a whole company in the same direction"—*Houdin*. Robert Houdin, often termed "the king of the conjurers," was a man of remarkable ingenuity and insight. His autobiography is throughout interesting and psychologically valuable. His conjuring precepts abound in points of importance to the psychologist, and a reference to his writings will well repay the reader.

ishes, tossing an object up in the air, "ruffling" or "springing" a pack of cards, a little joke—all these create a favorable opportunity, a "temp," when the attention is diverted and the other hand can reach behind the table or into the "pocket." These points would lead us too far, and perhaps it will suffice to analyze the points of interest in the "chest and ring trick" described above. Here the moment for the exchange of the rings is the one which is least suggestive of being a part of the performance, and therefore least attended to. The preparations for the shooting absorb the attention and allow the introduction of the small table at the rear to pass unnoticed; while the series of drawings of the chests so entirely prepare the spectator for the appearance of the last chest from the one preceding, that he actually sees the chest emerge from where it never was.

There is, however, one important factor lacking in the conjurer's performance to completely illustrate the psychology of deception. It is that the mental attitude of the observer is too definite. He knows that he is being deceived by skill and adroitness, and rather enjoys it the more he is deceived. He has nothing at stake, and his mind rests easy without any detailed or complete explanation of how it was done. Quite different must have been the feeling of the spectator before the necromancer of old, in whose performance was seen the evidence of secret powers that could at a moment's notice be turned against any one to take away good luck, bring on disease, or even transform one into a beast. When magic spells and wonder-working potions were believed in, what we would now speak of as a trick was surrounded with a halo of awe and mystery by the sympathetic attitude of the spectators. The most complete parallel to this in modern times is presented by the physical phenomena of spiritualism.* This is a perfect mine for illustrations of the psychology of deception, and it is this that I will consider as the final topic in this cursory view.

The first general principle to be borne in mind is that the medium performs to spectators *in doubt* as to the interpretation to be placed upon what they see, or more or less determined to see in everything the evidence of the supernatural. This mental attitude on the part of the spectators is *worth more to the medium* than any facts in the performance. The difference between such a presentation and one addressed to persons cognizant of the conjuring element in the performance, and bent upon its detection,

* For the present purpose it is necessary to select only such spiritualistic phenomena as have conclusively been proved to be producible by trickery, and to have been accepted as evidences of spiritual agency, without disposing of the problems of spiritualism in the least. Personally, I believe all the phenomena explicable by the same physical and psychological principles that have divested so many of them of their mystery.

can not be exaggerated. It is this that makes all the difference between the *séance* swarming with miracles, any one of which completely revolutionizes the principles of science, and the tedious dreariness of a blank sitting varied only by childish utterances and amateurish sleight of hand. Scientific observers often report that the very same phenomena that were utterly beyond suspicion in the eyes of believers, are to unprejudiced eyes so apparent "that there was really no need of any elaborate method of investigation"; close observation was all that was required. Again, Mr. Davies, of the English Society for Psychical Research, has experimentally shown that, of equally good observers, the one who is informed of the general *modus operandi* by which such a phenomenon as "slate-writing" is produced, will make much less of a marvel of it than one who is left in doubt in this regard.

With these all-powerful magicians, an expected result, and the willingness to credit a marvel clearly in mind, let us proceed from those instances in which they have least effect up to the point where they form the chief factor. First come a host of conjuring tricks performed on the stage in slightly modified forms, but which are presented as spiritualistic. So simple a trick as scratching a name on one's hand with a clean pen dipped in water, and then rubbing the part with the ashes of a bit of paper containing the name, thus causing the ashes to cling to the letters formed on the hand and reveal the mystic name, has been offered as a proof of spirit agency. Whenever an article disappears or rapidly changes its place, the spiritualist is apt to see the workings of hidden spirits; and over and over again have the performances of professional conjurers been declared to be spiritual in origin in spite of all protest from the conjurers themselves. Here everything depends upon the possession of certain technical knowledge; judging without such knowledge is apt to be mere prejudice. Another very large class of phenomena consists of those in which the performer is placed in a position apparently inconsistent with his taking any active part in the production of the phenomena—rope-tying tests, cabinet *séances*, the appearance of a "spirit-hand" from behind a screen, locking the performer in a cage, sewing him in a bag, and so on. The psychologist has very little interest in these; their solution depends upon the skill with which knots can be picked, locks unfastened, and the other devices by which security can be simulated. The chief interest in such performances is the historical one, for these have done perhaps more than anything else to convince believers of the truth of spiritualism. Here, where everything depends upon the security of the fastenings (for once free, the medium can produce messages from the spirit-land limited only by his ingenuity and boldness), it might be supposed that all possible precautions had been taken against undoing

them; while, as a matter of fact, the laxity of most investigators in this regard is well known. These performances deceive because people overlook the technical acquisitions needed to pronounce upon the possibility or impossibility of a fastening being undone and apparently restored without detection. If manufacturers of safes were equally credulous, and gave equally little time to the study of the security of locks, "a safe" would be an ironical expression indeed.

