

Fig. 8

the handkerchief over the glass of port and waving your wand you change it to sherry. But, as nowadays sherry is considered too strong and prohibition is so popular, that you are going to throw the handkerchief over it again and turn it into water, which you prove to be real by drinking it.

#### CHANGING WINE TO WATER

As a matter of information, we are giving you a secret to a trick that you will oftentimes see on the stage, but we do not recommend it because oxalic acid is used, which is a deadly poison. However, a story of Chemical Magic would not be complete without a description of this trick because you might want to know how it is done when you see it performed on the stage.

The trick is so well described by Professor Hoffman in his excellent book "More Magic," that we are reprinting it here as he gives it.

"The performer shows a row of apparently empty wineglasses, and a jug of water. He pours water from the pitcher into one of the glasses and back again, just to prove that it is water; after which he announces that the jug will, at his command, yield either wine or water. Accordingly, he fills the first glass. The liquid is clear water. He fills the second with apparently red wine. The third glass poured out is water, the fourth wine. He cannot fill the fifth, for the

jug is empty. He, therefore, pours all back again and again fills the four glasses. All now appear to hold wine, though a little diluted. He turns the jug upside down to show that it is again empty, then once more pours the contents of the four glasses back into it. On again filling the glasses, each holds nothing but clear water. Again he returns the liquid to the jug; then takes up and fills from it the fifth glass, which has not yet been used. The liquid is red wine. He empties half of this into another glass and fills both up. Both now apparently contain wine. Back the liquid goes for the last time into the jug. On being again poured forth, it is once more water.

"The various changes are so numerous and so apparently causeless, that even those who suspect chemical agency, and have some knowledge of the science may well be puzzled to know how they are produced.

"The first step is to make a saturated solution of tannin. This is done by simply dissolving tannin in water, until it will take up no more. A half pint may be made at a time and bottled for future use. The next step is to knead powdered oxalic acid with a few drops of water into a stiff paste, and from it make a few lozenge-shaped wafers about the diameter of a dime and almost a quarter of an inch thick. These are allowed to dry, when they become hard like ordinary lozenges. The performer must also supply himself with a small bottle of saturated solution of perchloride of iron, frequently sold under the name of "steel drops."

"These are preliminary preparations. When the performer desires to show the trick, he must make the following arrangements. In the jug (which should be of corresponding size) he must place four wineglassfuls of water to which he has added a tablespoonful of the tannin solution. This does not affect the color of the water. Two of the glasses are prepared by dropping into each two drops of the perchloride of iron. These are placed alternately with two clean glasses in the following order: clean, iron, clean, iron, and the series is completed by a fifth glass into which half a teaspoonful of liquid ammonia has been poured. This is colorless and the glasses all, therefore, appear empty.

"The performer first pours into a clean glass and the color of the solution naturally remains unaltered. He next pours into one of the prepared glasses, when the iron combining with the tannin, produces a beautiful red color. As the change is not absolutely instantaneous, it is well to screen the bowl of the glass with the hand while pouring, thereby giving time for the reagents to combine. If the audience see the liquid change color in the glass, they will at once infer that the trick is chemical.

"Proceed in a like manner with the next two glasses. When the contents of the four are again poured back into the jug, they all amalgamate and, therefore, become red. Now comes in a little piece of sleight-of-hand. When the

performer has again emptied the jug into the glasses, in showing the former empty, he takes the opportunity to introduce one of the oxalic acid lozenges. (These should be in a convenient pocket.) If possible, the lozenge should be broken in small pieces before putting into the jug, because this will make it dissolve more readily.

"When he again pours the liquid into the jug, the oxalic acid, now dissolved therein, again bleaches the solution. But, when a small portion of this bleached solution is poured into the glass containing the ammonia, the alkali overpowers the acid and again brings back the color. When, however, this small portion is again returned to the stock, the acid being in larger quantity overpowers the alkali and again bleaches the mixture.

"It is hardly necessary to remark that oxalic acid is a deadly poison and the amalgamated liquid should, therefore, be gotten rid of as soon as the trick is completed."

