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THE AMERICAN
JOURNAL OF PSYCHOLOGY

Founded by G. STANLEY HALL in 1887.

Vol. XI.

JULY, 1900.

No. 4.

THE PSYCHOLOGY OF CONJURING DECEPTIONS.

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This study is concerned with that portion of the field of magic which can be properly included under the term conjuring. For the purposes of this article, this may be broadly defined as the performance of wonderful or miraculous deeds of any sort under pretense of other than ordinary human agency. The subject will be treated in two parts. In the first chapter an effort is made, by the comparative method, to find in the deep lying instincts and impulses of the psychic life the basic elements in conjuring.

In the remaining portion of the work attention is given to modern conjuring. In the large body of existing conjuring tricks is found much material of value to the psychologist. Many of these are perfect psychological experiments whose efficiency have been proved on thousands of people. About the profession of prestidigitation, as of other occupations, there has grown up a body of special knowledge, in part formulated into rules and practices, of which it is here the purpose to show the psychological reason. The treatment of the subject will follow this outline:

1. Origin of Conjuring.
2. Classification and Typical Examples of Modern Conjuring Tricks.
3. The Training of the Conjurer.
4. Psychological Justification of the Rules and Practices of the Conjurer, treated under, (1.) Attention, (2.) Perception, (3.) Suggestion and Association, (4.) Suggestion and the Law of Economy.
5. Sociological and Pedagogical Observations.

I.

ORIGIN OF CONJURING.

In considering the elements of conjuring the view here advanced is (1.) that at bottom it rests upon a universal instinct to deception—a biological tendency appearing throughout the animal world from simple forms to the highest orders, which acts as a constant force in the process of natural selection—as a means of preserving the self or species. This instinct, blind enough at the beginning, and to be classed as a deception only by reason of its effect, in the higher orders becomes implicated with an ever-increasing intelligence, ending with the conscious deceptions of man, which in him, find their widest range and their highest form. (2.) In the struggle of primitive man to increase his personality conjuring came into existence. According to this view conjuring is deception ingrafted upon the religious instinct and thus given a supernatural coloring.

THE INSTINCT TO DECEIVE.

A division of all deceptions may be made into (1.) serious deceptions or those in which some form of selfishness appears, and (2.) deceptions of play. The group first named will be here noticed. Regarded biologically, these have in all cases as their common unifying principle that they serve, or have served in the past, the interests of the individual or species making use of them. From the psychological standpoint they are to be regarded as a manifestation of the instinctive struggle for power characteristic of every normal living organism—as an expression not only of the “will to live” but to live regnant.

A complete review of the materials in proof of such an instinct is here impossible. It will serve the end in view to cross-section the stream of these activities at different levels for purposes of illustration. In the search for beginnings of deception no need is felt of groping back of instinct to consider the play of chemical forces within the protoplasm; nor to seek in tropisms nor in any form of irritability of the cell the origin of the phenomenon. It is enough to state the view of Schneider¹ and others who would do so, that the tendency to withdraw from the unpleasant in simple cell life is the source of all the self-protective impulses and reactions which are later developed, including that of flight; and that the tendency to expand to the agreeable differentiates into impulses and instincts of an aggressive kind, as fighting and reproduction.

The facts of protective mimicry² are first to receive attention.

¹Schneider, G. H. : Vierteljahrschrift für wiss. Phil., III, p. 297.

²For the subject of Mimicry, see Bates, *Naturalist on the Amazons*; Wallace, *Natural Selection*, and Poulton, *The Colors of Animals*.

Protective mimicry is the name given to a power of adaptation of form and color on the part of an animal species to that of its environment or to another species, which, from various reasons, as a disagreeable smell or nauseous taste, a sting or a hard integument, is immune from attack. Predaceous species, from which it is to the interest of the weak species to be concealed, are mimicked. On the other hand endless instances exist of predaceous insects being disguised to resemble their prey in shape and color. Indeed mimicry is universal among lower animals except in those cases where other means of defense exist. The reason for this as given by Darwin¹ is that they "cannot escape by flight from the larger animals which prey upon them, hence they are reduced like most weak creatures to trickery and dissimulation." Some small birds, reptiles and mammals which are weak in means of defense are also benefited by it. The Carnivores, also, which depend upon deceiving their prey, are nearly all colored to suit the environment.

From the standpoint of evolution the importance of this power of adaptation is obvious: thus a closer approximation of form and color to the copy, by giving a better means of escape or of securing food, assures to its possessor a corresponding advantage in the struggle. Modification in the direction of safety will, however, according to the law of parsimony, never be carried any further than is necessary to deceive the creature it is meant to deceive, but it must proceed that far else there is no protection. But what justification exists for calling the facts of mimicry deception? Premising that the word deception is not to be taken in animal activities with the same significance accorded to it in ethical discussions, but that it will connote more as we advance through the different grades of intelligence, it can be affirmed that the phenomena under discussion are in their effect real deceptions. "Naturally," Grant Allen² remarks, "there can be no mimicry without a creature to deceive; the very conception implies an external nervous system to be acted upon, and to be acted upon deceptively." Important as is the assumption of similarity in form and color in the animal making use of it, not less so from an evolutionary standpoint, is the group of associated habits developed to give it a proper stage setting and without which indeed the masquer would assume a vain role.

In the lower forms exhibiting mimicry the motor aspect is of a simple reflex type and the deception involved is unconscious. As Morgan³ says, "Mimicry is biological not psychological." The Kollima butterfly, mentioned by Bates, whose

¹ Naturalist on Amazons. Letter to Bates. Memoirs.

² Grant Allen: Art. Mimicry, Encyc. Brit.

³ Morgan C. Lloyd: In. Com. Psych., p 97.

folded wings exactly resemble dead leaves when alighting, feels the innate necessity of alighting only among dead leaves of its own color. So also the long green pipe-fish, with its prehensile tail, clings only to green seaweed, for only then is its color protective. So the green lizard seeks the grass and the brown lizard the sand. In these associated habits is found the basis for calling mimicry deception.

A group of phenomena of an apparently self-preservative character is the so-called death feigning of certain animals. Among those animals possessing the characteristic have been named, spiders, coleopters, caterpillars, snakes, turtles, fishes, numerous birds, and several mammals, among which are the monkeys, foxes, opossums, and possibly red squirrels. Hudson¹ says, "When a fox is caught in a trap or run down by dogs, he fights savagely at first, but by and by relaxes his efforts, drops on the ground and apparently yields up the ghost. The deception is so well carried out that dogs are constantly taken in by it, and no one not previously acquainted with the clever trick of nature, but would at once pronounce the creature dead. Now, when in this condition of feigning death, I am quite sure that the animal does not altogether lose consciousness. It is exceedingly difficult to discover any evidence of life in the opossum, but when one withdraws a little way from the feigning fox and watches him very attentively, a slight opening of the eye may be detected and, finally, when left to himself, he does not recover and start up like an animal that has been stunned, but slowly and cautiously raises his head first, and only gets up when his foes are at a safe distance." He states that in some cases the swoon comes on before the animal has been touched.

Without going into the merits of the controversy which is still unsettled, as to whether the activity in question is of a cataleptic nature as Couch, Preyer, and others maintain, or is a true manifestation of instinct, the writer inclines to the latter side of the case. From all the data at hand the trait under discussion appears to be a serious stratagem evolved to serve a useful end. Among those holding this view is Lloyd Morgan,² who thinks the collapse of extreme dread has its protective value in the case of animals that sham dead and that it has been organized through natural selection into an instinctive response of stillness and limpness and that "the same stimulus may give rise at the same time to instinctive reactions and to the visceral reaction essential to emotion, the two inseparably connected in origin. The result is that the instinctive data and emotional data are simultaneously presented to consciousness and their association is of the closest possible nature. With

¹Hudson, W. H.: *The Naturalist in La Platte*, p. 202.

²Morgan: *Habit and Instinct*, p. 206.

the growth of experience this constant association is yet further strengthened and the motor and visceral effects are yet further consolidated, so that each tends to supplement and re-enforce the other."

A group of deceptions serving for the protection of the species is to be observed in the case of many creatures not sufficiently strong to fight off enemies. It is a well known trait of certain birds to flutter off the nest when disturbed and by simulating a broken wing to draw the intruder away from the eggs or young, flying away when at a safe distance with no pretense of lameness. "Such tactics," Lloyd Morgan¹ remarks, "are not restricted to one or two species. They are common, no doubt, with diversities of detail to such different birds as grouse, pigeons, lapwings, rails, avocets, pipets, ducks, buntings and warblers." Among American birds the habit has been observed in the case of several species of the partridge family, doves, vesper sparrows, whippoorwills, bobolinks, the plovers, rails, and allied species. The simulation of helplessness is a perfect device, at least so far as dogs are concerned. They seem never to get too old or too wise to start a pursuit. The impulse to react at sight of the fluttering bird is too strong to be resisted. Many ingenious variations of this instinct exist among other species. Clever ruses are also employed by many to conceal the nest. The care of the turkey hen to hide her nest and the various artifices she employs to throw a watcher off the clue, no one knows better than the farmer's boy who has been set the task of tracing her to the nest.

Wild animals, whose very existence hangs on the continued exercise of craft or strategic skill, can be cited endlessly in illustration of the fact that the battle is not always to the strong, but that life is very largely a war of wits. Everywhere we see the cunning devices used in attack and the counter devices of escape. They but emphasize the general fact that these deceptions are not sporadic cases; special developments for the protection of a few species making use of them. A deeper insight into the underlying forces maintaining the equilibrium in the vast complexus of animal life must be gained before a positive statement is warranted, but from the fact that they are the normal reaction of most animals under conditions tending to lessen well-being, or safety, it seems not too hypothetical to say that the impulse to deceive is a general expression of a biological principle existing throughout the animal world, and that it is a very large factor in the push upward.

Domesticated animals have all preserved this tendency to fall back on deception when comfort is threatened, as several hun-

¹*Ibid.*

dred observations which the writer has gathered show. On a census of these the dog seems, from the number and versatility of its tricks, to be the chief trickster in the animal world, probably because he is most open to observations of this sort.

Popularly it is thought that the dog in many cases is guilty of conscious deception. While it is, perhaps, safer on the whole, to explain, as Morgan¹ does, most of the observed deceptions as due to associations formed in sense-experience, it is, nevertheless, only fair to leave the judgment unexpressed regarding a large number of instances seeming to show a conscious intent to deceive. It is not so easy to believe there is no actual deception in cases like this described by Groos.² He says: "I once saw one (dog) drop a piece of bread that he would not eat on the ground and lie down on it, then with an air of great innocence pretend to be looking for it."

From a summary of more than one hundred cases of canine craft the only point here emphasized is the fact of their selfish content. In families where the dog-churn was used, it was common for the motive power to absent himself early on the morning of churning day and hide out till night. To avoid being put out at night dogs and cats also will frequently hide in a dark room or behind furniture as the regular time approaches. They conceal themselves, also, to avoid baths or anything unpleasant. If unwilling to chase a cat that has given him proof of her prowess, or to do any distasteful task, the dog makes a great pretense of not knowing what is desired of him, but he assumes an anxiety to know; when spoken to sharply, however, he goes with a conscious guilty air and does what is required of him. When an old dog has been roughly used in play by a boy, or when busy with his bone or aware that he is to be shut up or sent after the cows or punished, he makes use of the childish resource of pretending not to hear. Often when caught in *flagrante delicto* the dog employs various means of avoiding chastisement. A terrier of superior intelligence, owned by the writer, at such times tried to change the subject by assuming a mood of frolicksome gaiety and executing a series of comical antics calculated to give a suggestion of amity. Frequently when scolded, like the King Charles spaniel cited by Romanes, the dog pretends to be very lame or in great pain. This dodge is especially tried where he has gained sympathy from a former wound. Lameness is also feigned by dogs wishing to ride in a vehicle, as it is by children wishing to be carried.

Many of these tricks of the dog and other domesticated animals seem far removed from the instinctive deceptions of wild

¹Morgan C. Lloyd: In. Com. Psych., p. 371.

²Groos: The Play of Animals, p. 297.

animals. The essence of the act, however, appears to be the same, being an effort to better adapt themselves to their surroundings to increase their own comfort or pleasure, and, as such, are surely based on the old tendencies brought down from a former wild state.

If the statement that in some one of the lower animals may be found the germ of every human faculty is correct, then it seems not unreasonable to expect that activities so general and so important, as those just described, will have large place in the higher realm of life, or plainly that human deceptions will be found to possess the same instinctive character.

DECEPTIONS IN CHILDREN.

Of a collection of more than three hundred observations of spontaneous fooling or deceiving by children, a large majority were found to relate to children under three years of age. The cases exhibit an almost half and half ratio between the rubrics of spontaneous play activity and deceitful acts which involve an element of selfishness. A study of the latter group shows clearly the kinship existing between animal and child life. Children instinctively make the same responses to conditions affecting their pleasure or well-being, oftentimes in the identical form. Numerous cases show the use that is made of the "ostrich trick." "A little girl, past one year old, continued to chew paper whenever she could get it, notwithstanding her punishment. She used to stand up with her face to the wall chewing paper, evidently thinking because she saw no one, no one saw her, for if any one came and turned her around she would try to hide the paper which was left." Another forbidden to eat green fruit "lay down by the fence with the pear under her, perhaps thinking she would escape observation." This trait appears in various forms, and precedes real hiding which comes later. Shutting the eyes is common, holding the hand or an article before the eyes, and hiding the face in some one's lap or shoulder. Babies when frightened or diffident, or sometimes when scolded, hide the face on the mother's shoulder. So when tickled the face is hidden or eyes closed possibly as a means of escape from the annoyance. It is well known that sensitive dogs when scolded will hide their eyes in their paws or close them, and it may be for the same reason.

It is hard to analyze the action, but it seems evident that to the child the world comes and goes at will with the opening or shutting of the eyes. When he shuts his eyes he makes it dark, so that no one can see. This limiting reality to the range of his own vision may become the basis of various attempts at deception. This resource is employed to escape punishment for a fault, as in the instance where a child had cut the

table cloth into strips: "when her mother discovered her she threw the shears down and covered her head with her arms." In clashes of personality, where children do not wish to be compelled to drop what they are engaged in, or to comply with distasteful commands, where censure is expected, and in many similar cases they refuse to answer when called or they hide.

Fear of punishment is the motive for the invention of many lies and acts of deceit, as most persons can testify, who will run back in memory over the events of their childhood. Some children committing a fault resort to tactics similar to those of the dog mentioned above. They take to kissing and caressing. Pretended illness often follows the doing of an act for which punishment is expected, though doubtless in the case of sensitive children it may at times become real enough. Where there is a desire to enlist sympathy or attract attention, or where pleasant remedies, such as wintergreen are used, this pretense is common. Later if school life is disliked, the child makes a great pretense of being ill, but will still be able to play around all day. On this point Dr. Hall¹ remarks: "The long list of headaches, nosebleeds, stomachaches, etc., feigned to get out of or to avoid going to school, of false excuses for absences and tardiness, the teacher especially, if disliked, being so often exceptionally fair game for all the arts of deception, all this seems generally prevalent. This class of lies ease children over so many hard places in life and are convenient covers for weakness and even vice." With school age the child enters upon a new life. He begins a struggle with social forces before unknown to him. His mental activities now find a wider scope and a fuller development, and along with a growing intelligence the deceptions become more complex, though still plainly of the same instinctive character. They are in all essential respects the same as those of animals and young children. They are the outgrowths of impulses directly or indirectly self-preservative and to go no further back, are doubtless reminiscent of man's life in past ages when chiefly by his nimble wit he could survive in the war of all against all.

There is little need to follow these deceptions up to their adult form. They crop out in every phase of our community life as a manifestation of the instinct to gain power or wealth and all that they make possible, and if indeed the present shows this tendency in an unusual degree, as Mantagazza² and others assert, it is because the conditions of life are becoming more difficult and by reason of the sterner competition are forcing

¹Hall, G. S.: Children's Lies. *Am. Jour. Psych.*, Vol. III, No. 1.

²Mantagazza: The Tartuffian Age. Nordau: Die Luegen.

man to rely to a greater extent upon those innate animal impulses which the canons of morality among civilized races condemn.

Our commercial life is redolent of fraud from our gigantic infant industries with their specious pleas of inability to compete with foreigners, to the small grocer who is made by Puck to ask the clerk if he has sanded the sugar, larded the butter, and gravelled the coffee, and on being answered in the affirmative tells him to come into prayers. The political corruption in our large cities, the peculiar methods by which United States senators frequently gain their seats, and even the struggle for supremacy or survival between nations—not always carried on by force in the field, but by crafty diplomats intriguing behind closed doors to form combinations against the peace and prosperity of their neighbors—all this is commonplace. Yet a large view of these deceptions as of the others presented justifies the assertion, that they are of a piece throughout.

RELATION OF DECEPTION TO CONJURING.

The statement was made on a previous page that conjuring is based on two atavistic tendencies: The one which appears in nature as a general instinct to deceive has been sufficiently set forth. It yet remains to establish the other assertion, which was in effect, that primitive conjuring was the deceptive performances of priests become miracle by the religious superstitions of a deluded people.

The evolution of the sacred conjurer is made possible by the animistic tendencies of all savage peoples, among whom is developed a belief in spiritual beings of an elementary sort inhabiting stones, trees, animals or men. Extraordinary powers of body or mind in an individual, are due to an incarnate spirit—an ancestral ghost. Hence, arises the general doctrine of inspiration. Existing primitive races still believe that the priest when inspired ceases to act or speak as a voluntary agent, but moves and speaks as entirely under supernatural influence. From inspiration to divination is but a short step. It is simply the inspired man using his power for particular ends. His power as an exorcist arises from the belief that the priest by the aid of good spirits may eject the spirit of an enemy which has entered a man's body. This power proves available for other purposes. He asks why not revenge himself on enemies or invoke the spirit's aid in other matters of advantage to himself? There is thus initiated sorcery¹ and thaumaturgy.

Up to what stage self-deception is an element in religious conjuring it is not easy to say. That it should be present to some

¹Herbert Spencer: *Data of Sociology*, Vol. I, Chap. 18.

degree among modern savages is not surprising when regard is had to the means of attaining to the office of priest. This, among nearly all savage peoples, is gained through the practice of some form of shamanism. This state may be brought on by fasting, the use of drugs, whirling, dancing, singing, beating drums or other means of producing abnormal excitement—the condition of inspiration. Since, however, it is also the “*mise en scene*” for the innumerable deceptions practiced upon their deluded followers, there must, in general, grow up a very large element of conscious fraud; but where self-deception leaves off and conscious deception begins it is impossible to distinguish.

The psychological reasons impelling to priestly conjuring are all those motivated by the struggle for power anywhere. Power permits of revenge; it brings wealth and a host of euphoric concomitants, such as pride of position, reverence, homage, praise and other elements tending to exalt personality. That it is a means to wealth is seen in many tribes of the present day. “Among the Zulus¹ the spirit doctors discharge a sacerdotal function, offering up sacrifices for which their mercenary spirit leads them to demand good pay. “These crafty izanusu do not go into Hades (when giving oracles) for nothing. A large fat ox is generally the reward and often a goat beside.” Tylor,² speaking of the priest as conjurer in connection with ceremonial ordinances says: “more usually it is the priest who as minister of the deities has the lion’s share of the offering or the sole privilege of consuming them; from the Figian priest who watches for the turtle and puddings apportioned to his god; and the West African priest who carries the allowances of food sent to the local spirits of mountain, or river or grove, which food he eats himself as the river’s proxy, to the Brahmin who receives for the divine ancestor the oblation of a worshipper who has no sacred fire to consume it. ‘For there is no difference between the fire and a Brahmin, such is the judgment declared by them who know the Veda.’” Among the Andaman³ Islanders “the priest inculcates the belief that he can bring sickness or death upon those who fail to show their belief in him in some substantial form.” In Australia⁴ the business is profitably worked by one sorcerer charming bits of quartz into the victim’s body so that another has to be sent for to get them out. This imposture is interesting because in various forms it is common in nearly all parts of the world. The articles generally extracted are bones, bits of wood, stones, lizards and balls of hair.

Besides its material benefits the calling of the conjurer min-

¹ Tyler J.: “Forty Years among the Zulus,” p. 100.

² Tylor: *Primitive Culture*, Vol. II, p. 379.

³ Man, E. H.: *Aboriginal Inhabitants of the Andaman Islands*.