Passing next to the most interesting of spiritual manifestations, those in which self-deception comes to the foreground, I need hardly dwell at length upon the tilting of tables, the production of raps by movements of which the sitters are unconscious; for these have been so often and so ably presented that they must now be well understood. Suffice it to say that it has been objectively proved that it is almost impossible not to give some indication of one's thoughts when put upon the strain; and that, when excited, these indications may be palpably plain and yet remain unperceived by the individual who gives them. The extreme subtlety of these indications is met by the unusual skill of the professional "mind-reader," who takes his cue from indications which his subject is "absolutely confident he did not give." The assurance of sitters that *they know* they did not move the table is equally valueless, and here nothing but objective tests will suffice. The most wholesome lesson to be derived from the study of these phenomena is the proof that not all our intentions and actions are under the control of consciousness, and that, under emotional or other excitement, the value of the testimony of our consciousness is very much weakened. Again, it is almost impossible to realize the difficulty of accurately describing a phenomenon lying outside the common range of observation. Not alone that the knowledge necessary to pronounce such and such phenomenon impossible of performance by conjuring methods is absent, but with due modesty and most sincere intentions the readiness with which the observing powers and the memory play one false is overlooked. In the investigation of Mr. Davies, above referred to, the sitters prepared accounts of the "slate-writing" manifestations they had witnessed, and described marvels that they had not seen but which they were convinced they had seen—writing on slates utterly inaccessible by Mr. Davies, and upon slates which they had noticed a moment before were clean. The witnesses are honest; how do these mistakes arise? Simply a detail omitted here, an event out of place there, an unconscious insertion in one place, an undue importance to a certain point in another place—nothing of which any one need feel ashamed; something which it requires unusual training and a natural bent to avoid. The mistake lies in not recognizing our liability to such error.

If, however, the spectator is once convinced that he has evidence of the supernatural, he soon sees it in every accident and incident of the performance. Not only that he overlooks natural physical explanations, but he is led to create marvels by the very ardor of his sincerity. At a materializing *séance* the believer recognizes a dear friend in a carelessly arranged drapery seen in a dim light. Conclusive evidence of the subjective character of such perceptions is furnished by the fact that the same appearance is frequently recognized by different sitters as the spiritual counterpart of entirely different and totally dissimilar persons. A "spirit-photograph" is declared to be the precise image of entirely unlike individuals. Each one sees what he expects to see, what appeals to his interests the most intensely. What the unprejudiced observer recognizes as the flimsy, disguised form of the medium, the believer transforms into the object of his thoughts and longings. Only let the form be vague enough, the light dim enough, the emotions upon a sufficient strain, and that part of perception in which the external image is deficient will be readily supplied by the subjective tendencies of each individual. In the presence of such a mental attitude the possibilities of deception are endless; the performer grows bolder as his victim dispenses with tests, and we get scientific proofs of the fourth dimension of space, the possibility of matter passing through matter, the laws of gravity entirely set aside. And the identically same performance that would convince Prof. Zoellner of the reality of the fourth dimension of space, would show the spiritualist the workings of his deceased friends, would convince the theosophist of the spiritual flight of the performer's astral body, and (it may not be irrelevant to add) it is the same type of performance that served and yet serves to terrify the minds of uncultivated and superstitious savages. All depend not upon what is done, but upon the mind of the spectator. Little by little, through neglect, through mal-observation and lapses of memory, through an unwillingness to mistrust the reports of an excited consciousness, caution is abandoned, credulity enters, until mediums are actually seen flying out of one window and into another, until the wildest and most far-fetched fantastic explanation is preferred above a simple one; until the bounds of the normal are passed, real hallucinations set in, conduct becomes irrational, and a state not distinguishable from insanity ensues. If this seems improbable, turn back to the records of witchcraft persecutions and read upon what trifling and wholly imaginary evidence thousands of innocent lives were sacrificed; and this not by ignorant, bloodthirsty men, but by earnest, by eminent, by religious leaders. A child is taken sick, is remembered to have been fondled by an old woman; therefore the woman has put the child under a spell and must be

burned. A man sees an old woman in the woods, and, on turning about, the old woman is gone and a hare flies across his track; he concludes that she turned herself into a hare, and the witch test is applied. When the personal devil was believed in, he was daily seen clothed in the garments that imagination had given him, and engaged in mischievous actions of all kinds. When witchery was the dominant superstition, all things gave evidence of that. With the doctrines of modern spiritualism to be supported, the number of mediums and manifestations will be correspondingly abundant. Create a belief in the theory, and the facts will create themselves.

In the production of this state of mind a factor as yet unmentioned plays a leading rôle: it is the power of *mental contagion*. Error, like truth, flourishes in crowds. At the hearth of sympathy each finds a home. The fanatical lead, the saner follow. When a person of nervous temperament, not strongly independent in thought and action, enters a spiritualistic circle, where he is constantly surrounded by confident believers, all eager to have him share their sacred visions and profound revelations, where the atmosphere is replete with miracles and every chair and table may at any instant be transformed into a proof of the supernatural, is it strange that he soon becomes one of them?—hesitatingly at first, and perhaps yet restorable to his former modes of thought by the fresh air of another and more steadfast mental intercourse, but more and more certainly and ardently convinced the longer he breathes the *séance* atmosphere. No form of contagion is so insidious in its onset, so difficult to check in its advance, so certain to leave germs that may at any moment reveal their pernicious power, as a mental contagion—the contagion of fear, of panic, of fanaticism, of lawlessness, of superstition. The story of the witchcraft persecutions, were there no similar records to deface the pages of history, would suffice as a standing illustration of the overwhelming power of psychic contagion. To fully illustrate its importance in the production of deception would require an essay in itself. It enters at every stage of the process and in every type of illusion. It has least effect when deception is carried on by external arrangements, by skillful counterfeits of logical inferences; its power is greatest where the subjective factor in deception is greatest, more particularly in such forms of deception as have been last described.

