

The Underworld of Paris

CHAPTER I

THE SCIENTIFIC DETECTIVE

FIRST of all I propose to show exactly how we detect the murderer and catch the criminal in France. Many of our judicial methods are open to criticism, but the actual examination and punishment of the criminal has never been my official concern and I intend therefore only to deal with the various stages of Police investigation from the time of the discovery of a crime to the arrest and handing over to justice of the guilty.

Since science plays a part of the first importance in criminal catching not only in France but in every country, I have asked our chief scientific expert at the Prefecture of Police to collaborate with me in this chapter. I refer to Monsieur Edmond Bayle, the disciple and successor of M. Bertillon, the originator of what is known at the Prefecture as the "*Service de l'Identité Judiciaire*" (formerly called "*L'Anthropometrie*" or "*Le Bertillonage*")—the famous mensuration system of identification which is still such a bulwark of our detective work.

For the story of our scientific methods from this point until the end of the chapter Monsieur Bayle is responsible.

.

It was in 1885 that the problems of identifying and distinguishing between different men attracted the attention of M. Bertillon, who was then about thirty-two years old, and only a clerk at Police Headquarters. At this date a law was passed requiring that the previous convictions—if any—of a criminal should be known to the Police. Until then it had been easy for the "old lag" to change his civil status by means of stolen identity papers, and thus conceal his past. The Police, therefore, had now to ignore the man's name, and turn their attention to discovering strictly personal characteristics on the body of the suspect: marks which in themselves might be sufficient to identify him from all other human beings.

It was then that Alphonse Bertillon, son of a doctor, created the science of "anthropometry" or body measurement. This new means of identification was accepted by the Police, and a system was organized by which forms had to be filled up for

every prisoner, giving precise information about a certain number of bone measurements such as length of arm, middle finger, head, foot, etc. M. Bertillon held that the sum-total of these measurements would be sufficiently variable between different people, and that no two would coincide. This, however, proved unreliable, and to find an exact method of identification M. Bertillon had to go further. He added to his "questionnaire" a precise summary of the marks that each prisoner had on his body—scars, moles, and other particulars, together with a careful description of the colours of the eyes and hair. Finally a very methodical analysis, written in everyday terms, was made of the face, with such accuracy that one might call it a "speaking portrait." As a result, even to-day members of the Police Force who are taught this method can, without any photograph, pick out the individual so described from passers-by in the street. Lastly, as an auxiliary to this "speaking portrait," M. Bertillon's form was completed by photographs, both profile and full-face, of the person in question, taken under special conditions so that successive photographs of the same person could be considered together.

These forms were made out in duplicate; one copy was filed alphabetically according to the name; the other was classed according to the measurements of length and breadth of the head and length of the middle finger. Thus it was only necessary to measure the suspect, to pick out his "dossier" and read up his past relations with the law. In order to make sure, however, that the papers really applied to the individual in question, a most careful examination had to be made, not only of all measurements taken, but of everything else noted in the "*fiche*," so that the Police could decide if any alteration had been attempted.

However, M. Bertillon discovered at once that he had omitted the principal point of identification—finger-prints. After 1894, he added to his form the imprints of four fingers, and in 1904, he took all ten. But these impressions were not used to classify the papers, so well did the body-measurements serve to betray him—if he had a past—to the Police. Yet M. Bertillon did not undervalue the finger-print for purposes of identification; indeed it was he who first thought out how to use these slight imprints often left behind by criminals to their undoing. The markings which we all carry at our finger-tips are so complicated and varied that it is impossible to find two fingers in the world which make identical impressions; and the imprint, therefore, of a single finger is enough to identify with certainty any particular person. Fingers always more or less lightly perspire, so that they

cannot touch a smooth surface without leaving their mark. Thus we may often find the finger-prints of a criminal on an article he has touched or on a safe he has opened or on a window-pane broken at the scene of his crime. These imprints are generally very faint, and it was M. Bertillon who first learnt how to find and photograph them, and who finally made them a study. To-day there is no more valuable method of identifying criminals; the discovery of a finger-print where a crime has taken place often leads to the rapid arrest of the guilty person. The Department of Judicial Identification has besides, as part of its organization, a special library devoted to such research, where every year more than 180,000 finger-prints left behind by criminals are examined. This involves the taking of 7800 photographs, of which 12,000 proofs are enlarged. Co-operating with this laboratory, we have remodelled the old method of M. Bertillon in such a way that the papers are no longer classified by means of body-measurements, but simply by finger-prints. Thus in future it will only be necessary to examine a special list to find the imprint required.

