THE MASSACRE OF THE ARDEATINE CAVES : Identification of the Dead.

A report on the exhumation and identification of three hundred
and thirty-five bodies recovered from the Ardeatine Caves in Rome.

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THE Appian Way has been the silent witness to many deeds and misdeeds in the 2,000 years of its existence but it is hardly possible that it has witnessed any deed more foul than that of March 24, 1944, when 335 innocent individuals whose only crime was that they were Jews or anti-Fascists were murdered by Nazi firing squads in reprisal for the killing of 32 soldiers by Italian civilians. None of the victims played any part in the killing. Many of them had been in prison for months, many more had been arrested at the time of the incident although not involved in it and some others were nominated for execution by one man alone who was himself later captured, tried and executed.

The initial incident took place on March 23, 1944, in the city of Rome. It had been noticed that a column of German soldiers passed along a certain street (Via Rassella) daily at the same hour. This fact was noted by the anti-Fascist underground movement who decided to ambush them. The day chosen was the anniversary of the founding of the Fascist Militia. A University student was chosen to make the attempt. A dustman's handcart was used. A light steel case containing about 60 pounds of explosive was put inside this cart and packed round about with a similar amount of explosives. A fuse was set and ignited at the appropriate moment. The resultant explosion killed 32 Nazi soldiers and 3 civilians. The student made good his escape.

The German reaction was immediate and violent. All the houses in the vicinity were searched and the inmates turned out on the street (despite age, sex, or physical condition) and made to stand against a wall with their hands above their heads. The houses were ransacked from cellar to roof. Furniture was broken up and thrown to the street. Personal belongings underwent a similar fate except in the case of valuable items which became the individual Nazi's loot.

Of all the individuals removed from houses and seized in the street the males were later removed to a prison established by the Germans at their Headquarters in the Via Tasso. Estimates of this number vary between 70 and 250. The correct figure is probably about 70. The number included 2 boys aged 17 who had been seized in their home performing their lessons from school and a boy of 14 who, when his father was seized, accompanied him. They were shot the following day.

There are various hysterical versions of the subsequent events. The Nazi Commander (General Meltzer) decreed that reprisals would be taken to the extent of 10 Italians for 1 German. (Some say that the initial order was 100 Italians for 1 German but first, by the intervention of the Italian authorities, this was reduced to 20 and later, by the alleged intervention of the Vatican, it was further reduced to 10.) The Italian newspapers of March 26 carried the following official communiqué. "On the afternoon of March 23, 1944, criminal elements threw hand grenades against a German police squad passing through Via Rassella. As a result of this ambush 32 policemen were killed and many injured. The cowardly ambush was made by bandit Communists. Investigations are still going on to ascertain how much of this was due to Anglo-American incitement. The German Command is determined to put a stop to the activities of these nefarious bandits. The German Command has therefore ordered that for every German killed 10 bandit Communists will be shot. This order has already been carried out."

The selection of victims was peculiar and done arbitrarily. All individuals held in the Via Tasso or other German prisons were to be executed. The total number so held was approximately 270. A further 50 was required to swell the total to 320 and bring the number up to that decreed by General Meltzer. Fifty political prisoners held in the civilian jail (Regina Coeli) were therefore nominated for execution by the Chief of Police. But 335 bodies were found in the Ardeatine Caves. The additional 15 were nominated by Caruso who, as Chief of Police, ordered the inclusion of 15 individuals who were among his public and private enemies.

The execution took place at the Ardeatine Caves.

