enlarged; there may be dropsy of the legs, and some albumen in the urine. In the first case, in spite of the lividity of the skin, the congestion, as seen by its effects on the organs, is not nearly so great as in the second, or cardiac case. I take the case of mitral disease, for in aortic, when the blood is thrown back on the heart, the body is pale and impoverished, and it is not until the mitral valve gives way that the congestive conditions become apparent.

Let us see why these differences exist. In the case of bronchitis, the blood is impeded in the pulmonary artery, as is evidenced by the hypertrophy of the right ventricle, and, subsequently, an engorgement takes place in the general venous system. The forces which urge the blood through the lung are in part mechanical and in part chemical. If the air be prevented from entering the trachea from any obstruction, the blood is hindered in its passage through the alveoli, showing that the chemical process of aëration is necessary for the natural flow of the blood. In cases of strangulation, therefore, the right side of the heart is distended, and the whole venous system gorged. If the obstruction be slower or more partial, as in ordinary diseases of the air-passages, the right ventricle, after a time, forces the imperfectly aërated blood through the lungs; and, there being nothing to impede its flow onward in the pulmonary vein or left ventricle, it takes its course through the system. In this way, the pulmonary circulation is freed, and the lividity of the countenance in bronchitis is therefore not so much owing to venous stasis, as to the presence of dark blood circulating in the arteries. This is the only explanation which I can see to account for the slight engorgement of the various organs in bronchial affections. Take, now, the case of mitral disease; the blood is thrown back on the pulmonary veins, and this arrests the flow coming from the right side of the heart through the pulmonary artery; consequently, the whole of the capillary system of the lungs is gorged on both sides of the termination of the bronchi. You will see that there is no longer a question of the possibility of non-aërated blood passing the alveoli of the lung, since there is a positive mechanical hindrance to the passage of any fluid. The congestion of the lung in the two cases is, therefore, of a very different kind; in the bronchitis, it is on one side of the alveoli only; in the heart-case, it is on both sides; in the former, it is in the pulmonary artery; in the latter, in both pulmonary vein and artery commencing in the vein; consequently, the effects are very different on the several organs, and on the body at large.

In the case of bronchitis, although the patient is livid, the congestion does not attain the intensity it does in that of the heart. Here the blood may actually stagnate in the vessels, producing a consolidation of the lung, or may burst through the tissues, so as to constitute a pulmonary apoplexy. This is known during life by hæmoptysis, and the dulness and absence of breath-sounds on percussion and auscultation. In the same way, and for the same reason, the liver becomes altered, as it rarely is in bronchitis, until the congestion produces great enlargement and the condition known as nutmeg-liver; the kidneys, also, from like engorgement, may show albumen in the urine, and the legs become dropsical. After death, the effects of the engorgement are seen in the indurated lung, spleen, enlarged kidney, and nutmeg-liver. These altered states of organs are so well marked, that their appearance alone would denote death from heart-disease. I have frequently been asked why the same conditions do not obtain in bronchitis. I have now endeavoured to give the explanation.

I have brought the subject especially before you in connection with the numerous cases we have in the hospital, on account of the important practical consequences which result from a knowledge of it. Many cases are not so simple as I have described. A patient, for example, may be found sitting up in bed, breathing with difficulty, and with so much rattling in the chest as to preclude the possibility of rightly gauging the state of the heart. If the case be one of primary bronchitis, this is the disease to treat; if the heart be at fault, that may be the organ to administer to, and the secretion in the tubes be allowed to go on as a salutary process of relief. Suppose, in such a case, the liver be found enlarged, this fact would point to the heart as being the principal cause of the symptoms, and you would prescribe accordingly. Or we might, as we often do, meet with a much more complex case, where, besides the symptoms just named, the urine is albuminous, and the patient dropsical. It is much more easy to call such a case one of renal dropsy, as I have often heard done, than to make out accurately the true causation of the different morbid processes. If, however, on careful examination, we find the liver enlarged and the lung gorged, it is much more likely to be one of heart-disease, and the albuminous urine a secondary affection. Let the case be treated on this supposition, and we may often see the dropsy disappear, the urine become healthy, the liver decrease, the engorgement of lung pass off, and the patient resume his usual

condition—one of chronically impaired heart. Such instances are far from common; for I constantly see cases regarded as primary bronchitis, others as primary liver-disease owing to its enlargement, others as Bright's disease owing to the presence of albumen in the urine, and yet all these conditions are due to congestions arising from heart-disease. This has been overlooked, owing to the absence of *bruits*, or their obscurity by pulmonary sounds. It is, therefore, most important to take note of other facts and considerations on which to found a diagnosis.

