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*"Handwriting is a gesture of the mind"*

# **DISPUTED HANDWRITING**

**An Exhaustive, Valuable, and Comprehensive Work upon  
One of the Most Important Subjects of To-day.  
With Illustrations and Expositions for the  
Detection and Study of Forgery by  
Handwriting of All Kinds**

**By**

**Jerome B. Lavay**

The first work of the kind ever published in the United States.  
For the Protection of America's Banks and Business Houses.

1909

TO THE AMERICAN BANKERS' ASSOCIATION

THAT POWERFUL AGENCY WHICH HAS ELEVATED THE STANDARD OF BANKING IN THE UNITED STATES AND AN INSTITUTION THAT FOLLOWS ALL WRONGDOERS AGAINST MEMBERS OF THE FRATERNITY RELENTLESSLY AND SUCCESSFULLY THIS WORK IS MOST RESPECTFULLY DEDICATED

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This follows with many pages of Illustrations and Descriptions of Various Kinds of Genuine, Traced, Forged and Simulated Writings and Autograph Signatures of Bankers, Statesmen, Jurists, Authors, Writers and the Leading Public Characters of the World; Individual Autographs of Every President of the United States; Freak Signatures and Curious and Complicated Writing; and Scores of Other Interesting and Instructive Autographs and Writings of Various Kinds That Will Prove of Great Worth and Value

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## PREFACE

But few writers in the United States have expended their genius in the field of disputed, forged, or fraudulent handwriting. In France and Germany the subject has been more studied, and in both languages several valuable books have appeared, while in this country it is only recently that disputed handwriting has been looked upon as one of the sciences.

Up to the time of the publication of this work nothing has appeared in the United States on the subject of disputed handwriting, short magazine and newspaper articles sufficing.

Interest in disputed handwriting and writing of all kinds is being rapidly developed, and is a study and research with which the banker and business man of the future must and will be perfectly familiar. A place will be made for the science among the permanent, necessary, and most helpful studies of the day.

No effort has been spared by the author of this work to make every feature of handwriting accurate. This work is the result of years of practical study in the field of disputed handwriting, and personal application has demonstrated that the facts and suggestions given will be found absolutely correct. The aim has been to make this the standard work on this subject.

In conclusion, the author wishes to acknowledge a debt to the leading handwriting experts of the United States and Europe for many suggestions that have materially assisted him in the preparation of this work. We trust it will prove a material aid to the bankers, business men and professional men of the United States.

THE AUTHOR.

## DISPUTED HANDWRITING

### CHAPTER I

#### HOW TO STUDY FORGED AND DISPUTED SIGNATURES

All Titles Depend Upon the Genuineness of Signatures—Comparing Genuine With Disputed Signatures—A Word About Fac-simile Signatures—Conditions Affecting Production of Signatures—Process of Evolving a Signature—Evidence of Experience in Handling or Mishandling a Pen—Signatures Most Difficult to Read—Simulation of Signature by Expert Penman—Hard to Imitate an Untrained Hand—A Well-known Banker Presents Some Valuable Points—Perfectly Imitated Writings and Signatures—Bunglingly Executed Forgeries—The Application of Chemical Tests—Rules of Courts on Disputed Signatures—Forgers Giving Appearance of Age to Paper and Ink—Proving the Falsity of Testimony—Determining the Genuineness or Falsity by Anatomy or Skeleton—Making a Magnified Copy of a Signature—Effectiveness of the Photograph Process—Deception the Eye Will Not Detect—When Pen Strokes Cross Each Other—Experimenting With Crossed Lines—Signatures Written With Different Inks—Deciding Order of Sequence in Writing—An Important and Interesting Subject for Bankers—Determining the Genuineness of a Written Document—Ingenuity of Rogues Constantly Takes New Forms—A Systematic Analysis Will Detect Disputed Signatures.<sup>[1]</sup>

The title to money and property of all kinds depends so lately upon the genuineness of signatures that no study or inquiry can be more interesting than one relating to the degree of certainty with which genuine writings can be distinguished from those which are counterfeited.

When comparing a disputed signature with a series of admittedly genuine signatures of the same person whose signature is being disputed, the general appearance and pictorial effect of the writing will suggest,

as the measure of resemblances or differences predominates, an impression upon the mind of the examiner as to the genuine or forged character of the signature in question. When it is understood that to make a forgery available for the purposes of its production it must resemble in general appearance the writing of the person whose signature it purports to represent, it follows as a reasonable conclusion that resemblances in general appearances alone must be secondary factors in establishing the genuineness of a signature by comparison—and the fact that two signatures look alike is not always evidence that they were written by the same person.

As an illustration of the uncertainty of an impression produced by the general appearances and close resemblance of signatures, even to an expert observer, is manifested when the fac-simile signatures of the signers of the Declaration of American Independence, as executed by different engravers, are examined. On comparing each individual fac-simile made by one engraver, with the fac-simile of the same signature made by another engraver, they will be found to exactly coincide in general appearance as to form and pictorial effect, and so much so, that the fac-similes of the same signature made by different engravers cannot be told one from the other. On examining them by the use of the microscope they may be easily determined as the work of different persons. While this is likewise true of the resemblances in general appearance which a disputed signature may have when compared with a genuine signature of the same person, it is also true that the measure of difference occurring in the general appearance of a disputed signature, when compared with genuine ones of the same person, are not always evidence of forgery.

There are many conditions affecting the production of signatures, habitually and uniformly apart from the causes which prevent a person from writing signatures twice precisely alike, under the influence of normal conditions of execution. The effect of fatigue, excitement, haste, or the use of a different pen from that with which the standards were written, are well known conditions operating to materially affect the general appearance of the writing, and may have been, in one form or another, an attendant cause when the questioned signature was produced, and thus have given to the latter some variation from the signatures of the same person, executed under the influence of normal surroundings.

In the process of evolving a signature, which must be again and again repeated from an early age till death, new ideas occur from time to time, are tried, modified, improved, and finally embodied in the design. The idea finally worked out may be merely a short method of writing the necessary sequence of characters, or it may present some novelty to the eye. Signatures consisting almost exclusively of straight up-and-down strokes, looking at a short distance like a row of needles with very light hair-lines to indicate the separate letters; signatures begun at the beginning or the end and written without removing the pen from the paper; signatures which are entirely illegible and whose component parts convey only the mutilated rudiments of letters, are not uncommon. All such signatures strike the eye and arrest the attention, and thus accomplish the object of their authors. The French signature frequently runs upward from left to right, ending with a strong down flourish in the opposite direction. All these, even the most illegible examples, give evidence of experience in handling or mishandling the pen. The signature most difficult to read is frequently the production of the hand which writes most frequently, and it is very much harder to decipher than the worst specimens of an untrained hand. The characteristics of the latter are usually an evident painstaking desire to imitate faulty ideals of the letters one after the other, without any attempt to attain a particular effect by the signature as a whole. In very extreme cases, the separate letters of the words constituting the signature are not even joined together.

A simulation of such a signature by an expert penman will usually leave enough traces of his ability in handling the pen to pierce his disguise. Even a short, straight stroke, into which he is likely to relapse against his will, gives evidence against the pretended difficulties of the act which he intends to convey. It is nearly as difficult for a master of the pen to imitate an untrained hand as for the untrained hand to write like an expert penman. The difference between an untrained signature and the trembling tracing of his signature by an experienced writer who is ill or feeble, is that in the former may be seen abundant instances of ill-directed strength, and in the latter equally abundant instances of well-conceived design, with a failure of the power to execute it.

Observations such as the preceding are frequently of great value in aiding the expert to understand the phenomena which he meets, and they belong to a class which does not require the application of standards of measure, but only experience and memory of other similar instances of which the history was known, and a sound judgment to discern the significance of what is seen.

No general rules other than those referred to above can be given to guide the student of handwriting in such cases, but the differences will become sufficiently apparent with sufficient practice.

A well-known banker, writing to the author of this work, makes some points on the subject which are rather disturbing. His fundamental proposition is that the judgment of experts is of no value when based as it ordinarily is, only upon an inspection of an alleged fraudulent signature, either with the naked eye or with the eye aided by magnifying glasses, and upon a comparison of its appearance with that of a writing or signature, admitted or known to the expert, to be genuine, of the same party.

He alleges, in fact, that writing and signatures can be so perfectly imitated that ocular inspection cannot determine which is true and which is false, and that the persons whose signatures are in controversy are quite as unable as anybody to decide that question. Nevertheless, the law permits experts to give their opinions to juries, who often have nothing except those opinions to control their decisions, and who naturally give them in favor of the side which is supported by the greatest number of experts, or by experts of the highest repute.

Decisions upon such testimony this banker regards as no better than, if quite as good as, the result of

drawing lots. Of course he cannot mean to include under these observations, that class of forgeries which are so bunglingly executed as to be readily detected by the eye, even of persons not specially expert. He can only mean to say that imitations are possible and even common, which are so exact that their counterfeit character is not determinable by inspection, even when aided by glasses.

At first blush this contention of the banker is extremely a most unsatisfactory view of the case, and the more correct it looks likely to be, the more unsatisfactory. Courts may go beyond inspection and apply chemical on the tests, but such tests cannot be resorted to in the innumerable cases of checks and orders for money and property which are passed upon every day in the business world, and either accepted as genuine or rejected as counterfeit. But the real truth is, in fully ninety-nine cases out of a hundred, that no check or order is paid merely upon confidence in the genuineness of the signature, and without knowledge of the party to whom the payment is made, or some accompanying circumstance or circumstances tending to inspire confidence in the good faith of the transaction. In that aspect, the danger of deception as to the genuineness of signatures loses most of its terrors.

It is one of the recognized rules of court to admit as admissible testimony, the opinions of experts, whether the whole or any specified portion of an instrument was, or was not written by the same hand, with the same ink, and at the same time, which question arises when an addition to, or alteration of, an instrument is charged. It must be recollected that at this time it is a very easy matter for experienced forgers and rascals to so prepare ink that it may appear to the eye to be of the age required, and it is next to impossible for any expert to give any information in regard to the age of a certain writing. In many instances experts have easily detected the kind of ink employed, and have also successfully shown the falsity of testimony that the whole of a writing in controversy was executed at the same time, and with the same ink.

James D. Peacock, a London barrister, who has given considerable time and study to disputed handwritings, lays great stress upon the ability of determining the genuineness or falsity of a writing by what he calls its "anatomy" or "skeleton." He says that some persons in making successive strokes, make the turn from one to another sharply angular, while others make it rounded or looping. Writings produced in both ways appear the same to the eye, but under a magnifying glass the difference in the mode of executing is shown. As illustrating that point, he makes the following statement in respect to a case involving the genuineness of the alleged signature of an old man whose handwriting was fine and tremulous:

"On making a magnified copy of the signature, I found that the tremulous appearance of the letters was due to the fact that they were made up of a series of dashes, standing at varying angles with each other, and further, that these strokes, thus enlarged, were precisely like these constituting the letters in the body of the note, which were acknowledged to have been written by the alleged forger of the note. Upon the introduction of this testimony the criminal withdrew the plea of not guilty and implored the mercy of the court."

As one means of determining whether the whole of a writing was executed at the same time, and with the same ink, or at different times, and with different inks, Mr. Peacock further says that the photographic process is very effective because it not only copies the forms of letters but takes notice of differences in the color of two inks which are inappreciable by the eye. He states that:

"Where there is the least particle of yellow present in a color, the photograph will take notice of the fact by making the picture blacker, just in proportion as the yellow predominates, so that a very light yellow will take a deep black. So any shade of green, or blue, or red, where there is an imperceptible amount of yellow, will pink by the photographic process more or less black, while either a red or blue varying to a purple, will show more or less paint as the case may be."

As to deception which the eye will not detect, in regard to the age of paper, he says:

"I have repeatedly examined papers which have been made to appear old by various methods, such as washing with coffee, with tobacco, and by being carried in the pocket, near the person, by being smoked or partially burned, and in various other ways. I have in my possession a paper which has passed the ordeal of many examinations by experts and others, which purports to be two hundred years old, and to have been saved from the Boston fire. The handwriting is a perfect fac-simile of that of Thomas Addington, the town clerk of Boston, two hundred years ago, and yet the paper is not over two years old."

The most remarkable case of deception to the eye, even when aided by magnifying glasses, is in determining when two pen strokes cross each other, which stroke was made first. Mr. Peacock does not explain how the deception is possible, but that it occurs as matter of fact, he shows by an account of a very decisive experiment. Taking ten different kinds of ink, most commonly on sale, he drew lines on a piece of paper in such a way as to produce a hundred points of crossing and so that a line drawn with each of ink passed both over and under all the lines drawn with the other inks. He, of course, knew, in respect to each point of crossing, which ink was first applied, but the appearance to the eye corresponded with the fact in only forty-three cases. In thirty-seven cases the appearance was contrary to the fact, and in the remaining cases the eye was unable to come to any decision.

By wetting another piece of paper with a liquid compound acting as a solvent of ink, and pressing it upon the paper marked with lines, a thin layer of ink was transferred to the wet paper, and that shown correctly which was the superposed ink at every one of the one hundred points of crossing.

Many cases have occurred, in signatures written with different inks, where some letters in one cross,

some letters in another, in which it becomes important to decide the order of sequence in writing. It is also frequently important to decide the order of sequence in writing. It is also frequently important when the genuineness of an addition, as of a date, is the thing in dispute.

No subject can be more important or interesting to the business public or especially to bankers than that of the reliability of the lists of the genuineness of written papers. While it is true that in most cases there is some ear-mark beside the appearance of a signature, whereby to determine the genuineness of a document, it is also true that in many cases, and frequently in cases of great magnitude, payments are made on no other basis than the appearance of a writing. The most common class of these last cases is where "A" has been long known to be an endorser for "B," and where the connection between the two, which leads to the endorsements, is well known. There is nothing in the appearance in the market of a note of "B" endorsed by "A," that is, in any degree calculated to excite suspicion or to put a prospective purchaser upon his inquiry. If the endorsement of "A" resembles his usual handwriting, it is almost always accepted as genuine and if losses result from its proving to be counterfeit, they are set down to the score, not of imprudence, but of unavoidable misfortune.

Thus, as the ingenuity of rogues constantly takes new forms, the ways and means by which they can be baffled in these enterprises are constantly being multiplied. The telegraph and telephone give facilities for promptly verifying a signature where one is in doubt.

It happens not infrequently that the desire to get a given number of words into a definite space leads to an entirely unusual and foreign style of writing, in which the accustomed characteristics are so obscured or changed that only a systematic analysis can detect them. If there be no apparent reason for this appearance in lack of space, the cause may be the physical state of the writer or an attempt at simulation. If a sufficient number of genuine signatures are available, it can generally be determined which of these two explanations is the right one.

Note illustrations of various kinds of handwriting in Appendix at end of this book. Particular attention is directed to the descriptions and analysis. They should be studied carefully.

## CHAPTER II

### FORGERY BY TRACING

Forgeries Perpetrated by the Aid of Tracing a Common and Dangerous Method—Using Transparent Tracing Paper—How the Movements are Directed—Formal, Broken and Nervous Lines—Retouched Lines and Shades—Tracing Usually Presents a Close Resemblance to the Genuine—Traced Forgeries Not Exact Duplicates of Their Originals—The Danger of an Exact Duplication—Forgers Usually Unable to Exactly Reproduce Tracing—Using Pencil or Carbon-Guided Lines—Retouching Revealed under the Microscope—Tracing with Pen and Ink Over a Transparency—Making a Practice and Study of Signatures—Forgeries and Tracings Made by Skilful Imitators Most Difficult of Detection—Free-Hand Forgery and Tracing—A Few Important Matters to Observe in Detecting Forgery by Tracing—Photographs a Great Aid in Detecting Tracing—How to Compare Imitated and Traced Writing—Furrows Traced by Pen Nibs—Tracing Made by an Untrained Hand—Tracing with Pen and Ink Over a Transparency—Internal Evidence of Forgery by Tracing—Forgeries Made by Skilful Imitators—How to Determine Evidences of Forgery by Tracing—Remains of Tracings—Examining Paper in Transmitted Light—Freely Written Tracings—A Dangerous Method of Forgery.

Forgery by tracing is one of the most common and most dangerous methods of forgery.

There are two general methods of perpetrating forgeries, one by the aid of tracing, the other by free-hand writing. These methods differ widely in details, according to the circumstances of each case.

Tracing can only be employed when a signature or writing is present in the exact or approximate form of the desired reproduction. It may then be done by placing the writing to be forged upon a transparency over a strong light, and then superimposing the paper upon which the forgery is to be made. The outline of the writing underneath will then appear sufficiently plain to enable it to be traced with pen or pencil, so as to produce a very accurate copy upon the superimposed paper. If the outline is with a pencil, it is afterward marked over with ink.

Again, tracings are made by placing transparent tracing-paper over the writing to be copied and then tracing the lines over with a pencil. This tracing is then penciled or blackened upon the obverse side. When it is placed upon the paper on which the forgery is made, the lines upon the tracing are retraced with a stylus or other smooth hard point, which impresses upon the paper underneath a faint outline, which serves as a guide to the forged imitation.

In forgeries perpetrated by the aid of tracing, the internal evidence is more or less conclusive according to the skill of the forger. In the perpetration of a forgery the mind, instead of being occupied in the usual function of supplying matter to be recorded, devotes its special attention to superintendence of the hand, directing its movements, so that the hand no longer glides naturally and automatically over the paper, but moves slowly with a halting, vacillating motion, as the eye passes to and from the copy to the pen, moving under the specific control of the will. Evidence of such a forgery is manifest in the formal, broken, nervous lines, the uneven flow of the ink, and the often retouched lines and shades. These evidences are unmistakable when studied with the aid of a microscope. Also, further evidence is adduced by a careful

comparison of the disputed writing, noting the pen-pressure or absence of any of the delicate unconscious forms, relations, shades, etc., characteristic of the standard writing.

Forgeries by tracings usually present a close resemblance in general form to the genuine, and are therefore most sure to deceive the unfamiliar or casual observer. It sometimes happens that the original writing from which the tracings were made is discovered, in which case the closely duplicated forms will be positive evidence of forgery. The degree to which one signature of writing duplicates another may be readily seen by placing one over the other, and holding them to a window or other strong light, or by close comparative measurements.

Traced forgeries, however, are not, as is usually supposed, necessarily exact duplicates of their originals, since it is very easy to move the paper by accident or design while the tracing is being made, or while making the transfer copy from it; so that while it serves as a guide to the general features of the original, it will not, when tested, be an exact duplication. The danger of an exact duplication is quite generally understood by persons having any knowledge of forgery, and is therefore avoided. Another difficulty is that the very delicate features of the original writing are more or less obscured by the opaqueness of two sheets of paper, and are therefore changed or omitted from the forged simulation, and their absence is usually supplied, through force of habit, by equally delicate unconscious characteristics from the writing of the forger. Again, the forger rarely possesses the requisite skill to exactly reproduce his tracing. Much of the minutiae of the original writing is more or less microscopic, and from that reason passes unobserved by the forger. Outlines of writing to be forged are sometimes simply drawn with a pencil, and then worked up in ink. Such outlines will not usually furnish so good an imitation as to form, since they depend wholly upon the imitative skill of the forger.

Besides the forementioned evidences of forgery by tracing, where pencil or carbon guide-lines are used which must necessarily be removed by rubber, there are liable to remain some slight fragments of the tracing lines, while the mill finish of the paper will be impaired and its fiber more or less torn out, so as to lie loose upon the surface. Also the ink will be more or less ground off from the paper, thus giving the lines a gray and lifeless appearance. And as retouchings are usually made after the guide-lines have been removed, the ink, wherever they occur, will have a more black and fresh appearance than elsewhere. All these phenomena are plainly manifest under the microscope. Where the tracing is made directly with pen and ink over a transparency, as is often done, no rubbing is necessary, and of course, the phenomena from rubbering does not appear.

Where signatures or other writings have been forged by previously making a study and practice of the writing, to be copied until it has been to a greater or less degree idealized, the hand must be trained to its imitation so that it can be written with a more or less approximation as to form and natural freedom.

Forgeries and tracings made by skilful imitators are the most difficult of detection, as the internal evidence of forgery by tracing is mostly absent. The evidence of free-hand forgery and tracing is chiefly in the greater liability of the forger to inject into the writing his own unconscious habit and to fail to reproduce with sufficient accuracy that of the original writing, so that when subjected to rigid analysis and microscopic inspection, the spuriousness is made manifest and demonstrable. Specific attention should be given to any hesitancy in form or movement in tracing which is manifest in angularity or change of direction of lines, changed relations and proportions of letters, slant of the writing, its mechanical arrangement, disconnected lines, retouched shades, etc.

Photographs, greatly enlarged, of both the signatures in question and the exemplars placed side by side for comparison will greatly aid in making plain any evidence of forgery.

If practicable, use for comparison as standards both the imitated writing and that of the imitator's traced writing. These methods, employed by skilled and experienced examiners, will rarely fail of establishing the true relationship between any two disputed handwritings and more especially where the question of a forged or traced signature is under discussion.

Under the microscope tracing by the pen-nibs are usually easily visible, and they differ with every variety of pen employed. A stiff, fine-pointed pen makes two comparatively deep lines a short distance apart, which appear blacker in the writing than the space between them, because they fill with ink, which afterwards dries and produces a thicker layer of black sediment than those elsewhere. The variations of pressure upon the pen can be easily noticed by the alternate widening and narrowing of the band between these two furrows. The tracing appears knotty and uneven when made by an untrained hand, while it appears uniformly thin, and generally tremulous or in zigzags when made by a weak but trained hand.

Where the tracing is made directly with pen and ink over a transparency, as is often done, no rubbing is necessary, and of course the phenomena from rubbering do not appear.

Where signatures or other writings have been forged by previously making a study and practice of the writing to be copied until it has been to a greater or less degree idealized, the hand must be trained to its imitation so that it can be written with a more or less approximation as to form and with natural freedom.

Forgeries thus made by skilful imitators are the most difficult of detection, as the internal evidence of forgery by tracing is mostly absent. The evidence of free-hand forgery is chiefly in the greater liability of the forger to inject into the writing his own unconscious habit, and to fail to reproduce with sufficient accuracy that of the original writing, so that when subjected to rigid analysis and microscopic inspection, the spuriousness is made manifest and demonstrable. Specific attention should be given to any hesitancy in form or movement, manifest in angularity or change of direction of lines, changed relations and

proportions of letters, slant of the writing, its mechanical arrangement, disconnected lines, retouched shades, etc.

Photographs, greatly enlarged, of both the signatures in question and the exemplars placed side by side for comparison will greatly aid in making plain any evidences of forgery by tracing.

It sometimes occurs that the forger, fearful that his attempt to imitate another's writing would be too easily detected if made with a free hand, sketches in pencil the characters he intends to make in ink on the document, or traces them by means of blackened paper at the appropriate place. The evidences of this are very likely to appear when the document is examined in transmitted light.

It is often asserted in trials that tracings of a genuine signature invariably show hesitation and painting. This is not always the fact. Tracings proven and subsequently admitted to have been such have shown an apparent absence of all constraint, and a careful examination of the result revealed no pause of the pen. But, on the other hand, these freely written tracings have invariably shown either a deviation from some habitual practice of the writer, or, if the model was followed with skill, two or three such tracings, when photographed on a transparent film and superposed, have shown such exact resemblances as to proclaim their character at once.

The natural tendency of man is to introduce some elements of symbolism in what he is attempting to trace and to seek some sort of geometrical symmetry in what he designs. Wherever he is not restricted by certain forms which he must introduce, and which may render a balance of parts about a median line unattainable, he tends to evolve symmetrical designs, as in the highest and simplest forms of ancient architecture. When the parts of the design are prescribed, as in the representation of objects in nature, he soon tires of mere mechanical repetition of the same things in a given sequence, and strives to convey some ulterior idea by the manner of joining these parts. This gives life and language to sculpture and painting, and gives character to handwriting. Tracing signatures is one of the most common and dangerous methods of forgery. Some specimens of traced signatures are illustrated and explained in an Appendix at the end of this book.

## CHAPTER III

### HOW FORGERS REPRODUCE SIGNATURES

Characteristics Appearing in Forged Signatures—Conclusions Reached by Careful Examinations—Signatures Written with Little Effort to Imitate—What a Clever Forger Can Do—Most Common Forgeries of Signatures—Reproducing a Signature over a Plate of Glass—A Window Frame Scheme for Reproducing Signatures—How the Paper is Held and the Ink Applied—How a Genuine Signature is Placed and Used—A Forger's Process of Tracing a Signature—How to Detect Ear Marks of Fraud in a Reproduced Signature—Prominent Features of Signatures Reproduced—Method Resorted to by Novices in Forging Signatures—Conditions Appearing in All Traced Signatures—Reproduction of Signatures Adopted by Expert Forgers—Making a Lead-Pencil Copy of a Signature—Erasing Pencil Signatures Always Discoverable by the Aid of a Microscope—Appearances and Conditions in Traced Signatures—How to Tell a Traced Signature—All the Details Employed to Reproduce a Signature Given—Features in Which Forgers are Careless—Handling of the Pen Often Leads to Detection—A Noted Characteristic of Reproduced Signatures—Want of Proportion in Writing Names Should Be Studied—Rules to Be Followed in Examining Signatures—System Employed by Experts in Studying Proof of Reproduced Signatures—Bankers and Business Men Should Avoid Careless Signatures.

In detailing matters which experience suggests as importantly connected with the examination of disputed signatures, there are none more essential to a proper consideration of the subject than an understanding of those characteristics often appearing in forged signatures, and by which they are distinguished as such. When the features occurring as a concomitant of most forgeries are understood, their appearance may suggest a short and easy route to reach a conclusion: yet the careful and conscientious examiner will, even with these indications present in a disputed signature, institute a very careful and detailed study of the latter by comparison with the standard writings; and with as much effort as if the indications of forgery were not present. To make these features positive evidence, each other developed detail must also tend to the same deduction, and each detail must be compatible with every other feature, and all point to the same conclusion.

As forgers differ in their capability as to accuracy in simulation, all grades of its proficiency come up in the experience of those who, as experts, are called upon to make such matters a study. At one extreme will be found to occur signatures written with but little effort to imitate the genuine signature they purport to represent; with all the intermediate grades of imitation extending to the other extreme, wherein a skilful forger will, by practice, so simulate the signature of a person and with such close resemblance that the very individual whose name is imitated cannot, independently of attending circumstances, tell the forgery from the signature which he knows he has written.

Among the most common forgeries of signatures are those which have been traced from genuine ones, and these are produced in various ways; the most common method being to place the genuine signature over a plate of glass horizontally arranged, with a strong light behind it, or against the window frame, and then to place over the signature so positioned the paper on which the forgery is to be made. When this

has been done the papers are held in contact firmly, the pen is dipped in ink and moved over the paper, guided by the lines of the genuine signature beneath, which show through the superimposed paper, and by means of which the form of the signature is transferred to the paper, which is exteriorly placed.

While the process of tracing produces very nearly the proper form of the matter thus copied, and if well done by the forger the copy will in general appearance and to a certain extent resemble in outline the signature thus traced, there are usually apparent in all reproduced signatures thus made, peculiarities and ear marks indicating the manner in which they were produced and by which they can be identified as such.

One of the most prominent features of reproduced signatures is the general sameness of the writing as appearing in the uniform width of the lines, and the omission of the usual shading emphasis. The cause of this appearance is the absence of habitual pen pressure, and the necessitated slow movement of the pen held closely in contact with the paper and by which a uniform and steady flow of ink is deposited thereon; thus making what should be the heavier and lighter lines of one width and density as to shading. This method of tracing and reproducing signatures is that usually resorted to by novices but is seldom employed by expert forgers.

Another condition appearing in all traced signatures is the absence of all evidence of pen pressure when examined as a transparency; this deficiency occurring as consequent upon the manner of moving the pen over the paper. While signatures thus made may resemble the one from which they are copied, the only likeness they have is that of pictorial resemblance and it will be found to be destitute of all the appearances and indications of habitual writing in other respects.

Another method of tracing signatures is frequently resorted to by persons adept in the art, and this consists in making a lead-pencil copy of the genuine signature holding the paper on which the forgery is to be produced; tracing the outline of the signature by means of a pencil, and then with ink to write over the pencil copy. But as the method necessitates the use of an india rubber to remove the surplus black lead where not covered by the ink, evidences of the use of the rubber will be found to occur, and traces of the black lead can be found by the microscope. While the appearances and conditions are common to traced signatures, there are in addition to their presence generally found evidences of pauses made in the writing, the effect of which will appear not as shading of the lines, but as irregularities or excrescences produced thereon by resting the hand in its movement, and by which at intervals more ink flowed from the pen than would occur when the latter was being moved habitually over the paper. Where the signatures of the same person exactly coincide when one is laid over the other in parallel arrangement with a strong light behind them, this condition of their appearance is very positive evidence that one of them was traced from the other and is a forgery, as it is a circumstance which cannot possibly occur in the writing of two signatures produced habitually.

In considering reproduced signatures and forged writing and in detailing some of the most common features which are found to occur in it, it must not be understood that all the phenomena attending the production of forged signatures can be given. Inasmuch as each person has a peculiar muscular co-ordination that is manifested in the production of habitually written signatures, so each forger from the same cause has an individual habit that must be used when simulating; hence there will be as many styles of writing manifested in production of forgeries as there are forgers to produce them. No positive rule can be laid down for the classification of their peculiarities excepting the manner of accuracy with which the simulation appearing in them is done. Each case of disputed writing must be examined by itself, and while there are certain process steps to be followed which experience suggests as facilitating the analysis, yet the examiner must wholly depend upon what is seen in the disputed signature that is, or is not, found in the admittedly genuine writing of the person whose signature is questioned, and the comparison of the one with the other.

Reproduced signatures often show a copying effort that is manifested in the details of their production. These evidences generally appear, in some instances, as pauses made in the lines connecting the letters of the signature, where the pen rested while the eye of the forger was directed from the writing being done to the copy, that the writer could fix in the mind the form of a succeeding letter. These pauses appear in different measure of prominence in different forgeries, and there is no rule as to their measure or appearance. With some forgers the pen rests with considerable emphasis and with others it is lifted from the paper and returned to the paper while the eye of the writer goes back to the copy. With others there will appear but little hesitancy. Some forgers, well skilled in the art, will, by practicing the simulation until they have the form of the genuine signature well fixed in the mind, become enabled to produce a forged copy of a genuine signature that will show no pauses—hence the absence of pauses is not proof of the genuine character of a signature. Another common characteristic of forged and reproduced signatures and particularly such of them as are not traced and are produced by persons not skilled in the art is found in the studied appearance which they have, as if written under restraint, and without the apparent freedom consequent upon habitual writing. Another characteristic of forged signatures that are not traced from a genuine signature is that they are written with greater length in proportion to the width and height of the letters, than occurs in the genuine signature from which they are copied in imitation. This want of proportion occurs generally from making the lines connecting the letters of the signature longer than those of the copy.

At the same time, while these characteristics are common to forged writing, to make them available in formulating an opinion from an analysis they must be substantiated by every other occurring in the writing. It must be clearly kept in view that general impressions derived from a cursory examination of a disputed or reproduced signature should have no weight in the mind of the examiner before proceeding with the analysis, as such an impression is apt to lead the investigation into a particular line of research

and it should be understood that the work of the examiner must relate to the comparison of the details in each of the writings as to their correspondence or difference.

As before stated in this chapter, and a fact that should be remembered in studying fraudulent signatures, that one of the commonest and easiest means of reproducing a signature is to put the genuine signature on a piece of glass, lay another piece of glass on top of it and fasten the piece of paper that is to receive the forgery on top of that. Then by holding the glass strips to a bright light, the original signature casts a shadow through, which may be traced in pencil. From this tracing the ink forgery is completed.

But when a forgery done in this way is put under a strong magnifying lens it will not bear scrutiny. If the original has a strong down stroke on the capital letters the movement will be free and will leave the pen lines with smooth edges. The man who is tracing such letters cannot trust himself to the same free movement of the pen and the result under the glass shows hesitancy and uncertainty. Also if other lines in the signature be lighter than the forger naturally uses the same hesitancy will be shown. When the lines have passed scrutiny, too, there is another "line" test which will show that the impossibility of one's writing two signatures alike has been accomplished.

From dotted points made above the genuine signature straight lines are drawn radiating from it to certain portions of certain letters in the signature that is forged. When the forged signature is replaced in the glass and the other on top, as is done in the tracing, these radiating lines will fall one upon the other with the exactness of the lines in the signatures.