But though these finger-prints are so precious, every mark that the criminal leaves—dust, hairs, stains, all the traces inseparable from a crime—must be delicately examined. We, in extending M. Bertillon's work, are therefore trying to make of the Department of Official Identification an organization capable of utilizing all the modern scientific methods for the purpose of detecting criminals. It is the duty of the *police judiciaire* to put before the expert the smallest item found after a crime—a blood-stain, a thread of cloth, the identification of whose dye may lead to some result; a grain of gunpowder which may point to some particular kind of weapon; stains of shot the analysis of which can indicate both the nature of the powder and the bullet. Again, the forger may be betrayed by the practically invisible traces left on a paper—sometimes only an infinitely small quantity of matter left by the written line, which however permits an analysis of the ink and a comparison with other parts of the document. In a case of fraudulent art dealing, there are a thousand points to consider apart from the picture itself—the canvas, framework, surface and underlying colours, the varnish.

In detecting and at the same time preserving these traces, the strictest and most sensitive methods of analysis must be employed; methods involving both physical and chemical research. Any specialized laboratory engaged in Police work should include departments of physics and chemistry and possibly also of biology—all of which are contained in our Department of

Judicial Identity. Here we attempt to measure a certain number of physical characteristics. The indices of refraction of solid, liquid, or dissolved matters are noted ; their rotary power and dispersion ; their power of absorption of electro-magnetic waves from the infra-red to the X-rays of radio-active substances passing through visible light, the ultra-violet and X-rays again. The study of the spectra of phosphorescence and fluorescence ; the measurement of electric conductivity of bodies charged with ions, microscopic and ultra-microscopic, etc., is carried on ; and it is through the examination of small objects by these methods that a scientific verdict can be given.

Let me show you how scientifically we handle a murder from the time that it is reported to Headquarters.

The " groundwork " at the scene of a murder has, by many years of patient organization, been refined down to a clearly stereotyped procedure. Our Inspectors do not hunt wildly for clues or " deduct " with a clairvoyant eye like the detective of fiction—they use the same method with every homicide, and it is this carefully laid-down course of procedure that I want to introduce now. I think it will be agreed that these official facts dispel much of the illusion of sensational adventure which is attached to the detection of crime. Arrived at the scene of the crime our detectives make sure that every kind of trace has been noted. A systematic investigation is then carried out. For this purpose every member of the Corps is supplied with his own " formulaire "—a list of all questions that may have to be put about the whole affair—to which he has to find answers there and then. He carries also a special chemical outfit to enable him to make certain researches on the spot, together with material for making diagrams and photographs. Such a " formulaire " is divided up into :

- A. Preliminary Work.
- B. Examination of the Corpse.
- C. Room where Crime was committed.
- D. Neighbouring Rooms.
- E. Verification of People concerned.

Five different *Inspectors de Sûreté* are detailed to work under these headings, and their instructions are given as follows :

In carrying out the *Preliminary Work*, where the detective must decide what causes may have altered the condition of a place and must also replace it in its original state, he must first examine the lock before entering and note what may prove important ; he must note the height of the room ; make a plan of and photograph the room ; and finally, ascertain the civil status,

profession, and habits of the victim, and gather any other information about the crime.