⁴ Grey’s *Journal of Travel*, Vol. II, p. 337.

isters to his self-importance. With all this priestly class there appears a love of showing off and filling the public eye, just as with the Flagellants who pretended to lash the blood from their own backs, or of the Fakirs of India who are such because of the distinction it gives them. Self-advertising is not the least of the conjurer's gifts whether ancient or modern. There is apparently, much more in the priests' impudent assertion of power than in their actual manifestation of it, as many of their feats are exceedingly trivial. But like every act of deception they seem to contain a pleasureable element. It may be true as Groos¹ says it is of all animal play that the pleasure is in satisfying an instinct and in being a cause. The evidence for the pleasure in modern conjuring is not hard to find. Robert Houdin constantly refers to its fascination. It has been said of Hermann that he was never so happy as when he went to orphan asylums or about the streets playing his tricks on children, policemen and shopkeepers. Kellar also assures the writer that his profession possesses an intense fascination for him.

Among the people of remotest antiquity the most unique deceptions the meager history of the times reveals are those performed under the guise of religion. Priestcraft and thaumaturgy, the first including the second, always held in view one great end: namely, the acquisition of power, veneration and obedience. To its attainment no scruple was permitted to restrict the means. All the resources of legerdemain, cabalistic rites and imposture of every sort were employed, besides natural phenomena and the facts of true science. All were given a semblance of the supernatural and were invested with an inviolable secrecy maintained by the use of a particular language, figurative expressions, emblems and allegories, and a dramatic setting such as the construction of their temples made possible. All combining to form a veil of mystery and acting powerfully to paralyze the critical faculty of minds not too acute in that naïve age.

The priests of antiquity were the conservators of learning. They alone possessed the highest knowledge, zealously preserved from profanation in the service of the gods by an impenetrable mystery. Indeed, it is only in comparatively recent times that knowledge has been allowed to filter out to the common people. Even Pythagoras and Plato did not believe in the fitness of the vulgar to receive truth. The priests exploited the secrets of science for a thousand years, at least, to maintain their religion and their own power. In the Christian era, on the contrary, as Andrew D. White² has shown, for

¹ Groos: *Play of Animals*.

² White, Andrew D.: *Warfare of Science and Religion*.

fifteen hundred years science was completely smothered by the antagonism of the church and regarded as sorcery.

The preliminary chapters of a history of the sciences must show their magical origin; while a history of old forms of thaumaturgical art, on the other hand, is a history of the origin of science. And not the least interesting fact connected with either is in showing how arts which come into common use may pass for divination and magic so long as the secret of their operation is the knowledge of but a few individuals. The oldest traces of magic are found in the records of Egypt, Chaldea and Babylonia. Among these nations sorcery and magical astrology are as old as their history. Astrology is well called the mother of science, for while it is true that the Chaldeans studied the stars for purposes of conjuration, their observations led to the science of astronomy. Medicine is also discovered to have had a magical origin. According to Sprengel,¹ "The highest healing power which acts not through palpable means, but by the aid of the will, was practiced by the priests of the highest rank; they were the soothsayers and sages, and knew how to produce many supernatural effects." They declared that the means to be used and the issue were revealed through prophecies. "In Egypt, more than in any other country, we find that physic is connected with religion and the priesthood."

Some of the positive sciences had their birth in the temples of the ancient religions. The miracles performed during the initiatory rites of the sacred mysteries are to be explained as physical and chemical effects. From descriptions which have come down to us of the phantasmagorical procession of the divinities we can easily discern the use of the principles of optics. Sir David Brewster² says on this subject that there can be little doubt that the concave mirror was the principal instrument used in connection with the pretended apparitions of the gods and goddesses in the ancient temples. In the scanty references to these apparitions which we possess is clearly seen the traces of an optical illusion. Pliny mentions that in the ancient temples of Hercules at Tyre there was a certain seat made of a consecrated stone "from which the gods arose." Æsculapius was often exhibited to his worshippers in his temple at Ephesus in a similar manner. Jamblicus tells us that the priests showed the gods to the people in the midst of smoke, the smoke evidently serving as a background on which to project the reflected images.³

¹ Sprengel: *Geschichte der Arzneikunde*, Vol. I, p. 71.

² Brewster: *Letters on Natural Magic*.

³ For the reference to this phase of Magic see Ennemoser, *History of Magic*; Lenormant, *Chaldean Magic and Sorcery*; White, Andrew D., *Warfare of Religion and Science*; Lehman, A., *Aberglaube und Zau-*

The science of acoustics also furnished the ancient sorcerers with some of their best effects. The imitation of thunder in some of their subterranean temples could not fail to indicate the presence of a supernatural agent. The golden virgins whose voices resounded through the temple of Delphos; the stone from the river Pactolus whose trumpet notes scared the robbers from the treasure which it guarded; the speaking-head which uttered its oracular responses at Lesbos; and the vocal statue of Memnon, which began at the break of day to accost the rising sun; the statues of the gods and the walls near them, discovered by explorers, possessing secret passages by which the priests could enter to deliver the oracles, are a few cases of this sort.

The principles of hydrostatics also were available in the work of magical deception. The marvellous fountain which Pliny describes in the Island of Andros as discharging wine for seven days and water during the rest of the year; the spring of oil which broke out in Rome to welcome the return of Augustus from the Sicilian war; the three empty urns which filled themselves with wine at the annual feast of Bacchus in the city of Elis; the weeping statues and the perpetual lamps of the ancients, were all the obvious effects of the principle of the equilibrium and pressure of fluids.

Chemical agents seem to have been used, if ancient literature is to be relied on for information. We recall the vengeance wreaked by Medea by means of her chemical jacket. Many examples of self-kindling altars are given, the explanation of which, as advanced by Salverte,¹ is that a petroleum or naphtha product was used, such as is still found in certain regions of that country. The apparent miracle which was worked in the sanctuary at Gnotia, where the incense kindled of itself in honor of the gods, and of which Horace and Pliny are so incredulous, was a feat easily to be compassed by the priestly jugglers.

A similar explanation will serve for the cases observed by Pausanius in two cities of Lydia, the inhabitants of which, subjected to the yoke of the Persians had embraced the religion of the Magi. "In a chapel," he says, "is an altar upon which there are always ashes that in color do not resemble any others. The Magi placed some wood upon the altar and invoked I know not what gods by orisons taken from a book written in a barbarous language unknown to the Greeks. The wood soon ignited of itself without fire and the flame of it was very brilliant."

We have now finished the portion of this study specially devoted to the serious deceptions of conjuring. Under various

berci; Frost, *Lives of the Conjurers*; and Hopkins, *Magic and Stage Illusions*.

¹Salverte, E.: *The Occult Science*, etc.

forms not always distinctly religious, except in so far as all superstition is akin to religion, they continue down to the middle ages. Indeed history reveals how the destinies of a nation were in more than one instance subject to the scheming of a conjurer in the king's closet. They are in evidence in the performances of the latter part of that strange romantic eighteenth century of skepticism and credulity when the rotten fabric of French society was about to crumble under the storm of revolution. The society of the time, with overwrought imagination, hungering for miracles, offered themselves to every impostor as ready victims. Charles Kingsley says that this period "which is usually held to be the most materialistic of epochs, was, in fact, a most spiritualistic one." Imbert Saint Amand,¹ says "The mania for the supernatural, the rage for the marvellous, prevailed in the last years of the eighteenth century which had wantonly derided every sacred thing. Never were the Rosicrucians, the adepts, sorcerers, and prophets so numerous, and so respected. Serious and educated men, magistrates, courtiers, declared themselves eye-witnesses of alleged miracles. When Cagliostro came to France he found the ground prepared for his magical operations. A society eager for distractions, and emotions, indulged to every form of extravagance necessarily welcomed such a man and hailed him as its guide." Cagliostro was the last great pretender to magic and sorcery, and also the forerunner of our modern spirit mediums, who exhibit a phase of deception which will be noticed to some extent in the second part of this study which deals with modern conjuring. He raised the shades of the illustrious dead, told fortunes, predicted lucky numbers in the lottery, transmuted metals, and founded occult lodges of Egyptian masonry for the regeneration of mankind. He manufactured elixirs of life, and reaped an abundant harvest by professing the art of making old people young. He pretended to be of great age; saw Rome burned under Nero, and witnessed the crucifixion of Christ.

II.

MODERN CONJURING.

Modern conjuring is motivated in large part by the same elements appearing in other play. It is doing for entertainment what once was regarded as serious miracle. This is true, however, only of conjuring proper. The shows of the spiritualistic mediums are still as of old deceptions of a serious nature.

The history of conjuring for entertainment takes us back at least to the middle ages where jugglers in connection with

¹ Saint Amand, Imbert: Marie Autoinette and the End of the Old Régime.

their acts of skill exhibited many curious feats at fairs and on the streets. During the eighteenth century the conjurers came into greater estimation with the public, and gave performances from the stage, while the jugglers were left to an itinerant and more obscure life.

Many of the pieces of modern performers were presented by the wizards of the last century. Sechel's print of Bartholomew Fair for 1732 shows Falkes to have been the great conjurer of the time. He exhibited among other things the now famous "flower trick" of the Indian conjurers. A swarm of conjurers during the last half of the century strove for recognition. One of this fraternity described by Cowper was Katterfelto "with his hair on end at his own wonders, wondering for his bread." They dealt largely in feats of dexterity with cards, numbers, dice, rings, etc., and also found profit in the exhibition of automata. A new epoch began with Pinetti, 1783. His tricks were invented by him, and from that time until Houdin came upon the stage, false bottom tricks, of which there were above forty, were much in vogue. The greatest reform in the art of conjuring was effected by the genius of Robert Houdin. Whatever advancement has been made since his time has been along the lines laid down by him, and are largely the result of the growth of science. Prior to his day the wizards draped their tables to the floor, making of them hiding places for confederates. He used an undraped center table, and two light stands at the sides. He discarded the long flowing robes of his predecessors and appeared in evening dress. Since his time no first-class performer has dared to return to the former mode.

CLASSIFICATION OF CONJURING DECEPTIONS.

The plan employed in the classification of the tricks is taken from the standpoint of the performer, having regard to the means used in working the illusion. A grouping according to the psychical processes involved was not possible for the reason that somewhat the same elements entered into a majority of the illusions. A strict psychological classification that suggested itself as possible was a division into (1) Positive illusions—in which the spectator believes he sees something which does not take place—an example of which is the thrown card disappearing in the air. (2) Negative illusions, or those feats in which the changes are made but are unseen by the spectator. The division would have no practical value as all but a very small number are found in the second division.

The list presented is not exhaustive but contains the majority of the better known illusions, and at least is sufficient to represent the different classes. Nothing more is claimed for it. It is apparent that many tricks could be classified under several

heads; in general, however, their place was determined by the most predominant feature.¹

TRICKS INVOLVING SCIENTIFIC PRINCIPLES.

Optical Illusions. 1-234. Modern Black Art. 2-55. Cabaret du Néant or Tavern of the Dead. 2-61. Amphitrite. 2-63. The Mystery of Dr. Lynn. 2-81. Houdin's Magic Cabinet. 2-520. Gone. 5-60. Maid of Athens. 6-31. Denstone's Metempsychosis. 7-136. The Mermaid's Head. 2-60. The Three-headed Woman. 2-69. The Talking Head. 2-69. The Living Half-woman. 2-72. She. 2-79. The Queen of Flowers. 2-77. The Decapitated Princess. Stella, a variant of above. 2-84. The Mystic Maze. 2-86. The Platinized Glass Illusion. 2-88. Marguerite and Faust. 5-21. The Vanished Mirror and Spectral Demon. 5-32. Birth of Venus. 5-49. The Water and Ink Trick. 5-50. Valensin's Fish-bowl Trick. 5-5. The Blackboard Feat. 2-523. The Spider and the Fly. 7-46. Spirit Medium Reading Question by Means of Mirrors. 9-53. The Cards Revealed by the Looking-glass.

Acoustics. 2-102. The Invisible Woman. 2-103. The Magic Harps. 5-30. The Spirit Bell. 4-91. Poe's Raven in the Garland of Thebes. 4-36. Kellar's New Karmos. 2-170. Animated Puppets. 9-222. The Mesmerized Watch. 9-159. A coin being spun upon the table to tell blindfold whether it falls head or tail upwards.

Electrical. 7-62. The Educated Fly. 7-77. Spirit Telegraphy. 2-96. The Neo-occultism. 2-100. The Mask of Balsamo. 3-109. The Obedient Padlock. 3-114. The Demon Candlesticks. 3-122. The Spiritualistic Cash Box. 3-130. The Magic Clock. 3-135. Spirit Chiromancy. 9-483. The Light and Heavy Chest. 9-485. Spirit Rapping, The Magic Bell, The Magic Drum and many variations.

Chemical. 3-71. The Enchanted Sun Glass. 3-79. The Mysterious Goblet. 3-87. The Miniature Inferno. 3-98. The Strange Disappearance. 2-108. The Magic Rosebush. 7-7. Invisible Writing Brought out on a Single Slate. 7-11. Spirit Writing. 7-43. The Caustic Pencil Trick. 7-49. Spirit Writing on Held Slate. 7-51. Reading Questions in Sealed Envelopes. 7-132. The Mysterious Vase. 5-37. Blood and Water Trick. 5-39. Wine, Ink and Blueing Trick. 2-134. The Wine Changed to Water. 5-8. Transmigration of Smoke. 4-30. Spirit Pictures. 5-34. A Spirit Vision. 5-57. The Flash of Flame. 5-58. Balloon Production.

Mechanical Tricks (many of them with sleight of hand features). 1-149. The Magic Card Bottle. 1-152. All Nations in one Bottle. 1-208. The Magi's Wand. 1-230. The Indian Mail. 1-245. The Enchanted Organ. 1-261. The Cocoon. 2-27. Vanity Fair. 2-31. After the Flood. 2-34. The Magic Palanquin. 2-35. Cassadoga Propaganda. 2-39. The Appearing and Disappearing Lady. 2-44. The Mysterious Trunk. 2-46. The Indian Basket Trick. 2-89. Trilby. 2-91. The "Haunted Swing." 2-136. The Sand Frame Trick. 2-137. Houdin's Magic Ball. 2-367. Psycho. Mechanical Chess-player. 2-369. The Kempelen Chess Player. 2-374. The Juggling Automaton. 2-376. The Toy Artist.

¹In the classification the first number given refers to the book, and the second to the page where found. No. 1. Burlingame, "Hermann, the Magician." No. 2. Hopkins, "Magic, Stage Illusions and Scientific Diversions." No. 3. Hopkins, "The Twentieth Century Magic." Nos. 4, 5 and 6. Burlingame, "Tricks of Magic" in three vols. No. 7. Robinson, "Spirit Slate-writing." No. 8. "Revelations of a Spirit Medium." No. 9. Hoffmann, "Modern Magic," No. 10. Hoffmann, "More Magic."

2-519. The Magic Table. 3-29. The Flight of the Timepieces. 3-47. The Magical Balance. 3-56. The Salem Seamstress. 4-6. Mephisto's Glass Cylinder. 4-14. Ice Freezing Extraordinary. 4-18. The Magnetized Chair. 4-29. The Mystery of L'Hassa. 4-31. Shrine of Koomra Sami. 4-34. Great Mahatma Miracle. 4-81. The Mango Tree Trick. 4-85. Rapid Transit. 4-87. The Oriental Barrel Mystery. 4-87. The Artist's Dream. 4-92. Samuel's Cartomantic Floral Charm. 4-92. Flowers Transformed. 5-8. Instantaneous Flower Production. 5-29. Magical Appearance of Bouquet. 5-30. The Changing Cards. 5-33. The Magical Monk. 5-33. Artistic Metagenesis. 5-34. Fortune Telling Coin Tumbler. 5-35. Another Artist's Dream. 5-39. Flowers of Yaggi. 5-40. Egyptian Incubator. 5-42. Box and Die Trick. 5-50. Apple and Orange Trick. 5-51. Comical Box. 5-53. Flowers from a Cone. 5-54. Inexhaustible Box. 5-62. Vivisection. 6-1. Buatier's Human Cage. 6-11. Maskelyne's Spiritualistic Couch. 6-19. The Climbing Ring. 7-53. To Answer Questions Written and Kept in Pocket. 7-74. Houdin's Floating Piano and Performer. 7-101. Horatio Eddy's Light Seance. 7-110. The Wire Cage Test. 7-143. Cupid Lighter Than a Butterfly. 9-139. Tricks Performed by Means of the Changing Card Boxes. 9-187. The Vanishing Coin Box, The Rattle Box, and many others on the false bottom principle. 9-195. Lamouchoir du Diable. 9-202. The Miraculous Casket. 9-203. The Coin Wand. 9-215. The Watch Mortar and the Magic Pistol. 9-217. The Snuff Box Vase. 9-220. The Watch Target. 9-234. The Magic Rose. 9-246. The Burning Globe. 9-258. The Magic Laundry. 9-296. The Red and Black Ball Vase Vanish, many variants. 9-330. The Pillars of Solomon. 9-333. The Magic Coffin. 9-335. The Bran and Orange Trick. 9-337. The Rice, Cone, and Orange Trick. 9-342. The Magic Mill. 9-372. The Bowl of Ink Changed to Clear Water. 9-373. The Inexhaustible Bottle. 9-377. The New Pyramids of Egypt. 9-380. The Box of Bran Transformed to a Bottle of Wine. 9-385. To Fire Borrowed Rings from a Pistol and Make Them Pass into a Goblet filled with Bran, the Bran disappearing and being found elsewhere. 9-388. The Coffee Trick. 9-400. The Rose in a Glass Vase. 9-424. The Vanishing Canary Bird and Cage. 9-435. The Passee-Passee Trick. 9-454. The Fairy Star and the Card Bouquet. 9-458. The Demon's Head. 9-462. The Magic Picture Frame. 9-467. The Magic Picture and the Chosen Cards. 9-468. The Magic Portfolio. 9-469. The Glove Column. 9-539. Zoe. 9-540. Fan Fare. 10-368. The Inexhaustible Punch Bowl. 10-428. The Shower of Gold.

TRICKS INVOLVING UNUSUAL ABILITY, SUPERIOR INFORMATION, ETC.

Mathematical. 9-42. To Discover a Given Card. 9-47. The Four Packets of Cards Having been formed Face Downward on the Table to Discover the Total Value of the Undermost Cards. 9-52. To Make a Card Thought of Appear at Such Number in the Pack as Another Person Shall Name. 9-53. To Guess Four Cards Thought of by Different Persons. 9-54. The Pairs Repaired. 9-55. Another Method of Discovering a Card Thought of. 9-59. A Congress of Court Cards. 9-104. A Row of Cards Being Placed Face Downwards on the Table to Indicate by Turning Up One of Them How Many of Such Cards Have During Your Absence Been Transferred From One End of the Row to the other. 9-160. Odd or Even, or the Mysterious Addition. 9-265. To Turn Up a Domino Whose Points Shall Indicate How Many Have Been Moved in Your Absence. 9-267. The Dominoes Being Arranged in a Row to Name Blindfolded the End Numbers of the Row. 9-269. To Name Without Seeing Them the Points of a Pair of Dice. 9-213. To Indicate on the Dial of a Watch the Hour Secretly Thought of by

Any of the Company. 9-560. The Q Trick. 10-237. The Expunged Numeral. 10-241. To Predict the Sum of Five Rows of Figures.

Code or Confederate. 2-184. Mental Magic. 2-197. Silent Thought Transference, Number One. 2-199. Thought Transference, Number Two. 4-61. The Spirit Thinkaphone. 4-63. Tachy Psychography. 4-65. Hypnognotism. 4-79. Head of Ibykus or Talking Skull. 5-22. Thought Reading in Cards. 6-49. Euclid Outdone. 6-41. McLaughlin's Thought Reading Trick. 5-6. Giving Number of Banknote in Sealed Envelope. 5-57. Magnetic Handkerchief. 9-56. To Guess by the Aid of a Passage of Poetry or Prose Such One of Sixteen Cards, as, in Your Absence has Been Touched or Selected by the Company.

Mediumistic Feats. 2-50. Spiritualistic Knots and Ties of Many Kinds. 4-22. The Three-knotted Charmed Handkerchief. 4-23. The Eglinton Rope Test. 4-24. One of the Davenport Rope Ties. 4-25. Braid and Tape Test. 5-59. Eglinton's Famous Slate Trick. 7-18. Spirit Writing With Pencil Thimble. 7-44. Spirit Writing With the Toes. 7-52. The Thumb Pencil Writing. 7-86. The Cotton Bandage Test. 7-105. Slade's Accordion Trick. 8-144. The Picture Medium. 8-178. The Slate Medium and the Sealed Envelopes. 8-184. Dark Circle Trick. 9-238. The Vanishing Knots. 10-250. Reading Blindfold. 10-251. Dr. Lynn's Second Sight Trick.

Superior Information or Ability. 9-47. To Place the Four Kings in Different Parts of the Pack and to Bring them Together by a Simple Cut. 9-48. The Four Kings being Placed under the head of One Person, and the Four Sevens under the Head of Another, to Make Them Change Places at Command. 9-50. To Name All the Cards of the Pack in Succession. 9-51. The Cards Being Cut to Tell Whether the Number Cut is Odd or Even. 9-51. The Whist Trick, to Deal Yourself All the Trumps. 9-57. To Detect Without Confederacy Which of Four Cards Has Been Turned Around In Your Absence.

