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Contributors

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REPORT

OF THE

TRIAL OF GEORGE STEPHEN FOR MURDER,

At Aberdeen, 18th and 19th April 1865.

BY ALEXANDER SILVER, M.A., M.D.,

ASSISTANT TO THE PROFESSORS OF MATERIA MEDICA, AND OF MEDICAL JURISPRUDENCE, IN
THE UNIVERSITY OF ABERDEEN.

Reprinted from the Edinburgh Medical Journal for July 1865.

ON Tuesday the 18th, and Wednesday the 19th days of April 1865, George Stephen, wood-merchant, Port Elphinstone, Inverury, was tried at the Spring Circuit Court of Justiciary, held at Aberdeen, before the Lord Justice-Clerk and Lord Cowan, for the crime of murder, "in so far as on the third day of December 1864, . . . in or near the plantation on the north side of the avenue leading from the turnpike road to Thainstone House, . . . he did wickedly and feloniously attack and assault the now deceased Ann Milne or Joss, or Forbes, . . . and did, with an axe or some other lethal weapon to the prosecutor unknown, strike her one or more blows on the head, whereby she was wounded on the head and her skull fractured, and she was mortally injured, and died within a few hours thereafter, and was thus murdered." . . .

The points on which this case chiefly depended for its interest were,—1st, The completeness with which the murder was proved against Stephen; 2dly, The state of the prisoner's mind at the time of the commission of the act; and, 3dly, The state of his mind when the sentence of death should have been carried into effect. The prisoner pled guilty to the charge of murder; but a special plea of insanity at the time of the alleged commission of the deed having been put in on his behalf, the trial proceeded.

To take events in their proper sequence, it was proved that the prisoner had been long connected with this woman (twenty-seven years, as stated in one of her letters); that he had been accustomed to visit her at her own house; that she had frequently gone from Aberdeen to Thainstone, a distance of fourteen or fifteen miles, for the purpose of meeting him, and, according to her own account, of receiving money from him. Some of the letters found in his possession, and proved to have been written for her, contained threats of exposure if her demands were not complied with, and one, making an appointment with him for the 3d of December, stated, that she did not want to come to his house (of which he appeared to have complained on a former occasion), but that she *would not* go home till she should have seen him.

On the morning of the 3d of December 1864, Ann Forbes, after borrowing some clothes from a neighbour, set out from Aberdeen, intending to walk to Thainstone and back again. This was about 8 A.M., and nothing further is known of her movements until about 12 o'clock, when she called at an inn at Kintore, asked for half a gill of whisky, of which she drank the half, leaving the other half until her return, at which time she promised to pay for it as she had done on previous occasions. She was next seen a little beyond Thainstone seated on a heap of stones, and asked a boy passing if it was past one o'clock (the letter making the appointment had fixed the time between one and two

o'clock). This witness particularly noticed a strip of red flannel she had over her head, and stated that a little beyond and nearer Inverury he met George Stephen walking in the direction of the woman he had just seen, and noticed an axe under his arm. Shortly after a woman passed and also noticed Forbes still sitting on the stones, while a short distance beyond she met Stephen, and saw him enter the wood along with her. She also remarked the axe he was carrying.

What occurred within the wood was unobserved, though, as will be seen, the proceedings may be guessed at with tolerable certainty.

Stephen was next seen walking homewards, without the woman, and apparently carrying something, though the witness who gave evidence on this point could not tell what it was.

About half-past two o'clock, while beating the wood at Thainstone for game, a boy came upon a woman, afterwards identified as Ann Forbes, lying on her face, but slightly inclined to her left side, in an insensible state, and with a wound on the back of her head from which blood was flowing. The piece of red flannel formerly alluded to was still round her head, but had been torn, apparently by the blow which caused the wound. Her person lay upon, or close to, a petticoat which had been spread out on the ground.

In this state she was found by Dr Irvine, who examined the wound and removed some pieces of bone from it. When moving her, an envelope was noticed in her breast, which was addressed "Mr George Stephen, Wood-merchant," but contained nothing except a piece of brown paper.

She survived till about eight o'clock P.M., but continued totally insensible up to the time of her death.

The person of George Stephen was examined that evening; but the examination of the spot where the woman was found and the inspection of the body was postponed to another day. When discovered, Forbes lay in an open grassy spot, thickly covered with withered leaves, and with her head directed from the avenue, which was close at hand. Where her head had lain was a considerable quantity of clotted blood, and some oatmeal pulp, similar to that which was afterwards found in her stomach.

The body was examined on Monday the 5th of December, forty-one hours after death.