In this review of the types of deception, I have made no mention of such devices as the gaining of one's confidence for selfish ends, preying upon ignorance, upon fear, acting the friend while at heart the enemy, planned connivance and skillful plotting, together with the whole outfit of insincerity, villainy, and crime. It is not that these are without interest or are unrelated to the

many types of deception described, but that they are too complicated and varied to be capable of rigid analysis: the moment deception becomes conscious, there must be acting and subterfuge to maintain the appearance of sincerity. If we add this great class of deceptions to those already enumerated, we may perhaps realize how vast is its domain, and what a long, what a sad chapter would be necessary to contain the history of human error.

Ethics is so closely related to psychology—right knowing to right doing—that a brief “*hæc fabula docet*” by way of summary may not be out of place. We find, first, a class of sense-deceptions which are due to the nature of sense-organs, and deceive only so long as their true nature remains unknown. These are neither pernicious nor difficult to correct. Next come a class of deceptions that deceive because we are ignorant of the possibilities of conjuring and pronounce upon the possibility or impossibility of a certain explanation in advance of complete knowledge; of this I have already said enough. But most dangerous and insidious are the deceptions in which self-deception plays the leading rôle. The only safeguard here is a preventive: the thorough infusion of sound habits of thought, a full recognition of the conditions under which the testimony of consciousness becomes doubtful, an appreciation of the true value of objective scientific evidence, and an inoculation against the evils of contagion by an independent, unprejudiced logical schooling. When once these evils of self-deception, fed by the fire of contagion and emotional excitement have spread, reason has little control. As Prof. Tyndall tells us, such “victims like to believe, and they do not like to be undeceived. Science is perfectly powerless in the presence of this frame of mind It [science] keeps down the weed of superstition, not by logic, but by slowly rendering the mental soil unfit for cultivation.” With the spread of education, with the growth of the capacity to profit by the experiences of others, with the recognition of the technical requisites that alone qualify one for a judgment in such matters, with a knowledge of the possibilities of deception and of the psychological processes by which error is propagated, the soil upon which spiritualism and kindred delusions can flourish will be rendered unfit.

THE French Academy of Sciences recently had a discussion about the “Canals” of Mars. A paper by M. Fizeau remarked upon the resemblance between some drawings of these objects and M. Nordenskiöld’s view of the great Icelandic glacial crevasse in Greenland as indicating that the whole surface of Mars is covered, down to the equator, with a glacial ice-cap. M. Janssen thought that they were rather crackings resulting from the advanced planetary age of Mars, with excessive cooling and absorption of the oceans and atmosphere, or crevasses in the rocky crust corresponding with the furrows of the moon.

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[Begin Page: Page 145]

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THE PSYCHOLOGY OF DECEPTION".

By JOSEPH JASTROW, Ph.D.,

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THE saying that appearances are deceptive is an inheritance from very ancient times. To Oriental and to Greek philosophers the illusory nature of the knowledge furnished by the senses was a frequent and a fertile theme of contemplation and discussion. The same problem stands open to the psychologist of to-day; but, profiting by the specialization of learning and the advance of technical science, he can give it a more comprehensive as well as a more practical answer. The physiological activities underlying sense-perception are now well understood ; the experimental method has extended its domain over the field of mental phenomena ; and in every way we have become more expert in addressing our queries to the sphinx, Nature, so as to force a reply. To outline the position of modern psychology with reference to

this interesting problem of deception is the object of the present essay.

In a sensation we recognize a primitive element in the acquisition of knowledge. The deprivation of a sense results in a dwarfed and incomplete mental development. This is due, not to the mere sense-impressions that the organ furnishes, but to the perception and co-ordination of these by inferential processes of the higher faculties. It is not the eye of the eagle, but the brain directing the human eye, that gives intellectual supremacy. Physiology recognizes this distinction as one between lower and higher brain-centers. A man may lose his retina, or may have his optic nerve injured, and so be blind in the ordinary sense of the word. He is prevented from acquiring further knowledge by this avenue ; but,

TOL. XXXIV. — 10

[Begin Page: Page 146]

146 THE POPULAR SCIENCE MONTHLY.

unless he become blind in early childhood, he will retain a good memory for visual images, will be able to more or less clearly imagine pictorially the appearances of objects from verbal descriptions, and in the free roamings of his dream fancy will live in a world in which blindness is unknown. On the other hand, cases occur where, owing to the disordering of certain portions of the

finely organized cortex of the brain, the patient, though retaining full sight and understanding, is unable to derive any meaning from what he sees. The same group of sensations that suggest to our minds a book, a picture, a face, and all the numerous associations clustering about these, are as unmeaning to him as the symbols of a cipher alphabet. This condition is termed "psychic blindness," and what is there lost is not the power of vision, but of interpreting, of assimilating, of reading the meaning of visual sense-impressions.

