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EXPERT TESTIMONY—SCIENTIFIC TESTIMONY IN
THE EXAMINATION OF WRITTEN DOCUMENTS,
ILLUSTRATED BY THE WHITTAKER CASE, &c.

EXPERT (in law) is "one who is expert or experienced; a person having skill, experience or special knowledge on certain subjects or professions, a *scientific witness*."

One of the definitions of the word science is, "Knowledge; that which one knows."

One definition given by Webster is, "Any branch or species of knowledge."

Webster's definition of the word "expert" is, "An expert, skilful or practiced person; one who has skill, experience or peculiar knowledge upon certain subjects of inquiry in science, art, trade, or the like; a scientific witness." This definition would include every person who is skilled in any business, art or trade whatever; and in law, any such person, when called as a witness in a court of justice, might be entitled to be classified under the head of an expert or a scientific witness in that particular department of human pursuit in which he could claim to be skilled. Scientific or expert testimony, then, in this view of the subject, would include the investigation and ascertainment of certain classes of facts and their statement in fixed terms. This definition thus far involves no conclusion or opinion on the part of the expert as to the relation or bearing of such facts in a

given case. It places this class of testimony on the same ground as all other testimony in this respect. This, as I have said in a former paper, would seem to be the true position of the expert witness in all those cases where it requires no special learning or skill to understand the bearing of the ascertained facts. It happens in a large number of cases in which the expert witness is called to testify, perhaps in all of the class under discussion, that an intelligent juror is just as capable of coming to a correct conclusion in the premises as to the bearing of the facts as the expert himself, and it certainly seems as absurd to call for his (the expert's) opinion in such cases as is deemed to be the fact in respect to the ordinary witness. In my paper, to which I have alluded above (*American Law Register*, Sept. 1880), I say: "The discussion of the value of expert testimony frequently occupies the attention of the courts, and is made, in a large proportion of cases, the subject of adverse criticism on the part of the learned judges." This will continue to be the case so long as the statement of scientific facts and the *opinions* of scientific men are allowed to be received in the courts and are classified by them (under the same head) as expert testimony. Scientific testimony, that is, scientific facts, from the very nature of the case, must be admitted to be the very best class of testimony, while the opinions or guesses of scientific men, like all other guesses, are often as likely to be wrong as right. It would be just as reasonable to class under the same head the theories of the alchemists and the demonstrations of the chemists as to place *opinions* and the facts of science in a similar position.

The proverbial uncertainty of expert testimony is further due to the practice of the courts themselves in admitting incompetent persons to testify, as also in thus adopting an altogether incorrect classification.

If the courts deem it necessary, to the settling of disputed questions, to classify facts and opinions under the same head, that of "expert testimony," and to make use of both to the same end, they might do away with the present state of confusion in the matter, by calling the one the testimony of fact and the other the testimony of opinion.

As an illustration of the first species of testimony, I give a case in which it was a question, whether one part of a document was written with the same ink as the other part. Upon submitting

the paper to the action of water, in connection with the thin sheet used in the process of copying, I found that one part gave a distinct copy, while the other part showed not the slightest appearance of being acted upon by the solvent. Further, upon both parts being subjected at the same time to the action of a re-agent, in one case the ink was changed to green, while in the other it was obliterated. Was there any need in this case for the expert, who performed the manipulations, to give an opinion as to the identity of the ink in the two portions of the documents; and was not the jury just as competent to decide the question as the most skilled expert? And, further, could there be any propriety in designating the answer to such a question as an *opinion* at all? "An opinion," say the authorities, "is a matter about which two persons can, without absurdity, think differently." Could there be any chance of such difference here? And why then does the expert witness stand in any different relation to such cases as the one under consideration, than the ordinary witness? And, further, does not his being an expert, in the legitimate sense of the term, incapacitate him in many of the courts from giving testimony at all in such cases, that is, in cases where, as in the one under consideration, he is able to set the actual facts before the jury? He could not, as is evident, give an *opinion* in such a case, as the result of his investigation amounts to a demonstration.