I could point to numerous cases where digitalis and other appropriate remedies have been given to quiet and strengthen the central organ of the circulation, and all the other ailments have departed. I cannot, therefore, too much impress upon you the value of a diagnosis in these cases; and consider well all the points to which I have drawn your attention, for upon your due appreciation of them the life of your patient may depend. I have necessarily taken typical cases to dwell upon, and have drawn from a large general experience; at the same time, I should say that there are exceptional cases, which would require further explanation, such as the rarer instances of bronchitis associated with enlargement of the liver and dropsy.

DEATH FROM PISTOL-SHOT WOUNDS: SUICIDE OR HOMICIDE?

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THE case known as "the Uxbridge tragedy" is one presenting many points of medico-legal importance, the question to decide being whether certain wounds found on a dead body had been suicidally or homicidally inflicted. The result of the trial was the conviction of the prisoner for the murder of her husband.

The account which follows has been written on my own responsibility, and does not in any way implicate Mr. Parrott, the other medical witness. Nevertheless, I may say that, on almost all the main points, we were entirely agreed.

The circumstances of the case are briefly as follows. The deceased, James Gibbons, aged 65, a perfectly healthy and prosperous man, lived with his wife at Hayes, Middlesex. He had been married thirty-seven years, but had no children. He had adopted, or at any rate undertaken the care and education of, a little girl distantly related to him, and had had disagreements with his wife on this account. On November 15th, 1884, he went into the country to see his adopted child; in the evening, he returned to Hayes, and walked home from the station with the station-master—a personal friend—who testified that he left him close to his own door somewhere about 10 P.M. He was seen to enter his house by his own servant-girl, but was not again seen alive. His wife and he were the only persons who slept at his home. Shortly before midnight, the next-door neighbour was aroused by Mrs. Gibbons, who was dressed in her nightgown alone, and who said that her husband had committed suicide. The neighbour returned to the house with Mrs. Gibbons, and found the deceased lying dead on his face upon the floor of the bedroom in a pool of blood. Close to his side lay a revolver. Mr. Parrott, of Hayes, was at once sent for, and in a short time arrived at the house with Mr. Hathaway, his assistant. They found the deceased lying on his face on the floor, with his left arm stretched forwards towards the door, the right arm doubled beneath his body, and his feet towards the bed. On the side of the bed next which he lay was a depression, as though caused by some one sitting down; this depression was about half way down the bed, and close to it the sheet was sprinkled with a few spots of blood; anyone sitting on the place indicated would have his right hand towards the pillow. There were no marks of a struggle having taken place; but close to the door the wall was marked with blood-spots, so that a very large amount of hæmorrhage had taken place, the clothes of the deceased were saturated and smeared with blood; he was partly undressed, and had on a shirt, jersey, and drawers.

Mr. Parrott hastily turned the deceased on to his back, and found the three wounds to be presently described; life was extinct, but the body was quite warm. Turning to the wife, Mr. Parrott naturally asked, "How has this happened?" She replied that they had had a few words about the little girl who used to live with them; that the deceased had then taken the pistol from under the pillow; and, exclaiming that he could stand it no longer, had waved the weapon round his head, and fired off four or five shots in rapid succession. Asked by Mr. Parrott whether she had not tried to prevent her husband from killing himself, she said that she had thrown her arms

round his neck, and then had run downstairs. It may here be remarked that Mrs. Gibbons made at different times six different statements. In one, she said that all the shots were fired after she left the room in a fright at seeing her husband seize the pistol; in another, that one shot was fired whilst she was in the room, the others after she had left it; and in the remaining accounts, she said that two, three, and, lastly, all four shots were fired whilst she was in the room. At one time, she said she saw her husband fall; at others, that after getting downstairs she heard him fall. At no time did she say that the pistol went off during a struggle, or that she herself ever obtained possession of it.

The pistol found beside the deceased was a six-chambered revolver, about six inches in length. Five chambers had been recently discharged, and the sixth was occupied by an old empty cartridge-case, which had become blocked. The six chambers could be fired in succession by a series of pulls at the trigger, without recocking; but the weapon had not what is known as a "rebounding lock"—that is, one which cocks itself as soon as the bullet is discharged. The chambers could only be rotated by either pulling the trigger or raising the cock with the finger or thumb; they did not rotate automatically; so that, after a shot had been fired, the empty cartridge-case alone lay in a line with the barrel, and no bullet could be fired until after the revolution of the chambers brought a loaded cartridge into position. Except when cocked, it required a very strong pull of the trigger to fire the weapon; each shot demanded a distinct effort and the exercise of some strength. In the room was found a box containing sixteen cartridges, each of which fitted the pistol. The bullets were about one-third of an inch in diameter.