In the experiences of daily life we seldom have to do with simple sensations, but with more or less complex inferences from them ; and it is just because these inferences go on so constantly and so unconsciously that they are so continually and so persistently overlooked. It has probably happened to the reader that, upon raising a pitcher of water which he was accustomed to find well filled, the vessel has flown up in his hand in a very startling manner. The source of the difficulty was the emptiness of the pitcher. This shows that one unconsciously estimates the force necessary to raise the vessel but only becomes conscious of this train of inference when it happens to lead to conclusions contradictory of the fact. The perception of distance, long thought to be as primitive a factor in cognition as the impression of a color, is likewise the result of complex inferences ; and the phenomena of the stereoscope furnish unending illustrations of the variety and complexity of these unconscious reasonings. These, it must be noted, are drawn by all persons alike ; but, like the man who was unaware that he had been talking prose all his life until so informed, are

not recognized as such until special attention is directed to them.

The simplest type of a deception occurs when such an inference owing to an unusual disposition of external circumstances, leads to a conclusion which other and presumably superior testimony shows to be false. A typical case is the observation, described already by Aristotle, that a ball or other round object held between two fingers crossed one over the other, will seem double. Under ordinary circumstances a sensation of contact on the left side of one finger and on the right side of the finger next to it (to the right) could only be produced by the simultaneous application of two bodies. We unconsciously make the same inference when the fingers are crossed and thus fall into error — an error, it is important to observe, which we do not outgrow but antagonize by

[Begin Page: Page 147]

THE PSYCHOLOGY OF DECEPTION. 147

more convincing evidence. Again, the stimulation of the retina is ordinarily due to the impinging upon it of light-waves emanating from an external object. Accordingly, when the retina is disturbed by any exceptional cause, such as a blow or electric shock, we have a sensation of light projected outward into space. In brief, we are creatures of the average ; we are adjusted for the most probable event ; our organism has acquired the habits impressed upon it by the most frequent repetitions ; and this has

induced an inherent logical necessity to interpret a new experience by the old, an unfamiliar by the familiar. As Mr. Sully well expresses it, these illusions " depend on the general mental law that when we have to do with the unfrequent, the unimportant and therefore unattended to, and the exceptional, we employ the ordinary, the familiar, and the well known as our standard.^' Illusion arises when the rule thus applied fails to hold ; and whether or not we become cognizant of the illusion depends upon the ease with which the exceptional character of the particular instance can be recognized, or the inference to which it leads be opposed by presumably more reliable evidence.

As our present purpose is to investigate the nature of real deception, of the formation of false beliefs leading to erroneous action, it will be well to note that even such elementary forms of sense-deceptions as those just noted fall under this head. No one allowed the use of his eyes will ever believe that the ball held between the crossed fingers is really double, but children often think that a spoon half immersed in water is really bent. Primitive peoples believed that the moon really grew smaller as it rose above the horizon, and the ancients could count sufficiently upon the ignorance of the people to make use of mirrors and other stage devices for revealing the power of the gods. The ability to correct such errors depends solely upon the possession of certain knowledge, or a confidence in the existence of such knowledge.

Still confining our attention to deceptions produced by exceptional external arrangements, let us pass to more complex instances of them. These, as so many of the types of deception, are

found in great perfection in conjuring tricks. When ink is turned into water and water into ink ; when a duplicate coin or other article is skillfully introduced in place of the one that has disappeared ; when two half-dollars are rolled into one ; when a box into which you have just placed an article is opened and found to be empty ; when the performer drives a nail through his finger, or when a card which you have just assured yourself is the ace of hearts on second view becomes the king of spades — you are deceived because you are unaware that the addition of a chemical will change the color of liquids ; that the piece you now see is different from the one you saw a moment ago ; that the one half-

[Begin Page: Page 148]

148 THE POPULAR SCIENCE MONTHLY.

dollar is hollow and the other fits into it; that the box has a double bottom ; that the nail has been substituted for one that fits around the finger, and that one half of the card is printed on flap which by falling down shows another aspect. All these are technical devices which amuse us by the ingenuity of their construction and provoke about the same kind of mental interest as does a puzzle or an automaton. Ignorance of this technical knowledge or lack of confidence in its existence may convert these devices into real deceptions by changing the mental attitude of the spectator. However, the plausibility of such performances depends so much upon their general presentation that

they seldom depend for their effectiveness solely upon the objective appearances they present. Asking the reader, then, to remember the very great number and ingenuity of such devices, and insisting once more that the only complete safeguard against being deceived by them is the acquisition of the purely technical knowledge that underlies their success, I will cite in detail a trick combining illustrations of several of the principles to be discussed. A number of rings are collected from the audience upon the performer's wand. He takes the rings back to the stage and throws them upon a platter. A pistol is needed, and is handed to the performer from behind the scenes. "With conspicuous indifference he hammers the precious trinkets until they fit into the pistol. A chest is hanging on a nail at the side of the stage.