These caves are located in the Old Appian Way just beyond the famous "Quo Vadis" church and near to the Catacombs of St. Calixtus. The roadway runs in a cutting with high ground on both sides. The caves therefore run into the hillside. On the east side is the high ground which contains the galleries of the Catacombs of St. Calixtus. On the West side lie the Ardeatine Caves. There are no galleries in these Caves as there are in the Catacombs. There is an incline, however, in the floor level so that in point of fact the farther one enters the Caves the farther does one travel below road level. The Caves consist of a series of tunnels crossing and recrossing each other and all converge on several exits to the road. The tunnels into the hillside vary in length from 50 to 150 yards. They all end blindly. The breadth of the tunnels is even and measures about 12 feet. The height varies from 15 to 20 feet. The intersecting tunnels are of similar dimensions; several end blindly. The actual executions took place in a tunnel which stretches into the hill for about 100 feet. This tunnel opens into a further tunnel situated practically at right angles to it which ends blindly on the left at a distance of about 10 yards while on the right it extends into the hillside to meet another tunnel. The main entrance to the Caves is situated in a quarry about 100 feet from the road at road level.

The executions took place on March 24, 1944. At about 2 p.m. that day the intended victims were taken out of their cells and, with their wrists tied

behind their backs, they were led to army waggons into each of which were packed about 80 of the victims. They were relieved of any valuables they possessed but many had been able to secrete various items about their persons. This fact proved useful later in identification of those cases. All approaches to the Old Appian Way were closed and guarded by German soldiers. The waggons arrived at the spot and at about 4 p.m. the shooting began and continued till late at night if not, indeed, till the next day. It has been established that on arrival at the Caves a waggon would back into the mouth and then the victims were made to descend and driven along the tunnel. There was no set firing squad. From the position of the bodies as found it was obvious that they were herded along in groups varying from 1 or 2 to a maximum of 5. Some had obviously been shot singly. Others in pairs and threes. They lay where they fell. Those following fell on top of those in front. As the bodies piled on each other those following were made to climb on top of the mound. All were shot in the nape of the neck or back of the head with two exceptions, that of a father and son whose bodies were found in each other's embrace and whose skulls showed entrance wounds in the lateral aspect of the occipital bone. 263 bodies were found in the blind tunnel. They had been shot from a distance of about 10 feet. The remaining bodies were found in the main tunnel. All of these had been shot in the back of the head and it was more obvious here that the victims, prior to, being shot, were made to climb on to the bodies of the earlier victims. Some, indeed, were made to kneel on the top of the pile as evidenced by the posture found on exhumation.

The commonest target for a firing squad is over the heart but it occasionally happens, even allowing for the fact that not all the firearms carry live shells, that the individual is not killed outright but has to be despatched by the officer in charge. A firing squad, however, aiming at the head and especially the back of the head means certain and instantaneous death.

When all the victims were executed the tunnels were sealed off by blowing up the roof at two points. This did not work according to plan, however, and, while a large amount of earth and rock did fall into the tunnels, they were not sealed off. All that really happened was that a circular hole was made in the roof about 10 feet in diameter, the debris from which sufficed to provide a thin covering for the masses of corpses.

These, then, were the events leading up to the executions and the details of the execution themselves as reconstructed at the time of the exhumations from the position and posture of the corpses.

The Germans, no doubt, hoped that the bodies would never be found (as evidenced by the attempts to seal off the portion of the tunnel) or, at least, that they would not be found for a long time to come. They had, however, overlooked the presence of a swine-herd in the fields above the tunnels and he brought the news to town of shootings at the Ardeatine Caves and then, of course, the Germans who, already were extremely occupied with the Allied Bridgehead at Anzio, were soon to be driven out of Rome by the advance of the 5th and 8th Armies from the south and the Anzio Bridgehead forces

from the sea. Rome fell on the night of June 4-5, 1944, i.e. eighty-four days after the executions. On July 26 the work of exhumation and identification began and continued up to December in which time all the bodies were exhumed and of the total of 335 found only 13 remained unidentified. Most of these are headless but it is very probable that some of them will be identified later as it is possible that they were not natives of Rome but are victims from Northern Italy. Only two Romans so far remain unidentified.