An inquest was held on November 18th, and adjourned to enable medical evidence to be called. On November 20th, Mr. Parrott and Mr. Hathaway proceeded to make a *post mortem* examination, and their attention was at once directed to a wound in the back of the left shoulder, which had passed unnoticed by them when first called to the deceased. After a partial examination of the body, Mr. Parrott applied for leave to obtain further assistance; and, at his request, I completed the *post mortem* examination, with the assistance of himself and Mr. Hathaway.

The deceased was a man of middle height, broad shouldered, rather stout, and heavily built. The scalp presented two small contused wounds, such as might have been caused by falling against any hard blunt object; one of these was situated on the forehead, the other near the occipital protuberance. The calvaria was normal, as was also the brain. The extremities were in a natural condition. The viscera were generally healthy. The following wounds were found.

Wound No. 1.—In the left cheek, in a line with the canine tooth, was a bullet-wound. The aperture in the skin was oblique, so as to indicate that the bullet had entered in a direction from right to left, as well as from before backwards. The superior maxilla had been shattered, the missile passing beneath the malar bone and lodging against the mastoid process, deep amongst the muscles of the neck. The face, for some distance around the aperture of entry, was blackened by powder, but the hair was not singed as though the pistol muzzle had been placed in actual contact; it might well have been held at a distance of several inches.

Wound No. 2.—Immediately beneath the left clavicle, two inches to the outer side of the nipple line, was a perfectly clean cut circular bullet-wound of entry. The wound was in a direction almost directly backwards, but a little downwards, passing above the first rib towards the scapula; the bullet was found lying in the substance of the subscapularis muscle. In connection with this wound, there had been most extensive and abundant hæmorrhage, and the blood had been driven far and wide into the surrounding tissues, extending along the brachial plexus and under the sterno-mastoid, as high as the submaxillary triangle, backwards into the subscapular region, and forwards beneath the pectoral muscle. Evidently there had been a large vessel wounded; and in the subclavian artery, in the track of the bullet, was found a sharply cut hole, such as would be caused by a missile of the nature discovered. The fact that there had been some dissection of the parts before I found the injured vessel, alone prevented me from coming to a definite conclusion that the hole had certainly been caused by the bullet; nevertheless, I felt but little doubt in the matter. The skin around this wound was not blackened, and bore no traces of powder-marks.

Wound No. 3.—On the left side of the chest, two inches to the outer side of the nipple, and about half an inch below its level, was a bullet-wound of entry. This wound was not circular, but oblique, indicating an entry of the bullet from above and behind, as well as in a general direction from left to right. As the arm lay by the side, a probe could not be introduced further than through the skin; and it

was not until the arm was raised to a right angle, or more, from the trunk, that a probe could be passed into the thorax. It was then found, on reflecting the skin, that the fourth rib had been cleanly punctured by the bullet in an oblique manner. On removal of the sternum, the anterior mediastinum was found full of blood; to use the words of Mr. Hathaway, "the thorax was fairly swamped with it." In the anterior surface of the pericardium were two torn holes, and its cavity also contained a quantity of blood. An examination of the heart showed that the bullet had struck the right ventricle on its anterior surface, close to the septum, and near the apex; that it had entered the cavity of the ventricle; and that, being roughened and flattened by its transit of the rib, and, by the same means, having its velocity lessened, it had not made a clean cut aperture of entry and exit, but had ploughed up and torn away the muscular substance in its course, thus allowing a very free exit to the contained blood. The bullet had then traversed the diaphragm, and was found a little to the right of the ensiform cartilage, in the left lobe of the liver, and close beneath the abdominal wall. The general direction of this wound was *from left to right, from above downwards, and from behind forwards*. The aperture in the skin, the axis of the entry and of the exit wounds in the rib, were also in a similar direction, and there was every reason to believe that the bullet had not materially deviated from the direction in which it was fired. Further, it was evident that, at the moment the wound was inflicted, the arm must have been raised from the side to a considerable extent, for not only did the skin-wound not correspond to that in the deeper structures, unless the arm were so raised, but, had the arm been by the side at the time the wound was inflicted, it is certain that a bullet, entering two inches to the outer side of the nipple, and half an inch below its level, must have passed just below the fifth rib, or even lower, whereas, in this case, the fourth rib had been wounded. The skin around the entrance-wound was neither scorched nor blackened by powder. It is evident, from the position and direction of this wound that, to be self-inflicted, the weapon must have been held in the left hand of the deceased.

Wound No. 4.—In the back of the left shoulder, on a level with the first dorsal vertebra, and three inches from the spinal column, was a bullet-wound of entry. It was perfectly circular in shape, and a probe could be passed along the wound in a direction practically directly forwards, but with the very slightest tendency upwards, as far as a point immediately beneath the skin on the front of the neck; here the bullet had lodged. The wound traversed soft tissues alone, being confined to the thick and fleshy part of the base of the neck; no important structures had been injured. It was evident that the weapon that had inflicted this wound had been pointed almost directly forwards from behind the back of the deceased; for the entry-wound was circular, and the bullet had struck nothing that could cause it to deviate from its course. The skin around the wound was blackened by powder to a considerable extent.

