Yesterday in Stamps:

Postage Stamp Restoration

by Robert Fellows *(From STAMPS Magazine, April 27, 1973)*

(This article is being reprinted at the suggestion of long time subscriber Steve Chown of Lake Oswego, Oregon. No doubt there are improved techniques and supplies that have been developed since that time, and we invite you to add to the base of knowledge provided in this article. ***Notice that this article is about legitimate restoration techniques, NOT about deceptive practices.*** *JFD.)*

When a collector acquires a postage stamp for his album, dirt, stains and other accretions often detract from its pleasing appearance. Restoration may be possible, but should be undertaken only as a last resort when the problems and potentialities are carefully considered, and when the great risk of failure is completely understood and accepted.

There are many restoration procedures to try mechanical, chemical, solvents stain softeners, enzymic action, bleaching—until the desired results are achieved or complete failure must be acknowledged. Seldom in stamp restoration can an error be undone.

Ethical considerations, indeed, criminal sanctions, preclude claiming as a restoration such fraudulent practices as removing a cancellation regumming, reperforating or color painting to fake a different variety, and this, even though the deceitful alteration was accomplished with such consummate skill, and in the past some actually have been, to fool all but a philatelist competent enough to serve on an expertizing committee of the Philatelic Foundation.

Restoration of stamps is understandably difficult due to the complexity of the papers, inks, and adhesives used in their fabrication, the endless kinds of accretions encountered, the chemical deterioration which in time weakens all paper, and especially, because what will remove an accretion will often damage a stamp. There is also lacking the conventional inconspicuous corner on a stamp to pre-test a restoration technique. Were mutilated stamps, those unsuitable for an album, saved for testing purposes, the danger of irreparable damage to a wanted stamp needing restoration, could be considerably lessened.

Dedicated scientists and restorers connected with the great art museums freely publish and exchange information on their successes and failures in art restorations. The philatelic community ought to emulate them by holding back no secrets, by systematically recording which techniques work and which do not with particular stamps burdened with particular accretions.

In this paper the usual procedures will be described with no attempt made to recommend a recipe for a specific problem. Common prudence dictates trying the least drastic procedure before progressing, if need be, to the more risky. When water is used and it is feasible, distilled water ought to be selected to avoid the complications arising from the chlorine and other chemical impurities likely present in tap water. Diluted reagents ought to be tried first, with the procedure repeated a few times if necessary, rather than resorting to stronger chemicals, hoping for quicker results.

Always dependent on the strength of the stamp paper, the stability of the inks, the nature of the accretion to be gotten rid of, a stamp may be treated in various ways–with water alone, a solvent, a stain softener, a bleach, or a combination of these. Certain stamps just cannot stand any immersion in a liquid, and all stamps should be wetted the least needed for the restoration. Whether stamp ink will run in a liquid can often be tested by blotting the stamp with a blotter moistened with the liquid and observing whether any color has been absorbed. Naturally if a piece of a mutilated duplicate of the stamp is available the liquid can be tested on it. It happens, however, full immersion followed by thorough rinsing are required with many techniques, and if a stamp is not strong enough to withstand the treatment, the restoration may be impossible. With certain methods the face of the stamp can be kept dry by applying the liquid just on the back of the stamp, and depending on the liquid to work through the pores of the paper and in this way accomplish the purpose.

Thus at times it may be advantageous to float a stamp face up on a liquid's surface. A simple way of doing this is to place the dry stamp in an empty tray, and then allowing the liquid to gently flow into the tray, taking care that it does not flow on the stamp. Or the back of a stamp may be sprayed with a fine atomizer, painted with an artist's sable brush dabbed with a cotton swab, or placed face up on a blotter saturated with the liquid. If the stamp is strong enough, both sides can be just slightly moistened, when it is impractical to fully immerse.

With some reagents it, is necessary to sluice away any deleterious chemical residues which may remain after treatment. This can be done with an artist's brush and water, but preferably, if the stamp can stand it, by allowing cold water to gently flow into and out of an enamel tray holding the stamp, the water flowing from a tube around the end of which is tied a cloth cotton-filled bag to reduce the water turbulence. A stamp may be treated by being held in a vapor or gas. When a stamp is treated with a volatile substance, the action can be prolonged by covering the stamp with a blotter and a sheet of glass to slow the evaporation. It is safer to use liquids cold or tepid rather than hot or boiling. So as not to work with contaminated liquids it is best to work on only one stamp at a time.