The *Examination of the Corpse* involves much more detailed work. The detective must first describe the clothes and underclothes—their disorder; any unusual stains (notably of blood), the apparent nature of the stain (for future verification); its quantity, shape, and flow; any extraneous matters such as hairs of head, beard or moustache, plaster, earth, sand, tobacco, or even buttons, ribbons, string, paper, etc.; and finally if any hole or burning has been made, he must note the position of the wound and the size and direction of the bullet. He must then consider the body itself and inquire into the probable cause of death. If by wounds he must note their position, direction, and size; the probable nature of the weapon used, whether for cutting, piercing, stunning, or shooting; and he must describe the flow of the blood so as to deduce from it the position of the victim at the moment he was struck. In the case of a pool of blood, he must decide whether it denoted two successive positions of the body. If by strangling, he must find out if this has been brought about by hands or cords, and in the latter case he must look for them, photograph them, and, without disturbing, take a small sample for purposes of comparison. If the body has been burnt, he has to describe the burnt parts and look for traces of paraffin or petrol on the body, hair, or clothes. (In all these researches where the object is to convey rapidly all useful evidence, not a moment should be lost in conserving these samples and sending them to the doctor who will attend the inquest, as well as in drawing up a report for the Examining Doctor.) The hands of the body must next be examined for traces of struggle, scratches, or bleeding, and any substances such as blood or hairs on the nails must be collected and samples taken. The weapon, if bludgeon or axe, knife, razor, or dagger, must be searched for traces of blood, hairs, threads of cloth, which should be taken to the laboratory. If a firearm, the officer must count the remaining cartridges, search for bullets, collect the empty cartridge cases, note the direction in which they are fired, and finally, if possible, obtain the bullets and the weapon.

The *Examination of the Room* where the crime took place is also extremely detailed. On arrival, the detective must note the general aspect of the room, any particular odour, and any traces of disorder. He must first examine the entrances and what adjoins them. He must note whether the doors are partially of glass, how they open and close, their bolts, whether the lock works silently, if there are any signs of forcing (in which case he

must look for the tools) and then if the bell has been put out of order. (If the room is part of a flat, then a similar inquiry must be carried out with regard to its front door.) He has to examine the windows, whether shut, open or broken, their fastenings, their dimensions, their accessibility. Then the furniture must be inspected. The condition of the bed must be noted—whether made or not, or whether the body is in it—sheets and blankets must be removed and a list made of them, and samples of blood, stains, hairs, etc., taken. Wardrobes, chests-of-drawers, sideboards, cupboards, etc., with locks, must be searched to see if they have been broken open (if so, impressions must be taken) and to find out if anything is missing. The stove must be carefully examined for traces of burnt material or paper, and its general construction noted. In a case where possibly gas-poisoning has preceded death, the chimneys, etc., of any stoves should be examined for leakages. Linen—clothes, underclothes, towels—must be overhauled for stains and hairs of every kind. With regard to the stains themselves—if on the ground, walls or furniture, the detective must test their composition immediately by peroxide; he must note their position, their shape, and the direction indicated by such shape, their flow and any attempt at wiping them up; he must, if possible, note their size and even photograph or sketch them—and then he must look for foreign matters in these stains—hairs, brain matter, bits of bone, pins, etc. Footprints or finger-prints should be noted exactly and photographed, and the finger-prints of the victim should be taken on the spot. The colour of toilet waters in pails and pots should also be noted and samples taken. If there has been a fire of involuntary origin, lamps (oil, petrol, or alcohol) must be inspected and cleaned, any escapes of gas or short circuits must be noted, and search made for explosive substances, and all heating apparatus must be examined. If the fire has been brought about wilfully, the investigator must examine the spot where the fire began, determine its position, measure and describe it and decide on its importance. He must note the materials used (paper, shavings, straw, etc.), and how they were lit; the presence of oil (smell, stains, or empty bottle) or other inflammable substance. He must see if the windows and doors had been arranged to create a draught; or, if it was a case of gassing, he must look at the meter and record book to find out how much has been used.

The process of reporting on the *Neighbouring Rooms* is very similar. The same details must be noted and special care taken to leave no traces undiscovered. A plan must be drawn to

indicate the exact position of these rooms with reference to the room where the crime was committed. A survey of the domestic animals must also be made.

With regard to the *Verification of Persons*, if suspects have been detained at the police station, their statements must first be verified. Their measurements and finger-prints must be taken, their hands, nails, clothes, hair, etc., must be examined and all smells and skin disorders noted. Finally, if possible, a few straight questions should be put referring to any statements made.