The Clothing.—The clothes worn by the deceased at the time of his death were drawers, shirt, and flannel-jersey; they had all been washed before I inspected them, but not before they were examined by Mr. Parrott. Only the shirt and jersey presented any signs of injury by bullets.

At the back of the left shoulder, in a situation corresponding with wound No. 4, the shirt presented a ragged singed hole, of the size of a five-shilling piece; a corresponding, but smaller, hole was found in the jersey. The marks of powder were limited to the edges of the hole; there was no scattering of powder-granules around. Bullet-holes, corresponding in situation to the wounds Nos. 2 and 3, occurred in both the shirt and the jersey; each of them, when seen by Mr. Parrott on the night of the death of the deceased, was small and sharply cut; but, owing to the scrubbing during washing, had become rather ragged, and enlarged: the size of a threepenny-piece.

The shirt, for several inches around each of these holes, was thinly dotted with powder-marks, widely scattered in an irregular fashion. There was, however, no burning or blackening.

In order to satisfy myself as to the distance at which these shots had been fired, I procured eleven of the cartridges found in the room where the deceased had died; and with them, and a pistol of exactly the same make as that which had been found beside the deceased, I fired experimental shots at distances varying from actual contact (with a piece of shirting and flannel, which were then thoroughly washed) to a distance of two feet. As a result of these experiments, I concluded that (1) wound No. 4 had been inflicted with the pistol at a distance of about an inch or so from the shirt, and that the muzzle had not been actually pressed against the back; (2) wounds No. 2 and 3 had been inflicted with the pistol-muzzle at a distance of about one foot from the shirt, and certainly not less than six inches.

My next endeavour was to determine, if possible, the sequence of the wounds. With regard to Nos. 1 and 4, I did not find anything sufficiently definite to warrant me in forming an opinion on this point. Wound No. 2, however (below the clavicle), had almost certainly been inflicted before that of the heart; for the force with which the blood had evidently been pumped into the tissues argued that, at the time this shot was fired, the heart was acting vigorously, and the arteries were distended with blood; neither of which would have been the case after such a wound of the heart as I have described.

Next, as to the immediate cause of death. There was nothing immediately dangerous to life in the wounds either in the face or shoulder. The amount of hæmorrhage in connection with the wound below the clavicle, coupled with the certainty that a large vessel—almost without doubt the subclavian—had been injured, pointed to the conclusion that this wound itself was dangerous to life, and one which might well cause death from loss of blood. But the heart-wound was, without doubt, the one of all the four most likely to kill. Considering, therefore, the torn nature of this wound, the ease with which blood could be poured out, and the vast quantity of blood found within the thorax, I concluded that, either from the shock to the heart, from direct loss of blood, or from interference with the cardiac action by the pressure of the effused blood, or from a combination of all these, life could not be prolonged beyond a couple of minutes after its infliction.

Having, then, considered the facts already detailed, it became necessary to consider whether the wounds were suicidal or homicidal. And, first of all, putting aside, for the time, the wound in the shoulder, was it possible for the deceased himself to inflict the other three wounds—Nos. 1, 2, and 3? The first point to consider was whether, after the amount of injury inflicted by two of them, a man would yet have power to fire the third shot. I have already stated that, in my opinion, the heart-wound had been inflicted after that below the clavicle; and that there was nothing in the face-wound whereby I could say in what relation it stood to any of the other injuries in point of sequence. But, naturally endeavouring to reconcile the injuries to the theory of suicide, I found no difficulty in allowing that the face-wound also might have been inflicted before that of the heart; and thus the heart-wound would be placed last of the three. This was evidently the most favourable arrangement, if the case were to be found to be one of suicide; for it did away with the necessity of supposing that an old man, after having fired one shot through a large vessel and another through his heart, should yet be able to fire a third bullet into his face—a supposition that appeared to me impossible of acceptance, and one which, fortunately, there was no reason to adopt in order to admit the suicidal character of the injuries. Assuming, therefore, that the shots had been fired in the order of, first, the face-wound, second, the wound below the clavicle, and third, the heart-wound, I felt that, although highly improbable, it was yet not impossible for all the three to have been self-inflicted.

