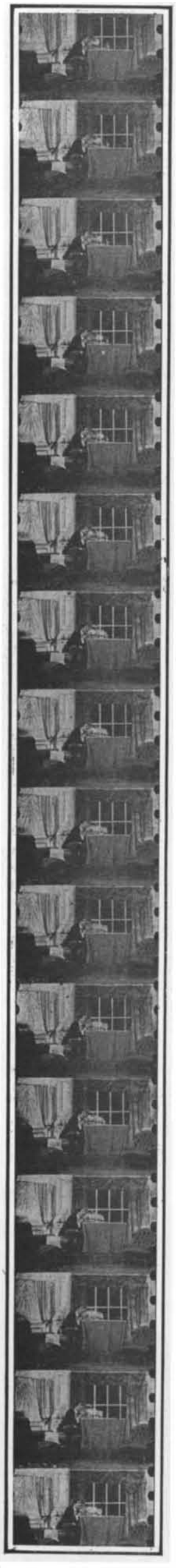


Coquetting with the fairy.

SOME TRICKS OF THE MOVING PICTURE MAKER.

Moving pictures are exhibited in about ten thousand theaters and halls in the United States. With the rapid spread of this new amusement has also come a marked change in the public taste. When the moving picture first made its appearance as part of the programme of a music-hall entertainment, spectators were quite content with views of factory employees going to and coming from their work, the arrival and departure of railway trains, the passing of street parades, and similar scenes. Nowadays, a more or less coherent story must be unfolded, for which reason the maker of moving pictures has been compelled to write plays (or at least to conceive them) and to have them acted before the camera. Hence it is that every moving-picture studio includes in its equipment a company of about thirty actors or more, a stage manager or two, a stage with scenery fully as elaborate as that of the regular stage, together with all the paraphernalia of stage carpentry. As the art progressed, it was soon discovered that the camera was capable of performing miracles utterly inexplicable to the uninformed spectator, and hopelessly impossible of attainment on the regular stage. Thus, we find a milliner's apprentice transformed into a fashionably-dressed lady; a sleeping sot cut in two by an automobile and then put together again by an accommodating chauffeur with the aid of his tool kit; clowns mounting stairs backward and making amazing leaps; carriages which travel backward, dragging their horses with them; pumpkins rolling up a hilly street and leaping into upper windows; swarms of fairies springing from scattered roses; columns of vapor becoming transformed into radiant visions; and a host of other marvels which never fail to bewilder.

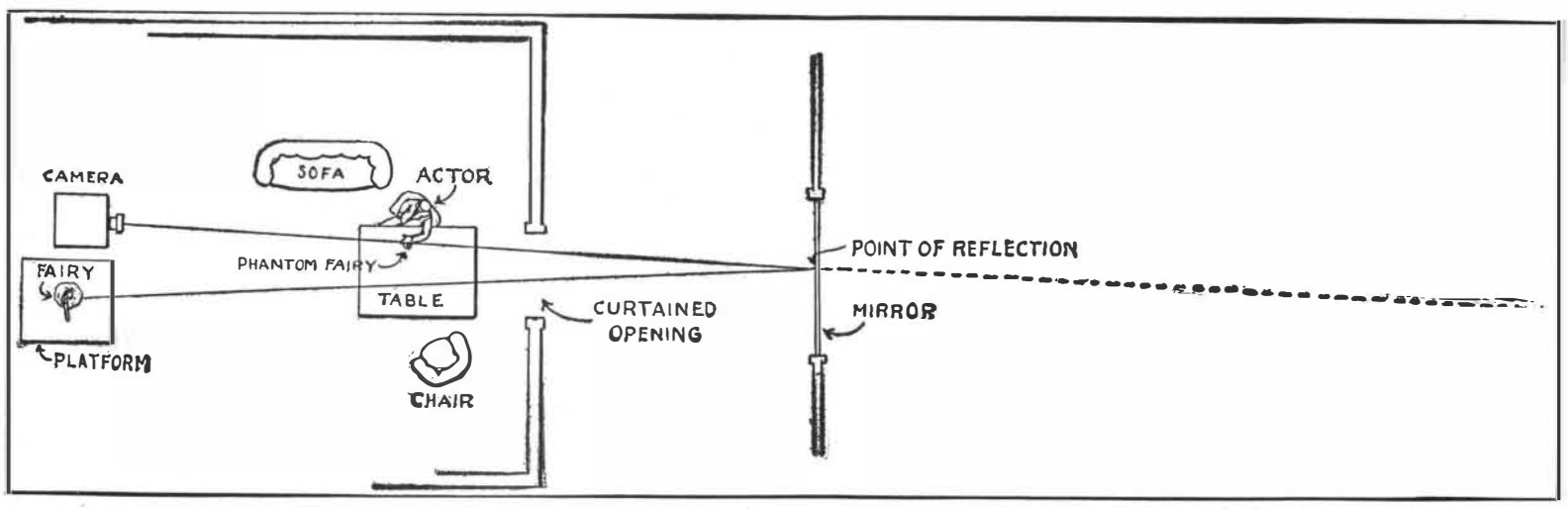
Some of the "properties" of the "Princess Nicotine." All are enlarged fac-similes of objects used in everyday life.