The pistol is fired at this chest, which is thereupon taken down and placed upon a table toward the rear of the stage. The chest is unlocked and found to contain a second chest. This is unlocked and contains a third ; this a fourth. As the chests emerge they are placed upon the table ; and now from the fourth chest there comes a fifth, which the performer carries to the front of the stage and shows to contain bonbons, around each of which is tied one of the rings taken from the audience. The effect is indescribably startling. Now for the real *modus operandi*. In the hand holding the wand are as many brass rings as are to be collected. In walking back to the stage the genuine rings are allowed to slip off the wand and the false rings to take their places. This excites no suspicion, as the walking back to the stage is evidently necessary, and never impresses one as part of the performance. The pistol is not ready upon the stage, but must be gone for, and as

the assistant hands the performer the pistol, the latter hands the assistant the true rings. The hammering of the rings is now deliberately undertaken, thus giving the assistant ample time to tie the rings to the bonbons, and, while all attention is concentrated upon the firing of the pistol, the assistant unobtrusively pushes a small table on to the rear of the stage. This table has a small fringe hanging about it, certainly an insignificant detail, but none

[Begin Page: Page 149]

THE PSYCHOLOGY OF DECEPTION. 149

the less worth noting. The chests are now opened, and, after having shown the audience that the second chest comes out of the first, the third out of the second, and so on, he can very readily and quickly draw the last smallest chest from a groove under the table and bring it out as though it had come out of the next larger chest. This is opened and the trick is done. So thoroughly convinced is the observer by the correctness of his first three inferences that the last box came out of the one before it, that I venture to say this explanation never occurred to one in ten thousand, and that most of the audience would have been willing to affirm on oath that they saw the last box so emerge. The psychology of the process, then, consists in inducing the spectator to draw the natural logical inference, which in this case will be a wrong one.

The more closely the conditions that lead to correct inferences

in ordinary experience are imitated, the more successful will be the illusion ; and one great principle of conjuring illusions is to first actually do that which you afterward wish the audience to believe you have done. Thus, when coins are caught in mid-air and thrown into a hat, a few are really thrown in ; but the others palmed in the hand holding the hat, and allowed to fall in when the other hand makes the appropriate movements. Some of the rings to be mysteriously linked together are given to the audience for examination and found to contain no opening, the audience at once concluding that the rings which the performer retains are precisely like them. In general, to gain the confidence of the person to be deceived is the first step alike in sleight of hand and in criminal fraud.

As we turn from the objective to the subjective conditions of deception, we enter the true domain of psychology ; for the most scientific deceiver is he who employs least external aids, and counts most upon his power of captivating the intellect. Just as we interpret appearances by the forms they most commonly assume, so it is our average normal selves that interpret them. A variation in our sense-organs or our judging powers will lead to illusion. The effects of contrast are an apt illustration. Coming from a dark to a light room, the light seems glaringly bright ; a hand immersed in hot water and then in lukewarm water will feel the latter as cold ; when accustomed to the silence of the country the bustle of the city seems unusually noisy, and so on. Fatigue produces similar results. Fatigue the eye for red, and it sees white light as green ; the last mile of a long walk seems the longest ; the last hour of a long wait, the most tedious. So long

as we recognize our unusual condition and allow for its effects, we are not deceived ; but under the influence of emotion this power is easily lost. The delusions of the insane are often misinterpretations of abnormal sensations under the guidance of a dominant

[Begin Page: Page 150]

150

THE POPULAR SCIENCE MONTHLY.

idea. One patient, with abnormal skin-sensibility, believes he is made of glass or stone ; another, for similar reasons, believes he has an invisible persecutor constantly at his side. But for the present we will assume that the judging powers do not vary beyond their normal limits.

In every perception two factors contribute to the result. The one is the nature of the object perceived, the other that of the percipient. The effect of the first factor is well recognized, the importance of the second factor is more apt to be overlooked. The sunset is a different experience to the artist from what it is to the farmer ; a piece of rocky scenery is viewed with quite different interests by the artist and the geologist. The things that were attractive in childhood have lost their charm, and what was then considered stupid, if noticed at all, has become a cherished hobby. Even from day to day our interests change with our

moods, and our views of things brighten with the weather or the good behavior of our digestive organs. Not only will the nature of the impression change with the interests of the observer, but even more, tvlietlier or not an object will be perceived at all will depend upon the same cause. The naturalist sees what the stroller entirely overlooks ; the sailor detects a ship in the distant horizon where the landsman sees nothing; and this is not because the naturalist and the sailor have keener vision, but because they know what to look for. Whenever an impression is vague or an observation made under poor conditions, this subjective element comes to the front. The vague and changing outline of a cloud is " almost in shape of a camel," or " like a weasel," or " like a whale." Darkness, fear, any strong emotion, any difficulty in perception show the same thing. " La nuit tons les chats sont gris." Expectation, or expectant attention, is doubtless the most influential of all such factors. When awaiting a friend, any indistinct noise is readily converted into the rumbling of carriage - wheels ; the mother hears in every sound the cry of her sick child. After viewing an object through a magnify ing-glass, we detect de-tails with the naked eye which escaped our vision before. When the answer in the book happens to be wrong, nine tenths of the students will be able to get it none the less. We can regard the accompanying outline either as a book with the back protruding toward us or receding from us. Everywhere we perceive what we expect to per-ceive, in the perception of which we have an interest. The process

that we term sensation, the evidence of the senses, is dual in character, and depends upon the eyes that see as well as upon the things that are seen.