A stamp restorer will have to take the usual precautionary steps with any of the reagents which are inflammable, dangerously toxic if inhaled to excess, or irritating to the skin. Proprietary household cleaners which may contain certain additives unsuitable for stamp restorations should be avoided. Fresh, inexpensive and purer chemicals can readily be purchased at a good pharmacy or a supply house catering to chemists, artists, or members of the cleaning and dyeing trade. A student having a kindly science teacher may receive from him encouragement, instruction, perhaps small quantities of chemicals, and even credit for a semester project based on stamp restoration. By consulting any good elementary chemistry text book, a stamp restorer will be able to glean ideas for simple glass apparatus set-ups needed for a few of the procedures handy in stamp restoration.

Paper is most vulnerable to disintegration when wet. Hence a wet stamp should never be handled with fingers or tongs. What should be used is a wire or perforated tray which can fit into a tray containing the liquid. The stamp is placed in the smaller tray on top of a mat of strong, white acid free paper. By this method a wet stamp need never be lifted unsupported. When a stamp is worked on outside of a liquid, it should be supported on a sheet of smooth glass, with, where indicated, a mat underneath to ease the handling and supply any desirable resilience.

Surface dirt on a stamp which has not been washed into the paper fibers can sometimes be removed by running a vacuum cleaner tool over a tightly fastened piece of filter paper covering the stamp. Light pencil marks and surface dirt can often be obliterated by merely using the softest India rubber eraser, or by circularly rotating on the stamp clean pieces of dough kneaded from day old bread. Sometimes the surface dirt can be transferred to a strong tissue paper held tightly over the stamp, and moistened just enough to accomplish this purpose with parallel strokes of a sable brush dipped in water.

Surface dirt frequently disappears when the stamp is rinsed in cold water, or water to which has been added a few drops of an aqueous solution of ammonium hydroxide (household ammonia). More stubborn dirt may have to be emulsified with a lather of pure castile soap applied with an artist's brush. Certain dirt may yield with one of the mild detergents available in liquid, paste or solid form. A few drops of a non-ionic wetting agent can be added to the water with good advantage. If a stamp does not contain casein or any other protein substance, one of the enzymic

protein digestants may work well. When a stamp has been soaked in a warm solution of it for a half hour or so, some of the dirt may be digested into a form quite capable of being flushed away with water. Enzymic conversion is particularly good in removing blood, egg, saliva, and other analogous protein stains. When soap, detergent, or enzymic agent is used, it is important to thoroughly rinse the stamp so as not to leave any film.

To improve the appearance and also to better preserve a stamp, it is desirable to remove any pasted down paper or old hinges. It is safer to remove the stuck paper from the stamp rather than vice versa. If the stuck paper is thick and can be split into layers with a paper knife, it is best to initially remove as many layers as possible before working on the last one. Most stamp adhesives will soften in water or a 10% aqueous solution of acetic acid (white vinegar). A pinch of sodium chloride (table salt) added to the liquid may lessen the likelihood of certain stamp inks running. The stamp may be floated on the liquid's surface in an attempt to wet the stuck on paper and the adhesive, and thus permitting the stamp to remain relatively dry. The stamp may be frozen in a deep freeze or by being put face up on a piece of freshly scrapped dry ice. By breathing on the stuck paper or by atomizing it with a fine spray, enough moisture may be condensed on the paper after a few tries to accomplish the task of separating the stamp from the paper. The stamp may be subjected to the humidity of a sweat box, placed face up on a wet blotter, or fully immersed if the condition of the stamp permits.

If one wants to chance embrittling the stamp paper by heat, a hot iron can be applied to a blotter covering the stamp in an attempt at melting the adhesive. There are a few adhesives used on old stamps which because they resist all reasonable attempts at removal, should be left untampered with. To prevent curling and for better long term stamp preservation, once the original stamp gum has been disturbed, all of it should be removed.

Solvents can dissolve stamp accretions or that which cause them to cling. A lubricant or softener can loosen an accretion so that soap, detergent, solvent or bleach can more effectively work. A bleach hopefully, chemically converts the accretion into a colorless form, or to something which can be sluiced away. The problem is to select the correct cleaning method to accomplish the restoration and not leave the restorer disappointed with nothing more than a square of blank deteriorated paper.