The following is the report of the inspection, etc.:—

"We hereby certify on soul and conscience, that, between the hours of seven and eight o'clock evening, on Saturday the 3d day of December 1864, we examined the person and clothing of George Stephen, wood-merchant, residing at Port Elphinstone, near Inverury, Aberdeenshire, and that we detected nothing unusual either on his person or clothes, with the exception of a slight rent, apparently recent, on the outside of the right sleeve of his coat, nearly midway between the parts corresponding with the wrist and elbow.

"We further certify on soul and conscience, that, on the Monday following (the 5th day of December 1864), we inspected the dead body of Ann Milne or Joss, or Forbes, wife of William Forbes, residing at Gordon's Court, Virginia Street, Aberdeen, the body then lying in the porter's lodge at Thainstone House, parish of Kintore and county of Aberdeen, when the following appearances presented themselves, viz.:—

"(Externally).—The body sparingly clothed and the clothes much dilapidated. The front of the body, including the lips and nails, markedly pale. Dependant parts of the trunk and limbs livid. Backs of the right hand and fingers stained with blood. Blood in a dried and crusted state on the middle of the forehead, on the left side of the face, and on the hair of the head generally, except on that over the right temple. The pupils of the eyes widely opened. Joints stiff. Portions of the skin, not exceeding three-sixteenths of an inch in breadth over the outsides of both haunches, in a dry, brown, and horny state. Old scars in both groins. A large wound of the scalp, very irregular in shape, with blunt and very irregular edges on the upper and back part of the head towards its right side. In its longest direction, which was from a point

corresponding with the crown of the head to a point an inch to the right side of the prominence of the hind head, the wound measured four inches; measured from the crown of the head to a point an inch and a-half above the prominence of the right temple, its extent was three and a-half inches. At or near the middle of the wound its edges were one and a-half inches apart. From the lower border of the wound an irregular flap of skin extended upwards to the length of an inch and three quarters. A second and superficial scalp wound, three-branched or T shaped (the largest measurement of which was a quarter of an inch), situated at a point three-quarters of an inch to the left of the central part of the first wound.

“(Internally).—Scalp pale and bloodless. A clot of blood a quarter of an inch in greatest thickness under the scalp, on the left side of the head, in the neighbourhood of the left ear, measuring in greatest breadth four inches. Blood in the canal of the left ear. In the situation of the large scalp wound, the wall of the skull deficient over an irregular space, approaching to a four-sided shape. The larger measurement of this breach in the skull (which was nearly from before backwards) was two and a-quarter inches, and its shorter, one and three-quarter inches. Loose fragments of bone, of small size and irregular shapes, adhered to the edges of the breach in the skull. There ran from the anterior and right corner of this opening in the skull, a fissure or linear fracture, in a direction downwards and forwards towards the base of the skull for three and a-half inches; a second fissure from its posterior and left corner downwards and forwards to the posterior hollow at the base of the skull. The outer covering of the brain torn to the extent of three-quarters of an inch at the part corresponding with the back of the breach in the skull. Skull unusually thick and solid. The posterior part of the right half, or hemisphere of the brain proper, irregularly torn up to the depth of an inch and a-half. A thin layer of clotted blood over the exterior of the right half of the brain beneath its outer covering. Interior of the brain unusually pale and bloodless. Mouth, throat, gullet, and air-passages natural. Blood in about equal and moderate quantities in the cavities on both sides of the heart,—the blood chiefly fluid, but containing clots, partly red, partly yellow. The interior of the left lung of a bright-red colour and firm consistence. Thin fluid in considerable quantity in the interior of the lowest division of the right lung. The parts within the cavity of the belly pale and bloodless. Thin white pulpy matter in the stomach, containing particles of oatmeal, and smelling faintly of spirits. The womb unusually small and its opening closed.

“Nothing else unusual observable on the exterior of the body, within the cavities of the head, chest, or belly or about the top of the spine.

“We also certify on soul and conscience, that from the above inspection of the body of Ann Milne or Joss, or Forbes, we are of opinion that the large wound of the head, the fracturing of the skull, and the consequent loss of blood, had been the cause of her death, and that these injuries had been the effects of violence inflicted during life.

(Signed)

“F. OGSTON, M.D.

ALEXANDER SILVER, M.D.

AL. IRVINE, M.R.C.S. Eng.