TRICKS DEPENDING ON A LARGE USE OF FIXED MENTAL HABITS IN THE AUDIENCE.

Sleight-of-Hand With and Without Apparatus. 1-119. Hermann's Best Handkerchief Trick. 1-126. Another Handkerchief Vanish. 1-129. The Color-Changing Handkerchief. 1-133. Changing a Handkerchief into a Billiard Ball. 1-138. The Multiplying Billiard Ball. 1-139. The Chameleon Billiard Ball. 1-141. Samuel's Improved Chameleon Billiard Ball. 1-161. The Multiplying Coins. 1-184. The Fish Bowl Production. 1-188. The Flying Cage. 1-194. Chronological Catastrophe. 1-200. Hermann's Klingklang Trick. 1-202. The Spirit Calculator. 1-204. Heavy Weights from a Hat. 1-291. A Comedy of Errors. 2-106. The Cone of Flowers. 2-112. The Birth of Flowers. 2-114. To Pass a Finger Through a Hat. 2-119. The Egg and Hat Trick. 2-122. The Dissolving Coin. 2-132. The Invisible Journey of a Glass of Wine. 4-5 Handkerchief Multiplication. 4-8. The Flight Through Crystals. 4-11. Postal Card Trick. 4-15. Programme, Ring, and Envelope Trick. 4-16. Bertram's Programme and Coin Trick. 4-78. Catching Bullets on a Plate. 5-19. The Winged Numbers. 5-23. Yank Hoe's Paper Trick. 5-24. Cigarette and Card Trick. 5-26. Ornithological Labyrinth of Perplexity. 5-28. Tambourine and Paper Trick. 5-29. Valensin's Multiplying Coins. 5-44. A Coin Sleight. 6-29. The Flying Thimble. 7-128. The Miraculous Wine Glasses. 9-214. To Bend a Borrowed Watch Backwards and Forwards. 9-240. To Exchange a Borrowed Handkerchief for a Substitute. 9-254. Plumes from an Empty Handkerchief. 9-268. To Change Invisibly the Numbers Shown on Either Face of a Pair of Dice. 9-308. The Hundred Goblets from a Hat. 9-325. The Vanishing Gloves. 9-329. Egg Production. 9-163. To Make a Marked Quar-

ter and a Penny Wrapped in Separate Handkerchiefs Change Places at Command. 9-164. To Make Two Marked Coins Wrapped in Separate Handkerchiefs Come Together in One of Them. 9-168. To Pull Four Quarters Through a Handkerchief. 9-170. To Pass a Marked Quarter Into the Center of Two Oranges in Succession. 9-172. To Make a Coin Pass Invisibly from the One Hand to the Other, and Finally Through the Table. 9-175. To Rub one Penny Into Three. 9-180. The Travelling Counters. 9-181. The Wandering Coins. 9-227. To Pass a Ring From One Hand to Either Finger of the Other Hand. 9-228. To Pass a Ring Through a Pocket Handkerchief. 9-228. To Pass a Ring Through the Table. 9-230. To Pass a Ring Invisibly upon the Middle of a Wand, the Ends being Held by two of the Spectators. 9-231. The Magic Ball and Rings. 9-233. To Pass a Borrowed Ring Into an Egg. 9-272. Cup and Ball Conjuring. Four Movements Necessary: First, to Palm the Ball; Second, to Reproduce the Palmed Ball at the End of the Fingers; Third, to Secretly Introduce the Palmed Ball Under the Cup; Fourth, to Simulate the Action of Placing the Ball Under the Cup. 9-276. To Produce a Ball from the Wand, and to Return a Ball Into the Wand. 9-277. To Pass One Cup Through Another. 9-279. Having Placed a Ball Under Each Cup, to Draw it Out Again Without Lifting the Cup. 9-281. To Make a Ball Travel Invisibly from Cup to Cup. 9-283. Having Placed Two Balls Under the Middle to Make them Pass Under the Two Outer Ones. 9-282. Having Placed a Ball Under Each of the End Cups, to Make Them Pass Successively Under the Middle Cup. 9-283. To Pass Three Balls in Succession Under One Cup. 9-284. To Place Three Balls, One After the Other, Upon the Top of One of the Cups, and to Make Them Fall Through the Cup on to the Table. 9-285. To Pass Three Balls in Succession Upwards Through the Table into One of the Cups. 9-286. To Pass Two Balls in Succession from One Cup to Another Without Touching Them. 9-287. The Multiplication Pass. 9-288. To Transform the Small Balls to Larger Ones. 9-289. To Again Transform the Balls to Still Larger Ones. 2-125. Second Sight. 4-19. Slade's Spirit Knots. 5-10. Reading Sealed Messages. 7-32. Spirit Writing on Double Sealed or Locked Slates. 7-41. Spirit Writing While You Look. 7-49. The Slate Exchanged. 7-54. Another Method of Answering Sealed Questions. 7-58. Foster's Mind-Reading Trick. 7-72. The Table Lifter. 8-147. Slate Writing with Materialized Pencil. 1-221. The Spiritualistic Sack. 2-123. The Spirit Slates. 4-21. Bellechini's Cabinet Mystery. 4-27. New Spirit Post. 4-28. Spirit Hand. 5-15. The Original Slate Mystery. 7-4. Single Slate With Flap. 7-7. Endless Band Silicate Trick Slate. 7-9. With Two Slates and a Flap, to Produce a Message on a Blank Piece of Paper. 7-47. Another False Flap Method. 7-96. The Handcuff Trick. 8-140. The Carpet Slate Trick. 8-153. Slate Writing by Aid of the Trap. 6-21. The Magic Tambourine. 5-28. Candle and Rings. 5-47. Electric Coin Shuffle. 5-53. Ball and Changing Tube. 4-6. Soup Plate and Handkerchief. 4-12. Demon Cards. 4-13. Magic Die, Flowers, and Glass Box. 4-13. The Vanishing Billiard Ball. 1-135. Vanishing a Solid Billiard Ball from a Glass of Water. 1-154. Ring and Bottle Trick. 1-157. The Rabbit Trick. 2-48. The Decapitation Trick. 2-105. Egg and Handkerchief Trick. 2-117. A Cake Baked in a Hat. 2-120. Multiplication of Coins. 2-121. Magic Coins. 2-129. The Travelling Bottle and Glass. 2-130. Disappearance of an Apple and Ninepin. 9-121. The Magic Sword. 9-182. The Heads and Tail Trick. 9-183. The Magic Cone and Vanishing Coin. 9-185. The Animated Coin. 9-198. To Pass a Coin Into a Ball of Wool. 9-225. The Flying Ring. 9-241. The Locked and Corded Box and the Washerwoman's Bottle. 9-251. The Shower of Sweets. 9-313. The Welch Rabbit. 9-321. The Bonus Genius. 9-337. The Rice and Orange Trick.

9-401. The Chinese Rings. 9-419. To Vanish a Die Through the Crown of a Hat. 9-426. The Decanter and a Crystal Ball. 9-427. The Die and Orange. 1-143. The Rising Cards. 1-187. Cazeneuve's Card in an Orange. *Card-Tricks.* 9-64. To Make a Card Vanish from Pack and be Found in Person's Pocket. 9-66. To Teach the Company a Trick which They Learn Without Difficulty, Then to Allow Them to Succeed, or Cause Them to Fail at Your Pleasure. 9-69. To Distinguish the Court Cards by Touch. 9-70. To Name Any Number of Cards in Succession Without Seeing Them. 9-71. To Make Four Cards Change from Eights to twos, from Black to Red, etc. 9-73. A Card Having been Drawn and Returned and the Pack Shuffled to Make It Appear at Such Number as the Company Choose. 9-76. The Three Card Monte Trick. 9-77. To Nail a Chosen Card to the Wall. 9-77. The Inseparable Sevens. 9-79. The Inseparable Aces. 9-84. To Cause a Number of Cards to Multiply Invisibly in a Person's Keeping. 9-86. The Pack Having Been Divided into two Portions Placed in the Keeping of Two Different Persons, to Make Three Cards Pass Invisibly From the One to the Other. 9-90. To Make Four Aces Change to Four Kings, and Four Kings to Four Aces. 9-93. To Change Four Aces Held Tightly by a Person into Four Indifferent Cards. 9-97. The Shower of Aces. 9-103. Two heaps of Cards Unequal in Number Being Placed Upon the Table to Predict Before Hand which of the Two the Company Will Choose. 9-108. The Cards Having Been Freely Shuffled and Cut into Three or Four Heaps, to Name the Top Card of Each Heap. 9-110. To Allow a Person Secretly to Think of a Card, and even Before Such Card is Named to Select it from the Pack and Place it Singly Upon the Table. 9-115. To Change a Drawn Card into the Portraits of Several of the Company in Succession. 9-119. To Deal Yourself All the Trumps, the Three Other Players Holding the Usual Mixed Hands.

TYPICAL CONJURING DECEPTIONS.

For the illustration of the principles involved in conjuring, by showing something of the means employed in the performance of the feats, and as furnishing a basis for subsequent remarks, there follow below, in skeletal form, a number of tricks of the different groups. While the psychical element, the real flesh and blood of the trick is wanting, the omission is in part atoned for by a fuller statement of the principles involved in several special tricks given in the discussion. It has been asserted that in the nations of antiquity, the facts of science so far as then known were exhibited by the priests as evidence of divine power. In this age of discovery magic still makes use of them for the pleasure of a wonder loving world. Scientific features at present completely dominate the programme of the high class conjurer. In truth, however, these contain less of interest for the psychologist. The effects they permit of do not depend so much on an ideational contribution, hence, they do not vary so much with the individual. Being almost purely sensory, the illusion is the same in the case of the scientist to whom it is merely a puzzle or who may even know the principle, and the ignorant man to whom the feat is still colored with magical qualities.

OPTICAL ILLUSIONS.

In optics the most astonishing effects are produced as the result of skillfully placed mirrors, plate glass, and magic lanterns.

2-69. The Living Half Woman.

Effect. On a small table rests a three-legged stool, supporting a cushion and the half lady. Lady moves and speaks, brilliant light. Visitor can see the four legs of the table, and the space under the stool. Method. Two mirrors set at angle of forty-five degrees under stool, side legs of table also connected with middle one by two mirrors.

2-77. The Decapitated Princess.

Effect. Head resting upon two swords lying across the arms of a chair. Method. An opening in chair back, below swords through which lady's head protrudes. It is concealed by a mirror placed at forty-five degrees reflecting the red plush of seat of chair. Variants are the Talking Head, Stella, The Spider and the Fly, The Mystery of Dr. Lynn.

2-72. She.

Effect. Lady standing on a small round stand beneath which the four legs and four lighted candles are seen. Cylindrical cloth screen lowered over lady to level of table. At pistol shot screen and lady are ignited; when burned out, a pile of bones and skull remain on table. Method. Mirrors meeting at right angles under table reflect two legs and two candles to make them seem four. Lady descends through trap in table top when screen is lowered.

7-136. The Mermaid's Head.

Effect. Upon a light tripod stands an aquarium with goldfish swimming in it, and in the center a head which moves and smiles. Method. Three triangular mirrors above the crossing place of the legs form a place serving to conceal body, and permit of placing head in the central cavity of transparent glass in aquarium.

1-250. Metempsychosis, or The Walker Illusion.

Effect. Living forms walk bodily out of blank space, change into other shapes and finally vanish. A ghost becomes visible and develops into a living person. Process reversed. Method. Large plate glass mirror—on rollers, transparent at one end and silvering gradually increasing in density—set at proper angle. Keller's blue room on this principle.

2-79. Keller's Queen of Flowers.

Effect. A screen eight by ten feet in three divisions. The bottom is a floor raised about one foot from the stage, an electric light under each division, a semi-circular stand placed in front of middle panel at same height as floor. At roof is a brass rod from which hangs a curtain inclosing the little stand. Audience can see if any one seeks to get behind curtain, yet when curtain is drawn, a lady surrounded by flowers is seen on the platform. Method. Invisible mirrors running from floor to roof of summer house form a passage way through which one can walk from behind scenes to stand while the audience still keep guard.

2-81. Houdin's Magic Cabinet.

Effect. An empty cabinet shown and examined by spectators. A lady enters and the doors are closed, when opened the lady has disappeared. They are closed and she reappears. Method. The sides of cabinet are the backs of two mirrors, when the doors are closed upon the lady, she pulls the mirrors towards her till they meet at the pole in the front of cabinet rendering her invisible.

2-86. The Platinized Glass Illusion.

Effect. The image of a person looking in mirror may be changed to portrait of a horned devil. Method. Mirror gives image by reflec-

ted light but is transparent by transmitted light, which may be admitted by shutter to show image placed behind glass.

2-60. The Three-headed Woman.

Effect. Curtain drawn back a woman's body is seen, it has three heads, two springing from the neck of the third; they sing, etc. Method. A mirror, facing audience. On an inclined board which rests against the screen in front of the stage, lie three young girls, the middle one in light colored silk. The bodies of the two at the sides are covered with fabric of dead black color. In front of them are placed powerful lights.

1-234. Black Art.

Effect. Stage setting and everything in black except the articles which are to appear, these are white. The performer in white silk commands the spirits. His wand comes out of space to his hand. Two small tables suddenly appear when desired. Refreshments are served from empty vases, doves and rabbits are then produced from them, and thrown in the air when they disappear. Performer produces a lady from a shawl, severs her head with a knife and places it on a pedestal. The body is still seen to move. Many other startling effects are produced. Method. Stage in dead black. Reflectors on sides and in front face audience. Articles to appear are placed behind black screens. Assistants in dead black move freely about the stage and are invisible, when head is deposited on pedestal, lady walks behind screen head only showing.

2-61. Amphitrite.

Effect. Through a circular aperture in a screen appears a scene representing the sky, below in foreground is the sea; at command a nymph rises from sea into space in which she turns round and round, gracefully moving arms and legs. She finally assumes position of a diver and plunges into ocean. Method. Mirror inclined forty-five degrees to stage, nymph strongly illuminated lies on a revolving table below the stage, table pushed forward to make her appear, and pulled back at the end of performance.

2-520. Gone.

Effect. Lady tied in a chair, raised by windlass a few feet above stage. Performer fires a pistol, at same instant lady vanishes and chair drops to floor. Method. A row of lights on frame of windlass are turned off at instant that pistol is fired. Another row up over the proscenium are at the same instant turned on, and they brilliantly light up a background corresponding to background of stage. The front of frame unknown to audience is covered by a sheet of glass which receives image of background above, and hides rear background and lady from sight. Another method sometimes used is to drop a black screen at pistol shot.

2-55. Cabaret du Neant.

Effect. Subject placed in a standing coffin changed to a grinning skeleton and back at command. He is next placed at a table, when audience see a spirit approach and gesture to him. Method. A skeleton is in a coffin unseen by spectators, when the light is turned on it has its refracted image from large plate glass thrown so as to coincide with the person in the second coffin. In the same way the spirit is made to walk.

7-46. Spirit Message by Aid of Mirrors.

Effect. A person writes a question on a slate, places it written side down on the table. The medium places one hand on slate, and with the other writes a communication which is the answer to the unseen question. Method. The slate is placed over a trap; trap is opened and three mirrors at forty-five degrees reflect writing to the place medium is sitting.

ACOUSTIC ILLUSIONS.

An example of the illusions of this class may be taken from the ventriloquists who exhibit in public large articulated puppets in connection with their art. The aim of the ventriloquist is to produce an illusion of a voice proceeding from a point other than its real source. In order to deceive his listeners more completely, an unusual tone of voice is used. Contrary to the popular opinion, these sounds are not thrown but their locality is suggested by all the means of the actor's art, and by the employment of talking figures. The moving mouths of these puppets and the still lips of the performer produce an effect which especially on the stage is absolutely perfect. The puppets are so constructed that under the manipulation of the performer, they move their limbs, shrug the shoulders, shake the head, wink, make faces, and move their jaws in such a way as to seem to utter the words that the spectator hears. In order that the lips of the magician may be kept motionless during the performance, a selected vocabulary of words, free from labials is necessitated. This fact will not be perceived by the audience if the artist does his work well. A good setting enhances the effect very much, and real acting is as important here in creating the illusion as in any other branch of conjuring. The difficulty of localizing the origin of sounds is shown in many familiar cases. It is well understood by those who study stage effects; should an actress who is no vocalist have a part requiring her to sing, she has only to simulate singing while the vocalist in the wings supplies the notes with little fear that the audience will detect the imposture. So the beautiful chorus girls stand on the front row, but the volume of sound is contributed by their plainer comrades behind. In spiritualistic seances where stringed instruments float across the stage giving forth melodious sounds the while, the man with the bow plays an instrument in contact with the wire, but unseen by the audience. Where a cannon is fired on the stage only a fulminating cap is flashed before the spectators, the real explosion taking place outside. The resounding smack heard when one clown slaps another is produced by the victim clapping his hands at the instant he is struck. The audience following the larger movement do not see this. A common laboratory experiment where the subject sits blind-folded and is required to judge of the direction and distance of sounds made by a snapping instrument shows the difficulty the ear experiences in localizing sounds. The results obtained indicate that, in general, judgment is based upon the relative intensity of the sounds reaching the two ears; while the general direction of right and left are sensed, no approach to accuracy oc-

curs. Our spatial ideas are for the most part a complex effect of tactual and visual sensations past and present, and audition contributes but little. The ability of the ear to discriminate the source of sounds therefore, is in no way comparable to the eyes' power to focus on the object of vision. Indeed the ear does not trust to its own accuracy but relies so far as possible on aid from the eye, which, biologically considered, is by far the more important sense. It is plain, therefore, for the reasons given that the use of the puppet is an advantage in the production of the illusions referred to, for the eyes of the spectator are irresistibly drawn to its moving lips, and his mind acting under the usual association, as explained elsewhere, is impelled to attribute the voice to it also.

2-103. Houdin's Magic Harps.

Effect. Two harps, placed upon the stage play in concert. Intervention of spirits. Method. The harps are in contact with two fir rods which pass through floor, and rest upon harps played by skillful musicians below. Several variants.

9-222. The Mesmerized Watch.

Effect. Performer makes passes over a borrowed watch to change it as he says into a repeater. He then asks it to tell the hour that last struck, when the watch chimes the number with a clear bell-like tone, and answers other questions, three strokes for yes and one for no. Method. The strokes are made by a clock bell with a striking mechanism placed in the pocket. It is set in motion by pressure on a button.

A variant is the spirit bell. Effect. An ordinary bell placed on a plate of glass tells fortunes, ages, etc. Method. A second bell in table connected with an electric battery.

4-91. Poe's Raven in the Garland of Thebes.

Effect. A raven sitting in a garland of roses suspended in mid air by ribbons talks, sings, whistles, and tells fortunes. Method. The raven is stuffed, ribbons double and contain a rubber tube running behind scenes. The voice of a confederate passes out of tube in a direct line with bird's mouth.

9-159. A Borrowed Coin being Spun on a Table to Tell Blindfold whether it falls head or tail upwards.

Method. Substitute a coin prepared by cutting the edge so that a minute point will project from one side. When spun on this side it will run down more rapidly, and the difference in sound is distinguishable to an attentive ear.

4-36. Keller's New Karmos.

Effect. Lady sits on a chair facing audience. Performer blindfolds her and makes magnetic passes over her. The lady names cards, the numbers of banknotes, and other second sight feats. Method. Assistant behind scenes with a strong glass sees everything, and tells the lady what to say by means of an invisible speaking tube passing from behind the wings under the floor and up the rear leg of chair. Performer under pretense of hypnotizing the lady connects the tube in her hair to the one in chair.

ELECTRICAL DECEPTIONS.

9-483. Houdin's Light and Heavy Chest.

Effect. The weight of a chest changed at the command of the magician. Method. Electro-magnetism. Box with iron plate on bottom

placed in contact with studs, connected with electro-magnet and this with battery below stage.

9-485. Spirit Rapping and Telegraphy is frequently produced in many forms by the aid of electro-magnetism. A keeper, to which is attached the knocker, is drawn down by making circuit, and drawn back by a spring on breaking it. The apparatus is concealed in table and wires leading down hollow leg to battery. Magic bells and drums on the same principle.

3-122. Houdin's Crystal Cash Box.

Effect. A transparent box suspended above stage,—performer takes a number of coins in his hand and saying pass, they vanish from his hand, and are heard to fall in the crystal box where they become visible. Method. Coins are pushed through trap in table and placed by assistant in a glass flap against lid of box before bringing it in, in which position they are invisible. At a signal the circuit is completed through a wire holding glass flap; a fuse is melted and coins released.

7-62. The Educated Fly.