The information thus collected from these various researches is then passed on to the chief detective inspector in charge of the case. The samples which have been gathered together as evidence are taken for examination to a well-fitted laboratory specially established at the Sûreté. I do not hesitate to say that this is unique of its kind. It consists of laboratories devoted to chemistry, physics, physico-chemistry, biology, microbiology, and histology, and contains therefore a scientific outfit useful not only for the study of problems arising in criminal cases, but also for the endless study involved in perfecting methods of criminological research.

In order to interest readers in this organization, I shall now give a complete description of an actual case as viewed in the laboratory. The murderer, Lazaire Teissier, was condemned on the 13th December 1925 by the Assize Courts of the Seine, and sentenced to ten years' penal servitude, and there is no doubt that it was the evidence produced so exactly by the "Identity Department" that enabled the jury to arrive at a just verdict and condemn the prisoner.

One morning in summer, a huge parcel was found on the grass in the Bois de Boulogne. When opened, the packet revealed the body of a bound man, wearing shirt, trousers, and boots, and with his legs drawn up to his chest. In the same parcel were found his coat, waistcoat, tie, and a white straw hat. After it had been photographed on the spot, the body was taken to the Medico-Legal Institution where the clothes were removed and later handed over to us, together with a sample of the hair.

What were we to deduce from them? In the hairs, clotted with blood, there were numerous grains of coal, sand, sawdust, and sharp fragments of stone, and a small piece of yellow cardboard about two millimetres long. The hairs themselves were greyish; but under the microscope they seemed to show traces

of dark chestnut dye ; the longest, when separated, were colourless and must have been turning white, while some of the very short hairs had natural ends that had not been cut. On the back of the shirt, between the shoulders, were found large black stains which seemed to have been made by very fine carbon powder ; two little colourless insects such as live without light ; but no traces of sand or sawdust. Marks of coal, sand, and sawdust were found on the trousers and belt as well as on the coat and boots.

From these first observations we were able to deduce that the body, before being placed in the Bois, had been kept for a time in some dark place containing coal, sand, and sawdust—probably a cellar. The next step was to establish by means of our materials the whereabouts of the cellar, and a closer examination therefore was made of the objects. The coal-dust was for the most part shining and hard, and its figure of density was found to be high, so that we could presume it to be anthracite. The sand, which seemed to have come from a grindstone, appeared under the microscope to resemble little rounded pebbles, some of opaque, others of transparent crystal, while others again were stained with iron. The sawdust, which we put in paraffin and cut up into small atoms a thousandth part of a millimetre in thickness, showed under the microscope that it was a mixture of two woods—pine or fir and oak. The small piece of cardboard, we found under the microscope to be made of straw celluloid, and a further examination proved that this celluloid was non-streaky and had been prepared therefore by non-chemical means. Finally, the colourless insects were identified, the one as belonging to the Coleoptera—a genus of beetles—the other, a little crab—both blind as are animals living in complete darkness. Thus we had so far deduced that the crime took place in a cellar whose floor contained at the same time coal-dust, sand of a certain composition, sawdust from pine and oak, and fragments of cardboard made of non-streaky celluloid.

The next step was to examine the clothes more attentively. They were carefully brushed and all the dust produced from each garment was collected and examined under a lens. On the trousers we found more coal-dust, sand, and sawdust, a small thread of dyed green wool, and two little pieces of some transparent substance dyed red, about half a millimetre thick. We then had to identify these red atoms, to analyse the dye on the wool and to compare these with others in order to find out their origin. In this particular case we used a technical method that is generally employed—the analysis of the light transmitted by the little



THE TEISSIER CASE
Parcel at moment of opening in Bois de Boulogne.

objects. Every molecule—that is, every chemical unit—is either transparent or opaque, and by analysing the light that has passed through a body by means of its spectrum, any light rays that the body has received can be identified. Such an analysis needs very complicated instruments, and the minute nature of our samples made the task still more difficult. As a result, however, we found that the little particles of red dust came from varnish coloured by an artificial matter—rhodamine. Then in the dust taken from the shirt we found another thread of green wool mixed up with the same matters as above. These new facts, revealed by the lens, told us that in the place, still unknown, where the man, living or dead, had been, there must be more green threads, or a suit or cloth made of similar green threads, and also some article covered with varnish that was artificially coloured red.