These radiating lines, too, may be used in the few cases where the forger is an expert penman depending upon an offhand duplication of a signature. This penman will have his inevitable natural slant to his letters. This characteristic slant never is the same in two individuals. In his free and easy forgery of a name written by another person this "Jim, the penman" exposes his acquired slant which disputes the original.

This slant of individual writing shows especially in any attempt to write a forged letter or document. When the pen scope of the original has been lined out, proving the characteristic common lengths between the lifting of the pen from the paper, the lines radiating from the points to individual letters in words or groups of words in authentic and bogus specimens, these radiations point at once to the fact that the same person did not write the matter.

These are some of the things upon which the handwriting expert works upon and brings to bear in proof of reproduced signatures and handwriting in general. How the more or less inexpert person discovers questionable showing in these duplications are many. His intuitions may suggest his doubts. Material evidences may have come to bear upon him. Likelihood of some one person's having self-interests in the matter may induce him to make sure.

In the case of a banker or business man, having large interests and required to affix his signature to many papers of moment, he ordinarily makes it certain that through adapted whorls and freehand sweeps of the pen, the signature will be least careless and inviting to the adventurous forger. In much of his personal correspondence with strangers, however, this adapted and unusual signature frequently becomes a source of loss to himself and irritation to his correspondents. In the case of hundreds of such individuals, the writing to a stranger in expectation of a reply becomes an absurdity for the reason that the person addressed is hopelessly barred from reading the name attached to the letter. A plain signature is always the best.

## CHAPTER IV

### ERASURES, ALTERATIONS AND ADDITIONS

What Erasure Means—The English Law—What a Fraudulent Alteration Means—Altered or Erased Parts Considered—Memoranda of Alterations Should Always Accompany Paper Changed—How Added Words Should be Treated—How to Erase Words and Lines Without Creating Suspicion—Writing Over an Erasure—How to Determine Whether or Not Erasures or Alterations Have Been Made—Additions and Interlineations—What to Apply to the Suspected Document—The Alcohol Test Absolute—How to Tell which of Crossing Ink Lines were Made First—Ink and Pencil Alterations and Erasures—Treating Paper to Determine Erasures, Alterations and Additions—Appearance of Paper Treated as Directed—Paper That Does Not Reveal Tampering—How Removal of Characters From a Paper is Effected—Easy Means of Detecting Erasures—Washing With Chemical Reagents—Restoration of Original Marks—What Erasure on Paper Exhibits—Erasure in Parchments—Identifying Typewritten Matter—Immaterial Alterations—Altering Words in an Instrument—Alterations and Additions Are Immaterial When Interests of Parties Are Not Changed or Affected—Erasure of Words in an Instrument.

Erasure or erazuer, as it is more commonly called in England, from the Latin word "scrape or shave" is the scraping or shaving of a deed, note, signature, amount or of any formal writing. In England, except in the case of a will, the presumption, in the absence of rebutting testimony, is that the erasure was made at or before the execution thereof. If an alteration or erasure has been made in any instrument subsequent to its execution, that fact ought to be mentioned (in the abstract or epitome of the evidence of ownership) together with the circumstances under which it is done.

A fraudulent alteration, if made by the person himself, taking under it would vitiate his interest altogether. It was formerly considered that an alteration, erasure or interlineation would void the instrument entirely, even in those cases where it was made by a stranger; but the law is now otherwise, as it is clearly settled that no alterations made by a stranger will prevent the contents of an instrument from retaining its original effect and operation, where it can be plainly shown what that effect and operation actually was. To accomplish this the mutilated instrument may be given in evidence as far as its contents appear and evidence will be admitted to show what portions have been altered or erased, and also the words contained in such altered or erased parts; but if, for want of such evidence or any deficiency or uncertainty arising out of it the original contents of the instruments cannot be ascertained, then the old rule would become applicable or more correctly speaking, the mutilated instrument would become void for uncertainty. If a will contains any alterations or erasures, the attention of the witnesses ought to be directed to the particular parts in which such alterations occur, and they ought to place their initials in the margin opposite, before the will is executed, etc., notice this having been done by a memorandum added to the attestation clause at the end of the will.

In Scotland the rule as to erasure is somewhat stricter than in England and the United States, the legal inferences being that such alterations were made after execution. As to necessary or bona-fide alterations which may be desired by the parties, corrections or clerical errors and the like after a paper is written out but before signature, the rule usually followed is that the deed must show that they have been advisedly adopted by the party; and this will be effected by mentioning them in the body of the writing. Thus if some words are erased and others superinduced, you mention that the superinduced words were written over an erasure; if words are simply deleted that fact is noticed, if words are added it ought to be on the margin and such additions signed by the party with his Christian name on one side and his surname on the other; and such marginal addition must be noticed in the body of the work so as to specify the page on which it occurs, the writer of it and that it is subscribed by the attesting witness.

The Roman rule was that the alterations should be made by the party himself and a formal clause was introduced with their deeds to that effect.

As a general rule alterations with the pen are in all cases to be preferred to erasure; and suspicion will be most effectually removed by not obliterating the words altered so completely as to conceal the nature of the correction.

The law of the United States follows that of England and Scotland in regard to alterations and erasures.

If any one will try the experiment of erasing an ink-mark on ordinary writing paper, and then writing over the erasure, he will notice a striking difference between the letters on the unaltered surface. The latter are broader, and in most cases, to the unaided eye, darker in color, while the erased spot, if not further treated to some substitute for sizing, may be noticed either when the paper is held between a light and the eye, or when viewed obliquely at a certain angle, or in both cases.

Very frequently it happens that so much of the size and the superficial layer of fibres must be removed that the mark of the ink can be distinctly seen on the reverse side of the paper, and the lines have a distinct border which makes them broader than in the same writing under normal conditions. If a sharp pen be used there is great likelihood that a hole will be made in the paper, or a sputter thrown over the parts adjacent to the erasure.

The latter effect is produced by the entanglement of the point of the pen among the disturbed fibres of the paper and its sudden release when sufficient force is used to carry it along in the direction of the writing.

It is often of importance to know, in case of a blot, whether the erasure it may partially mark was there before the blot, or whether it was made with the object of removing the latter.

Inasmuch as an attempt to correct such a disfigurement would in all probability not be made until the ink had dried, an inspection of the reverse side of the paper will usually furnish satisfactory evidence on the point. If the color of the ink be not more distinct on the under side of the paper than the color of other writing where there was no erasure, it is probable that the erasure was subsequent to the blot.

If the reverse be the case, the opposite conclusion may be drawn. Blots are sometimes used by ignorant persons to conceal the improper manipulation of the paper, but they are not adapted to aid this kind of fraud, and least of all to conceal erasures.

The decision as to whether they have been made legitimately and before a paper was executed, or subsequently to its execution, and with fraudulent intent, must be arrived at by a comparison of the handwriting in which the words appear, the ink with which they were written, and the local features of each special case which usually are not wanting.

To determine whether or not papers contain erasures the suspected document should be examined by reflected and transmitted light. Examine the surface for rough spots. Forgers after erasures frequently endeavor to hide the scratched and roughened surface by applying a sizing of alum, sandarach powder, etc., rubbing it to restore the finish to the paper.

Distilled water applied to the suspected document at the particular points under examination will dissolve the sizing applied by the forger. If held to the light the thinning will show. The water may be applied with a small brush or a medicine dropper. Water slightly warmed may be used with good results at times.

Alcohol, if applied as described for water, will act more promptly and show the scratched places. It may be well to use water first and then alcohol.

To discover whether or not acids were used to erase, if moistened litmus-paper be applied to the writing, the litmus-paper will become slightly red if there is any acid remaining on the suspected document. If the suspected spots be treated with distilled water, or alcohol, as already described, the doctored place will show, when examined in strong light.

Which of two inklines crossing each other was made first, is not always easy of demonstration. To the inexperienced observer the blackest line will always appear to be on top, and unless the examiner has given much intelligent observation to the phenomenon and the proper methods of observing it mistakes are very liable to be made. Owing to the well-known fact that an inked surface presents a stronger chemical affinity for ink than does a paper surface, when one ink-line crosses another, the ink will flow out from the crossing line upon the surface of the line crossed, slightly beyond where it flows upon the paper surface on each side, thus causing the crossing line to appear broadened upon the line crossed. Also an excess of ink will remain in the pen furrows of the crossing line, intensifying them and causing them to appear stronger and blacker than the furrows of the line crossed.

It is probable that ink and pencil alterations and erasures are more frequently made with a sharp steel scraper and ink-erasing sand rubber than otherwise. By these methods the evidence—first, the removal of the luster or mill-finish from the surface of the paper; second, the disturbance of the fibre of the paper, manifest under a microscope; third, if written over, the ink will run or spread more or less in the paper, presenting a heavier appearance, and the edges of the lines will be less sharply defined; fourth, if erasure is made on ruled paper, the base line will be broken or destroyed over the scraped or rubbed surface; fifth, the paper, since it has been more or less reduced in thickness where the erasure has been made, when held to the light will show more or less transparency. When erasures have been thus made the surface of the paper may be resized and polished, by applying white glue, and rubbing it over with a burnisher. When thus treated it may be again written over without difficulty. When erasures have been made with acids, there is a removal of the gloss, or mill-finish; and there is also more or less discoloration of the paper, which will vary according to the kind of paper, ink, and acid used, and the skill with which it has been applied. If the acid-treated surface is again written over, the writing will present a more or less ragged and heavy appearance, if the paper has not been first skillfully resized and burnished. It is very seldom that writing can be changed by erasure so as not to leave sufficient traces to lead to detection and demonstration through a skillful examination.

Upon hard uncalendered paper erasures by acid when skillfully made are not conspicuously manifest, nor when made upon any hard paper which has been "wet down" for printing, since the luster upon the paper would be thereby removed, and, so far as the surface of the paper is concerned, there would be no further change from the application of the acid. This applies to a wide range of printed blank business and professional forms.

A forgery consists either in erasing from a document certain marks which existed upon it, or in adding others not there originally, or in both operations, of which the first mentioned is necessarily antecedent to the last; as where one character or series of characters is substituted for another.

The removal of characters from a paper is effected either by erasure (seldom by pasting some opaque objects over the characters, painting over them, or affixing a seal, wafer, etc., to the spot where they existed) or by the use of chemical agents with the object of dissolving the writing fluid and affecting the underlying paper or parchment as little as possible.

If the erasure be effected by scratching or rubbing, this removes also the surface of the paper, which consists of some sort of "size" or paste with resin soap, which is pressed into the upper pores to give the paper a smooth appearance, and to prevent the writing fluid from "running," or entering the pores and blurring the edges of the lines.

If the paper were left as it exists when the scratching or rubbing is completed, it would be very easy to see that it had been tampered with, for not only would the parts thus abraded show the running of any fluid which was subsequently laid upon them, but the surface would appear rough to the eye in comparison with adjacent parts of the paper, and the place would appear thinner by transmitted light. Even to the touch the surface would reveal differences from the ordinary condition of other parts of the paper.

But the forger usually endeavors to overcome these difficulties by applying to the scratched area sandarach, resin, alum, paste, or two or three of these together, the effect being to prevent an unusually large flow of ink from the pen and its abnormal absorption by the paper.

The paper should be placed between the observer and a strong light, by which means, either with or without a magnifying-glass, a distinct increase in the brightness of the suspected area may be noticed, indicating a thinning, and even traces of letters, or marks which have escaped the erasing-tool, may be seen.

A close scrutiny may show places where the surface has been partially torn, and the fibres of the paper united together into little knobs, and almost invariably a magnifying-glass will clearly show the disturbance of the superficial fibres, as compared with other and normal parts of the paper. If the latter be tinted, the change of appearance may extend to color. The color of the paper should always be attentively observed.

A change of color over the part which is the subject of investigation may indicate the mechanical removal of the paper itself, or a washing either with water or with acids, alkalies, or saline solutions. A certain spotted character which follows this latter treatment differs from the changes of color due to age or soiling.

When the heavier strokes—usually the down strokes—of a writing are thicker and more blurred than usual a removal of sizing is indicated, or an original imperfect sizing of the paper.

On the contrary, where the strokes are thinner and closer together than usual, the cause is generally the application of resin, which has been added, in all probability, to conceal a previous scratching of the surface.

The spots produced by washing are more like penumbra, or blurred marks bordering the tracings of the character, and are generally colored.

In order to bring out any traces of ink-marks which have been so far removed as not to be observable by the naked eye, Coulier recommended the placing of the document between sheets of white filter paper and passing a hot flatiron over it, allowing the latter to remain on the spotted parts for a short time. Another method is to wet the suspected paper or document with alcohol, wrapped in another piece of paper also saturated with alcohol, for the purpose of bringing out as yellow rusty marks all the pen strokes which had not been entirely removed by erasure.

This treatment fixes the appearance of the spread lines and colored spots in the space that has been washed and renders more noticeable the stain caused by a partial sizing. In this manner apparently white paper on which at first no traces of characters could be found showed a yellow tinge, denoting the presence of previous writing, and on the application of gallic acid and an infusion of nut-galls became sufficiently distinct to permit the erasure and forgery to be detected.

When an erasure is made on the surface of such a paper, the mineral and organic materials of the sizing and loading are removed, and the fibres of the paper which they unite are deranged in form and position. Such a surface exhibits invariably the teased-up ends of the fibres, and generally shows by the agreement in their direction in what way the scratching was done.

Even in cases where a substitute for the sizing has been so successfully added that no change in color or surface is observable, the fibres will show by their unusual positions that they have been disturbed. When an attempt has been made to write over the place without sufficiently restoring the sizing, the effects can be seen in the running of the ink between the fibres and the staining of the body of the paper to a considerable depth from the surface and to a considerable distance from the spot.

Erasures in parchments produce prominences on the opposite side of the sheet. The ink placed upon such erasures has a peculiar bluish tinge. It happens at times that a whole page is taken out, either by scratching or rubbing with pumice (which was the practice in the eleventh century, when a parchment became so valuable that it was common to keep up the supply by erasing the writing on old parchments) or by washing.

When the latter method was used, the writing as in palimpsests can be made to reappear by warming. The parchment can be either laid on a hot plate or pressed with a hot flatiron between two sheets of paper.

Where the supposed writer of a document was a bad or careless penman the interlineations or additions are generally distinguished from his handwriting, which they simulate, by greater clearness and precision, as has been said above; for when a man will risk being sent to jail for forgery it is not likely that he is willing to lose any prospective advantage which his felony will bring him by lack of distinctness in the characters by means of which it is perpetrated.

Considering the number of fraudulent additions or interlineations which are constantly made, the number of mistakes in spelling or in following the method employed by the supposed writer in forming the same words is surprisingly great. Several instances are recalled where the name of the supposed writer was not only misspelled but spelled in two different ways in the same instrument. It occasionally seems as if the forger's attention is so earnestly directed to overcoming the difficult parts of his task that he neglects the simpler and more obvious parts. A forger generally leaves some telltale marks to make his detection certain.

Since typewriting has come so generally into use, the question often arises as to the identity of typewriting by different operators as well as that done on different machines. This may usually be done with considerable degree of certainty. Different operators have their own peculiar methods, which differ widely in many respects,—in the mechanical arrangement, as to location of date, address, margins, punctuation, spacing, signing, as well as impression from touch, etc.

The distinctive character of the writing done on different machines is usually determined with absolute certainty. With most machines there are accidental variations in alignment. Certain letters from use become more or less imperfect, or become filled or fouled with ink. It is highly improbable that any one even of these accidents should occur in precisely the same way upon two machines, and that any two or more should do so is well nigh impossible. It is equally certain that all the habits and mannerisms of the operators would not be precisely the same. A careful comparison of different typewritings in these respects cannot fail to determine whether they are written by the same operator or upon the same machine. It should be remembered that writing upon the same machine will differ in all the respects

mentioned at different stages of its use and condition.

An immaterial alteration is one which does not change the legal effect or significance of an instrument. If what has been written upon or erased from the instrument has no tendency to mislead any person to the instrument, it will not be an alteration; it is immaterial also where the meaning is in no manner varied or changed.

The courts uniformly hold that an immaterial alteration should be treated as no alteration and therefore does not avoid the instrument.

Altering words in the instrument without changing the legal sense or altering immaterial words is an immaterial alteration.

Retracing a faded name with ink, or tracing a word with ink written with pencil, is immaterial.

Alterations and additions in deeds are immaterial where neither the rights or duties, interests or obligations, of either of the parties to the instrument are in any manner changed or affected.

A promissory note made payable to a partnership under a certain name was altered by the maker and the payee without the knowledge of the surety so as to be payable to the same parties under another name and the court held it to be immaterial.

But the effect of the correction must be that it makes the instrument conform to the intention of the parties concerned, nor must they alter the legal sense of the instrument. Memoranda made on the margin of the note for the convenience of the holder and merely explanatory of some circumstances connected with the note are immaterial. The erasure of words immaterial to the legal sense of the instrument or inserted by mistake, is also immaterial.

Where an alteration is in itself immaterial it will not void an instrument even though made with fraudulent intent.

In Missouri it has been held that any alteration material or immaterial, made fraudulently or innocently, avoids a note in the hands of one who made the alteration. But in a later Missouri case, it is held, that the addition of the signature of a married woman without a separate estate to a note already issued was a nullity and without legal effect and therefore to be considered as no alteration and not to discharge the original parties.

## CHAPTER V

### HOW TO WRITE A CHECK TO PREVENT FORGING

How a Paying Teller Determines the Amount of a Check—Written Amount and Amount in Figures Conflict—Depositor Protected by Paying Teller—Chief Concern of Drawer of a Check—Transposing Figures—Writing a Check That Cannot Be Raised—Writers Who Are Easy Marks for Forgers—Safeguards for Those Who Write Checks—An Example of Raised Checks—Payable "To Bearer" is Always a Menace—Paying Teller and an Endorsement System Must Be Observed in Writing Checks—How a Check Must Be Written to Be Absolutely Safe—A Signature that Cannot Be Tampered with Without Detection—Paying Tellers Always Vigilant.

Among the casual patrons of the average bank there is a superstition that in presenting a check at a teller's window the amount of the check shall be determined by the amount spelled out in the body of the check, without regard to the figures written at the top or bottom of the slip.

Nothing could be farther from the facts as they are accepted at the bank window. As a matter of fact, when a check made out in this erroneous way comes to a teller's window he is most likely to refuse to pay either amount. There is no law, written or unwritten, to justify the paying of the amount spelled out in the body of the check, regardless of the group of figures on its face. This figure group is designed merely to check and justify the written amount, but if there is a discrepancy between the two amounts there is nothing to indicate that it is not the written amount that is wrong and the figure group that is right.

Under such circumstances the chief duty of the teller is to protect the depositor who has drawn the check on his bank. The person who presents the check for payment manifestly has been a party to the mistake in not having read over the check carefully before receiving it. If the payee is unknown to the teller and if the discrepancy is at all material, the teller turns the check back with the advice that the payee look up the drawer and have the error corrected.

In many cases of discrepancy between the two amounts on the face of a check the sum involved is the fractional part of the dollar at the end of the chief figures. This comes about through the drawer's concern over the main figures in the check. He is likely to write the amount in letters on the center line of the body of the check, affixing the fractional part of a dollar in the form of 100th parts of that unit. In writing the checking group in figures at the upper or lower corner of the slip, his chief concern is with the dollars and in his care he is likely to overlook the odd cents first entered on the face of the paper. Or if he attempts to write the figures "74" cents in repetition it is likely that they may be transposed to "47" cents in the operation.

How to write this check in order that it may not be tampered with and "raised" is something that has held the attentions and invited the inventive talents of many people, in and out of business. Even when the best of the chemical papers are used in the bank check the drawer of the paper may have not the slightest protection from "raising" at the hands of an expert. The manner in which the written and figure amounts on the face of the check are placed makes the material alteration of the amount easy beyond question.

For instance, the man who writes with a free, flowing, rounded hand and leaves roomy spaces everywhere between words and figures becomes an easy mark for a forger. This man is called upon to draw his check for \$4, even. He takes his check book and in the dollar line writes the word "four" in his rounded hand, simply filling the rest of the lined space with the plain flourish of his pen. Then in the upper corner of the check he writes the attesting figure \$4, with a dash after it. That makes it a cinch for an expert check raiser to make it \$40 or \$400 or \$4,000.

Manifestly the only safeguard for such a check as this, even if it be drawn upon chemical paper, is for the drawer to follow close upon the written "four" with the blocking "No-100th" dollars, using the same fraction as closely after the figure "4" in the corner of the check. To leave no possible room after a final written or figure amount on a check is the best possible precaution against raising it. For with many checks the printed warning "Not good if drawn for more than one hundred dollars," is a worthless precaution. In the above example it is so, for the reason that raised as it is the amount still is within the limit. Had the check been drawn in the same style for "six" dollars, it would have been more easily and profitably raised to "sixty." In the same general manner a slovenly "two" may be raised to "twenty," "three" may be "thirty," "five" is made "fifty," "seven" becomes "seventy," "eight" becomes "eighty," and "nine" is transformed into "ninety"—all without erasures and without leaving telltale marks upon a chemical paper.

In this way the average check which is made payable "to bearer" may be a potential menace in a slow course through a dozen hands. While a bank may require the holder of a "bearer" check to indorse his name upon the back, that indorsement means nothing to him. The check is payable to the bearer and the teller must pay it if it appears all right and he is certain of the signature at the bottom.

For the average man who may write his checks at a desk, and who may be willing to observe some system in the writing, perhaps the safest and cheapest protection for his paper is to repeat in red-ink figures the amount for which the check is drawn, placing those figures on the signature line at the bottom in such a manner that the black-ink signature will be woven through the red-ink group. Virtually there is no way of getting around this form of duplicated amount. The red figures show plainly through the signature and cannot be changed without affecting the form and character of the signature itself. To affect a signature in this way is to call attention to the fraud instantly. A man may make a shaky mismove of the pen somewhere in the body of the check, and if it is not too prominent a teller may take a chance and pass it; but he will shy at a signature which isn't what it ought to be—that subtle sixth sense of the old teller prompts him to it before he knows why, and a paying teller is always vigilant.

## CHAPTER VI

### METHODS OF FORGERS, CHECK AND DRAFT RAISERS

Professional Forgers and Their Methods—Using Engravers and Lithographers—Their Knowledge of Chemicals—Patching Perforated Paper—Difficult Matter to Detect Alterations and Forgeries—Selecting Men for the Work—The Middle Man, Presenter, and Shadow—Methods for Detecting Forgery—Detail Explanation of How Forgers Work—Altering and Raising Checks and Drafts—A Favorite Trick of Forgers—Opening a Bank Account for a Blind—Private Marks on Checks no Safeguard—How a Genuine Signature Is Secured—Bankers Can Protect Themselves—A Forger the Most Dangerous Criminal—Bankers Should Scrutinize Signatures—Sending Photograph with Letter of Advice—How to Secure Protection Against Forgers—Manner in Which Many Banks Have Been Swindled—Points About Raising Checks and Drafts That Should Be Carefully Noted.

A professional forgery band consists of first, a capitalist or backer; second, the actual forger, known among his associates as the "scratcher"; third, the man who acts as confidential agent for the forger, known as the "middle man"; fourth, the man who presents the forged paper at the bank for payment, known as the "layer down" or presenter.

When it is necessary to have a capitalist or backer connected with a band he furnishes the funds for the organization, frequently lays out the plans for work and obtains the genuine paper from which forgeries are made. He will, when necessary, find the engraver, the lithographer and most important of all, the "professional forger," who will do the actual forgery work.

The professional forger has, as a rule, considerable knowledge of chemicals, which enables him to alter checks, drafts, bills of exchange, letters of credit, or to change the names on registered bonds. He is something of an artist, too, for with a fine camel's hair brush he can restore the most delicate tints in bank safety paper, which tints have been destroyed by the use of acids. In fact no bank safety paper is a protection against him.

When the amount of the genuine draft or check is perforated in the paper, certain forgers have reached such perfection in their work as to enable them to cut out the perforation, put in a patch about the same as a shoemaker does with a shoe and then skilfully color the patch to agree with the original, so that it

becomes a very difficult matter to detect the alterations even with the use of a microscope. This done and the writing cleaned off the face of the draft, check, letter of credit, or bill of exchange, with only the genuine signature left and the tints on the paper restored, the forger is prepared to fill up the paper for any amount decided upon.

The backer or capitalist is rarely known to any member of the band outside the "go-between," whom he makes use of to find the forger. He very rarely allows himself to become known to the men who "present" the forged paper at the banks. If the forgery scheme is successful, the backer receives back the money paid out for the preparation of the work as well as any amount he may have lent the "band" to enable them to open accounts at banks where they propose placing the forged paper. He is also allowed a certain percentage on all successful forgeries, this percentage running from 20 to 30 per cent; but where the backer and forger are working together, their joint percentage is never less than 50 per cent.

It is an invariable rule followed by the backer and forger that in selecting a middle man they select one who not only has the reputation of being a "stanch" man, but he must also be a man who has at least one record of conviction standing against him. This is for the additional protection of the backer and forger, as they know that in law the testimony of an accomplice who is also a former convict must be strongly corroborated to be believed.

Out of their first successful forgeries a certain sum from each man's share is held by the middle man to be used in the defense of any member of the band who may be arrested on the trip. This money is called "fall money" and is used to employ counsel for the men under arrest or to do anything for them that may be for their interest.

When a "middle man" is exceedingly cautious and not entirely satisfied with the "presenters" he will sometimes have an assistant. This is where the "shadow" comes in. This shadow will under the direction of the "middle man" follow the "presenter" into the bank and report fully on his actions. He sometimes catches the "presenter" in an attempt to swindle his companions by claiming that he did not get the money, but had to get out of the bank in a hurry and leave the check or draft, as the paying teller was suspicious.

A "presenter" caught at this trick is sometimes sent into a bank to present a forged check where the bank has been previously warned of his coming by an anonymous letter. This is done as a punishment for his dishonesty and as a warning to others against treachery.

That the professional forger eventually profits but little by his ill-gotten gains is well illustrated by the fate of the most of them, who end their days in prison.

In the case of a forgery there are a dozen methods for detecting it—in the quality of the ink, in the quality of paper, in microscopic examination of the irregularities in penmanship, in "labored" tracings that show exaggerated tracings, in composite photography, and by a dozen little common-sense observations that scarcely can be controverted.

Some forgeries have been detected by the mere water-mark in the paper. Sittl of Munich is quoted as having had referred to him a possible forgery of a document dated 1868. Holding the paper to the light, he found as a water-mark in it the figure of the eagle of the German Empire—a symbol which had not been adopted at all until after the French war of 1870.

The magnifying glass is depended upon for many disclosures of forgeries. The unduly serrated edges of the ink lines are quickly marked in a forgery, though under certain circumstances a situation may be such as to force a person into this laborious writing; he may be cramped up in bed, writing on a book held in his lap, or he may be in a mental strain that produces it.

There are minds so easily impressed with a sense of responsibility that the writing or signing of any paper important in its bearing on the writer or his property will cause him to disguise his hand to some extent involuntarily, as many persons disguise their features involuntarily when being photographed.

As to signatures especially, attention is called to the "tremor of fraud," which is to be detected by the microscope, and stress is laid upon the necessity of observing just where this tremor falls. If it is in a difficult flourish of the signature and not elsewhere it indicates fraud; or if it be tremulous to the eye, in imitation of the signature of an aged person, a smooth, curved line may be the index of "the difficulty experienced by a good penman in feigning to be a bad one."

The microscope is useful and valuable in determining whether erasures have been made on paper. Also it will discover which of two crossed lines was last written. It may determine whether the ragged edges of the ink lines are those of fraud, illiteracy, or old age.

The practice of forging the names of depositors in banks to checks, drafts, notes, and in fact to all papers representing a money value, has been practiced, probably, since the creation of man. Of course the law recognizes forgery as a serious crime, and everywhere the punishment is severe. In the seventeenth century it was a capital offense in England, and there were more persons executed for that crime than there were for murder. Notwithstanding the rigorous penalty prescribed in every state in the Union, forgery is carried on to an alarming extent, sometimes by trusted employees, as well as professionals.

The raising of checks and drafts is the principal method employed by the men who make a business of defrauding the unwary. The simplest way of explaining the operation of raising a draft or check is as follows:

Two men are necessary for success at any given point, and hence they are not so liable to detection as if a number of confederates were engaged. It is the business of one of these men to enter a bank, and purchase a draft on New York City, for a certain amount of money, usually about fifteen hundred dollars, and a short time after this another draft would be procured from the same bank for a small amount, seldom over ten dollars. These drafts procured, they are handed to the "raiser," or the man who is to alter the paper for their dishonest purposes. In a short time the small draft is raised to be a perfect duplicate of the large one, in every sense of the word, both as regards number, amount, place of presentation, etc.

This work of alteration being fully completed, one of the men would then remove to another city, and forward the "raised" draft to New York, by express, for collection, or else would go to that city himself, and have it cashed through some respectable person. Immediately on receiving the money he would telegraph his companion, in words previously agreed upon, informing him of the successful result of the first move. The other confederate, upon the receipt of this information, would at once go to the bank where the drafts had been procured, and presenting the genuine draft for the large amount of money, would request that the money be refunded, giving as an excuse for not using it, either that he could not be identified in the New York bank, and for that reason could not collect it, or that the business he had procured it for had not been consummated. The bank officials would recognize him as the person who purchased the draft, and would unhesitatingly hand him back the money which he had paid. Of course he would quickly disappear from the locality, never to be seen in it again—and the forgery would not be discovered until, in the due course of ordinary business, when the other draft for the same amount would be returned for payment.

A favorite trick of forgers, and check and draft raisers, who operate on an extensive scale, is for one of them to open an office in a city, and represent himself as a cattle dealer, lumber merchant, or one looking about for favorable real-estate investments. His first move is to open a bank account, and then works to get on friendly terms with the cashier. He always keeps a good balance—sometimes way up in the thousands—and deports himself in such a manner as to lead to the belief that he is a highly honorable gentleman, and the bank officials are led to the belief that he will eventually become a very profitable customer.

Occasionally he has a note, for a small amount to begin with, always first-class, two-name paper, and he never objects—usually insists—in paying a trifle more than the regular discount. At first the bank officials closely examine the paper offered, and of course find that the endorsers are men of high standing, and then their confidence in the "cattle king" is unbounded. Gradually the notes increase in amount, from a thousand to fifteen hundred dollars, and from fifteen hundred to two or three thousand. The notes are promptly paid at maturity. After the confidence of the bank people has been completely gained, the swindler makes a strike for his greatest effort. He comes in the bank in a hurry, presents a sixty-day note, endorsed by first-class men, for a larger amount than he has ever before requested, and it generally happens that he gets the money without the slightest difficulty. Then he has a sudden call to attend to important business elsewhere. When the note or notes mature, it is discovered to be a clever forgery. This has been done time and again, and it is rare that the forger has been apprehended.

The forgery of checks is a common offense. It takes more than one man to successfully perform this operation. The forger himself is known as the "scratcher," or the expert penman of the party. The "middle man" is the fellow who conducts the business negotiations, ostensibly as a merchant, and the "layer-down" is the man who presents the check to the bank and secures the cash. The middle man must have a pleasing address, and be thoroughly posted on the commercial news of the day, and it is requisite that the layer-down be well dressed, quick witted, and possessed of an unlimited amount of polite assurance, a cheek that never pales and an eye that never droops. In selecting a person to fill this important position, the forger prefers to have a man who has, at some time or other, been convicted of crime, so that in case of discovery, and the turning of state's evidence by the layer-down (who is always the man caught) his evidence will not have weight with a jury. The latest mode is for the forger to imitate a private check by the photo-lithographic method, after having obtained a signed check.

The signature, after being photographed, is carefully traced over with ink, and the body of the check is filled up for whatever amount is desired. The maker of the check is requested to identify the person who holds it, and as a general thing he does not wait to see the money paid. The moment his back is turned, the layer-down palms the small check and presents the large one. This way of obtaining money is without the assistance of a middle man. Private marks on a check are no safeguards at all, although a great many merchants believe they can prevent forgery by making certain dots, or seeming slips of the pen, which are known only to the paying teller and themselves. This precaution becomes useless when the forger uses the camera. Safe breakers are often called upon by forgers and asked to secure a sheet of checks out of a checkbook. When this is accomplished a few canceled checks are taken at the same time. These are given to the forger and he fills them up for large amounts, after tracing or copying the signature. The safe burglars receive a percentage on the amount realized. If your safe vault or desk is broken open, where your check-book is kept, carefully count the leaves in your check-book, also your canceled checks. If any are missing, notify the banks, and begin using a different style of check immediately. The sneak thief, while plying his trade, often secures unsigned bonds of some corporation which has put the signed bonds in circulation, leaving the rest unsigned until the next meeting of the directors.

