A REVIEW OF BERTILLON'S TESTIMONY IN THE DREYFUS CASE.

The Dreyfus affair attracted more attention in America than any other criminal case abroad in the last quarter century, not excepting that of Mrs. Maybrick. Probably the most singular feature, among many curious to us on this side of the Atlantic, was the testimony of M. Alphonse Bertillon, the celebrated criminologist. Some hints of his theory the newspapers of the time printed; but, so far as I know, no comprehensive statement of it has appeared in the United States, save the all too short mention of it in the admirable monograph on the Dreyfus case, by Mr. Richard W. Hale, of Boston. I have thought that a somewhat detailed account of this evidence would prove acceptable to the legal profession, in these days of expert witnesses, because of the world-wide reputation of M. Bertillon. As a preliminary, it will be necessary to state the outline of the case.

Captain Alfred Dreyfus, an Alsatian by birth, threw his fortunes with the French, instead of with the Germans, after the war of 1871, and entered the French military schools. He displayed a somewhat remarkable aptitude in his studies, was graduated with honors; and for that reason, and also because of his familiarity with the German language, was looked upon as one likely to take high rank in the Army.

In 1894, while Capt. Dreyfus was in the Staff Corps, rumors came to the Bureau of Secret Service that a staff officer was selling army secrets to a foreign power (Germany). In September, a document, afterwards always called the "bordereau," was brought to Colonel Henry of the Secret Service by an "agent," in fragments, said to have been found in a waste paper basket in a room of the German Embassy.

This document was simply a letter of transmittal, unaddressed, unsigned and undated. In the trial by court-martial in 1894, it was referred to the spring of that year; later, it was conceded to have been written in August. It mentioned five documents which the writer said he transmitted to his correspondent, all of
them touching military secrets. On October 15th, Capt. Dreyfus was arrested secretly, charged with being the traitorous author of the document. His house was at once searched for incriminating evidence, but nothing discovered save a letter signed "Mathieu" (the name of a brother) and relating only to family matters. Capt. Dreyfus, placed in solitary confinement, was interrogated secretly, according to French criminal methods, by Col. du Paty de Clam, during two weeks, and was required to give specimens of handwriting containing many of the words of the bordereau, sitting, standing, gloved and ungloved; all the while kept in ignorance of the precise nature of the charge. On the 28th of October he was at length shown a photograph of the complete bordereau. He persistently denied ever having seen the document or ever having divulged any military secrets.

The case against him at the first, as at the last trial consisted, 1st, of certain moral elements, namely, that he was somewhat loose with women, and that he gambled and lost heavily; 2d, that he was disappointed and soured because he was not graduated higher (9th in a class of 81), and that he was known to have shown great curiosity as to military matters in departments other than his own; 3d, that just before his public degradation he confessed to Capt. Lebrun-Renault; and 4th, that his was the hand which wrote the bordereau.

As to the first, his connection with women seemed to have been slight and was little insisted on. The stories of high play and losses completely flattened out and were abandoned. Second, the defense insisted his graduation rank was a trivial matter, and that his curiosity was simply that of an ambitious officer. Third, the confession was extremely doubtful. His language is perfectly susceptible of two interpretations: one of guilt, the other of innocence, and both before and after that moment he always vigorously protested his innocence. Fourth, the handwriting of the bordereau.

This last is, to an American lawyer’s mind, the real point in the case. The rest was chaff.

In the trial of 1894 there were five experts, all government officials; three, including M. Bertillon, attributed the bordereau to the hand of Capt. Dreyfus, two declined so to do. In the various trials thereafter, the Esterhazy court-martial, the Zola
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trial, the proceedings before the Court of Cassation, and the final court-martial of Dreyfus at Rennes, many experts examined the bordereau, the great majority of whom attributed it to Esterhazy, or testified it was not written by Dreyfus. One of the government experts of 1894, Charavay, had the manliness to change his opinion, and to swear that Esterhazy (whose handwriting he had not seen in 1894) was the author.

In 1894 Bertillon declared, from the similarity of appearance of the handwriting alone, that Dreyfus wrote the bordereau. This was his first report made after a few hours' examination. At the trial in December, and at subsequent trials, he insisted that expert testimony based on comparison of graphic forms is a "vain knowledge," "without foundation, leading to continual error." His own method was absolute, irrefutable, mathematically certain. He developed his theory partially in 1894 at the trial, shifted somewhat later on, and at the Rennes court-martial in 1899 gave out, in a disquisition of seven hours, with a multitude of photographs, drawings, etc., what may be considered as his final perfected theory. It is that which I here explain as far as I have been able to comprehend it.