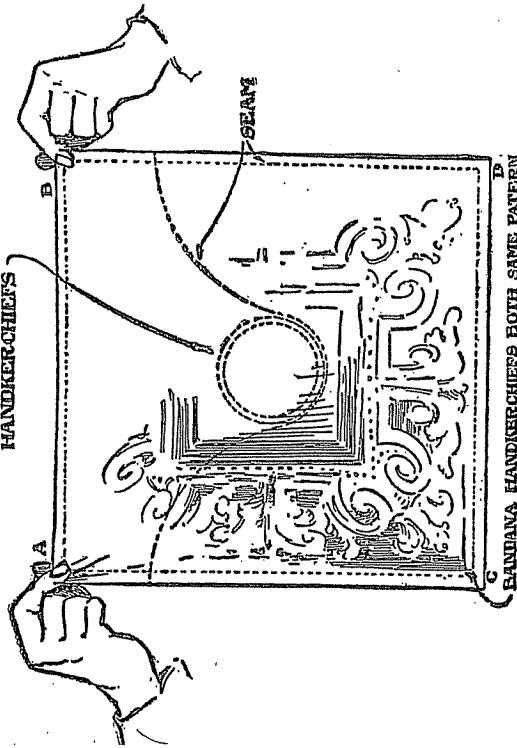
### LATEST FLYING GLASS OF WATER

We want to describe one other trick that is performed quite often on the stage and, although it is not a chemical trick, it fits nicely into Gilbert Chemical Magic because so many glasses are used that this little side play sometime during the performance may help mystify and increase the effectiveness of the entertainment. I know you would like to know how the Flying Glass of Water is worked, even if it is somewhat difficult to do. It sounds more difficult than it really is, however, for after some practice and with self-confidence the trick can easily be done. Certain changes can be made in the trick after you have become adept, so that it may fit into your performance to suit your own fancy.

The properties necessary for this trick are:

- 1st. A glass, the upper edge of which has been ground perfectly flat. This you can have done at a glass grinder's or a jeweller's.
- 2nd. A piece of celluloid one-eighth inch thick that fits snugly onto the mouth of the glass, and, better still, a second piece of celluloid that will fit just inside of the mouth of the glass, cemented to the large piece. By moistening the ground lip of the glass before covering this with the celluloid disk, it will be noticed that it makes a very effective cover which cannot be dislodged very easily and which will keep the contents of the glass from spilling. I have seen some performers use an ordinary piece of thin glass cut into a disk, which will answer the same purpose, although it has to be handled a little more carefully, because it makes a ringing noise when you are doing the trick, unless you are careful.
- 3rd. Prepare a handkerchief which has a ring or circular piece of cardboard sewed in the center. The ring or cardboard must be the same size as the mouth of the glass. An easy way is to sew two

### LOOSE RING BETWEEN HANDKERCHIEFS



BANDANA HANDKERCHIEFS BOTH SAME PATTERN

Fig. 9

thin handkerchiefs together around the edges, running a curved seam as shown in Fig. 9, so that when the double handkerchief (appears as a single one to the spectators), is held by corners *a*, *b*, the loose ring will roll towards the center. When the handkerchief is held by the corners *c*, *d*, the ring will ensconce itself in either corner *a* or *b* and the handkerchief can then be proven to be as free from preparation as its innocent appearance would indicate. A simpler and also effective way is to sew a patch cut from a similar handkerchief on the center of a bandana, or handkerchief with a colored pattern, to hold in position the ring or disk which will not be noticed, if done neatly. 4th. A small sponge soaked in water.

Introducing the trick, the performer enters with the glass which he fills with water in the presence of the audience. The glass is then covered with the prepared handkerchief in such a way that the ring rests directly over the mouth of the glass. The performer secretly obtains possession of the celluloid disk or glass top, which he had concealed in his vest pocket and, in arranging the handkerchief over the glass, places it on the top of the glass in the proper position. This may sound difficult to you, but the handkerchief is large and in holding it

up in front of the glass you can do a lot of things behind it while you are arranging it. There is no reason for the audience to guess what you are doing, so do not worry, but have self-confidence and keep your mind on the trick you are doing, not on what the other fellow is thinking about.

You now lift the corner of the handkerchief slightly to show your audience that the glass of water is still there. This is to allay any suspicion that you have done anything queer, which might have been discovered owing to clumsiness in getting the celluloid top on the glass. In showing the glass of water under the handkerchief, walk towards the front of the stage.