Frequently unsigned bonds are left in the bank vault for safe keeping. These are stolen and sent to the penman or "scratcher." Then a genuine signed bond is purchased, from which the signatures are copied and then forged. The same trick has been played on unsigned bank notes, but on the bank notes almost any name will do, as no person looks at the signature, as long as the note appears genuine.

The ingenuity of a countless army of sharpers is constantly at work in this country, devising plans to

obtain funds dishonestly, without work, but, in fact, they often expend more time, skill, and labor in carrying out their nefarious schemes than would serve to earn the sum they finally secure, by honest labor. Every banker must, therefore, be on his guard, and should acquaint himself with the most approved means of detecting and avoiding the most common swindlers. This is just as necessary as it is to lock his books and cash in his safe before going home.

Next to the counterfeiter, the forger is the most dangerous criminal in business life. Transactions involving the largest sums of money are completed on the faith in the genuineness of a signature. Hence every effort should be made to acquire the art of detecting an imitation at a glance. This can be done only by considerable practice. It is asserted that every signature has character about it which cannot be perfectly copied, and which can always be detected by an experienced eye. This is problematical, but certainly a skilful bank teller can hardly be deceived by the forgery of a name of a well-known depositor.

A banker should accustom himself to scrutinize closely the signatures of those with whom he deals. He should cut off their names from the backs of checks and notes, and paste them in alphabetical order in an autograph book devoted to that purpose, and compare any suspicious signature with the genuine one.

In consequence of the numerous frauds committed by forged checks, some of the European bankers have adopted the custom of sending with their letter of advice a photograph of the person in whose favor the credit has been issued, and to stop the payment when the person who presents himself at the bank does not resemble the picture. If this practice were to become universal, the object of preventing frauds could be well attained.

Instead of the signature being forged, the amount of a check, etc., may be altered. This is done either by changing the letters and figures, or by the use of an erasive fluid. The perfection with which the latter alteration can be performed is so complete that the most skilful eye cannot detect the imposture. A person may deposit a hundred dollars with a house in New York, and obtain their draft for that amount on Philadelphia; he then alters the one hundred to one thousand by erasing a portion of the letters and figures and cashes the draft at a broker's. The latter recognizes the signature, and has no suspicion of the fraud until too late.

The means to secure entire protection against this is by using an ink which cannot be erased by chemicals, or at least such chemicals as are familiarly known to the class of criminals who make this a specialty. Every well-regulated bank now uses a machine for punching or perforating a series of small holes in the check, so that any increase or decrease of the number of letters written is immediately detected.

Many banks have been swindled in the following manner: A check, say for ten dollars, is obtained from a depositor of a bank, and a blank check exactly like the filled-in check is secured. The two checks are laid one upon the other, so that the edges are exactly even. Both checks are then torn irregularly across, and in such a way that the signature on the filled check appears on one piece and the amount and name of the payee on the other. The checks having been held together while being torn, of course one piece of blank check will exactly fit the other piece of the filled check. The swindler then fills in one piece of the blank check with the name of the payee and an amount to suit himself, takes it with the piece of the genuine check containing the signature to the bank, and explains that the check was accidentally torn. The teller can put the pieces together, and as they will fit exactly, the chances are that he will think that the pieces are parts of the same check, and becomes a victim of the swindle. The trick, of course, suggests its own remedy.

It is a well-known fact that there are banks in the country that have paid thousands of dollars on raised checks, and decided that it was cheaper for them to pocket the loss than to have the facts become known.

The New York Court of Appeals holds that the maker of a check is obliged to use all due diligence in protecting it, and the omission to use the most effectual protection against alterations is regarded as an evidence of neglect.

Here are a few points about raising checks and drafts that should be carefully noted: To successfully raise a check or draft requires so much less skill or art than to accomplish a forgery that it has of late become alarmingly prevalent. Often where a check or draft is printed on ordinary paper the original figures are removed by some chemical process so skilfully that no alteration can be detected, even with a strong magnifying glass.

It is not uncommon, when filling up checks or drafts, to take another pen, and with red ink write the amount across the face of the paper, and again make the figures in and through the signature. All these precautions may make tampering with the amount more difficult for a clumsy novice, but it only imposes a few moments' more work upon the accomplished manipulator. He takes his strong solution of chloride of lime and rain water, or other prepared chemicals, and with a pen suited to the purpose, by neutralizing and abstracting the coloring properties of the ink, he carefully obliterates such portions of the lines in the figures and written amounts as suits his purpose, then easily makes the alteration he desires, the red ink coming out as readily as black. And if the tint or coloring of the paper should have been affected by his cautious touch, he takes the proper shade of crayon or water-color, and carefully replaces the original shade.

Now, the signature not being touched, but remaining genuine, and the payer not being supposed to know who wrote the check, but only who signed it, he pays the amount specified, and the law holds the "maker of the check responsible when there is nothing in its appearance to excite suspicion, and the

signature is proven genuine."

## CHAPTER VII

### THE HANDWRITING EXPERT

No Law Regulating Experience and Skill Necessary to Constitute An Expert—Experts Held Competent to Testify in Court—Bank Officials and Employes Favored—An Expert On Signatures—Methods Experts Employ to Identify the Work of the Pen—Where and When an Expert's Services Are Needed—Large Field and Growing Demand for Experts—Qualifications of a Handwriting Expert—How the Work Is Done—A Good Expert Continuously Employed—The Expert and the Charlatan—Qualifying as an Expert—A System Which Produces Results—Principal Tests Applied by Handwriting Experts to Determine Genuineness—Identification of Individual by His Handwriting—How to Tell Kind of Ink and Process Used to Forge a Writing—Rules Followed by Experts in Determining Cases—The Testimony of a Handwriting Expert—Explaining Methods Employed to Detect Forged Handwriting—The Courts and Experts—What an Expert May Testify to—Trapping a Witness—Proving Handwriting by Experts—General Laws Regulating Experts—The Base Work of a Handwriting Expert—Important Facts an Expert Begins Examination With—A Few Words of Advice and Suggestion About "Pen Scope"—Detection of Forgery Easy If Rules Suggested Are Observed—Expert Witnesses, Courts, and Jurors.

There is no rule of law fixing the precise amount of experience or degree of skill necessary to constitute a handwriting expert. The witness need not be engaged in any particular business or claim to be a professional expert. He must, however, claim to have experience. With that limitation, cashiers, paying tellers, other bank officers, attorneys, bookkeepers, business men, conveyancers, county officials, photographers, treasurers and clerks of railroads, etc., and writing teachers have in various cases been held competent to testify as an expert. And it has been held that experience with handwriting generally or specially will enable the witness to testify specially or generally thereto. Bank officials, and especially cashiers, tellers, and book-keepers, are usually regarded as competent by most courts to pass authoritatively upon handwriting.

Generally speaking, the witness must claim to be an expert, or at least show that he had the means of gaining experience. He need not claim to be an expert, but he must claim to have had such experience as will make him feel competent to express an opinion.

He may always give the reasons for his opinion, but he must confine his testimony to his opinion based on the handwriting itself, and not as affected by the facts of the case. He cannot state any inferences deduced from the facts. He must also testify himself. Evidence of what an expert has said with reference to a writing is inadmissible for the purpose of bringing that opinion before the court.

An expert may be tested with other papers in the case, but not with irrelevant papers, and the whole of the test paper must be shown him. He is entitled to see it all.

Letter-press copies and duplicates made by writing machines are not originals and therefore cannot be used as a standard of comparison.

An expert cannot give an opinion as to the genuineness of a signature based upon a comparison thereof with signatures not before the court.

The standard of comparison used by the expert must be produced in court. Photographic copies are admissible when accompanied by the originals. When original writings are in evidence and the genuineness thereof disputed, magnified photographic copies of the writing and of admitted genuine writings are admissible in evidence, for comparison by jury or expert when accompanied by competent preliminary proof that the copies are accurate in all respects except as to size and color.

The services of the expert are required in a wide range of civil and criminal cases. Where handwriting is questioned on notes, checks, drafts, receipts, wills, deeds, mortgages, bonds, anonymous letters, money orders, registered letter receipts, letters, pension papers, and in smuggling, and in short, on any kind of document where it becomes necessary to establish the identity of the writer, the expert is called in. Life, liberty, honor, and property are frequently balanced on a pen point—a few marks of the pen being the determining feature of many a case.

The handwriting of the schoolboy and schoolgirl, though crude, is conventional and idealized. It has but few characteristics so long as the school model or copy-book hand is the goal. The pupil gives constant attention to the handwriting as well as to the thought. A number of students of about the same grade, under the same teacher, will write much alike. Fifteen or twenty of these students could each write a line on a page and it might baffle a layman, and perhaps puzzle an expert, to tell whether or not more than one person wrote the page. This constant striving after one ideal, and putting thought on the handwriting, had drawn them all toward that ideal and away from individuality.

The employment of professional handwriting experts as witnesses in court cases that often involve enormous sums of money, or the liberty or even the lives of suspected malefactors, has awakened widespread interest in the methods of this class of experts, their resources and capabilities in conserving the ends of justice.

Many uninformed people appear to look on the handwriting expert as one who, by intuition or the possession of some mysterious occult power, is enabled to distinguish at a glance the true and the spurious in any questioned handwriting. Nothing could be further from the fact.

The secret of his power—as in any other line of scientific research—lies wholly in his intimate familiarity with the innumerable physical details which comprise the written line or word or letter—sometimes so slight a matter as the dotting of an *i* or the placing of a comma. It is precisely the same specialized sense, born of acute observation and minute scrutiny that enables an expert chemist to take two powders of like weight and color, identical in appearance to the common eye and perhaps in taste to the common palate, and say: This drug is harmless, wholesome; that is a deadly poison—and to specify not only their various individual constituents but the exact proportion of each. The trained eye of the handwriting expert (as in another case could that of the expert chemist) can often detect at a glance certain distinguishing earmarks of submitted writing that enable him to fix the identity of the writer almost off-hand. In the the great majority of cases, however, the cunning of the forger calls for deliberate, painstaking study and investigation before the conscientious expert is willing to announce with absolute surety an opinion so often fraught with tremendous possibilities for good or for evil.

Nothing else that a person does is so characteristic as the handwriting, and the identification of the individual can be established by it better than by portraits or almost any other means. As lawyers and laymen and courts are finding this out, the handwriting expert is more and more called upon to untangle snarled questions and to right wrongs.

It is only when attention is directed to this interesting science by the wide publicity given to some great case in which handwriting plays an important part that the notice of the general public is drawn to it. The average person would be surprised to know of the great number of cases that find their way to the office of the handwriting expert. The man who has made a success in this line is constantly in demand, and makes frequent trips to distant points to appear as witness in courts.

Though nearly every large town has some one who devotes some attention to handwriting, there are but five or six men in this country who give to it practically all of their time, and who have gone very deeply into the subject.

To allow any person to qualify as an "expert" and to testify as such is a matter wholly within the discretion of the court. Unfortunately, courts frequently are lax in determining this question. Almost any one who can write is permitted to give alleged "expert" testimony regarding handwriting. In one well-known case, a case, too, involving life and death—the court unwittingly accepted the "expert" testimony of a witness who, it was afterward proven, was unable to write even so much as his own name. In the litigation attending the disposal of large mining interests held at Butte, Montana, the court permitted testimony in regard to the handwriting of the testator from a witness who admitted that he had seen the testator write but once, and that in lead pencil over twenty years before.

Any one accustomed to writing is usually allowed to qualify as an "expert." To the lay mind it is natural to confound experts who have studied the subject deeply in all its various phases with those who have had occasion to examine it casually, or who may possess uncommon facility with the pen without ever having had occasion to investigate scientifically just those little illusive points upon which the professional expert places his reliance.

Hence, when we read of "experts" being mistaken, or of an equal number of them appearing on opposite sides of the same case, it will nearly always be found upon investigation that they are of the class described above, whose lack of thorough special training and specialized experience really should have disqualified them from giving testimony. Though any one may call himself an "expert," or a "professional expert," for that matter, thus opening the door to charlatanism in exactly the same manner that it is opened more or less in all vocations, yet, as a matter of fact, it is very rare that professional handwriting experts testify to a contrary state of facts, and the cases in which they have been proven mistaken are remarkably few.

Experts who have a natural aptitude coupled with experience that produces skill are able, by a system which they have reduced to a science, to detect the spurious from the genuine handwriting with almost unvarying success. But their conclusions are not reached by second sight or sleight-of-hand methods, but rather by painstaking, scientific investigation.

Some of the principal tests applied to determine the genuineness of handwriting are these: The actual and relative slant of the letters or the angles between their stems and the base; the constancy and accuracy with which a straight line is followed as a base; the amount of pressure used on the pen and the part of the stroke where it is applied, and the positions of the line as a whole relative to the edges of the paper. The simplest punctuation mark under the microscope has its own individuality. It would be difficult to find two writers whose semicolons and quotation marks cannot be distinguished at a glance. The dotting of the *i* and crossing of the *t* afford an infinite number of relations between points and lines, and in both of these the time element and the freedom of muscular movement play important parts. Even the health and self-control of the penman, as well as the physical circumstances, show their influence on these little strokes.

The identification of the individual by means of his handwriting is of great value in legal trials and outside of courts. Its use cannot be dispensed with any more than can the knowledge obtained in any other line of science.

One often hears a man boast of his ability to successfully duplicate another person's signature or handwriting, and to the casual observer the counterfeit really will bear a striking resemblance to the original. However, let the two be placed in the hands of an expert on disputed handwriting and he will pretty quickly determine which is the original and which the forgery. Furthermore, he will tell you what process was used to make the duplicate, for there are several methods in use among forgers, and can even tell the composition of the ink.

In the determination of any handwriting there is no actual rule to guide an expert, as each case must be a law unto itself. The time of day that the signature was made and the condition for the moment of the individual have considerable bearing on the case, as has also the writer's general physical condition. Whether he was standing or sitting when the signature was made is a matter of importance. The quality of the paper and the make of the pen also have to be taken into consideration. In the case of forgery, where the forger has employed a finger movement writing with the muscles and apparently without education, there is scarcely any difficulty in arriving at a conclusion. The long flowing hand is easy to detect. When, however, the writing is finical a large mass of material has to be examined before a decision can be reached.

The testimony of an expert is without doubt the most dangerous kind of evidence when not supported by additional testimony; but, on the other hand, if the known facts fit in well, it is the strongest kind of testimony that can be submitted, and is usually known as "opinioned evidence." There probably is no class of professional witnesses which is subjected to such severe cross-examination as experts in handwriting, and, considering the great importance of their testimony, they should be ever ready and willing to explain the methods employed by them in arriving at their decision, which, of course, is the result of a comparison of the analyses of several pieces of writing, taking account of all exaggerations, idiosyncrasies and unusual peculiarities.

All evidence of handwriting, except where the witness has seen the writing in question written, is derived from four sources: First, from comparison; second, from the internal evidence of the writing itself; third, from the knowledge of the writing, from having frequently seen a person write; fourth, where one has received letters whose authorship has been subsequently verified by admission, or acted upon in such manner as to receive the approval of the writer. Comparison is made between the writing in question and other writing admitted by the writer to be genuine, or otherwise proved to be so to the satisfaction of the court.

The evidence adduced from comparison is more or less certain according to the skill of the expert and the circumstances of the case. Internal evidence is such as is presented by the peculiar quality of lines when drawn or worked up by slowly following traced lines, retouched shades, rubbered surface of the paper, and every indication of an artificial or mechanical process of producing writing.

Testimony based upon a knowledge of writing gained from having at some time seen a person write is the most fallacious of all testimony respecting handwriting; it can be only a mental comparison of writing in question with such a vague idea or mental picture as may remain from a casual view of the writing at some time more or less remote; and besides, one may perceive another in the act of writing and yet have little or no opportunity of forming any mental conception of it, even at the time of writing.

In some cases where the courts will permit it the expert witness may fully explain upon what he bases his opinion but it oftener occurs that the trial judge will limit the evidence down to the very narrow scope and the mere relation of such facts as the jury can see. Where a forgery is well executed the difference in general appearance between it and the genuine writing of the person whose signature is questioned, when compared, is very small. The limit put upon expert evidence by the trial judge takes from the effect of the testimony all the benefit of an explanation of the facts upon which the opinion is founded.

Juries are generally allowed to examine enlarged photographs of the writing, and sometimes to see it under the microscope, but even when so doing what they see unexplained cannot be appreciated intelligently and unless taken for granted as meaning something which the experience of the expert who gives the opinion understands, and which they without such an education, could not be expected to understand that which the photographs show and the microscope makes visible is just as likely to be misleading as otherwise.

An expert may testify as to the characteristics of the handwriting in question; as to whether the writing is natural or feigned, or was or was not written at the same time, with the same pen and ink, and by the same person, and as to alterations or erasures therein; and as to the age of the writing and obscurities therein; the result of his examination of the writing under a magnifying glass; and to prove in some cases the standard of comparison.

In the United States a witness may be asked to write on cross-examination, but not in direct.

Before a paper can be accepted as a standard of comparison it must be proved to be genuine to the satisfaction of the judge. His decision on this question is final if supported by proper evidence. In some states the question of genuineness is for the jury.

A party denying his handwriting may be asked on cross-examination, if his signature to another instrument is genuine. This is the test which may be successfully applied to ascertain if the signature is genuine. A plaintiff, on one occasion, denied most positively that a receipt produced was in his handwriting. It was thus worded, "Received the Hole of the above." On being asked to write a sentence in which the word "whole" was introduced, he took evident pains to disguise his handwriting, but he adopted

the phonetic style of spelling, and also persisted in using the capital *H*.

The practice of thus testing a witness is vindicated by one of the most sagacious of German jurists, Mittermaier, on grounds not only of expediency, but of authority.

Comparison of handwriting, either by jury or witness, is uniformly allowed to prove writings which are not old enough to prove themselves, but are too old to admit of direct proof of their genuineness.

Handwriting, considered under the law of evidence, includes not only the ordinary writing of one able to write, but also writing done in a disguised hand, or in cipher, and a mark made by one able or unable to write.

The principles regulating the proof of handwriting apply equally to civil and criminal cases.

The paper the handwriting of which is sought to be proved by experts must ordinarily be produced in court, but such production will be excused when the paper has been lost or destroyed and when it is a public record, which cannot be brought into court.

Genuineness may be proved in all cases, except where paper is required to be identified by an official seal, and except as controlled by law applicable to attested instruments.

It may be proved by his own admissions; by witnesses who saw the party write; by witnesses who corresponded with the party; by witnesses who had seen papers acknowledged by the party; by witnesses having personal relations with the party.

Comparison of handwriting, technically called *presumptio ex scripto nunv viso*, is where a paper or papers are proved or admitted to be in a party's handwriting, and a witness entirely unacquainted with the party's handwriting, or the jury, is allowed to make a comparison by juxtaposition of the writing so proved or admitted, and the writing disputed.

All evidence of handwriting, except where the witness sees the documents written, is in its nature comparison. It is the belief which a witness entertains upon comparing the writing in question with an exemplar in his mind derived from some previous writing.

In all the states of the Union the laws are uniform on the proposition that experts may testify as to comparisons made and the results based on such comparisons, except that the paper admitted to be genuine shall not contain matter of a frivolous nature, etc.

In a broad, general way the element of common sense is the basework of an expert's success in the business. He cannot depend upon anything suggesting intuition. Where two signatures or two specimens of writing are in question and one exhibit is a forgery and the other is genuine, or where both are genuine, yet in question, the expert is in the position of making his proofs and demonstrations convincing to the layman—the hard headed citizen who insists that "you show me." Frequently this citizen is on a jury where he has had to admit that he is not particularly intelligent before he would be accepted for the place.

As a first proposition to such a man, however, the expert in chirography may put him to the proof that out of a dozen signatures of his own name no two will be alike in general form. Then he may turn to the authentic and forged signatures in almost any case and show to the layman that the first question of forgery arose from the fact that these two signatures at a first glance are identically alike to almost the minutest detail. With all the skill which the forger has put into his crooked work, he keeps to the old principle of copying the authentic signature which he has in hand, and the more nearly he can reproduce this signature in every proportion the more readily the forgery can be proved.

One of the most important facts from which the expert may begin his investigations of possible forgery is that every man using a pen in writing has his "pen scope." This technical term describes the average stretch of paper which a man may cover without lifting the pen from the paper and shifting his hand to continue the line. In even the freest, swinging movements of a pen where the hand follows the pen fingers, there are occasional breaks in the lettering or undue stretch of space between the words which will indicate a characteristic scope of the pen if the specimens under investigation cover an ordinary paragraph in length.

As applied to the signatures of the ordinary individual, this pen scope will appear in some form in the signature. The writer may lift his pen before he has spelled out a long Christian or surname, he may indicate it in the placing of a middle initial or in the space which lies between the initial and the last name. In the case of the signature of one's name, too, it should be one of the easiest and best-studied group of words which he is called on to put upon paper. In writing a letter, for example, the pen scope through it may show an average stretch of one inch for the text of the letter, while in the signature the whole length of the signature twice as long, may be covered. But if the writer covers this full stretch of his name in this way the expert may prove by the necessary short pen scope of the copyist that the studied copy is a forgery on its face. For however free of pen stroke the forger may be naturally, his attempts to produce a facsimile of the signature shortens it beyond the scope of the original signer.

If a search be made through a series of undisputedly genuine signatures, it will be found that one characteristic fails in one and another in another. Here is where the handwriting expert makes his service valuable. He studies all these important points, and is not long in arriving at a successful conclusion.

The introduction of the experimental method into all modern investigation has led to the hope that in

this difficult subject means will be found to introduce simpler forms of determining regular or irregular handwriting.

As long as the steps by which experts reach their conclusions are so intricate or recondite that only the results may be stated to the jury, just so long will the character of expert testimony suffer in the opinion of the public, and the insulting charge against it be repeated that any side can hire an expert to support its case.

If a single competent expert could be selected by the court to take up questions of this kind and lay his results before it, the present system would be less objectionable than it is. Nevertheless, this solution is probably not the best, because no man is capable of always observing and judging correctly, and the most careful man may be led astray by elements in the problem before him of which he does not suspect the existence. It would seem, therefore, to be fairer and less open to objection if a plan of investigation were followed which can be clearly explained to those who are to decide a case and the resulting data left in their hands to assist them in their decision.

In such a manner of presentation, if any important data have been omitted, or if the premises do not warrant the conclusion, the errors can be detected without accusing the expert of lack of good faith or ignorance of his subject. The fact that he has testified in hundreds of cases and in every court in the world should not be allowed to influence the jury against a logical conclusion drawn from uncontroverted facts.

## CHAPTER VIII

### HOW TO DETECT FORGED HANDWRITING

Frequency of Litigation Arising Over Disputed Handwriting—Forged and Fictitious Claims Against the Estates of Deceased People—Forgery Certain to Be Detected When Subjected to Skilled Expert Examination—A Forger's Tracks Cannot Be Successfully Covered—With Modern Devices Fraudulent, Forged and Simulated Writing Can Be Determined beyond the Possibility of a Mistake—Bank Officials and Disputed Handwriting—How to Test and Determine Genuine and Forged Signatures—Useful Information About Signature Writing—Guard Against An Illegible Signature—Avoid Gyration, Whirls and Flourishes—Write Plain, Distinct and Legible—The Signature to Adopt—The People Forgers Pass By—How to Imitate Successfully—How an Expert Detects Forged Handwriting—Examples of Signatures Forgers Desire to Imitate—Examining and Determining a Forgery—Comparisons of Disputed Handwriting—Microscopic Examinations a Great Help in Detecting Forged Handwriting—Comparison of Forged Handwriting.

Few persons outside of the banking and legal fraternity are aware of the frequency with which litigations arise from one or another of the many phases of disputed handwriting; doubtless most frequently from that of signatures to the various forms of commercial obligations or other instruments conveying title to property, such as notes, checks, drafts, deeds, wills, etc. To a less extent the disputed portions involve alterations of books of account and other writings, by erasure, addition, interlineation, etc., while sometimes the trouble comes in the form of disguised or simulated writings. A disproportionately large number of these cases arise from forged and fictitious claims against the estates of deceased people. This results, first, from the fact that such claims are more easily established, as there is usually no one by whom they can be directly contradicted; and, secondly, for the reason that administrators are less liable to exercise the highest degree of caution than are persons who pay out their own money.

In all instances where a forgery extends to the manufacturing of any considerable piece of writing, it is certain of being detected and demonstrated when subjected to a skilled expert examination; but where forgery is confined to a single signature, and that perhaps of such a character as to be easily simulated, detection is oftentimes difficult, and expert demonstrations less certain or convincing. Yet instances are rare in which the forger of even a signature does not leave some unconscious traces that will betray him to the ordinary expert, while in most instances forgery will be at once so apparent to an expert as to admit of a demonstration more trustworthy and convincing to court and jury than is the testimony of witnesses to alleged facts, who may be deceived, or even lie. The unconscious tracks of the forger, however, cannot be bribed or made to lie, and they often speak in a language so unmistakable as to utterly defy controversion.

Note illustrations of forged handwriting in Appendix at end of this book.

With the present-day knowledge of writing in its various phases, the identity of forged, fraudulent or simulated writing can be determined beyond the possibility of a mistake. Every year sees an increase in the number of important civil and criminal cases that turn on questions of disputed handwriting.

There is not a day in the year but what bank officials are at sea over a disputed signature and a knowledge of how to test and determine genuine and forged signatures will prove of inestimable value to the banking and business world.

Forgery is easy. Detection is difficult. As the rewards for the successful forgers are great, thousands upon thousands of forged checks, notes, drafts, wills, deeds, receipts and all kinds of commercial papers are produced in the United States every year. Many are litigated, but many more are never discovered.

Practical and useful information about signature writing and how to safeguard one's signature against

forgery is something that will be welcomed by those who are constantly attaching their names to valuable papers.

Every man should guard against an illegible signature—for example, a series of meaningless pen tracks with outlandish flourishes, such as are assumed by many people with the feeling that because no one can read them, they cannot be successfully imitated. Experience has demonstrated that the easiest signatures to successfully forge are those that are illegible, either from design or accident. The banker or business man who sends his pen through a series of gyrations, whirls, flourishes and twists and calls it a signature is making it easy for a forger to reproduce his signature, for it is a jumble of letters and ink absolutely illegible and easy of simulation. Every man should learn to write plain, distinct and legible.

The only signature to adopt is one that is perfectly legible, clear and written rapidly with the forearm or muscular movement. One of the best preventatives of forgery is to write the initials of the name—that is, write them in combination—without lifting the pen. It will help if the small letters are all connected with each other and with the capitals. Select a style of capital letters and always use them; study out a plain combination of them; practice writing until it can be written easily and rapidly and stick to it. Don't confuse your banker by changing the form of a letter or adding flourishes. Countless repetitions will give a facility in writing it that will lend a grace and charm and will stamp it with your peculiar characteristics in such a way that the forger will pass you by when looking for an "easy mark." Plain signatures of the character noted above are not the ones usually selected by forgers for simulation. Forgers are always hunting for the illegible as in it they can best hide their identity.

It is said to be an utter impossibility for one person to imitate successfully a page of writing of another. The person attempting the forgery should be able to accomplish the following: First, he must know all the characteristics of his own hand; second, he must be able to kill all the characteristics of his own hand; third, he must know all of the characteristics in the hand he is imitating; fourth, he must be able to assume characteristics of the other's hand at will. These four points are insuperable obstacles, and the forger does not live who has surmounted or can surmount them.

To understand the principles on which an expert in handwriting bases his work, consider for a moment how a person's style of writing is developed. He begins by copying the forms set for him by a teacher. He approximates more or less closely to these forms. His handwriting is set, formal, and without character. As soon as he leaves off following the copy book, however, his writing begins to take on individual characteristics. These are for the most part unconscious. He thinks of what he is writing, not how. In time these peculiarities, which creep gradually into a man's writing, become fixed habits. By the time he is, say, twenty-five years old, his writing is settled. After that it may vary, may grow better or worse, but is certain to retain those distinguishing marks which, in the man himself, we call personality. This personality remains. He cannot disguise it, except in a superficial way, any more than he can change his own character.

It follows that no two persons write exactly the same hands. It is easy to illustrate this. Suppose, for example, that among 10,000 persons there is one hunchback, one minus his right leg, one with an eye missing, one bereft of a left arm, one with a broken nose. To find a person with two of these would require, probably, 100,000 people; three of them, 1,000,000; four of them, 100,000,000. One possessing all of them might not be found in the entire 14,000,000,000 people on earth. Precisely the same with different handwritings—the peculiar and distinguishing characteristics of one would no more be present in others than would the personal counterparts of the authors be found in other individuals.

It is more surprising, at first thought, to be told that no person ever signs his name even twice alike. Of course, theoretically, it cannot be said that it is impossible for a person to write his name twice in exactly the same manner. A person casting dice might throw double aces a hundred times consecutively. But who would not act on the practical certainty that the dice were loaded long before the hundredth throw was reached in such a case? The same reasoning applies to the matter of handwriting with added force, because the chance of two signatures being exactly alike is incomparably less than the chance of the supposed throws of the dice.

Probably many persons will not believe that it is impossible for them to write their own name twice alike. For them it will be an interesting experiment to repeat their signatures, say, a hundred times, writing them on various occasions and under different circumstances, and then to compare the result. It is safe to say that they will hardly find two of these which do not present some differences, even to their eyes, and under the examination of a trained observer aided by the microscope, these divergencies stand out tenfold more plainly.

Many cases of forgery hinge on this point, the forger having copied another person's signature by tracing one in his possession, but such attempts are always more easy to detect than those in which the forger carefully imitates another's hand. The latter is the usual procedure. The forger secures examples of the signature or writing which he desires to imitate. Then he practices on it, trying to reproduce all its striking peculiarities. In this way he sometimes arrives at a resemblance so close as to deceive even his victim. Still there is always present some internal evidence to prove that the writing is not the work of the person to whom it is attributed. Likewise it will reveal the identity of the person who actually wrote it, if specimens of his natural hand are to be had for comparison.

It is impossible for a man to carry in his mind and to reproduce on paper all the peculiar characteristics of another man's writing and at the same time to conceal all his own. At some point there is certain to come a slip when the habit of years asserts itself and gives the testimony which may fix the whole production on the forger beyond the shadow of a doubt.

The little things are the ones that count most in making examination and determining a forgery for the reason that they are no less characteristic than the more prominent peculiarities and are more likely to be overlooked by the person who tries to disguise his hand. The crossing of *t*'s and the dotting of *i*'s become matters of large moment in making comparisons of disputed handwritings. There is probably no matter in conjunction with a man's ordinary writing to which he gives less thought than the way he makes these crosses and dots. For that reason they are in the highest degree characteristic. And it is precisely because of their apparently slight importance that the person who sets out to imitate another's handwriting or to disguise his own is likely to be careless about these little marks and to make slips which will be sufficient to prove his identity.

Imitations of signatures are usually written in a laborious and painstaking manner. They are, therefore, decidedly unlike a man's natural signature, which is usually written in an easy fashion. The imitations show frequent pauses, irregularities in pen pressure and in the distribution of ink, and contain other evidences of hesitation. Not infrequently the forger tries to improve on his work by retouching some of the letters after he has completed a word. Microscopic examination brings out all of these things and makes them tell-tale witnesses.

Comparison of handwriting is competent but is not itself conclusive evidence of forgery. Identification of handwriting is, if possible, more difficult than identification of the person which so often forms the chief difficulty in criminal trials. As illness, strange dress, unusual attitude, and the like, cause mistakes in identifying the individual, so a bad pen or rough paper, a shaky hand and many other things change the appearance of a person's handwriting.

This kind of evidence ought never, therefore, to be regarded as full proof in trials where a handwriting is in dispute. Generally the best witness in a handwriting case is one who often sees the party write, through whose hands his writing has been continually passing, and whose opinion is not the result of an inspection made on a particular occasion for a special purpose.

## CHAPTER IX

### GREATEST DANGER TO BANKS

Check-Raising Always a Danger—A Scheme Almost Impossible to Prevent—The American Bankers' Association the Greatest Foe to Forgers—It Follows Them Relentlessly and Successfully—Chemically Prepared Paper and Watermarks Not Always a Safeguard—Perforating Machines and Check Raisers—How Check Perforations Are Overcome—How an Ordinary Check Is Raised—How an Expert Alters Checks—How Perforations Are Filled—Hasty Examination by Paying Tellers Encourages Forgers—The Way Bogus Checks Creep Through a Bank Unnoticed—A Celebrated Forgery Case—Forgers Successful for a Time Always Caught—Where Forgers Usually Go That Have Made a Big Haul—A Professional Crook Is a Person of Large Acquaintance.