Is this a strained interpretation of the practice of the courts as to the admission of expert testimony? In *Rex v. Cator*, 4 Esp. 117, the expert was allowed to be asked whether, in his opinion, the libel under consideration was written in a feigned or *natural* hand, but he could not be allowed to answer the question whether he should judge that the libel was written by the same person that wrote the acknowledged letters. Could absurdity go farther than this? What then is a natural hand in contradistinction to an unnatural or feigned hand as a general term? Or if the question read, Is this the handwriting of the party or parties involved in the transaction under consideration, how are we to get at the fact if we cannot be allowed to compare it with genuine specimens? In the case mentioned at the head of this paper, one of the government experts, Hagen, sought to make this distinction between a natural and feigned hand, and Mr. Southworth, another of the government witnesses, uses the term "natural hand." It would

be interesting to discover what is meant by "natural hand" in this connection. One of the definitions of the word "natural" is "produced by nature," "not artificial;" another, "in accordance with nature." Certainly this cannot be the meaning in either case, and we are precluded from limiting the application of the term to individual cases by the comparison of specimens of writing. This is forbidden in the first place, by the rulings of the court, and in the others by the connection in which the word "natural" is employed.

In *Gurney v. Langlands*, 5 B. & Ald. 330, on a charge of forgery, the expert was asked, "From your knowledge of handwriting, do you believe the handwriting in question to be genuine or forged?" The learned judge, Baron WOOD, said, in the course of his remarks, "There is no known standard by which handwriting can, upon inspection only, be determined to be counterfeited, without some previous knowledge of the genuine handwriting, the handwriting of men being as various as their faces."

In a case previous to this, Lord KENYON admitted this kind of testimony, *i. e.*, "Is the paper in question written in an imitated hand?"

In the subsequent case of *Goodtitle v. Braham*, 4 Term Rep. 497, he said, however, that he "would not receive such evidence." And he seems at this time to have come to a conclusion as to its utter absurdity; for he says in another case (*Batchelor v. Honeywood*, 2 Esp. 714), as to the evidence of a clerk from the post office, offered, under similar conditions, "it is *too loose* and cannot be received."

And Chief Justice BRONSON, of New York, in *Sackett v. Spencer*, 29 Barb. 180, adds, "The evidence of *experts* has been allowed in some instances to show that the signature was in a simulated hand; but this is now disapproved of." In spite of all this, and in spite of the manifest absurdity of the whole thing, in the Whittaker trial or trials, including the one at West Point, there were found experts, and "judge advocates," and "recorders," who could not only entertain such questions, but go even further, and allow an opinion to be given as to whether the specimen under investigation was written by a man or a woman.

Recorder SEARS to the expert, Mr. Gayler: "Can you say whether the anonymous letter (*i. e.* "the note of warning") was written by a man or woman?"

Ans. "In my opinion it was written by a man."

Q. "Is it a disguised hand?"

Ans. "I think so."

Thus it will be seen that in the eyes of these experts and gentlemen learned in the law, there is some known standard by which handwriting can, upon inspection, be determined to be counterfeited or otherwise, and, moreover, that this standard or model can be formulated in some way so as to be conceived of and understood as the true type or typical form of a natural or genuine handwriting. It would seem just as appropriate to talk of a natural brick house, or a natural steam-engine, as of a natural handwriting.

Perhaps, however, the idea may have been deduced from authority, that of Mr. Justice DOGBERRY, who declares that, "to write and read comes by nature." So that we may thus be warranted in pronouncing, in the language of the experts quoted above, whether a specimen of handwriting be "natural," or "feigned," or "simulated," or "dissimulated," or "disguised," or an "imitation," &c.

It will be seen that I am warranted in referring to this class of testimony as being still admitted in the practice of some of the courts, notwithstanding the declaration of Chief Justice BRONSON, that "it is now disapproved of," as the first case referred to, *Rex v. Cator*, is stated to be a leading case on this subject (5 Am. Law Rev. 228), and the present case, though tried by a military court, was conducted as regards the admission of evidence, in the same manner as it would be if tried in the civil courts.