“*Aberdeen, 8th December 1864.*”

After reading this and another report to be mentioned presently, Dr Ogston was examined as to the prisoner's state of mind at the date of the murder. He said, that on the evening of the murder he saw the prisoner at Kintore while in custody, but that he had very little conversation with him, not enough to form an opinion as to his insanity; that there was a degree of levity or indifference in his manner, but whether this was natural he had no means of judging; the prisoner was also quite intelligent, though he (Dr O.) had *very* little means of judging that. He also stated, that he saw the prisoner again on Sunday in the presence of the murdered woman, when he was very quiet, though the muscles of his face appeared to be quivering and he seemed

agitated. At that time he saw nothing to lead him to judge of the prisoner's disposition.

On searching Stephen's premises, three axes were discovered and handed over to Professors Ogston and Brazier for examination. On one of these, the head of which corresponded very closely in point of size with the breach in Forbes's skull, were discovered reddish stains, which, on a chemical and microscopical examination, proved to be blood. On the others nothing beyond stains of rust could be made out. In a crevice of the wood, near the head of the first-mentioned axe, certain minute scarlet fibres were also discovered, which, when viewed by the microscope, and compared with those constituting the piece of red flannel formerly mentioned, as having been found round Forbes's head, were seen to correspond in every respect.

Several witnesses were called, who spoke to the absence of any excitement or anything unusual in the prisoner's demeanour on the day the murder was committed.

On the part of the defence no attempt whatever was made to gainsay the committal of the deed, it being entirely limited to the proof of the prisoner's insanity.

The principal facts proved in connexion with this were as follows:—In the course of 1864, the prisoner, who up to that time had a good business, suffered some severe pecuniary losses, which appear to have affected him considerably. After this he appears to have altered in his demeanour, which was described as having been cheerful before this event, but dull and "dumpish" after it. Even before these losses, however, he is described as having been troubled with a peculiar hesitation in his speech, which was said to have come on about twelve months before any other peculiarity was observed. One Sunday morning in August 1864, he is said to have come down from his bedroom in a highly excited state, and shaking violently, and to have declared to his nieces, who lived with him, that he did not know what to do with them now, as his money was all done, and that there was neither meal nor fire in the house; although such was not really the case. He is also said to have complained that he could not sleep, his bed being only a heap of stones. Some time after this, Dr Thomson of Inverury was called in, who ordered a blister to the back of his neck and some purgative medicine. He does not appear to have improved much at first, since in October he is described as having several fits of an epileptic nature, for one of which Dr Paterson, assistant to Dr Thomson, was called. After this date, however, he appears to have got decidedly better, and the delusions seem to have been removed, though a childishness of manner remained behind. This was evinced in a tendency to talk of trifling circumstances, and a continual recurrence to such, although attempts were made to change the subject to others of more importance.

The principal medical evidence brought forward in his behalf was that of Drs Thomson, Inverury, and Jamieson, superintendent of the Aberdeen Lunatic Asylum.

Dr Thomson stated that he had known Stephen upwards of forty years, but had never attended him professionally until September last, about the 23d or 24th of the month; that he then found him leaning against the door of his house apparently stupid and confused, but that he noticed nothing particular in his eye at that time, though he had observed a change in his general appearance for months before; that his utterance was affected, and that he did not appear to have the perfect use of his tongue, it being apparently paralyzed, which is often a symptom of general paralysis. His treatment was by blistering and aperients, intended to remedy a loaded state of the brain. He (*Dr T.*) had no doubt that Stephen was labouring under disease of the brain, and he had some difficulty in getting him to apply the blisters that were ordered. On one occasion, when visiting Stephen, he noticed the glare of a madman in his eye, and warned his friends to watch him closely. At this time Stephen was labouring under a disease of the brain, which was accompanied by delusions and a childishness of manner; this he (*Dr T.*) did not think curable, and would be

likely to produce insanity, though at that time there was no good reason for sending him to an asylum. He also stated that he would not be surprised though under irritation Stephen had committed murder, as he would have difficulty in resisting an impulse; and, further, that imprisonment would probably have a beneficial effect on such a state of mind.

When cross-examined, Dr Thomson said that the state of his affairs would have a bad effect on Stephen's mind; that he was somewhat recovered by November, though not completely, and that he (Dr Thomson) did not expect him ever to be better. He also mentioned that his evidence was founded partly on observation, partly on hearsay.

Examined by the Lord Justice-Clerk.—Dr Thomson said that he was called to visit Stephen in consequence of the delusions Stephen was labouring under, and that these continued up to the end of October, but that, sometimes at least, he would be capable of knowing right from wrong, while he would know that crime would be followed by punishment, and that if he knocked a man or a woman down with an axe he would kill him or her. Dr Thomson further stated, that epileptic fits were sometimes accompanied by delirium, which would wear off after the attack; that the last epileptic attack Stephen had was about the 18th or 20th of October, but that he believed that Stephen's mind had been weakened for months before he saw him.