By means of a microscope we were able to advance further still. A little material was cut off each article of clothing, soaked for some hours in sterilized water, after which it was pressed and “centrifuged.” That is to say, it was placed in a special tube with a cone-shaped base—a tube that can be rapidly turned seven to eight thousand turns per minute. When the tube is thus being turned, all particles, no matter how small, are thrown to the bottom of the tube and collected in the cone-shaped portion together with all the tiny organisms present in the liquid. The clear liquid is then poured off, and what is found at the bottom of the tube is placed on slides, ready for a microscopic examination. The new elements that we found in this way from the coat, waistcoat, and hat were minute organisms producing great fermentation. These we cultivated and finally recognized as being agents of alcoholic fermentation—*Saccharynoces cerevisiae*—existing in places where fermented liquor (wine, beer, etc.) has been spilt. On the shirt, trousers, and tie, however, none of these fermentations were found, but different organisms (“diplococci” of the species “pneumococcus”), thus proving that the coat, waistcoat, and hat had been in a different cellar from the shirt, trousers, and tie—but all in some underground place—and it must be remembered that the hat, coat, and waistcoat were not on the body when found, but wrapped up in a parcel with the corpse.

On the basis of these established facts, the identity of the murdered man was soon discovered. He was a general clerk and messenger in an office and had been missing for a week before the discovery of his body in the Bois. Suspicion was directed towards two different men—one a wine merchant, the other a bookmaker; and inquiry proved that the latter had cellars

beneath his house. The Police decided to search these scientifically and he was invited to attend. At the head of a staircase leading to the cellars, separated by a door from the rest of the house, was a painted wall, on which, at about three feet from the ground, we found traces of a large blood-stain that somebody had tried without success to wash out. A closer examination of the stain showed us here and there small dried clots, still intact, that seemed to come from a splash, and some hairs. After it had been photographed in normal size, this stained portion of the plaster was removed by means of a chisel. We noted more blood badly washed out on the walls at the height of the first step. The bookmaker, who accompanied us, explained that just there a cat had had kittens, and a little later he added that sometimes his wife's soiled under-linen was placed there. Then he took us into a cellar which he told us was his own. On the ground was sawdust mixed with ordinary dust, as well as a heap of the former, a large box containing coal, and other cases and bottles. We took samples of everything, including the coal-dust, as the interior of the box might also be stained with blood. Then, closely questioned, the man confessed that he had another cellar. Here we found cases containing articles for table service; paper of all sorts and yellow cardboard—and in the middle of the cellar lay a large piece of red-varnished wood which had been partly split up with saw and axe into firewood (that was stacked there). There was also a large store of logs. The floor was covered with sand mixed with sawdust, other shining dust such as anthracite leaves, and small pieces of red-varnished wood. We took samples of everything on the floor, also of the yellow cardboard and the red-varnished wood, and the cellars were then sealed up.

A laboratory examination of the samples showed the following results: the blood-stain outside the cellar did not come from a cat but was human. Further, an examination of the little clots found in the splash of blood showed us that it was pure blood and could only have come from a very great hæmorrhage. Besides, the existence of the dry clots showed sufficiently that they were the result of a spurt of blood and not of contact with dirty linen. Again, we were able to recognize that the hair found stuck to a little clot was human hair, thin and short, having a natural end to it and not recently cut; it was turning white, but such colour as remained was dark chestnut. This hair was identical in every way with the short hairs taken from the body of the general clerk. In the samples taken from the floor of the second cellar, the coal-dust was from anthracite, the sand com-

posed of little grains of opaque, transparent, and iron-stained crystal. The sawdust was a mixture of pine and oak. The red-varnished wood was coloured with rhodamine, and when scientifically compared with the splinters found on the trousers, was seen to be identical. The yellow cardboard was made of straw celluloid, and this is machine-made celluloid which is non-streaky.