Having demonstrated to your audience that the glass is still there, return to your table in the back of the room or stage. On the way to the table you adroitly remove the glass from under the handkerchief and place it in the inside pocket of your coat which you have prepared for the trick. This pocket is sewed inside of the coat with a wire or celluloid loop, to keep it open, large enough so that you can drop the glass into it quickly and unnoticed. It is arranged, especially, for the purpose of carrying and concealing articles and is quite necessary in every magic performance. For a better description of the pocket you can read any first-class book on conjuring, which can be obtained in your own Public Library. It is hardly necessary to say that you will have to use great care in removing the glass so that suspicion will not be aroused. The elbows must be held against your sides and not moved up, when walking to the table. With a little practice and patience you will soon be able to drop the glass into the pocket without making any unnecessary moves and no one will ever suspect what you have done.

When you get back to the table, you secretly get possession of the soaked sponge and hold it in the disengaged hand. Again you apparently demonstrate that the glass of water is still under the handkerchief, as by squeezing the soaked sponge, it will appear as though you are spilling water out of the glass. The cardboard disk in the handkerchief is held between the thumb and first finger and the audience thinks the glass is still there, as having no knowledge whatever of the cardboard disk they cannot quite conceive how you could make the handkerchief look as though the glass were under it unless it really was so.

Next, you seize the handkerchief, which during all this time is held by the ring or cardboard, and throw it up into the air and simply shake it out and the glass of water seems to have mysteriously vanished.

**Second Part of the Trick.** You now throw the handkerchief over the knee and pick it up by the ring or cardboard, saying the words "Mysto Magic" and it again takes the shape of the glass, giving your audience the impression that it has returned. Again you vanish it. Then you ask a spectator to come on the

stage and you will show that you can bring the glass back, right in front of their eyes.

You have the spectator stand facing the audience and approach him from the left, grasp the ring again and apparently take the glass from the spectator much to the delight and edification of the audience. Still holding the prepared handkerchief by the ring, you walk around the spectator, who is facing the audience, and while passing behind him it is a simple matter to remove the glass from the prepared pocket and smuggle it under the handkerchief, which is thrown over his shoulder, and the glass is produced. Some conjurers have actually let the spectator remove the handkerchief. It is necessary to remove the celluloid top or glass disk. This is palmed in the hand and it is an easy thing to do, because everyone is watching the glass and the spectator. While giving the glass for examination you have ample opportunity to dispose of the disk either in your pocket or on the table.

Some performers, after having secretly placed the glass disk on the glass again, turn the glass upside down without any water spilling out. You can actually throw the glass of water into the air, much to the astonishment of the audience, but this, to my mind is not advisable, because it gives some real astute person the idea that the glass can be manipulated without any danger of the contents spilling. The fact which seems to appeal to most people is that you have actually vanished a full glass of water without spilling it, and that is the greatest secret of the trick.

As a trick by itself the turning of the glass upside down is a good one, but I would not advise it in connection with the disappearing and reappearing glass of water.

Another trick with the magic glass of water is as follows: Before the performance you put the celluloid disk over the glass. You then show the audience a full glass of water and cover it with a piece of paper. Tell them that according to the laws of hydraulics the paper will hold the water in the glass, but no law of hydraulics will keep the water in the glass, after removing the paper, and that is where your magic power comes in. Tip the glass upside down and slide the paper off, and much to the astonishment of the audience the water will still stay in. The celluloid disk, of course, is invisible at a short distance.

### THE VISION OF BELSHAZZAR

This is a most novel and startling combination trick which, although not dependent for its effect, in a large measure, on the aid of chemistry, it will, nevertheless, make a capital finale to a performance of Chemical Magic, or rather, a program of magic in which you may have introduced several of the tricks de-

scribed in this book. It will make a splendid climax to a series of tricks with cards and it should, whenever possible, be used as the closing number.

The basic idea of this trick is susceptible of many splendid combinations and its presentation may be varied to suit the artistic temperament of the performer. As a demonstration of the existence of so-called "astral spirits," it can be performed so that it will be much talked of wherever presented. As a regular magic trick, in combination with card tricks, it lends itself so well to a display of dramatic effect as to easily become the feature of the show. We will describe its effect as presented in conjunction with tricks with cards.

**Effect.** The magician calls attention to a large, unprepared wooden frame, on which he tacks a large square sheet of white paper. This frame he now sets on a clamp or holder which, in its turn, sets on a sheet of glass held in a vertical position. He further emphasizes the fact that the glass rests on a wooden stand, entirely isolated, and as no covering of any kind is resorted to, it is clearly impossible for any human being or material agency in whatever form, to approach or come in contact with the paper without the fact being detected by the spectators.