I do not wish to pursue, to any great extent, the question as to how far a strict construction of the rules of the courts would debar the scientific witness from giving, as an expert, any other testimony than that of opinion. Certain it is that in my own experience in some of the courts, such testimony only has been admitted, while in others every step in the process by which I have arrived at my conclusions, has been deemed admissible as testimony, and not with the mere idea alone of thus testing the qualifications of the expert. With reference to the particular class of testimony under discussion, or rather to one species of it, that in regard to handwriting, no other idea seems formerly to have been entertained by the courts, than that the expert's testimony should be that of opinion only. Lord MANSFIELD, in *Folkes v. Chadd*, 3

Doug. 157, says, "Handwriting is proved every day by opinion." In all the cases to which I have alluded, and in all which I have thus far examined, this is the only idea which is entertained in regard to the character and grounds of admissibility of this kind of testimony. It is true that "It had been the constant custom of the courts before the time of *Folkes v. Chadd*, to receive instructions from skilled witnesses; and whether such witnesses gave their testimony in the form of general scientific facts, or merely as opinions which the jury were to receive as facts, no objection was ever made to its reception." But nowhere is it even intimated that handwriting was ever thought to be capable of proof under the first condition.

This declaration or opinion, although applied to an altogether different subject than the one under discussion, covers the whole ground, and had the courts followed the idea here formulated, and classified the two kinds of so-called expert testimony under two heads, as I have suggested, they would have avoided the "deplorable confusion" as, says the writer, before quoted, in which "the whole subject has become involved." And still further, they would have avoided the utter absurdity of their many contradictory utterances in regard to this class of testimony.

The writer of the article in the Law Review, before quoted, says: "The assistance of such persons" (those skilled in any art or science) "in the administration of justice is as imperative as ever, since it is simply impossible for ordinary men to decide upon questions of abstruse and recondite learning or of technical skill without the aid of *experts*."

On the same page he has quoted the maxim, *cuiuslibet in sua arte perito credendum est*. On this he comments by saying that this maxim "would seem natural and reasonable enough to be capable of direct and easy application, but experience has shown it to be one of the most difficult—producing the most deplorable confusion and conflict in that department of the law in which it is sought to be applied." And further, "the investigation of the adjudications and discussions upon the subject, reveals an unmistakable tendency on the part of eminent judges and jurists to attach less and less importance to testimony of this nature." And this last, notwithstanding the admitted fact that in many cases it is "absolutely impossible to get along at all without this class of testimony."

But after all, is it very certain that there is any inherent difficulty in the application of the principle in legal trials? Is it not rather obvious that the apparent confusion grows mainly, as I have indicated, out of an incorrect classification in the premises and also of a want of technical knowledge on the part of those called upon to administer the laws?

This may seem an unjustifiable arraignment of learned judges and lawyers; but what of the proof? Lord MANSFIELD says, "When questions come before me in regard to unskillfully navigating ships, I always send for the brethren of the Trinity House. The question depends upon the evidence of those who understand those things." Thus this eminent judge acknowledges his want of information upon this special subject.

In a case in which a party was charged with passing a counterfeit bank note, it became necessary, in order to establish the character of the note, to distinguish between an etching and an engraving. To this end an engraver was called as a witness in the case. To the unskilled observer, the distinction is not appreciable, and in case of a much-handled note, it would pass the ordinary observation of a practical engraver; but with proper and careful examination, he could not fail to come to a correct conclusion in the matter. In the present case, as the court and attorneys could see no difference as to the genuineness of the specimens under examination, the case went to the jury with this idea, that each must therefore be genuine. The judge remarked, almost in the language of Lord President BOYLE, which I have quoted in a former paper: "In this case, an engraver has been examined, to whose testimony I pay very little attention, as their *opinions* are but little to be depended upon." The counsel for the defence had previously called the attention of the court and jury to the fact that (in his own language) "no human eye could see any difference, and that therefore no such difference could exist. The alleged difference, he said, was subjective or wholly imaginary on the part of the so-called expert." And yet the note was a counterfeit, and the plate had been executed mainly by the etching process, while the genuine plate was largely an engraving.

Here it will be seen that the very terms used by the witness in giving his testimony were misunderstood by the court, so that the court designated said testimony as an *opinion*, which it was not in any respect. It was simply a statement of an absolute fact which

the witness well understood and knew to be such, and which constituted as essential a difference between the processes used in the production of the two plates as exists between that employed in making a cast and a wrought-iron structure. Here there is something added to the legal literature which, as we have seen above, declares that eminent judges and jurists do not place much confidence in expert testimony. The reason in this case at least, would seem to be very obvious. One other case I proceed to notice in connection with this part of my subject, as it still further serves to illustrate what I have already said as to the sweeping generalization of the courts, in respect to the class of testimony under discussion.