But an examination of the clothing placed things in a different light. I have already said that I had arrived at the conclusion that shots numbers 2 and 3 had been fired at a probable distance of a foot, certainly at a distance of not less than six inches. But if any one will take a revolver in his left hand, with his finger on the trigger, and place the muzzle in such a position that it shall point at a spot two inches outside the nipple-line, and half an inch below that level, in a direction from left to right, forwards and downwards, he will find that the muzzle cannot be separated more than an inch or two from the side; and then it must be remembered that any loose clothing, like a shirt, would also be pulled away from the body by the lifting up of the arm to at least a similar distance, so that it becomes impossible to get the muzzle of the weapon appreciably separated from the clothing.

Was there then any other way of holding and firing the pistol, so as to inflict this wound, and yet to keep the muzzle at a distance of a foot, or a little less, from the body? I could find none; for, although it is possible to fire a shot into the side by pulling the trigger with the thumb, yet, putting aside the improbability of such a proceeding, I found that, if the elbow were raised to a level with the shoulder, as was the case when the wound in question was inflicted, then it was not possible to point the weapon in the necessary direction from left to right, downwards and forwards, whilst keeping the muzzle at the requisite distance. The weapon had certainly not been discharged at arm's length, for, at a distance of two feet, the powder did not mark the shirting used for experiment at all. These points can scarcely be thoroughly appreciated except with a pistol in the hand.

Considering, then, the position and direction of the heart-wound, together with the entire absence of burning or singeing of the shirt, and feeling certain that the weapon must have been held in close con-

tact with the chest if the wound were suicidal, I arrived at the conclusion that it was not possible for the deceased himself to have fired the shot through his heart.

Having, then, considered the possibilities of the self-infliction of the three wounds on the front of the body, I will now turn to the wound in the back (No. 4). I have already shown that this must have been inflicted with the pistol in near contact, and with the muzzle pointing directly forwards. Neither Mr. Parrott nor myself was able to place the pistol in anything like the position necessary for the infliction of such a wound on our own persons; others, who tried, were similarly unable; and putting aside the gross improbability of such a wound being intentionally inflicted, I felt justified in saying that a stout and heavily built man, even in his death struggle, could not possibly cause the injury in question; that the wound could not have been inflicted so long as the weapon remained in either hand of the deceased. I think this conclusion will be sufficiently obvious to any one who, like the twelve jurymen, tried to perform on himself the feat of placing and holding a pistol in the necessary position, more particularly with his finger on the trigger.

So far, then, I had arrived at the conclusion that two out of the four wounds were certainly not self-inflicted; and if they were not suicidal, the natural inference was that neither were the other two; it was immeasurably more probable that the same hand had inflicted all four.

The next point to consider was the probabilities in favour of or against the theory of suicide which presented themselves to a medico-legal witness.

First, was the deceased a man likely to make a desperate attempt upon his own life? The only evidence in support of such a theory was a statement by the prisoner, to the effect that her husband had injured his head five years ago, and had complained of headache at various times since. In controversion of this, Mr. Parrott, whose assistant had attended deceased at the time of the said accident, informed me that the injury had been a trifling one, and that, although he had himself frequently attended the deceased, during the past few years, for slight ailments, he had never heard him complain of his head, nor had he ever noticed any difference in his manner. The suggestion made by the prisoner was that her husband had been suddenly seized with a fit of mania, and that, in this fit, he had committed suicide.

Now, I am quite prepared to allow that there is frequently no adequate cause to be found for suicide in cases where this crime has undoubtedly been committed, yet it is a most extremely rare thing for a man to reach the age of 65 years without at any time showing the least tendency towards mania or delusions, and then to be seized with a most sudden attack of frenzy; for it must be remembered that so late as an hour before his death he was well and strong, cheerful and happy.

Then, were the wounds, taken together, such as would be likely to be self-inflicted? I thought they were not, and for the following reasons.

1. It is extraordinarily rare to find so many as three or four wounds in cases of suicide, and the extreme diversity of their situation argued against the self-infliction of all of them. The man was certainly quite sane as lately as an hour before his death; if the wounds were self-inflicted, then this was one of the most determined cases of suicide on record.

2. The amount of injury caused by the two first wounds on the front of the body of the deceased rendered it in the highest degree improbable that he should fire yet another shot, not to mention the wound in the back. The pain and shock caused by the infliction of a single wound such as that which shattered the upper jaw would satisfy most suicides, unless they were absolutely mad, and another injury, with great loss of blood, such as that caused by wound No. 2, would more than double the improbability of the wilful infliction of a third wound.