After a preliminary examination of the scene of the executions it was decided that all examinations would be done on the spot. All necessary laboratory facilities were therefore established within the Caves while outside a miniature laundry was set up. This step enabled the examination to be conducted more easily and is a parallel to the usual procedure of exhumation which it is always recommended should be done in the cemetery. It was also considered advisable to perform the examination within the Caves so that all the bodies should be maintained in the same environment throughout what was obviously going to be a long time and thereby prevent a final rapid decomposition which would undoubtedly occur if the bodies were moved to another location.

The first task was to remove the earth which had fallen into the tunnels following the attempt of the Germans to seal off that portion of the Caves by blowing in the roof and, coincidentally with this excavation, to shore up the neighbouring parts of the roof which had been weakened by the explosion. During this examination, a large number of hand grenades (32) was found and about 300 sticks of dynamite. This gave rise to the suspicion that the bodies of the victims were booby trapped. But, fortunately, this was not so. Many live bullets were also found and also one fully charged magazine of a German sub-machine gun, actually an automatic pistol, which by an extension of the stock can be used as a rifle.

The obstructions having been cleared, access to the two heaps of corpses was easy. The stench emanating from the heap of decomposing corpses was indescribable. I know of no words to do justice to the smell. It can only be imagined. The staunchest and strongest wilted, blanched and vomited. On such an occasion anosmia would have its advantages. The combination of sight and smell was ghastly and horrible. Appropriate measures were taken to substitute a less nauseating odour by means of forced ventilation with exhaust fans.

At first sight it was thought that only one pile of bodies existed and that in the main tunnel. The second and larger pile was located after clearance of the first lot of corpses. The attempted burial by blowing in the roof produced a very slight covering of earth from which protruded feet and limbs. In the main tunnel the corpses were piled in three layers and in the blind tunnel in five layers. The larger pile, measuring roughly 15 feet in length, filled the breadth of the tunnel, i.e. 10 to 12 feet, and was about 4 to 6 feet in height. The smaller pile was about 12 feet long to 10 to 12 feet wide and 4 feet high. Thus there were two large shapeless masses of corpses from

which emanated a most foul stench of putrefaction and of decomposed and rancid fat.

In addition there were swarms of flies and, as a crowning horror, hundreds of bloated mice swarmed near and through the corpses. It was found when it came to removal of the individual bodies that the skulls appeared to be a favourite habitat of the mice for in practically all the bodies when moved a mouse or mice darted out of the hole which had been blown in the skull. It is interesting to note that there were no rats found. The only answer I can suggest to this is that of the inhabitants hereabouts who say there are no rats to be found in this part of Rome at any time.

As might be expected the greatest number of the bodies were extremely friable. When it came to removal it was found, too, that many of the bodies were headless and in other cases limbs were lying as if they had been disarticulated. The lower jaw was also missing in a very great number of cases. All these deformities were obviously due to the normal processes of putrefaction and decay. The actual number of heads found detached from the body was thirty-nine and the number of mandibles was seventy. It was noticed that the bodies showing this mutilation were on the top of the pile and especially in those bodies on the fore edge of the pile where the victim fell forward and the head lay unsupported. Several of the skulls were found a short distance, varying from 3 in. or 4 in. to about 18 in., away from the main mass. While this was thought at the time to have been due to the depredations of mice I personally think it was just the ordinary roll of the head when gravity finally overcame the retention of the putrefying muscles and ligaments. This must be the solution, for all the mandibles lay evenly on the ground. They cannot roll. But if it satisfies the Latin character to say that the skulls were moved by rodents then it might be permissible to allow them this extravagance to increase the ghastliness of the whole incident.

From the photographs it will be seen that there was very little earth covering the pile of bodies. It may reasonably be assumed that such earth covering as there was, was caused by the dust settling following the blowing in of the roof and the dust movement in the tunnels during the two and a half months in which the bodies lay there. This earth covering was sodden with the fluids formed from the decomposing bodies and which, on the top layers and round the sides, served to knit and cement the bodies together and form a fairly efficient seal to the atmosphere. As the bodies were removed from on top of each other a cementing together was evident but here it was obvious that the substance, so cementing the bodies and forming practically an airtight mass, was adipocere formed by the putrefying bodies.