Raising checks has become the greatest danger to the banks. There is no comparison between raising checks with a genuine signature and forging the signature itself, so far as ease of execution is concerned. After many years of arduous work and after great expenditures of money the banks have to admit sorrowfully that if a man wants to raise a check he can do it; and the detection, while, of course, inevitable when the paid check returns to the depositor, is not immediate enough to prevent the swindler from getting away with the money.

That is why the most implacable enemy of the men who dare raise or falsify a check is the American Bankers' Association. This great concern in reality is a protective association, and it relentlessly hunts down all forgers first, last, and all the time. It never lets up, absolutely never, no matter time, money, or trouble. It bitterly pursues defaulters for the sake of justice, but it has still another object in its deadly trailing of forgers and check tamperers. That is because the whole banking structure hangs on signed paper. When it can be altered with impunity, away goes the financial system of to-day. Hence the unrelenting hunting-down of forgers who trifle with men's names. On the books of more than one large detective agency of the country are cases more than ten years old. The forgers never have been found, but the hunt still goes on. Reports of the chase come in regularly and the books will not be closed until the hunt stops at prison doors or beside a grave.

Yet with all this remorseless hunting, check-raising flourishes so well all over the United States that the banks fear to give even a hint as to the sums of which they or their depositors are robbed each year. The magnitude of the amount would frighten too many persons.

For a time it was thought that the use of chemically prepared paper would prove a safeguard, because any erasure or alteration would show immediately. The chemicals used in its composition would make the ink run if acids were used to change the figures. But among the check-raisers there were chemists just as clever as the chemists who devised the prepared paper.

Then paper with watermarks woven through it was used. But it, too, became an easy mark for the chemists who had gone wrong.

Finally, and until recently, the banking world thought that it had struck the absolute safeguard by using a machine to stamp on the check the exact amount for which it was drawn, the machine perforating the paper as it stamped it. Certainly it does seem that when the paper is cut right out of the check, leaving

nothing but holes, no change is humanly possible. But the completeness of this supposed safeguard has offered a tempting field for the check-raiser.

A special detective in the employ of the American Bankers' Association, who has spent half the years of his mature life in running down forgers and check-raisers, said that it was "too easy" to raise checks, and that a good many more men than try it now would do it were it not for the well-known relentlessness of the association in running down offenders against any single one of its constituent members.

"Write me a check for any sum you want," said the sleuth, "and I'll show you."

A check for \$200 was written and passed over to him. In less than two minutes, without an erasure of any kind, the check called for \$500, and the work was done so well even in that short time that the writer would have been tempted to believe that he had made an error and really drawn the check for that amount had he not been sure to the contrary.

"That kind of raising is easy," said the expert. "You see it demands no interlining or extending of words. The check-raiser simply knows how well certain characters lend themselves to changes that cannot be detected. The capital *T* in almost every man's handwriting can be changed to a capital *F* without any trouble by even an unskilled crook."

A check for \$2,000 was raised to \$50,000 almost in the wink of an eye. "This is the easy and safer part of the business," said he. "But when a check is to be raised from a sum like \$10 to, say, \$10,000, and the drawer has written it so that there is no room between the word 'ten' and 'dollars,' chemicals must be used. There is always more danger of detection in that. In the mere alteration of a check there is little. Look here. I'll change your checks as fast as you can write them, and I bet a lot of my alterations will pass muster."

A pad was hauled out and the writer filled the sheets out with carefully written amounts. The expert was as good as his word. He altered them almost as fast as they were written. Some, to be sure, were crude and would have betrayed the fact of alteration to the eye of any careful banker. But many were almost perfect, and all were wonderfully deceptive and showed what could be done by a crook who had plenty of time.

"But how about the perforations?" he was asked. "How could a crook change them?"

"Nothing easier," was the reply. "The fact that checks stamped with the amount in perforated characters are considered safe aids the swindler. Really, to beat the perforations is so easy that it will make you smile. All the outfit that is needed is a common little punch with assorted small cutting tubes and a bottle of an invisible glue that every crook can make or that he can buy in certain places that every crook knows. Now, here is a check stamped in perforated characters \$300\$. I take my little punch and fit into it a cutter that will punch holes of the same size as the holes in the perforations.

"Now I punch out of the edge of the check a few tiny disks. I moisten the tip of a needle and press them carefully into the holes that make the upper part of the figure 3. See, even in my haste and without glue, they fill the perforations completely and I can shake and pull the check without disturbing them."

It was true. The little plugs fitted perfectly, and even with the knowledge that they were there it was almost impossible to see where they had been inserted.

"Now," continued the expert, "I merely take my punch and carefully punch enough holes to the right of the upper part of the figure 3 to make it a 5. And there you are. If I wanted to pass this check through the bank I would only have to complete the job by smearing a drop of the invisible glue over the back where I have plugged the original holes. This glue is wonderfully tenacious and will actually hold the edges of paper together. It needs only the smallest surface in order to get hold. After it is on not even the microscope could detect it readily. And no amount of pulling or shaking of the check will disturb it.

"You may suppose that a check that is stamped this way, for instance—\$600\$—would be hard to change into one of four figures. But it is almost equally easy. The crook simply punches out enough disks from the edge to fill up the last dollar mark completely, and after he has plugged it and the glue is dry he punches a cipher into the place and then punches a dollar mark after it. Of course, after punching the little disks out of the edge of the check it is necessary to trim that part of the paper, but that is done readily, for checks always have ample margin.

"The check-raiser does not depend on the fact that the scrutiny of checks in a large bank is bound to be hasty, but he knows that he need not fear if his work is at all well done, for the paying teller simply cannot spend much time in examining the many checks that are passed in.

"One New York City bank sends through the clearing-house daily an average of 3,100 checks, and as there are about sixty-five such banks in the clearinghouse the total number of checks handled in the few hours of business in a day is something enormous.

"It is this haste—which, by the way, is absolutely necessary in order to keep the books posted to date—that is responsible for the passing of one of the most peculiar checks that ever came under the notice of the detectives of America. In this case the check was neither falsified nor was the signature forged, but it was bogus just the same.

"It was a check made up of the parts of two checks, and all the implements necessary for falsification

were a pair of scissors and that invisible glue. The clever swindler had got hold of two genuine checks from the same bank. One was for \$1,000 and the other for \$70. Placing these two checks together, one on top of the other, he cut them through neatly with the scissors. Then he pasted that portion bearing the word 'seventy' on the one check to that part bearing the word 'thousand' on the other. So the composite check read to pay to the holder 'seventy thousand' dollars. As the cutting was made through both checks in exactly the same place, the edges fitted perfectly. They were glued together and the check readily passed the bank cashier. The man was caught and made restitution without publicity, but the case gave bankers a shock. Other somewhat similar cases are known, but none involving such a large amount.

"A famous case was the celebrated Seaver fraud. He bought a draft for \$12 from the Bank of Woodland (Cal.), and, although it was written on chemical 'safety' paper and perforated in two places with a check punch, he raised it to \$12,000, and it was passed successfully and paid.

"But however successful they may be for a time, it is the fatal hoodoo of this 'most gentlemanly' way of making a living without earning it that a forgery is always discovered and the forger generally caught. That is because the forged check remains in existence and must be paid by some one, and sooner or later there will be an outcry. The best the raiser can hope for is to escape before the crime is discovered.

"Once the false check is passed and he has the money, his first idea is as to where he shall hide. Another fatality attaching to his peculiar business is that the same place that he thinks of flying to is the place that suggests itself to the mind of the thief-chaser. In other words, knowing their man, the man-hunters can guess well where to find him.

"If a forger wants to bury himself, he thinks of South America, because it is easy to get there, and apparently out of the world. Then, of South America, he probably only thinks of Venezuela, or closer home—of Guatemala or Panama. So the South American hunt is simplicity itself, as there are not so many large ports that strange Americans can pass through unnoticed.

"If a forger wants to continue in his crooked business he thinks of London, Paris, Berlin, and maybe Vienna. We guess at his calibre and whether he wants more money, and know where he probably will go to get it, for the professional crook has an international acquaintance, and he only goes among friends. So we follow him.

"If a forger is an adventurous spirit and committed the crime on impulse, and we could learn absolutely nothing more about him, we would look in that Mecca of adventurers, South Africa, for him. In fact, our first business is to learn what kind of a man he is, then shut our eyes and guess which one of a few places he will fly to. The guess often is so good that our men await him when the steamer lands there. If not, we don't forget the sailing vessels."

## CHAPTER X

### THUMB-PRINTS NEVER FORGED

Thumb-Print Method of Identification Absolute—Now Brought to a High State of Perfection—Will Eventually Be Used in All Banks—Certified Checks and Also Drafts with Thumb-Print Signatures—Absolute Accuracy of a Thumb-Print Identification Assured—A Thumb-Print in Wax on Sealed Packages—Its Use an Advantage on Bankable Paper of All Kinds—How Strangers Are Easily Identified—Bankers, Merchants and Business Men Protected by This System—Full Particulars as to How Thumb-Prints Are Made—Can be Printed by Anyone in a Few Minutes—How and When to Place Your Thumb-Print on Bankable Paper—Finger-Prints as Reliable as Thumb-Prints—Use to Which This System Could Be Put—Thumb and Finger Tips Do Not Change From Birth to Death—Department of Justice at Washington Has Established a Bureau of Criminal Registry Using the Thumb-Print System—Thumb-Print System Said to Be a Chinese Invention—Its Use Spreading Rapidly—How to Secure Thumb-Print Impression Without Knowledge of Party—An Interesting and Valuable Study.

How to detect the forger as one of the cleverest of operating criminals has been solved by the "thumb-print" method of identification, now spreading throughout the banks, business houses and public offices of the world.

It is quite as interesting as the suggestion that through the same thumb-print method in commercial and banking houses the forger is likely to become a creature without occupation and chirographical means of support. R.W. McClaughry, chief of the bureau of identification in the federal prison at Leavenworth, Kan., is one of the most expert in the thumb-print method of identification in this country, having been schooled at Scotland Yards in London, where the method first was brought to its present state of perfection. Mr. McClaughry sees for the system not only a great aid in preventing the forgeries of commercial brigands but the easiest of all means for a person in a strange city to identify himself as the lawful possessor of check, or note, or bank draft which he may wish to turn into cash at a banker's window.

Thumb-print signatures will eventually be used in all banks as a means of identification. It will be a sure preventative of forgery. For instance: A maker of a check desiring to take a trip around the world shall draw a check for the needed sum and, in the presence of the cashier of his bank, place one thumb-print in ink somewhere in one spot on the check—perhaps over the amount of the check as written in figures. Thereupon the cashier of the bank will accept the check as certified by his institution. With this paper in

his possession the drawer of the check may go from his home in New York to San Francisco, a stranger to every person in the city. But at the window of any bank in that city, presenting his certified check to a teller who has a reading glass at his hand, the stranger may satisfy the most careful of banks by a mere imprint of his thumb somewhere else upon the face of the check.

With the ink thumb-print of the cashier of a bank placed on a bank draft over his signature and over the written amount of the draft, chemical papers and the dangers of "raising" or counterfeiting the draft would have no further consideration. The thumb-print of the secretary of the United States treasury, reproduced on the face of greenback, silver certificate and bank note of any series would discourage counterfeiting as nothing else ever has done.

But this thumb-print possibility in commercial papers has its greatest future in the positive identification which either thumb or finger print carries with it. Criminologists all over the world have satisfied themselves of the absolute accuracy of the fingerprint identification.

At the present time traveling salesmen, who spend much money and who wish to carry as little as possible of cash with them, have an organized system by which their bankable paper may be cashed at hotels and business houses over the country. But with the thumb-print in use, as it might be, such an organization would be unnecessary.

As between bank and bank, this use of the fingerprint in bank papers of large face value is especially applicable. A draft for \$100,000 or \$1,000,000 may be worth more consideration of the banks concerned than the penmanship of signer and countersigner of the paper.

In the shipment of currency where there may be question of either honesty or correctness in the persons sealing the package, a thumb-print in wax will determine absolutely whether the wax has been unbroken in transit, as well as establishing the identity of the person putting on the first seal. As to the protective value of such a thumb-seal, a case has been cited in which train robbers, discovering a chance seal of the kind in wax of such a package, left that package untouched when the express safe had been blown open; it was too suggestive of danger to be risked.

In the ordinary usage of the thumb-print on bankable paper the city bank having its country correspondents everywhere often is called upon to cash a draft drawn by the country bank in favor of that bank's customer, who may be a stranger in the city. The city bank desires to accommodate the country correspondent as a first proposition. The unidentified bearer of the draft in the city may have no acquaintance able to identify him. If he presents the draft at the windows of the big bank, hoping to satisfy the institution, and is turned away, he feels hurt. By the thumb-print method he might have his money in a moment.

In the first place, even the signature of the cashier of the country bank will be enough to satisfy its correspondent in the city of the genuineness of the draft. Before the country purchaser of the draft has left the bank issuing the paper he will be required to make the ink thumb-print in a space for that purpose. Without this imprint the draft will have no value. If the system should be in use, the cashier signing the draft will not affix his signature to the paper until this imprint has been made in his presence.

Then, with his attested finger-print on the face of the draft, the stranger in the city may go to the city bank, appearing at the window of the newest teller, if need be. This teller will have at hand his inked pad, faced with a sheet of smooth tin. He never may have seen the customer before. He never may see him again. But under the magnifying influences of an ordinary reading glass he may know past the possibility of doubt that in the hands of the proper person named in the draft the imprint which is made before him has been made by the first purchaser of the draft.

In the more important and complicated transactions in bank paper one bank may forward from the bank itself the finger-print proofs of identity. The whole field of such necessities is open to adapted uses of the method. Notes given by one bank to another in high figures may be protected in every way by these imprints. Stock issues and institution bonds would be worthy of the thumb-print precautions, as would be every other form of paper which might tempt either the forger or the counterfeiter. In any case where the authenticity of the paper might be questioned, the finger-print would serve as absolute guarantee. In stenographic correspondence, where there might be inducements to write unauthorized letters on the part of some person with wrong intent, the imprint of finger or thumb would make the possibility of fraud too remote for fears. For, in addition to the security of signatures in real documents, the danger in attempting frauds of this kind is increased.

As to the physical necessities in registering fingerprints, they are simple and inexpensive. A block of wood faced with smooth tin or zinc the size of an octavo volume, a small ink roller, and a tube of black ink are all that are required. For removing the ink on thumb or finger a towel and alcohol cleanser are sufficient. A tip impression or a "rolled" finger signature may be used. Only a few seconds are required for the operation.

In giving big checks merchants and bankers would be protected by the thumb-print system. A merchant could place the print of his right index finger to the left of his signature on a check. The bank would have a print, together with the merchant's signature on file. Only a few seconds would be necessary to convince the paying teller as to its genuineness. The merchant, also, if necessary, could place a light print of the index finger over the amount of the check where written in figures. Any attempt to erase the figures would destroy the finger-print. If the figures were raised, the one doing so would be unable to place a finger-print in the same space that would correspond with the one at the bottom of the check beside the

signature, and the raising of the check would immediately be discovered in the bank where the check was presented.

The finger-prints could be used also in all manner of documents filed for record, such as deeds to lands, mortgages, leases, and the like. Railroads could use it to prevent men once employed and discharged for incompetency obtaining employment on another division, thus doing away with inspectors. Each new employee's finger-prints could be kept in a central office and classified. Any man attempting to obtain employment again with the same railway, who had once been discharged for cause, would immediately be detected, and a high standard of personnel thus obtained.

Congress recently passed a law whereby the Bureau of Immigration is permitted to tax each immigrant four dollars; this sum to be used in detecting foreign criminals who come to this country; also to aid in ascertaining whether foreigners who come here commit crimes and get into prisons. If such are found they are to be deported. By the finger-print system the prints of each foreigner could be taken at all ports of entry. These could be kept on file in Washington, and from time to time compared with those sent to the Bureau of Criminal Registry in the Department of Justice building. Any foreigner located in a prison could be ascertained, and upon the termination of his sentence taken to some port and placed on board ship.

It has been demonstrated by experts that the ridges of finger tips do not change from birth until death and decomposition. Scars made on the finger tips remain throughout life, and are valuable for identification purposes. Criminals try to evade identification by the system by burning the tips of their digits with acid; but these are classified under the head of disfigured fingers, and a lawbreaker cannot escape detection. Even the removal of two, three, or four fingers or an entire hand does not prevent a criminal being traced if his prints were taken before he lost the five digits. In the case of one hand being amputated, the missing fingers are classified as they appear on the other hand. If a search fails to locate the person, then the missing fingers are classified first as whorls and then as loops, search being made after each classification. In this manner the search may be a little more tedious than it would be if all the fingers were there, but in time he would be identified.

The Department of Justice thinks so well of the system that it has recently established in Washington a Bureau of Criminal Registry. There the finger-print sheets, and for the time being Bertillon cards, of all criminals who have been convicted of violating federal laws are to be kept. The prints and Bertillon measurements of new arrivals at government prisons and jails will also be sent there for classification, none of this work being done at prisons as heretofore. The men held in federal jails, charged with crimes, are also to have their finger-prints taken, and these sent to the central bureau. If the expert in charge of this bureau ascertains that a man indicted for crime has served a previous term in prison, this fact is to be communicated to the United States judge and district attorney, and if convicted the criminal is to be given the full limit of sentence.

Although the system of identification by fingerprints has been in use in Europe for a number of years, it is not a European invention. As a matter of fact, it is one of those cherished western institutions that the Chinese have calmly claimed for their own, and those who doubt this may be convinced by actual history showing it to have been employed in the police courts of British India for a generation or so back. Just who was responsible for its adoption there is not certain, but Sir John Herschel, at one time connected with the India civil service, is usually mentioned in this regard. The British police experienced a great deal of trouble in keeping track of even the most notorious native criminals and it was a great deal more difficult to arrest a first offender, for the reason that all the natives looked so much alike and were such apt liars.

Ordinary methods, even the Bertillon system, were fruitless and finally the finger-print scheme was tried. It worked like a charm. Where more arrests had been the exception, they now became the rule and the power of the law began to merit respect. In case after case the police were enabled to track the crime solely by the chance print of a man's finger or thumb on an odd piece of paper, on the dusty lintel of a doorway or a dirty window pane. Some of the stories told of their accomplishments in this line rival the most thrilling detective stories.

In one case, that of the murder of a manager of a tea garden on the Bhupal frontier, half a dozen or more persons were at first suspected, among them the real murderer, who was, however, later regarded as innocent because he was supposed to have been away from the district at the time the crime was committed. Investigations and questionings did no good, and at last the local inspector decided to take the thumb-prints of all concerned and refer them to the central office of the province. After the records had been searched a messenger came with orders to arrest the discharged servant of the manager who had been first suspected and then exonerated, for his finger-prints tallied exactly with those of a bad character just discharged from prison. He was later convicted of burglary by a court of appeal, to which the case was carried, the court refusing to condemn a man for murder on such slight basis when the actual crime had not been observed.

At the present time in India the papers taken in the civil-service examinations must be certified to by the thumb-print of the competitor and wills must likewise be sealed in the same way, and all checks and drafts must be certified by a thumb-print in addition to a signature.

In India, also deeds of transfer, and records of sale of land in connection with illiterate natives are executed by the impression of a thumb-mark instead of an "X, his mark"; and recently this very superior system of signature has been applied to all kinds of transactions with the natives, such as post-office savings banks, pension certificates, mortgages, etc.

The success the plan met with in India led to its trial and speedy adoption by the French and English police. In Paris it is used as an adjunct to the measurement system of M. Bertillon, but at Scotland Yard the Bertillon system has been entirely done away with and full reliance is had on the prints. M. Bertillon claims to have 500,000 prints in his collection, although this is said by the authorities to be an exaggeration, and Inspector McNaughton of the convict supervision office has at least 100,000 criminals' hands catalogued in his office.

Finger marks do not change in any way through life, and any injury only temporarily affects the pattern. The pattern becomes larger as the youth develops into a man, but the arrangement of the lines remains absolutely the same.

Thumb-marks may be generally classified as loops, arches and ovals, or whorls; the ovals irresistibly remind one of whirlpools as well as the volutions of shells, while the majority of loops or arches resemble in their convolutions the rapid movement of rushing water.

Thumb-print identifications have been extended to commercial uses by the postal savings bank on the Philippines at Manila. This bank has recently issued a series of stamp deposit cards, on which are spaces for stamps of different values to be affixed. When the depositor has stamps to the value of 1 peso (50 cents) on the card it is exchanged at the bank for a deposit book, showing the amount to his credit. Opposite the lines for the owner's signature and address is a square ruled off for the reception of his thumb-print, so that even if illiterate, depositors may readily be identified.

If any one wishes to get a thumb-print impression without the suspect's knowledge, simply hand him a piece of paper, asking him to identify it or examine it for one reason or another, afterwards sprinkling some special black powder over it which brings out the impressions as clear as life. Another sort of white powder is used for bringing out impressions on glassware.

Once the impression is secured, the fingers are classified according to a regular plan. The lines on them are divided into loops, whorls, arches, and composites, the latter class made up of a collection of the first three. Each pair of fingers as the index, little and ring fingers has a special valuation which is used to identify them and facilitate classification. One pair will be classified according to the number of little ridges between the delta, or point where all bifurcate, and the outer ring. If there are more than nine on one finger, it is classed as an over-nine.

It is seldom that two similar fingers are alike and the other finger usually would be an under-nine finger, say six. So there is the first pair classified thus, 9-6. The next two fingers may have rotary lines and are merely classified as R, the next two may not have many lines at all that will count, so are marked 0, while perhaps the last pair is unmatched, a point being allowed to one and nothing to the other.

Thumb or finger-prints are absolutely serviceable and certain in the detection of crime or in establishing a person's identity.

That this system may be most effectively employed as an adjunct to the rogue's gallery for fixing the identity of criminals there can be no doubt, since, from various experiments made it has been demonstrated that impressions made from the dermal furrows of the thumb or finger of no two persons can be sufficiently identical, when inspected under a microscope, to be mistaken one for the other; and that it is a powerful agency for the detection of criminals.

Very often, on the scene of a crime, finger marks are found on glossy surfaces (bottles, glasses, window panes, door plates, painted and varnished walls, etc.). By a comparison of such impressions, photographed by a special process, it is easy either to discover the maker of the finger marks observed at the scene of the crime, or to establish the innocence of a suspected person whose digital impressions have nothing in common with those marks.

Note and study fac-simile impressions of thumb-prints and finger-prints in Appendix at end of this book.

## **CHAPTER XI**

### **DETECTING FORGERY WITH THE MICROSCOPE**

Determining Questionable Signatures By the Aid of a Microscope—A Magnifying Glass Not Powerful Enough—Character of Ink Easily Told—The Microscope and a Knowledge of Its Use—Experience and Education of an Examiner of Great Assistance—An Expert's Opinion—The Use of the Microscope Recommended—Illustrating a Method of Forgery—What a Microscopic Examination Reveals—How to Examine Forged Handwriting with a Microscope—Experts and a Jury—What the Best Authorities Recommend.

In all examinations of questioned signatures to determine the individual habit of the writer the use of the compound microscope is a necessity to obtain the best field for study and analysis for the reason that the most important details are often so minute that they cannot be seen with the naked eye in sufficient size to determine their individual character and accuracy. A magnifying glass has but a limited field in this class of work, for it is not easily held in position steadily for continued observation and study, besides it has not the requisite power for the work. The lower powers of the compound microscope are but available for the examination of signatures for the reason that when the higher powers are used but little of the

signature is in the field of vision, although the power of the lens may be increased when some particular point or feature in the writing requires greater enlargement for more perfect definition. The higher powers of the microscope are sometimes used to ascertain the character of inks with which the writing is done, and also to determine the character of the paper on which a signature is written, which at times becomes important. For all practical uses of the microscope in the examination of signatures the range of object enlargement occurring between a three-inch and an inch objective will be found to answer the purpose, as the various powers of the lenses become important in making the analysis.

While it is a fact that the microscope and a knowledge of its uses is of the greatest importance in ascertaining the character of the signatures, when the question of their being forged or genuine is the object of the examination, it does not follow that because a person is learned in the use of the microscope in other fields of research that he is therefore qualified to become an expert in handwriting. A peculiar education made practically applicable by experience in this latter field of study is absolutely necessary to determine with accuracy what the microscope reveals, and its importance to give value to any conclusions reached by its use. The connection of effect with cause, and the determination of the latter as a matter of individualism cannot be accomplished merely from what is seen under the microscope. The examiner must by experience and education be fitted to ascertain from personal characteristics manifested in the writing of a signature necessitated their appearance as a matter of individuality.

From one of the best-known European experts on handwriting and who has figured conspicuously in important cases some interesting facts relative to this subject recently were learned. To the question, "What is the primary requisite for a conscientious opinion on the genuineness of any submitted handwriting?" this expert unhesitatingly replied, "An utter and entire absence of either feeling or prejudice. In other words, one should be perfectly dispassionate when engaged in such a work and use a first-class compound microscope."

To make his analysis the expert uses a microscope of great power, and by a strict and close attention to the subject-matter he can determine the exact means or methods employed in making the individual letters and the formation of the words and also the several inks that were used. Handwriting as defined by this expert is a mechanical operation pure and simple. Its general excellence or the reverse is largely dependent on the education which the hand has received. When a man sits down to write he mechanically reproduces on paper what is in his mind, and this may be said to be his natural handwriting. Should he stop to think even for a moment, not of what he is transferring to the paper but of the writing itself, he instantly ceases to write his natural hand, the transcription becoming only a copy or drawing from memory.

In the opinion of the expert, emphatically expressed, a person never writes twice exactly alike. This is stated to be the point around which all his subsequent developments revolve when examining a manuscript. Let several examples of the natural handwriting of an individual be compared. It is true that there will be a general similarity, but, as has been asserted, when placed in juxtaposition or subjected to a careful comparison under a microscope no two words or letters will be found to be alike. Thus it is not the similarity between two pieces of writing that would arouse suspicion with some experts, but rather the natural dissimilarity. Based on this point such experts occupy a distinct position by themselves, since other experts take what is called the positive side. With the first-named class, however, handwriting is a science of negatives. A good microscope will always be found a good detective in determining the genuineness of handwriting.

By way of illustrating one method of forgery interesting material which had played an important part in a court case was carefully examined. It consisted of five or six graded photographic enlargements of the duplicate signature which were carefully examined with the aid of a microscope. The original had been made by an elderly person and the forger had used the tracing process. To the naked eye it appeared to be a capital copy; in fact, it seemed to bear every semblance of being genuine. In the first enlargement of several diameters certain inaccuracies of tracing could be discerned, only, however, after attention had been called to them by an expert. In the next enlargement these same errors were more apparent, and so on through the series. The largest photograph was magnified several hundred diameters greater than the original and stretched across quite an area of paper. From an examination of this largest one with a microscope it was evident that the forger first had traced his copy with pencil, afterward going over it with ink, but so irregularly had his pen followed the pencil lines that in certain portions of this enlargement there was room for a man's fist between the first tracing and its inky covering.

In trying to detect forged handwriting every letter of the alphabet, wherever written, may be examined with a microscope for the following characteristics: Size, shading, position relative to the horizontal line, inclination relative to the vertical line, sharpness of the curves and angles, proportion and relative position of the different parts, and elaboration or extension of the extremities. In scarcely one of these particulars can a man make two letters so much alike that they cannot be distinguished by microscopical examination.

Although a great deal can be determined in a general way by close observation with the naked eye, it is always best to employ some magnifying power—usually an ordinary hand lens or pocket magnifier will suffice—but the writer has found it better to use a microscope objective of low power (four or five diameters), which is provided with an easily slipping sleeve, terminating in a diaphragm which cuts out the light entering the outside rim of the lens. This sleeve may be pushed out for one or two centimeters, and the particular spot under examination isolated from the adjacent parts without undue magnification. It is one of the popular fallacies that a high magnifying power is desirable in all cases of difficulty, but usually the reverse is the case in questions of handwriting.

Experts have sometimes impressed the jury with the fact that they had employed on some thick and opaque document, powers of several hundred diameters without the lately applied illumination from the side, reflected by a glass plate, introduced obliquely into the tube of the microscope. Without such aid no microscopist need be told that the light would be wanting to illuminate the field under these circumstances. The best authorities prescribe a magnifying power of not more than ten diameters for ordinary observation. For special purposes higher powers are sometimes useful. An ocular examination of the ink in the various parts of a written paper, document or instrument of any kind will generally decide whether it is the same.

## CHAPTER XII

### SIGNATURE EXPERTS THE SAFETY OF THE MODERN BANK

A New Departure in Banks—Examining All Signatures a Sure Preventive Against Forgery—The "Filling-in" Process—How One Forger Operated—Marvelous Accuracy of a Paying Teller—How He Attained Perfection—How Signature Clerks Work—A Common Dodge of Forgers—Post Dated Checks—A System That Prevents Forged and Raised Checks—Not a Forged or Raised Check Paid in Years.

[The following article has been kindly contributed by the manager of one of the largest English banks, located in London.]

One of the most trying positions in our business, is that of signature expert—the man who has to examine daily every draft that comes in through the clearing house and vouch for its genuineness. Our bank, one of the largest in London, employs six clerks who do nothing all day long but examine checks, and when I tell you that it is no uncommon thing for 10,000 drafts to come in during a single day you will understand that the job is not altogether the sinecure it is popularly supposed to be.

These clerks have not only to scrutinize the signatures both of drawer and drawee, but also examine the "filling-in," the latter being just as important, perhaps more so from a monetary point of view, as the signatures. As a matter of fact, the commonest forgery with which we have to deal is the "raising" of checks, and a forger of this nature generally chooses a check bearing a genuine signature but having very little "filling-in."

For instance, he knows that it would not be difficult to raise a check from £3 to £3000, for all he has to do is to erase the word "pounds," insert the word "thousand," and then add the erased word again. I have seen plenty of this kind of work during the time I have been examining checks.

One of the most impudent pieces of forgery, however, that I ever came across was a check raised from £5 to £500. The forger had evidently relied on colossal impudence carrying him through, for he had simply added a couple of ciphers and then between the words "five" and "pounds" had placed an omission mark and written the word "hundred" above, adding the initials of the drawer of the check just to give the thing a look of careless genuineness.

It was so astounding a piece of cool audacity that we had bets on the check, two of my assistants declaring it to be O.K., while the other three and myself declared it to be a forgery. Further inquiries, of course, proved that the opinion of the majority was the correct one.

It is marvelous what a vast number of signatures some paying tellers will carry in their mind's eye, as it were, and thus be able to pass checks by the thousand without once having to refer to the signature books. We had a paying teller here a few years ago who was little less than a wonder. He knew perfectly the signatures of at least 5000 customers, and could detect the alteration of a stroke in any one of them in an instant.

More remarkable still was the fact that he recognized with equal facility the signatures of those customers whose checks only came in once or twice a year. But he made an art of his work, and I afterward discovered that most of his evenings were spent in studying and learning the signatures of the customers, for he was a wonderful hand at copying writing, and whenever a new signature would come in, one with which he was not acquainted, he would at once facsimile it in his pocket-book, and by the next morning would be able to recognize it among 10,000.

Signature clerks are not, as a rule, supposed to make copies of customers' autographs, but many of them do, and some men are clever enough at the work to even deceive themselves.

Of course, it is understood that when the signature clerks are not examining checks they are studying the autograph books in order to familiarize themselves with the calligraphy of every customer. Each check, you must understand, passes through the hands of each clerk in turn, so that if one should pass a forgery or a "raised" draft it is very unlikely that the entire staff would do so. All these checks, of course, come through the clearing house, and if we should pass a forged draft and not find out our mistake before three o'clock in the afternoon our bank would be held responsible. One of the commonest dodges adopted by the modern check-forger is to get a customer of some small country bank to introduce him to that institution as a likely depositor. On the recommendation of the friend (who is probably quite unaware that the acquaintance he made some few months ago is a "wrong'un") there is no difficulty in accepting their new client's check for £2000, and the following day, when the same customer calls and withdraws £100 to

£500, as the case may be, he is politely handed the cash, and then, of course, loses no time in skipping the town. After the bogus customer's check has passed through the clearing house it is returned to the bank on which it has been drawn and the fraud is at once discovered.

Another part of a signature clerk's duties is to see that no checks are post-dated, as of course no drafts must be paid until they fall due. On occasions a careless man will post-date a check, but as a rule the mistake is purposely made. This spotting of post-dated checks, however, is the easiest part of a signature clerk's work, and it is very seldom that a check so dated escapes him. Then, again, we are often notified that payment on certain checks has been stopped, and the clerks have to be on the lookout for these, and it must be a very careless staff indeed that lets them slip by. We are held responsible for all checks passed after we have received notice to stop payment.