In the *Tracy Peerage Case*, 10 Clark & Fin. 154, 191, Lord CAMPBELL says: "I do not mean to throw any reflection on Sir Frederic Madden" (the expert in handwriting employed in the case), "I dare say he is a very respectable gentleman, and did not mean to give evidence" (opinion) "that was untrue; but really, this confirms the opinion I have entertained, that hardly any weight is to be given to the evidence of what are called scientific witnesses." Is not this most excellent logic? Because, in the opinion of the judge, an expert in handwriting has given testimony (an opinion) which he, the judge, thinks is not to be relied upon, that, therefore, in his own language, this really confirms him in the opinions he has entertained, that hardly any weight is to be given to the evidence of scientific witnesses, *e. g.*, chemists, astronomers, physicians, &c. Would it not be for the best interests of the courts and, as a consequence, of society also, to adopt that portion of the motto of The London Royal Society, where it says: "Science will not accept the authority of any master, however illustrious he may have been." Judge McLEAN, in *Allen v. Hunter*, 6 McLean 303, says: "The opinions of the experts who have been examined, are in conflict, and so far as my experience goes, this has been uniformly the case where experts have been examined." In this case eight doctors deposed in favor of the plaintiff, and eleven for the defendant.

In volume 80 of the Reports of Cases at Law and in Chancery, determined in the Supreme Court of Illinois, the opinions affirm the judgments below in thirty-three cases and reverse them in sixty-six cases, thus disagreeing with the courts below in two-thirds of the cases under consideration. Nor does this, by any means, present

the whole of the facts in the premises. As cases in the Supreme Court are decided of course by a majority of the judges, it will be found in many of those alluded to that the court was divided in opinion as were the doctors in the case which furnished the occasion for the discriminating conclusion of Judge MCLEAN in regard to every *species* of scientific testimony. For, as will be observed, the learned judge makes no exception in the case, but distinctly states that, as far as his experience goes, this has been uniformly the case when experts have been examined. This testimony of the doctors, it will be remembered, is precisely of the same character as the decisions of the judges, *e. g.*, the testimony of opinion.

Suppose the doctors, together with other scientific witnesses, should quote Lord CAMPBELL's language and apply it after this manner: "We do not mean to throw any reflection upon the noble lord nor upon judges in general. We dare say that they are all very respectable gentlemen, and do not mean to give an opinion that is incorrect, but really this confirms the opinion we have entertained that hardly any weight is to be given to the opinions of lawyers or learned judges, especially as it regards matters belonging to their particular profession. And as to scientific testimony they come, in most cases, with a bias in their minds in regard to it, depending upon their want of technical knowledge in the premises. From this same want of special knowledge outside of their profession comes their absurd classification of expert testimony, in which all varieties are placed in the same category, so that when a seeming discrepancy occurs in one case they declare, *ex cathedra*, that *all* such testimony, that is the 'evidence of what are called scientific witnesses,' should have 'hardly any weight given to it.'"

Or, in the language of Judge MCLEAN, the scientific court might say, "The opinions of the judges of the law courts, in a considerable proportion of their cases, are in conflict, and so far as our own experience goes, this has been largely the fact where they have been called upon to decide cases belonging to their own profession even; hence their opinions are but little to be relied upon. And if this be the fact in their own profession, how much weight should be given to their opinions upon subjects with which they are totally unacquainted?" The argument, it seems to me, is as strong against the value of one species of testimony or opinion as

the other. And this lies in the case of scientific testimony against that of opinion only. But who does not realize that civilized society could not get along at all without the courts, and further, that their wide differences in opinion grow out of the very nature of the human mind and the infinity of human relations? It may be, and no doubt is, difficult for the courts to adopt rules in all cases by which to test the qualifications of experts, but they could do so, I think, where the processes by which a conclusion is arrived at are of such a nature as to be capable of presentation to an intelligent jury. And in these cases, as I have suggested before, it might be left to the jury to draw their own conclusions, as in cases of ordinary testimony.