In order to ensure complete uniformity in the examination of each body, and to ensure as absolute and complete an examination as possible for each body, the following regime was instituted and adhered to without deviation in all cases. The primary essential was that only one body at a time would be removed in reverse order to that in which they fell as far as could be judged. This later proved to be extremely useful in identification of victims from one family, e.g. where there were two individuals from one family; in all instances

adjacent bodies in the pile of corpses were later identified as these individuals. To illustrate this each body as it was removed was numbered and in the case of two individuals from one family, say, for example, that in the final identification the questioning pointed to the probability of these victims being in bodies 7 to 10 or 11. Final examination often revealed these bodies as 7 and 8, or 8 and 9, or 9 and 10 and so on. In the case of one family which produced six victims the bodies were finally identified within a range of nine bodies and four were numbered consecutively; thus if the numbers were 1 2 3 4 5 6 7 8 9 the bodies of this family were found as ⁽¹⁾ 2 3 ⁽⁴⁾ 5 6 7 8 ⁽⁹⁾.

As soon as a body was removed from the heap of corpses a superficial examination was made to see if it were complete. If complete, it was removed for full examination. If it were not complete, the missing parts were sought for without disturbing the remaining corpses. If a foot were missing it was an easy matter by comparison of the footwear on the body with any disjointed limb. With heads and hands it was naturally much more difficult and, in some cases, impossible. If the missing part were not found easily the search was not proceeded with. In two cases an attempt was made to identify the missing parts by comparison of blood groups by making a saline extract from the main body and comparing it against an extract made from the part suspected of belonging to that body. This is, however, a negative test only and was not proceeded with. The final identification of limbs was by the comparison of the measurements of the long bones, e.g. if one arm or one leg of a body were missing the long bones of the remaining limb were measured and matched with limbs of the same measurements.

All the bodies were clothed. This fact was very useful in the final identification as will be seen later. It also accounts in part for the well-preserved state of the bodies as it is well known that the process of putrefaction and decay are slowed down when a body is clothed.

The number which was given to each body as it was removed was also given to the various envelopes and bags which were used to contain the various articles found in the clothing of the individual and also samples of the individual clothing and hair. In the case of clothing and hair very liberal samples were taken. A different envelope was used for each item and each envelope was given the serial number of the corpse, thus one envelope would contain samples of the clothing, a second, trivial articles, e.g. matches, cigarette papers and trinkets, a third, more valuable articles, e.g. watches or rings or jewels, a fourth, messages or letters or identification cards and the fifth, the shoes worn by the victim with more samples of clothing. All these containers were taken away and the contents disinfected and cleaned by means most appropriate for the articles concerned (e.g. all metal objects were steeped in an antiseptic solution and later washed in soap and water) to restore them as far as possible to their original condition. As can easily be imagined they were all contaminated by the products of putrefaction. An accurate detailed description was then prepared for the contents of each envelope or bag. In this connexion it is interesting to note two points in regard to the clothing and personal effects of the victims. The first is that the articles coloured white or some

other fundamental colour remained unchanged, whereas articles of composite colours invariably assumed a more or less uniform grey appearance. The second is in the various written or printed articles found on the victims where it was noted that the writings in ordinary lead pencil or printers' ink had withstood destruction by the liquids and gases of putrefaction. The notes written in ordinary vegetable inks were completely indecipherable.

When the body had been removed to that part of the caves equipped as a laboratory for the final examination, and after removal of the various articles detailed in the preceding paragraph, the normal routine of examination for identification of the dead was proceeded with.

For ease of description the general examination and appearance of the corpses will be described first of all and the various other details of the examination will be described separately although all were performed simultaneously.