But it is very seldom now, owing to the cleverness of the experts, that any forged checks, "raised" checks, post-dated checks, or stopped checks pass the vigilant eyes of our staff without being detected, but when one does—well, although the signature clerks are not held monetarily responsible for the loss, it means a bad mark against them in the future, and they feel its effects next time promotions or "rises" are being handed out.

Altogether, though the work is interesting, and even fascinating in a way, the responsibilities are so great that the effect on the nerves is often very trying at times. One thing we are particular about, and that is to take no chances. If we have the slightest doubt about the genuineness of a check we at once communicate, either by telegraph, special messenger, or telephone, with the supposed drawer of the check, and in this way turn doubt into certainty. During the last three years not a single wrong check has passed our vigilant optics, and, though I say it who should not, I do not believe there is a cleverer set of experts any where than those who compose my staff.

## CHAPTER XIII

### HOW TO DETERMINE AGE OF ANY WRITING

The Different Kinds of Ink Met With—Inks That Darken by Exposure to Sunlight and Air—Introduction of Aniline Colors to Determine the Age of Writings—An Almost Infallible Rule to Follow—To Determine Approximate Age of Ink Possible—The Ammonia System a Sure One—A Question of Great Interest to Bankers and Bank Employes—Thick Inks and Thin Inks—So-called Safety Inks That Are Not Safe—How to Restore Faded Inks—An Infallible Rule—Restoring Faded Writing—Restored by the Silk and Cotton System That Anyone Can Arrange—Danger of Exposing Restored Writing to the Sun.

The inks in common use over the United States at the present time, and for some years past, are not as numerous as one might be led to conclude. They are probably fifteen or at most twenty in all, including the most popular blue, red, magenta, and green inks. But among these there is a notable difference in character. Some are thick, heavy, and glossy, in character, and flow sluggishly from the pen. Few of these become much darker by standing. In this class will be found the copying inks and those in which a large quantity of gums or similar thickening agents are used.

Other inks are pale, limpid, and flow easily from the pen, and this class usually shows a notable darkening by exposure to sunlight and air. It will be unnecessary here to refer more particularly to the intermediate varieties or to discuss their various composition.

It should be, remembered here that in the last twenty years, or since the introduction into general commerce of aniline colors, which Hofmann discovered in 1856, these latter have been employed more and more in writing fluids; not only in mixtures of which they are the principal ingredients, but to a greater or less degree in all inks. Their presence, even in small quantity, in the gallo-tannate of iron and logwood inks can be generally detected by an iridescent and semi-metallic luster.

To assist in determining the ages of writings by one and the same ink, it is to be observed that the older the writing the less soluble it is in dilute ammonia. If the writing be lightly touched with a brush dipped in ten-per-cent ammonia, the later writing will always give up more or less soluble matter to the ammonia before the earlier. In case of inks of different kinds this test is not serviceable, for characters written in logwood ink, for instance, will always give up their soluble material sooner than nutgall inks, even if the last named be later applied. To estimate the age of writing from the amount of bleaching in a given time by hydrochloric or oxalic acid is very precarious, because the thickness of the ink film in a written character is not always the same, and the acid bleaches the thinner layer sooner than the thicker.

The determination of the age of a written paper is a problem difficult of solution. According to F. Carré the age can be approximately determined if the characters written in iron ink are pressed in a copying press and a commercial hydrochloric acid diluted with eleven parts of water is substituted for water; or, if the written characters are treated for some time with this diluted acid.

The explanation is that the ink changes in time, its organic substance disappears little by little, and leaves behind an iron compound, which in part is not attacked even by acids.

An unsized paper is impregnated with the described diluted acid, copied with the press, and a copy from writing eight or ten years old can be obtained as easily as one by means of water from a writing one day

old.

A writing thirty years old gives, by this method, a copy hardly legible, and one over sixty years old, a copy hardly visible. In order to protect the paper against the action of the acid, it should be drawn through ammoniacal water.

To determine the exact age of writings by the ink is not easy. The approximate age may be determined with some degree of certainty. If ink-writings are but a few days old, it is easy to distinguish them from other writing years old. But to tell by the ink which of two writings is the older, when one is but two months and the other two years, is, as a rule, impossible.

Where during the progress of a trial a document purporting to be years old is introduced in evidence, and it can be shown that it is but a few days old, having been prepared for the occasion, ordinarily the age of the writing will be comparatively easy of demonstration by the expert. Oxidization will not have set in to any extent, if the ink is very fresh, and this, with a careful watching of the color for any darkening, will determine whether or not the ink is fresh. This ink study should be a question of the utmost interest to bankers and bank employes.

A ten-per-cent solution of ammonia applied to two inks in question will show which is the fresher. The older ink will resist the action of the ammonia longer and give up less soluble matter than the newer writing. Nutgall, and logwood inks, of course, should not be tested comparatively by this method, as the logwood ink will respond to the ammonia sooner than the nutgall ink.

F. Carré also gives another method for determining, approximately, the age of ink-writings. If the writing is in iron ink, and is moistened with a solution of one part of hydrochloric acid to eleven parts of water and put in letter-copying press and copy transferred to copy paper it should give a strong copy, if but ten years old; a hardly legible copy, if thirty years old; and if sixty years old, a few marks will be copied, but they will not be legible.

If the same solution be used in place of water, as in the ordinary letter-copying process and the copying paper be saturated with it, the result will be the same.

To determine the age of writing by applying bleaching acids and watching results and counting the seconds is a dangerous method. Thick inks will respond to the acids slower than thin, and the time comparisons are misleading.

Safety inks, so-called, designed to resist the action of acids and alkalies have been repeatedly put upon the market, but no such ink has ever successfully challenged the world and proved its title of safety.

Many chemicals are recommended as restorations for faded writing, but these should be avoided as far as possible, as they are liable to stain, disfigure the paper, and in the end make matters materially worse. Familiarity with particular handwritings after some practice will enable the reader to make out otherwise unintelligible words without any other assistant than a powerful magnifying glass.

If the ink is very faint, the simplest and most harmless restorative is sulphate of ammonia, but its loathsome smell once encountered is not easily forgotten. The experiment in consequence is very seldom repeated for the result is scarcely good enough to risk a repetition of so horrible a smell.

The writing on old and faded documents may be restored, by chemical treatment, turning the iron salt still remaining into ferrous sulphate. A process which will restore the writing temporarily is as follows: A box four or five inches deep and long and broad enough to hold the document, with a glass, is needed. A net of fine white silk or cotton threads is stretched across the box at about one half the depth. Two saucers containing yellow ammonium hydrosulphide are placed in the bottom of the box. By means of a clean sponge or brush, moisten the paper with distilled water; then place it on the net with the writing side down. The action of the vapor of the ammonium hydrosulphide will cause the obliterated writing to slowly turn brown, then black. But within a short time after removal from the box the writing will again disappear.

Another method is to wash the document carefully in a solution of hydrochloric acid, one part, and distilled water, one hundred parts. Dry the moistened paper somewhat, leaving it just moist enough to hold a uniform layer of fine yellow prussiate of potash. A plate of glass with a light pressure should be placed on this. In a few hours dry the paper thoroughly, and carefully brush off the yellow prussiate of potash. The writing should come out a Prussian blue. This restored writing will be permanent unless exposed too much to the light.

The hydrochloric acid must be thoroughly removed; otherwise, it will destroy the paper. Crystallized soda, two parts, and distilled water, one hundred parts, in solution, will counteract the hydrochloric acid, if the document is allowed to float on it for twenty-four hours.

## CHAPTER XIV

### DETECTING FRAUD AND FORGERY IN PAPERS AND DOCUMENTS

Infallible Rules for the Detection of Same—New Methods of Research—Changing Wills and Books of Accounts—Judgment of the Naked Eye—Using a Microscope or Magnifying Glass—Changeable

Effects of Ink—How to Detect the Use of Different Inks—Sized Papers Not Easily Altered—Inks That Produce Chemical Effects—Inks That Destroy Fiber of Paper—How to Test Tampered or Altered Documents—Treating Papers Suspected of Forgery—Using Water to Detect Fraud—Discovering Scratched Paper—Means Forgers Use to Mask Fraudulent Operations—How to Prepare and Handle Test Papers—Detecting Paper That Has Been Washed—Various Other Valuable Tests to Determine Forgery—A Simple Operation That Anyone Can Apply—Iodine Used On Papers and Documents—An Alcohol Test That is Certain—Bringing Out Telltale Spots—Double Advantage of Certain Tests—Reappearance of Former Letters or Figures—What Genuine Writing Reveals—When an Entire Paper or Document is Forged.

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-transparency 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° to 16° 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.

See illustrations of various kinds of handwriting at end of this book.

## CHAPTER XV

### GUIDED HANDWRITING AND METHOD USED

Most Frequent and Dangerous Method of Forgery—How to Detect a Guided Signature—What Guided Handwriting Is and How It Is Done—Character of Such Writing—Writing by a Guided Hand—Difficulty in Writing—Force Exercised by Joint Hands—A Hand More or Less Passive—Work of the Controlling Hand—How Guided Writing Appears—Two Writers Acting in Opposition—Distorted Writing—How a Legitimate Guided Hand is Directed and Supported—Pen Motion Necessary to Produce Same—Influence in Guiding a Stronger Hand—Avoiding an Unnatural and Cramped Position—Effect of the Brain on Guided Hand—Separating Characteristics From Guided Joint Signature—Detecting Writing by a System of Measurement.

Guided handwriting is one of the most frequent means of forgery and oftentimes the most difficult to detect. It has been established that with care the elements of each handwriting can be detected and proven in a guided signature. The leading handwriting experts of the world are unanimous in declaring that it is possible for holding another's hand in making a guided signature to infuse the character of the guider's hand into the writing.

Guided handwriting is the writing produced by two hands conjointly and is usually erratic, and at first sight, hard to connect with the handwriting of any one person.

The character and quality of writing in case of a controlled or assisted hand must depend largely upon the relative force, exercised by the joint hands. The difficulty in writing arises from the antagonizing motion of one hand upon the other, which is likely to produce an unintelligible scrawl, having little or none of the habitual characteristics of either hand.

Where one hand is more or less passive, the controlling hand doing the writing, its characteristics may be more or less manifest in the writing. But obviously the controlling hand must be seriously obstructed in its motions by even a passive hand; and since the controlling hand can have no proper or customary rest, the motion must be from the shoulder and with the whole arm. The writing will therefore be upon an enlarged scale, loose, sprawling, and can have little, if any, characteristic resemblance to the natural and habitual style of the controlling writer, and of course none of the person's whose hand is passive.

In appearance it changes abruptly from very high or very wide to very low or narrow letters. This is to be explained by the non-agreement in phase of the impulses due to each of the two writers. If both are endeavoring at the same moment to write a given stroke the length of that stroke will be measured by the sum of the impulses given by the two writers. If they act in opposition to one another, one seeking to make a down stroke while the other is trying to make an up stroke, the result will be a line equal to the difference between the stronger and the weaker force.

As these coincidences and oppositions occur at irregular but not infrequent intervals, like the interference and amplification phases of light and sound waves, the result traced on the paper might be expected in advance to be—and in fact is—a distorted writing where maxima and minima of effect are connected together by longer or shorter lines of ordinary writing.

The only state of things which can justify the guiding of a hand executing a legal instrument is the feebleness or illness of its owner.

When such assistance is required it is usually given by passing the arm around the body of the invalid and supporting the writing hand while the necessary characters are being made.

Both participants in this action are looking at the writing, and both are thinking of the next letter which must be written, and of the motion of the pen necessary to produce it. Unless the executing hand were absolutely lifeless or entirely devoid of power, it would be impossible for it not to influence the guiding and presumably stronger hand; for the least force exerted cannot fail to deflect a hand, however strong, in

an unnatural and cramped position. Nor can the hand of the guider fail to add its contribution to the joint effort, however much the brain which controls it may strive to render the hand entirely passive. Both minds are busy with the same act, and insensibly both hands will write the same letter with the results just described.

Can the characteristics of each hand be separated from those of the other and the relative amount of the two contributions to the joint signature be stated?

This is a question which is naturally asked during the trial of a case involving the consideration of a guided hand. From the comparatively small number of experiments made in this direction it would be too hazardous to answer it in the affirmative, but it may be said that some of the characteristics of each hand can usually be made apparent by the system of measurement, and the indications seem to point to the probability of being able to increase the number of characteristics elicited in proportion to the number of observations made. If the significance of every part of every stroke could be properly interpreted, it follows that a complete separation of characteristics would be effected, but this would require an indefinitely large number of observations to be made and a quite unattainable skill in explaining them.

See specimens of guided signatures in Appendix.

## CHAPTER XVI

### TALES TOLD BY HANDWRITING

Telling the Nationality, Sex and Age of Anyone Who Executes Handwriting—Americans and Their Style of Writing—How English, German, and French Write—Gobert the French Expert and How He Saved Dreyfus—Miser Paine and His Millions Saved by an Expert—Writing with Invisible Ink—Professor Braylant's Secret Writing Without Ink—Professor Gross Discovers a Simple Secret Writing Method With a Piece of Pointed Hardwood—A System Extensively Used—Studying the Handwriting of Authors—How to Determine a Person's Character and Disposition by Handwriting.

It is possible for a trained expert in handwriting to tell with a fair degree of accuracy the nationality, sex, and age of any one who executes writing of any kind. A study of the handwriting of the different nations makes it comparatively easy to recognize in any questioned specimen the nationality of the writer. The aggregate characteristics of a nation are reflected in the style of handwriting adopted as a national standard. The style most in use in the United States is the semi-angular, forward-slant hand, although the vertical round-hand is now being largely taught in the public schools and will affect the appearance of the writing of the next generation quite appreciably.

Frequently educational and newspaper critics compare unfavorably American writing with that of other nations. The writer has investigated the subject by collecting from many countries copy-books and specimens of writing from leading teachers of writing, students in various grades of schools, clerks and business men.

America is so far in advance of any other country in artistic and business penmanship that there is really no second. Americans as a whole write at a much higher rate of speed and with a freer movement than any other nations, and, consequently, many critics stop when they have criticized form alone, not making allowance for quantity. Nervous, rapid writers (and such the Americans are) produce writing more or less illegible, but it is not the fault of the standard so much as the speed with which the writing is done.

The writing of England is either angular (for rapid business style), or the civil-service round-hand—too slow for the every-day rush of business. England's colonies, influenced by her copy-books and teachers, write about as England does. Canada is an exception, as her proximity to the United States causes her to mix the English and American styles, with the American gaining ground.

The German and French write two radically different styles. Hence the identity of the nation producing the writer as well as the identity of the writer himself usually can be established. Before the writer is known this frequently is of great benefit to the cause of justice as it narrows down the search.

A case such as the Dreyfus affair has a tendency to confuse the public mind and leads to wrong conclusions. In initiating the prosecution of Dreyfus the French government submitted the documents to expert Gobert, of the Bank of France, who is considered the leader in this line in France. Gobert reported that Dreyfus did not write the incriminating documents. The prosecutors then placed the papers in the hands of Bertillon, the inventor of the anthropometric system of measurements (used principally on criminals) which bears his name. It mattered not that Bertillon had never appeared in a handwriting case before, or that his skill in this line was unknown. He was a man of science, of great renown in other lines, and the government relied on these facts to bolster up its claim that Dreyfus wrote the incriminating papers Bertillon reported in favor of the government's contention, and it was an easy matter to get some alleged experts—weak as to will and ability—and one or two honest but misguided men to agree with him. Some of these afterward changed their opinions when better standards of writing were given to them.

Dreyfus' friends sent engraved reproductions of standards and disputed documents to the best-known experts all over the world, and without exception these reported that Dreyfus was not the writer of the disputed papers. On the side of the French government were a few so-called "experts," headed and dominated by a man with no experience whatever. The experts of skill and experience in France and the

world over were practically unanimous in favor of Dreyfus. A critical examination of the documents in question produced an absolute conviction that they could not possibly have been written by Dreyfus.

Unless the individual is fitted by nature and inborn liking for investigations of this character, no amount of education and experience will fit him. But, given natural equipment and inclination, it is necessary first of all that the expert have a good general education. He should have a sufficient command of language to make others see what he sees. He should have a good eye for form and color, and a well-trained hand to enable him to describe graphically as well as orally what his trained eye has detected. A few strokes on a blackboard or large sheet of paper will often make a clouded point appear much plainer to court, jury and lawyers than hours of oral description. The ability to handle the crayon and to simulate well the writings under discussion is a great aid.

A very interesting case was involved in the will of Miser Paine in New York in 1889. Here a deliberate attempt to get away with something like \$1,500,000 was made, which was frustrated by a handwriting expert. When quite a young man, James H. Paine was a clerk in a Boston business house. He absconded with a lot of money and went to New York, where all trace of him was lost. He speculated with the stolen money, and everything he touched turned to gold. He soon became a millionaire. Then he became a miser. He went around the streets in rags, lodged in a garret with a French family on the West Side, who took him out of pure charity, and lived on the leavings which restaurant-keepers gave him. There was only one thing that he would spend money on; that was music. He was passionately fond of music, and for years was a familiar figure in the lobby of the Academy of Music during the opera season. He would go there early in the evening, and beg people to pay his way in. If he didn't find a philanthropist he would buy a ticket himself, but he never gave up hope until he knew that the curtain had risen.

Finally Paine was run over by a cab in New York. He was taken to a hospital, but made such a fuss about staying there that he was finally removed to his garret home. He died there in a few days. Then a man came forward with a power of attorney which he said Paine gave him in 1885 and which authorized him to take charge of Paine's interest in the estate of his brother, Robert Treat Paine. The closing paragraph empowered him to attend to all of Paine's business and to dispose of his property without consulting anybody, in the event of anything happening to him. Nothing was known then of Paine's possessions. Later the French family with whom Paine lived opened an old hair trunk they found in the garret. In this trunk they found nearly half a million dollars in gold, bank notes, and securities. Chickering, the piano man, came forward then and said that some years before Paine gave him a package wrapped up in an old bandana handkerchief for safe keeping. He had opened this package and found that it contained \$300,000 in bank notes. Other possessions of Paine's were found. Relatives came forward and employing handwriting experts proved that the power of attorney presented was a forgery and the estate went to the relations of Paine. This was a celebrated case in its day and called attention to the value of experts in this line.

Ovid, in his "Art of Love," teaches young women to deceive their guardians by writing their love letters with new milk, and to make the writing appear by rubbing coal dust over the paper. Any thick and viscous fluid, such as the glutinous and colorless juices of plants, aided by any colored powder, will answer the purpose equally well. A quill pen should be used.

The most common method is to pen an epistle in ordinary ink, interlined with the invisible words, which doubtless has given rise to the expression, "reading between the lines," in order to discover the true meaning of a communication. Letters written with a solution of gold, silver, copper, tin, or mercury dissolved in aqua fortis, or simpler still of iron or lead in vinegar, with water added until the liquor does not stain white paper, will remain invisible for two or three months if kept in the dark; but on exposure for some hours to the open air will gradually acquire color, or will do so instantly on being held before the fire. Each of these solutions gives its own peculiar color to the writing—gold, a deep violet; silver, slate; and lead and copper, brown.

There is a vast number of other solutions that become visible on exposure to heat, or when having a heated iron passed over them; the explanation is that the matter is readily burned to a sort of charcoal. Simplest among these are lemon juice or milk; but the one that produces the best result is made by dissolving a scruple of salammoniac in two ounces of water.

Several years ago Professor Braylant of the University of Louvain discovered a method in which no ink at all was required to convey a secret message. He laid several sheets of note paper on each other and wrote on the uppermost with a pencil; then selected one of the under sheets, on which no marks of the writing were visible. On exposing this sheet to the vapor of iodine for a few minutes it turned yellowish and the writing appeared of a violet brown color. On further moistening the paper it turned blue, and the letters showed in violet lines. The explanation is that note paper contains starch, which under pressure becomes "hydramide," and turns blue in the iodine fumes. It is best to write on a hard surface, say a pane of glass. Sulphuric acid gas will make the writing disappear again, and it can be revived a second time.

One of the simplest secret writings, however, to which Professor Gross of Germany calls attention is the following:

Take a sheet of common writing paper, moisten it well with clear water, and lay it on a hard, smooth surface, such as glass, tin, stone, etc. After removing carefully all air bubbles from the sheet, place upon it another dry sheet of equal size and write upon it your communication with a sharp-pointed pencil or a simple piece of pointed hardwood. Then destroy the dry paper upon which the writing has been done, and allow the wet paper to dry by exposing it to the air (but not to the heat of fire or the flame of a lamp). When dry, not a trace of the writing will be visible. But on moistening the sheet again with clear water

and holding it against the light, the writing can be read in a clear transparency. It disappears again after drying in the air, and may be reproduced by moistening a great number of times. Should the sheets be too much heated, however, the writing will disappear, never to reappear again. This system is used extensively in Germany.

An interesting study is the handwriting of authors, as it indicates to a greater or less degree their personal temperaments.

Longfellow wrote a bold, open back-hand, which was the delight of printers, says the Scientific American. Joaquin Miller wrote such a bad hand that he often becomes puzzled over his own work, and the printer sings the praises of the inventor of the typewriter.

Charlotte Bronte's writing seemed to have been traced with a cambric needle, and Thackeray's writing, while marvelously neat and precise, was so small that the best of eyes were needed to read it. Likewise the writing of Captain Marryatt was so microscopic that when he was interrupted in his labors he was obliged to mark the place where he left off by sticking a pin in the paper.

Napoleon's was worse than illegible, and it is said that his letters from Germany to the Empress Josephine were at first thought to be rough maps of the seat of war.

Carlyle wrote a patient, crabbed and oddly emphasized hand. The penmanship of Bryant was aggressive, well formed and decidedly pleasing to the eye; while the chirography of Scott, Hunt, Moore, and Gray was smooth and easy to read but did not express distinct individuality.

Byron's handwriting was nothing more than a scrawl. His additions to proofs frequently exceeded in volume the original copy, and in one of his poems, which contained in the original only four hundred lines, one thousand were added in the proofs.

The writing of Dickens was minute, and he had a habit of writing with blue ink on blue paper. Frequent erasures and interlineations made his copy a burden to his publishers.

Horace Greeley could not decipher his own writing after it got cold.

Mark Twain writes a cramped, plain hand, and writes with haste.

For an evening entertainment when a few friends happen to drop in ask each one to write any quotation that pops into his head and carefully sign his name in full. Pen and ink are better than pencil, but the latter will answer in a pinch. If the writing is dark this shows a leaning toward athletics and a love for outdoor life and sports. If the letters are slender and faint the writer is reserved and rarely shows emotion or becomes confidential. Sloping letters indicate a very sensitive disposition, whereas those that are straight up and down evince ability to face the world and throw off the "slings and arrows of outrageous fortune."

Curls and loops are out of fashion nowadays, but any inclination to ornate penmanship is a sure indication of a leaning toward the romantic and sentimental, while the least desire to shade a letter shows imagination and a tendency to idealize common things. If the same letter is formed differently by the same person this shows love of change. Long loops or endings to the letters indicate that the writer "wears his heart upon his sleeve," or in other words, is trusting, non-secretive, and very fond of company. If the "y" has a specially long finish, this shows affectation, but if the same person is also careless about crossing the "t's," the combination is an unhappy one, as it points to fickleness in work and to affectation. A curved cross to the "t," or the incurving of the first letters of a word shows an affectionate and good-natured disposition if taken separately; but if the two are indulged in by the same writer it is a sign of jealousy.

Writing that is rather small points to cleverness, quick intuitions, a liking for one's own way, brilliant intellect, and fine powers of penetration. Round, jolly, comfortable-looking letters betoken a disposition to correspond.

With these hints in mind it will be surprising to find how many caps may be found to fit ourselves and our friends.

## CHAPTER XVII

### WORKINGS OF THE GOVERNMENT SECRET SERVICE

Officials of This Department Talk About Their Work—How Criminals Are Traced, Caught and Punished—Its Work Extending to All Departments—Secret Service Districts—Reports Made to the Treasury Department—Good Money and Bad—How to Detect the False—System of Numbering United States Notes Explained—Counterfeiting on the Decrease—Counterfeiting Gold Certificates—Bank Tellers and Counterfeits—The Best Secret Service in the World.

The secret service bureau of the Treasury Department is not an old concern. It has not been in operation many years, compared to the existence of other bureaus, but it grows in importance each year. There are now a large number of investigators, by some called detectives, in the field, but the exact number is not known and will not be made public.

Counterfeiting money is an old offense. It was done before the United States became a government, but does not seem to have become so widespread until the United States began making its own paper money during the Civil War. Prior to that time the offenses had been dealt with by states and municipalities, with such help as the general government cared to give. The increase in the crime, however, caused recognition by Congress in 1860, when \$10,000 was appropriated for its suppression to be expended under the direction of the Secretary of the Treasury. This sum was paid out in rewards to private detectives, municipal officers and others instrumental in bringing to trial and punishment those engaged in making bogus money.

With the turning out of greenbacks by the government an increase in the appropriation and a more organized fight against counterfeiting were necessary. In 1864 Congress appropriated \$100,000 and placed upon the solicitor of the treasury the responsibility and supervision of keeping down counterfeiting. This really inaugurated a methodical system of hunting and punishing counterfeiters. The solicitor of the treasury gathered about him a corps of men experienced in criminal investigations and set them to work. The plan worked so well that when John Sherman was secretary of the treasury he gave his approval to the organization of a separate bureau for suppressing the output of spurious currency. Under foreign governments the handling of counterfeiters is in control of a centralized police organization, which looks after all kinds of criminal offenses against the general governments. The one bureau has surveillance over criminals of every class. The tendency is in that direction in this government. The secret service bureau is now being used by a number of departments of the government.

The operations of the secret service are confined by law to the suppression of counterfeiting and the investigation of back pay and bounty cases. This is all the law permits the officials of the service to work on, but every day they are at work on other matters. That the law may not be openly violated the secret service operators assigned to do other work are practically taken off the secret service rolls and the department employing them is required to pay their salaries and expenses. Nearly all the departments now recognize the efficiency of the service and call upon the bureau at any time for a man. The Department of Justice has used a number of the operators in the last few years. In the course of time this will become so general that this government will probably build up a great criminal bureau, one that will supply officers for investigation of any crime. The Postoffice Department now has its own system of inspectors, who investigate violations of postal laws, and the plan of pitting specialist against specialist is regarded as perfect. This could be continued, though, if all the criminal organizations of the government were centralized.

The United States is divided into thirty secret service districts, each in charge of an operative who has under his direction as many assistants as the criminal activity of the section demands. The force is concentrated in one district if there are counterfeiting operations in progress, and then sent to another district as required. A written daily report, covering operations for twenty-four hours, is exacted from each district operative and from each man under him. These daily reports frequently contain many fascinating stories, many details of criminal life and espionage that would make columns. The reports received by the bureau in Washington are carefully filed away in the offices of the Treasury Department. Accompanying the reports are the photographs and measurements of every man arrested for counterfeiting. The Bertillon system of measurements is used by the service, as well as a plain indexed card system. The two are so complete that even without the name of a man his name and record can be obtained if his measurements are forwarded.

Hanging on the walls and in racks in the two rooms that are occupied by the chief and his two assistants are the photographs of every known counterfeiter in the country. Among these are the faces of William E. Brockway, the veteran dean of counterfeiters; Emanuel Ninger, the most expert penman the service ever knew, and Taylor and Bredell, who hold the record as the cleverest counterfeiters in history next to Brockway. There are hundreds of others who have at some time or other gotten into the clutches of the service, many of them the most desperate characters. Some of these have taken human life with the same ease they would make a paper dollar or a silver coin.

The development of modern processes of photolithography, photogravure, and etching has revolutionized the note counterfeiting industry. So famous a counterfeiter as Brockway realized this. In the old days all counterfeiting plates were hand engraved and it took from eight to fifteen months to complete a set. Now this part of the work may be done in a few hours.

Information as to the personnel and operations of the secret service is carefully withheld from the public. The names of the heads of the various districts and the operators are unknown and are seldom published unless in case of the arrest of a counterfeiter and the facts get into the newspapers. The bureau is managed by John E. Wilkie, chief. He has held the position since 1898, when he succeeded Chief Hazen. Mr. Wilkie is a newspaper man having held responsible positions on many large papers. He began his career as a reporter and worked his way up to city editor of one of the big Chicago papers. He has a great "nose" for criminal investigation, and his work is regarded as brilliant.

All the United States notes are printed in sheets of four notes of one denomination on each sheet. Each note is lettered in its respective order, in the upper and lower corners diagonally opposite, A, B, C, and D, and this is the system for numbering notes: All numbers, on being divided by 4 and leaving 1 for a remainder, have the check letter A; 2 remainder, B; 3 remainder, C; even numbers, or with no remainder, D. Any United States note the number upon which can be divided by 4 without showing the above result is a counterfeit, and while this rule is not infallible in all instances it will be found of service in the detection of counterfeits.

Compared with a dozen or so years ago, there is nothing like the counterfeiting going on in this country.

Shortly after the war the country was practically flooded with it, but so perfect is the machinery of the secret service and so successful have its officers been in recent years in unearthing the big plants and their operators, and placing the latter behind the bars, that counterfeiting has almost ceased.

The receipts of subsidiary counterfeit coins at the subtreasury at New York have been in recent times inconsequential. Some time ago an Italian silversmith, who was an expert coin counterfeiter, was captured, and the destruction of his plant and his subsequent conviction had a wholesome effect upon his fellow countrymen, some of whom have come over to the United States for the express purpose of counterfeiting its silver coins. Only five counterfeit issues of notes made their appearance during the year in question, and of these three were new and two were reissues of old counterfeits.

This shows how well the counterfeit situation, as it were, is kept in check and under control by the government. By some it is supposed that most of our counterfeiters come from abroad, but this is not strictly accurate, though many of those who attempt to imitate our silver dollar and the subsidiary coin issues hail from Italy and Russia.

In order to set up a first-class counterfeit shop for the turning out of good paper counterfeits, there are so many indispensable requisites on the part of the spurious money-makers that they get discouraged or caught in most instances almost at the very outset of their would-be easy money-making careers. All of the good engravers who are capable of turning out good plates are more or less under the constant supervision of the secret service officers, while the paper supply, or its possible supply, is equally well watched.

Because gold and silver coins pass current out on the Pacific coast, where notes do not yet circulate freely as in the east, California has more counterfeiting cases than any other state in the Union, with Pennsylvania, with its large foreign population in the mining regions, a close second.

A moderately deceptive \$5 silver certificate was made in Italy, imported into this country by various gangs of Italians and passed quite extensively in the eastern states, but the secret service officers quickly got on to the source of issue, and made many arrests and secured convictions. So closely did they hit the trail of a fairly good counterfeit note issued in the west that they got the maker and passer arrested and convicted and the plates captured so quickly that it must have caused him acute pain. It was the same with a \$10 note of deceptive workmanship which appeared in New York. Only three of these notes were circulated.

Of course there are plenty of counterfeit notes and coins in circulation—if there were not the secret-service officers would have an easy time of it—but the output has largely decreased as compared with former years, and, unless all signs fail, it is likely to go still lower, as the secret service officers become each year more expert in detecting this class of crime and putting the criminals away where they will serve the state the best. Gold certificates issued below the denomination of \$20, are numbered the same as treasury notes and are check-lettered in their order upon each sheet.

The only denominations of the gold certificates which have been counterfeited are the issues for \$20 and \$100, respectively, as the gold certificates present a pretty tough counterfeiting proposition, though most of the denominations of the various issues of the silver certificates have been more or less extensively counterfeited, perhaps the issues for \$5 and \$10, respectively, being the most favored at the counterfeiter's hands, by reason of the ready circulation of these two issues.

The main deterrents to counterfeiting nowadays are, first, lack of good engravers who will take the risk; second, the difficulty in the making and the assembling of first-class plates, and third, the difficulty in the securing of suitable paper. As to the last, the fiber paper now in use with the two silk threads running through the note lengthwise presents a hard proposition for imitation, and lastly, and an important provision, is the fact the public is now pretty well educated on the question of counterfeits, and know how a spurious bill both looks and feels. As for the bank tellers, they scent counterfeits by instinct. Things have changed for the counterfeiter, too, and they are not for the best from his point of view.

The secret service of the United States is without a question the best in the world.