Effect. A large mirror resting against an easel is marked by the performer in twenty-eight squares, and lettered a to z. One of the remaining squares is zero, and the other is left, as the conjurer says, for a starting point. A large fly is placed on the empty square; whenever a number is called for, the fly travels across and stops at the desired square. Method. Boy behind mirror with strong electro-magnet causes fly to move over desired course to corresponding square.

2-96. The Neo-occultism.

Effect. A diner with eye-glasses and armed with knife and fork attacks a beefsteak. At a signal lights go out, a skeleton appears sitting opposite gentleman who has disappeared, his glasses alone remaining visible. Method. A black curtain on the other side of the table conceals from spectators a skeleton covered with zinc sulphide, when the lights are extinguished, a concealed Ruhmkorff coil is put in action. The skeleton, the tableware, and the eye-glasses are alone visible.

3-114. The Demon Candlestick.

Effect. Candles lighted at command. Method. Candles hollow, secretly connected with the gas pipe. Wires are led up to wick of candle, ignited by an induction coil giving a two-inch spark or by a plate machine.

CHEMICAL EFFECTS.

7-11. Spirit Writing.¹

Effect. A blank piece of paper placed between two slates and laid on table in sight, is later found to have a message on it. Method. Invisible message written previously with dilute sulphuric acid. In the body of table is placed a lamp. The top of table is iron,—heat blackens the acid. A variant is to place the message previously written with a weak solution of copper sulphate in a vessel containing some ammonia. A similar method is to place the writing done with iron sulphate in contact with a surface moistened with a solution of nutgalls.

7-43. The Caustic Pencil Trick.

Effect. Medium takes victim's slate and with a pencil covers both sides with writing to see, so he says, if it is good enough for the test. He cleans both sides, and requests him to hold it close to his breast. On removing it writing is found on the side nearest him. Method. Pencil pointed at both ends, after writing several lines, the medium writes between them with a silver nitrate end, wets slate with salt water, writing white when dry.

¹ Robinson in "Spirit Slate Writing" gives thirty-seven formulas for sympathetic inks.

Another method is to write on slate with a solution of hydrochloric acid and zinc, it is invisible while wet.

7-51. Reading Questions in Sealed Envelopes.

This is hardly to be classed as chemical, but is a favorite with mediums. Prepare a sponge with alcohol, brush envelope and writing within becomes plainly visible.

4-30. Spirit Pictures.

Effect. Medium shows a wooden frame on which is a piece of cloth, a picture gradually appears on cloth. Method. Picture prepared beforehand on unbleached muslin, using sulphate of iron for blue, nitrate bismuth for yellow, sulphate copper for brown. Medium in cabinet behind with an atomizer sprays solution of prussiate potash, which brings out colors. Spirit music to hide noise of atomizer.

2-134. The Wine Changed to Water.

Effect. Conjuror asks a spectator to take refreshment. Waiter brings in two glasses and two transparent decanters. One contains red wine, the other water. The guest is asked to make a choice, and pours red wine into his glass which changes to water. The conjuror pours out water which becomes wine. Method. The wine was potassium permanganate and sulphuric acid, and was clarified by sodium hyposulphite in bottom of glass. The water was partly alcohol, and readily dissolved aniline red in other glass. Many other chemical combinations are used.

3-71. The Enchanted Sun Glass.

Effect. Fire set to paper by focusing rays from a candle. Method. In the handle of the sun glass is contained a solution of phosphorus in carbon disulphide. Liquid discharged on paper by a push-button.

5-58. Balloon Production.

Effect. Six inflated gas balloons produced from a hat which is first shown empty. Method. A half ounce of water in each of the empty balloons. In the neck of each has been placed a small bag containing calcium carbide. One at a time the water is permitted to reach the carbide and generate gas.

3-98. The Strange Disappearance.

Effect. A solid silver elephant placed on a column and covered by a glass and scarf disappears. Method. Elephant is of mercury frozen by evaporation of solid carbonic acid dissolved in ether or by frozen air; when exposed it soon melts and flows into an opening in the stand.

MECHANICAL TRICKS.

7-74. Houdin's Floating Piano and Performer.

Effect. Lady seats herself and plays piano placed against side scenes, closing cover she reaches toward bouquet on table which comes to her hand. She is seen to rise half way to top of stage, then glide to opposite side of room and out. Piano rises and follows her. Method. Invisible wires running over pulleys. Piano is drawn out behind from a papier machè shell, shell alone is floated out.

7-110. The Wire Cage Test.

Effect. The iron cage is subjected to rigid examination. Medium enters and is locked in. Usual manifestations take place. Method. One rod unscrews, releasing others. Many trick cabinets, handcuffs, etc., on same principle.

9-203. The Magic Coin Wand.

Effect. Touching any spot with wand a coin appears on end. Method. Wand is a hollow brass rod slotted along the side. In this a stud works to push a split coin out or to withdraw it. Use in connection with palmed coins or money slide.

9-215. The Watch Mortar.

Effect. Borrowed watch dropped in mortar, pounded with a pestle, pieces loaded in a pistol and fired at a loaf of bread. Watch found uninjured in loaf. Method. Mortar with movable bottom, watch drops through into other hand and is palmed. A dummy watch is pounded up and placed in pistol, when conjuror fetches the loaf he inserts watch. A variation is to shoot at a target, when the borrowed watch is seen to alight on a little hook in the middle. Target is reversible and held by a spring which is released at shot. It reverses too quickly for the eye to follow. A trick on the same principle is the Fairy Star. Six cards chosen by spectator are loaded into a pistol and fired at a gilt star brought out by an assistant. At shot the six cards are seen to appear attached to the points of the star. Method. The cards chosen are substituted, while performer loads six others into pistol, the assistant places the cards on springs behind the rays of the star and brings it in for target. The springs are released at shot, and cards appear. The card bouquet is a variant.

2-27. Vanity Fair.

Effect. A large looking glass with a shelf at bottom. Using a ladder a lady steps upon the shelf, turns to glass and inspects her reflection. A screen so narrow that a considerable portion of the mirror shows on each side of it is now placed around her. After a moment, screen is removed and lady has disappeared. Method. A section, cut in mirror below, slips up, leaving an opening. A sliding platform is pushed forward from an opening in the rear scene, and lady is drawn through by assistants.

9-34. The Magic Palanquin.

Effect. A lady in a palanquin carried by four slaves. At a given moment the curtains are drawn, and then immediately opened, the lady has disappeared. Method. The four posts are hollow containing a cord working over pulleys at the top. At the moment curtains are drawn counterpoises are disengaged and rapidly raise double bottom with lady up to interior of canopy.

2-35. Kellar's Cassadaga Propaganda.

Effect. A small cabinet forty-two inches high, thirty-six inches wide, and fourteen inches deep is placed on two chairs. Tambourines and bells are placed inside, and doors closed. The instruments begin playing and are then thrown out at the top. Cabinet opened and found empty. A slate placed therein has a message written on it. Other effects. Method. Cabinet is suspended in part by fine wires; a small boy perched on a shelf at back of cabinet is the moving spirit.

2-42. The Disappearing Lady.

Effect. A lady seated on a chair is covered by a silk veil. After counting three, veil is lifted and lady has gone. Method. Trap. May be used in reverse order.

2-89. Hermann's Trilby.

Effect. A plank is placed upon the back of two chairs. Trilby enters, lies down upon the plank. Hermann makes passes over her, then removes the chairs, leaving her floating in the air. Method. A bar protruded from a strong frame with moveable slide, works behind scenes. It is guided by performer under cover of his passes into its socket. A variation of this is to suspend plank by invisible wires before removing chairs.

8-153. Slate Writing via the Trap.

Effect. The "sitter's" locked or clamped double slate is held beneath the table by both inquirer and medium. It is later found to have a message on it. Method. Medium has convulsive jerkings and pulls slate from visitor for an instant and in giving it back substitutes

another. The slate is now passed through trap to an assistant below who opens and writes, fastens and returns slate.

7-7. The Endless Band Silicate Slate.

Rollers in frame of slate. A little stud pushed up brings previously written message on back of slate to front.

2-46. The Indian Basket Trick.

Effect. The performer, sword in hand leads in a young lady declaring she must be punished. He blindfolds her. She finally escapes and runs off the stage; he follows and drags her in by the wrist blindfolded and compels her to enter an oblong basket, say five feet by two, and as deep as wide, which is placed on a low stand or bench so as to be raised clear of the stage. Closing the lid he thrusts the sword through the basket in various places. Piercing screams are heard from within and the sword when withdrawn is red with blood. When all is quiet the conjurer wipes his sword and tells the audience that he did it to punish her, but that she had left the basket before the sword was thrust in. He turns it over and shows it empty. At this interval the lady appears from some other part of the room, makes her bow and retires. Method. Two ladies dressed alike, after the audience have seen the 'first lady's features, she runs out and the second is dragged in blindfolded and placed in the basket. The basket has a false bottom or flap, when the basket is turned up for the spectators to see, the lady is left lying behind it while the flap simulates the bottom. A variant later produced makes use of the principle of the sphinx table having a mirror between bench and floor, behind which is a trap. When lady enters basket, she passes immediately below stage. The basket is shown empty, and the lady appears as before. Both forms given are improvements over the trick as performed by the Indian jugglers exposed by Prof. Bertram.¹ In one form the spectators are not allowed to look in the basket, but after the thrusting in of sword the boy's clothes are taken out and the performer jumps in the basket himself. Another mode of working the trick is employed where there is a wall as background; screens are used and at the critical period confederates raise a tremendous disturbance, in the midst of which the boy escapes.

TRICKS INVOLVING UNUSUAL ABILITY, SUPERIOR INFORMATION, ASSISTANCE OF CONFEDERATES, ETC.

Under this heading might well be placed many card tricks not requiring sleight of hand, rope tying feats, and others requiring unusual skill, feats of memory as in the mind reading and second sight tricks, code tricks, and many requiring a confederate; also those involving superior information or knowledge of a mathematical nature, and puzzles.

Heller's Second Sight.

Effect. Lady blindfolded and seated before audience. Magician goes among spectators, receives from them various articles which the seeress accurately describes; of a strange coin, where coined, its denomination and date; of a watch, the metal, maker's name, the time, date, etc.; so of other objects however strange. Method. The questions put are words, syllables, or vowels from an ingenious code. By means of combinations of these, Heller could give the clairvoyant the names and other data of every variety of article. He could also give information without speaking a word, electricity being used.

¹ Bertram: "Are Indian Jugglers Humbugs?" Strand Magazine, January, 1900.

He gave the cue by some natural movement of arms or body to a confederate who telegraphed them to lady, a little machine in seat of sofa tapping off the signals to her. Others have the bottom of shoes placed in contact with electric apparatus. Many other forms or variations are used.

5-22. Thought Reading in Cards.

Effect. A pack of cards previously arranged in the order of hearts, diamonds, clubs, and spades. Exchanged for one given to be shuffled. Divide into seven or eight lots on the front of stage, one lot selected, the others removed. Secretly looking at bottom card in the lot taken off the top of selected lot, performer will know the order in which cards run. The blindfolded assistant is given this cue when she will be able to name the cards in order.

2-198. Silent Thought Transference, Number One.

Effect. Reading of bank-notes, numbers of watches, dates of coins, by medium. Method. Performer and medium count mentally and together. Practice enables them to do this with certainty. The numbers counted correspond to articles or ideas in the memorized code. signals for starting and stopping are used.

2-199. Silent Thought Transference, Number Two.

Effect. Pretence of hypnotizing medium, performer goes among audience who whisper what they wish subject to do. Having spoken to from twelve to twenty persons, the performer advances toward medium and waves his right hand in downward movement. She slowly rises and goes through desired performance. Method. A code of signs and things to be done are learned. These things are forced on the audience, performer's movement gives the cue.

The Thought Reading Artist.

Effect. Artist draws on blackboard a picture of animal or object thought of. Method. Magician has battery and shocking coil under his clothing. By taking hold of wire leading therefrom artist receives by signals information of the object that he is to draw. Another simple method is to communicate the desired information to artist by pulling a thread attached to her head, using a code of signals similar to Morse's alphabet.

9-56. To Guess by Aid of a Passage of Poetry or Prose Such One of Sixteen Cards as, In Your Absence Has Been Touched.

Method. A confederate and a code: animal, vegetable, mineral, verb, signifying respectively, one, two, three, four. Confederate selects such passage that the first word coming within either of the four categories, names the row, and the second gives the number or card in that row.

7-18. Spirit Writing With Pencil Thimble.

Effect. The skeptic holds one end of clean slate in one hand and the medium the opposite end. Both clasp their disengaged hands, slate is turned over and message found. Method. A piece of slate pencil fastened to thimble worn on forefinger; an elastic to vanish it when it is done with, or a tiny piece of pencil fastened to finger by flesh colored court plaster. Only a few words can be written within radius of finger. Must be written backward. A variant. Medium holds a card to forehead, presently an answer found thereon. In this case pencil is used on thumb.

7-44. Spirit Writing With the Toes.

A clean slate put on floor under the table. Hands of sitter and medium are clasped. Message appears upon slate. Method. Shoe slipped off, stocking is cut away. A bit of pencil attached to great toe or a piece of chalk held between toes.

2-50. A Spiritualistic Tie.

Effect. A committee tie a rope securely around medium's left wrist; he then places his hands behind him, the right wrist resting over the knots on the left, and the ends of the rope are tied down tight on the right wrist. Cabinet closed and phenomena occur. **Method.** In placing his hands behind him he gives the knot on left wrist a twist and covers the knot and twist with the right; when ready to release himself he gives his right hand and wrist a half turn releasing the twist lying on the knot, when the hand can be easily withdrawn to play the usual tricks, then returned. Many variations.

7-105. Slade's Accordion Trick.

Effect. Accordion held under table by strap end with right hand, keys being at the other end. Left hand on table. Accordion gave forth melodious tunes. **Method.** He skillfully reversed instrument as it went under the table. Holding firmly between his legs he used bellows, and worked the keys with one hand.

9-57. To Detect Which of Four Cards Has Been Turned Around in Your Absence. A Parlor Trick.

Method. Arrange cards face upward so that the wider margins are all one way.

9-267. To Allow Any Person To Arrange the Dominoes in a Row Face Downward, Then to Name Blindfold the End Numbers of the Row.

Method. The dominoes are to be arranged to match as in the game of dominoes. The performer previously abstracts one which makes it certain that the ends of the row will agree with the numbers on domino taken.

9-213. To Indicate on the Dial of a Watch the Hour Secretly Thought of by Any of the Company.

Method. A spectator is requested to think of any hour he pleases. The performer begins to tap the watch with a pencil. He asks the spectator to mentally count the taps, counting the first tap as one more than the hour he thought of. When the performer reaches eight he must tap on twelve, and thenceforward must tap the numbers in a reverse order. When the spectator counts to twenty, the pencil will be on the hour thought of.

TRICKS DEPENDING ON A LARGE USE OF FIXED MENTAL HABITS IN THE AUDIENCE.

Sleight-of-Hand with and Without Apparatus. 4-78. Catching Bullets on a Plate.

Effect. A file of soldiers; cartridges marked by audience, collected on a plate by performer who gives each soldier one. They are placed in guns which are fired at command. Performer catches the bullets on a plate. **Method.** As he returns to stage performer substitutes wax bullets coated with plumbago for the real ones, which he later produces.

1-119. Hermann's Best Handkerchief Trick.

Effect. Handkerchief borrowed, given to spectator to hold, and is found in pieces; takes pieces, rolls them together, and gives them to gentleman again and asks him to rub his hands together to sew the pieces. Taking them back again they are found changed to a long strip. He loads it into a pistol and shoots at a lemon; on cutting lemon the supposedly original handkerchief is found inside. He places it on a plate to scent it, when his assistant sets fire to it. Taking the ashes from the plate, the performer rolls them up in a piece of paper, which he then bursts open, and showing the original handkerchief returns it to owner. **Method.** Skillful palming and substitutions.

1-138. The Multiplying Billiard Balls.

The effects are produced by use of one solid ball and two half shells. Operator can show one, two, or three balls of as many colors, making vanishes and color changes at will.

6-29. The Flying Thimble.

Effect. Performer waves right hand with thimble on forefinger backwards and forwards before and behind the left; thimble seems to have changed suddenly to other hand. Method. Thimble palmed in left is shown on finger at instant thimble is withdrawn.

2-106. The Cone of Flowers.

Effect. A Piece of Paper formed into a cone when gently shaken becomes filled with a great quantity of flowers.

Method. A package of flowers each containing a spring is held compressed by a band. It is palmed by performer and released when placed in cone.

2-112. The Birth of Flowers.

Effect. I. At a wave of wand a rose appears in buttonhole. Method. A rubber cord attached to rose passes through buttonhole and fastens to waistband. When first entering rose is held under arm. II. Seeds placed in a glass and covered by a hat. Hat removed and flowers are discovered. Method. Flowers introduced into hat while audience's attention is directed to glass.

2-114. To Pass a Finger or Wand Through a Hat.

A false finger concealed in hand is held in place from inside of hat by a needle attached to finger.

2-119. The Egg and Hat Trick.

Effect. Eggs taken from an empty handkerchief and placed in hat. Supply unlimited. Method. Egg behind handkerchief suspended by a thread. Raising handkerchief withdraws egg from hat.

2-122. The Dissolving Coin.

Effect. Coin is held by a spectator within folds of a handkerchief over a glass of so-called acid. At signal coin is dropped and heard to strike glass. Cover removed and coin found dissolved. Method. A glass disk the size of coin substituted for coin before spectator takes hold. It just fits the bottom of glass and is invisible in the water.

1-202. The Spirit Calculator.

Effect. A blank paper given to spectator is folded and kept in pocket. On another paper several persons in the audience write numbers of three figures each, when added they amount to the number found on the blank paper in first gentleman's pocket. Method. Performer under pretense of helping to fold blank paper substitutes one with a number on it, and as he passes the second paper with the numbers to a spectator to be added, he substitutes one containing several numbers amounting to the number on the blank paper.

9-254. Plumes in an Empty Handkerchief.

Effect. Handkerchief shaken to show that it is empty, large plumes then taken from it. Several repetitions. Method. Plumes grasped in hand when coat is put on, the ends reaching to the wrist are seized under cover of handkerchief. A variant is Hermann's Flags of all Nations.

1-184. Hermann's Fish-bowl Production.

Effect. Performer in evening dress, produces from a handkerchief several bowls of water with goldfish swimming therein. Bowls about seven inches in diameter, and two deep. The last one produced has a tripod attachment a foot or two high. Method. The bowls with strong rubber covers are disposed in pockets about performer's person. The tripod attachment to the final bowl is formed by a telescoping contrivance. Magicians often produce numerous glasses of wine of different sorts on the same principle.

1-126. A Handkerchief Vanish.

Effect. A silk handkerchief rolled in hands disappears and is found elsewhere. Method. A flesh-colored barrel or sack hanging to a finger receives it and is then swung to back of hand, and later disposed of if desired. Another vanisher used to vanish gloves and other articles is a receptacle attached to a rubber cord which flies beneath coat when released.

9-175. To Rub One Coin into Three.

Method. Previously stick two coins with wax to under side of table near edge. While rubbing coin with thumb above, scrape off coin below and produce. Repeat.

9-178. To Make a Marked Coin Vanish from Handkerchief and be Found in Center of an Orange.

Method. Ask a spectator to hold a coin in a handkerchief. Palm coin while placing it beneath, and give him a similar one which is sewed into the handkerchief. Performer now brings the orange, pushing coin into a slit in orange while doing so, shake out handkerchief and cut orange.

9-268. To Change Invisibly the Numbers Shown on Either Face of a Pair of Dice.

Method. Arrange dice so that the numbers shown on the face are the same, except in reverse order, on the next quarter turn, as three and one and one and three. Now, if dice are given a quarter roll between fingers as they are brought forward the numbers are seen reversed.

9-62. A card having been chosen and returned, and the pack shuffled to produce the chosen card instantly in various ways.

Method. A taper pack used. When a card is chosen pack is reversed and it can then be withdrawn by touch. With an unprepared pack the chosen card is brought to the top by the pass and palmed, and later produced at will.

9-69. To distinguish the Court Cards by Touch Blindfolded.

Method. A knife drawn along edge of each court card leaves a minute ridge perceptible to the touch.

9-73. A Card Having Been Drawn and Returned and the Pack Shuffled to Make it Appear at Such Number as the Company Choose.

Method. When chosen card is returned make the pass and keep palmed, produce at the number chosen. Very many variations based upon the pass and palming.

9-76. "The Three Card Trick."

Dropping a court card and two plain cards to tell the court card. Method. The operator holds them, face downwards, one between the second finger and thumb of the left hand, and the other two, one of which is the court card, one between the first finger and thumb, the other between the second finger and thumb of the right hand, the latter being outermost. Bringing the hands quickly together and then quickly apart, the cards are dropped in succession. The trick is an illustration of the fact that the hand can move quicker than the eye can follow.