The operator now approaches the audience, and, from a pack of cards which has just been handed to him by his assistant, he requests a spectator to select a card. After the card has been shuffled back into the pack, the performer remarks that he is about to offer a demonstration of a most astounding nature, as, in fact, it is nothing less than an actual representation of the "writing on the wall," the famous "Mene Tekel Upharsin" of biblical renown. He makes a brief allusion to prophet Daniel's interpretation of the vision of the Babylonian king, Belshazzar, and upon the conclusion, the magician turns around to face the isolated frame, pronounces the words "Mene Tekel Upharsin" in a commanding voice, and he no sooner finishes his incantation than the most astounding thing imaginable takes place—the audience see the name of the chosen card appear instantly, written in letters of fire upon the sheet of paper stretched on the frame.

**Explanation.** The card chosen is "forced"; that is to say, it is a card which the performer, in an adroit manner, forces the person to choose without his design being detected. The name of the card to be forced is written on the sheet which is afterwards tacked on the frame, using a solution of six "measures" of potassium nitrate and one-half "measure" of gum arabic in about four table-spoonfuls of water, applying this with a fine camel's hair brush. This writing, upon drying, will be invisible, but when a flame or spark is touched to any one part of the writing, the whole will take fire as though it were a gunpowder fuse.

The spark is produced by means of an electrical equipment, as described

WOODEN FRAME APPARENTLY  
ABSOLUTELY INSULATED

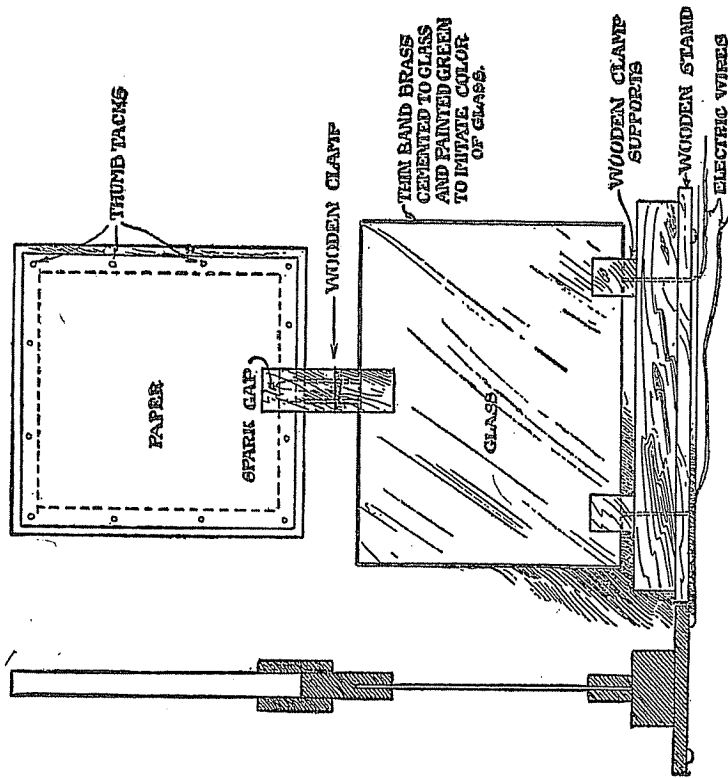


Fig. 10

in the trick "Fiat Lux," on page 26 of this book. The accompanying illustration is more or less explanatory and it will be seen that the electrical current is carried to the frame through a clever arrangement of breaks and contact points in the circuit. The wires which pass through the base, end on the glass supports and connect with the copper band on the edge of the plate of glass. The wiring in the upper double clamp is similarly prepared to enter into contact with the wires in the frame. The spark occurs at the end of the two wires in the frame and at this point it is well to place a tiny folded piece of "flash paper" to insure quicker results.

If care is taken that the spark is applied only to the writing, there will be no danger that any other part of the paper will catch fire. However, to make sure that the fire will not spread beyond the lines of the writing, it will be well to paint the paper outside the lines of the writing with water glass (sodium silicate), which will make fireproof the parts of the paper covered with it.

The writing is done in large letters, taking care that all these are joined, and, also, that a "lead" is made to the point where the spark is produced.

## GROUP III

### MISCELLANEOUS EXPERIMENTS

In addition to the tricks that we have just described and from which you may select some of the best for an evening's performance, we describe below, among other things, some interesting chemical reactions which you may use to mystify your friends, or at least show them some experiments and have some fun.