(1) *General Examination.*—As has already been stated each body was examined separately after removal from the pile to the table. Removal of the clothes revealed a state of affairs which, so far as I know, has never before been seen. This state of affairs can be summarized briefly in the question "Why were some of the bodies mummified and why did others show adipocere formation?" All the bodies were dead for the same length of time (within a matter of minutes in contiguous bodies and hours in the case of those killed at the beginning and the end) and all bodies were in practically the same environment except for those in the lowest layer who lay on the ground and those on the top layer whose backs were, apart from the slight covering of earth or dust, exposed to the air. All the circumstances being practically identical in each case it was therefore reasonable to presume that the general putrefactive condition and state of each body would be similar, at least, if not identical.

The conditions necessary for the formation of adipocere in a decomposing body are well known—moisture, absence of air-movement, lack of oxygen, and conditions unfavourable to the growth of bacteria. The appearance of adipocere is also well known—the characteristic rancid smell, the greasy soapy feeling, friability, and colour (pearly white or grey, or brownish). The composition of adipocere is also known, i.e. a mixture of fatty acids produced by the hydrogenation of the body fats.

The conditions necessary for mummification are also well known and are exactly opposite to those required for the formation of adipocere.

Where there was adipocere formation, and this was in the great majority of cases, it was practically confined to the lower limbs and to the skin and underlying muscles of the anterior aspect of the abdomen, with a suspicion of its formation on the back of the majority of the individual corpses. It was not complete in any case and was not present in any of the internal organs. As is natural this condition was more evident in the more adipose bodies.

In the Catacombs, across the road from the Ardeatine Caves, all the bodies found were mummified. It was reasonable to assume that in these cases, too, the putrefactive process would be one of mummification as the

FIG. 1.—A close-up view of the larger pile of corpses. Note the absence of earth covering.

FIG. 2.—A close-up of the manner in which the victims' hands were tied.

FIG. 3.—There was rather more earth covering to this body. Note the well-preserved condition.

FIG. 4.—Removing the clothing and recording details of articles found therein. The assistant is holding up a pocket-handkerchief. Note the skeletonization of the skull. The man in horn-rimmed spectacles on the left is Professor Ascarelli who was in charge of the exhumation and identification.

temperature and ventilation were, despite the blowing in of the roof by the Germans, practically identical. In mummification the body becomes dry with a greyish brown colour, a marked wasting and diminution in weight and a wooden rigidity.

The majority of the bodies showed the presence of both processes, e.g. saponification of the legs and ventral aspect of the body and, if one can be excused an Irishism, a saponified mummification or mummified saponification of the dorsum. No case showed complete saponification. Several cases showed mummification to such a degree that, if left for a longer period, it might have been complete. The bodies on the top of the piles showed little or no saponification but only the ordinary process of putrefaction and decay with possibly a greater or lesser alteration due to a degree of mummification. Why should these differences be present? The extrinsic factors of moisture and temperature were identical for all. It must therefore be assumed that there are some intrinsic factors necessary for these conditions.

(a) *Adiposity of the Body* : It is known that the more adipose the body the greater and easier is the formation of adipocere.

(b) *Clothing* : It is known that the processes of putrefaction and decay are delayed when a body is clothed by the exclusion of air to the tissues.

(c) *Age* : It is known that the bodies of older people putrefy more slowly than those of younger people.

(d) *Fluid Content of the Body* : Given the proper set of circumstances the larger the fluid content of the body, i.e. the bigger the individual, the greater the likelihood of the formation of adipocere, as it is known in normal circumstances such bodies putrefy more quickly. The converse should be true for mummification.