Through the kindness of Mr. J. Stuart Blackton and Mr. Albert E. Smith of the Vitagraph Company of America, we are enabled to give an explanation of the more important of these mysteries. In one film, which Mr. Blackton has conceived, entitled "The Princess Nicotine," nearly all the tricks of the moving-picture dramatist are utilized to the full, for which reason we cannot do better than to describe in detail the various scenes of this photographic play and to explain how its many startling effects are obtained.

The artifices which are employed are all of them more or less dependent upon the fact that a moving picture is made by means of a camera, which takes photographs of animated objects on a film traveling past a lens at the rate of fifteen pictures per second. Almost all the tricks which can be played with the ordinary camera are also possible with the moving-picture machine. In addition, the film's motion can be reversed with curious effects. Thus, if a horse race is photographed with a moving-picture machine, it is a very simple matter to present the curious spectacle of the animals furiously racing back from the goal to the starting point, simply by causing the film to travel backward instead of forward. Double exposing, well known to every photographer, also explains many strange effects. What is known as the "stop motion" renders it possible for characters suddenly to appear and disappear. For example, by stopping the film and allowing a man to walk on or off and then resuming motion, a sudden appearance or disappearance is produced. On the screen there is no break at the point where the exit or entrance occurred, so that the spectator fails to realize the manner in which he was deceived. Sometimes the diaphragm of the lens is manipulated, in order that forms may gradually become definite or indefinite. The "stop motion" is likewise employed with great effect in giving life to apparently inanimate objects. Thus, it is possible for the spectator to see a lump of clay form itself into a bust of Washington, apparently without hands to mold it. The trick is done simply by stopping the film after each manipulation of the clay, and then resuming motion. The finished picture, which may have taken days to complete, is run off on the screen in a few minutes, and produces a truly staggering effect.

All these tricks of the moving-picture photographer, as we have said, are more or less embodied in the photographic play entitled "The Princess Nicotine." Its mysteries can best be explained scene by scene.

A man is disclosed sitting at a table. Before him on the table are a square tobacco box, a box of matches, a corncob pipe, a large round magnifying glass with a handle, a square white bottle standing on the square box, a vichy siphon, and a whisky bottle. The man fills his pipe, yawns, leans back, and falls asleep. The lid of the tobacco box opens, apparently of itself, and a fairy, Princess Nicotine, steps out, trips over to the pipe, points at it, returns to the box, helps out a smaller fairy, and motions her to climb into the pipe. As they are thrown on the screen, the figures of the man and the two fairies contrast by reason of their sizes. The man is life size, the fairies no bigger than his thumb. This peculiar effect of disproportionate sizes is produced by means of a mirror. The Princess Nicotine is an actress of average height. Her companion fairy is a little girl about twelve years of age. Both play their parts close to the moving-picture camera. They are reflected by a mirror placed far behind the table at which the man is sitting, the mirror being so arranged that it forms apparently one pane in a window. The reflection is caught by the camera, the lens of which is exactly flush with the top of the table, so that the images apparently stand upon the table. Inasmuch as the distance from the camera to the mirror is great, the two fairies are so reflected that they appear in very diminutive form upon the table. Thus, the illusion of miniature fairies is produced. Had the fairies been placed from the camera a distance equal to twice that of the mirror from the camera, the same result would have been produced. A mirror was employed simply to save space. The man in reality never sees anything but the table and the objects upon it.