These first results led to the arrest of the owner of the cellars. Yet further research was carried on. In the sand of one cellar, a scrap of paper bearing the name of the general clerk was found. Then all the dust on the ground was collected in a heap and thoroughly sifted, with the result that the four parts of a torn railway ticket were discovered—a return ticket which had not been used for the return journey. The name of the station, and the date and hour of issue were clearly visible. The date coincided with that on which the clerk had disappeared; the name on the ticket was that of the station nearest his home, and the hour marked was the time he usually left each morning.

In the second cellar, there were no traces of blood, and it seemed unlikely that a body could have been hidden there for a week. Besides, this cellar was ventilated by an air passage leading to the yard, and which though narrow and closed by an iron grating, allowed enough light to filter through to make it impossible for blind and colourless insects to be found on the floor or walls. It was then that we learned of the existence of a third place useful for concealment. Under the stone steps leading below was a narrow place, well-hidden, just large enough to contain a body placed on its back and doubled up. On these steps also we discovered in several places splashes of blood which when removed and examined proved to be human. The floor was damp and black with coal-dust. In this dust, as well as in the samples taken from the walls, we found (by examination in the laboratory) little angular pieces of matter from a grindstone similar to those found in the hair of the corpse; hairs like those taken from it; colourless, blind insects like those on his shirt; some threads of green wool similar to those on his shirt and trousers; and, finally, minute organisms free from fermentation, such as had been found on the shirt, trousers, and tie of the dead man.

We had still to discover, however, the place where the coat, waistcoat, and hat had rested. They could not have been with the other clothes, because, as will be remembered, the organisms found on them were quite different from those just examined; nor could they have been in the second cellar, which when examined was also found to produce different organisms. We

then inspected the coal-box from the first cellar. There was no trace of blood inside it, but the dust that we scraped out of it proved to be rich in fermentations identical with the organisms found so abundantly on the coat, waistcoat, and hat.

We had now only to examine the green threads of wool found in the dust of the third cellar. After a scientific comparison of their dye with that of the threads taken from the trousers and shirt, a slight difference was revealed, but a further examination showed that the dyes of the threads found on the body and those of some clothes in the house of the accused were identical. Finally, in that same house, we found overalls on which were several dry clots of what was undoubtedly human blood.

After this exposition, further comment seems unnecessary. Yet the man confessed nothing. Our evidence had established the facts that the clerk had been killed in the cellar to which he had a key, and that his body had remained there for a while; but it told us nothing of the general circumstances attending his death. Was the murder premeditated or the result of a homicidal impulse? Were the blows given without intent to kill? Was there an accomplice in the cellar, and did he play a secondary or a principal rôle? These questions remained unanswered by our evidence, which merely served to point out the cellar of the man charged—a fact which was wisely noted by the judgment of the Assize Court. Yet how was it that our laboratory, despite all its resources, was not able to answer these questions? It was because, among all the traces left behind by the crime, and by the help of which we should have been able to work back to its origin, certain data were too subtle to be detected by apparatus which could only recognize material objects. The missing evidence, which might have established the truth, could not have been detected by any but human agency—and no one had seen or heard, openly or secretly, anything which might have been remembered—no proposal made by the accused—no acts, cries, or words at the moment of the crime. Such evidence, not conclusive in itself, would have been valuable in completing the case if corroborated by the results of the laboratory work.

Truth lies always between theory which moves too fast, and routine which moves too slowly. Whatever technical developments may take place in the future towards perfection, the laboratory alone will never be sufficient in determining a criminal matter—and that should not be its aim. To men of legal training, however, I need not stress the importance of "*les pièces de convictions*"—circumstantial evidence. I can only say that the end the laboratory tries to attain is to isolate and examine in

each case every object that seems to be connected with it—and as we have seen, the value of any such object is not to be determined by its weight or size. Much would remain undiscovered if the laboratory were not called upon—and much must still remain undiscovered when its work is done. But, in my opinion, the laboratory is carrying on fine work which brings its own reward.

EDMOND BAYLE,

*Head of the Department of Judicial Identity
at the Prefecture of Police, Paris.*