It has already been stated that the mass of bodies were cemented together by the seepage of body fluids through the clothing from the overlying to the underlying body. This would therefore tend to exclude the air from the bodies and thereby assist in the process of saponification. The bodies lay on top of each other face downwards. The body fluids would therefore normally gravitate vertically and this would account for the greater degree of saponification of the thorax and abdomen. The seepage of the body fluids would be sufficiently slow and the temperature sufficiently high for a soap to form fairly quickly in the more adipose individuals. This would account for the mild degree of saponification found in the dorsum of some of the bodies as the moisture required was received from the upper body before full solidification of the adipocere in the upper body. When this happened no more moisture would be available and saponification would cease in the lower body. A body lying in the middle of the mass of corpses fully clothed would very shortly be enclosed and occupy an airtight space at a possibly higher temperature.

The presence of maggots and rodents, especially the latter, may also have had some effect on the condition of the bodies, as by their burrowing and excretions the moisture and air conditions within the piles would alter to some extent.

The formation of adipocere in the lower limbs can, I think, only be explained by the fluid content of the limb being comparatively large in relation to the other parts.

Many skulls were practically completely skeletonized. This was mainly due to the depredations of rodents.

So much for the general examination and an attempt to explain the condition of the bodies as found.

(2) *Sex*.—To begin with it was not known if all the victims were male, but no difficulty was encountered in establishing the sex in all cases as the length of the hair of the head, the distribution of the pubic hair, the presence of hair on the trunk and the presence of hair on the face were in all cases diagnostic of the male sex. In practically all cases, too, presence of the penis was evident.

(3) *Age*.—This was a rather more difficult and involved procedure as the great majority of the victims were between 20 and 60 years of age and for all these the estimation was more or less a guess and an approximation. In all cases under 25 the estimation of the age was rather more exact and instead of the age being recorded in these cases in terms of 10 or even 20 years it was possible to give an estimate to within a year or two. The age of the victims was arrived at by examination of teeth, the ossification of bones, calcification of the costal cartilages, fusion and ossification of the xiphoid process and the manubrium to the sternum, ossification of the laryngeal cartilages, obliteration of the skull suture and so on. In this mass determination of the ages of a large number of bodies there was abundant proof for Professor Brash's opinion that age estimation from skeletal changes, though providing a reliable basis, does not provide an exact determination but only within a range which varies from a year or so in individuals before puberty. "Thereafter the range must gradually lengthen and after thirty years when the mature skeleton already begins to show signs of 'ageing'—including the beginning of the progressive closure of the cranial sutures—it will hardly be safe to estimate more closely than in decades."

In this examination as has already been stated the majority of victims were aged between 25 and 45. There was one boy aged 14, one aged 15, two aged 17, five aged 18 and ten men between 60 and 70, with one man aged 74 years.

(4) *Stature*.—The stature of the individual was obtained in two ways as follows :—

(a) As has already been stated, all the corpses were clothed. Clothing was removed by cutting down the minimum number of seams. All the garments were then measured in accordance with the normal measurements taken by a tailor. These measurements were submitted to an expert tailor and he then submitted his estimates on the height and general build of the individual. While this may not be a very scientific method it served as a fairly reliable check as in all cases his assessment was practically identical to that obtained by more scientific means.

(b) The scientific means of estimating the stature used was the method described by Orfila (he was Professor of Anatomy at Paris) and by the use of

Manouvrier's Tables. This method, as far as I could assess, is similar, if not identical, to that which we call in Britain, Parson's Formula.

(5) *Race*.—The problem of identification of race did not arise.

(6) *Social Status, Habits, Trade*.—The social status of each victim was assessed from the type and condition of his clothing and footwear. Thus it was very easy to identify a priest in the body found clothed in a cassock. Similarly the soldiers and policemen executed could be identified from their uniforms. The individuals clothed in lounge suits and working clothes could be, with almost complete certainty, identified as being professional or artisan. So too, with the type of footwear, a reasonable assessment of the individual's status and calling was possible. Decomposition of the body was too far advanced to obtain any information from the texture and condition of the skin of the hands but it was noticeable that the manual worker's hands were larger and the preservation produced by the adipocere formation showed who had been a muscular individual and therefore more likely to be of the manual working class.