[Begin Page: Page 151]

THE PSYCHOLOGY OF DECEPTION. 151

Accordingly, the conjurer whose object it is to deceive does so by creating an interest in some unimportant detail, while he is performing the real trick before your eyes without your noticing it. He looks intently at his extended right hand, involuntarily carrying your eyes to the same spot while he is doing the trick with the unobserved left hand. The conjuror's wand is extremely serviceable in directing the spectator's attention to the place where the performer desires to have it.* So, again, when engrossed in work, we are oblivious to the knock at the door or the ringing of the dinner-bell. An absent-minded person is one so entirely " present-minded " to one train of thought that other impressions are unperceived. The pickpocket is psychologist enough to know that at the depot, the theatre, or wherever one's attention is sharply focused in one direction, is his best opportunity for carrying away your watch. It is in the negative field of attention that deception effects its purpose. Houdin gives it as one of his rules never to announce beforehand the nature of the effect which you intend to produce, so that the spectator may not know where to fix his attention. He also tells us that whenever you count

" one, two, three," as preliminary to the disappearance of an object, the real vanishing must take place before you say " three," for the audience have their attention fixed upon " three," and whatever is done at " one " or " two " entirely escapes their notice. The " patter " or setting of a trick is often the real art about it, because it directs or rather misdirects the attention. When performing before the Arabs, Houdin produced an astounding effect by a very simple trick. Under ordinary circumstances the trick was announced as the changing of the weight of a chest, making it heavy or light at will. The mechanism was simply the attaching and severing of a connection with an electro-magnet. To impress the Arabs, he announced that he could take a man's strength away and restore it again at a moment's notice. At one time the man could raise the chest with ease, but the next he would not have power enough to move it an inch. The trick succeeded as usual, but was changed from conjuring to sorcery — the Arabs declaring him in league with the devil.

The art of misleading the attention is recognized as the point of good conjuring, the analogues of the diplomacy that makes the object of language to conceal thought ; and a host of appropriate illustrations might be derived from this field. The little flour-

* " Again, a mere tap with the wand on any spot, at the same time looking at it attentively, will infallibly draw the eyes of a whole company in the same direction" — Houdin. Robert Houdin, often termed " the king of the conjurers," was a man of remarkable ingenuity and insight. His autobiography is throughout interesting and psychologically valuable. His conjuring precepts abound in points of importance to the psychologist, and a reference to his writings will well repay the reader.

[Begin Page: Page 152]

152 THE POPULAR SCIENCE MONTHLY.

ishes, tossing an object up in the air, " ruffling " or " springing " a pack of cards, a little joke — all these create a favorable opportunity, a "temp," when the attention is diverted and the other hand can reach behind the table or into the "pocket." These points would lead us too far, and perhaps it will suffice to analyze the points of interest in the "chest and ring trick" described above. Here the moment for the exchange of the rings is the 'one which is least suggestive of being a part of the performance, and therefore least attended to. The preparations for the shooting absorb the attention and allow the introduction of the small table at the rear to pass unnoticed ; while the series of drawings of the chests so entirely prepare the spectator for the appearance of the last chest from the one preceding, that he actually sees the chest emerge from where it never was.

There is, however, one important factor lacking in the conjurer's performance to completely illustrate the psychology of deception. It is that the mental attitude of the observer is too definite. He knows that he is being deceived by skill and adroitness, and rather enjoys it the more he is deceived. He has nothing at stake, and his mind rests easy without any detailed or complete explanation of how it was done. Quite different

must have been the feeling of the spectator before the necromancer of old, in whose performance was seen the evidence of secret powers that could at a moment's notice be turned against any one to take away good luck, bring on disease, or even transform one into a beast. When magic spells and wonder-working potions were believed in, what we would now speak of as a trick was surrounded with a halo of awe and mystery by the sympathetic attitude of the spectators. The most complete parallel to this in modern times is presented by the physical phenomena of spiritualism.* This is a perfect mine for illustrations of the psychology of deception, and it is this that I will consider as the final topic in this cursory view.

The first general principle to be borne in mind is that the medium performs to spectators in doubt as to the interpretation to be placed upon what they see, or more or less determined to see in everything the evidence of the supernatural. This mental attitude on the part of the spectators is worth more to the medium than any facts in the performance. The difference between such a presentation and one addressed to persons cognizant of the conjuring element in the performance, and bent upon its detection,

* For the present purpose it is necessary to select only such spiritualistic phenomena as have conclusively been proved to be producible by trickery, and to have been accepted as evidences of spiritual agency, without disposing of the problems of spiritualism in the least. Personally, I believe all the phenomena explicable by the same physical and psychological principles that have divested so many of them of their mystery.

[Begin Page: Page 153]

THE PSYCHOLOGY OF DECEPTION. 153

can not be exaggerated. It is this that makes all the difference between the seance swarming with miracles, any one of which completely revolutionizes the principles of science, and the tedious dreariness of a blank sitting varied only by childish utterances and amateurish sleight of hand. Scientific observers often report that the very same phenomena that were utterly beyond suspicion in the eyes of believers, are to unprejudiced eyes so apparent " that there was really no need of any elaborate method of investigation " ; close observation was all that was required. Again, Mr. Davies, of the English Society for Psychical Research, has experimentally shown that, of equally good observers, the one who is informed of the general modus operandi by which such a phenomenon as " slate-writing " is produced, will make much less of a marvel of it than one who is left in doubt in this regard.