In the examination of handwriting I have endeavored to adopt a method by which the ordinarily intelligent man may be able to come to a conclusion with no other assistance from the expert than that of a full explanation of the facts in the case. It consists in the bringing together of magnified specimens of the letters under discussion, drawn with great accuracy by means of the microscope, and placing the disputed letters and words thus enlarged by the side of the genuine ones, thus enabling any one to make a comparison of form under the only conditions in which such comparison can possibly be made. We are also able under these conditions to observe the minute anatomy of the letters which is inappreciable in most cases by the unaided eye. The only theory involved in the process is the idea that every person has some peculiarity in his writing unlike that of any one else which, if not otherwise appreciable, may be brought out by means of the microscope. This may consist in what has been called the "rhythm of pressure," where some portion or portions of a letter are specially shaded, or by a peculiar looping, curving of pen strokes, &c. Whatever the facts may be, they are all brought out by means of the microscope, and by thus placing the enlarged copies of the letters side by side the juror as well as the expert in a given case is placed in a position to draw his own conclusions. Where chemical or other so called scientific examinations are to be made, it is my endeavor, as before stated, to bring the facts in the same manner before the jury, thus placing them in a position to do their legitimate work in these cases as well.

My whole course of examination in the Whittaker case was conducted on this method alone, so that no conclusion was given

the grounds of which could not be made plain by ocular demonstration. This case, so far as I am concerned in it, consists of the question whether a certain document was written by Cadet Whittaker or by some other person.

PLATE 1.

Sunday April 4th
 Mr Whittaker, You will
 be 'fixed' Better keep
 awake
 A friend

This document is called the "note of warning" (plate 1) and consists of the following words: "Sunday April 4th Mr Whittaker, You will be 'fixed' Better keep awake A friend" The envelope in the same hand is simply addressed "Cadet Whittaker." I give a fac simile of the first magnified four times,

PLATE 2

Cadet Whittaker.

Cadet Whittaker.

Cadet Whittaker.

CCCCCCCCCCCC

CCCCCCCCCCCC

CCCCCCCCCCCC

CCCCCCCCCCCC

(plate 1), the address is seen on (plate 2) first line. These are from photographs of the "note of warning" and the "address," sent me at Chicago before I had anything to do with the trial. They purported to be taken by the government, and at the time of the trial were carefully compared with the original note, with which they perfectly agreed, with the exception of one letter, which fact I shall have occasion to notice hereafter. The original note was in pencil, and I remark that though the frame-work or direction of lines which compose letters written with a pencil are correctly given by the photographic process, the minute anatomy, e. g., the varying roughness of lines, &c., fails to be preserved. The letters composing the plates were drawn under a magnifying

power of from 9 to 10 diameters (80 to 100 areas), and then photographed on the wooden blocks, thus preserving the original form unchanged except as to size. I have drawn my report of the testimony given in the *first* trial from the Criminal Law Magazine of March 1881, and this, with whatever else of government testimony that is found in this paper, is given in order to illustrate not only what I consider the difference between true and false methods in such investigations, but also to show the utter absurdity and unfairness of much that is introduced as testimony in those cases in which experts are called to testify.

Expert John E. Hagen, Criminal Law Magazine, p. 158, says: "Effort is made by a nerve motion to vary the direction from an accustomed routine line of motion to a different one, and one to which the reflex capacities of the muscles guiding the pencil have not been habituated. The capital 'S' in Sunday shows the wandering pencil lines of disguising effort, as do the capital letter 'A' &c. Page 159, at the top of the 'C' in the word 'cadet' an unusual loop is formed by steady and arbitrary conditions of habit," &c. It would not seem difficult to estimate the value of the testimony of a witness who could make such a statement as this. What then is nerve motion? Are not all the voluntary motions of the body produced by the action of the muscles through the influence of the nerves under the order of the nerve centres? And what are "reflex capacities of muscles?" Do the muscles ever acquire capacities of their own by which they act independently of the nerve centres? There may be some excuse perhaps for unscientific persons coming to a conclusion that they do so in St. Vitus's dance, or epilepsy, but these would hardly be conditions in which any particular kind of writing could be produced. But even here such testimony would be of no value whatever, as it is founded upon false premises. Both diseased and normal muscular action depends for its direction upon the nerve centres. And thus all this material allowed to be used as testimony, on which the reputation, and life even, of an innocent person may depend, is shown to be as baseless as "the stuff of which dreams are made." Certainly then its admission in the courts becomes matter of grave question.