The stage setting of the "Princess Nicotine," showing the positions of the camera, mirror, and actors.

The box opens of its own accord by means of a black thread attached to the lid. A pull upon the thread by a "super" standing out of range of the camera opens the box.

In the second scene the smaller fairy, with the assistance of Prin-

Blowing smoke at the fairy. In reality, the actor sees nothing on the table.

The fairy as the spectators see her. Steam serves as smoke.

The fairy entering the pipe with the assistance of the "Princess Nicotine."

cess Nicotine, pulls the tobacco out of the pipe. The smaller fairy then climbs into the bowl, disappears, and pulls tobacco over her. The Princess Nicotine returns to the tobacco box, climbs inside, closes the lid, raises it again, peeps out, laughs, and closes the lid again. To carry out this illusion, a corncob pipe and a tobacco box of gigantic dimensions are employed—the exact enlarged counterparts of the pipe and box lying upon the table in front of the man. By photographing only the two fairies and these huge properties and projecting the pictures upon the screen the spectators are apparently brought close to the table. Instead of tobacco, hay is employed, which on the screen looks for all the world like tobacco.

Presently the man awakens. He reaches for his pipe, and strikes a match. Try as he will, he cannot light the tobacco. He looks into the bowl. Snatching the magnifying glass, he examines the tobacco carefully.

The spectators suddenly take the place of the man, and apparently look through the magnifying glass with him; for upon the screen the magnified image of the pipe is thrown. A living fairy is disclosed peeping out of the big pipe, smoke rising around her. She laughs and points her finger. The effect is produced simply by photographing the girl in the large property pipe, and by blowing steam through the pipe so that it floats up around the girl and simulates smoke.

The scene is flashed back, and we see the man again at his table. He drops the magnifying glass, astonished, turns the pipe upside down, and knocks the ashes out on the table. He examines the tobacco through the glass. Again the enlarged image of what he sees through the glass is thrown upon the screen.

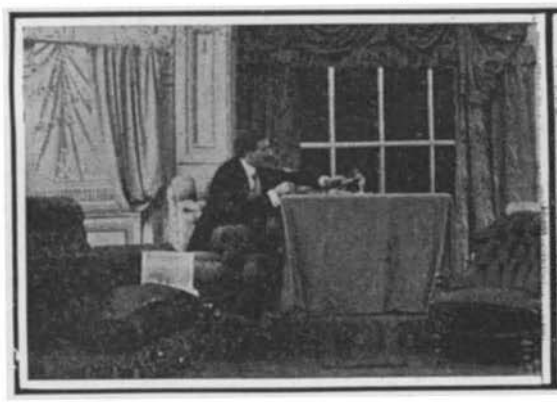
The inverted pipe is shown, immensely enlarged, apparently, with the smoking tobacco spilled out. The girl leaps to her feet, laughs, throws a kiss, runs to the tobacco box, opens the lid, leaps in, closes the lid, raises it again. She and the Princess Nicotine both point mockingly and laugh. In this transformation, the large property pipe is again used, and steam again serves as smoke.

duced of a rose plucking itself apart, dancing upon the table, and molding itself into a cigar.