Dr Jamieson stated that he had visited Stephen but only in prison, with a view to ascertain whether he laboured under insanity, and that in his opinion Stephen was labouring under disease of the brain. He was led to form this opinion from the man's general aspect and manner, his particular mode of articulation, his admission of the imperfect way in which he slept, his general inattentiveness and confusion of mind when spoken to, and his apathy and want of curiosity. This opinion would have been strengthened had he been informed that the man had suffered from epileptic fits and partial paralysis. He said that excitement, acting upon a person in such a state, might produce an uncontrollable impulse to commit an act of violence, and that insane persons who were also epileptic were more dangerous than those who were not affected by epilepsy. He was of opinion that, from what he had observed himself and from what he had heard, that at the time the prisoner was labouring under the delusions already mentioned, he was of unsound mind, and that he would not have hesitated to grant a certificate to that effect. He also said, that he would not have been surprised to hear that the prisoner had committed a deed of violence early in December, his state in the month of October being as above detailed; on the contrary, such a deed would be a probable result of the brain disease.

Cross-examined by the Advocate-Depute.—Dr Jamieson stated that though he had the opportunity of talking with the prisoner, he could make out no delusion about him, nor could he say that he did not know right from wrong. *Examined by the Lord Justice-Clerk.*—Dr Jamieson said that he had visited the prisoner four times, viz., on the 10th and 16th of December, and on the 19th and 30th of March, and that his answers applied chiefly to the first of these visits; that he endeavoured to detect delusions, but could not; and that he talked to the prisoner chiefly about his personal feelings, his feelings to others, and on his ideas on the subject of his stomachic ailments and prison diet, and that on the 10th December there was no symptom of insanity about the prisoner except his peculiar appearance, which was the result of brain disease, not of insanity.

This concluded the evidence in the case.

In summing up, the *Lord Justice-Clerk* drew the attention of the jury to the fact, that they had not to decide as to the prisoner's insanity at the time of the trial, but as to his state of mind on the 3d of December; for were it made out that he was insane at the time of the trial, he would not have been allowed to plead to the indictment; he then proceeded to say:—

“But I must tell you further, and tell you very decidedly, in consequence of the line of argument adopted by the prisoner's counsel, that disease of the brain is not insanity. Disease of the brain is bodily disease, and insanity is mental disease; and no amount of bodily disease will justify you in pronounc-

ing that this prisoner was insane on the 3d December, or at any other time. Mental disease is often produced by disease of the brain—often accompanied by it—but what you have to try is not whether he had disease of the brain, but whether that produced insanity. There are some other matters connected with the doctrine of legal insanity which it is quite necessary to give you directions about at the outset. Insanity is a term capable of being used in several meanings; and it is very often used by gentlemen of the medical profession in a totally different sense from what is in use in courts of criminal jurisdiction. A man's mind may be weakened by disease, and may, in a certain sense, be called insane; but not on that account does he cease to be morally and legally responsible for his actions. There are many persons whose minds are naturally weak, and men whose minds may have been weakened or impaired by the action of bodily disease; but those persons are not held irresponsible for their actions. But in order to justify a verdict of insanity in a case of crime, you must find that man's mind not only weakened and impaired by disease, but be satisfied that he does not know the difference between right and wrong in the crime with which he is charged. Either he does not know the act with which he is charged, or he does not know the kind of act, or if he does know it as a physical fact, he is unable to know he is guilty in a moral or legal sense, and incapable of appreciating its consequences and effects. While a man is in that condition he is not in the eye of the law insane. If he knows what he is doing—if he understands that in committing the crime of murder, for instance, he is really killing his victim—if he knows that that is a sin—that it is wrong and not right—that such an act will bring him under the cognizance of the criminal law, and lead to punishment, then he is morally and legally responsible, no matter how weak otherwise his mental faculties may be. Extraneous causes, such as excitement and provocation, have nothing to do with the question of insanity. A man whose mind is weakened or impaired may be more easily excited and provoked than another, just as a man in bad health may be easily irritated; but does he, therefore, cease to be a responsible agent? That is quite out of the question."

Speaking of the state of the prisoner's mind at the time the deed was committed, his Lordship said:—

"Then, Gentlemen, to complete the digest of the evidence as shortly as I can, it is necessary to advert to the evidence of Dr Ogston, the chief medical witness for the Crown. His evidence bears, in the first place, chiefly on the state of the body of the deceased, and the cause of death; and I need not enter into detail on that. But he says he saw the prisoner upon the day immediately succeeding the murder. He was then in presence of the body. He said he was very calm, but he could see that the muscles of his face were quivering a little, betraying a certain amount of agitation; and I think that what Dr Ogston says as to the prisoner's demeanour was corroborated by everybody who saw him, either on the afternoon of the 3d or on the Sunday after he had been apprehended. They all describe him as being perfectly quiet; no appearance of agitation or excitement."