It must be borne in mind that the bordereau was written on thin, transparent paper, of a yellowish tint, marked in squares by vertical and horizontal lines, four millimetres apart, such as was known in this country years ago, when postage was high, as "foreign paper."

Bertillon's first proposition was that a certain number of polysyllabic words began and terminated, with respect to certain vertical lines, drawn by him on a fac simile of the bordereau, distant apart 5 mm., in exactly the same way. This he said demonstrated that the writing was carefully and artificially built up or constructed. Next, he found that it was constructed on a key word, the word "intérêt." He hit upon this in a curious way. He was called in to consult Commandant d'Ormescheville, and purely by accident was shown the letter seized in the house of Dreyfus and signed "Mathieu." It had been found in a portfolio and was supposed to be of no importance. It certainly appears to be in quite a different handwriting from that of the bordereau or from Capt. Dreyfus' genuine writing, and its contents seem entirely innocent. M. Bertillon, however, saw in
it the word "intéret," and he began to measure. He found certain coincidences in the lengths of the words which astounded him, and he took the letter with him for future study.

He discovered that the word "intéret" was just 12.5 mm. long, that the circumflex and acute accents, the cross of the t and other elements, each bore a certain definite relation to the length of the word. He was more astonished than ever. He had in the meanwhile discovered in the War Office, in certain official letters of Capt. Dreyfus, some words which he said measured curiously, and appeared as if traced from something else. The finding of the word "intéret" made all clear. It was manifest that this word had been used to construct a "gabarit," that is, a sort of model, made by writing this word several times end to end. On this gabarit, thin paper was placed, and the original of the bordereau was traced in pencil, somewhat slowly and the final paper retraced in ink from this pencil copy.

He proves this elaborately with diagrams, which show that many of the words of the bordereau are superposable on words of the standards of comparison and of the Mathieu letter. Not that the superposed words in all, or even in many cases are, line by line, coincident with the underlying words, for he superposed words upon unlike words, e.g., 120 on 1894; but that certain lengths are the same, and they superpose, "demi-centimetric square upon demi-centimetric square." It is true that some of the repeated words, as "manoeuvres" do not so superpose; but he avoids this by superposing m upon m, then slides one paper 1.25 mm. to the left, and behold the middle portions coincide! If the final letters still do not superpose, he moves the paper another 1.25 mm., and, presto! the finals coincide! Even this does not always succeed; and in several instances, having attained partial superposition by a movement of 1.25 mm. to the left, he is compelled to shift the paper to the right 1.25, or 2.5 mm., before success crowns his efforts. He confesses that this is very complicated.

He pushes his investigations farther, and constructs a green chain and a red chain, overlapping (deux chaines imbriquées), either or both of which the writer of the bordereau might use at pleasure, and still further mask his identity. These "chains" were constructed in the following manner: The word, "intéret,"
was written on a horizontal line, seven or eight times, end to end, in ink of a given color, say red. Then the same word was written, end to end in like manner on the same line, in ink of a different color, say green, but beginning at a distance to the left of a "kutsch" from the initial stroke of the i, as written in red ink. These two constituted the "chaines imbriquées" of the "gabarit;" and the bordereau was written by regulating certain pen strokes according to similar strokes in the gabarit. The pen strokes to be followed were the straight strokes of the i, n and t (les jambages) and in the bordereau all such strokes were made to correspond, in distance from the vertical lines, to similar strokes in the gabarit. Thus, all such straight strokes, though in different words, according to Bertillon, would be superposable.

To the extent that I have been able to master his "thesis" on this head, his meaning seems to be something like this: The writer of the bordereau anticipated that the document, in case of discovery, would be subjected to close scrutiny, and he feared the superposition of words might be discovered; hence, while he caused certain words to be directly superposable on the same words or words of equal length taken from letters of members of his own family and from his official letters in the War Office, certain others he designed not to be superposable except under certain conditions, viz., the conditions of slipping the underlying paper to the left or right through a distance of 1.25 mm., or twice that distance; or reversing the motion as above mentioned. This unit of length, 1.25 mm., not being an even decimal subdivision of any unit of the metric system, was therefore the more likely to escape notice. It is called a "kutsch;" and according to Bertillon, this odd unit was just coming into vogue in France in 1894. The use of the two chains was to regulate this matter of the sliding of the covering paper, through the distance of a kutsch or a multiple thereof, and to the right or left, as the writer might desire. No law governing this matter is stated, but the selection of either chain was at the whim of the author, the chains being merely graphic devices to check and make accurate the desired movement.