The loop at the top of the "C," which we are told is formed under such mysterious conditions, is shown on plates 2, 4, 5. The letters on the plates marked with a star are from the "note of

PLATE 3.

* P. S. O. P. A. F. I. M. N. M.

B. B. B. B. B. I. J. J. J. J. J. J.

W. N. P. U. N. U. W. U.

A. A. A. A. A. A. A. A.

D. D. D. D. D. D. D. D.

W. N. W. N. W. N. W. N. W. N.

D. E. W. P. E. W. P. E. W. P.

warning," those marked with the letter "J" are from specimens of writing produced on the trial by the government and alleged to be in the hand of one of the cadets at West Point, and numbered 27. Those marked with the letter "I" are from Cadet Whittaker's papers.

Plate 4, consists of letters from each of these sources. These letters will be described in their order, as will those on plate 5, which consists of letters from the "note of warning," and also from Whittaker's writings, copied from expert Hagen's own plates, used in the second trial. This "unusual loop," at the top of the "C," it will be seen is common to this letter as found in the "note of warning" and also No. 27. See 4th and 5th lines of plate 2, and also diagrams of the method of forming it, plate 4, 4th line (first "C" from note of warning, 2d "C" and 3d "C" from No. 27). On plate 5, this letter from the "note of warning" is contrasted with one

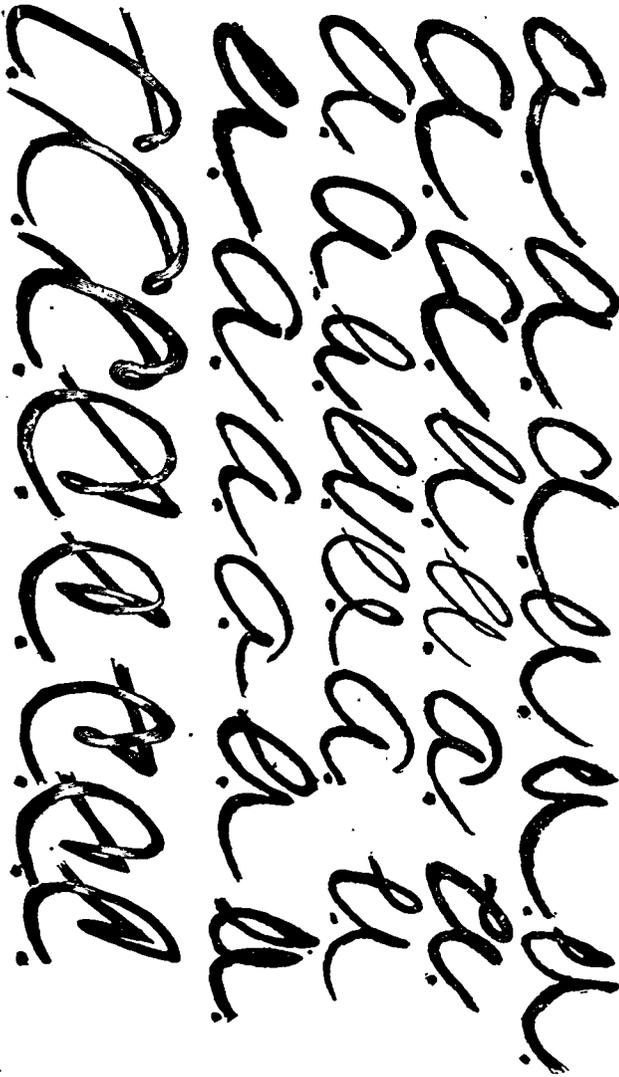


PLATE 4.

of Whittaker's, copied from Hagen's own plate, and represented as being made in the same manner in the expression "an unusual loop is formed at the top of the "C" in the word cadet." By looking at Hagen's own model (plate 5), and at these letters in plate 2, and the *diagram* "Cs." in plate 4 (the last five of which are all the forms of this letter which approximate in the least to those

under discussion, which I find in some eighty of Whittaker's papers in my possession), we shall see that they are made upon entirely different principles. In Hagen's example, from whence he has drawn his conclusions, it will be seen that the crossing lines would form *two* open loops at the upper part of the first letter had not the first loop been obliterated by the inflow of the ink, while in the other, from Whittaker's writing, *three* loops would have been seen as shown in the diagram. It will be also seen that the outline of the two letters is quite different, the one everywhere rounded, while the other shows a sharp point at the top.

