

Detecting Fraud And Forgery In Papers And Documents

The art of detecting forgery or fraud, in checks, drafts, documents, seals, writing materials, or in the characters themselves is a study that has attracted handwriting experts since its study was taken up. There are almost infallible rules for the work and in this chapter is given several new methods of research that will prove of the utmost value to the public.

It is not an uncommon occurrence that wills and other public documents are changed by the insertion of extra or substituted pages, thereby changing the character of the instrument. Where this is suspected careful inspection of the paper should be made--first, as to its shade of color and fiber, under a microscope; second, as to its ruling; third, as to its water-mark; fourth, as to any indications that the sheets have been separated since their original attachment; fifth, as to the writing--whether or not it bears the harmonious character of the continuous writing, with the same pen and ink, and coincident circumstances, or if typewritten, whether or not by the same operator or the same machine. It would be a remarkable fact if such change were to be made without betraying some tangible proof in some one or more of the above enumerated respects.

Books of accounts are often changed by adding fictitious or fraudulent entries in such spaces as may have been left between the regular entries or at the bottom of the pages where there is a vacant space. Where such entries are suspected, there should be at first a careful inspection of the writing as to its general harmony with that which precedes and follows, as to its size, slope, spacing, ink, and pen used, and if in a book of original entry, the suspected entry should

be traced through other books, to see if it is properly entered as to time and place, or vice versa.

The judgment by the naked eye as to the colors or shades of two inks in the same paper or document is very likely to be erroneous for the reason that when a lighter ink is more heavily massed than a darker one the effect on the eye is as if it were the darker. Under a microscope or magnifying glass the field is more restricted, the finer lines are broadened, and one has larger areas of ink to compare with less surface of strongly contrasted white paper. Then, again, an ink without noticeable bluish tinge to the naked eye may appear quite blue under the glass where the films of ink are broadened and thinned and their characters better observed.

In order to judge whether two marks have been made by the same ink, they should be viewed by reflected light to note the color, luster and thickness of the ink film. Many inks blot or "run" on badly sized paper--i.e., the lines are accompanied by a paler border which renders their edges less well defined.

Even on well-sized papers this class of inks usually exhibits only a stained line of no appreciable thickness where the fluid has touched the paper.

The copying and glossy inks, which often contain a considerable quantity of gum, do not "run" or blot even on partially sized paper, and show under the glass a convexity on the surface of the line and an appreciable thickness of the film.

It does not always follow when an ink has made a blur on one part of

the paper and not on another that the paper has been tampered with. A drop of water accidentally let fall on the blank page will frequently affect the sizing in that place, and, besides, all papers are not evenly sized in every part.

The inks rich in gum, or those concentrated by evaporation from standing in an open inkstand, give a more lustrous and thicker stroke. Some inks penetrate deeper into the paper than others, and some produce chemical effects upon the sizing and even upon the paper itself, so that the characters can easily be recognized on the underside of the sheet. In some old documents the ink has been known to so far destroy the fiber of the paper that a slight agitation of the sheet would shake out as dust much of the part which it covered, thus leaving an imperfect stencil plate of the original writing.

Distilled water is very useful in many cases to ascertain whether paper has been scratched and partially sized or treated with resin. If it has not been altered by chemical agents, the partial sizing and the resinous matter used give to the paper a peculiar appearance. Sizing takes away from the whiteness of the paper, and, thinned by the scratching or washing, it absorbs much more quickly even when it has been partially sized.

A simple mode of operation is to place a document or paper suspected of being a forgery, on a sheet of paper or better still, on a piece of glass; then moisten little by little with a paint brush all parts of it, paying close attention to the behavior of the liquid as it comes in contact with the paper.

By means of water one can discover what acids, alkalis, or salts the

parts of the paper with colored borders or white spots contain.

With the aid of a pipette cover these spots with water and let it remain for ten or fifteen minutes; then with the pipette remove the liquid and examine the products it holds in solution. Afterwards make a comparative experiment on another part of the paper which is neither spotted nor whitened.

If the original writing has been done with a very acid ink on a paper containing a carbonate, such as calcium carbonate, the ink, in attacking the calcareous salt, stains the paper, so that if the forger has removed the ferruginous salts this removal is denoted by the semi-transparence that water gives to the paper.

To study carefully the action of the water it is necessary to repeat the experiment several times, allowing the paper to dry thoroughly before recommencing it.

According to Tarry, it is necessary to have recourse to alcohol to discover whether the paper has been scratched in any of the parts and then covered with a resinous matter to prevent the ink from blotting.

Place the document on a sheet of white paper and with a paint brush dipped in alcohol of specific gravity 0.86 or 0.87 cover the place supposed to have been tampered with. It may be discovered if the writing thickens and runs when the alcohol has dissolved the resin.