#### THE MAGIC ROSE

Fill a glass with water, and add five "measures" of cobalt chloride. Secure a paper rose, white or pale pink. Wet the rose with the cobalt chloride solution. Now allow it to dry. Saturate it again with the same solution. Repeat this two or three times. When dry, it is supposed to be a pink rose. When you are ready to exhibit it, you call attention to the color, and, in performing the trick you should stand near a stove or radiator so that you can expose the rose to the heat, covering it over with a handkerchief, in a natural way, as though you were using the stove or the radiator for a place on which to lay the handkerchief. If the room in which you are performing the trick does not contain a stove or radiator, any other type of heater will serve to furnish enough heat. Put the rose behind your back, bringing it close to the heat. The heat will turn the rose from pink or white to blue and you can turn it back to pink or white again by bringing it in contact with the steam from boiling water or by blowing your breath on it.

**What Takes Place.** Cobalt chloride has great attractive power for water. When dry, it is blue in color. If it is brought in contact with the steam from boiling water, it absorbs moisture which causes it to turn pink again. Heating it drives away the water and again turns blue.

#### CHEMICAL BAROMETER

The knowledge relative to the properties of cobalt chloride will be of interest to you because you can then make and understand the chemical barometer.

If you soak in a saturated solution of cobalt chloride strips of white crepe paper and after allowing them to get thoroughly dry you hang them outside exposed to the air, you will have improvised a dependable barometer, for their change of color will prove sure indications as to what kind of weather to expect. If their color is pink you then know that there is moisture in the air and that rain is near. When their color is blue, the presage is of fair weather, as you then know that the air is dry.

This is a very interesting little experiment, and you can really have much fun with it.

#### THE MAGIC PICTURE

If a landscape scene is painted using a strong solution of cobalt chloride to paint the sky and a solution of copper sulphate to paint the grass, a pretty effect can be secured on heating the picture. The scene seems to change from summer to winter. The heat changes the pink sky to blue and the green grass changes to white. On cooling, the summer scene returns.

**Chemical Explanation.** Copper sulphate acts like cobalt chloride. On heating, it loses water of crystallization and turns colorless; while the cobalt chloride turns from pink to blue.

#### THE MAGIC POWER OF MENTAL CONCENTRATION

*Changing the color of a piece of cloth or paper while being held by a spectator.*

Take a piece of paper that has been saturated with cobalt chloride and dried; then apply heat and it is blue. Next, ask someone in the audience to hold it tightly in his hand. While he is holding it, tell him to concentrate his mind on the thought of color and press the object tightly in the palms of his hands, when he will squeeze the color out of it. Do not let him open his hands while you are making the little speech about concentration of mind over matter. You wave your wand about him and pronounce the mystic words, "Mysto Magic," and then tell him to open his hands and the paper or cloth has turned pink.

**What Took Place.** As you can readily imagine, the cobalt chloride absorbed the moisture from the person's palms which turned the color from blue to pink. Remember that the color can be brought back by heating again.

#### THE MAGIC OF AMMONIA

Place three "measures" of ammonium chloride in a glass. Smell it and also allow your friends to smell it, noting the fact that no odor is present. Now, to the ammonium chloride add three "measures" of calcium oxide with a few drops of water. This makes a paste of it. If you will let your friends smell of the mixture, they will find a strong odor of ammonia coming from it, while in the beginning there was no odor at all.

**Chemical Explanation.** The calcium oxide reacts on the ammonium chloride, liberating ammonium.

#### FLASH PAPER

Tricks with flames and fire are quite popular with professional performers. One of the illusions that is quite common is to produce from a handkerchief a large bowl of fire. Many other interesting little fire effects are produced with what is known as "flash paper." For your information, we will tell you how to prepare this and describe some of the tricks in connection with which it is commonly used. First, it might be of interest to you to know that "flash paper" may be obtained at a trifling cost at any conjuring store, and for that reason it is not necessary to go to the expense of making it, except for the scientific knowledge and interest derived from experimenting.

Considerable care must necessarily be exercised in making anything of this kind and we would therefore caution you that this work should be done under competent supervision in the laboratory, or by persons who know how to handle the chemicals used.