After the rose has thus miraculously metamorphosed itself, the man returns. He picks up the cigar and lights it. The smoke rises, and then whirls rapidly around. Presently a huge cloud of smoke rushes into the white bottle standing on the table. To produce the effect of smoke rushing into the white bottle, steam is blown from under the table through a hole in the bottom of the bottle. On the screen the film is reversed, so that the steam (apparently smoke) instead of rushing out of the bottle blows into it.

Astonished at the very remarkable behavior of the smoke the man picks up the bottle and looks at it. The fairy is dimly visible within. Again he picks up the magnifying glass and peers through. Once more the spectators take the place of the man, and apparently look through the magnifying glass. They see the girl in the bottle, turning around and leaping up and down, knocking at the glass. This effect of the girl in the bottle is produced by means of a double exposure. In other words, a series of pictures is taken of the bottle alone, and another of the little girl's reflected image on the previously exposed film. Naturally, the girl must not move without a prescribed area on her platform beside the moving picture camera; otherwise, her reflection would fall outside of the bottle.

The man seizes the bottle by the top, and breaks the lower part with a hammer. The girl is revealed standing upon the box. She points to the man, and throws him a kiss. Stooping, she produces, apparently from behind the box, a package of cigarettes. She opens the package, takes out a cigarette, and hands it to him. He reaches for it, takes it, lights it, blows the smoke at her, and looks at her through the magnifying glass. The effect of the girl standing on the box after the bottle is broken is again produced by means of the "stop motion," the girl appearing at the proper moment when the film is stopped, and motion being resumed when she is in position. The package of cigarettes which she produces is in reality a huge



The actor taking the cigarette from the fairy.

The fairy offering the cigarette to the actor.

The man beneath the table blows smoke through the rose.

Once more the scene is changed. The man is seen at his table. The lid of the box is just closing. It opens once more. The Princess thrusts out her arm, and waves it playfully. The lid closes, leaving the arm protruding. The man seizes it. He pulls what he supposes to be the arm, opens the lid, and to his surprise finds himself holding a large rose. He smells it, coughs, and chokes; for smoke streams up from the center of the rose.

The effect of the closing lid is produced by a fine black thread manipulated by a man out of range of the camera. What is apparently the Princess' arm is a miniature property arm. The transformation of the arm into the rose is produced by a "stop motion." In other words, the camera is stopped, a rose substituted for the arm, and the motion resumed. In throwing the picture on the screen the "stop" is of course omitted, so that a miraculous transformation takes place. The rose has a hollow stem, which is connected with a rubber tube passing through the box on the table. A man beneath the table blows smoke through the tube.

Once more the man seizes his magnifying glass, and examines the rose. What he sees is again thrown upon the screen. The little fairy's head appears in the center of the rose, smoking a cigarette, and blowing the smoke laughingly. The rose of course is a huge property flower. Back the scene changes. The man drops the rose (a paper rose of natural size), frightened, and runs out. Presently the leaves detach themselves from the corolla, and commence to whirl around of their own accord toward the center of the table. Gradually they approach the center, and roll themselves up into a cigar. To produce this illusion, the "stop motion" is again called into requisition. Each leaf is carefully plucked by hand. The stage manager moves the leaves of the rose just so far and no farther, steps out of range of the camera, and another picture is taken; and so on to the end. With the film flickering in front of the projecting lens at the rate of twenty pictures per second, the illusion is produced of a rose plucking itself apart, dancing upon the table, and molding itself into a cigar.

property package, as large as the girl herself. In the reflection it appears as small as a real package, so that the spectators are completely deceived. The cigarette which she removes from the package is a property cigarette, a yard long, and stuffed with hay. In the mirror it appears as small as a real cigarette. The effect of the man's taking the cigarette from her is again produced by means of the "stop motion," a real cigarette being substituted for the false.