On the left edge of the bordereau, M. Bertillon discovered a nick or notch, which looked, he said, as if the edge had been trimmed with scissors, and, at this point, a hesitation had interrupted the
smooth action of the blades, leaving this notch. He explains, by diagrams, to which I have not had access, that this notch played a hidden but most important office in regulating the angle of the lines of writing in the bordereau. Here I am balked, for I can see no reason in the argument on this head.

Finally, though M. Bertillon affects to utterly dispise comparisons of graphic forms, he devotes page after page of his lecture to a discussion of certain peculiarities in the forms of letters in the bordereau, and in other documents. These in no wise differ from the ordinary dreary technics of the average handwriting expert, so far as the actual letters are concerned, but M. Bertillon has special reasons to assign which governed the writer in the choice of each one of these graphic peculiarities. Many of these are mentioned in the legend to his diagram.

Now for the reason of this elaborate method of writing the bordereau.

According to Bertillon, Dreyfus is a shrewd man, a skillful man, a man of extensive technical learning, a man of resources. He is not likely to plunge into treasonable practices without taking minute precautions. No one but a fool would write an incriminating letter like the bordereau, without first disguising his hand. This disguise would be the device of the ordinary man. But Dreyfus was not an ordinary man; and hence would not be content with so simple a method.

Naturally, he would consider all dangers, to anticipate all. Thus, if the bordereau were found in a place which gave no indication of the identity of its writer, it would be sufficient if the handwriting were so disguised as to enable him to deny authorship. On the other hand, if found on his person, in his house, or on the person of his emissary, what could be his defense? The writing has been already partially disguised to meet the first contingency, it must also contain other elements to meet the second. This is where the theory comes in.

"He would have availed himself of his bordereau as a protection, by himself demonstrating the artificial construction," says Bertillon. He would take the words from the official documents written by himself and show that they were traced in the bordereau. This would enable him to set up as a defense a conspiracy against himself, an "alibi de machination," to quote the
phrase of Bertillon. According to the latter, Dreyfus could go further; he could show the artificial construction of words in the Mathieu letter, and thereby either throw the blame on his brother, or compel their joint trial in the civil courts, and not by court-martial. The artificial construction is called by the witness "auto-forgery." That is to say, Dreyfus forged his own handwriting, intending, if arrested, to show it was not his natural hand, but a counterfeit thereof.

In short the differences between Dreyfus' natural hand and that of the bordereau, admitted by Bertillon, were, according to him, artfully put in by Capt. Dreyfus to throw off suspicion; while the absolute similarities were put in to enable him, in a proper case, to claim they were traced from his own handwriting, and therefore, done by some one else. The gabarit and the pencil tracing were his means of writing the bordereau so that the latter would appear as if written in an easy running hand, and were, of course, to remain profound secrets. Bertillon admits that it required vast ingenuity to conceive such a plan; he modestly does not mention the ingenuity required to unravel it.

This system of defense M. Bertillon illustrated in 1894, by the following diagram, with accompanying legends. He complains that the court-martial of that time did not seem to understand the diagram, and so he abandoned it. Perhaps it will appear plain to some who read this article.

A careful study of this diagram will, I think, disclose in it a certain method and considerable ingenuity. It conforms, too, to M. Bertillon's theory of defense, and particularizes the minuscule of this defense to be urged by the writer of the bordereau. I think, however, it cannot be said to clarify the subject at all. Its tendency is towards confusion. I have in my office a diagrammatic chart, drawn in five different colored inks, illustrating what its designer calls, "A Mechanical Philosophy." It is constructed after the manner of a genealogical chart, with something over three hundred ramifications, each with a special name, over one hundred newly coined by the author, such as "plasmation," "externation," "biokotomization," and the like. While close study of it reveals a certain logical connection, and certainly discloses immense labor, it is entirely worthless as a system of logic; though traces of Mill, Lessing, Kant, and
Hamilton, maybe seen in it. The author was a prosperous business man whom no one ever suspected of having ideas outside of his daily work. He died afterwards, insane. I do not mean to imply that that is M. Bertillon's mental condition; but certainly a neurologist would regard his diagram, if coupled with other symptoms, as an unfavorable sign.

**Diagram of M. Bertillon.**

Pursuit and judicial attack following seizure of document on the person of the author, or in his house, or on his emissary, who, in giving his true name, betrays also the author's identity.