9-90. To Make Four Aces Change to Four Kings and Four Kings to Four Aces.

Method. Four cards are kings on one side, aces on the other. Produce and palm as desired in a variety of ways.

9-103. Of Two Heaps of Cards Unequal in Number, to Predict which the Company Will Choose.

Method. Both heaps contain even numbers. By a palmed card the heaps are made odd or even as desired. Many tricks with "prepared cards" require considerable sleight-of-hand in their performance. In

general they are used for a special part of the trick. The tapering pack, as its name indicates, is broader at one end. A long card or a broad card is often used for forcing. When not forced or otherwise used in the trick itself, it is useful to place over or beneath other chosen cards to find them easily. Cards pricked in the corner are often used. Card sharpers doctor the pack to suit their purposes. In preparing the "strippers" used by them, two hands are selected from the pack and the remainder are trimmed down. A "brief" is simply a card kept out of the pack and trimmed convexly at the sides so that it can be distinguished by the touch.

Several kinds of mechanical changing cards are used but all have as their object the apparent transformation of the cards to different ones. In one case four cards have the spots so arranged that they can be shown as fives, but by reversing them they become twos. There may be spots on back and front. Aces with changeable spots worked by a pin through a slit in the back. Packs arranged in various fashions for vanishing.

9-139. In the "Torn Card" trick a card is torn to pieces and burned, except one corner, the ashes fired at a box on the table in which is found the card restored save for the corner torn off. This piece is now taken from the spectator and thrown or fired at the card when it is seen to be whole. Method. The restored card is of tin made to resemble a card with a flap of the shape of the missing corner held back by a spring, which is released at the proper time.

2-48. "The Decapitation Trick."

Effect. Clown placed upon a coffin shaped box. Head covered with a cloth. Harlequin cuts across his neck with a large knife, and in a moment lifts in the air the severed head. He places it by the headless trunk, a lighted cigarette is placed in its mouth, smoke comes from the nose, the eyes roll, in horror he again covers it with the cloth, takes and kneads it on to the body; figure rises an orthodox clown. Method. An assistant in the box which contains trap doors, a dummy head which is an exact *fac simile* of the clown's painted head and face. Variants are Vanek's Decapitation, and Herman's Decapitation.

1-157. "Hermann's Rabbit Trick."

Effect. Two rabbits are produced from a hat, placed on the table, one is rubbed into the other: a third is then pulled from the inside of a gentleman's coat. Method. The two are first produced from pockets. In rubbing them on the table one is pushed through trap. The gentleman, who is a confederate, has the third in his inside pocket.

9-401. The Chinese Rings.

Effect. Eight nine-inch steel rings given for examination, are found to be separate and solid, at the will of the operator they become linked together in an apparently inextricable mass. A shake causes them to fall apart upon the stage. Method. Rings really consist of one key ring, two single rings, a set of two and a set of three linked together. Many variations in combining them.

9-251. The Shower of Sweets.

Effect. A borrowed handkerchief is held over a plate when a shower of sweets pour forth and are caught by the plate. Method. A small bag with mouth closed by springs is introduced under handkerchief and opened.

9-373. The Inexhaustible Bottle.

Effect. Performer appears with bottle and glasses and serves any wine called for. Method. Bottle is of tin divided into a number of compartments, each tapering close to neck of bottle. A pin hole drilled into each compartment, fingers cover holes except the one to be drawn from.

9-388. The Coffee Trick.

Effect. Coffee berries change to hot coffee, white beans to sugar, and bran to hot milk. Method. By the use of apparatus of the double bottom order. Very many variations of the false bottom type.

9-398. The Wizard's Omelet.

Effect. Three rings borrowed, three eggs produced and broken into a pan, alcohol poured in and ignited; while still blazing the rings are dropped in, a cover placed over pan. When a pistol is fired cover is removed, and instead of omelet are found three live doves, each with ribbon around neck to which is attached a ring. Method. Rings were substituted. Assistant brings in the doves and rings in the double cover of the pan.

9-309. The Cannon Balls in the Hat.

Effect. A large cannon ball is found in a borrowed hat. Next a hundred goblets are taken from the hat, or a dozen large dolls or drums and bird cages, finally another cannon ball. Method. The first ball introduced into hat from table shelf is real, the second is hollow and contains a large number of spring dolls, collapsible bird cages, etc.

1-188. The Magic Bird Cage.

Effect. After exhibiting cage and bird, performer tosses cage up into the air and it disappears. Method. Cage is collapsible. It is attached to a strong rubber cord, running between legs to back waistband and disappears under coat-tail. To vanish cage stand with legs somewhat apart, make the tossing movement upward and follow with the eyes.

9-198. To Pass a Marked Coin into a Ball of Wool.

Method. Wind wool on a flat tin tube, three or four inches in length. To end a coin trick slip coin in tube, then pull out tube.

9-185. The Animated Coin which Answers Questions by Jumping up in a Tumbler.

1. Method. A long black thread attached to coin by wax. Assistant behind scenes pulls thread.

2. A piston working in hollow stem of tumbler is worked by assistant below stage.

III.

THE PREPARATION OF THE CONJURER.

The psychological principles involved in the training of the conjurer for expertness merit brief attention. To become an artist the possession of certain natural qualities are essential. A pleasing personality, a strong eye and a hypnotizing smile are elements contributing to success, for the magician must, above all else, be able to inspire confidence. He is pre-eminently a suggester or an actor playing the role of a sorcerer; with his magic wand in hand he is no longer amenable to the natural laws of earth, but disports himself in a realm of miracles. By his dramatic ability he clothes his feats in the magic garb which distinguishes them from the jugglers performances.

In preparing for his art, two of the senses, sight and touch, must undergo special education. The famous Houdin, at the beginning of his career, was compelled to create the principles of his art and recognized the fundamental importance of these two senses. Taking a lesson from the skill acquired by pian-

ists, he saw that "by practice¹ it would be possible to create a certainty of perception and facility of touch, rendering it easy for the artist to attend to several things simultaneously, while his hands were busy employed with some complicated task." To acquire this faculty he had recourse to juggling, practicing until he was able to keep four balls in the air while, at the same time, reading a book without hesitation. This is a feat demanding the most perfect muscular co-ordination and nice adjustment of eye to muscle. It affords an example of the marvellous perfection to which an organ may attain by practice. "The juggler is obliged to give impetuses that vary infinitesimally. He must know the exact spot whither his ball will go, calculate the parabola that it will describe, and know the exact time it will take to describe it. His eye must take in the position of three, four or five balls that are sometimes several yards apart, and he must solve these different problems in optics, mechanics and mathematics instantaneously, ten, fifteen, twenty times per minute, and that, too, in the least convenient position."² By reason of such practice Houdin's fingers acquired such a remarkable degree of delicacy and certainty that he was able in his performances to lift from a pack of cards the exact number called for without looking at them, being guided alone by his exquisite tactual sense. His eye also gained a promptitude of perception quite beyond the normal. When he came later to train his son and himself for the second sight trick he found that a greater power of discrimination was possible. The method at first adopted was to name the number of spots on a group of dominoes at a glance. Beginning with nine spots they, at length, were able to give instantaneously the product of a dozen dominoes. The next exercise attempted was more difficult. Passing rapidly before a shop window they cast an attentive glance upon its contents. Halting beyond, lists were made of the objects seen. The boy could often note as many as forty articles, and Houdin thirty. He relates that this power enabled him to see everything that went on in the audience without appearing to do so; and to carry on two trains of thought simultaneously, to attend to what he was doing and to what he was saying. This dual performance is possible, as M. Paulhan³ has shown, where the operations are easy and heterogeneous and have become very habitual. Where the processes must be sharply discriminated in consciousness, however, there is only rapid oscillation of attention. The acts and speech of the conjurer are practiced till they become to a great extent automatic and their simultaneous performance is

¹ Houdin's *Memoirs*, p. 48.

² Hopkins: *Magic*, etc., p. 139.

³ Paulhan: *Revue Scientifique*, Vol. XXXIX, p. 684.

easily possible, leaving the mind free for other work, and Houdin tells us that he frequently invented new tricks or applications while going through his performances. Nevertheless, occasions do arise, as the experiences of the artist mentioned indicate when, because of unexpected developments, it is necessary that both processes become focal. He says that on one occasion a spectator who had tried to baffle his son's clairvoyance in the second sight trick, asked him to name the number of his stall, which was covered by his cloak. A sharp tilt of words resulted, when the question was put to the boy and correctly answered. He says "the way I succeeded in finding out the number of the stall was this: I knew beforehand that in all theatres where the stalls are divided down the center by a passage, the uneven numbers are on the right and the even on the left; as each row was composed of ten stalls it followed that on the right hand the several rows must begin by one, twenty-one, forty-one, and so on, increasing by twenty each. Guided by this I had no difficulty in discovering that my opponent was seated in number sixty-nine, representing the fifth stall on the fourth row." The results attained by this artist have been cited at some length as an indication of what every expert conjurer must acquire by analogous means.

Several questions may be raised as to what elements are involved in such an acquisition of skill. 1. Does this training to extraordinary skill in sense perception indicate a training in the organ involved, or in the brain centers? 2. How far, if at all, is this acquired ability of one sense or organ an education of others? As to the first question the answer may be made that both are true. The conjurer's hands "make the pass" and similar movements mechanically, for skill is largely by way of increase of automatic action. These feats work themselves while his mind is more or less actively leading off the attention of the audience to other matters. Beside greater perfection of movement, practice also brings increase of rapidity. Jastrow¹ has made experiments on Hermann and Kellar, the two most noted conjurers of the age, which demonstrate this. "For Mr. Hermann the maximum number of movements of the forefinger alone was 72 in 10 seconds, or 7.2 per second, and of the forearm 75 or 7.5 per second. For Mr. Kellar, forefinger 83 in 15 seconds or 5.5 per second and for the forearm 127 or 8.2 per second. The average of a large number of individuals for the forefinger movement was 5.4 per second, and of a group of ten persons, tested more nearly in the same way as were Messrs. Hermann and Kellar, 4.8 per second. The

¹Jastrow, Joseph: Psychological notes on sleight of hand experts, Science, Vol. III, p. 685.

average forearm movement of the same ten persons was 7.5 per second. It thus appears that the movement for both Mr. Hermann and Mr. Kellar are rapid, Mr. Hermann's forefinger movement being exceptionally so, while Mr. Kellar's forearm movement is the better.' In the ordinary form of reaction experiments for touch, sound and sight both of the special subjects reacted far more quickly than the ordinary individual. In the eye there is probably some gain in power of peripheral vision by such training as Houdin underwent; an idea of how far such increased efficiency is due to better habits of attention, however, may be gained from the studies of Dr. Ranke¹ on the South American Indians. He marvelled at the keenness of sight of his Indian guides. Nothing escaped them. They could shoot a fish in swift-flowing water, estimating correctly for refraction; could distinguish animals protectively colored from the background; could follow a trail on the ground where the whites saw nothing. He tested them with Snellen Types and found that in keenness of vision their eyes were no better than Europeans. He concluded that the differences lay in the fact that the Indians, through long practice, had a better apprehension of what was to be seen. In time he learned to repeat their performances. Such studies suggest that the wonderful power of Houdin and his boy consisted largely in their ability to make focal in the mind those obscure stimuli which for the ordinary person hover faintly in the margin of consciousness.

The second question, as to how far training of one organ is capable of increasing the power of others, has not yet reached the point where a definite answer can be given. Experiments on both the physical and mental processes have been made, but the results are conflicting. Féré² found that motor-training increased the dermal sensibility. Leland,³ from various visual exercises, claimed that increased power of relating and comparing was given and that in time the intellectual ability was increased. Miss Aiken⁴ states that by a daily period of visual exercises with a rotating blackboard, a gain in power of concentration and discrimination was made which showed its effects also in other departments of the school work. On the other hand Jastrow⁵ found that in estimation of movement of various kinds and in complicated mental reactions, the experts, Hermann and Kellar, both fell below the normal. In educational

¹Dr. J. Ranke: Studies of the Senses of South American Indians, Gesellschaft Anthropologi, 1897.

²Féré, Ch.: L'influence de L'éducation de la Motilité volontaire sur La Sensibilité. Revue Phil., 1897, p. 596.

³Leland C.: Practical Education.

⁴Aiken, Miss C.: Methods of Mind-training.

⁵Jastrow, Joseph: *loc. cit.*

circles the mental gymnastic theory has lost ground, at least it is recognized that it must not be overworked. In the field of motor-training, however, with which we are chiefly concerned, it seems safe to say that training of one organ gives added power in others—certainly strengthening the symmetrical organ and probably giving finer co-ordination to the whole organism. Scripture¹ and his students have investigated these questions, and their results show clearly the gain in power made by the unpracticed member, an effect that undoubtedly comes about through the higher development of the nerve centers in the brain. Or put in other terms, the increased capacity is possible because of a better stock of images of movement.

Returning to the training of the conjurer we find among his accomplishments an unusual degree of skill with the hand. A special grasping power of the muscles of the inside of the hand must be cultivated, as it is the principle of palming, which is the chief means used to cause the disappearance of coins, balls, etc., the hand concealing the object while in appearance it is held open.

The special education of the conjurer calls attention to the harmony between the members of the body. In simple organisms all movements are movements of the entire body; contractions and expansions; with all the differentiation that has come about in the higher orders the tendency is still for the whole nervous organism to act as a unit. So closely associated are the sensory and motor processes, when in the bonds of attentive perception, that an object or movement of any sort engaging the attention of the individual is at once brought into the focus of vision. He is impelled to reach out and take hold of it or go towards it; at the same time his language will relate to the thing occupying him. All his powers are held in subjection to it, to the greater or less disregard of the rest of the world. With the conjurer it is otherwise. The "misdirection" upon which he depends for establishing his illusions is brought about by a subversion of the order above mentioned. He must learn dissociation. The hand most in evidence no longer acts in aid of the idea which the mind is attempting to have executed and which is indeed being quietly performed by the other hand. The eyes also cease to dwell on the act, and the words spoken to be in explanation of it, but rather serve to call attention to an unessential or a non-existent part. By gesture, glance and speech is the attention captured, and while thus psychically blinding his audience the artist calmly proceeds with the performance of his trick. In overcoming all

¹Scripture E. W.: Studies from the Yale Psych. Lab., Vol. VI, also Cross-education, Pop. Sci. Mon., March, 1900.

these natural tendencies the performer must reverse the conventional theory and practice in education. He must oppose nature's law of economy and forge against the line of greatest resistance. The result of which is that he gains a region where the thought of ordinary men cannot follow. He now lives in the realm of miracles.

The road to excellence is a difficult one. In working up an illusion the artist must practice unceasingly till he has mastered the mechanical portion; he must then devote himself to the dramatic element, which as regards the effect upon the spectator, is by far the more important portion. He must not lose sight of the fact that he is playing the role of a magician, of a being possessing supernatural powers, and in every word and gesture should live up to the spirit of his part. Great deliberation in action is essential, as care must be taken not to make a parade of dexterity or to do anything to suggest the idea that the effects are produced as the result of dexterity. As before stated the secret of success lies in the appeal to certain mental habits and not in extreme rapidity of action. Chronophotographic pictures of the hands of a prestidigitateur were taken by Binet¹ at the rate of ten or twelve per second. Sleight of hand tricks performed with one or both hands were taken. "One is struck," he remarks, "on seeing the photos, with the fact of not finding therein the illusion which is so plain when the trick is executed before the eyes." The perfection of conjuring lies in the *ars artem celandi*—in so mystifying the spectators that they are unable to suggest any solution of the wonders they have seen.

It is essential that the second phase of a transformation be not exhibited until the audience have clearly perceived the first; the change of one card to another, of one coin to two, falls decidedly flat if the first stage was not clearly perceived. So in transforming an orange to an apple it is essential that the spectators notice that it was first an orange. Furthermore they cannot be trusted even then to make the idea focal in consciousness. They are in a more or less passive condition and the artist must strongly suggest the idea he would have entertained. It is difficult to fully comprehend the unique power his accomplishments and versatility afford the conjurer. To the amateur it is a revelation to find with what ease the audience can be deceived. The experience is pleasing. It fosters confidence in himself and gives him a sense of power. The audacity and coolness of the professional magician are a natural growth springing from the conditions with which his unique

¹ Binet: *La Psychologie de la Prestidigitation*. *Revue Philosophique*, 1894, pp. 346-348.

profession surrounds him. His success in his art depends in large measure on these qualities, but on the other hand they follow on an easy success. In time there develops the *sang froid* which does not admit of failure. Possessing several ways of performing a trick and being aware that the spectators will not know when he does fail, he carries off the affair to some conclusion possibly much different from his original intention.

IV.

PSYCHOLOGICAL JUSTIFICATION OF THE RULES AND PRACTICES OF THE CONJURER.

While the long list of conjuring tricks is of so varied a nature, both in method of performance and in effect, as to preclude all thought of classification according to psychological laws it is still true that some general rules have arisen which are observed by the artists in the profession, and many special practices applicable to individual tricks. It will be seen that these illustrate in a striking manner some of the ordinary laws of psychic action.

1. *Attention.* The mechanical portion of a feat of sleight of hand, it has been stated, possesses little power to illude the senses, that characteristic lies in the psychological features with which the performer clothes it. The technical outward appearance; the use of apparatus and dexterity count for little beside the ingenious use of certain mental processes. Of these attention deserves a prominent place. It is through the operation of attention, in large measure, that the effects are secured. Since it is so nearly conterminous with consciousness this is indeed to be expected. The division of attention adopted here is the common one of spontaneous or passive and active attention, but so far as the subject relates to the audience little notice need be taken of the latter. It is on the play of passive attention among the audience that the magician depends for establishing his illusions.

MANIPULATION OF ATTENTION THROUGH GESTURE AND SPEECH.

Under this head may well be treated the part the attention plays in the production of conjuring illusions. (a) Gesture as here used includes every purposive movement of the hand, body and eye, and indeed all the play of features to express emotions or ideas. (b) The "patter" is the spoken discourse relating to the feats. The proper understanding and application of both classes of actions are of the greatest importance to the conjurer.

Gesture. Probably no better examples of the effect of community life upon the individuals of which it is composed, are

afforded than are found in the performances under discussion. A few illustrations will make this apparent. The conjurer plays upon certain fixed mental habits of the audience. He relies upon these to create a favorable opportunity to effect a given disappearance unknown to the spectators. The movements designed to divert attention are numerous. Each trick has its own appropriate gestures combined with the patter which supplies the pretext for them. In vanishing a dollar this is seen clearly. The description of this manoeuvre given by Dessoir¹ is excellent. The artist "takes the coin in his left hand, looks closely at the right hand, as if it were the most important and then takes hold of the dollar. This trick is so convincing that you would be willing to swear the right hand held the coin; the position of the fingers adapts them naturally to this supposition. As soon as he has taken hold he moves his right hand sideways away from the left hand, the whole body follows the movement, the head bent forward, the look in the eyes, everything forces the spectator to follow this hand. In the meantime the first two fingers of the left hand point to the right hand, while the two other fingers hold the coin which is covered by the thumb. By such shading, and particularly by the constant talking of the artist, the whole attention is concentrated on the right hand, and everybody makes up his mind to pay close attention to see how the dollar will disappear from this hand. He makes little backward movements with the fingers, by which they move gradually away from the palm of the hand, and apparently deeply interested in the phenomenon he says, "See how the dollar grows smaller and smaller, there it has disappeared entirely, melted away," He opens the fingers wide, straightens himself up, and the sparkling eyes seem to say, "How queerly that disappeared; it is strange." Again the performer ostentatiously places some article on one corner of the table at which he is performing, while the left hand, finding its way behind the table, gets possession of some hidden article to be later produced. In the trick of producing cannon balls from an empty hat, the first ball shown is real, the second is of hard wood painted black, and is placed beforehand on the servante. To introduce it into the hat which has just been shown to be empty, one takes the hat in the right hand, leaving the middle finger free to insert in a hole bored in the ball. The performer now advances his left hand to take the wand or some other article which is placed toward the front of the table, as a natural consequence of this movement the body is bent forward a little, the right hand sinks gently down to the level of

¹Dessoir Max: *The Psych. of Legerdemain.* The Open Court, Vol. VII, p. 3609.

the table and the middle finger forthwith finds its way into the ball, lifts it up, and introduces it into the hat which covers the act completely. The spectators suspect nothing because they have been looking at the article picked up from the table and not at the hat. Sometimes by the ruffling of the cards the opportune moment is created; sometimes a ball is thrown into the air in order to gain an opportunity during the same instant, of taking unseen with the left hand another ball from the pocket or table shelf. Again a mere tap of the wand on any spot, at the same time looking at it attentively, will infallibly draw the eyes of the company in the same direction. Hermann's biographer says of him that "his 'misdirection' was beyond expression. If his luminous eyes turned in a certain direction, all eyes were compelled (as by some mysterious power) to follow, giving his marvellously dextrous hands the better chance to perform those tricks that were the admiration and wonder of the world."