(7) *Hair*.—A liberal sample of the hair of the head was taken from each individual. If the individual was bald, this was noted, and where possible a careful description of the distribution of the baldness was taken in lieu of a sample of hair. The hair distribution of the rest of the body was carefully noted and described wherever possible.

(8) *Teeth*.—The examination of the teeth in all cases was carried out carefully. The results of any previous dental operations were noted and a full description recorded. In the final identification of the individual these details were reported on by the Dental Surgeon who had attended the man.

(9) *Evidence of Cause of Death*.—It was obvious in all cases that death had been due to wounding of the head caused by the discharge of one or more bullets directed towards the back of the head producing various types of exit wounds and in all cases causing death. It can reasonably be said that in all cases death was instantaneous but that is something which cannot be known definitely especially when one reads reports such as that by Dr. Douglas J. A. Kerr in a recent *Lancet* where an individual shot himself in the head, lay unconscious for several hours and then walked a total distance of about 300 yards, sought entrance to his house and said quite clearly that he must go to the bathroom and only died three hours later. It can, however, be definitely stated from previous scientific experience that consciousness would be lost immediately. All victims were killed by bullets discharged from a Luger automatic pistol of 0.9 mm. calibre. In no case were there more than two bullets used and in all cases the entrance wound was in the occiput or nape of the neck. The injuries produced varied considerably. In some cases a clean hole was blown out of the head in the exit wound. In others, there were found multiple splintered fractures, while in some the skull was so splintered as to leave it completely shattered. In those cases shot in the nape of the neck, either from the aim of the executioner or as a result of movement of the victim's head, the 1st cervical vertebra was found completely shattered. From the examination of the Caves and the condition of the wounds, it can

reasonably be assumed that the victims were shot from a distance of about 10 feet. The bullets were hard metal.

The different injuries can be explained by the condition of the skull and angle of fire. In normal bone and with a straight and undeflected bullet a clean hole might reasonably be expected to be blown out of the skull by the bullet finding its exit. When the bullet was deflected at the entrance wound by hitting the skull at an angle the injuries resultant would vary, dependent on the strength of the skull bones, from fissuring to a greater or lesser degree, to almost complete shattering and scattering of the skull fragments. In any case the bone damage would be severe. The track of the bullet, where possible to deduce, was in all cases upwards and forwards.

(10) *Remaining Points in Routine Examination.*—Owing to the processes of general decay no information could be obtained from the examination with regard to the complexion or with regard to previous injury or disease except in a few cases where such injury or disease affected bones, e.g. old fractures.

IDENTIFICATION.

While the examination of the bodies was going on the relatives of those known definitely to have been executed in the Caves and of those who were missing and presumed to have been shot in the Caves were instructed to submit a full and accurate description of the supposed victim. This description was first of all completed by the relative and was elicited by means of a questionnaire making reference to all the physical features of the individual—name, age, height, physique, occupation, teeth, hair, previous disease or injury, especially fractures, distinctive body marks such as tattooing, clothing and articles believed to be in possession of the victim. In this connexion it is interesting to note the large number whose only assessment of height was in degrees of comparison, i.e. tall or medium or small. The majority were unable to give the exact height of the relative. It is probably fair to say that this failing would be evident all over the world.

Several meetings were held and the relatives instructed in the completion of the questionnaire, e.g. dental condition of the victim, had he all his teeth, were they in good condition, and so on—if he had had dental treatment the name of the dentist. Samples of clothing and the handwriting of the victim together with a photograph were also asked for. When the questionnaire was submitted the individual was closely questioned by the police on the details as completed and submitted by the relative in order to check their accuracy and if possible to clarify those points submitted or elucidate further details.

From the examination of the victims a full description was recorded similar to that of the questionnaire. Each body was described in the greatest of detail and as accurate an assessment as possible of age, height and physique made. Clothing was carefully examined and the description of dress and its condition, style, colour, etc., carefully recorded. Makers' tags and laundry marks were looked for and recorded where found. The samples of clothing, etc., removed from the body were held with the full description of the body.