Some useful solvents for the stamp restorer to consider for non-greasy stains are acetone, absolute methyl or ethyl alcohol, amyl acetate, turpentine, ether, chloroform. Some solvents to consider for greasy stains are carbon tetrachloride, pyridine, white lead free gasoline, benzene, benzine, naphtha, perchlorethlene, trichloroethylene. A few of the useful lubricants are mineral oil, pine oil, petroleum jelly, warm glycerin, and morpholene.

White gasoline or carbon tetrachloride will dissolve the adhesive of Scotch tape. Pyridine or amyl acetate will dissolve Du Pont cement or airplane glue, though these first may have to be softened with mineral oil. (The technique for lubricating or softening is to apply the lubricant with an artist's brush and allow it to remain a few minutes to soften the accretion. What is softened is carefully brushed away before the restorer precedes with additional treatment, which may include steps to get rid of any residue of the softener). Alcohol should dissolve the adhesive of sealing wax. Oil paint spots can be softened with pine oil and treated further with naphtha or tetraethlene. Tar can be softened with mineral oil and removed with naphtha. Tough tobacco stains can be lubricated with warm glcerin [sic] and then treated with alcohol; or the stamp with a tobacco stain can be dipped in a 10% aqueous solution of citric acid (lemon juice) to first soften the stain. Benzene will remove most gum resin stains.

Parafin or candle wax accretion can be dissolved in carbon tetra chloride, or absorbed by the capillary action of a blotter to which a hot iron is applied. Naphtha will dissolve the adhesive of adhesive tape. Crayon marks can be softened with pine oil and removed with naphtha. Animal or vegetable oil and grease spots not too badly oxidized can be treated with pyridine. Morpholene is good to use to soften oxidized grease stains. Petroleum grease stains can be treated with naphtha, though further treatment likely will be required to get rid of iron rust stains, if the grease contained any iron particles. While ether is good to remove many non-grease stains it is dangerous to use with many stamp inks. Pyridine will generally remove any stains left by a lubricant which remain after washing with soap or detergent and water.

Although most hazardous, it is not impossible to lift certain alien ink stains, and still be left with a stamp with its proper cancellation markings, if any, intact. The ingredients of the alien ink must differ enough from those of the stamp so that the restoration method used does not harm the stamp. If the ingredients are too similar, restoration will be impossible. There are so many different types of inks, some stable, some running, some oil bound, inks made with a variety of ingredients, the stamp restorer has to be highly selective in the treatment chosen so that only the unwanted ink is removed. The general procedure is to loosen the alien ink with a lubricant, brush away what is loosened, treat with a solvent, wash, bleach if necessary, and rinse. With analine inks care must be exercised so as not to use hot liquids which may cause the inks to run.

Lac type India ink (carbon black, borax, shellac, glycerin) can be softened with pine oil, treated with alcohol and washed. Gelatin type India ink (carbon black, gelatin and water) can be digested after soaking a half an hour in warm water with an enzymic agent. Marking ink (spirit soluble nigrosine dye, lamp black, resin, phenol, mixed with nitrobenzene or turpentine) is most difficult to lift without harming the stamp. But an attempt can be made. Repeatedly softening the ink with pine oil and washing with soap or a detergent and water may work. Printer's ink (oil as a carrier, color pigment, solvent) is handled the same way. Smudges from stamp pad ink (Soluble dye in water, glycerin) and type writer ribbon ink (castor oil, creosote, oil of cassia, oil soluble dye of an aniline type) can be removed by washing with soap or a detergent and water to which has been added a small amount of ammonia. Carbon paper stains (oil, glycerin, alcohol, plumbago, oil soluble dye) may yield to amyl acetate. Ball point pen ink (oil, solvent, coloring agent) can usually be lifted with tuolene or amyl acetate. A convenient test for ball point pen ink is to blot the stamp with a blotter lightly dampened with a weak paint remover to see whether any ink is absorbed. Indelible pencil marks (resin, kaolin, graphite cinnabar, methl violet, shellac) should be softened with warm glycerin and then washed with soap or a detergent and water. Blue or blue-black writing ink (ferrous sulphate or ferric chloride, mixed with tannic acid, dye) should be softened with warm glycerin, rinsed, dipped in 5% hydrochloric acid to somewhat decompose the iron tannate, rinsed, and then washed with soap or a detergent and water. It should be noted that no iron tannate ink can withstand much bleaching. A simple test for iron tannate ink is to drop a tiny bit of 1% acetic acid on the dry ink and absorb what was dropped with white filter paper. The filter paper will turn Prussian blue if 1% potassium ferro cyanide is placed on what was absorbed, and the ink contained iron tannate.