In another part of his charge, his Lordship laid down the law of lunacy in criminal cases as follows:—

"Now, Gentlemen, as I said before, you must not mistake brain disease, or weakness of mind produced by brain disease, for that kind of insanity which alone exempts from legal responsibility. I have told you already, and I repeat it, that unless a man is in such a condition from mental disease as to be bereft of reason, and not able to understand what he is doing,—if he does not know what is the act which he commits, and is unable to appreciate its nature and quality, or to understand its consequences and effect,—if that is true, then no doubt the person of whom it is proved is insane, and not legally responsible. But if, on the other hand, you are satisfied that at the time he committed the act the prisoner knew the difference between right and wrong, understood the nature of the act he was committing and the consequences that would follow; then, however much his mind may have been impaired by disease, however

much he may have been excited or irritated, however much he may have been influenced by the operation of extraneous causes, he is a moral agent, and answerable to the law."

After twenty minutes' deliberation, the jury, by a majority of nine to six, found the prisoner guilty as libelled, and he was accordingly condemned to death.

A great deal of interest having been taken in the case, application was made to the Sheriff, who, after this sentence had been passed, ordered an examination of the prisoner, in terms of the Lunacy Act (20° and 21° Vict. cap. 71).

In Clause LXXXIX. this Act provides that,—“If any person, while imprisoned in any prison or other place of confinement, under any sentence of death, transportation, penal servitude, or imprisonment, or under charge of any crime or offence, or under any civil process, shall appear to be insane, it shall be lawful for the sheriff of the county where such person is imprisoned to inquire, with the aid of two medical persons, as to the insanity of such prisoner; and if it shall be certified by such sheriff and such medical persons that such prisoner is insane, it shall be lawful for one of her Majesty's Principal Secretaries of State, upon receipt of such certificate, to direct, by warrant under his hand, that such person shall be removed to such asylum as the said Secretary of State may judge proper and appoint,” etc.

In accordance with this Act, a certificate of the prisoner's insanity, signed by Drs Macrobain and Fraser of Aberdeen, was forwarded to Sir George Grey, who sent down directions that the sentence was not to be carried into effect, but has not yet issued a warrant for his consignment to any asylum.


The completeness of the proof in this case is one of its most remarkable features, for except the whole affair had been seen, it would have been difficult to have made the evidence stronger. The appointment, the meeting, and entering the wood together, the axe with its stains and woollen fibres, and, finally, the motive in Forbes's continual persecution and threats of exposure, all go towards rendering the case one of the best instances of the power of circumstantial evidence on record. From circumstances previously mentioned, the proceedings within the wood might be deduced something as follows:—Having gone into the wood a sufficient distance to screen them from observation, and having reached a spot tolerably free itself though sheltered on all sides, Stephen may have asked Ann Forbes to sit down while they discussed the subject of her visit; having removed one of her petticoats for the purpose of protecting them from the wet ground, she appears to have spread it out and been in the act of rising, when the prisoner, who must have stood behind her, struck her a fearful blow with his axe. Only one blow appears to have been struck, for, though the wound in the scalp was very irregular, when struck by a broad flat body it usually splits up in various directions, acting like a brittle substance rather than as a tough tenacious membrane. What is perhaps unique in this case is the circumstance, that the breach in the skull, allowing for some irregularity of its edges, almost exactly corresponded with the head of the stained axe. This may have been owing in this particular instance to the great force with which the blow must have been inflicted.

With regard to the mental condition of Stephen, it seemed to be more that of a man of low mental organization than of one actually insane; he presented during the whole proceedings the appearance of the utmost indifference, indeed he seemed by far the least concerned in the whole Court. Once or twice during his trial he appeared to sleep, and when the jury returned and were about to give their verdict, being detained by another case which was going on at the time, he coolly continued to stare round the court-house, never once turning his eyes towards the assize. Even after the Lord Justice-Clerk had pronounced his sentence in a manner which affected every one else present, the prisoner moved off in the calmest possible manner, and immediately on his return to gaol is said to have coolly demanded his dinner. When confronted with his murdered victim, as stated by Dr Ogston, he evinced no other sign of emotion than a slight twitching of the muscles of his face. From first to last his conduct has been as cool as it could possibly be, and

the fate that now awaits him will probably be to him a far greater punishment than hanging would have been.