Thus two descriptions were obtained, that submitted by the relatives and that prepared from the examination of the body.

The descriptions of the corpses were grouped according to age (as estimated in the majority of cases in decades), height (within an inch or two), and profession where it was possible to assess.

The police grouped the descriptions similarly, except that with more definite and exact information they were able to restrict the size group, and rather than having a small number of large groups were able to have a total of 53 groups by age, height and profession.

The description of a body when received from the laboratory by the police would be compared with the description held by them within the group. From these the final identification could be proceeded with, e.g. if the description was received by the police from the laboratory of a man 5 feet 8 inches to 5 feet 10 inches in height, aged between 25 and 35 years, and an artisan as deduced from his clothing and with nothing particular on his person to identify him, the names of all victims held by the police and approximating to these assessments of height and age would be examined, and it is evident that the victim must be among these. The full particulars of these men would then be compared and all those not of the artisan class would be excluded thus reducing the field of possibles. Comparison would then be made of all the samples of clothing removed from the body and submitted by the relatives, and so on until the field was reduced still further by processes of elimination till it could be said with a fair degree of accuracy that this is the body of so and so. Having reached that point the family of the individual was called on and submitted to questioning by the doctor making the examination. If the details elicited by this further examination were compatible with those already found the relatives were then shown and asked to identify the sample of clothing and the various other articles recovered from the body. If this examination was satisfactory the relatives were next interviewed at the Caves and submitted to a final questioning by the Professor in charge of the examination and asked to identify the articles recovered from the body. If this examination was satisfactory only then was identification accepted as complete. One further step in the identification was viewing the body. Its value is, I think, extremely doubtful except that it might have been possible to recognize the individual. Still it might have been some satisfaction to the unfortunate relative and this step was only taken at their express wish.

All this procedure was not necessary in all cases as it was possible to identify 76 of the victims almost immediately from various articles found on the body, e.g. visiting cards. Much of the questioning of the relatives could be reasonably dispensed with in such cases.

Of the 335 bodies exhumed 322 have been definitely identified. The remaining 13 may or may never be so identified but their scientific description remains for all time. The questionnaires for these are not complete and for four there is no questionnaire at all.

The investigations were completed on December 22, 1944, that is, roughly six months after the commencement of the work. The actual exhumations were completed at the end of September. There is perhaps nothing original or outstanding in this identification except the magnitude of the task and the number of bodies identified. It was a colossal undertaking and well merits recording. In this connexion it may be of interest to know that of the original photographs only six copies were made and distributed as follows :— to His Holiness the Pope, the Sindaco of Rome (Prince Doria), the A.M.G. Governor of Rome (Colonel Poletti), Professor Ascarelli, who carried out the examinations, the A.M.G. Director of Public Safety (Lieutenant-Colonel Pollock), and to the *Archives* of the City of Rome. That set of photographs consisted of 32 plates. The four photographs illustrating this article are from a set chosen by the writer of which there are only two in existence. One in possession of the writer and the other presented by him to Professor Ascarelli.

One final point that struck one very forcibly in this identification. The amount of time and work spent on this task before completion of the work was colossal even allowing for numerous and frequent interruptions from hysterical relatives. Here is more powder for the guns of the advocates of universal recording of finger-prints. If the finger-prints of these victims had been recorded with the registration of their birth this task would have been completed in hours or days instead of in months. Unknown and unidentified bodies will continue to turn up as long as time lasts.

Examinations must continue as at present, but there is no reason why identification should rest on the sometimes uncertain results of such examinations when the solution is so simple and requires so very little extra in the present system of recording the birth of the individual. The universal recording of finger-prints has been advocated by many experts in the past thirty or forty years. It is to be hoped that this very desirable means of recording an individual will be accepted and implemented in the not-too-distant future.