A stamp restorer can test the difference between a nigrosine type ink and an iron tannate type by spotting the accretion with a 5 % aqueous solution of ammonium hydroxide. The nigrosine type will hot react, but the iron tannate type will turn brown. Red ink (water, alcohol, glycerin, phenol, red dye) and green ink (similar but colored with melachite green) should be lubricated with warm glycerin to be followed with a soap or a detergent wash. Stains of ink containing silver nitrate should be treated with an application of mild iodine solution, followed by an application of mild iodine solution, followed by an application of a 5% solution of sodium thiosulphate (photographer's hypo). After all of these procedures there may remain residues which will disappear, if at all, only by bleaching.

Iron stains on stamps can result from some careless act as leaving a rusting paper clip on a stamp, or such stains may be the residue of a cleaning procedure. There are promising treatments for getting rid of iron stains. The stamp can be painted with or dipped in 10 % citric acid (lemon juice) and then washed with soap or a detergent and water. The stamp can first be painted with or dipped in a concentrated aqueous solution of sodium chloride (table salt) before being given the citric acid treatment. The stamp can be immersed a few minutes in either a 5% aqueous solution of oxalic acid, or a 5% solution potassium binoxalate (salt of lemon). Alternatively a

stamp may be treated with a 0.3% aqueous solution of ammonium sulphate followed by a painting with or a dip in a 0.4% aqueous solution of oxalic acid, and the conventional wash. Since all these treatments may have to be attempted a few times to completely get rid of the rust, the stamp has to be strong enough to withstand the rust removal attempt.

Among the many stamp blemishes, discolorations and other accretions which may be removed by bleaching are water stains, mildew, foxing, rust (various brown-reddish-green-orange bacterial or fungoid spots as distinct from iron rust), lead ink changelings caused by sulphuration, and certain residues left after mechanical, washing, chemical, softening, solvent cleaning techniques. Since iron gall ink decolorizes when bleached, few stamps printed with such ink can undergo any bleaching. Bleaching removes unwanted material by breaking it down into substances capable of being washed away, or by reducing the material to colorless matter. The condition of the stamp and the nature of the accretion problem govern the type, the strength of the bleach to be used, in fact, if a bleach can be used at all. A bleach may be applied in any of the ways previously indicated. Bleaches act at various speeds, from instant completion to periods extending to hours, It is necessary for the stamp restorer to constantly follow the bleaching action, and stop it just as soon as the desired results are achieved. Mistakes caused by over bleaching cannot be rectified. Bleaching can easily ruin the brillance of stamp inks and cause stamp paper to completely disintegrate. With certain bleaches, just as soon as the wanted bleaching has been completed, it is necessary to treat the stamp with an antichlor or neutralizing agent to arrest any additional bleaching by traces of the bleach remaining on the stamp. Whenever possible a stamp should be well rinsed after bleaching to rid it of any deleterious residues. Usually for a bleach to work properly it is necessary to moistened the stamp before hand, however slightly.

In the atmosphere there are sulphur pollutants which convert white lead and lead carbonates used to manufacture certain stamp inks into black sulphides, causir the stamp to undergo a bad darkening color change. A fresh 5 aqueous hydrogen peroxide solution will oxidize the black sulphides into white lead sulphates, and by doing so will restore the original color of the stamp. Commercial hydrogen peroxide contains corrosive impurities which the stamp restorer should avoid by not using the commercial product directly on the stamp. One way of doing this is to prepare small block of plaster of Paris and allowing fresh hydrogen peroxide to be absorbed by it. The stamp can be suspended an eighth of an inch above it on a cotton thread pallet and the block covered with a glass jar. In a few hours the stamp restorer can hope to see the darkened stamp restored to its pristine beauty. Another method is to prepare an ethereal solution of equal parts of 5% hydrogen peroxide and ether adding a few drops of perhydral. The liquids are immiscible. The aqueous layer remains on the bottom with the impurities. The ether containing enough of the pure hydrogen peroxide rises to the top. Being careful so as no to disturb the layers, a cotton swab can be dipped into the top layer and dabbed on the stamp. Or the stamp itself can be lowered into the top layer. A blotter art a sheet of glass covering the treated stamp will slow the evaporation. Bleaching with etherei solution is faster than when the vapor technique is used. While hydrogen peroxide does not directly break down cellulose molecules, under certain conditions it can cause paper degradation. Thus careful rinsing is indicated, if possible. Unfortunately the man made sulphur compounds now ever present in the air, will in time again darken the stamp, mandating future retreatment.