3. The position and direction of the wounds were greatly opposed to the theory of suicide. Wound No. 1 had entered the face from right to left, and, though it might possibly have been fired by the left hand, was presumably, if suicidal, inflicted with the right. Wound No. 3 could only have been inflicted with the left hand, a condition of things which argued a change of hands during the infliction of the injuries. Then it is a most unusual thing for a man naturally right-handed, as was the deceased, to use a weapon of any kind with the left hand. Again, the heart-wound (No. 3) was in such a situation and direction as to make it extremely awkward and difficult for it to be self-inflicted under any circumstances. A man about to kill himself does not hold the weapon in such a position. For if anyone will try holding a pistol against his side at the spot I have already indicated,

pointing forwards and downwards, he will find that his hand is rendered so powerless by the constrained attitude, that he will have difficulty in pulling the trigger at all. But if, in addition, the previous shot had wounded the subclavian artery of the left side, as was almost certainly the case, the improbability of the left hand being used to fire the pistol is greatly increased. Every surgeon knows the numb and powerless feeling that follows on the sudden stoppage of blood to a limb. In allowing, therefore, the possibility of the self-infliction of all three of the above wounds, I felt that I had given the prisoner the benefit of whatever doubt existed; I could not conscientiously say that such infliction was at all probable.

4. The condition of the clothing around wounds Nos. 2 and 3 was adverse to the theory of suicide. Putting aside the possibility of holding the pistol at a distance whilst inflicting the heart-wound, it is a well known fact that suicides almost invariably hold the weapon in close contact with the body, and both the clothing and body become blackened by the powder. If a man wish to kill himself, he does not hold the weapon at a distance of a foot, yet this was the most probable distance at which the weapon had been fired; it had certainly not been in close contact.

5. A fifth bullet which had been fired had entirely missed the deceased, and was subsequently picked up in the bedroom. It is an extremely unusual thing for a man to completely miss himself when trying to commit suicide with a revolver.

At the trial, the question naturally arose, "Could the wound in the back have been inflicted by accident?" First, could it have been caused during a struggle between the deceased and his wife for possession of the weapon? The evident reply to this was, that it could not be so inflicted, unless the wife herself had possession of the pistol (I have repeatedly insisted on the impossibility of its infliction so long as the weapon was in either hand of the deceased); and, granted that she had possession of it, there was nothing in the character of the wound itself to give information as to whether the finger that pulled the trigger had pulled it accidentally or otherwise; it did not appear to me to be a question for a medical witness at all. Nevertheless, it is evident that the improbability of such a wound being accidental is very great, considering what must have been the position of the pistol. And it must be remembered that, in none of the statements of the prisoner, did she say that there had been a struggle, or that she had ever obtained possession of the weapon, or that a shot had been fired whilst she tried to stop her husband from killing himself.

The next suggestion of the learned counsel for the prisoner was that, after the deceased had fired the three wounds on the front of the body and face, he dropped the pistol, and then, falling backwards on it, the cartridge exploded, and the wound in the shoulder was inflicted. I declined to say that such an accident was absolutely impossible, but it was most improbable; for the deceased was found lying on his face, not on his back. And then, in order to inflict such a wound, it was evident that he must fall on the upright muzzle of the pistol, balanced with its butt against the ground; for, as the weapon lay flat on the floor, the wound in question could not possibly be inflicted. Then, there was another and almost insuperable objection to the possibility of such an accident, which, however, I omitted to mention in the witness-box. As already explained, the revolver was not a "self-cocking" one, it had not a "rebounding lock." If, therefore, it had been dropped after the infliction of the heart-wound, without being recocked, it could not explode; for until recocked, or until the trigger was pulled, the empty cartridge-case of the bullet last fired alone lay in contact with the barrel. In order to bring up a fresh cartridge, it was necessary to "revolve" the cylinder containing it by cocking, or pulling the trigger. Was it likely that the deceased, after inflicting three serious wounds—one at least fatal—would recock the pistol, drop it, and then fall so as to cause it to explode and inflict the wound in question? Most unlikely, if not impossible, it seemed to me; especially if it be considered that, had he wanted to fire another shot, he could have done so by pulling the trigger without recocking. Lastly, the condition of the clothing over the back wound negated this supposition; for I have already stated that it did not seem probable that the weapon had been fired whilst pressed close against the back, as would have been the case if the deceased had fallen on the muzzle of the pistol. Thus, no sufficiently plausible explanation could be found in support of the accidental infliction of wound No. 4, although the possibility of its infliction by accident was not absolutely denied by myself, and was put to the jury by the counsel for the prisoner, and by the judge in his summing up.

I have now detailed, in full, the whole of the medico-legal facts bearing upon the case, and have endeavoured to place before the profession the evidence, as far as Mr. Parrott and myself are concerned,

upon which the prisoner was convicted of murder. I have no intention of dealing with any of the other evidence adduced at the trial. For my own part, I may say that a very anxious and long consideration of the facts of the case in all its bearings, fully convinced me that it was one of homicide, and I found myself quite unable to reconcile the facts with the theory of suicide. Whether or not the medical evidence, taken in conjunction with the other circumstances of the case, was sufficient to justify a verdict of "guilty" is not for me to settle, but that verdict was one in which the presiding judge entirely concurred.