With these all-powerful magicians, an expected result, and the willingness to credit a marvel clearly in mind, let us proceed from those instances in which they have least effect up to the point where they form the chief factor. First come a host of conjuring tricks performed on the stage in slightly modified forms, but which are presented as spiritualistic. So simple a trick as scratching a name on one's hand with a clean pen dipped in water, and then rubbing the part with the ashes of a bit of paper containing the

name, thus causing the ashes to cling to the letters formed on the hand and reveal the mystic name, has been offered as a proof of spirit agency. Whenever an article disappears or rapidly changes its place, the spiritualist is apt to see the workings of hidden spirits ; and over and over again have the performances of professional conjurers been declared to be spiritual in origin in spite of all protest from the conjurers themselves. Here everything depends upon the possession of certain technical knowledge ; judging without such knowledge is apt to be mere prejudice. Another very large class of phenomena consists of those in which the performer is placed in a position apparently inconsistent with his taking any active part in the production of the phenomena — rope-tying tests, cabinet seances, the appearance of a " spirit-hand " from behind a screen, locking the performer in a cage, sewing him in a bag, and so on. The psychologist has very little interest in these ; their solution depends upon the skill with which knots can be picked, locks unfastened, and the other devices by which security can be simulated. The chief interest in such performances is the historical one, for these have done perhaps more than anything else to convince believers of the truth of spiritualism. Here, where everything depends upon the security of the fastenings (for once free, the medium can produce messages from the spirit-land limited only by his ingenuity and boldness), it might be supposed that all possible precautions had been taken against undoing

[Begin Page: Page 154]

them ; while, as a matter of fact, the laxity of most investigators in this regard is well known. These performances deceive because people overlook the technical acquisitions needed to pronounce upon the possibility or impossibility of a fastening being undone and apparently restored without detection. If manufacturers of safes were equally credulous, and gave equally little time to the study of the security of locks, " a safe " would be an ironical expression indeed.

Passing next to the most interesting of spiritual manifestations, those in which self-deception comes to the foreground, I need hardly dwell at length upon the tilting of tables, the production of raps by movements of which the sitters are unconscious ; for these have been so often and so ably presented that they must now be well understood. Suffice it to say that it has been objectively proved that it is almost impossible not to give some indication of one's thoughts when put upon the strain ; and that, when excited, these indications may be palpably plain and yet remain unperceived by the individual who gives them. The extreme subtlety of these indications is met by the unusual skill of the professional " mind-reader," who takes his clew from indications which his subject is " absolutely confident he did not give." The assurance of sitters that they know they did not move the table is equally valueless, and here nothing but objective tests will suffice. The most wholesome lesson to be derived from the study of these phenomena is the proof that not all our intentions and actions are

under the control of consciousness, and that, under emotional or other excitement, the value of the testimony of our consciousness is very much weakened. Again, it is almost impossible to realize the difficulty of accurately describing a phenomenon lying outside the common range of observation. Not alone that the knowledge necessary to pronounce such and such phenomenon impossible of performance by conjuring methods is absent, but with due modesty and most sincere intentions the readiness with which the observing powers and the memory play one false is overlooked. In the investigation of Mr. Davies, above referred to, the sitters prepared accounts of the " slate-writing " manifestations they had witnessed, and described marvels that they had not seen but which they were convinced they had seen — writing on slates utterly inaccessible by Mr. Davies, and upon slates which they had noticed a moment before were clean. The witnesses are honest ; how do these mistakes arise ? Simply a detail omitted here, an event out of place there, an unconscious insertion in one place, an undue importance to a certain point in another place — nothing of which any one need feel ashamed; something which it requires unusual training and a natural bent to avoid. The mistake lies in not recognizing our liability to such error.

[Begin Page: Page 155]

THE PSYCHOLOGY OF DECEPTION. 155

If, however, the spectator is once convinced that he has evi-

dence of the supernatural, he soon sees it in every accident and incident of the performance. Not only that he overlooks natural physical explanations, but he is led to create marvels by the very ardor of his sincerity. At a materializing seance the believer recognizes a dear friend in a carelessly arranged drapery seen in a dim light. Conclusive evidence of the subjective character of such perceptions is furnished by the fact that the same appearance is frequently recognized by different sitters as the spiritual counterpart of entirely different and totally dissimilar persons. A " spirit-photograph " is declared to be the precise image of entirely unlike individuals. Each one sees what he expects to see, what appeals to his interests the most intensely. What the unprejudiced observer recognizes as the flimsy, disguised form of the medium, the believer transforms into the object of his thoughts and longings. Only let the form be vague enough, the light dim enough, the emotions upon a sufficient strain, and that part of perception in which the external image is deficient will be readily supplied by the subjective tendencies of each individual. In the presence of such a mental attitude the possibilities of deception are endless ; the performer grows bolder as his victim dispenses with tests, and we get scientific proofs of the fourth dimension of space, the possibility of matter passing through matter, the laws of gravity entirely set aside. And the identically same performance that would convince Prof. Zoellner of the reality of the fourth dimension of space, would show the spiritualist the workings of his deceased friends, would convince the theosophist of the spiritual flight of the performer's astral body, and (it may not be irrelevant to add) it is the same type of performance that served and yet serves to terrify the minds of uncultivated and

superstitious savages. All depend not upon what is done, but upon the mind of the spectator. Little by little, through neglect, through mal-observation and lapses of memory, through an unwillingness to mistrust the reports of an excited consciousness, caution is abandoned, credulity enters, until mediums are actually seen flying out of one window and into another, until the wildest and most far-fetched fantastic explanation is preferred above a simple one ; until the bounds of the normal are passed, real hallucinations set in, conduct becomes irrational, and a state not distinguishable from insanity ensues. If this seems improbable, turn back to the records of witchcraft persecutions and read upon what trifling and wholly imaginary evidence thousands of innocent lives were sacrificed ; and this not by ignorant, bloodthirsty men, but by earnest, by eminent, by religious leaders. A child is taken sick, is remembered to have been fondled by an old woman ; therefore the woman has put the child under a spell and must be