**How to Make It.** One part of nitric acid and two parts of sulphuric acid are mixed, and let stand for about twelve hours before using. Now soak some ordinary tissue paper in the liquid for half an hour and remove it from the liquid and wash it in clear, clean water until all trace of the acid has been removed from the paper. It should now be placed in some place, not near a fire, to dry.

**Caution.** The acids should never be mixed in the house. This should be done in the open air, or in a well arranged laboratory.

**Special Note.** Magic handkerchiefs, that is, "flash handkerchiefs," can be prepared in exactly the same way, using a cambric handkerchief which has been previously thoroughly washed and dried. Cloth or paper treated in this way, when touched by fire or chemical, produce a quick flash of light which consumes all of the material; no trace whatever of this is seen after the flash. The flash is so effective and so dazzles the eyes of the spectators that the magician can take advantage of it in producing articles from under his coat or any place in which he may have them concealed.

**How Flash Paper Is Ignited Without a Flame.** This is a very effective little trick and is oftentimes seen on the stage. I know it will be of interest to my readers to know how it is performed. The "flash paper," of course, is ordinary tissue paper prepared as above. A very fine glass tube is cut in lengths of about one inch, and into this, by means of a medicine dropper, is placed sulphuric acid; first, one end of the glass tube is sealed and after the sulphuric acid is placed inside, the other end is also sealed, and so the tube will be hermetically sealed at both ends.

The very finest of glass tubing is used for this purpose, much finer than the ordinary glass tube used in the laboratory for chemical experiments. Now, after having prepared the tube or "acid tube" as it is called in Magic, and under which name it may be purchased at a conjuring depot, you make a powder mixture from equal parts of chlorate of potash and powdered lump sugar. Now, after the "flash paper" is prepared, on a small sheet of this place a small quantity of the powder just produced by mixing chlorate of potash and lump sugar and one of the "acid tubes," being sure that the tube is in contact with the powder, then rolling the paper to resemble a cigarette. If the tube is broken the acid will ignite the powder, and this in turn will make the "flash paper" burst into a beautiful flash in a very effective and startling manner, everything vanishes, paper and all, leaving nothing behind. In presenting this as a trick, the roll is picked up off the table and attention is called to the extraordinary magic cigarette.

### THE FIRE BOWL

A description of Chemical Magic would not be complete without reference to the Fire Bowl, as this is the most effective, most used apparatus for exhibiting a trick of this nature on the stage today. The bowl itself is a mechanical contrivance in the shape of a finger bowl and arranged for holding a crystal of potassium permanganate the size of a pea in the center; on one side of the bowl there is a receptacle where some glycerine is poured and the whole is so arranged that when the bowl is produced mysteriously from under cover of a handkerchief or sheet, the glycerine and the potassium are brought in contact, which results in a blaze being produced.

**Chemical Explanation.** When the glycerine comes in contact with the crystal of potassium permanganate, the oxygen contained in this is driven off very rapidly, which produces intense heat. The heat vaporizes the glycerine and this burns with a purple flame.

**Another Method.** In another form of the fire bowl, the flash is obtained in the following manner: An "acid tube" cigarette, that is, an "acid tube" filled with sulphuric acid, in contact with a mixture of potassium chlorate and lump sugar, rolled in a cigarette paper as described in the chapter about "Flash Paper," is placed in the center of the bowl, being supported on two points, and between these there is a little hook which engages the tube and which it will break in two upon pressure being exerted through a lever which operates the hook and which protrudes at the bottom of the bowl.

Some magicians obtain a larger flash by surrounding the cigarette at the bottom of the bowl with a sheet of flash paper. This would be ignited by the

cigarette at the time the magician presses on the lever upon producing the bowl, and the effect is, indeed, very mysterious.

### WATER AS A POLYCHROME INK

Prepare several sheets of white paper in the following manner: On about a third of the number of sheets you intend to prepare, rub thoroughly, using a small wad of cotton or piece of cloth to rub with, a mixture composed of one-half "measure" of tannic acid and one-half "measure" of ferric ammonium sulphate. Be sure that your hands are perfectly dry, and, in fact, that no moisture comes in contact with the sheets. After rubbing this mixture well, shake off from the sheets the excess and lay them aside in a dry place. On the upper right hand corner you may make a pencil mark, as, for instance, a little dot so that you may tell these apart from the other lots.

A second lot you may prepare by rubbing the sheets in the same manner as indicated for the first lot, but using this time a mixture of one-half "measure" of sodium ferrocyanide and one-half "measure" of ferric ammonium sulphate. Mark the sheets with, say, two dots on each of two opposite corners, so that you may be able to identify them.