Hold the paper moistened with alcohol between the eye and the light; the thinning of the paper shows the work of the forger.

Some more skillful forgers use paste and resin at the same time to mask their fraudulent operations; in this case luke-warm water should be first employed and then alcohol; water to dilute the paste, and alcohol to dissolve the resin. The result is that the ink added on the places scratched out spreads, and the forgery is easily seen.

Test-papers (litmus, mauve, and Georgina paper) serve to determine whether a paper has been washed either by the help of chemical agents, acids incompletely removed, or the surplus of which has been saturated by an alkali, or by the help of alkaline substances. The change of the color to red indicates an acid substance; an alkali would turn the reddened litmus paper to blue, and the mauve and Georgina test-papers to green.

Take a sheet of test-paper of the same dimensions as the document to be examined, moisten it, and cover it underneath with a sheet of Swedish filter-paper. These two sheets together (the filter-paper underneath) are then applied to the document which has been moistened already. The whole is then laid between two quires of paper, covered by a weighted board, and left in this condition for about an hour. At the end of this time examine the test-paper to see if it has partly or altogether changed color. This examination finished, put the test-paper in contact with distilled water, to be afterwards removed and tried by appropriate tests to discover the nature of the alkali or acid present.

Silver nitrate is also used to discover whether the paper has been washed with chlorine or chlorites. A paper in that way becomes acid. The chlorine changes to hydrochloric acid, which dissolves in the water with which the suspected document or paper is moistened, and at

the contact of silver nitrate little spots of silver chloride appear.

There are various other tests such as gallo-tannic acid or infusion of nutgalls prepared a short time before application and may be used with advantage to restore writings that have been removed by washing. Place the document or paper on a sheet of white paper and moisten the whole of its surface with a paint brush dipped in the reagent, taking care not to rub it or strongly press it. When the surface is well impregnated allow the solution to act for an hour, and at the end of this time examine the document again. Then moisten it a second time and the following day, examine the results. Repeat the moistening several times if necessary, for it often takes some time to make the traces of writing reappear.

Chevallier and Lassaigne experimented together on the effect produced by the vapor of iodine on the surface of the papers or documents upon which the alteration of writing was suspected. Take a bottle with a wide mouth from ten to eleven centimeters in height, and the opening from five to six centimeters in width. This last is covered by a disk of unpolished glass. Into the bottom of this vessel introduce from twenty to thirty grams of iodine in crystals.

Place the portion of paper on which the vapor of iodine is to act at the opening of the bottle, and cover it with the stopper of unpolished glass, on which put a weight so as to exert a slight pressure, and in

order that the aperture may be hermetically closed. Then allow the vapor of iodine to act on the dry paper for three or four minutes at the temperature of 15 deg. to 16 deg. C. and examine it attentively. When the surface has not been spotted by any liquid (water, alcohol, salt

water, vinegar, saliva, tears, urine acids, acid salts, or alkalis) a uniform pale-yellow or yellowish-brown tinge will be noticed on all parts of the paper exposed to the vapor of iodine.

Otherwise a different and easily distinguished tinge shows itself on the surface that has been moistened and then dried in the open air.

Machine-made papers with starchy and resinous sizing give such decided reactions that sometimes it is possible to distinguish by the color the portion of the paper treated with alcohol from that moistened with water. The spot produced by alcohol takes a kind of yellow tinge; that formed by water becomes a violet blue, more or less deep, after having dried at an ordinary temperature. As to the spots produced by other aqueous liquids, they approach in appearance, though not in intensity, those occasioned by pure water. Feeble acids, or those diluted by water, act like water; but the concentrated mineral acids, in altering more or less the substance of the sizing, produce spots that present differences.

Spots which become apparent by using vapor of iodine are due to chemical agents whose strength has altered either the fibers of the surface, or the paste uniting them.

In a word, the test of a document or paper by vapor of iodine has the double advantage of indicating the place of the supposed alteration and operating afterwards with appropriate reagents to bring back the traces of ink. It is only the reappearance of former letters or figures written or effaced that demonstrates forgery. Much time may be profitably spent in merely scanning each letter of a document, and the writing by lines, paragraphs, and pages before a closer scrutiny.

Gradually, if the writing be genuine, its character will begin to reveal itself, and unconsciously a hypothesis as to the physical causes of the irregularities or characteristics will be formed.

When an entire document or page is forged, the ornamentation, flourishes, or the capitals at its head will often be seen to be out of keeping, either with its nature or with the supposed author's habits in similar cases. In a writing all must agree, place, day, year, handwriting, superscription or heading, signature, and material carrying the writing, especially paper, both as to constitution and color and ink.