[Begin Page: Page 156]

156 THE POPULAR SCIENCE MONTHLY.

burned. A man sees an old woman in the woods, and, on turning about, the old woman is gone and a hare flies across his track ; he concludes that she turned herself into a hare, and the witch test is applied. When the personal devil was believed in, he was daily-seen clothed in the garments that imagination had given him, and engaged in mischievous actions of all kinds. When witchery-

was the dominant superstition, all things gave evidence of that. With the doctrines of modern spiritualism to be supported, the number of mediums and manifestations will be correspondingly abundant. Create a belief in the theory, and the facts will create themselves.

In the production of this state of mind a factor as yet unmentioned plays a leading role : it is the power of mental contagion. Error, like truth, flourishes in crowds. At the hearth of sympathy each finds a home. The fanatical lead, the saner follow. When a person of nervous temperament, not strongly independent in thought and action, enters a spiritualistic circle, where he is constantly surrounded by confident believers, all eager to have him share their sacred visions and profound revelations, where the atmosphere is replete with miracles and every chair and table may at any instant be transformed into a proof of the supernatural, is it strange that he soon becomes one of them ? — hesitatingly at first, and perhaps yet restorable to his former modes of thought by the fresh air of another and more steadfast mental intercourse, but more and more certainly and ardently convinced the longer he breathes the seance atmosphere. No form of contagion is so insidious in its onset, so difficult to check in its advance, so certain to leave germs that may at any moment reveal their pernicious power, as a mental contagion — the contagion of fear, of panic, of fanaticism, of lawlessness, of superstition. The story of the witchcraft persecutions, were there no similar records to deface the pages of history, would suffice as a standing illustration of the overwhelming power of psychic con-

tagion. To fully illustrate its importance in the production of deception would require an essay in itself. It enters at every stage of the process and in every type of illusion. It has least effect when deception is carried on by external arrangements, by skillful counterfeits of logical inferences ; its power is greatest where the subjective factor in deception is greatest, more particularly in such forms of deception as have been last described.

In this review of the types of deception, I have made no mention of such devices as the gaining of one's confidence for selfish ends, preying upon ignorance, upon fear, acting the friend while at heart the enemy, planned connivance and skillful plotting, together with the whole outfit of insincerity, villainy, and crime. It is not that these are without interest or are unrelated to the

[Begin Page: Page 157]

THE PSYCHOLOGY OF DECEPTION. 157

many types of deception described, but that they are too complicated and varied to be capable of rigid analysis : the moment deception becomes conscious, there must be acting and subterfuge to maintain the appearance of sincerity. If we add this great class of deceptions to those already enumerated, we may perhaps realize how vast is its domain, and what a long, what a sad chapter would be necessary to contain the history of human error.

Ethics is so closely related to psychology — right knowing to right doing — that a brief " hpcfdbula docet " by way of summary may not be out of place. We find, first, a class of sense-deceptions which are due to the nature of sense-organs, and deceive only so long as their true nature remains unknown. These are neither pernicious nor difficult to correct. Next come a class of deceptions that deceive because we are ignorant of the possibilities of conjuring and pronounce upon the possibility or impossibility of a certain explanation in advance of complete knowledge ; of this I have already said enough. But most dangerous and insidious are the deceptions in which self-deception plays the leading role. The only safeguard here is a preventive : the thorough infusion of sound habits of thought, a full recognition of the conditions under which the testimony of consciousness becomes doubtful, an appreciation of the true value of objective scientific evidence, and an inoculation against the evils of contagion by an independent, unprejudiced logical schooling. When once these evils of self-deception, fed by the fire of contagion and emotional excitement have spread, reason has little control. As Prof. Tyndall tells us, such " victims like to believe, and they do not like to be undeceived. Science is perfectly powerless in the presence of this frame of mind It [science] keeps down the weed of superstition, not by logic, but by slowly rendering the mental soil unfit for cultivation." With the spread of education, with the growth of the capacity to profit by the experiences of others, with the recognition of the technical requisites that alone qualify one for a judgment in such matters, with a knowledge of the possibilities of deception and of the psychological processes by which error is propagated, the soil upon which spiritualism and

kindred delusions can flourish will be rendered unfit.

The French Academy of Sciences recently had a discussion about the "Canals" of Mars. A paper by M. Fizeau remarked upon the resemblance between some drawings of these objects and M. Nordenskiöld's view of the great Icelandic glacial crevasse in Greenland as indicating that the whole surface of Mars is covered, down to the equator, with a glacial ice-cap. M. Janssen thought that they were rather crackings resulting from the advanced planetary age of Mars, with excessive cooling and absorption of the oceans and atmosphere, or crevasses in the rocky crust corresponding with the furrows of the moon.