Chlorine dioxide is a most useful bleach for the stamp restorer to resort to. It is mild, completely volatile in air, leaves no harmful residues, does not unduly whiten stamp paper or injure the paper's cellulose molecules, can be used more selectively and safely than other bleaches, possesses even greater bleaching capabilities than chlorine gas, and is rather easy to produce. Chlorine dioxide may be readily released from technical grade sodium chlorite (yellow flaky solid) by using either formaldehyde or dilute sulphuic acid. When a stamp can withstand immersion in a solution and rinsing, it is easier to use the formaldehyde method. 20 grams of sodium chlorite is dissolved in a liter of distilled water. 25 mil-liliters of 37 % formaldehyde, plus 3 milliliters of sodium secondary-alcohol sulphate (wetting agent) are added. The stamp is permitted to remain in the solution twenty minutes or longer as the bleaching taking place is carefully observed. The stamp is removed when the bleaching is done to the restorer's satisfaction. Then it is best to submit the stamp to twenty minutes of rinsing to void all residual sodium salts. For stamps unable to withstand so drastic a treatment, it is possible to generate chlorine dioxide gas to be used in its gaseous state or in an aqueous solution. A simple glass apparatus is put together to permit dilute sulphric acid (1:2 with water) to drop a drop at a time, into an Erienmyer flask containing a 10 % aqueous solution of sodium chlorite. Yellowish chlorine dioxde gas is generated. (It is important to note a dangerous explosion will occur if concentrated sulphuric acid comes in direct contact with solid sodium chlorite, and further, a fire can result if sodium chlorite solution in contact with an organic material is allowed to evaporate to dryness). When it is too risky to place a stamp in a solution, the stamp slightly moistened, can be placed on a cotton thread pallet set in a glass chamber into which the chlorine dioxide gas is made to flow. The stamp is removed when the bleaching is observed completed. No rinsing is required as the chlorine dioxide on the stamp will quickly evaporate and there will be no harmful residues. If the chlorine dioxide gas is allowed to bubble twenty minutes into a small flask containing distilled water a concentrated solution of the substance will result, (at room temperature about twenty times by volume of the gas will be absorbed by the water). The concentrate, diluted to one third strength, can advantageously be applied in any of the various ways. This method, too, requires no rinsing or the use of antichlor.

Another convenient, mild, slow working bleach for the stamp restorer to explore is made by dissolving 2 or 3 grams of fresh chloramine T (white powder made from benzol) in a 100 cubic centimeters of distilled water. This bleach causes no cellulose damage, nor is any caustic residue left after its use. No antichlor, and little rinsing will be required. Good as chloramine T is, chlorine dioxide is probably a preferred bleach for a stamp restorer to use.

Chlorine is a well known and potent bleach which occasionally may be of use to the stamp restorer. However, when alternatives are available, it is best to avoid it. Chlorine bleaches very quickly, thus the bleaching action has to be followed very attentively. There are several easy methods to produce small quantities of chlorine. 30% hydrochloric acid by means of a drop funnel is allowed to drop into a flask containing a small amount of potassium permanganate or manganese dioxide, and the flask is gently heated. Or 10% sulphuric acid can similarly be dropped into a flask containing a mixture of manganese dioxide and sodium chloride. The yellow gas liberated is chlorine (chlorine is very noxious and any surplus should be allowed to bubble through and be absorbed by a solution of sodium hydroxide). The gas itself can be used as a bleach, or the gas can be used to bubble through water to form a bleaching solution. Various concentrations of the solution can be used in the usual ways. A tiny quantity of chlorine can be generated by plunging into 10% hydrochloric acid a cotton wad which had been allowed to become dry after being saturated with a concentrated (4:10) aqueous solution of manganese dioxide. The wad when removed from the acid is held beneath a moistened stamp to be bleached by the chlorine given off. A serious fault with chlorine as a bleach is that there is an alkaline reaction which tends to soften paper by breaking down cellulose molecules. If the condition of the stamp paper permits, this can (be somewhat mitigated by intermittently during the bleaching process, dipping the stamp into 10% hydrochloric acid. However, acid causes certain ink pigments to violently effervesce, which precludes employing this with stamps printed with such inks. Another trouble with chlorine is that even after mild bleaching stamp paper often becomes unnaturally whiter and may require retoning. But worse, with chlorine the bleaching continues until the chlorine has been neutralized. For this, an antichlor, as a 2% aqueous solution of sodium thiosulphate (photographer's hypo), is used as a dip. Sodium or calcium hypochlorites are strong bleaching powders which can be used in various concentrated