A third lot of sheets is prepared by rubbing them with a mixture composed of one-half "measure" of sodium sulphocyanate and one-half "measure" of ferric ammonium sulphate. This lot of sheets you may be able to identify later on if you make three small pencil dots on two opposite corners.

Now you hand to each of three spectators a clean pen and give them water as the writing ink to write with on the sheets. These, to them, are unprepared. The writing done with water with a clean pen on the sheets marked with one dot will be black. The writing on the sheets marked with the two dots will be blue, and the writing on the sheets with the three dots will be red.

Be sure that the pens are clean and that the sheets are not touched by moist fingers. In fact, it is the moisture combining with the chemicals with which the sheets were rubbed that causes the chemical reaction which brings out the different colors.

### SYMPATHETIC INKS

In Group I of this book we describe several experiments based on the use of so-called sympathetic inks. It is interesting to know that there are several things to be found in the home to which we may resort in a pinch to produce a sympathetic ink, when for some reason or other, chemicals are not to be had. For instance, lemon juice makes a fairly good sympathetic ink provided the

writing is done with a clean pen. Upon drying, the writing will become invisible, but will be made visible upon heating the paper.

Milk will also make a fairly good sympathetic ink provided the writing is done with fairly heavy lines. The appearance of the writing will be obtained by heating the paper.

Writing done with vinegar will be invisible until brought out by heating, and one of the features of this writing is that it will not disappear after the sheet has cooled.

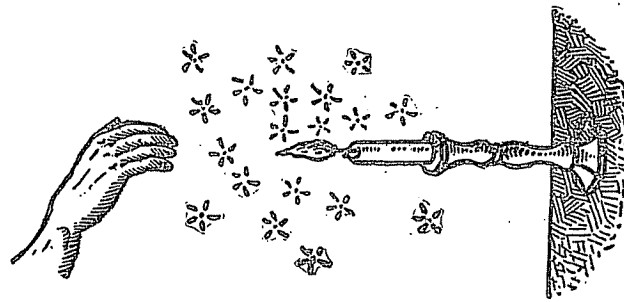


Fig. 11

#### MAGIC STARS FROM THE CANDLE

To perform this interesting experiment, file off some metal from the end of a poker. To the surprise of everyone these filings are combustible as may be readily demonstrated by sprinkling them over the flame of a candle. They actually take fire as they reach the flame, the particles burning like stars, producing miniature fire-works. (See Fig. 11).

This verifies the fact commonly known in chemistry that iron in a solid mass will not burn, but when it is divided up into small particles it takes fire readily, even more so than things that are conceded to easily burn. It is not absolutely necessary to take the iron filings from the end of a poker. They can be secured from many other sources, but we have referred to the poker, because the poker, in its regular form, is considered by most people to be non-combustible, and, as a magician, you can demonstrate that it is not true—you can make the poker burn.

#### MAGIC CRYSTALS

This will hardly fit into a magic entertainment, but some fun can be had with it and it will be found interesting.

1st. Take four "measures" of ammonium chloride and a tablespoonful of water and stir them.

2nd. Allow the ammonium chloride to dissolve, and while it is dissolving get a small mirror or window glass.

3rd. With a piece of paper, feather or brush apply the solution to the glass and give it time to dry.

4th. When it is evaporated, beautiful crystals will form on the glass appearing like frost.

**What Took Place.** Ammonium chloride crystallizes out when the water evaporates.

#### MYSTO MAGIC PAPER

Pink and blue litmus paper are about as near magical as anything in chemistry. They are always interesting to the student of chemistry. The uninitiated who do not understand it or know anything about it are fascinated and interested because of the color changes which the papers are made to undergo.

First, take a piece of blue litmus paper and wet it with tannic acid and it will instantly turn pink. If pink litmus is wet with an alkali, such as calcium oxide solution, it will turn red. It is very useful in chemistry and tells the difference between acids and bases. Tannic acid is an acid; calcium oxide is a base.

#### IS A GLASS EVER FULL?

**Effect.** A glass is filled brimful of water and to the astonishment of everyone you are able to put a quantity of material into the water without its overflowing. **How It Is Done.** It is true that solids that are insoluble in water will cause the glass to overflow, but if certain materials that are soluble in water are placed in it, you do not increase the volume of the solvent. This can be demonstrated