Gesture, as to its power to attract attention, is to be referred back to a study of action in relation to the struggle for existence. Through far-reaching ages of primitive life in the war of all against all, it was essential to every creature to have an eye out for the moving object. In it lay the source of danger or dinner, as the case might be. Existence itself depended upon giving the moving object a correct interpretation. It was hence essential that it be brought into the field of clearest vision. The reflex reaction to movement in the eye was thus established through stern necessity, and still persists.

The biological significance of attention to movement as a means of self-preservation is attested in the fact that "both¹ the magnitude and rapidity of objective movement are far more adequately cognized in indirect than in direct vision." Experiment shows this to be true of the human eye, and the observations of hunters indicate that the fact applies in even greater degree to those wild animals to whom attention is still a condition of life; who maintain existence by being able to sense movement of prey to be caught or enemies to be avoided.

A further reason for attention to gesture or movement, of a social nature, is found by studying the expressive movements in man and those animals which are able to interpret the meaning of various signals expressive of psychic states. Certain herds of wild animals and flocks of birds station out sentries while the remainder feed; at the approach of danger a signal is given which is understood and responded to by the other members. In general the higher animals are able to give expression to their emotions through certain movements analogous to those made use

¹Kuelpe: *Outlines of Psychology*, p. 363.

of by man. Darwin¹ has commented on the significance of these movements, showing, in the case of man, that he was first a gesticulatory animal, and that, as is still the case with animals, the first gestures were of an instinctive emotional nature. "There is no doubt," says Mosso,² "that the first human beings were dumb, and that men for a long time made use of gesture language for purposes of mutual understanding before they discovered sound language. The child, too, before it is able to talk expresses itself by gestures. It observes the looks of its parents and of the persons who speak to it in order to comprehend the meaning of the words heard."

At the second stage, following Wundt's classification, are the mimetic movements expressive of qualitative feelings. The type is readily recognizable in the taste reflexes corresponding to sour, sweet, saline and bitter impressions. On the third level we have pantomimetic movements expressive of ideas, capable of designating the object of an emotion, or describing the object as well as the processes connected with it by the form of the movement. As regards the subject of attention to gesture this third group is of greatest importance. Speech is genetically derived from gesture, at any rate it is safe to say that articulatory language arose as an accompaniment to gesture. "As evidence for this view we have the unrestrained use of such gestures by savages, and the important part they play in the child's learning to speak."³ Mallory has declared that gestures in the wide sense indicated, of presenting ideas under physical forms, has had a direct formative effect upon language; and that "they exhibit⁴ the earliest condition of the human mind, are traced from the remotest antiquity among all peoples possessing records; are generally prevalent in the savage state of social evolution; survive agreeably in the scenic pantomime and still adhere to the ordinary speech of civilized man by motions of the face, hands, head and body, often involuntary, often purposely in illustration or for emphasis."

The facts cited show a reason for attention to movements of gesture, the effect of which has been to engraft the reflex on the nervous system.

(b) *Patter*. The "boniment" or "patter" is the story told by the performer. It is the verbal clothing, in fact the "*mise en scene*" by which an illusion is given an appearance of reality. Talleyrand remarked that "speech was given to man in order to disguise his thoughts."

¹ Darwin: Expression in the Emotions in Men and Animals.

² Mosso: Clark University Lectures, 1899, p. 393.

³ Wundt: Outlines of Psychology, p. 300.

⁴ Mallory: Sign Language of North American Indians, First Annual Report Bureau of Ethn., p. 285.

This is, at least, its use in the case of the diplomat and the magician. Of each of these it is true that "he says what he does not do, he does not do what he says, and what he actually does he takes particular care not to say anything about."

When a conjurer invents a new trick, he generally composes at the same time a special patter to accompany it. This must be memorized carefully, however ready a speaker the magician may ordinarily be. Such is the testimony of all the conjurers who have written on the subject: Houdin, Hoffman, Garenne Sachs, etc. The reason for this is similar to that for the practice of gesture. Speech is a form of motor expression. It is fundamentally an impulsive act and tends to appear in connection with gestures, as in all probability it had its development by a process of differentiation from gesture. Truth-telling is the natural mode within the tribe, whether among animals or men, as a consideration of mimetic, pantomimetic, and other expressive movements shows. The conjurer if giving way to the natural tendency would suit the word to the action. In reality he forces himself to talk glibly of the trick in a misleading way but with all semblance of truth, else will the trick fail in its effect. He therefore speaks by rote one set of words, while his thoughts which would ordinarily be given vocal expression in accompaniment with the performance, direct the real act which is taking place behind all this feint of hand, eye and patter.

Two not wholly separable elements of the misdirection of attention found in the spoken portion of the conjuring illusion may be seen from the foregoing presentation. (1) The power of vocal expression as mere gesture to call the eyes to the performer's face thereby lessening the force of attention to the act being performed. (2) By means of the suggestive power of the ideas in the patter to so shunt off the mental processes as to facilitate the trick. Examples of the first are seen in the way the performer springs a joke at the critical stage and thus makes for himself a favorable opportunity. When a card has been chosen and returned to the pack the artist does not at once make the pass to get possession of the card, as that might arouse suspicion, but after a moment he says to the chooser: "Are you sure you will recognize the card again?" All eyes are then involuntarily raised to his face for an instant, but in that instant the pass is made by a slight movement, at best almost imperceptible, and the card transferred to the top where it may afterward be disposed of as the trick demands.

The second offers a case of greater complexity. The significance of the words themselves are here of great importance in inducing the audience to attribute effects to other than their true cause; hence a feat of dexterity must be attributed to

mechanism or science and a trick really depending on scientific principles offered as a result of sleight of hand. This phase of the patter is indeed in many cases an accommodation to the apperception of the audience and will be further discussed in a succeeding chapter.

So far the discussion has pertained chiefly to passive attention, the aspect exhibited by untrained animals and men in a naïve state. Active attention may be brought into play, however, by the observer of the feats of the modern conjurer, for unlike the spectators of ancient magic he is conscious that he is being deceived and may make an effort to solve the problems presented. Dessoir¹ states that "the ignorant are more difficult to deceive than the educated. The former sees in every 'tour' a mistrust of his intelligence, an attempt to dupe him, against which he fights with all his might, while the latter gives himself up willingly to the illusion as he came for the purpose of being deceived."

Psychologically this means that the man of education gives only passive attention to the succeeding phases of the trick, while in the case of the ignorant person there is a struggle between active and passive attention. That the ignorant man is harder to deceive, however, may be questioned, and for two reasons. In the first place, recalling the monoideistic character of attention, it is a truism that attention to one thing means inattention to others, and that the very intensity of effort in one direction weakens effort in others. Now the conjurer always takes good care to do the other thing. Second is the difference in capacity for understanding the nature of the feat in the two classes. A large majority of the illusions require for solution more of an apperceptive basis than the ignorant man possesses; besides in many cases some lingering belief that 'there's magic in it' stands in the way of a proper understanding of the trick. However, the performer prefers passivity and a non-critical state and seeks in every way to guard against the rise of active attention. He observes the rule "never to reveal in advance the nature of the effect to be produced," in order not to focus attention. For example, where an article is to be made to disappear after counting one, two, three, the change is made at the one or two, as the minds of the audience are actively centered on the three and do not notice what takes place before that. The same reason holds for another conjuring rule: "never to repeat the same trick twice in one evening unless the manner of performing it is varied."

We may summarize this section with the observation that the fixed mental habits, evolved for useful purposes, to avoid being

¹Dessoir: *The Psychology of Legerdemain*. Open Court, Vol. VII.

surprised and deceived, are the very agents employed by the conjurer to effect this end.

2. *Perception.* Certain aspects of attention have been presented in the preceding section. In some of its phases attention is inseparable from the discussion of all conscious processes, hence a treatment of perception is at the same time a treatment of attention. In the succeeding discussion of the perceptive processes, therefore, we merely shift the point of view, emphasizing for the time the effects produced through stimulation of the sense organs, with the subjective modification these products undergo.

Perceptions are combinations of sensational and ideational elements. The latter are complexes built up for the most part from sensations previously experienced. In an unusual degree conjuring offers opportunity for the study of these elements as they enter into the phase ordinarily called apperception. In no other field, perhaps, is the part contributed from past experience, or in Professor James's phrase the part which "always comes out of our own head" so large. Perception refers to concepts. Apperception depends on the contents of the mind as conditioned by the past life. The new is interpreted in terms of the old and in accordance with habits of mental action previously formed. In this tendency of the mind to act in certain habitual lines corresponding to the law of mental economy is found the key to a large part of the illusions of conjuring. The magician is skilled in appealing to the strongest apperceptive centers of his audience. The history of conjuring, as of human deception, generally reveals how advantage has always been taken of the prevailing thought of the community. The priestcraft of the nations of antiquity in their thaumaturgical operations to acquire power relied on the superstitious fancies of the people to give a miraculous color to the simple tricks of sleight-of-hand, the facts of true science, and all the means of imposture employed.

Serious magic as a mental prepossession has continued, though with ever decreasing intensity, to be a factor in conjuring down to the present time. When Descartes asserted that animals were mere automata he gave a new cue to the conjurers. While the public mind was vibrating with this idea, automatic ducks, swans and other creatures were introduced by the conjurers of the time, and continued in evidence for more than a century and a half. No one knew better than Houdin how to make use of this popular apperceptive element. His aerial suspension trick, as presented, gave the appearance of the subject, the six year old son of Houdin, sleeping in the air, with one hand supporting the head, and the elbow of the same arm resting on the top of an upright rod. The secret of the trick lay in the ingenious

mechanical apparatus concealed under the clothes of the child, and would have been easily guessed had it been presented in a bald form devoid of its apperceptive stage-setting. But as given by the magician it was the "suspension in equilibrium by atmospheric air through the action of concentrated ether." Surgery supplied him with the idea. He says "it will be remembered that in 1847 the insensibility produced by inhaling ether began to be applied in surgical operations; all the world talked about the marvellous effects of this anæsthetic and its extraordinary results. In the eyes of many people it seemed much akin to magic." "The experiment was received with hearty applause. Still it sometimes happened that sensitive persons, regarding the etherization too seriously, protested in their hearts against the applause, and wrote me letters, in which they severely upbraided the unnatural father who sacrificed the health of his poor child to the pleasures of the public. Some went so far as to threaten me with the terrors of the law if I did not give up my inhuman performance." All this testifies to the completeness of the illusion. The public mind was so filled, at this time, with the quackery of mesmerism and the magical possibilities of ether that they were prepared to believe in the ability of a person to sleep in the air, without other support than the upright rod on which the sleeper's elbow rested, rather than suspect the existence of concealed mechanism. When the ether story later became threadbare the feat was introduced as an effect of electromagnetism. The manner in which the conjurers appeal to topics of popular interest to lead the public to a wrong interpretation of a trick is illustrated in the modern fashion of presenting every feat admitting of it in a garb of pretended hypnotism.

We now pass from the general view of apperception to a consideration of particular phases of it better termed preperception. In this case the ideational element is seen to be more definite, and is, in a measure, called up at the will of the performer.

The centrally excited portion of the perception varies with the individual and with the character of the stimulus. In common with the sensational elements from the peripheral organs, it possesses among its attributes quality and intensity. The relation which these bear to the corresponding attributes of the products of the sense-organs have been made the subject of investigation. Münsterberg¹ has found that if a word is displayed for a brief time which presents some slight difference from another word, it is read as though this difference were not visible, provided that a word is previously called out to the observer which stands in intimate association to the other, but has nothing to do with the actual impression. Thus, "part"

¹ Münsterberg: *Beiträge zur Experimentellen Psychologie*, Heft. 4.

is read as "past," if future is suggested, "fright" as "fruit," if vegetable is given. The effect is a probable result of the excitement of the ideational centers from first attending to the class. Similar results have also been found by Pillsbury.¹

Kuelpe² in his study of illusory perception obtained judgments of subjective and objective illumination of a dark surface. "The observer sat at his ease in a darkened chamber, and was required to say whether he saw anything, and if so, what it was like, and whether he thought it was objective or subjective. The only objective phenomenon introduced was a faint illumination of the dark wall facing the subject, given at irregular intervals, for various periods of time, and at different degrees of intensity. Nearly all the observers were liable to confusion when the stimulus approached the limen; an objective was very seldom subjectified, but a subjective frequently objectified." The experiments showed that the extent of stimulation over which confusion is possible is very small, and that the normal intensity of the centrally excited visual sensations is therefore exceedingly weak.

It is plain, however, that cold-blooded experiments in a laboratory can give little idea of the mental contribution made in the case of an imaginative person whose centers are quivering with emotional excitement. In the conjuring illusions much of the effect lies in the anticipatory preparation of the ideational centers concerned with the object of attention, the performer determining what preparation shall be made.

On the fact that we act with certainty on our knowledge of the phenomenal world rests the ordinary conviction of the identity of things as they are and as they appear to the observer. Ages of response to this idea have rendered our trust in the senses so implicit, and given such fixed mental habits, that numberless errors and illusions, historical and personal, fail to shake our confidence. An obvious inference may be drawn from the diversion of attention mentioned in the last section. Beside the mere switching aside of the sensorial attention by gesture, as noted, the awakening of new images by means of the patter is equally as important. The fire of witty talk, the evocation of spirits, cabalistic signs, attribution of power to wand, etc., are all effective. A reason for attributing scientific effects to sleight of hand and the reverse will now more plainly appear. A simple trick is that of causing a coin to instantly dissolve when put in a tumbler said to contain a powerful acid. The coin is palmed and a substituted glass disk is dropped into the water beneath a handkerchief, profes-

¹Pillsbury: A Study of Apperception. *American Journal of Psychology*, Vol. VIII, No. 3.

²Kuelpe: *Outlines of Psychology*, p. 184.

sedly used to prevent acid fumes from arising. The spectators, always prone to adopt a complicated hypothesis, hearing as they believe the chink of the falling coin, and being given the idea that acid is at work may overlook the more simple explanation. The chief part of conjuring lies in the artist's ability to so lead the thoughts of the audience into chosen paths, to awaken at the proper time such new images that the development of the trick appears for the moment as the logical outcome of the surrounding conditions; then by the production of a result totally unexpected and at variance the sense of illusion is produced. Nothing is neglected which may assist in this result. In arranging the programme each trick is made more surprising than the last. Every effort is made to so fill the mind with a feeling of the wonderful, and so far as possible with special ideas, that the imagination is ready to respond in the next step taken. Conjuring is thus seen to be a kind of game of preperception wherein the performer so plays upon the psychical processes of his audience that the issues are as he desires.

The perception which occurs under conditions of vivid expectation shows how the inward reproduction may completely dominate the sensory element and create a product of the imagination in intensity rivaling reality.

Where the nature of the object which is expected to appear is known in advance, anticipatory preparation may then have ready a preformed image to spring at any instant of time. An analogy is that of the person whose mind is so superstitiously primed that any white tree-trunk or post will explode the ghost centers. The principle that one sees what one expects to see, finds, perhaps, its best exemplification in the conjuring shows of the materializing medium. It is difficult for the scientist to read himself into the peculiar state of mind of the "sitters" who firmly believe that the spirit of their departed friends are really with them in the room, and who, by having their intelligence paralyzed by a belief in the supernatural, are easy marks for the charlatans who, despite frequent exposures, are continually springing up to take advantage of human frailty. Much of the effect is accounted for when the "*mise en scene*" is held in remembrance: everything is so disposed as to contribute to an atmosphere of mystery. A darkened room; a circle of suggestible subjects infecting each other, and all strained to the highest pitch of vivid expectation: their psychical centers hyperæsthetically excited by the desire to learn of their loved ones whose images fill the mind, and whose actual presence is felt. These are not conditions conducive to sharp sight and logical judgment, but they make the work of the medium easy. In this abnormal state of the subjects the sensorial is almost at the

mercy of the preperceptive element. Any rustling noise is attributed to spiritual agency; every light reflection is taken for a spirit form. The literature of the subject is full of illustrations. The author of "Revelations of a Spirit Medium" who confesses that by his skill in the performance of his feats he has converted hundreds of people to a belief in spiritualism, giving them undoubted evidence of life beyond the grave, states that when beginning the practice of cabinet tricks before a circle of spiritualistic friends in his apprentice days he noted their proneness to attribute every slight occurrence to spiritual agency. A handkerchief illuminated by phosphorus on being pushed through the opening of the cabinet was seen by the sitters as a human head and face. "It was set down as a case of etherialization,¹ as they declared they could look right through it and see the curtain behind it. One gentleman, a doctor, declared he could see the whole convolutions of the brain. Thus they helped out the show with their imaginations and made a reputation for the medium." He learned later that by putting a wire gauze mask in front of the handkerchief a luminous face and head was presented. He recounts that "that wire mask has been recognized by dozens of persons as fathers, mothers, sisters, brothers, cousins, sweethearts, wives, husbands, and various other relatives and friends." The same author, alluding to the tendency to allow the imagination to dominate what is seen, after describing an easy process for producing spirit pictures by transferring outline pictures to a slate, states that he "knows² of, at least, five people who have recognized friends in Lydia Pinkham's newspaper cut after it had been transferred to the medium's slate." Not to multiply needlessly examples illustrating how the perceptions are determined by the intensity of the interest—Dessoir³ quotes the case of a scientist who had difficulty to restrain himself from laughing when he "heard the same puppet successively addressed as 'grandmother,' 'my sweet Betty,' 'papa,' and 'little Rob.'" Reflecting on this propensity of the mind he acutely observes, "create a belief and the facts will create themselves."

3. *Suggestion and Association.* The part which the accompanying images play in the perceptive process has been set forth. Under the above heading will next be shown how the performer manipulates these ideas in the minds of his audience, juggling with them much as he does with the articles he handles. Suggestion is the switching-key by means of which he ushers in the ideas necessary to his purposes.

¹ Revelations of a Spirit Medium, p. 90.

² *Ibid.*, p. 147.

³ Dessoir: *The Psych. of Legerdemain*, Chap. V, Open Court, Vol. VII.

Several aspects of normal suggestion are related to our subject.

1. *Suggestions of Repetition.* In a certain class of tricks the following conjuring rule applies: "First actually do what the spectators are to be led to believe you do." In these cases the conjurer prepares the way by the formation in the minds of the spectators of proper associations. In the well-known trick of firing from a pistol the broken pieces of several borrowed rings this is the principle involved. The pistol is fired at a box placed on a stand. The box is then unlocked and a second locked box taken from this containing a third, and so on,—finally reaching the last of the series of boxes which, when unlocked, contains the rings tied to roses. In one form of the trick the rings are not in the series of boxes at all, but after the artist has demonstrated that the second has been taken from the first and the third from the second, etc., it becomes easy to take the casket containing the rings from the shelf behind the table, where the assistant has placed it, by lifting it up as though from the preceding casket. By the first steps the association is formed so that no doubt is felt that the rings were really in the nest of boxes. Another element entering here is found in the general tendency to short-circuit all possible processes. After the first or second time the people become impatient, as always at repeated action, and relax in keenness of attention, and if the performer seems to hurry later it is in line with the desire of the audience. In the Chinese ring trick, by giving certain rings to be examined, receiving them back and adroitly giving them out again the artist manages to create the impression that all have been examined, and the effect upon the spectators is all the more startling by reason of the eight rings shown by inspection to be without opening, later linking themselves together in various combinations in the hands of the performer. The possibilities of illusory perception under the influence of suggestions of repetition may be well illustrated by a portion of a sleight-of-hand trick given in some detail. The effect of the trick known as "A Shower of Money" is as follows: The performer borrows a hat which he holds in his left hand. He then announces that he requires a number of (say) half dollars for the purposes of his trick, but, he continues, "as there seems to be a good deal of money around to-night I will not be at the trouble of borrowing, but just help myself." He then begins to pick the coins out of the air, finds one climbing up the wall, another in a spectator's whiskers, under a lady's foot, and so on. At each supposed new discovery the performer takes with his right hand, from some place where there was clearly nothing an instant before, a coin which he drops into the hat held in his left hand. The explanation of the trick is very simple,

being merely a practical application of the art of "palming." The performer provides himself beforehand with the number of coins he desires for his experiment. "Of these he palms two in his right hand and the remainder in his left. When he takes the hat he holds it in the left hand, with the fingers inside and the thumb outside, in which position it is comparatively easy to drop the coins, one by one, from the hand into the hat. When he pretends to see the first coin floating in the air he lets one of the coins in his right hand drop to his finger tips, and, making a clutch at the air, produces it as if just caught. This first coin he really drops into the hat, taking care that all shall see clearly that he does so. He then goes through a similar process with the second; but when the time comes to drop it into the hat, he merely pretends to do so, palming the coin quickly in the right hand, and at the same moment letting fall into the hat one of the coins concealed in his left hand. The audience perceiving the sound, coincident with the movement, naturally believe it to be occasioned by the fall of the coin they have just seen. The process is repeated until the coins in the left hand are exhausted. Once more the performer appears to clutch a coin from space, and showing for the last time that which has all along been in his right hand, tosses it into the air and catches it visibly."¹

When the artist really throws the first coin into the hat he leads the spectators to infer the same result from the subsequent similar movements. The chink of the falling coin strengthens the illusion and the ostentatious catching of the final coin clinches it. To still further mystify the audience and to remove the suspicion that the coins were all along concealed in his hand, the performer sometimes uses his producing wand, which is so made that on pressing a little stud a slit coin springs out on the end, giving the effect of having been taken out of the air. It is used in connection with the money slide, an apparatus for holding money concealed under the vest. The hand can now be shown empty, but by pressing on the side with the right hand at the same instant a coin is made to appear on the wand, which he can then do unobserved, he obtains the needed coin. Under cover of taking the coin from the wand he withdraws it into the wand and shows the one in his right hand, which is thrown into the hat. He can then repeat. Where the same result can be produced by two wholly different methods the effect on the audience is most bewildering, as any conjectures as to the explanation of the first method are inadmissible as regards the second.