The case has excited much public interest, and many people have expressed their doubts as to the correctness of the conviction. I think these doubts are readily explained. The position and direction of the wounds, demonstrated by Mr. Parrott and myself on a plaster bust to the judge and jury, the explanation of medical points, whose importance it was not easy to grasp, was not the kind of evidence likely to be faithfully and correctly reproduced by the newspaper reporters. The consequence was that the most absurd statements were put into the mouths of the medical witnesses, and in no paper that I read did my own evidence occupy more than a dozen lines; indeed, one journal, which devoted two entire "leaders" to the case, and especially to the medical evidence, did not report a single word uttered by myself in the witness-box. Now, personally, this is a matter of entire indifference, except that it has exposed me to the attacks of innumerable correspondents; and, before I leave the matter, I would merely say that, had I been one of the general public, I should certainly have felt some of the dissatisfaction which found a vent in the press, though I think also I should have had sufficient confidence in trial by jury, to rest assured that there was more evidence than appeared on the surface.

But while I am not surprised at the feeling expressed by the reading public, I confess I had felt pretty confident that members of my own profession would withhold their condemnation, if not their opinion, until they were in possession of the real facts of the case; and I am only sorry to find I have been mistaken. There has, apparently, been a prevailing impression, gathered whence I know not, that in order to prove the case one of suicide it is necessary to presuppose the ability of the deceased to fire other shots after the wound of the heart. If anyone will refer to what I have written, he will find that there is no necessity for anything of the kind. Well, with this idea apparently fixed in their heads, numerous correspondents have detailed at length, as singular and extraordinary, cases in which a man has lived for a variable time, and possessed the power to perform various actions after a heart-wound. They also kindly conclude that the medical witnesses did not realise the possibility of such an occurrence. Now, the very fact that these numerous writers each considered his own case a singular one, showed very plainly that the ignorance was on their side; for every surgeon is, or should be, aware, that the cases of heart-wound that have not proved immediately fatal may be counted by dozens, not by units; and, further, that complete recovery may ensue after such injuries. Lastly, the same class of correspondents—most, I am glad to say, not in the medical profession—speak of all heart-wounds in general, and assume that, because one may not be immediately fatal, therefore all the others may run a similar course—a deduction which is simply absurd. But it is not a material point in the present case, whether the heart-wound was immediately fatal or not; and there appears to me to be no reason for raising a discussion on what is simply a side question.

I cannot, however, leave this part of the case without referring to the action taken by a medical journal in commenting on the evidence of Mr. Parrott and myself. Four days after the trial was finished, an editorial "annotation" not only threw doubt upon the justice of the verdict—a course of which I do not complain—but also made the following statement. "The inferences of the medical witnesses were at variance with similar known facts in other cases on record, in which a shot has been fired by a suicide in the interval between the infliction of a mortal wound—even of the heart—and death. Moreover, a wound in the back is peculiarly likely to be self-inflicted if the suicide falls forward, or on his side, while the arm still clutching the pistol, is convulsively drawn, stiffened, and, by the fall, twisted back."

Such a statement, I submit, is absolutely incorrect and misleading. It implies—first, that the medical witnesses did not allow the possibility of the self-infliction of as many as two or three wounds; and, second, that there was an evident and ready explanation of the wound found in the back.

I have already explained that I did allow the possibility of the self-infliction of all the three wounds on the front of the body and face, that is, as far as the amount of injury inflicted by the first two, and

the liability of such injury to prevent the possible infliction of a third, was concerned; the probability of such self-infliction was a question left to the jury to decide.

As to the wound in the back, not only is it an entire supposition that the "arm still clutching the pistol" was "convulsively drawn, stiffened, and by the fall twisted back," whilst the deceased was found with one arm outstretched, the other doubled beneath him, and the pistol lying by his side; but I have already pointed out, and still maintain, that the particular wound in question could not by any possibility be inflicted so long as the pistol remained in either hand of the deceased. Under such circumstances, I say that it is distinctly misleading to the general public, for whom, apparently, this annotation was written, to say that "a wound in the back" is peculiarly likely to be self-inflicted, etc.; for it certainly implies that the wound found in the back of the deceased could be so caused.

And partly in self-defence, but also in the interests of medical witnesses in general, I do protest most strongly against a medical journal condemning medical evidence on the scanty and insufficient accounts in the daily press. The attacks of correspondents and article-writers are to be expected, and I have not considered it either necessary or advisable to carry on a discussion on medical subjects in the daily papers; but from those who edit the medical papers, I think medical witnesses have a right to expect better treatment, and I entirely agree with a paragraph in the *BRITISH MEDICAL JOURNAL*, that, "this important case is one on which it would be rash to express an opinion without the most complete data, and a careful description of the wounds in all their bearings is requisite to enable any surgeon to form an opinion of value as to the case."