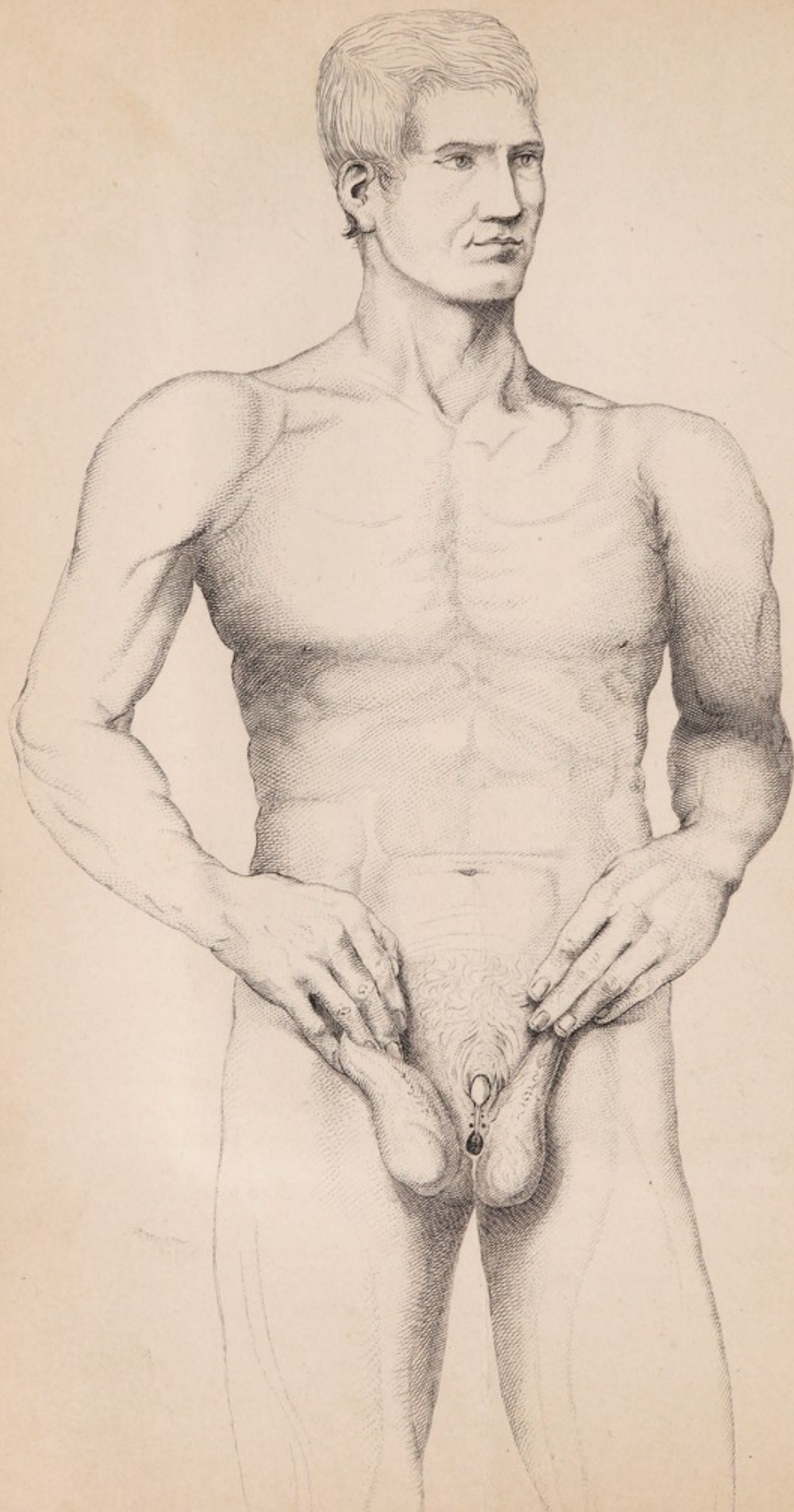
On the merits of the legal doctrines, propounded by the learned Judge, it is not for me to speak, though they have been already commented on pretty extensively by the general public. In all probability they will be viewed differently by lawyers and medical men, particularly by those practitioners connected with the management and treatment of the insane.

Since writing the above, a letter has been received containing Her Majesty's pardon of George Stephen for the crime of murder, and a commutation of the sentence of death passed upon him for one of penal servitude for life. In accordance with this, Stephen has been conveyed to the Perth Penitentiary instead of a lunatic asylum as was originally anticipated. This apparent change in Stephen's sentence has been rendered necessary by the Perth Penitentiary not being recognised as a lunatic asylum under the Lunacy Act, so that penal servitude had to be substituted for the confinement in a lunatic asylum, that he might be received at Perth. He will, however, be treated in all respects as insane, and not as an ordinary convict.