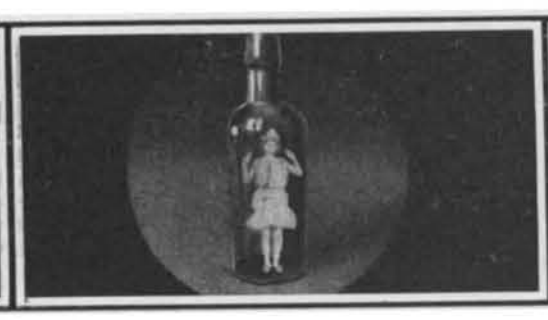
When the man picks up the magnifying glass to observe the antics of the fairy after he has blown smoke at her, the scene is again changed, so that the spectators apparently look through the glass. The smoke in the magnified image is really steam, the illusion being heightened because the fairy coughs, shakes her fist, and stamps her foot in rage.

In the next scene the man is still shown blowing smoke. He takes a match, lights it, and holds it toward the fairy. She shrinks in fear. The man laughs, looks away, and blows out the match. In revenge the fairy stealthily creeps toward the match box. He watches her antics through the magnifying glass. In the magnified image the spectators see her opening the match box, taking out matches, and piling them up. She strikes a match on the box, and ignites the pile. The match box shown in the magnified image is a large property match box. The matches themselves which the fairy piles up are between two and three feet long, and are provided with paper heads which look for all the world like phosphorus in the camera.

When the scene is flashed back again to show the man at the table, the real matches (which have meanwhile been arranged in a pile) are shown blazing, with the fairy still bending down in the position of applying the match. The man seizes the seltzer siphon on the table, points at the blazing matches, looks through the magnifying glass. Again the spectators take the place of the man, and

(*Concluded on page 487.*)

The fairy shaken out of the pipe. The smoke is steam; the tobacco, straw.



The fairy within the bottle; an effect produced by double exposure.

The fairy in the center of the property rose.

Shaking the fairy out of the pipe.

SOME TRICKS OF THE MOVING PICTURE MAKER.

SOME TRICKS OF THE MOVING PICTURE MAKER.

(*Concluded from page 477.*)

apparently look through the glass. They see the matches burning—this time the property matches—with a stream of water playing upon them, and the fairy falling backward and disappearing.

The final scene discloses the man squirting seltzer on the smoking matches, and in his anxiety to extinguish them completely deluging himself.

The effect of "The Princess Nicotine" when thrown upon the screen is so startling that it defies explanation by the uninitiated. The little fairy moves so realistically that she cannot be explained away by assuming that she is a doll, and yet it is impossible to understand how she can be a living being, because of her small stature. The illusion is heightened by the enormous size of the property cigarettes, matches, and corncob pipe compared with the diminutive size of the fairy. Naturally, in enacting this photographic play it is most important that the two fairies should act their parts faultlessly. Thus, when the girl is shown in the bottle, she must never move outside of a certain square marked on the platform upon which she stands beside the camera. Otherwise, she would no longer be seen in the bottle, but outside of it, and the illusion would thus be destroyed.

Again, when she hands her property cigarette to the man, and he apparently takes it, she must hold her hand, and the man his hand, in the proper position, so that the real cigarette and false are superimposed.

In other moving-picture plays it is sometimes necessary to produce effects which are not required in the "Princess Nicotine." Thus, in one film story, a robber is required to run 100 yards down the street, while the apparatus is in operation. If the crank were turned at the usual rate, about 900 pictures would be taken. In order to produce the impression of still greater speed, the film maker simply cuts down the number of pictures to 600, so that the robber runs the 100 yards with outrageous leaps and bounds.

The coloring of films may also puzzle many. The tinting is more simply done than may be supposed. Three positive prints are made from the negative. Out of each picture of the positive a section to be colored red is cut. From the second film, a different section is cut, which is to receive a blue color. Out of the third another part is cut, to receive yellow. Three positive stencils are thus obtained, each having perforations made by cutting away a particular section in each picture throughout the entire length of the film. The fourth positive is now colored by means of the three stencils. The film to be colored is passed slowly over paint rollers in contact with the first stencil, color being applied exactly in the same way as with ordinary stencil plates. The operation is repeated for the second and third stencil film, so that the positive is run over the rollers three times, each time receiving a different color through different perforations. The final result is a positive film in three colors.