Several investigations have been made in the subject of sug-

¹Condensed from Hoffmann's *Modern Magic*, p. 205.

gestions of repetition. Binet¹ and Henri have experimented to see with what degree of precision a person repeats the same operation where the circumstances which have explained the first operation change a little and require a different act; but where the suggestion remains that the conditions are as at first. The experiment was based on the visual memory of lines. A model line was shown to a child, then after the lapse of a certain interval, a card was shown on which was traced a series of parallel lines of increasing length; the child had to recognize the line equal to the model line. The operation is made two times; the first time the model line is found in the series, the second time it is not found. Thus, the model line being 40 millimeters, the second series contains no line longer than 36 millimeters. A practiced eye would perceive the lacuna, but the first trial has already created a habit by reason of which the child, having found the model line in the first table, strives to find it in the second. In children from 7 to 9 years old, 88% were misled by the "routine;" from 9 to 11 years, 60%; and from 11 to 13 years, 47%, thus showing that suggestibility decreases with age.

Seashore used somewhat analogous methods in investigating the subject. His experiments, made upon university students, seem to prove them not less easily duped than the children of the primary school mentioned by Binet. And it is important to observe that even where his subjects acted with knowledge they were still subject to the illusion. His manner of procedure was to make a genuine experiment several times, then, when the association has been formed by repetition, a pretended experiment is made and the subject by reason of the suggestion responds as before. In illusions of heat produced by first sending an electric current through a silver wire held between the fingers of the subject, and finally pretending to do so, of 420 trials there were only five cases where the subject felt nothing. Illusions of change of brightness were produced by the principle employed by Kuelpe heretofore mentioned, with the exception that at a given signal a change of intensity of the illumination was first made.

Complete hallucination² of an object was produced in the following manner: In a darkened room a little ball is hung upon a black background and the distance at which the subject can distinguish it is ascertained. The experiment is made several times, the subject approaching slowly and pausing at the point where he can just see the ball. The distances marked on the floor are then read. He then turns back to

¹ A. Binet: *La Suggestibilité. L'année Psychologique*, 1898, p. 136.

² Seashore: *Measurements of Illusions and Hallucinations in Normal Life. Studies from the Yale Psych. Lab., No. III, 1895.*

make the trial again; at this instant the operator suppresses the ball; the subject advances again and when he finds himself at the same distance as at the previous times he believes that he perceives the ball. The point of importance here, as Binet has pointed out, lies in the light it throws on the mechanism of suggestion. The fact that subjects acquainted with the purpose and nature of the investigation, after several repetitions of the stimulus, undergo the illusion, seems to show that the greater part of the effect lies in the tendency to re-excite the centers that have just been in action.

There is a well known conjuring illusion which closely parallels the experiment last given. In this case, however, the image of repetition seems in part to be the effect of an after image. The reference is to the trick of causing an orange, ball, or card to disappear in the air. The performer shoots several cards out into space; sending some of them even seventy or eighty feet up into the gallery. Finally a card starts out but is seen to vanish while in mid-air. The thrower has in truth repeated the usual casting movement but has thrown no card. What the audience see is an image of repetition which is undoubtedly partly the effect of a residual stimulation in the eye, partly a central excitation. For, since a frequently repeated sensory irritation, as well as the external suggestion of the motion of the hand, is necessary to awaken the image of the object associated with the movement it cannot be classed as purely central and hence is not an hallucination. The conjurer by first really throwing up the card gives the suggestion of repetition and following it up by the pretended throw causes the subject to see what he desires. We have produced this effect in some experiments made with a tennis ball (an apple and a silver dollar were found equally effective, however). The experiments were performed before the pupils of several schoolrooms, also on a number of children and adults not included in the results below. The operator sitting behind the teacher's desk threw the ball about three feet in the air, catching it and letting the hands sink low behind the table. The second throw was four or five feet in height. On its return it was dropped between the legs but the hands went up with the regular throwing movement and were held as if awaiting the descent of the ball.

The conditions for the experiment offered by the open school-room were not good, the light was too strong. From other trials made in the evening on people of all ages it seems that dim or artificial light is more suitable to the production of the illusion. This view is warranted also by the fact that after-images are of longer duration in dim or artificial light. Observation shows

also that the colors on a rotating disk fuse at a slower rate of rotation in a feeble light.

After the performance each pupil was requested to write a description of what he saw and to state where the ball was when he ceased to see it. Two seventh grades, one fifth and one fourth grade were visited. Of the 165 children witnessing the experiment 78 answered to seeing the ball go up and disappear. Of the whole number 103 were boys and 62 girls. 40% of the boys and 60% of the girls were deceived in the matter.

A few typical answers are herewith presented:

1. I saw it come two times. It was about half way up to the ceiling before it disappeared.
2. I saw it come down, but not the last. It was about one foot.
3. I did not see the ball come down. It was half way to the ceiling before it disappeared.
4. I did not see the ball come down, but I think it did.
5. The ball did n't go up as far as the door before it disappeared.
6. I did not see the ball come down. The ball went about one-fourth to the ceiling before it disappeared.
7. It was about one yard from the ceiling before it disappeared.
8. The last time the ball was going to come down it disappeared.
9. The ball went in back of the picture on the wall.
10. I do not see what became of the ball. All I can think of is it went up into the air and did not come down, or, at least, I did not see it.

From the answers given it would appear that the intensity of the central image varied with the individual. Many answers were ambiguous to such an extent that it could not be said whether the ghost of the ball was seen at all, or whether it was not seen to make a part, at least, of the return journey. A number try to account for the mystery. Such explanations are offered as that it was a rubber ball and burst while up in the air.

The fact that 20% more of the girls than of the boys saw the phantom ball may have many causes. The cases are few. We may, in passing, however, quote Havelock Ellis's¹ statement to the effect that ecstasy, trance, seeing of visions, illusions of fancy and tendency to hallucinations, are more frequent in females. Pliny tells us that women are the best subjects for magical experiments, and Bodin estimated the proportion of witches to wizards at not less than fifty to one. It is certain

¹ Havelock Ellis: *Man and Woman*, Chap. XII.

that in numerous trials of this experiment before ladies not one failed to experience the illusion, and even previous knowledge does not prove a sufficient safeguard.

These cases of suggestions of repetition cited, both from the laboratory and the stage, show plainly that the conjurer's maxim "to first really do what you would have the audience believe you do" rests upon a physiological basis.

We turn now from suggestions of repetition to psychic phenomena of a somewhat different though still related type. In suggestions of confidence and obedience—in the natural tendency of the mind to be influenced by means of a hint, sign or symbol, an association or kindred stimulus the conjurer finds a ready means for betraying the judgment of his audience. The two factors to be considered are (1) the conjurer as a suggester of ideas, direct or indirect, as means of influencing the mind, and (2) the mental condition of the audience.

The chief quality to be inspired is confidence, and the peculiar confidence the artist inspires is a general belief in himself as a performer of wonders. As a background for the special demands he makes upon their credulity pains are taken to create a magical atmosphere. Coming upon the stage to begin the entertainment he removes his gloves and rolls them into invisibility. Instead of borrowing articles for the purpose of his trick he may produce them from the nose or beard of some one in the audience. Each trick is made more startling than the last, and each becomes the pedagogical basis for another till finally the spectators, lost in the bewildering complexity of wonders, react helplessly to the suggestions of the performer, which he helps out by the pretended evocation of imaginary spirits, by cabalistic words, proper use of the wand, in effect, by the artist living up to the dramatic possibilities of the role of magician.

The second point, relating to the suggestibility of the audience, may be illustrated by a brief notice of the investigations of various workers in this field. In these cases, belief that the fact will happen, instead of being instituted by repetition, is brought about by the idea being given by speech, gesture or implication.

Small¹ tested the power of suggestions of this class to modify the perceptions of school children. He found that after some preliminary remarks on odors, in which several kinds were mentioned, and having placed labelled perfume bottles on the table, when he made a spray in the room of water from an atomizer, 73% of 540 children got an illusion of perfume. In experiments of tastes with sugar, salt and quin-

¹Small, M. H.: The Suggestibility of Children, *The Ped. Sem.*, Vol. IV, No. 2.

ine solutions, after the preliminary suggestions, 88% gave judgment that the water was sweet, 95% got the illusion of salt and 90% perceived the taste of quinine in the water. In many cases they accompanied their judgments with the characteristic mimetic movements; the last being most marked in effect, many making the "bitter face." When a crank was turned, to which a toy camel was attached by a string, 76% of 381 pupils saw the camel move although it never did. The effect of the suggestions made in these experiments was invariably greatest in the lowest grades.

The result of suggestions made in a tone of conviction or authority, has interest for our study as being most nearly in line with the conjurer's practice. A hint of any description, coming from one who ought to know, in general, produces a marked effect. A. Binet¹ in collaboration with V. Henri, has made experiments of this class to show the effect of moral authority in influencing an act of memory. A model line of 40 millimeters in length was presented to a child, who had then to find it again by memory, or by direct comparison, in a table composed of several lines among which was to be found the model line. At the moment of making his choice, the operator regularly asks him and always in the same tone, the following question: "Are you very sure? Is it not the line by the side of that?" Under the influence of this discreet suggestion, made in a very gentle tone, the majority of the children abandoned the line first designated and chose another. The table of results given by him shows that the youngest are most sensible to the suggestion, and further, that the suggestion is more efficacious when the choice is made from memory than when made by direct comparison.

The aim of the experiment was to determine the mechanism of suggestibility and to study the conditions where it succeeds best. As a result of his tests, the author deduces the rule that "the suggestibility of a person upon a point, is within reason, inversely as the degree of certainty relative to this point." Vitale 'Vitali'² who repeated these experiments, insists upon the importance of the personality of the experimenter, a factor which will cause great variation in the results.

Having repeated after some time the same tests upon the same subjects, he has found enormous variations.

Perhaps the closest analogy to the conditions in the audience of the conjurer, is found in some later experiments of Binet³ and Vaschide upon 86 pupils of the French primary schools.

¹ Binet: *La Suggestibilit e, L'annee Psychologique*, 1898, p. 95.

² Vitale Vitali: *Studi Anthropologici*, Forli, 1896, p. 97.

³ Binet: *op. cit.*, p. 98.

The experiment was intrusted to M. Michael, the director of the school. He alone did the speaking and explaining. After the preliminary distribution of paper, writing of names, dates, etc., he announced that he was going to make an experiment upon their memory of the length of lines; a line drawn on a white card was then shown for three seconds to each pupil, and each one had then, after having seen this model, to trace upon the paper a line of equal length. This having been done M. Michael announced that he was going to show a second line a little longer than the first; this declaration was made in firm well modulated voice, with the natural authority of a director of the school addressing the whole class collectively. The second line was only 4 centimeters, whereas the first was five. The second line was shown to each pupil exactly as the first had been. The suggestion was very effective. Nine pupils only of the 86 drew the second line shorter, or it can be said that 75 believed in the word of the master rather than to the truth of their own memories. The author asserts as the result of the test that normal suggestion constitutes a test of docility, and cites the facts given by Bernheim as showing that the persons most sensible to hypnotism, that is to authoritative suggestion, are old soldiers, government employees, and, in a word, all those who have been habituated to discipline. The children are in the passive state when they follow readily ideas suggested by any one in authority over them, or, indeed, any one who can impress them. To a large degree this receptivity is maintained throughout life. It is not children alone who are in subjection to ideas. Moll¹ says "men have a certain proneness to allow themselves to be influenced by others through their ideas, and, in particular, to believe much without making logical conscious deductions." We are all credulous and ready to accept the answer. It is only more noticeable at conjuring shows than at other assemblages. In community life there is need of exchanging ideas, and while our experience may in time render us more critical of our fellows the tendency still persists to take as truth ideas advanced from whatever source. This tendency is greatly accentuated in a crowd, hence the reason for another maxim in conjuring: "always perform to as large an audience as possible." "The mental quality of the individuals of the crowd," says Le Bon,² "is without importance. From the moment that they are in the crowd the ignorant and the learned are equally incapable of observation." This is proved by a great number of historical facts, and is illustrated in the action of every mob. In this subversion of the rational element the conjurer finds his

¹ Moll, A.: Hypnotism, p. 219.

² Le Bon, G.: Psychologie des Foules, p. 28.

advantage. He assumes great audacity and boldness and a firm belief in himself. These are the qualities which a leader must possess who would sway the people and subject them to his purposes.

Were the spectator in an ordinarily critical state he would know very well that blowing on a card is not an adequate cause for transforming it into another; nor the ruffling of a pack of cards a probable means for making a chosen card fly from the pack to stranger's pocket; nor the varied use of wand and word and by-play a sufficient explanation of the effects produced; yet he sees the fact and his mind unconsciously follows the suggestions so artfully offered him. He is not at his best intellectually. The rational element is in abeyance.

The suggestibility of the normal state here exemplified finds analogies in the negative illusions of hypnotism. Under hypnotic suggestion the subject does not perceive an object which is present before him. The same fact appears in the illusions of our study. It has been shown that the performer hides, produces or substitutes objects under the very eyes of the spectators, the attention being first drawn off by clever talk or feints of movement. For example, in the card metamorphosed the change is made in the spectator's field of view—the sense stimulation takes place, but does not become focal because he has been psychically blinded by withdrawal of attention. In hypnosis, in order that the subject may not see the object which he is told is not present, another factor, according to Binet¹ and Féré, must be added to the diversion of attention; before it can be attained the conviction that the object is not there must be first established in the subject, without this the result would hardly be attained. It is a certain fact, observable without hypnosis, to which attention was called while on the subject of pre-perception that strong expectation of an effect is very favorable to its appearance.

A difference to be noted is that, whereas, in hypnosis the object is not seen only when the operator forbids, in waking life to forbid the perception of an object insures its being seen.

Again, experiments in hypnotism indicate that the suggestibility of a hypnotized individual increases with the number of hypnotizations, but Binet has shown in the work above referred to that a second suggestion is less efficacious than the first, and this offers a second reason for the rule of the prestidigitator: "Never repeat a trick twice in the same performance unless by a different method," for beside focussing attention in advance the force of the suggestion for diversion will be weakened.

4. *Suggestion and the Law of Economy.* Another large group

¹Binet and Féré: *Animal Magnetism.*

of tricks in which the conjurer takes advantage of his superior knowledge of the mental habits of the audience remains to be studied. Chief among them are those in which is seen the universal tendency to do the thing required in the easiest way. The importance of this law in the explanation of a type of suggestion will become clearer as we proceed. Some cases of "forcing" will illustrate this phase of suggestion. By the term "force" in conjuring is meant the whole process by which a person is led to choose such card, number or object as the performer desires—the subject all the while believing that he is exercising absolute freedom of choice. The success of many tricks depends on this feature which is accomplished in various ways. Some simple cases of forcing which are worthy of recital only because of the background of bewilderment they prepare are given before entering more at length into those possessing greater psychological complexity.

Where it is desired that a certain number be chosen the forcing bag is frequently employed. This is a double bag; on one side is contained counters from one up as far as desired. On the other side the counters are all of a kind. The magician brings out a handful from the first compartment to show that all are different, and then asks some person to place his hand in the bag and choose one, offering him as he does so the other opening.

A person may be asked to thrust a paper knife between the pages of a closed book. In this case all the pages are numbered alike, the book being so made up that at whatever point the knife is inserted the number of the page is the one desired.

The following force was used by Hermann in an anti-spiritualistic slate-writing trick: two slates after being washed with a sponge were tied together and handed to a spectator to hold over his head. Nine people in the audience were given slips of paper on which to write questions. These were then folded up and dropped into a hat. A lady chose one from the hat. It was read, the slates untied and an answer to it found on one of them. Hermann explained that he had suppressed the nine questions written by the people in the audience, and had dropped in nine of his own all containing the same question, hence the lady could not help taking the one desired for the trick. There had been a false flap on the lower slate, which he had dropped out when they were being tied, and the answer was there before the questions were written.

In a number of feats, of which the Rice and Orange trick performed by Hermann is a representative, we have a form of forcing which contains another element of psychological interest. In this trick rice and orange are made to exchange places. We give a somewhat detailed account of it that the

full effect of the trick may be seen, following in the main Hoffmann's¹ description. The apparatus consists of three japanned tin cones about ten inches in height by five at the base, and an ornamental tin or zinc vase standing about the same height as the cones, and having a simple metal cover or top. Of the cones, all of which are open at the bottom, two are hollow throughout, but the third has a flap or movable partition half way down, inclosing the upper half of the internal space. This flap works on a hinge, and is kept shut by a little catch, which is withdrawn by pressure on a little button outside the cone, when the flap drops down and lets fall whatever has been placed in the enclosed space. The cone is prepared for the trick by filling this space with rice, and closing the flap; and the three cones are then placed in a row on the performer's table, the prepared one being in the middle. The vase contains in its bottom, a valve, which leads into a false bottom in the foot beneath. The vase is prepared for the trick by placing an orange in it, and in this condition it is brought forward and placed on the table by the performer or his assistant. A small paper bag full of rice is brought in at the same time, and completes the preparations. The performer begins by borrowing two hats, and places them one on the other, the mouths together, on a chair or table. He then (by palming) produces an orange from the hair or whiskers of a spectator and places this on another table. He next brings forward and exhibits the vase, filling it as he advances, with rice from the paper bag, and thus concealing the orange which is already placed therein. He calls attention to the genuineness of the rice and the simplicity of the cover, and finally putting on the latter, places the vase on the ground or elsewhere, in view of the audience. He pretends a momentary hesitation as to where to place it, and in the slight interval during which he is making up his mind he presses up the button within the foot. This opens the valve allowing the rice to escape into the space below, and leaving the orange again uncovered. The audience is, of course, unaware that such a change has taken place. Leaving the vase for the moment, he requests the audience to choose one or other of the three cones on the table. It is essential to the success of the trick that the prepared cone containing the rice be chosen. It is then placed on the top of the upper hat, if it is the middle one and conjurers tell us that in such cases the middle one is nearly always the one chosen. The audience are then asked to make a choice of the remaining cones and the one selected is placed over the orange upon the table. The performer showing first by rattling his wand

¹Hoffmann: *Modern Magic*, p. 340.

within it that it is hollow throughout, and he may even hand the remaining one around for inspection.

It was said that the audience almost always select the middle cone and the explanation given is based on that assumption.

But the question naturally arises, suppose one of the end cones is selected instead of the middle one, the trick is spoiled as neither of the others will produce the rice. But such is not the case, for mark, that the audience have not been asked to choose which cone shall be placed on the hat, but simply to choose one of the cones. Had one of the end cones been chosen it would have been handed around for examination and finally placed, not on the hat but over the orange. Then, standing behind the table, he requires the audience to make a choice between the remaining two, right or left. Whichever is chosen he is safe. As the right of the audience is the performer's left, he is at liberty to interpret the answer in whichever way he thinks proper, and he does so in such a manner as to designate the cone containing the rice. Thus, if the audience say the left he answers, "on my left? Very good." If they choose the right he says, "on your right? Very good." In any case the cone containing the rice is taken as the one designated and is placed on the hat. As the audience have, to all appearance, been allowed perfect freedom of choice and have actually examined two out of the three cones, they are very unlikely to suspect any preparation about the remaining one.