Plan of defense in case the attack comes from the left:
- It was done by
  1. A subordinate.
  2. A real spy, secretly advised.

Pursuit and judicial attack following the discovery of the document without any indication of its author's identity.

Plan of defense, attack coming from the right:
- 1. To remain quiet in the hope that the assailant, intimidated by the mackles and the rapid handwriting, will recoil from the initials and especially the double ss.
- 2. To take refuge in the arsenal of the habitual spy.
- 3. To invoke the plan prepared secretly.
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A. The mackles, made with double face, which can be explained: on the left—by the combination of opened and closed letters; on the right—by rapid smooth handwriting, consequently not disguised.

B. Suppression of the letter “a”; almost exclusive use of voluted “E;” suppression or lessening the loops in the letters f, g, z, l; making properly the letters m and n; rounding the letter v; embellishing the letter x, etc.

C. Battery of the double “s” the second one long.

D. Arsenal of the habitual spy, specially taught to use the defenses of the right, but able also to use those of the left, a help often more secret than useful: grilles (paper ruled in squares) and graphic blemishes which result therefrom, useless repetition of words, of phrases, of syllables; cartograms, double and single; words composed of detached syllables. Imperfections and graphic defects. Unusual style—Laconic combined with prolix style.

E. Small notch at edge of document on the right: forgery.

F. Use of thin paper marked in squares: counterfeit.

G. Technical words from his genuine writing minutely traced even with their defects, and taken mostly from documents in the War Office relating to large parks of artillery: forgery.

H. Lengthening the final portions of “guerre,” “responsables,” “d’adresse” (line 23), etc. Inversion of the curve of “L;” retouching certain words; abnormal curves in “G,” “L,” “Y,” etc.: counterfeit.

I. Last and most concealed subterranean trench.

J. Tortuous and subterranean way, joining the different paths together, and opening at last to the citadel.

K. Citadel of graphic rebuses.

One of the experts for the defense struck at the keystone of this arch, and pointed out that the word “intérêt” did not measure 12.5 mm., that Bertillon had arbitrarily omitted to include part of the initial letter and all of the final t, in his measurement, and that in truth the word was 15.46 mm. long. He took his scale into court and showed diagrams in support of his contention. If he was accurate, he completely annihilated the “theory,” for he destroyed the “keyword.” Furthermore, he insisted that in photographing and many times rephotographing the bordereau, Mr. Bertillon, little by little, distorted the true dimensions of the original writing. And finally, he contended that all theories based on minute measurements must fail, because the bordereau as first brought in, was in small fragments, and that it had been patched together, and even that had been unskilfully done.

Another expert attacked that portion relating to the manner in which the vertical lines cut the initial strokes of certain words, a coincidence which, according to Bertillon, could not happen
more than twice in a million times, and which first gave him the
notion that the bordereau was artificially constructed. This
proposition was fundamental. But the expert denied the pro-
portion, as not being a true exposition of the doctrine of chances,
showed very clearly that Bertillon was grossly ignorant of the laws
underlying that science, and applied the argument *ad hominem*
by producing a letter from Bertillon's own office, written by a
court official, in which such coincidences were more numerous
and more striking than in the bordereau. Moreover, this witness
very sensibly remarked that the bordereau was written on paper
ruled vertically as well as horizontally, and that the writer would
unconsciously begin his words at the vertical lines, except where
it would throw the spacing out too much.

Again, this last expert pertinently inquired how M. Bertillon
could insist that the reverse side of the page of the bordereau
could be traced over the gabarit. The bordereau, says he, is
written on both sides of a sheet of thin paper, and, granting
that the writing on the obverse side could be traced from the
gabarit, yet when the writer turned the sheet and began to
write on the back thereof, the words already written on the face
would obscure the underlying gabarit, at least to the extent in-
compatible with accurate tracing.

In his address to the court-martial, Maitre Demange sug-
gested that while M. Bertillon's theory might be most ingenious,
it seemed to be confined to M. Bertillon himself; for certainly
at no time had Dreyfus suggested that there could be any super-
position, nor had he attempted to set up as a defense any "*alibi
de machination*."

M. Ballot-Beaupré, the President-Rapporteur of the Court of
Cassation, who reviewed the whole case in a most admirable,
unimpassioned and wholly judicial manner, confessed he did
not understand M. Bertillon.