Leaving out of view the part I will call the tail in the first letter, and which I have never found in any of Whittaker's "Cs." let us follow this stroke of the pen from the point of crossing the downward shaft until its return to this point. In the first "C," on plate 4, that from the "note of warning," this line passing to the right, forms the first loop of the "C" by turning upon itself downward, and to the left then upward, still continuing its course to the left, then downward again to the starting point. In Whittaker's "C," the line first proceeds upward and to the right to a point in its course where it turns directly downward, forming a sharp corner; next it turns upon itself to the right and proceeds upward, and to the left crossing the two parts of the line which constitute the angular portion of the letter; next turning downward and to the left to the starting point. Thus, it will be seen, that there are three crossings and three loops in this letter, while there are but two in the first "C," and in the formation of the first loop of the two letters the line is carried to the left in one and to the right in the other. Next, I notice the capital "S," in plate 5. Of this letter it will be remembered Expert Hagen says: "It shows the wandering pencil lines of disguising effort." The first "S," in plate 5, is from the "note of warning," the second "S" is one of Whittaker's; both copied from Expert Hagen's plate. The first shows the first limb as beginning at the right, then proceeding to the left, then again to the right with an upward curve and course until it crosses the shaft where it forms a downward curve. Next the line mounts upward to the top of the letter, where, turning abruptly on itself, it proceeds downward almost in a straight line, forming the upper loop of the letter. The next "S" (Whittaker's) begins at a point at the left, and proceeds to the right, and upward in a continuous curve until it reaches the top, from whence it proceeds downward,

PLATE 5.

P. P. P. C. C.
 W. W. G. G. G.
 Whittaker
 Whittaker
 Whittaker
 C. W. P. P. P. e. e.

forming a curve opposite to the first, thus constituting the upper loop of the letter, with two nearly equally curved sides unlike the first which has one side nearly straight. Notice also the first limb or upward stroke of the two letters, the one made up of double curves in opposite directions, the other of a single curve in one direction. The analysis of these letters might be carried much farther, but I shall give the prominent characteristics only, as these will fully serve my purpose. Where the original writing is

executed in ink, and with an ordinary pen, the minute anatomy of the pen strokes, the "rhythm of force," &c., often furnishes very important testimony, but when the pencil, or pencil-pointed pen is used, this "rhythm of force" cannot well be appreciated. The next two letters, on plate 5, from Expert Hagen's plate 1 (used at the court-martial) will be seen to differ quite widely from each other. The first from the "note of warning" has an oval-looped top, a *double* curved shaft, and a blunted terminal extremity, the other, from Whittaker's writing, is without a loop at the top, has a *single* curved shaft, and ends in a point. This pointed ending of this class of letters is true of all of Whittaker's writing so far as my experience goes. This fact is also shown in plate 3. The next two letters ("C") I have noticed before. The two capitals ("W") I shall not comment upon, only referring to plate 2 for all the forms of this letter that I have been able to find in Whittaker's writing. The next group of three "Y's," in plate 5, are copied from Hagen's (plate 1). The first is from the "note of warning," the other two from Whittaker's papers. The first has the top loop formed with one side much more curved than the other, with the bottom of the main limb quite pointed; this limb joined to the lower without a perceptible loop, and the lower loop made up with a single curve and two distinct angles. The second letter has the first loop made with two nearly equally curved sides, the bottom distinctly curved, as it is also in the third example, the main limb joined to the shaft in both cases with distinct loops, the lower loop being made up with two curves and a single sharp angle. Could difference farther go than is shown throughout this entire plate? The editor of a certain legal journal, in commenting upon the "note of warning," said: "It must be concluded to be Whittaker's from the almost entire difference which exists between the two hands." This would seem to be the ground upon which the experts and the author of the article in *The Criminal Law Magazine* come to their conclusions in the case.

"Credo quia impossibile est."

R. U. PIPER.

Chicago.

(To be continued.)