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From the Author 5

ACCOUNT

OF A

CASE OF HERMAPHRODISM.

BY

P. D. HANDYSIDE, M. D.

FELLOW OF THE ROYAL COLLEGE OF SURGEONS, LECTURER
ON ANATOMY IN EDINBURGH, &c.

(Read before the Medico-Chirurg. Society, Dec. 3, 1834.)

(From the *Edinburgh Med. and Surg. Journal*, No. 123.)

Gottlieb Göttlich, the son of an officer in the Saxon service, was born at the village of Nieder Leuba, near Zittau, in the kingdom of Saxony, on the 6th of March 1798.

He was considered at birth to be of the *female* sex, and was accordingly baptized by the name of *Marie Rosine Göttlich*; the initial letters of which name, with the figures 1818, are stained on his right arm. He had a brother and two sisters, who died before he was born, and of whose appearance he can give no account. He was brought up and entered into service as a female, without his true sex being ever suspected, even by himself, till the spring of 1831, when, on account of a fracture of the left *os femoris*, he was received into the hospital at Dresden.

At this period, the part which had hitherto been regarded as the left *labium externum* became distended by a small round tumour, which proved to be the left testicle, that had descended from the *abdomen*, following the course of an inguinal hernia, which had been produced by a strain at work a short time before. The intestine becoming strangulated, Professor Bach operated for its relief.

A year after this the right testicle descended after a precisely similar manner, and on this occasion Göttlich being at Göttingen, the strangulation was relieved by an operation performed by Professor Langenbeck. The cicatrices are still visible on each groin, marking the seat of these two operations.* To ob-

* I beg to refer to the annexed sketch of Göttlich, and also to a cast in the Museum of the Royal College of Surgeons of the greater part of his body, which I took the opportunity of making during his late stay in Edinburgh.

viate the inconvenience of hernias, which succeeded these operations, a double truss has since been worn.

The parts hitherto regarded as the *labia externa* were thus shown to be the lateral halves of the *scrotum* separated by a fissure on the median line.

He still continued to clothe himself in female attire, and to wear his hair turned up, till November 1832, when he visited the University of Heidelberg; and then it was that I had first the opportunity of seeing him. Professor Tiedemann, before whom he presented himself, did not hesitate to regard him at once as a *male*, but declared him to be (in the words of that distinguished anatomist) "evidently a man, with genitals of uncommon conformation. She will dress herself, therefore, in men's clothes, and adopt the name of Gottlieb." Professor Blumenbach of Göttingen, to whom this individual was presented on the 4th February 1833, confirmed the view of Professor Tiedemann.

Since that period Göttlich has been employed exhibiting himself to the members of the medical profession at the different schools in various countries in Europe. After visiting Bonn, Jena, Marburg, Mainz, Offenbach, Breslau, Bremen, and other places on the continent, he travelled by way of Hamburg and Christiania to London in April last, where he was examined by Sir A. Cooper, Mr Green, Dr Davis, and Dr Grant. He next exhibited himself at Manchester, Liverpool, Cork, Dublin, Glasgow, Aberdeen, and Montrose, and arrived at Edinburgh in November last. Since coming here, he has attracted so much of the attention of the profession, that I have been induced to believe that a short notice of the facts connected with his case might not prove unacceptable if placed upon record.

The *general appearance and conformation of body* of Gottlieb Göttlich are essentially and distinctly masculine; although when attired in female clothing he bears a remarkable similarity both in form and temperament to the robust females of the lower class in the Department of the Upper Rhine. There is, however, a perfect masculine gravity of countenance, and a complete manly self-possession in his deportment at those times when he is exhibited in a state of nudity to a number of persons. His features are rather void of expression; he is not very intelligent; in his appetites and desires he is thoroughly sensual; and his discourse and occupations (perhaps from the influence of female habits and society) are altogether womanish. This bias and turn of mind may also proceed from the constitution being so long deprived of that influence which it naturally receives from the developement which the *testes* undergo at puberty; from the long-deferred appearance of which in this individual, his system has failed to be impressed with the true characters of his sex.



The *configuration of the head* also is male, though perhaps there is (apart from a national peculiarity in the form of the skull) a greater deficiency of *cerebellum* than is usual in the male compared with the female, the posterior part of the head being very flat. His sexual desires, however, are far from being below mediocrity. The head is exceedingly prominent in front, but a remarkable and very unusual depression is observable in each temporal region.