solutions. Bleaching with either of these has all the disadvantages as bleaching with chlorine, including the necessity of using an antichlor. It is not hard to realize the stamp paper and the stamp inks have to be really strong to withstand such bleaching.

A stamp may be bleached by being stippled with a 2% aqueous solution of potassium perborate and then allowed to dry in strong sun light. A lightning fast bleach is a 0.5% aqueous solution of potassium permanganate. With potassium permanganate, immediately when the desired bleaching results are reached, and this may be within a minute or so, the stamp must be plunged into the sodium thiosulpate solution to which has been added just a trace of hydrochloric acid.

When a stamp has been washed, treated with a softener, a solvent or a bleach, its outward appearance may have been improved but the stamp feels limpy. This is the result of the loss of the paper sizing. The stamp can be resized by being painted with a size made of pure gelatin, pure library starch paste, highly diluted animal glue, or the white of an egg. Probably a gelatin size made by dissolving a square inch of pure sheet gelatin in a pint of hot water is best.

As stamp accretions are bleached away, if the stamp paper takes on a displeasing unnatural, dull, whitish appearance, retoning can sometimes be accomplished by painting the stamp with coffee, tea or stout. With practice and experimentation, the optimum concentration can be worked out to retone the paper to its correct look.

When a wet stamp is allowed to air dry between two blotters and a sheet of glass weighted down, small creases will usually disappear. Of course, this will not be the case when the paper fibers have been fractured. If the fibers have been broken the condition can be stabilized by resizing the paper along the fold.

A real challenge to the slamp restorer is to mend rips and tear. This is delicate work and requires much patience. When a torn stamp is immersed in water an attempt should be made to arrange the rendered paper fibers to their original position. Then when the wet stamp is placed on a sheet of smooth glass, the arranging under high magnification can be continued. A glass rod and a sharply pointed stilus make handy tools. When the fibers are in the best position, rewoven if possible, they are gently pounded in place with the back of a spoon. If there is a mutilated duplicate stamp available for the purpose, some paper pulp can be chewed, and a wee bit of the pulp hammered in over the ripped area. Pulp can also be used to strengthen thin spots. When the mending is complete a few drops of size is placed over the repair. When the stamp is air dried the mend can be feathered out using a soft India rubber eraser. It goes without saying, that when the fiber endings are missing nothing can be done about the resulting hole.

Acidification is one of the most serious causes for paper deterioration. When a decision has been made to thoroughly wet a stamp, with little additional trouble, or risk to the stamp, the stamp restorer can increase the stamp's long term permanence by deacidifying it. The stamp can be left twenty minutes in a 0.15% aqueous solution of calcium hydroxide to neutralize any paper acid, and then left for a similar period in a 0.20% aqueous solution of calcium bicarbonate to carbonate the excess hydroxide. Calcium carbonated is precipitated, a small portion of which beneficially remains on the stamp after rinsing, to stabilize the cellulose fibers of the paper and to act as a future buffer against any acid chemically produced by the interaction of the ingredients of the stamp paper and inks. The wet stamp can also be sterilized to arrest bacterial and fungoid spore damage. The vapor given off by thymal crystals held under an electric bulb will sterilize a stamp held in it.

With simple apparatus, and small quantities of a few inexpensive chemicals, the scientific, adventuresome stamp collector can try his hand at being a restorer. Notwithstanding a share of grievous disappointments, and many ruined stamps the stamp restorer will be able to convert certain eye-sore stamps, if not into stamps of pristine beauty, at least into something worthy to be exhibited in a stamp album. It is hoped that by trial and error many successes will be recorded in a stamp collector's book of experimentation.