Maitre Monard, the counsel for Mrs. Dreyfus, addressing the
Court of Cassation, recalled that a certain witness had testified
that M. Bertillon was a genius. For his part, said the advocate,
a certain poet had stated that genius was closely allied to a
wholly different mental condition.

There seems to be in French procedure, nothing corresponding
to our cross-examination. Bertillon’s testimony was a lecture, lasting for six or seven hours, unbroken by a single question.

Then followed a few questions by members of the court, and a few by Dreyfus’ counsel. To the latter, Bertillon seemed antagonistic, and some of his answers disclose strong personal feeling. He had admitted that, graphically considered, Esterhazy’s handwriting showed more points of similarity with, and fewer differences from, the bordereau than did the writing of Dreyfus; this he said was nothing, for that sort of comparison was all humbug. Asked if he had subjected any specimen of Esterhazy’s handwriting to the same sort of tests as the bordereau, he answered he had, but not so thoroughly. But that would prove nothing. It is quite likely that Esterhazy had begun to imitate the writing of the bordereau even before 1894, so as to be able to continue the traitorous work, should Dreyfus be arrested. “Esterhazy does not trouble me at all;” he is “a man of straw.”

In truth, the fantastic theory of Bertillon had been destroyed by the facts before ever the court-martial met at Rennes. I have called attention to the peculiar paper on which the bordereau was written. Just before the proceedings were begun by the Court of Cassation, the nature of this paper was discussed in the press, and the government set out to find some like it. The search was long, but at last one store was found in Paris which still had some at hand. At this time two persons, one a tailor, the other a petty official, each produced a letter from Esterhazy written on this identical paper. They were dated respectively April 17, 1892, and August 17, 1894, and were each in answer to dunning letters addressed to Esterhazy. No reasonable person can doubt their entire genuineness. The date of the later one is contemporaneous with the bordereau. Esterhazy, before this discovery, had vehemently denied ever having used such paper. When confronted with the letters, he admitted that he always tried to have on hand some thin paper; it was useful in tracing plans, etc. He also admitted his signature to both letters. No such paper was shown ever to have been used by Dreyfus. The rarity of its use, and difficulty in obtaining it, make most strongly against Esterhazy.
These two letters written on this unusual paper, and the strong similarity between the writing of the bordereau and that of Esterhazy would seem to be conclusive of the guilt of Esterhazy and the innocence of Dreyfus. It had no effect whatever on Bertillon or his faith in his theory. Esterhazy, says he, has simply practiced imitating the writing of the bordereau. There has been time enough to prepare the letters of 1892 and 1894, write them on the peculiar paper, and produce them after Esterhazy's acquittal by the court-martial, to the end that, Esterhazy being now safe, Dreyfus would be freed. This, of course, was the work of the "Syndicate" — the Jews.

A probable explanation of this curious vagary in a man of Bertillon's reputation will, perhaps, be found in the cause of that very reputation. As everyone knows the "Bertillon system" is based upon minute measurements; he himself lives in an atmosphere of millimetres. What cannot be determined by measurement, has no value to him. In short, his system has become with him simply an obsession.

Given this obsession in a man of highly nervous temperament, such as Bertillon, and the "theory" is psychologically accounted for. The world, however, owes him thanks for a new idea, the conception of a man forging his own handwriting!

The "Affaire Dreyfus" has caused much evil, but it produced one great man. From the lies and anonymous letters of Commandant du Paty de Clam, the perjury and forgery of Colonel Henry, the cynicism, moral obliquity and treason of Esterhazy; from plot and counter-plot; from the muck and mire of dirty politics; from the cowardice and deceit of the General Staff we turn to regard one grand figure — Picquart. A colonel of the army, head of an important department, able, brilliant, young, a career unparalleled was opening out before him.

Like nearly all army officers, he believed in the guilt of Dreyfus. But his official position gave him access to the secret papers, known only to a limited few, on the faith of which, behind closed doors, the court-martial of 1894 convicted Dreyfus. His suspicions were aroused, and he began to investigate the secret dossier, du Paty and Henry. He started the investigation which led finally to the revision of the sentence.
At once the conspirators sought to destroy him. He faced them all; the press, the public, the army. He sacrificed his brilliant career, was degraded, imprisoned. For what? For that thing which so many of his fellow-officers talked of continually, yet so little understood—honor. He suffered and fell, that justice might be done to the despised Jew on Devil's Island.

In the memory of living men, the French army has not produced such another soldier. And the pity of it is, that the army did not know him when they saw him.

FRANK P. BLAIR.

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