The expression of hostile opinion to which I have referred above has been accepted by the public at large as indicating that of the medical profession, and implying that the prisoner was in this case wrongfully convicted by reason of some gross misrepresentation of the medical witnesses. The paragraph I have quoted has been the text for various articles pointing to this conclusion. I therefore submit the whole of the facts of the case to the profession at large; and whilst I do not for an instant suppose that, in a difficult and intricate case, my deductions and conclusions will in every particular meet with universal approval, I am confident that the prisoner was not convicted by any misrepresentation of facts by the medical witnesses.

In conclusion, I may say that I shall be very glad if this report induces those who have had greater experience than myself in medico-legal work to express their opinions on the result of the trial, and on the many points for consideration presented by the medico-legal aspects of the case. For my own part, I may say that I shall be happy to furnish any other information in my power. To Mr. Parrott I am much indebted for the most able assistance, without which the present account would have been very imperfect.

ON A CHEAP FORM OF ARTIFICIAL LEG.

By RICHARD BARWELL, F.R.C.S.,
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FOR very many years—indeed, I know not for how many—all not wealthy persons having the misfortune to lose a leg, were provided with a support for the body, termed a bucket or pin-leg. This extremely unsightly apparatus appears so hallowed by Rowlandson's and Cruikshank's drawings, and by the "Timber Toe" class of Dibdin song, that in England no serious attempt has been made to improve it. Nevertheless, it is for progression very awkward and clumsy; in sitting, especially, if other persons be moving about in the room, extremely cumbersome. Nor is the bucket, with the upright and strap, a mode of fixation to which people become accustomed without previously undergoing a good deal of galling, abrasion, and other discomfort.

Hence it is somewhat surprising that a form of artificial leg, known long ago both in Paris and Rome, should not have been more extensively introduced and appreciated here, especially as an article by Miss W. M. Wyse,¹ and a pamphlet by General Maxwell,² give excellent descriptions of the mechanism and reports of its efficiency. Probably the cause of this may be, that neither of those publications have fallen under the notice of hospital surgeons, or others having frequent occasion to order artificial limbs. Hence it appears to me desirable to make, through the pages of the *BRITISH MEDICAL JOURNAL*, these appliances more widely known.

They were invented about the year 1847, by the Comte de Beaufort, but have come more markedly into use in and after 1870. The

count's inventions embrace both an artificial arm, with a movable prehensile thumb, and a leg. But in the present paper I shall speak only of the leg, deferring mention of the arm until a rather wider experience has been acquired.

Of the leg, two forms exist—the one for amputation below, the other above the knee. We will begin with the former. It consists of, to quote in part General Maxwell—1. "A wooden foot, soled, and partly covered with leather;" 2. "Two uprights of beechwood, curved to the form of the leg, when seen from before or behind, and provided with a knuckle-joint in the position of the knee;" 3. "Between the uprights are leathern sockets, laced up in front—one for the thigh, the other for the shank or stump."

In this form the limb answers admirably, and many hundreds have been supplied by the society "L'Assistance aux Mutilés Pauvres," both in France and Italy; but the mode of workmanship and the arrangements of workshops in England render it simpler, and therefore cheaper, to make the uprights of steel. The following is the mode of manufacture, which, after many consultations on the subject, I have arranged with Mr. Schramm, of Belmont Street, N.W.

Leather or poroplastic felt is cut to the proper size, soaked or steamed, and moulded by hand and bandage to the thigh and to the thigh and leg-stump. While these are hardening, the necessary measurements

Fig. 1.

The engraving is taken from a patient with an unusually short leg-stump. If in this plate, and in plate 2, the socket had been continued to the top of the boot as recommended, the appearance would have been as of a natural limb with supports. By some blunder, the hinge is not of the proper form; the lower segment should curve backward, not forward.

for length are taken. A tracing is made of the foot, that the size of the artificial may correspond with that of the natural one. Also tracings are made of the outer and inner margins of the limb, as models of the curves to which the steel uprights must be bent. The foot, be it observed, is to be made of willow, the lightest wood. It is partially covered with kid-leather, and Mr. Schramm has introduced a mode of fixing a leather sole on a removable German-silver plate, in such wise that any cobbler can renew it in half an hour.

The sole is not flat like that of a shoe, but curved, the curve being

¹ "Arms and Legs in France," *Macmillan's Magazine*, 1882.

² "Arms and Legs in Rome," by Henry Hamilton Maxwell, Lieutenant-General Royal Artillery, Rome.