RECENT FRENCH AEROPLANES AND THEIR PERFORMANCES.

(*Concluded from page 481.*)

flight of 2 hours and 20 minutes on December 31st last) and is significant from the fact that it was made with a monoplane, which is generally considered to be the most advanced type of aeroplane. The day before, Mr. Latham made a 37-minute flight at a height of from 60 to 75 feet, and the day after—June 6th—he won the Goupy prize for a flight of 5 kilometers (3.1 miles) in a straight line across country, covering this distance in 4 minutes and 13 seconds at a speed of about 44.1 miles an hour. The entire flight lasted 14 minutes. On June 7th he made four flights of 600 meters (1,968 feet), 700 meters (2,297 feet), 3 kilometers (1.86 miles), and 12 kilometers (7.46 miles) respectively. In each of these flights he carried a passenger. The last flight was of 11 minutes 6 seconds' duration, Mr. Latham's companion in this instance being Mr. F. Hewartson of the London Daily Mail. The latter sat facing backward in front of Mr. Latham, and so steady was the flight of the machine, that he was able to make stenographic notes while in full flight. Even with the extra passenger, the aeroplane had a tendency to soar, but this was easily checked by means of the horizontal rudder.

The other monoplane shown in flight is the new No. 12 machine of M. Louis Blériot. This monoplane has a length of 10 meters (32.8 feet), a spread of 12 meters (39.4 feet), and its weight with two men on board is given as 498 kilogrammes (1,098 pounds). The thrust obtained from the propeller (which in this case is chain-driven from a 30-horse-power, 8-cylinder water-cooled motor mounted in the lower part of the body framework) is 73 kilogrammes (161 pounds). The first test was made on May 21st. The machine flew successfully at its first trial. Since then it has been altered somewhat. Our photograph shows it in its altered condition. The vertical rudder has been moved from the extreme end of the body framework to a point about half way between the two ends, and has been placed above the frame. The horizontal rudder has been placed below the body framework near the rear, while there is a second one below the aviator's seat. A fixed horizontal surface is located above the body just below the vertical rudder. After making successful flights with a passenger, M. Bleriot, on June 12th, is reported to have flown 1,000 yards at a height of from 15 to 20 feet, carrying two passengers, the weight of the machine with passengers being in this instance 1,232 pounds. This was a very remarkable performance, and it is the first time that an aeroplane is known to have carried more than two men. The passengers taken by M. Blériot were M. Fournier and Santos Dumont. M. Blériot is continuing his experiments, and he will, no doubt, make some record flights before long.

The biplane, shown in flight, is one of the Voisin machines, such as was first used successfully by Farman and Delagrange. The particular one shown in the photograph is that of M. De Rue. It has made some excellent flights at the new aviation field of the Aero Club of France at Juvissy, and in the picture is shown winning the Archdeacon cup.

The biplane shown on the ground is a new machine, having planes which are arched from the center outward in a peculiar manner, as can be seen from the picture. This arching of the planes also extends to the tail in the rear. A large four-bladed propeller is placed just back of the main planes, and is driven by a chain from the motor. The designer, M. Lepetil, expects to increase the transverse stability by means of the arching of the planes. The machine has not yet received its initial test. It has two runners below the tail, and two runners with wheels in front.

THE CONSTRUCTION OF THE ZEPPELIN AIRSHIP.

(*Continued from page 481.*)

partments contains a separate gas bag. These gas bags are well shown in the picture at the front end of the airship. They fit the compartments, and press against a network of ropes (not shown) within the girders. Outside of these girders there is a covering of special balloon cloth. On the under side of the frame there is a trussed keel, extending to within two compartments of each end. The two cars are suspended from this trussed keel, and rigidly attached to the same about a quarter of the way back from the bow and a quarter of the way forward from the rear end of the airship. Each car contains a 110-horse-power motor, which drives, by means of shafts

(*Concluded on page 491.*)