## CHAPTER XVIII

### CHARACTER AND TEMPERAMENT INDICATED BY HANDWRITING

A Man's Handwriting a Part of Himself—Cheap Postage and Typewriters Playing Havoc with Writing by Hand—Old Time Correspondence Vanishing—Two Divisions of Handwriting—Fashion Has Changed Even Writing—Characteristic Writing of Different Professions—Handwriting a Sure Index to Character and Temperament—Personality of Handwriting—Handwriting a Voiceless Speaking—A Neglected Science—Interest in Disputed Handwriting Rapidly Coming to the Front—Set Writing Copies no Longer the Rule—Formal Handwriting—Education's Effect on Writing—Handwriting and Personality—The Character and Temperament of Writers Easily Told—Honest, Eccentric, and Weak People—How to Determine Character by Writing—The Marks of Truth and Straightforwardness—How Perseverance and Patience Are Indicated in Writing—Economy, Generosity and Liberality Easily Shown in Writing—The Character and Temperament of Any Writer Easily Shown—Studying Character from Handwriting a Fascinating Work—Rules for Its Study—Links in a Chain That Cannot Be Hidden—A Person's Writing a Surer Index to Character Than His Face.

A person's handwriting is really a part of himself. It is an expression of his personality and his character and is as characteristic of his general make-up as his gait or his tone of voice.

There is always a direct and apparent connection between the style of handwriting and the personality of the writer. Another familiar evidence of this is the fact that no two persons write exactly alike, notwithstanding that hundreds of thousands of people learned to write from the same copy-books and were taught to form their letters in precisely the same way. Thus, it will be seen, if handwriting bore no relationship to personality and temperament and was not influenced by the character of the individual, we would all be writing the beautiful Spencerian copper-plate we were taught in our school days. But, as it is, not one in fifty thousand writes in this manner five years after leaving school.

Like speech or gesture, handwriting serves as a means for the expression of thought; and in expressing our thoughts we give expression to ourselves. When once the art of writing is learned we are no longer conscious of the mental and manual effort required to form the letters. It becomes, as it were, a second nature to us. We do it mechanically, just as we form our words when talking, without realizing the complex processes of mind and muscle that it involves.

Of course, the style of handwriting does not in every case remain the same throughout the entire life of a man or woman. A man of fifty may not write the same hand that he did when he was eighteen or twenty, and if he lives to be eighty or ninety it will in all probability show further indications of change. This fact only emphasizes the relationship between handwriting, character, and personality; for it will always be found that where there is a change in the style of penmanship there is a corresponding change in the person himself. Very few of us retain the same character, disposition, and nature that we had in youth. Experience and vicissitudes do much to modify our natures, and with such modifications come alterations in our handwriting. In some persons the change is very slight, while in others it is noticeably evident.

When a man attempts to change his style of handwriting he simply alters the principal features of it. If his writing normally slopes to the right, he will probably adopt a back-hand. He may also use a different kind of pen; may change the size of the writing, alter the customary formation of certain letters, and add certain unfamiliar flourishes. But knowing nothing about the many minor characteristics of his natural writing he unconsciously repeats them, notwithstanding his best efforts to veil the identity of his chirography. In this respect he resembles the actor, who, while he may assume all the outward characteristics of another individual, still retains certain personal peculiarities of which he is himself unaware and which render it impossible for him to completely disguise his own individuality.

The introduction of cheap postage and the immense increase of every-day correspondence has ruined handwriting and banished forever the art of composition. The short, modern, business-like letters of today will not bear comparison with the neat, voluminous letters full of graphic scenic descriptions, which our forefathers were wont to compile, and were worth keeping and rereading. Now, when similar correspondence is undertaken, it is dictated to a stenographer, copied on a typewriter, or printed, for few people will take the trouble to read manuscript composition of any kind. Looking backward, we find a marked paucity of ideas and carelessness of writing in correspondence, getting worse the farther back we go. Few letters are preserved these days, except those on business, which is a pity, for a letter is always a unique production, being a correct reflect of a writer and his times.

There are always two divisions of handwriting, the formal hand employed for clerk's work, and a freer, less mechanical, less careful style, used for private correspondence. Writing was a profession only understood by a few, and as late as the sixteenth century, when it was necessary to communicate with persons at a distance, a professional scribe was employed to write the letter. But letter-writing was rare and did not become general till after the close of the sixteenth century, and even then it was restricted to the upper classes of society.

Fashion changes in everything. Every generation had its own particular type of writing. Compare, for instance, any bundle of letters taken at random, out of an old desk or library. It is quite easy to sort them into bundles in sequence of dates, and also guess accurately the age and position of the writers. The flowing Italian hand, used by educated women early in the nineteenth century, has now developed into a bold, decisive, almost masculine writing.

It will be found that most professions have special characteristics in writing and these are all liable to change, according to circumstances and writing is the clearest proof of both bodily and mental condition, for in case of paralysis, or mental aberration, the doctor takes it as a certain guide.

The most noticeable movement by which cultured people recognize one another are the play of the features, the gait, talking and writing. Of these evidences the last named is the most infallible, for by a few hasty lines we may recognize again a person whom we neither see nor hear, and enjoy in addition the advantage of being able to compare quietly and at our leisure the traits of one individual thus expressed with the characteristics of another. There are not many men to be found in any walk of life who do not endeavor to conceal to some extent, however slight, their true views and emotions, when brought into close contact with their fellow-beings. But the mind photographs itself unsuspectingly in the movements of the hands, by the use of pen and ink away from all alien observation, and with the rigid unchangeable witness in our possession the character of the author of the manuscript lies open to the gaze of the intelligent reader.

In this way handwriting becomes much more individual than any other active sign of personality. It

varies more, it is more free, it represents the individual less artificially than voice or gesture. There must exist between the form and arrangements of letters in words and lines, on the one hand, and certain individual peculiarities of the writer, on the other, some kind of connection. It is strange that no scientific writing has ever yet been undertaken, for it seems conclusive that handwriting is a kind of voiceless speaking, consequently a phenomenon, and therefore an operation which lies within the province of physiology.

Yet there are no books or studies on the subject of disputed handwriting up to the present time, short newspaper and magazine articles and sketches being the only contributions the public has been favored with up to the publication of this work.

There is as yet no physiology of handwriting formulated, and that the further question of the relation of handwriting to the moods of the writer has not ever been touched upon scientifically. The history of science teaches us that in case a fact, which is theoretically and practically important, has been neglected for decades and even centuries by trained scientists; but the subject will now be taken up and a place made for it among the prominent and leading studies of the day. Interest in disputed handwriting and writing of all kinds is rapidly coming to the front in the United States, and is a study and research that the business man of the future will be perfectly familiar with.

It is now no longer the rule to teach to write entirely by the aid of set copies, as was the case with our forefathers, who wrote after one approved pattern, which was copied as nearly as possible from the original set for them; therefore characteristics, peculiarities are longer in asserting themselves and what is now considered a "formal" handwriting was not developed till late in life. There were, and still are, two divisions or classes of handwriting, the professional and personal; with the first the action is mechanical and exhibits few, if any, traces of personality. Yet in the oldest manuscripts studied and consulted there are certain defined characteristics plainly shown. The handwritings of historical and celebrated personages coincide to a remarkable degree with their known virtues and vices, as criticized and detailed by their biographers.

As the art of writing became general, its form varied more, and more, becoming gradually less formal, and each person wrote as was easiest to himself.

Education, as a rule, has a far from beneficial effect upon handwriting; an active brain creates ideas too fast to give the hand time to form the letters clearly, patiently and evenly, the matter, not the material, being to the writer of primary importance.

So as study increased among all classes, writing degenerated from its originally clear, regular lettering into every style of penmanship.

If the subject of handwriting, as a test of personality is carefully studied, it will be found that immediate circumstances greatly influence it; anxiety or great excitement of any kind, illness or any violent emotion, will for the moment greatly affect the writing. Writing depends upon so many things—a firm grasp of the pen, a pliability of the muscles, clearness of vision and brain power—even the writing materials, pens, ink and paper, all make a difference. It is not strange, then, that with so many causes upon which it depends, writing should be an excellent test of personality, temperament and bodily health.

Excitability, hastiness, temperament, personality and impatience are all seen in the handwriting at a glance. A quick brain suggests words and sentences so fast, one upon another, that though the pen races along the page, it cannot write down the ideas quickly enough to satisfy the author.

Temper depends upon temperament. The crosses of the letter "t" are the index whereby to judge of it. If those strokes are regular through a whole page of writing, the writer may be assumed to have an even-placed temper; if dashed off at random—quick short strokes somewhat higher than the letter itself, quick outbursts of anger may be expected, but of short duration, unless the stroke is firm and black, in which case great violence may safely be predicted.

Uncertainty of character and temperament is shown by the variation of these strokes to the letter "t." Sometimes the cross is firm and black, then next time it is light, sometimes it is omitted altogether, varying with each repetition of the letter like the opinions and sentiments of an undecided person. The up and down strokes of the letters tell of strength or weakness of will; gradations of light and shade, too, may be observed in the strokes.

Capital letters tell us many points of interest. By them originality, talent and mental capacity are displayed, as well as any deficiency or want of education. There are two styles of capital letters at present in use. The high-class style employed by persons of education is plain and often eccentric, but without much ornamentation. The other may be called the middle-class, for it is used by servants and tradespeople, having a fair amount of education, mingled with a good deal of conceited ignorance and false pride.

With these last, the capital letters are much adorned by loops, hooks and curves, noticeable principally in the heads of the letters, or at their commencements.

Therefore to become an expert on handwriting, a careful study must be made of the writings of those whose life and character, together with personal peculiarities, are intimately known and understood, and from this conclusions may be drawn and rules arrived at for future use. Get some friend to write his name and from your knowledge of his character follow rules given in this work and you will find that a correct conclusion will be arrived at. The same correct solution will be found by studying any signature.

Affection is marked by open loops and a general slant or slope of the writing. A hard nature, unsympathetic and unimpressionable, has very little artistic feeling or love of the fine arts; therefore the same things which indicate a soft, affectionate disposition will also indicate poetry, music and painting, on one or other kindred subjects. The first of these accompanies a loving, impulsive nature. In painting, four things are absolutely necessary to produce an artist, form, color, light and shade. Success in art implies a certain degree of ambition, and consequently upon its vanity and egotism; hence an artist's signature is generally peculiar and often unreadable from its originality, egotism and exuberance of creative power.

Imagination and impulse do not tend to improve handwriting. The strokes are too erratic. Haste is visible in every line. A warm-hearted, impulsive person feels deeply and passionately at the moment of writing and dashes off the words without regard to the effect they will produce upon the reader.

Truth and straightforwardness give even lines running across the page and at regular distances from one word to another. Tact is very essential. This quality requires often slight deceptions to be allowed or practiced; hence an unevenness in the writing is observed. Untruthfulness gives greater unevenness still; but do not rush to conclusions on this point for an unformed handwriting shows this peculiarity very often, being due, not to evil qualities, but to an unsteady hand employed in work to which it is unused.

Very round, even writing, in which the words are not closed, denotes candor and openness of disposition, with an aptitude for giving advice, whether asked or unasked, and not always of a complimentary kind.

Blunt, crabbed writing suggests obstinacy and a selfish love of power, without thought for the feelings of others. True selfishness gives every curve an inward bend, very marked in the commencement of words or capital letters.

Perseverance and patience are closely allied. In the former the letter "t" is hooked at the top and also its stroke has a dark, curved end, showing that when once an idea has been entertained no earthly persuasion will alter or eradicate it. Such writers have strongly defined prejudices and are apt to take very strong dislikes without much cause.

Carelessness and patience also are frequently linked together, more often in later life, when adversity has blunted the faculties, or the drill routine of an uneventful existence has destroyed all romance. Then the writing has short, up and down strokes, the curves are round, the bars short and straight; there are no loops or flourishes, and the whole writing exhibits great neatness and regularity.

Economy of living, curiously enough, is marked by a spare use of ink. The terminals are abrupt and blunt, leaving off short. Where economy is the result of circumstances, not disposition, only some of the words are thus ended, while others have open, free curves and the long letters are looped.

Generosity and liberality may be seen likewise in the end curve of every word. Where these characteristics are inconstant and variable, the disposition will be found to be uncertain—liberal in some matters, while needlessly economical and stingy in others.

When a bar is placed below the signature, it means tenacity of purpose, compared with extreme caution; also a dread of criticism and adverse opinions. No dots to the letter "i" means negligence and want of attention to details, with but a small faculty of observation. When the dots are placed at random, neither above nor in proximity to the letter to which they belong, impressionability, want of reflection and impulsiveness may be anticipated.

Ambition and gratified happiness give to the whole writing an upward tendency, while the rest of the writing is impulsive without much firmness.

Sorrow gives every line of the writing a downward inclination. Temporary affliction will at once show in the writing. A preoccupied mind, full of trouble, cares little whether the letter then written is legible or not; hence the writing is erratic, uncertain, and the confusion of mind is clearly exhibited in every line. Irritable and touchy persons slope the nourishes only, such as the cross of the letter "t" and the upper parts of the capital letters. When the capital letters stand alone in front of the words and the final letters also are isolated, it betokens great creative power and ideality, such as would come from an author and clever writer.

The most personal part of a letter or document is, of course, the signature, but alone without any other writing it is not always a safe guide to character. In many instances the line placed below or after a signature tell a great deal more than the actual name. A curved bending line below a signature, ending in a hook, indicates coquetry, love of effect, and ideality. An exaggerated, common-like form of line means caprice, tempered by gravity of thought and versatility of ideas. An unyielding will, fiery, and at the same time determined, draws a firm hooked line after the signature. A wavy line shows great variety in mental power, with originality. Resolution is shown in a plain line, and extreme caution, with full power to calculate effect and reason a subject from every point of view, is shown by two straight dashes with dots, thus —:—

The personality of a writer can never be wholly separated from his works. And in any question of date or authenticity of a document being called in dispute, the value of graphology and its theories will be found of the utmost importance, for the various changes in the style of handwriting, or in the spelling of words, although, perhaps, so minute and gradual as seldom to be remarked, are, nevertheless, links in a chain which it would be extremely hard to forge successfully so as to deceive those acquainted with the matter as well as versed in its peculiarities.

## CHAPTER XIX

### HANDWRITING EXPERTS AS WITNESSES

Who May Testify As An Expert—Bank Officials and Bank Employees Always Desired—Definition of Expert and Opinion Evidence—Both Witness and Advocate—Witness in Cross Examination—Men Who Have Made the Science of Disputed Handwriting a Study—Objections to Appear in Court—Experts Contradicting Each Other—The Truth or Falsity of Handwriting—Sometimes a Mass of Doubtful Speculations—Paid Experts and Veracity—Present Method of Dealing with Disputed Handwriting Experts—How the Bench and Bar Regard the System—Remedies Proposed—Should an Expert Be an Adviser of the Court?—Free from Cross-Examination—Opinions of Eminent Judges on Expert Testimony—Experts Who Testify without Experience—What a Bank Cashier or Teller Bases His Opinions on—Actions and Deductions of the Trained Handwriting Expert—Admitting Evidence of Handwriting Experts—Occupation and Theories That Make an Expert—Difference Between an Expert and a Witness—Experts and Test Writing—What Constitutes an Expert in Handwriting—Present Practice Regarding Experts—Assuming to Be a Competent Expert—Testing a Witness with Prepared Forged Signatures—Care in Giving Answers—A Writing Teacher as an Expert—Familiarity with Signatures—What a Dash, Blot, or Distortion of a Letter Shows—What a Handwriting Expert Should Confine Himself to—Parts of Writing Which Demand the Closest Attention—American and English Laws on Experts in Handwriting—Examination of Disputed Handwriting.

While the qualification necessary for the permission of a witness to testify in court as an expert is largely discretionary with the judge, such discretion is usually exercised with so great liberality that it is not often that a witness offered as an expert is refused by the court on the ground of deficient qualification. It is usually held that any one possessed of anything more than ordinary opportunity for studying or observing handwriting may give expert testimony, which the jury may receive for what it is deemed to be worth. Bank officials and employees are declared by most courts to be competent witnesses. If on any previous occasion one has given testimony, that fact is usually accepted as a sufficient qualification, or if he has ever seen the person write whose writing is in question, he is deemed competent. With such limited qualification it is no matter of surprise that expert testimony is sometime made to appear at very great disadvantage. Incompetent and mercenary witnesses will seek employment, and since there are always two sides to a case, and on each side lawyers who spare no efforts for victory, there is a chance for every kind of witness, as there is for every kind of attorney.

Expert evidence is that given by one especially skilled in the subject to which it is applicable, concerning information beyond the range of ordinary observation and intelligence.

Opinion evidence is the conclusions of witnesses concerning certain propositions, drawn from ascertained or supposed facts, by those who have had better opportunities than the ordinary individual or witness to judge of the truth or falsity of such propositions, or who are familiar with the subject under inquiry, and give their conclusions from the facts within their own knowledge concerning certain questions involved.

Let us look at the question as it presents itself to the layman, to men of science and experience, to microscopists, to bank officials and others having much to do with writing. An expert in handwriting occupies a totally anomalous position when called before a court as a witness. Technically he is both a witness and an advocate, sharing the responsibilities of both but without the privileges of the latter. He has to instruct counsel and to prompt him during its course. But in cross examination he is more open to insult because the court does not see clearly how he arrives at his conclusions, and suspects whatever it does not understand. Nearly every person who has had to appear in court as an expert has been subjected to more or less humiliation by the judge.

It may be, perhaps, cynically hinted that men who have made the science of disputed handwriting a study should be willing to bear all kinds of arrogance for the public good. In the first place, many thoroughly competent experts in any department of science distinctly and peremptorily refuse to be mixed up in any affair which may expose them to cross examination. Many experts will investigate a matter, give a report of their conclusions, but absolutely refuse to appear in court.

Another not very edifying spectacle is that of paid handwriting experts standing in court and contradicting each other, or pretending to contradict in the interests of their respective clients, is not exactly right. These men would change places and reverse positions and arguments if necessary. Men of the world are tempted to say that "Science can lay but little claim to certainty in demonstrating the truth or falsity of handwriting and the whole procedure is more a mass of doubtful speculations than a body of demonstrable truths." But it must be remembered that a professional expert must be paid for his services, and always tell the truth as it appears to him.

It is clearly seen that our present method of dealing with experts regarding disputed handwriting is found to be on all sides not just exactly satisfactory. Oftentimes the public is skeptical and many honest and thorough experts are scandalized. The bench and bar share this feeling but unfortunately are disposed to blame the individual rather than the system.

There is no question but what this unanimity of dissatisfaction will vanish as soon as a remedy is seriously proposed. To that, however, we must come unless we are willing to dispense with expert evidence altogether.

It is contended by many that an expert should be the adviser of the court, not acting in the interest of either party in a lawsuit. Above all things an expert ought to be exempt from cross-examination. His evidence, or rather his conclusions, should be given in writing and accepted just as the decisions of the bench on points of law.

Opinions of eminent judges have differed widely respecting the reliance to be placed upon testimony founded upon expert comparisons of handwriting, but it should be remembered that those opinions have been no more varied than has been the character and qualifications of the experts by whose testimony they have been called forth.

It is too true that very frequently persons have been allowed to give testimony as experts who were utterly without experience in any calling that tends to bestow the proper qualifications for giving expert testimony.

The constant professional observation of handwriting in any line of financial or commercial business tends to confer expert skill. It should be said here, however, that the average bank cashier or teller bases his opinions and his identifications generally upon the pictorial effect without recourse to those minuter and more delicate points upon which the skilled expert rightly places the greatest reliance. Such testimony can not be compared for accuracy or value with that of the scientific investigator of handwriting. It follows, then, that one who is endowed with more than ordinary acuteness of observation, and has had an experience so varied and extensive as to cover most of these lines, is likely to be best fitted for critical and reliable expert work.

In a word, the trained expert eye, even on so slight a thing as a simple straight line, will detect certain peculiarities of motion, of force, of pressure, of tool-mark, etc., that in normal circumstances the result will stand for its author just as his photograph stands for him. Now, this being undoubtedly true within certain limitations, how more than incontestable must be the proposition to any rational man that if, instead of a simple undeviating pen-stroke, lines that run to curves and angles and slants, and shades and loops and ticks, and enter into all sorts of combinations, such as any specimen of handwriting must, however simple, bear inherent evidences of authorship that yield their secrets to the expert examiner as the hieroglyphics on an Egyptian monument do to a properly educated antiquarian.

The propriety of admitting the evidence of handwriting experts in investigating questions of forgery is now recognized by statute in most states. Common sense dictates that in all investigations requiring special skill, or when the common intelligence supposed to be possessed by the jury is not fully adequate to the occasion, we should accept the assistance of persons whose studies or occupations have given them a large and special experience on the subject. Thus such men of experience or experts are admitted to testify that work of a given description is or is not executed with ordinary skill; what is the ordinary price of a described article; whether described medical treatment or other practice was conducted with ordinary skill in a specific case; which of two colliding vessels, their respective movements being given, was in fault; whether one invention was an infringement of another, looking at the models of both; and other cases already mentioned.

This is as near to an exact definition of who are admissible as experts as it is possible for us to come. In all these cases it is to be observed that the expert is to speak from no knowledge of the particular facts which he may happen to possess, but is to pronounce the judgment of skill upon the particular facts proved by other witnesses. Of course the court must be first satisfied that the witness offered is a person of such special skill and experience, for if he be not, he can give no proper assistance to the jury; and of course, also, very much must at least be left to the discretion of the court, relative to the need of such assistance in the case; for very often the matter investigated may be so bunglingly done that the most common degree of observation may be sufficient to judge it.

Where a witness is called to testify to handwriting, from knowledge of his own, however derived, as to the hand of the party, he is not an expert, but simply a witness to a fact in the only manner in which that fact is capable of proof. Nor is he an expert who is called to compare a test writing, whose genuineness is established by others, with the writing under investigation, if he have knowledge of the handwriting of the party, because his judgment of the comparison will be influenced more or less by his knowledge, and will not be what the testimony of an expert should be, a pure conclusion of skill.

But when a witness, skilled in general chirography, but possessing no knowledge of the handwriting under investigation, is called to compare that writing with other genuine writings that have been brought into juxtaposition with it, he is strictly an expert. His conclusions then rest in no degree on particular knowledge of his own, but are the deductions of a trained and experienced judgment, from premises furnished by the testimony of other witnesses.

One of the palpable anomalies of the present practice regarding experts on handwriting is that a person who has seen another write, no matter how ignorant the observer may be, is competent to testify as to whether or not certain writing is by the hand of the person he has once seen engaged in the art of writing, while an expert handwriting witness may only testify that the hand appears to be simulated but may not point out the differences between specimens of genuine writing and the instrument in controversy.

It is safe to presume that the apparently unreasonable position of the law was assumed with a good

object in view, and it is probable that the object was the protection of the court from the swarm of so-called experts which might be hatched by a laxity in the wording of the law. Few things would be easier for a dishonest person than to swear he was a competent expert, and then to swear that a document was, in his opinion, forged or genuine, according to the requirements of his hirer. The framers of the practice in reference to expert testimony on documents seem to have had in mind that the only possible kind of testimony as to documents was that based upon impressions; and that the only method of coming to a conclusion was by giving words to the first mental effect produced on a witness after he has looked at a writing.

For this reason the practice has grown up in many trials of preparing carefully forged signatures and producing them before the witness as a test of how far he is able to distinguish genuine from forged signatures.

However expert a witness may be, however successful in discriminations of this kind, self-respect and a becoming modesty should induce him to refuse to answer them without distinctly stating that his answer, which gives his best judgment at the time, must be subject to reversal if by longer and more thorough investigation it appear that the opposite view were the true one.

When there is presented before a court of law a document, of which it is important to know whether a part or the whole of the body, or the signature, or all, is actually in the handwriting of some person whose writing or signature in other exhibits is admitted to be genuine, the counsel on each side usually seeks the aid of one or more handwriting experts.

Usually a teacher of writing is called, but more often the cashier or paying teller of a bank is preferred. There seems to be a good reason for choosing a bank cashier or a paying teller, for the man upon whose immediate judgment as to genuineness of signatures, reinforced by a large and varied knowledge of human nature and quick observation of any suspicious circumstances depends the safety of a bank, has certainly gained much experience and is not apt to be easily deceived in the kind of cases coming daily before him. How much the average cashier and paying-teller depends upon the trifling circumstances attending the presentation of a check, the appearance of the person presenting it, the probability of the drawer inserting such a sum, etc., becomes apparent when one has heard a number of these useful officers testify in cases where they are deprived of all these surroundings, and required to decide whether a certain writing is by the same hand which produced another writing, both being unfamiliar to them.

In this case they are obliged to create a familiarity with the signatures of a man whose character and peculiarities they have never known.

They miss the aid of some feature, such as a dash, a blot, or the distortion of a letter, which would recall to them the character of the writer. Most of the best experts of this class confess that they cannot tell on what their judgment is based. They simply think that the writing is not by the same hand as that admitted to be genuine. "No," they will tell you, "it is not merely superficial resemblance. I don't know what it is, but I feel sure," etc. These witnesses are more frequently right than the more pretentious professional expert. The former trust to the instantaneous impressions which they receive when papers are handed to them; the latter too often give their attention to the merely superficial features of chirography without getting beyond the more obvious resemblances and differences which are frequently the least important.

While the expert in handwriting should confine himself to the concrete examinations of the paper, ink, seals, etc., and leave to the counsel the task of reasoning on the purport of the words added, and all other matters not allied to the materials left as the result of the forgery, yet it would be unreasonable to neglect altogether these means of corroborating a previously formed suspicion, or directing a course of inquiry.

That expert would be more or less than human who could shut his eyes to the importance of the fact that certain words containing evidence in the manner of their formation or their position that raised doubts as to their genuineness by their import gave to the person who might have written them benefits which he would not have derived in their absence.

The parts of a writing which demand the closest attention are those which have been made unconsciously and which are not easily noted by a superficial view. The height, the spread of the letters, the peculiarities of the endings, the nourishes, and the general shape are things which the forger observes and imitates, often with success; but the curvature of a letter in its different parts is not easily appreciated by the naked eye.

There are but few laws in the United States regarding the functions of handwriting experts. Courts in various states have followed decisions made by higher courts where matters affecting expert testimony have been carried to the court of last resort. A code of uniform laws on this question is being agitated and will soon be called to the attention of all state legislatures. England has adopted a simple and concise law on admissibility of testimony of handwriting experts.

In the absence of such laws a few extracts from Stephens' Law of Evidence, an English work, will be found interesting and instructive:

Article XLIX: "When there is a question as to any point of science or art, the opinions upon that point of persons specially skilled in any such matter are deemed to be relevant facts.

"Such persons are hereinafter called experts.

"The words 'science or art' include all subjects on which a course of special study or experience is

necessary to the formation of an opinion, and amongst others the examination of disputed handwriting.

"Illustration: The question is, whether a certain document was written by A. Another document is produced which is proved or admitted to have been written by A.

"The opinions of experts on the question whether the two documents were written by the same person, or by different persons, are deemed to be relevant."

Article LI: "When there is a question as to the person by whom any document was written or signed, the opinion of any person acquainted with the handwriting of the supposed writer that it was or was not written or signed by him, is deemed to be a relevant fact.

"A person is deemed to be acquainted with the handwriting of another person when he has at any time seen that person write, or when he has received documents purporting to be written by that person in answer to documents written by himself or under his authority, and addressed to that person, or when in the ordinary course of business, documents purporting to be written by that person have been habitually submitted to him.

"Illustration: The question is, whether a given letter is in the handwriting of A, a merchant in Calcutta.

"B is a merchant in London, who has written letters addressed to A, and received in answer letters purporting to be written by him. C is B's clerk, whose duty it was to examine and file B's correspondence. D is B's broker, to whom B habitually submitted the letters purporting to be written by A for the purpose of advising with him thereon.

"The opinions of B, C, and D on the question whether the letter is in the handwriting of A are relevant, though neither B, C, or D ever saw A write.

"The opinion of E, who saw A write once twenty years ago, is also relevant."

Article LI I: "Comparisons of a disputed handwriting with any writing proved to the satisfaction of the judge to be genuine is permitted to be made by witnesses, and such writings, and the evidence of witnesses respecting the same, may be submitted to the court and jury as evidence of the genuineness or otherwise of the writing in dispute. This paragraph applies to all courts of judicature, criminal or civil, and to all persons having by law, or by consent of parties, authority to hear, receive, and examine evidence."

## CHAPTER XX

### TAMPERED, ERASED, AND MANIPULATED PAPER

Sure Rules for the Detection of Forged and Fraudulent Writing of Any Kind—A European Professor Gives Rules for Detecting Fraud—How to Tell Alterations Made on Checks, Drafts, and Business Paper—An Infallible System Discovered—Results Always Satisfactory—Can Be Used by Anyone—Vapor of Iodine a Valuable Agent—Paper That Has Been Wet or Moistened—Colors That Tampered Paper Assumes—Tracing Written Characters with Water—Making Writing Legible—How to Tell Paper That Has Been Erased or Rubbed—What a Light Will Disclose—Erasing with Bread Crumbs—Hard to Detect—How to Discover Traces of Manipulation—Erased Surface Made Legible—Treating Partially Erased Paper—Detecting Nature of Substance Used for Erasing—Use of Bread Crumbs Colors Paper—Tracing Writing with a Glass Rod—Tracing Writing Under Paper—Writing With Glass Tubes Instead of Pens—What Physical Examination Reveals—Erasing Substance of Paper—Reproducing Pencil Writing in a Letter Press—Kind of Paper to Use in Making Experiments—Detecting Fraud in Old Papers—The Rubbing and Writing Method.

Prof. G. Brynlants of the Belgian Academy of Sciences, who has made the detecting of forgery and disputed handwriting a study for twenty years, recently made public an account of the researches he had made and deductions arrived at with a view of making known how frauds and alterations are made on checks, drafts, and business paper generally and how same can easily be detected. The system he recommends is now in use in nearly every bank in Europe and the result of his work and his recommendations should be carefully read and the system applied by the banks and business houses of the United States, when occasion requires.

The following article has been specially prepared for this work; and if its recommendations are carefully carried out it will prove a sure rule for the detection of forged and fraudulent handwriting:

"Although my experiments were not always carried on under the most favorable circumstances, their results were eminently satisfactory and will prove a boon to the banking and business world. A piece of paper was handed to me for the purpose of determining if part of it had been wet and if another part of it had been manipulated for the purpose of erasing marks upon it; in other words, whether this part had been rubbed. The sample I had to work upon had already gone through several experiments. I had remarked that the tint of the paper exposed to the vapor of iodine differs from that which this same paper assumes when it has been wet first and dried afterwards. In addition to this I realized that when sized and calendered paper, first partially wet and then dried, is subjected to the action of iodine vapor, the parts which have been wet take on a violet tint, while those which had not been moistened became either discolored or brown. The intensity of the coloration naturally varied according to the length of time for

which the paper was exposed to the iodine.

"There is a very striking difference also when the water is sprinkled on the paper and the drops are left to dry off by themselves in order not to alter the surface of the paper.

"Thorough wetting of the paper will cause the sprinkled spots to turn a heavy violet-blue color when exposed to vapor while the parts which are untouched by the water will become blue.

"If, after sprinkling upon a piece of paper and evaporating the drops thereon, this piece of paper is thoroughly wet, then dried and subjected to the action of iodine, the traces of the first drops will remain distinguishable whether the paper is dry or not. In the latter case the trace of the first sprinkling will hardly be distinguishable so long as the moisture is not entirely got rid of; but as soon as complete dryness is effected their outlines, although very faint, will show plainly on the darker ground surrounding the spot covered by the first drop.

"In this reaction, water plays virtually the part of a sympathetic fluid, and tracing the characters with water on sized and calendered paper, the writing will show perfectly plain when the paper is dried and exposed to action of iodine vapor. The brownish violet shade on a yellowish ground will evolve to a dark blue on a light blue ground after wetting. These characters disappear immediately under the action of sulphurous acid, but will reappear after the first discoloration provided the paper has not been wet and the discoloration has been effected by the use of sulphurous acid gas.

"The process, therefore, affords means for tracing characters which become legible and can be caused to disappear, but at will to reappear again, or which can be used for one time only and be canceled forever afterwards.

"The usual method of verifying whether paper has been rubbed is to examine it as to its transparency. If the erasure has been so great as to remove a considerable portion of the paper, the erased surface is of greater translucency; but if the erasure has been effected with great care, examining same close to a light will disclose it; the erased part being duller than the surrounding surface because of the partial upheaval of the fibers.

"If an erasure is effected by means of bread crumbs instead of India rubber, and care is taken to erase in one direction the change escapes notice; and it is generally impossible to detect it, should the paper thus handled be written upon again.