The performer now raises the cone placed on the hat to show that there is nothing underneath it, and as he replaces it presses the button, thereby letting the flap fall, and the rice pours out upon the hat, though it remains still concealed by the cone. He next lifts up the cone under which is the orange, and holding the latter up, replaces it, but in again covering it with the cone makes a feint of removing and slipping it into his pocket. Then noticing, or pretending to notice, a murmur on the part of the company, he says: "Oh, you think I took away the orange, but I assure you I did not." The company being still incredulous, he again lifts the cone and shows the orange. "Here it is, you see, but as you are so suspicious I won't use the cover at all, but leave the orange here in full view on the table." He again leaves the orange on the table, but this time on what is called a "wrist trap." Leaving it for the moment he advances to the vase, and holding his hands together cup-fashion over it, but without touching it, he says, "I take out the rice, so, and pass it under this cover" (walking towards cone on the hat, and making a motion of passing something into it). "Let us see whether it has passed." He raises the cone and the rice is seen. "Perhaps you think, as you did not see it, that I did not actually pass the rice from the vase to the cone. At any rate

you will not be able to say the same about the orange. I take it up, before your eyes, so." He places his hands round it on the table, and at the same moment presses the lever of the trap, which opens and lets it fall through into the table, closing again instantly. Keeping his hands together, as though containing the orange, he advances to the vase, and holding his hands over it, says, "here is the orange which has not left your sight even for a single moment. I gently press it so" (bringing the hands closer and closer together), "and make it smaller and smaller, till it is reduced to an invisible powder, in which state it passes into the vase." He separates his hands and shows them to be empty, and then opening the vase, rolls out the other orange, and shows the vase empty, all the rice having disappeared.

There are here two points of psychological interest which, in the last analysis, however, are covered by the same explanation: 1. The reason the middle cone is oftenest chosen, and 2, why the performer can interpret the choice to suit his purposes with no suspicion of it on the part of the audience. That the middle of three balls, cones or other articles, should be oftenest chosen is a suggestion to make psychologists pause before placing the same reliance in the calculation of probabilities in mental phenomena that is possible in the realm of physical science. The ingenious explanation given M. Binet¹ by the conjurer, M. Arnould, is here quoted, with approval, as being in line with the correct explanation of a large part of the effect produced by the conjurer. He says: "The middle object is oftenest designated because it is the easiest to point out. In the experiment the performer and the spectator are face to face, if the object to the left is designated it will be necessary to add whether the left of the operator or the speaker is intended; as it requires but one word to designate the middle one he chooses that as more easy." Sidis² has made experiments analogous in principle to the performances under discussion; their end was to influence a person's choice who supposed himself free. On a large white chart were placed six squares of color, each having a dimension of three centimeters each way. A black screen covered the whole, and the subject was asked to fix his eyes on this for five seconds, then the screen being raised he has to choose at once any one of the squares of color he wishes. The objects being placed in the same straight line, various artifices are employed to influence the choice: (1) abnormal position: one square is placed slightly out of line or a little inclined; (2) abnormal form: one is made in the form of a star or triangle; (3) using a square of the same color as the screen; (4) suggesting a color verbally as

¹ Binet: *op. cit.*, p. 143.

² Sidis: *The Psych. of Suggestion*, Chap. III.

the screen is raised; (5) suggesting verbally the number in the row; (6) surrounding one square with a band of color. The three methods first named proved most suggestible in the order given. The percentage of successes being, to take only the cases of immediate suggestion, 47.8, 43 and 38.1.

In a work by Decremp,¹ a magician of the last century, is described a play, wherein a choice is directed when the number of objects is much larger. The performer spreads out before the audience fifteen packets of two cards, and asks them to think of any two by chance, now if he forms a packet of two notable cards of the same color, such as the king and queen of hearts, it will be more frequently selected than another, "for," remarks Decremp ingeniously, "it is easier to retain in memory the king and queen of hearts than two other cards poorly matched."

Here appears again the principle of inertia. Between several possible acts, where all are indifferent, that is unconsciously preferred which is easiest to perform. In some experiments by Binet in his work on suggestibility above referred to, these mental habits are brought out but they are too long to be quoted here. The same principle, however, appears in the different card forces now presented.

Forcing a single card from an ordinary pack—to be presently described—is a delicate manoeuvre, and while the expert may nearly always succeed there are some illusions which depend upon the drawer taking a card similar in suit and number to one already prepared elsewhere for the purpose of the trick. In this case it is absolutely necessary that the card drawn should be the right one, and even the most accomplished performer sometimes resorts to another expedient to be certain of forcing a simple card. This is absolutely insured by a "forcing pack," *i. e.*, a pack in which all the cards are alike. In this case the drawer may do his utmost to exercise a free choice but will be certain to draw the desired card. Where more than one card is to be drawn as in the preparation for the well known trick of the "rising cards" the pack may consist, instead of similar cards throughout, of groups of two or more particular cards; thus, one-third may be queen of hearts, one-third aces of diamonds, and the remaining third seven of clubs. It is only necessary to offer different portions of the pack to different choosers to insure one of each sort being chosen. Where more than three cards are required, a tapering pack is offered to various individuals in the audience; as they are gathered up

¹I quote from Binet's work on suggestion, not having seen the original work.

they are placed with a regular pack which has been substituted and are thus readily distinguishable.

The descriptions of the method for forcing a regular card are much the same in all works on conjuring from Houdin's time to the present. When one wishes to force a card the first precaution is never to lose sight of the card in order not to risk confounding it with another. The card to be chosen is first put beneath the pack and kept there while the pretence of shuffling the cards is made; the operator then makes the pass to bring the card to the middle of the pack, in which position it is easier to force it. These preparations take but an instant, indeed they are made while explaining to the audience in a lively manner that a complicated experiment is to be given which requires that a card be chosen by some one in the audience. The conjurer with light step descends the run-down and approaches the nearest spectator, requesting him to take a card from the pack which is presented. A certain vivacity of movement is useful and strikes short the resistance of a recalcitrant spectator; when one is surprised one is more docile. It is best not to present the cards spread out but closed, it is only at the moment when the spectator advances his hand, perhaps a little surprised to see the pack closed, that they are opened for him but are not held immovable, a dozen or more cards from the middle of the pack are made to pass rapidly before the eyes of the spectator and it is in this dozen is found the card to be forced. The spectator, in the rapid succession of cards passing before his eyes, has no time to choose one in particular, but he continues to advance his hand with the thumb and index finger spread to seize some card. The operator follows his hand and notes the direction of his gaze, very gently he advances the pack towards him and puts the very card between his fingers. The person mechanically closes his fingers and seizes the card, believing that he has drawn it by chance from among all those spread out before him. As soon as he closes upon the card, to avoid all contrary determination the pack is gently withdrawn. "The skill employed in this circumstance," says R. Houdin, "can be compared to that used in the passes of fencing. One reads in the eyes of his adversary his determination and, by a turn of the hand, renders himself master of his will." The words pronounced are also of some importance. Before proffering the cards the person is asked to take one from the pack. One avoids using the word choose as raising unnecessarily the suggestion of independence. It is well, also, to seize strongly the cards of the pack except the one to be forced. The spectator without realizing the intention of the operator, feels a resistance and permits himself to seize the forced card which he draws more easily. In spite of all precautions the artist cannot

absolutely control the conditions and the trick sometimes fails ; but the practiced conjurer always has a new line of conduct ready to follow.

Binet¹ has studied the different processes involved in this feat and makes the following points: 1. "The pack is first presented closed to hinder the spectator from making his choice before the operator has put the cards under his eyes; if he could see the cards spread out while two meters away, he could fix his eyes on one and hold it by malice or timidity. To avoid this result the pack is opened only when it is before the spectator, and he has already extended his hand with the intention of seizing a card. 2. If only a dozen to twenty cards in the middle of the pack are made to pass before the spectator, it is to indicate to him that it is in these cards that he ought to make his choice. They are the only ones presented to him, and it is altogether natural that he should not think of taking those which the operator keeps under his hand. The choice is then not upon 32 or 52 cards of the pack, but is limited to a smaller number. 3. The cards are made to pass in an unceasing movement, first, because this manœuver makes the spectator believe that several cards are put at his disposal, and, finally, because then the eyes of the spectator cannot be fixed upon any one. 'The play consists, on the whole, of rendering particularly difficult the choice of other cards, and rendering easy, on the contrary, the choice of the card forced. The conjurer acts on the instinct that when we are on the point of choosing between several possible acts, none of which possess any particular interest, it is the facility of execution which determines our choice. Our thought follows, very naturally, the line of least resistance.'"

The same author compares with this feat that of "the card thought of," which depends on the same principle. The only difference is that the choice is mental instead of being with the hand. The subject is asked to fix his choice secretly upon one card of the pack which are made to pass rapidly before his eyes while spread out. The artifice of the feat consists in making the cards pass so rapidly that the person cannot see them distinctly, save one, and that one is the determined card, which, by opening the pack a trifle more at this point, is made more easily visible. The eyes leap upon this, and the chances are greatly in favor of the person choosing it. The reason being that "to choose a card by chance it is necessary to have the idea in some form. When he sees distinctly only one card of the pack he is given an idea which facilitates the work to be done. If he wishes to name a different card he must commence by ridding his mind of the idea of the former card and then call

¹ Binet: *op. cit.*, p. 107.

up the idea of another card. This would be a longer and more complicated process, but as their exists, it is supposed, no special motive for taking one card rather than another, the thought will follow the line of least resistance, and he will name the card first seen."

This law of economy is in evidence in all the activities of body and of mind. The biological advantage accruing from it in the formation of useful habits is too well known to require statement. A hierarchy of habits, as Bryan¹ has shown, is a condition of progress in the individual and in the race, for, while progress comes at the cost of effort, and while it is impossible if one yield to the tendency to do the easy, the habitual thing, the secret of it lies in making difficult actions automatic that they may be used as the alphabets of more complex actions. However, the majority of people remain for the most part subject to the law of inertia, and in the strife between the routine and the critical spirit the triumph of the former is assured. This law, shown to exist in forcing tricks, appears throughout the whole range of conjuring illusions. To most people, when off their guard, it is not an impossibility that an orange should change into rice or a ball pass invisibly from one cone to another first shown to be empty. It is only when one comes to oneself sufficiently to bring into use his general belief in the uniformity of nature that one escapes from the belief in the miraculous. While one is only attending with the lower sensory centers the feeling of enchantment is paramount. When anything occurs to arouse a suggestion of incongruity this feeling is dissipated. This is a reason why a conjurer should never reveal how a trick is done, or expose the methods of rivals, such actions give the audience an unnecessary clue, arouses suspicions which they would never have thought of, and which will remain to spoil the effect of any subsequent trick worked by a similar process, and, in general, it will tend to diminish the prestige of the performer by showing by what shallow artifices an illusion may be produced.

V.

SOCIOLOGICAL AND PEDAGOGICAL OBSERVATIONS.

Interest in Conjuring Deceptions. The spectators experience an undoubted pleasure in witnessing the feats and illusions of the conjurer. Evidence of this is seen in the continued existence of this kind of entertainment, and especially in the crowds attending on them. An analysis of the causes for this pleasure is difficult. Some of the elements lie far back in an inextrica-

¹Bryan, W. L., and Harter, N.: Studies on the Telegraphic Language, Psych. Rev., Vol. VI, No. 4.

ble tangle, others are more on the surface. Of these last may be mentioned the general pleasure in witnessing action of any kind—in the satisfaction of the craving for spectacles which was pandered to by ancient civilizations who found the conditions of popular contentment to lie in providing "shows and bread."

Another element is certainly the puzzle interest. Divested of all their dramatic and magical features, these feats yet remain as puzzles and as such are capable of motivating an intellectual curiosity, for the "puzzle" activity is an expression of an intellectual play instinct" with the affective accompaniment of all play. The biological uses of this activity are obvious. It leads to inquiry into the unknown; to a necessary investigation of the environment and the increase of power which comes from the acquisition of knowledge and an enlarged horizon. Were the performances under discussion, however, merely puzzles, public interest in them would be short-lived. The deep lying popular interest reflected in modern magical performances must be referred back to the remote past. It is undoubtedly, in part, at least, an inherited Anlage, an interest derived from the awe or fear that supernatural ideas have always inspired. In every age man has manifested "vague unconscious fears of the unknown, of darkness, of mysterious powers, witchcraft, sorcery, magic,² etc." The tendency to animism which peoples the world with spirits is a force representative of the strongest of human interests. Through long ages the workings of the laws of nature have been to the ignorant an inexplicable enchantment. Relying on the instinct for the marvellous—the interest in things wonderful—the priests of primitive ages, as we have found, were always able to indulge an innate tendency to deception and to maintain their claims to superiority. The facts of sense presented under the authority of religion were received with a veneration due to the miraculous element and worshipped because enshrouded in a sacred obscurity. With the advancement of science the serious aspect of this religious sentiment has declined, but the interest in everything claiming a supernatural character still exists in a modified form whether ghosts, spiritualism, hypnotism, or magic. In this, as in other aspects of our psychic life, we see that man, though he has sloughed off so largely the traits of his ancestors to assume the livery of culture, has not cut loose from the habits of the past. In the activities of his complex social life there is seen the same play of forces working towards the same biological end. We are all children at conjuring shows. We like it because we then

¹Lindley: "A Study of Puzzles," *Am. Jour. Psych.*, Vol. VIII, p. 456.

²Ribot: "The Psychology of the Emotions," p. 210.

get away temporarily from the shackling logic of our lives. The crust of nature is thin, and we easily slump through into a state, perhaps analogous to the old conditions when we took things for granted; when everything was wonderful that we did not understand, and no one but the priest could understand it. We cut loose from our higher centers and let the nerve impulses run through the easiest channels, as indicated in the last chapter, and in this passivity there is pleasure.

The tendency to believe mentioned above, has a legal interest because of its bearing on the value of evidence. That witnesses in courts of justice may be prejudiced and corrupted by different forms of suggestion is well-known. In the light also of what has been said regarding the ease with which the senses are illuded, it is seen that the rules for the admission of evidence are none too rigid, and that the judicial officer, on whom their administration depends, has need of special training in the laws of mental action.

Indeed a knowledge of psychology has practical value in all departments of life, as showing how perfectly simple in reality are some apparently wonderful things. It has been a great agent in chasing away superstition. It has given a clearer knowledge of the relation of mind and body, and shown how bodily functions are modified by mental suggestions, and has thus taken away the supernatural character of a host of acts of healing, of faith cures, the accounts of which are still given out in certain quarters as miracles.

The general human credulity which has made the profession of the conjurer possible is also responsible for a large class of adepts which afflict society. These charlatans play upon the same weakness of mind as the conjurer. They stand ready to adapt themselves to every opportunity; to take advantage of the uppermost popular apperception. During the summer of 1899, when the public interest in the kissing bug¹ visitation was at its height, "in Washington, professional beggars seized the opportunity, and went around from door to door with bandaged faces and hands complaining that they were poor men and had been thrown out of work by the result of kissing bug stings." There are always hairbrained financial schemes being exploited to relieve the credulous of their means. The South Sea Bubble, Credit Mobilier, Jernigan Sea Water Co., and other schemes promising five hundred and twenty per cent. are historical cases. It is the victims of these swindles who maintain the horde of fortune tellers and other parasites of society of a similar kind, never reflecting that if the power of these pretended seers was

¹Howard, L. O.: "Spider Bites and Kissing Bugs," *Pop. Sci. Mo.*, Nov. 18, '99, p. 34.

real, they would be found actively engaged on the stock market rather than up dingy stairways.

A class of sleight of hand performers obnoxious to law abiding communities are the pickpockets. They understand quite as well as their brethren of the stage, the mechanism of attention. In every large crowd brought together to witness an exciting spectacle, they are present to ply their vocation. Trusting to the general absorption they work with little fear of detection. Their manner of procedure in actively diverting attention, however, is somewhat different. They step on the toes of their victim, or jostle him while deftly abstracting his watch.

Pedagogical Observations. Several points of interest to education appearing from the study of conjuring may be reviewed.

1. The interest of young children in conjuring illusions offers itself as a fruitful topic for investigation, both as showing the time it arises and its nature. From experiments performed before children, and from observations of them at their first conjuring shows, it appears probable that interest in the performances as transcending ordinary human acts, does not arise in many cases till the age of five or six years or even later. The young child sees nothing impossible in such feats as a coin changing to two in the hand, etc. He has no intelligent curiosity because he has as yet no ideas of causality. He is like the savage of whom Spencer¹ says that he "cannot make the distinction between natural and unnatural because he has not the conception of causal relations in the abstract;" "there being for him no established general truths."

2. The lives of the conjurers show that continued success in their calling depends upon their ability to constantly produce new marvels. To keep pace with the popular hunger for the new thing, they are always adapting the latest scientific discoveries to their purposes. Old tricks are also often revived in new form for the astonishment of the rising generation. This inclination to conform to the shifting popular interest is shown in the performance itself. A conjuring rule is "in arranging the programme make each trick more surprising than the last." Obedience to this rule is compelled by the law of diminishing intensity of feeling. It is a necessary consequence of this law, as Hoffding² shows, that repetition must weaken feeling, enthusiasm be succeeded by indifference, and if carried far enough, by absolute loathing. This law demands greater emphasis in education. In those exercises in the child's train-

¹ Spencer, Herbert: "Data of Sociology," Vol. I, p. 97.

² Hoffding: Outlines of Psych., p. 277.

ing where drill still seems necessary, great delicacy is required in his guidance, for to maintain the pupil's interest the stimulation must increase. Adapting for the teacher the conjuring rule just given, each illustration must be made more interesting than the last, but with this safeguard, that it be not more stimulating than is necessary to carry the interest; for overstimulation leaves the pupil indifferent, and in the condition of the child who didn't want his toys, but wanted to want them.

3. The education of the conjurer presents something of value for popular education. The motor training which comes from the practice of juggling very greatly increases the efficiency of the individual, and might well be a part of the programme of instruction. Only one who has acquired some degree of skill can appreciate the superior power of the conjurer.

4. It is recognized as the correct procedure in pedagogy to cause the pupil to bring the proper subjective element to the interpretation of the objective facts presented, and problems are deemed fit according as they find some correspondence among the ideas he already possesses. The conjurer reverses this process as has been shown, seeking constantly by the aid of all his arts to lead the audience to the employment of the wrong apperceptive material; and the spectator impelled along these lines, and finding no solution, is in proper condition to be mystified by the denouement. The problem he presents is insoluble to most people; that is the aim of the magician. His reputation depends upon his giving his audience nuts which they cannot crack. In inclining their minds to take the direction of greatest complexity, he contravenes the proper theory of education. In this, however, he does not sacrifice the interest of the spectators as would be the case were the same method applied to the education of youth.

The deep interest in the feats of the conjurer inspires one to ask whether it may not profitably lend itself to pedagogical purposes. An inspection of the skeloton tricks given in the chapter on classification reveals the wide use the artist makes of the various scientific principles, and suggests their value as illustrative material in the teaching of the sciences. Perhaps most can be claimed for the pedagogy of magic in the realm of physics. Nearly every important principle in this branch of knowledge is exemplified in one or more of the tricks given. In the demonstration of the principles of electricity, mechanics, hydrostatics, optics, and acoustics, the feats given may have an exceedingly important function. Certainly a knowledge of their use in the field of magic would give the subject added interest.

5. The responsiveness of a crowd was noticed by Houdin. He says in his memoirs on this point, "How many times since, have I tried this imitative faculty on the part of the public. If you are anxious, ill disposed or vexed, or should your face bear the stamp of any annoying impression, your audience straightway imitating the contraction of your features begin to frown, grow serious, and ill-disposed to be favorable to you. If, however, you appear on the stage with a cheerful face, the most sombre brow is unwrinkled, and every one seems to say to the artist, how do you do, old fellow? Your face pleases me, I only want an opportunity to applaud you." Substitute teacher in the above, and we have a situation found in every schoolroom. Every teacher is in some sort a conjurer. She fills the artist's place, and by every look, tone, or gesture is a source of suggestion. What ideas, what actions shall result, rest largely with her, hence the need of teachers of culture who may fill a large place in the plastic life of their pupils as gracious inspirers to better things. The child by the very law of its development must act on suggestion, must respond to his environment. If his teachers, his parents, or the community do not present the proper suggestions or do not offer them in a skillful manner, he will react to wrong ones.

BIBLIOGRAPHICAL NOTICE.

The references to authorities cited are given at the bottom of the page. In addition, general use has been made of the excellent bibliographies of magic given in Hopkins's "Magic and Stage Illusions," etc., Burlingame's "Tricks of Magic," Vol. III, and Lehmann's "Aberglaube und Zauberei."

ACKNOWLEDGMENTS.

It remains to express my obligation to Dr. G. Stanley Hall for the suggestion of the study and for the interest he has shown throughout its progress. Also to Dr. E. C. Sanford and Dr. W. H. Burnham for their kindly criticisms and interest.