"Iodine vapors, however, show all traces of these manipulations very plainly giving their location with perfect certainty. The erased surfaces assume a yellow brown or brownish tint. If, after being subjected to the action of the iodine, the paper on which an erasure has been made is wet, it becomes of a blue color the intensity of which is commensurate with the length of time to which it has been under the action of the iodine, and when the paper is again dried the erased portions are more or less darker than the remainder of the sheet. On the other hand when the erasure has been so rough as to take off an important part of the material exposure to iodine, wetting, and drying result in less intensity to coloration on the parts erased, because the erasing in its mechanical action of carrying off parts of the paper removes also parts of the substance which in combination with iodine give birth to the blue tint. Consequently the action of the iodine differs according to the extent of the erasure.

"When paper is partially erased and wet, as when letters are copied, the same result although not so striking follows upon exposing it to the iodine vapor after letting it dry thoroughly.

"Iodine affords in certain cases the means of detecting the nature of the substance used for erasing. Bread crumbs or India rubber turn yellow or brownish yellow tints and these are distinguished by more intense coloration; erasure by means of bread crumbs causing the paper to take a violet shade of great uniformity. These peculiarities are due to the upheaval of the fibers caused by rubbing. In fact this upheaval creates a larger absorbing surface and consequently a larger proportion of iodine can cover the rubbed parts than it would if there had been no friction.

"When paper upon which writing has been traced with a glass rod, the tip of which is perfectly round and smooth, is exposed to iodine vapor, the characters appear brown on yellow ground which wetting turns to blue. This change also occurs when the paper written upon has been run through a super-calender. If the paper is not wet the characters can be made to appear or be blotted by the successive action of sulphurous and iodine vapor.

"Writing done by means of glass tips instead of pens will show very little, especially when traced between the lines written in ink. The reaction, however, is of such sensitiveness that where characters have been traced on a piece of paper under others they appear very plainly, although physical examination would fail to reveal their existence, but a somewhat lengthy exposure to iodine vapors will suffice to show them.

"If the wrong side of the paper is exposed to the iodine vapor the characters are visible; but of course in their inverted position.

"If the erasure has been so great as to take off a part of the substance of the paper the reconstruction of the writing, so as to make it legible, may be regarded as impossible. But in this case subjecting the reverse side of the paper to the influence of the iodine will bring out the reverse outlines of the blotted-out characters so plainly that they can be read, especially if the paper is placed before a mirror. In some instances, when pencil writing has been strong enough, its traces can be reproduced in a letter press by

wetting a sheet of sized and calendered paper in the usual way that press copies are taken, placing it on paper saturated with iodine and putting the two sheets in a letter book under the press, copies being run off as is usual in copying letters. The operation, however, must be very rapidly carried out to be successful. As a matter of fact the certainty of these reactions depends entirely upon the class of paper used. Paper slightly sized or poorly calendered will not show them.

"Another point consists in knowing how long paper will contain these reactive properties. In my own experience the fact has been demonstrated that irregular wetting and rubbing three months old can be plainly shown after this lapse of time. Characters traced with glass rod tips could be made conspicuous. I have noticed that immersing the written paper in a water bath for three to six hours will secure better reactions, but although these reactions are very characteristic they are considerably weaker."

## CHAPTER XXI

### FORGERY AS A PROFESSION

How Professional Forgers Work—Valuable Points for Bankers and Business Men—Personnel of a Professional Forgery Gang—The Scratcher, Layer-down, Presenter and Middleman—How Banks Are Defrauded by Raised and Forged Paper—Detailed Method of the Work—Dividing the Spoils—Action in Case of Arrest—Employing Attorneys—What "Fall" Money Is—Fixing a Jury—Politicians with a Pull—Protecting Criminals—Full Description of How Checks and Drafts Are Altered—Alterations, Erasures and Chemicals—Raising Any Paper—Alert Cashiers and Tellers—Different Methods of Protection.

[This Chapter was written for this work by the manager of one of the largest detective agencies in the United States. They make a specialty of bank work and from the number of forgers apprehended and convicted know just how the work is done. A careful reading of this chapter will put bankers and the public on their guard against the most pestiferous rascals they have to deal with.]

Professional forgers usually make their homes in large cities. They are constantly studying schemes and organizing gangs of men to defraud banks, trust companies and money lenders by means of forged checks, notes, drafts, bills of exchange, letters of credit, and in some instances altering registered government and other bonds, and counterfeiting the bonds of corporations. These bonds they dispose of or hypothecate to obtain loans on.

A professional forgery gang consists of: First, a capitalist or backer; second, the actual forger, who is known among his associates as the "scratcher"; third, the man who acts as confidential agent for the forger, who is known as the "middleman" or the "go-between"; fourth, the man who presents the forged paper at the bank for payment, who is known as the "layer-down" or "presenter."

The duties of the "middleman" or "go-between" are to receive from the forger or his confidential agent the altered or forged paper. He finds the man to "present" the same, accompanies his confederates on their forgery trips throughout the country, acts as the agent of the backer in dealing out money for expenses, sees that their plan of operations is carried out, and, in fact, becomes the general manager of the band. He is in full control of the men who act as "presenters" of the forged paper. If there be more than one man to "present" the paper, the middleman, as a rule, will not allow them to become known to each other. He meets them in secluded places, generally in little out-of-the-way saloons. In summer time a favorite meeting place is some secluded spot in the public parks. At one meeting he makes an appointment for the next meeting. He uses great care in making these appointments, so that the different "presenters" do not come together and thereby become known to each other. The middleman is usually selected for his firmness of character. He must be a man known among criminals as a "staunch" man, one who cannot be easily frightened by detectives when arrested, no matter what pressure may be brought to bear upon him. He must have such an acquaintanceship among criminals as will enable him to select other men who are "staunch" and who are not apt to talk and tell their business, whether sober or under the influence of liquor. It is from among this class of acquaintances that he selects the men to "present" the forged paper. It is an invariable rule followed by the backer and the forger that in selecting a middleman they select one who not only has the reputation of being a "staunch" man, but he must also be a man who has at least one record of conviction standing against him. This is for the additional protection of the backer and forger, as they know that in law the testimony of an accomplice who is also an ex-convict, should he conclude to become a state's witness, would have to be strongly corroborated before a court or jury in order to be believed.

As the capitalist and forger, for self-protection, use great care in selecting a "middleman," the middleman to protect himself also uses the same care in the selection of men to "present" the forged paper. He endeavors, like the backer and forger, to throw as much protection around himself as possible, and for the same reasons he also uses ex-convicts as the men to "present" the forged paper at the banks. The "presenters" are of all ages and appearances, from the party who will pass as an errand boy, messenger, porter, or clerk, to the prosperous business man, horse trader, stock buyer, or farmer. When a presenter enters a bank to "lay down" a forged paper, the "go-between" will sometimes enter the bank with him and stand outside the counter, noting carefully if there is any suspicious action on the part of the paying teller when the forged paper is presented to him, and whether the "presenter" carries himself properly and does his part well. But usually the middleman prefers waiting outside the bank for the "presenter," possibly watching him through a window from the street. If the "presenter" is successful and

gets the money on the forged paper, the middleman will follow him when he leaves the bank to some convenient spot where, without attracting attention, he receives the money. He then gives the presenter another piece of forged paper, drawn on some neighboring bank. They go from bank to bank, usually victimizing from three to five banks in each city, their work being completed generally in less than an hour's time. All money obtained from the various banks on the forged paper is immediately turned over to the middleman, who furnishes all the money for current expenses. After the work is completed the presenters leave the city by different routes, first having agreed on a meeting point in some neighboring city. The "presenters" frequently walk out of the city to some outlying station on the line of the road they propose to take to their next destination. This precaution is taken to avoid arrest at the depot in case the forgery is discovered before they can leave the city. At the next meeting-point the middleman, having deducted the expenses advanced, pays the "presenters" their percentage of the money obtained on the forged paper.

A band of professional forgers before starting out always agree on a basis of division of all moneys obtained on their forged paper. This division might be about as follows: For a presenter where the amount to be drawn does not exceed \$2,000, 15 to 25 per cent; but where the amount to be drawn is from \$3,000 to \$5,000 and upwards, the "presenter" receives from 35 to 45 per cent. The price is raised as the risk increases, and it is generally considered a greater risk to attempt to pass a check or draft of a large denomination than a smaller one. The middleman gets from 15 to 25 per cent. His work is more, and his responsibility is greater, but the risk is less. There are plenty of middlemen to be had, but the "presenters" are scarce. The "shadow," when one accompanies the band, is sometimes paid a salary by the middleman and his expenses, but at other times, he is allowed a small percentage, not to exceed 5 per cent, and his expenses, as with ordinary care his risk is very slight. The backer and forger get the balance, which usually amounts to from 50 to 60 per cent. The expenses that have been advanced the men who go out on the road are usually deducted at the final division.

In case of the arrest of one of the "presenters" in the act of "laying down" forged paper, the middleman or shadow immediately notifies other members of the band who may be in the city. All attempts to get money from the other banks are stopped, and the other members of the band leave the city as best they can to meet at some designated point in a near-by city. Out of their first successful forgeries a certain sum from each man's share is held by the "middleman" to be used in the defense of any member of the band who may be arrested on the trip. This money is called "fall money," and is used to employ counsel for the men under arrest, or to do anything for them that may be for their interest. Any part of this money not used is paid back in proportion to the amount advanced to the various members of the band from whose share it has been retained. Sometimes, however, in forming a band of forgers there is an understanding or agreement entered into at the outset that each man "stand on his own bottom"—that is, if arrested, take care of himself. When this is agreed to, the men arrested must get out as best they can. Under these circumstances there is no assessment for "fall money," but usually the men who present the paper insist on "fall money" being put up, as it assures them the aid of some one of the band working earnestly in their behalf and watching their interests, outside of the attorney retained.

When one of the party is arrested, an attorney is at once sent to him. As a rule, in selecting an attorney, one is employed who is known as a good criminal lawyer. It is also preferred that he should be a lawyer who has some political weight. The middleman employs the attorney, and pays him out of the "fall money." The arrested man is strictly instructed by the attorney to do no talking, and is usually encouraged by the promise that they will have him out in a short time. In order to keep him quiet, this promise is frequently renewed by the attorney acting for the "middleman." This is done to prevent a confession being made in case the arrested man should show signs of weakening. Finally, when he is forced to stand trial, if the case is one certain of conviction, the attorney will get him to plead guilty, with the promise of a short sentence, and will then bargain to this end with the court or prosecutor. Thus guided by the attorney selected and acting for the "middleman" and his associates, the prisoner pleads guilty, and frequently discovers, when it is too late, that he has been tricked into keeping his mouth shut in the interests of his associates. It is but fair to state, however, that if money can save an arrested party, and if his associates have it, they will use it freely among attorneys or "jury fixers," where the latter can be made use of, and frequently it is paid to politicians who make a pretense of having a "pull" with the prosecuting officers of the court.

In most instances when checks are sent out they are not seen again by the maker for a period of days. As business houses of any considerable magnitude always have a comfortable balance with their bankers, ample time and an abundance of cash are thus placed at the disposal of the check-raisers.

As to the best methods of raising checks so that the fraud will not be readily detected, much depends upon the way in which they are written. The style of handwriting, the texture and quality of the paper, and the chemical properties of the inks, are points which are necessary to be considered.

Many checks may be altered to a larger amount by the mere addition of a stroke of the pen here or the erasure of a line, by means of chemicals, in some other place. For instance, take a check of \$100, no matter how it may be written, there are five or six different ways in which it may be altered to a much larger amount, and in such a manner as to defy the scrutiny of the most careful bank teller. It may be made into six hundred by merely adding the "S" loop to the "O," dotting the first part of the "n" to make of it an "i," and crossing the connecting stroke between the "n" and the "e" to form the "x." To complete the change it will be found necessary to erase with chemicals part of the "e."

A check for one hundred dollars may also be easily altered to eight hundred dollars, especially when sufficient space has been left between the "one" and the "hundred," as follows: Add to the "O" the top part of an "E," dot part of the "n" to form an "i," connect the remaining part of the "n" with the "e," forming the

loop of a "g," and then add "ht." The figure "i" is very easily changed to "8."

Sometimes a small capital is used for an "o." In this case an alteration into "Four" hundred is easily accomplished by simply prefixing a capital "F" and transforming the "e" into an "r," the "n" being made to serve as a "u."

Another change frequently made is to "Ten" hundred. It is done simply by adding the stem and top part of the "T" to the "O" and changing the first part of the "u" to an "e."

Of course, any of the foregoing changes may be made with equal facility whether the amount be "hundred" or "thousand."

Two hundred, if anything, is a much easier amount to alter than one hundred. It is done in the following manner: Make an "F" by simply crossing the "T;" dot the first part of the "w" to make an "i." and change the "o" into an "e." The figure "2" can be made into a perfect "5" by simply adding the top part of the "5" to it.

Three hundred is not so easily altered; still it may be done by changing the word "hundred" into a "thousand"—an alteration which is by no means rare, and which is quite simple, especially when the word is begun with a small "h." The modus operandi is as follows: Place a capital "T" before the "h"; change the first part of the "u" into an "o," connecting it with the second part, which, with the first part of the "u," will form a "u"; change the second part of the "u" to an "s"; erase the top part of the "d," making of it an "a," and complete the alteration by making an "n" of the "r" and "e." This alteration may appear to be somewhat complicated, but a trial of it according to direction will show how nicely it may be done.

"Four" is another easy amount to alter. It is done by extending the second part of the "u" into a "t," and adding the "y" loop to the "r." "Five" is changed into "Fifty" and "Fifteen." "Six," "Seven," "Eight," and "Nine" are changed into "Sixty," "Seventy," "Eighty," and "Ninety" by simply affixing the syllable "ty." "Twenty" is another easily changed amount; all that is necessary to make "Seventy" of it is to make an "S" of the "T," and change the first part of the "w" into an "e." To make the alteration perfect, the top part of the "T" must be erased with chemicals.

In regard to the chemicals used to erase ink, much depends upon the ink. For most writing fluids and copying inks which are in daily use, a saturated solution of chloride of lime is the best eraser known, and when properly made is very quick and effective in its work. It may be applied with a glass pointed pen, to avoid corrosion, or with a clean bit of sponge. It acts as a powerful bleach, and with it the face of a check may be washed as white as before it was written upon. When inks have become dry and hard, sometimes carbolic or acetic acid is used effectively with the chlorine. The application of any alkali or acid to the clean polished surface of a check will, of course, destroy the finish and leave a perceptible stain, but the work of covering up these traces is quite as simple as removing the ink in the first place.

A favorite trick of forgers and check and draft raisers, who operate on an extensive scale, is for one of them to open an office in a city and represent himself as a cattle dealer, lumber merchant, or one looking about for favorable real-estate investments. His first move is to open a bank account, and then work to get on friendly terms with the cashier. He always keeps a good balance—sometimes way up in the thousands—and departs himself in such a manner as to lead to the belief that he is a highly honorable gentleman, and the bank officials are led to the belief that he will eventually become a very profitable customer.

Occasionally he has a note, for a small amount to begin with, always first-class two-name paper, and he never objects—usually insists—on paying a trifle more than the regular discount. At first the bank officials closely examine the paper offered, and of course find that the endorsers are men of high standing, and then their confidence in the "cattle king" is unbounded. Gradually the notes increase in amount, from a thousand to fifteen hundred dollars, and from fifteen hundred to two or three thousand. The notes are promptly paid at maturity. After the confidence of the bank people has been completely gained, the swindler makes a strike for his greatest effort. He comes in the bank in a hurry, presents a sixty-day note, endorsed by first-class men, for a larger amount than he has ever before requested, and it generally happens that he gets the money without the slightest difficulty. Then he has a sudden call to attend to important business elsewhere. When the note or notes mature, it is discovered to be a very clever forgery. This has been done time and again, and it is rare that the forger has been apprehended.

The latest mode is for the forger to imitate a private check by the photo-lithographic method, after having obtained a signed check. The signature, after being photographed, is carefully traced over with ink, and the body of the check is filled up for whatever amount is desired. The maker of the check is requested to identify the person who holds it, and as a general thing he does not wait to see the money paid. The moment his back is turned, the layer-down palms the small check and presents the large one. This way of obtaining money is without the assistance of a middleman.

Private marks on checks are no safeguards at all, although a great many merchants believe they can prevent forgery by making certain dots, or seeming slips of the pen, which are known only to the paying-teller and themselves. This precaution becomes useless when the forger uses the camera. Safe-breakers are often called upon by forgers and asked to secure a sheet of checks out of a check-book. When this is accomplished a few canceled checks are taken at the same time. These are given to the forger and he fills them up for large amounts, after tracing or copying the signature. The safe burglars receive a percentage on the amount realized. If your safe, vault or desk is broken open where your check-book is kept, carefully count the leaves in your check-book, also your canceled checks. If any are missing notify the banks and begin using a different style of check immediately. The sneak-thief, while plying his trade, often secures

unsigned bonds of some corporation which has put the signed bonds in circulation, leaving the rest unsigned until the next meeting of the directors.

Frequently unsigned bonds are left in the bank vault for safe keeping. These are stolen and sent to the penman or "scratcher." Then a genuine signed bond is purchased, from which the signatures are copied and then forged. The same trick has been played on unsigned bank notes, but on the bank notes almost any name will do, as no person looks at the signature, as long as the note appears genuine.

The ingenuity of a countless army of sharpers is constantly at work in this country, devising plans to obtain funds dishonestly, without work, but, in fact, they often expend more time, skill and labor in carrying out their nefarious schemes, than would serve to earn the sum they finally secure, by honest labor. Every banker must, therefore, be on his guard, and should acquaint himself with the most approved means of detecting and avoiding the most common swindlers. This is just as necessary as it is to lock his books and cash in his safe before going home.

Next to the counterfeiter, the forger is the most dangerous criminal in business life. Transactions involving the largest sums of money are completed on the faith in the genuineness of a signature. Hence every effort should be made to acquire the art of detecting an imitation at a glance. This can only be done by considerable practice. It is asserted that every signature has character about it which can not be perfectly copied, and which can always be detected by an experienced eye. This is problematical, but certainly a skillful bank-teller can hardly be deceived by the forgery of a name of a well-known depositor.

A banker and business man should accustom himself to scrutinize closely the signatures of those with whom he deals. He should cut off their names from the backs of checks and notes, and paste them in alphabetical order in an autograph book devoted to that purpose, and compare any suspicious signature with the genuine one.

In consequence of the numerous frauds committed by forged checks, some of the European bankers have adopted the custom of sending with their letter of advice a photograph of the person in whose favor the credit has been issued, and to stop the payment when the person who presents himself at the bank does not resemble the picture. If this practice were to become universal, the object of preventing frauds could be well attained.

It is probably a fair statement to make that any draft issued can be raised, but it is unquestionably true that some can be much more easily altered than others, and as in the last ten years additional safeguards have been thrown around the bills of exchange of banks, so the forger has become more and more expert and proficient, just about keeping the pace. As the question of armor that can not be pierced and projectiles that will pierce anything are first one and then the other a little ahead, so it is with the bank forger and the banks.

Admirable as some of the work unquestionably is, if anything so disreputable can be called admirable, there is even yet a something about either the work or the operator that should arouse the suspicions of the teller or cashier who is on the alert; and a teller or cashier without suspicion, and who is not on the alert, may be a comparatively good man, but is certainly in the wrong place.

The presenter of a counterfeit bill at the teller's window may have no knowledge of the character of the bill that he is presenting, but he who presents a forged draft, in addition to presenting a bad bill, has a consciousness himself of the fraud that he is attempting, thus giving the teller not only the chance of scrutinizing the bill, but also to judge of the appearance, whether nervous or otherwise, of the man who is laying the trap, and these two facts should inure greatly to the advantage of the teller.

As the news of the many successful depredations is scattered, we see banks trying different methods of protection, many of which at first glance are admirable, but which it will be seen on a little careful study simply require but slight change of method on the part of the professional forger to successfully evade. For instance: Many banks are daily advising their correspondents of the number and amounts of drafts issued, either in the course of the mails or otherwise. This at first sight would seem to be almost absolute protection, but it really may prove a trap to the bank so advised, as may readily be seen. Let us suppose that Mr. Forger steps into a bank in Cleveland, buys a draft for \$5; a day or two later, or on the same day, he buys another draft for \$5,000. The first draft is successfully altered to \$5,000, but would not of course be paid by the correspondent bank for this amount, because of the advice they have of this number is that it was issued for \$5; but it was a simpler matter to change the number of the draft to correspond with the \$5,000 draft, the number of which the forger has, than it is to make the other alterations necessary to raise it from \$5 to \$5,000. After making these alterations it goes in for payment, and on reference to the advice sheet it is found that this apparent number was issued for \$5,000 and paid accordingly. Then the forgers have simply the problem on hand to avail themselves, either directly through the bank of issue or elsewhere of this genuine \$5,000 draft, which is certainly not a hard task for the men who have successfully performed the harder one.

## **CHAPTER XXIIA FAMOUS FORGERY**

The Morey-Garfield Letter—Attempt to Defeat Mr. Garfield for the Presidency—A Clumsy Forgery—Both Letters Reproduced—Evidences of Forgery Pointed Out—The Work of an Illiterate Man—Crude Imitations Apparent—Undoubtedly the Greatest Forgery of the Age—General Garfield's Quick Disclaimer Kills Effect of the Forgery—The Letters Compared and Evidences of Forgery

Very few cases have arisen in this country in which the genuineness of handwriting was the chief contention, and in which such momentous interests were at stake, as in the case of the forged "Morey-Garfield Letter." It was such as to arouse and alarm every citizen of the republic. A few days prior to the presidential election of 1880, in which James A. Garfield was the Republican nominee, there was published in a New York Democratic daily paper, a letter purporting to have been written to a Mr. H.L. Morey, who was alleged to have been connected with an organization of the cheap-labor movement. The letter, if written by Mr. Garfield, committed him in the broadest and fullest manner to the employment of Chinese cheap labor. It was a cheap political trick, a rank forgery, and the purpose of the letter was to arouse the labor vote in close states against Mr. Garfield. It was also a bungling forgery. We present herewith facsimiles of the forged letter and one written by Mr. Garfield branding the Morey letter a fraud.

THE MOREY-GARFIELD FORGERY

Personal and Confidential  
House of Representatives,

Washington, D. C., July 23 1880

Dear Sir

Yours on relation to the Chinese  
problem came duly to hand

I take it that the question of cheap labor  
is only a question of private and corporate  
economy, and individuals or companies have  
the right to buy labor where they can get  
it cheapest.

We have a treaty with the Chinese  
government, which should be religiously kept  
until its provisions are abrogated by the  
action of the general Government, and I am  
not prepared to say that it should be  
abrogated, until our great manufacturing  
and corporate interests are concerned in the  
matter of labor.

Very truly yours  
J. A. Garfield

H. L. Morey  
Employers Union  
Lynn, Mass.

## LETTER WRITTEN BY GARFIELD.

MENTOR, OHIO, Oct 23, 1880.

Now Marshall Jewell  
 Chairman Rep. Nat. Committee  
 241 Fifth Avenue N.Y.

Dear Sir:

In my dispatches of yesterday and this evening (which are also sent you by mail) I have denounced the Morey letter as a base forgery. Its stupid and brutal sentiments I never expressed nor entertained. The lithographic copy shows a very clumsy attempt to imitate my penmanship and signature. Any one who is familiar with my handwriting will instantly see that the letter is spurious.

Very Truly Yours  
 J. A. Garfield.

## LETTER WRITTEN BY GARFIELD.

The Morey letter was evidently written by an uneducated man. Here are three instances of wrong spelling that a man of Mr. Garfield's education could not possibly make. The words "ecomony" and "Companys" in the eighth line and "religeously" in the twelfth line give evidence of a fraudulent and deceitful letter at once.

The misplacing of the dot to the "i" in the signature to the left of the "f" and over the "r" is a mistake quite natural to a hand unaccustomed to making it, but a very improbable and remarkable mistake for one to make in writing his own name. Another noticeable feature in the Morey letter is the conspicuous variations in the sizes and forms of the letters. Notice the three "I's" in the fifth line. Variations so great in such close connection seldom occur in anything like an educated and practiced hand. The "J" in the signature of the Morey letter has a slope inconsistent with the remainder of the signature and the surrounding writing. It is also too angular at the top and too set and stiff throughout to be the result of a natural sweep of a trained hand.

The Morey letter was written in January, 1880, and made public in October of the same year. If Mr. Garfield wrote the Morey letter in January there was at that time no motive to write it in any other than his ordinary and natural hand. The letter of denial is in his perfectly natural hand; these two letters should therefore be consistent with each other.

The signature of the Morey letter is a clumsy imitation of General Garfield's autograph. Observe the stiff, formal initial line of the "F"—its sharp, angular turn at the top, absurd slope and general stiff appearance, while the shade is low down upon the stem, and compare with the free, flowing movement, round turns and consistent slope of the same letter in his genuine autograph. We might extend the comparison, with like result, to all the letters in the signature, and to a multitude of other instances in the writing of the body of the letter.

Many persons, and some professed experts, have remarked what appeared to them striking and characteristic resemblances between the Morey letter and General Garfield's writing.

It should be borne in mind that if the letter is not in the genuine handwriting of Mr. Garfield it was written by some person whose purpose was to have it appear so to be. That being the case, we should naturally expect to find some, even more, forms than we do, having a resemblance to those used by Mr. Garfield. All these resemblances appear to be either copied or coincidences in the use of forms. There are no coincidences of the unconscious writing habit, which clearly, to our mind, proves the Morey letter, as Mr. Garfield well characterizes it, a very clumsy effort to imitate his writing. Indeed, the effort seems to be little more than an endeavor, on the part of the writer, to disguise his own hand, and copy a few of the general features of Mr. Garfield's writing, adding a tolerable imitation of his autograph.

## CHAPTER XXIII

### A WARNING TO BANKS AND BUSINESS HOUSES

Information for Those Who Handle Commercial and Legal Documents—Peculiarity of Handwriting—Methods Employed in Forgery—Means Employed for Erasing Writing—Care to be Used in Writing—Specimens of Originals and Alterations—Means of Discovering and Demonstrating Forgery—Disputed Signatures—Free Hand or Composite Signatures—Important Facts for the Banking and Business Public—How to Use the Microscope and Photography to Detect Forgery—Applying Chemical Tests—How to Handle Documents and Papers to Be Preserved—The Value of Expert Testimony—Using Chemical, Mechanical and Clerical Preventatives.

The following chapter is written by Mr. William C. Shaw, of Chicago, the well-known handwriting expert and expert on forgery, whose services are called in all important forgery and disputed handwriting cases in the country. It is replete with facts and suggestions of the greatest importance, and will be found not only interesting reading, but an instructive article throughout.

The comparative frequency with which checks, drafts, notes, etc., are being raised or altered, as well as deeds, wills, etc., forged and substituted, has naturally created a widespread interest in the subject of "disputed handwriting." The importance of practical knowledge in this direction by those who are continually handling commercial papers and legal documents is at once apparent, but others engaged in any business pursuit may be saved considerable loss, trouble and annoyance by observing the principles and suggestions explained and illustrated in this article.

In approaching the subject of detecting forged or fraudulent handwriting let it be understood as a fundamental principle that there are hardly two persons whose writing is similar enough to deceive a careful observer, unless the one is imitating the other. Hands, like faces, have their peculiar features and expression, and the imitator must not alone copy the original, but at the same time disguise his own writing. Even the most skilled forger cannot entirely hide his individuality and is bound to relapse into his habitual ways of forming and connecting letters, words, etc. The employment of extreme care can be detected by signs of hesitancy, the substitution of curves for angles, etc., which appear very plainly when the writing is critically examined with a magnifying glass. When a signature has been forged by means of tracing over the original, the resemblance is often so exact as to deceive even the supposed author. In these cases the microscope is generally effective in detecting the forgery, as well as the methods employed. Perfect identity of two genuine signatures is a practical impossibility; if, therefore, two signatures superposed and held against the light completely coincide it is almost certain that one of them is a forgery.

The methods employed in executing forged handwriting are varied and depend largely on the individual skill and inclination of the party attempting it.

The most frequent class of forgeries consists of erasures, which means the removing of the genuine writing by mechanical or chemical means. Erasing with knife, rubber, etc., has practically been abandoned by expert forgers, on account of the almost certain detection which must necessarily follow the traces left in evidence. Erasing fluids, ink eradicators, etc., are more generally used for this purpose. These have entered the market for legitimate purposes and can be commercially obtained. Too much confidence should, therefore, not be placed in the careful writing of checks, etc., alone, as with the aid of chemicals the original writing can be entirely removed and forged words and figures substituted.

Second in importance and frequency, and perhaps the easiest kind of forgery, consists of simple additions to genuine handwriting. In checks or drafts the changing of "eight" to "eighty" by the addition of a single letter is a striking illustration. The change of "six" to "sixty," "twenty" to "seventy," etc., can also be accomplished by adding a few strokes and without erasure, as per specimens given.

ORIGINAL.	ALTERATION.
Eight.	Eighty
Six	Sixty.
Two	Five
Ten	Fifty.
Ten	Twenty
Twenty	Twenty
\$8.00	\$80.00
100.00	900.00

The forging of signatures and writing in general is accomplished by means of tracing as above referred to, free-hand copying, with the aid of considerable practice, and copying by mechanical or chemical processes. It is not intended here to give directions, but simply to refer to facts, with a view to preventing losses and detecting forgeries. For this reason one method of reproduction may briefly be described. The carelessness with which blotters are used in public places, bank counters, post, express and hotel offices is to be strongly condemned. The entire signature of an indorser is often clearly copied on the underside of the blotting paper, which only needs to fall into the hands of a designing party to be projected on any paper or document and in any desired position.

The means of discovering and demonstrating forged handwriting are as varied as the methods employed in its execution, and it may be some comfort to know that the cunning of the forger is more than matched by the skill and ability of the expert.

The ordinary method of identifying handwriting consists in the "comparison of hands." This, however, is only admitted in courts of justice under certain limitations. The genuineness of a disputed writing can be proved by a witness who has seen its execution, or by comparison with correspondence received in the regular course of business, or by comparisons with disputed specimens of the alleged handwriting, which must also be in evidence. Disputed signatures may be compared with other signatures acknowledged to be genuine, or with letters or documents, the genuineness of which is unquestioned. In arriving at conclusions many things are to be considered, the form of the letters, their manner of combination, evidences of habit, etc.

Another method of detecting forgery is afforded by the internal evidences of fraud of the writing itself, with or without the aid of comparison with genuine writing. These evidences may consist of alterations, erasures, additions, crowding, etc., as above referred to; tracing a genuine writing by means of ink or pencil, afterwards retraced, etc.

The copy of a genuine signature may be free-hand or composite, by which is meant that the writing is produced discontinuously or in parts. Comparison of the separate letters of the doubtful specimen of writing with the separate letters of the genuine writing of the supposed imitator or imitated always exhibits less uniformity if imitation has been attempted, the copyist being frequently led into an approach to his ordinary handwriting or into an oversight of some special characteristics of the writing he is simulating. Even minor points do not escape the expert's critical attention. The dotting of the i's, or crossing of the t's, curls, loops, flourishes, intervals between words and letters, connections, characteristics of up and down strokes are all carefully noticed.

A glass of low magnifying power will, as a rule, exhibit erasures, and even bring to view the erased letters. In tracing, the forger frequently fails to cover over the first outlines, which can be plainly distinguished. The places where the pen has been put upon and removed from the paper may sometimes be noticed, which is in itself strong evidence of fraud.

With the aid of a microscope the character of the alterations, certain characteristics due to age, emotion, etc., the kind of pen used and how it was held, the nature of ink, order of writing, with regard to time, whether produced by the right or left hand, standing or sitting, can often be determined. Indentations made by heavy strokes or a sharp pen, as well as those employed as guides for the signature subsequently written, will also be brought into prominence. Forged signatures placed under the microscope have generally a patched appearance, which results from the retracing of lines in certain portions not occurring in genuine writing.

In case of disputed handwriting photography has also been employed to great advantage. Of course the

writing in question should, whenever practicable, be compared with the original, photographic copies being looked upon with disfavor and considered by most courts as secondary evidence. Still, photographic enlargements of genuine and disputed signatures are very useful in illustrating expert testimony. Certain characteristics, differences in ink, attempts to remove writing, etc., may be brought to view, which would be entirely overlooked by direct examination. The wonderful power of the camera has recently been illustrated in a very striking manner. A large ocean steamer was photographed, and on receipt of the proof the owners were surprised to see a hand bill posted on the side of the hull. Examination of the ship disclosed no hand bill there, but another photograph exhibited the same result. A searching inspection revealed the presence of the mysterious paper buried beneath four coats of paint, but defying the superficial scrutiny of the human eye.

As a last resort chemical tests may be applied, by which the identity or difference of the inks used may be established, etc. As a means of demonstrating that chemical erasures have been made a certain manipulation and treatment of the paper submitted will almost invariably bring back the original and obliterated writing.

A few words regarding papers and documents, intended for preservation, will not be amiss. Improved processes of manufacture have certainly had no beneficial influence on the durability of the products, and while inks and papers have become greatly reduced in price and apparently improved in quality, it is very doubtful if much of our book learning and many of our written instruments will go down to future generations. Even fifty years will suffice to decompose many an attractive volume at present on the shelves of our libraries, or fade the writing of finely engraved and important documents. The quality of the ink and paper selected is therefore of greatest importance. Typewritten copies particularly are subject to the ravages of time, and ought to be avoided when preservation for years to come is the principal consideration, as for instance in the case of wills, etc., which ought to be made in one's own handwriting whenever practicable.

Briefly, I may state that all the safeguards employed on commercial papers or legal documents, outside of the actual protection afforded, have the beneficial effect or tendency to make forgeries, erasures or alterations more difficult, at the same time warning prospective forgers to keep a respectful distance.

The inks used, the position of the writing, the paper on which it is written, the employment of certain chemical, mechanical and clerical preventatives are all to be thoughtfully considered by those who desire to protect themselves against losses resulting from fraudulent handwriting.

With regard to expert testimony it may be said in conclusion that it is most effective if governed solely by the evidence submitted, and not by information otherwise obtained. The microscopic and photographic examination of papers and documents, as well as their mechanical and chemical treatment, require in all cases the trained eye, the skilled hand and the extensive experience of the expert, in order to fully utilize the available material and to arrive at conclusions which are in entire accord with the facts under consideration, thereby aiding in the just and equitable settlement of weighty questions of profit or loss, affluence or poverty, liberty or imprisonment, life or death.

Another expert in handwriting says that regarding the methods made use of to determine authorship, specialists are naturally reticent. Some of them have admitted, however, the nature of the leading principles which guide them. The philosophy of the matter rests mainly on the fact that it is very rare for any two persons to write hands similar enough to deceive a careful observer, unless one is imitating the other. "Fists," like faces, have all some special idiosyncrasy, and the imitator has not merely to copy that of some one else but to disguise his own.

By careful and frequent practice he may succeed well enough to deceive the ordinary man, but is rarely successful in baffling the expert. Even the most skilful culprit cannot wholly hide his individuality, as he is sure to relapse into his ordinary method occasionally. Then again, great care has to be used, and this can be detected by the traces of hesitancy, the substitution of curves for angles and *vice versa*, which come out very plainly when the writing is examined under the microscope, as it usually is by the expert.

A plan of detection which has been adopted with great success is to cut out each letter in a doubtful piece of writing, and paste all the A's, B's, etc., on separate sheets of paper. The process is also gone through with a genuine bit of caligraphy of the imitator or the imitated, as the case may be. Comparison almost invariably shows that the letters are less uniform if imitation has been attempted, the writer being occasionally betrayed into some approach to his ordinary caligraphy, or into momentary forgetfulness of some special point in the handwriting he is simulating.

No point is too small to escape an expert's attention. The dotting of the "i's," the crossing of "t's," the curls and flourishes, the intervals between the words, the thinness of the up-stroke and the thickness of the down-stroke, are all noted and carefully compared. Where only a signature has been forged, and that by means of tracings from the original the resemblance is often so exact as to deceive even the supposed author, but in these cases the microscope is generally effective in determining not merely the forgery but the method by which it was accomplished. It is some comfort to know that the cunning of the forger is overmatched by the scientific skill of the trained expert.

## CHAPTER XXIV

### HOW FORGERS ALTER BANK NOTES

Bankers Easily Deceived—How Ten One Hundred-Dollar Bills Are Made out of Nine—How to Detect Altered Bank Notes—Making a Ten-Dollar Bill out of a Five—A Ten Raised to Fifty—How Two-Dollar Bills are Raised to a Higher Denomination—Bogus Money in Commercial Colleges—Action of the United States Treasury Department—Engraving a Greenback—How They Are Printed—Making a Vignette—Beyond the Reach of Rascals—How Bank Notes Are Printed, Signed and Issued by the Government—Safeguards to Foil Forgers, Counterfeiters and Altersers of Bank Notes—Devices to Raise Genuine Bank Notes—Split Notes—Altering Silver Certificates.

A dangerous game and one too often successfully perpetrated, is the raising of bank bills from a lower to a higher denomination. Counterfeiters and forgers have often been detected making ten bills of nine by the following operation:

A counterfeit one hundred-dollar bank note is cut into ten pieces; one of these pieces is pasted into a genuine bill, cutting out a piece of the genuine of the same size. In pasting nine genuine bills in this manner nine pieces are obtained, which, with one piece of counterfeit, will make a tenth bill, which is the profit. This operation is not a very successful one, as the difference between the counterfeit and the genuine will be very evident to any one who examines closely.

Every business man should know how to detect altered bank bills, and a close scrutiny of all money offered, bearing in mind the suggestions here made, will prove a safeguard. Bank notes are sometimes altered by raising from lower to higher denominations, or replacing name of broken bank by name of good one. This is done either by erasing words and printing others in their place, or by pasting on the original bill a piece of counterfeit work or a piece taken from some genuine bill. If the former, the new counterfeit piece will always differ from the surrounding genuine work. If the latter, the fraud will be revealed by holding the bill up to the light, when the portion pasted will look darker than the surrounding portions.

Another method employed is to cut ten-dollar bills in halves, also five-dollar bills, then join them, and raise the five part to a ten by the blue paper dodge. This bill can be successfully worked off in a roll of other bills, owing to the workmanship, and sometimes a gang will visit a certain locality and flood it with doctored bills. Fifty-dollar bills have been often raised from a ten. This fraud is generally neatly executed, and is well calculated to deceive the unsuspecting, and a banker, in hurriedly counting money, is liable to be taken in on one of these.

A recent scheme to defraud with raised bills is to raise a two-dollar bill to a five. In order to accomplish this feat rascals cut out the figure five in the left-hand corner of a "V" and paste it over the figure "2" in the upper right-hand corner of the two-dollar bill. The pasting is done so neatly that not one person in a hundred, or even a thousand, unless an expert, would notice the difference. The very small \$2 marks in the scroll-work surrounding the large figure are blotted out with a pencil and are not visible. The figure "2" in the lower right-hand corner is erased with acids, and the bill is in all respects a first-class imitation of the genuine article. Treasury officials say that this is something new in the way of bill-raising, and is very dangerous.

Many people who are not used to handling money have been swindled by what is known as "Imitation Money." The United States Treasury Department is making strenuous efforts to break up the practice of issuing imitations of the national currency, to which many commercial colleges and business firms are addicted. This bogus currency has been extensively used by sharpers all over the country to swindle ignorant people and its manufacture is in violation of law.

So vague is the general idea as to how a bank note is made that we give an explanation of the various processes it goes through before it is issued as a part of the "money of the realm," saying, by way of introduction, that this country leads the world in bank-note engraving. Unfortunately, the first consideration in making a bank-note is to prevent bad men from making a counterfeit of it, and therefore all the notes of a certain denomination or value must be exact duplicates of each other. If they were engraved by hand this would not be the case; and, another thing, hand engraving is more easily counterfeited than the work done by the processes we herewith describe.

Every note is printed from a steel plate, in the preparation of which many persons take part. If you will look at a \$5 "greenback" you will see a picture in the center; a small portrait, called a vignette, on the left, and in each of the upper corners a network of fine lines with a dark ground, one of them containing the letter "V" and the other the figure "5." These four parts are made on separate plates.

To make a vignette it is necessary, first, to make a large drawing on paper with great care, and a daguerreotype is then taken of the drawing the exact size of the engraving desired.

The daguerreotype is then given to the engraver, who uses a steel point to mark on it all the outlines of the picture. The plate is inked and a print taken from it. While the ink is still damp the print is laid face down on a steel plate, which has been softened by heating it red hot and letting it cool slowly. It is then put in a press and an exact copy of the outline is thus made on the steel plate. This the engraver finishes with his graver, a tool with a three-cornered point, which cuts a clean line without leaving a rough edge.

Now this is used for making other plates—it is never used to print from. It must be made hard and this is done by heating it and cooling it quickly. A little roller of softened steel is then rolled over it by a powerful machine until its surface has been forced into all the lines cut into the plate. The outlines of the vignette are thus transferred to the roller in raised lines, and after the roller is hardened it is used to roll over plates of softened steel, and thus make in them sunken lines exactly like those in the plate originally

engraved. The center picture is engraved and transferred to a roller like the vignette, but the network in the upper corners, and also on the back of the note, is made by the lathe. This machine costs \$5,000, a price that puts it beyond the reach of counterfeiters, and its work is so perfect that it can not be imitated by hand.

The black parts of the note are printed first, and when the ink is dry the green-black is printed, to be followed by the red stamps and numbers. It is then signed and issued. For greater security one part of the note is engraved and printed at one place and another part at another place, when it is sent to Washington to be finished and signed.

But even after all this care and all these safeguards many skillfully executed counterfeits and raised and altered bank notes have been made and issued, some of them so good as to deceive the most expert judges of money.

Many devices have been resorted to by counterfeiters to raise genuine bank-notes, as well as to manufacture bogus ones, but one of the most novel has recently come to light. The scheme consists of splitting a \$5 and a \$1 note, and then pasting the back of the \$1 note to the front of the \$5 note and the front of the \$1 note to the back of the \$5 note. The mechanical part of the work was excellently done, but the fraud could be detected the moment the note was turned over.

An effort had been made to change the "one" to "five" on the "one" side of the new combined note, but it was done so clumsily that the fraud would have been seen at a glance, and the only hope of passing the notes as fives would have been to pass them over with the \$5 side up and trust to the man receiving it not to turn it over before putting it away. The doctored notes came to the notice of the writer through one of the Chicago banks, with the request that they be allowed whatever they were worth. The government always redeems notes at the face value, and as the faces in this case were of a \$1 and a \$5 note, \$6 was allowed. It is not known whether the bank was caught on the split notes or not.

Another scheme for altering bank-notes is practiced with more or less success. It is to take a one dollar silver certificate and by means of powerful acids and fine penwork the large figure "one" on the reverse side is split into two "tens," and the intermediate portion transformed into a scroll. On the other side the "one" over the representation of the silver dollar is obliterated and "ten" substituted, but the "s" is left off the dollar. The single "1" figures in the corners are neatly eaten off and the figure "10" substituted. The small "one" is changed to an "X" and a new series number is printed in red upon the face. The bill would pass anywhere. None but an expert would detect the fraud.

## APPENDIX

### INTERESTING WRITINGS OF VARIOUS KINDS FOR STUDY AND COMPARISON

#### FOUR ORDINARY SIGNATURES WITH DESCRIPTIONS

A cursive signature that reads "Yours truly A. L. Brown!". The letters are thin, light, and appear to be traced rather than written naturally. The "A" and "L" are particularly delicate and lack the weight of a natural hand.

A mechanical or artificial hand in copy-book style, lightly and delicately traced.

A cursive signature that reads "J. Carpenter.". The letters are thick, dark, and highly connected. The strokes are rapid and energetic, showing a high level of animation and mental activity.

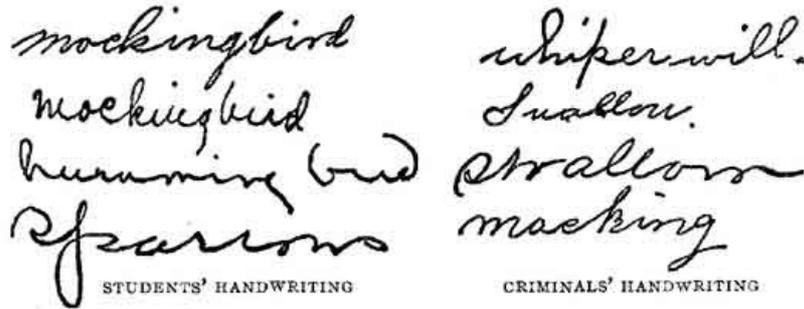
Characteristic signature, connected and rapidly traced letters expressing great animation and mental activity.

A cursive signature that reads "Arlo T. Bates.". The letters vary significantly in size and are written with a natural, expressive flow. The "A" is large and bold, while the "T" and "Bates" are more varied in size and style, showing great spontaneity.

A natural hand, letters vary in size, written with great spontaneity and expression.

# William Mathews.

A restrained hand, letters slowly and deliberately traced, indicating a slow intelligence and perception.



The above is a comparison of the students' and criminals' handwriting, the selections being made from the records of each class.

*B. L. Parsons*

The tremor of feebleness is shown in this signature. This was written by a gentleman ninety-two years of age. Writing of one who is ill or feeble is usually characterized by a light stroke. The simulated tremor of a skilful penman is rarely successful in deceiving a trained eye.

*Pennsylvania*

This signature represents the tremor due to illiteracy. The tremors and angular features shown are by no means indicative of lack of power, but the power is misdirected.

*Ivan Wilson*

The signature of Ivan Wilson, herewith given, will serve as an illustration of the tremor almost inseparable from forgery. The tremors of a simulating hand are never so numerous nor so fine as real tremors.

GENUINE

*Frank James*

FORGED TRACING

*Frank James*

FORGED FREE-HAND

*Frank James*

The first signature is the original. The second is a bungling traced forgery and the third is a forged freehand. Taken apart from one another they are clever enough to deceive, but studied together here the fraud and deception is readily

apparent.

ORIGINAL SIZE.

GENUINE.

Walter Drum.

FORGED TRACING.

Walter Drum.

FORGED FREE HAND.

Walter Drum

We give above a genuine signature with a forged tracing and a forged free-hand. You can readily detect the forgeries when these signatures are placed together and explained. It gives one points on how to study forged and disputed signatures.

SOME THUMB AND FINGER-PRINT SUGGESTIONS



We show herewith two enlarged finger-prints. These are taken from the index finger and are used in many cases instead of thumb-prints.



The above illustrations are fac-simile impressions of the dermal furrows of the right and left thumbs of four different persons. The left thumbs are in the top row, the right thumb being below. These are enlarged to bring out the distinctive points. You will note that no two are alike and it is absolutely impossible to forge or duplicate the thumb-print of any person.

["Thumb-prints Never Forged" on page 115.](#)



Promiscuous thumb-prints taken at random, easily distinguishable in the original impression but not enlarged as in above illustration. A photographic reproduction showing the lines without enlargement almost impossible.

### INTERESTING AUTOGRAPH SIGNATURES

Kaiser's signature published in book sanctioned by him is the writing of an extremely erratic and nervous man.

This is a facsimile of Capt. Myles Standish's handwriting found on the fly-leaf of one of his books. Capt. Myles Standish, known as the human sword blade, whose valor saved the Pilgrims at Plymouth from utter destruction at the hands of hostile Indians went back to England in 1625 on business for the colony. Before his return, in 1626, he bought this book and carried it back to America with him.

In this signature of the great Liberator of Italy, we have indications of energy in the angular form of the letters, and in the hasty and irregular dot to the small letter "i," and originality in the curious angularly waved line below the signature. It denotes tenacity of purpose.

In this signature of Napoleon Bonaparte, which appears on a letter written by him when only a captain in the French army, we have the "vaulting ambition" which made him all *but* master of Europe. There is the dominant will in the strongly marked "t," and in the hard, thick line which terminates the flourish; his egotism and self-assertion are evidenced in this flourish, his originality in the peculiar form of the capital letter "B;" but ambition is here "still the lord of all."

GREELEY'S LAST LETTER

New-York Tribune.  
New York, Dec 12, 1872

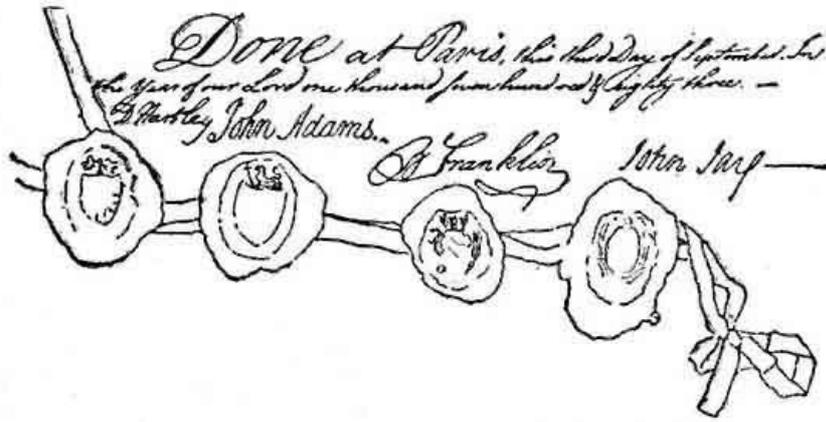
My Dear Friend,  
You are a man of  
many sorrows, and  
do not fear to send  
them, but I beg to say  
that I do not forget  
to collect enough back  
less postage you will  
in my behalf I am not  
well Yours  
Horace Greeley

Col. W. K. Kellogg,  
144 So. Fifth  
Philadelphia.

This was the last letter ever written by Horace Greeley, America's famous editor and horrible penman.

Cyrus W. Field  
R. F. Ingersoll  
Alisco Purkin  
Alfred Don  
S. D. James

The signatures of this group are by well-known men, all leaders in a special line of activity. These autographs are original and typical of the men writing them. The general character, temperament and make-up of these gentlemen are well-known to all, and a study of these signatures will be found interesting.



Reduced copy of the signatures and seals of the English and American commissioners who signed the treaty of peace between Great Britain and the United States in 1783.

**CHARACTERISTIC WRITING OF SOME OF THE BEST KNOWN MEN IN THE BANKING WORLD OF THE UNITED STATES**

President American Bankers' Association and President of the Continental National Bank, Chicago.

Mr. Vanderlip, President of the National City Bank, New York.

Lewis E. Pierson, First Vice-president American Bankers' Association and President Irving National Exchange Bank, New York City.

F. O. Watts, Chairman Executive Council American Bankers' Association and President First National Bank, Nashville, Tenn.

*P. C. Kauffman*

Treasurer American Bankers' Association and Second Vice-president Fidelity Trust Co., Tacoma, Wash.

*Fred. E. Farnsworth*

Fred. E. Farnsworth, Secretary American Bankers' Association, New York.

*W. G. Fitzwilson*

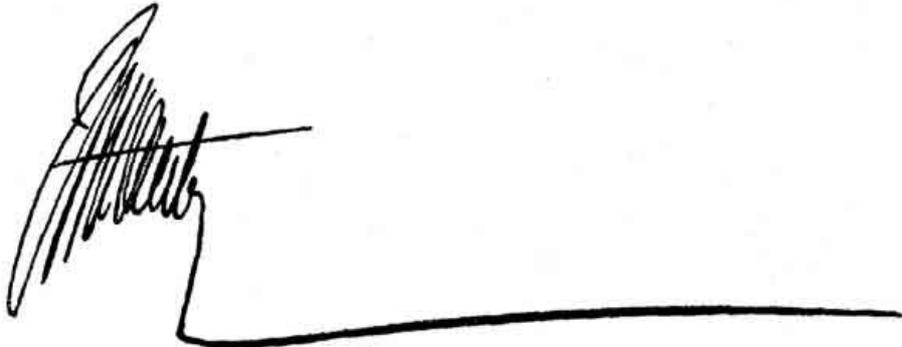
W. G. Fitzwilson, Assistant Secretary American Bankers' Association, New York City.

*A. Caudall*

Assistant Cashier of the National City Bank, Chicago, and formerly President of the American Institute of Banking.



This gentleman is one of the best-known bankers in America. He has also been Secretary of the Treasury.



A rather complicated, though not altogether unreadable signature of John K. Ottley, vice-president of the Fourth National Bank, Atlanta, Ga.



J. Furth, President of the Puget Sound National Bank, Seattle, Wash.

With my best respects, I am

Yours truly.



There is no better known gentleman in the country than John Farson, the millionaire banker of Chicago. He dresses attractively, loves legitimate notoriety, is absolutely democratic in his daily life, is charitable and pleasant and believes in making everybody happy, and is a great lover of flowers and children. His signature indicates his character thoroughly.



Governor of the Bank of Japan.

This is a fair specimen of the writing of a Japanese banker and business man. This was written with great haste, also.

CURIOUS AND FREAKISH SIGNATURES OF WELL-KNOWN BANKERS AND BUSINESS MEN

Banker Wm. W. Quigg thinks this is a pretty good signature. He is a banker at Ontario, Calif.

A Michigan bank cashier, E. Newell, writes this signature.

This is the signature of Common Parse.

This is the way H. G. Nolton writes his name.

This was the original freak signature of the country. It will be recognized by every one as F. E. Spinner.

F. S. Watts, teller in an Iowa bank, is not afraid to use ink. He says this signature has never been counterfeited.

( )  
This stands for Lloyd Bowers, a well-known Kansas banker.



Yours truly  
Lloyd Bowers  
Manager

R. J. B. Crombie, a Canadian banker, has a signature that is certainly freakish.



Tom Randolph

Tom Randolph, president of a Sherman, Texas, National Bank, thinks he is a good writer.



W. D. Mussenden  
Cashier

W. D. Mussenden, an eastern banker, thinks any man ought to readily read his writing.



C. W. Bush

C. W. Bush, president of the Bank of Yolo, Woodland, California, makes these marks and they are good on any check.



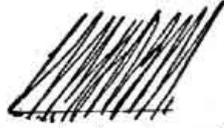
W. O. Cline

W. O. Cline, editor and publisher of a Chicago paper. This is one of the most unique signatures in the United States.



W. O. Cline

A. B. Ming might write worse but it is doubtful.



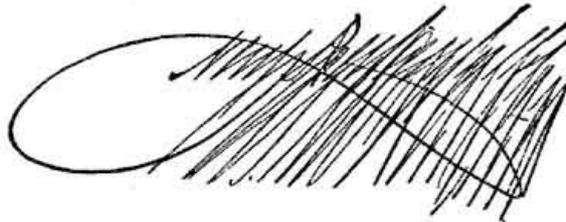
W. P. Hazen, a Kansas banker, has written this signature so many years he thinks it ought to be legible to any one.



This is the very complicated signature of Hugh Harbinson, a well-known Connecticut business man.



John Mohr, Jr., thinks this is a plain signature.



Jas. V. D. Westfall, formerly a well-known New York State banker.



F. C. Miller, Kansas banker, wants this to pass current as his name.



Louis Houck, historian, Cape Girardeau, Mo.



Tams Bixby, General Manager The Pioneer Press, St. Paul, Minnesota. This is certainly a unique signature.



J. W. Dunegan, Cashier First National Bank, Marquette, Mich.



This is known as the "Turn Around" signature. This was furnished us by the president of one of the largest banks in New York City. It is one of the most curious of signatures. Turn it around. It reads the same both ways.



P. B. Elder, formerly a Pennsylvania bank president, known as the "upside down" writer. Turn it around.



John R. Dixon, a well-known Chicago business man.



Peter White, President First National Bank, Marquette, Mich.

**HOW SOME CELEBRATED WOMEN WRITE**



In this signature of the "divine Sarah," the flourish peculiar to most actresses, which indicates love of admiration, is very remarkable. We have also, in the return of the curve of the letter "S" the sign typical of egotism; in the peculiar form of the letter "B," we have originality; in the heavy down strokes we have sensuousness; and in the angular forms of all the letters, strong will.



Who has not heard of that eccentric woman in man's garb, Dr. Mary E. Walker. She is egotistical, seeks after notoriety, and her signature is a correct portrayal of a petulant and whimsical nature.



This signature of Marie Antoinette was taken from a letter written while she was in prison under sentence of death. This is a despondent signature. Misfortune, separation from her husband and children, and humiliation had crushed her pride, and the whole of this signature is descendant, the four last letters remarkably so, which indicates a thoroughly despondent condition.

### THREE OF AMERICA'S BEST-KNOWN MEN



Melville W. Fuller, Chief Justice of the Supreme Court, of the United States.



P. S. Grosscup, Chicago, Judge of the Circuit Court of the United States.



John Hay, formerly Secretary of State, is a versatile man. The most remarkable point in this autograph is its extreme clearness, indicative of lucidity of ideas. Cultivation is shown in the form of the capital letters in both Christian and surname. No obstinacy is shown in this nature, only sufficient firmness to hold his own when necessary, the signature showing also a strong literary leaning.

### THREE FAMOUS MILITARY MEN

U. S. Grant R. E. Lee  
G. J. Beauregard

We present a group of signatures of famous military men. The autograph of General Grant is plain and simple in its construction, not an unnecessary movement or mark in it—a signature as bare of superfluity and ostentation as was the silent soldier and hero of Appomattox. In the autograph of R.E. Lee we have the same terse, brief manner of construction as in Grant's. It is more antiquated and formal in its style, more stiff and what might be called aristocratic. Its firm upright strokes, with angular horizontal terminal lines, indicate a determined, positive character. In somewhat marked contrast with the two last-mentioned autographs is that of General Beauregard, in that he indulges in a rather elaborate flourish, which is a national characteristic.

**CHARACTERISTIC WRITING OF A FEW OF THE WORLD'S BEST-KNOWN LITERARY MEN AND  
AUTHORS**

William Shakespeare

Shakespeare's writing shows a strong, intuitive observation — that quick movement of the mind which seizes character at a glance — is shown by the want of *liason* between the curiously formed letter "h" and the "a" which follows it. With a poet's disregard of order, Shakespeare puts no dots to either of the small letters "i" in his Christian name, nor is there any full stop at the end of the signature, so suggestive, when seen in an autograph, of caution, and that attention to minutiae which seems almost incompatible with the poetic nature. No flourish of any kind disgraces this thoroughly characteristic signature of England's greatest poet.

J. Fenimore Cooper

His popularity and fame as a novelist may be attributed to the fascinating style and vivid portrayal of his imaginative rather than realistic creations. The flourish after the signature has its significance also. It is lacking in grace or harmony, and evidently the quick, assertive stroke from the pen of one who will brook no opposition.

Henry W. Longfellow

In this signature of Longfellow we have imagination in the letter "L" in the signature of the surname, lucidity of ideas in the extreme clearness of the writing, ideality in the absence of *liason* between the "l" and "o," but not as much tenderness as one would have expected in the writing of the author of "Evangeline."

Edgar Allan Poe

Edgar Allen Poe was an egotistical and imaginative writer. When the flourish takes any very peculiar abnormal form, it is rather a sign of originality than vanity, though there is perhaps always a slight admixture of egotistical feeling in all flourishes.

Emile Zola

Who has not heard of Emile Zola? This signature has the lightning flourishes in the "Z" and "a," and the entire separation of letters indicate an almost wholly intuitive mind, but lacking in logic, reason and judgment.

#### AUTOGRAPHS OF SOME WELL-KNOWN MEN. THEIR WRITING IS AS DIFFERENT AS THEIR CHARACTERS

Joe Cannon

Uncle Joe Cannon, Speaker of the House of Representatives, has a careless and rapid signature which indicates a determined and arbitrary will.

C. T. Rhodes

Cecil T. Rhodes, the wealthy South Africa diamond king, has a signature denoting secrecy and thrift. The curve of the "C" and "T" denoting love of publicity. His wonderful endowments gave him fame and publicity.

Respectfully yours  
C. T. Rhodes



Signature of John Jacob Astor, the founder of that well-known family.



Ingersoll's signature is that of a combative man. This is told by a certain irregularity in writing and at the same time all the signs of ardent courage.



Admiral George Dewey. Extreme straightforwardness is indicated in this signature; the letters are all one height and the line of writing is straight. It denotes precision, discipline and loyalty.



An enlarged signature of one of the most successful merchants in the country. This signature shows intuitive perception of character and the heavy characters denote precision, organization, and care for details.



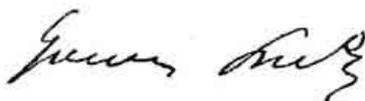
The signature of H. N. Higinbotham, a former partner of Marshall Field, and an immensely busy man. It shows that an active business man can write a legible hand if he will.



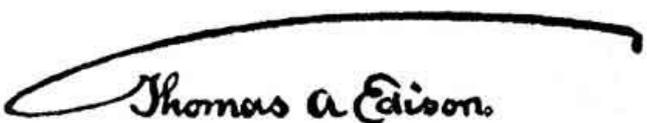
This signature is that of one of America's greatest merchants and financiers. He is as careful in writing as in business and gives the greatest care to all details. Philanthropy is also shown in his hand.



This is the inventor of the telephone, and one of the most famous characters of the country. This is a most pronounced signature indicating inventive genius and charity, with strong literary proclivities.



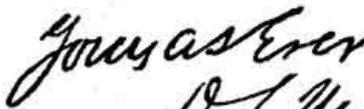
  
Joseph Zeisler, one of the best known physicians in the country. This writing, while difficult to read, indicates a nervous body and active brain.

  
Thomas A. Edison.

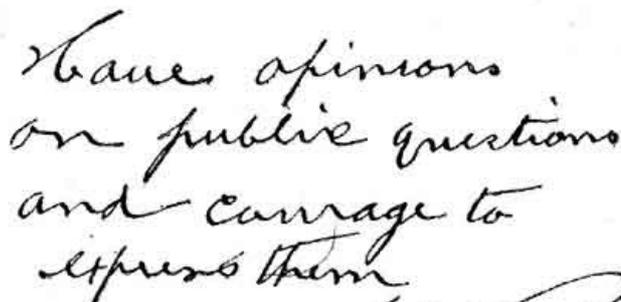
Thomas A. Edison, the famous inventor.



One of the richest men in America and a well-known philanthropist.

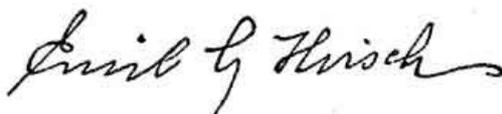
  


This signature evidences calm and clear judgment; the open "o's," fluency of speech; and the simply formed capitals, the modest, unpretentious nature.





The writing of one of the most famous characters in American politics. His writing indicates firmness, love of notoriety and also a semblance of weakness.



The signature of Emil G. Hirsch, Rabbi of Sinai Congregation, Chicago, one of America's best-known and most-respected Jewish citizens.



"Oom Paul" Kruger, formerly president of the Transvaal Republic. This is the signature of a man that believed the world was flat. He was "set" in his ways — stubborn, obstinate, unmovable. His rugged character was never brought within the restraints of conventionality, and neither, apparently, was his handwriting.



*Hopkinton Smith*

One of America's best-known educators.

*Arthur N. McGeoch*

Arthur N. McGeoch, Milwaukee, Wis., a well-known attorney.

*Geo. E. Allen*

Geo. E. Allen, Educational Director, American Institute of Banking.

*Sam'l Washburn*  
*August Smith*  
*Wm. H. G. B. Barnwell*

*Sam'l Washburn*

*Bernard Hart*  
*Alex. Leitch*

*Andrew Barclay*

*John H. West*  
*James H. Brown*

*John Smith*  
*John W. Washburn*

*Charles H. Brown*

*David Peck 13<sup>th</sup> November 1792*

*Robinson H. Hartshorn 13<sup>th</sup> Nov<sup>r</sup> 1792*

*Sutton Hardy*

*Benjamin Lusk*

*John Cherry*

*John H. Washburn*

*Amos Barber*

*Key Porter*

*Geo. Perron*

*Lucius M. Case*

*Augustus H. Brown*

*D. M. Washburn*

Characteristic writing of business men in the early days of our country. These autographs appear on the original agreement which formed the first stock exchange in New York City, in 1792. Whirls, flourishes, and other peculiarities are remarkably plenty in the above, which is an indication of correct writing in those days.



One of the few legible signatures to the Declaration of Independence.



P. M. Hanney, a leading Chicago business man, and a director in the great firm of Siegel Cooper & Company.



General counsel for the American Bankers' Association, and authority on American banking law.



Retired Major General of the United States Army.

**AUTOGRAPH SIGNATURES OF THE PRESIDENTS OF THE UNITED STATES**

G. Washington

Your friend & ever  
A. Lincoln

Sal. Garfield

John Adams

James Monroe

Andrew Jackson

James Buchanan

Th. Jefferson

Sincerely  
R. B. Hayes

James K. Polk

W. H. Harrison

J. Q. Adams

Warren B. Brewster

Green Clements

Zachary Taylor

Millard Fillmore

U. S. Grant

C. A. Smith

John Tyler

Andrew Johnson

Franklin Pierce

Benjamin Harrison

Theodore Roosevelt

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**Footnote:**

[1]

Note illustrations of various kinds of forged, simulated, and genuine handwriting in Appendix, with careful descriptions of same.

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