In respect to the *surface of the body* generally, there is not that abundant deposition of fat by which muscular action is in the female so much obscured, neither is there that spare development of the muscles themselves, nor that want of character in the bones which characterize the female, and announce the delicacy of her frame-work, by its softer and smoother contour; but in the case before us, the structure of the whole cutaneous and adipose tissues, the well-marked roughnesses along the bones affording firm attachments to the strongly developed and very powerful muscles, whose action is marked in the diversified lines along the surface of the body, impart to the figure of this individual the hard and uneven outline which so generally characterizes the male structure.

Besides the matter and form of the surface of the body, its *proportions* also partake more of the masculine character. The height of Göttlich is five feet seven inches. The shoulders are somewhat projecting. The breadth of the chest measured between the two *acromion* processes is seventeen inches; that of the *pelvis*, between the two anterior superior iliac spines eleven inches,—denoting, therefore, the comparative narrowness of the *pelvis*, and its agreement with that of the male. In this person, as may be observed of the male sex generally, the distance between the *pubes* and the *umbilicus* is shorter than between the *umbilicus* and the *scrobiculus cordis*, while the reverse is found to be the case among females; and the chest is longer in proportion to the other parts than in the female sex. The neck is short and thick; its length, from the chin to the *jugulum*, is only three inches; the length of the *sterno-mastoid* muscle only six inches, while the breadth of the neck (in accommodation with the male proportions elsewhere observed) is four and a-half inches. The *pomum Adami* is largely developed; and the voice, which before the testicles appeared was soft and quite feminine, began at that period to undergo the change of *moulting*, and it has now assumed a somewhat graver and more masculine tone.

The breasts also, which in early life were slightly elevated, have become, since the descent of the *testes*, much smaller and perfectly flat. The *perinæum* is masculine. The knees also present more of the male character, and the circumstance

that, when Göttlich stands erect, they approach more closely together than is usual in the male sex, is attributable to the mode of treatment adopted after the fracture of the *femur* already adverted to.

The next general feature in this person respects the *hair* on the surface of his body. Not only has that on the head become thicker and stronger since the testicles came down, but an appearance of hair on those parts of the body where at puberty in the male it grows has lately presented itself. A light downy beard has appeared on the chin and upper lip, and the hair in the *axillæ* and about the *pudenda* has increased materially. There is a little below the knees, but the legs, thighs, *raphé* of the *perinæum*, arms, and chest, are destitute of this covering.

Lastly, the *genito-urinary organs*, though in their external features imperfectly developed, yet present a conformation essentially masculine. The *pubes* is not prominent, and there is no developement of the *mons veneris*. The *penis* is one inch and a-half in length, but imperforate. The *glans* is distinct, and of a red colour; it is more pointed than usual, appearing like an enlarged *clitoris*, to which it bears a more perfect resemblance from the absence of the *urethra*; there is, however, a slight longitudinal depression where the *urethra* should have opened. The prepuce is one inch in length, loose and rugose, overhanging the *glans*, and attached to its lower surface, on each side of the depression for the *urethra*. The *crura penis* are large; and, on an examination being made through the *rectum*, may be distinctly felt proceeding from the *tubera ischii*, and uniting together a little way in front of the arch of the *pubes*. When erected, the length of the *penis* is increased to two inches, and in thickness it resembles a common-sized forefinger.

Below the *penis*, and occupying the place of the *septum scroti*, there is a narrow elevated line or *raphé* one inch and a-half in length, commencing at the *frænum præputii*, and terminating on the upper surface of a canal of about one inch in diameter and three inches in depth, leading to the urinary bladder. The opening into the bladder is through a narrow orifice at the farther end and on the upper surface of this capacious canal, and corresponds in direction, in length, and in width to the female *urethra*.

When the walls of this canal, simulating in some respects a *vagina*, are examined by the aid of the speculum, they are seen to be lined by a membrane presenting many folds resembling the *carunculæ myrtiformes*; and upon a more minute and extended examination of this canal with the assistance of a sound in the bladder and the finger passed up the *rectum*, it seems to have no connexion whatever with a *uterus*, a *prostate*,

or any other organ. No menstrual discharge, or any symptoms indicating the natural efforts to perform that function, have ever occurred. At the period when the *testes* descended, however, Göttlich experienced repeated attacks of *hæmoptysis*.

The urinary passage is separated from the *perinæum* by a semilunar fold of skin (resembling the *furca virginis*) which serves to direct forward the stream of urine; and its inferior border is at the distance of two inches from the *anus*, but connected to it by means of the usual cutaneous elevation,—the *raphé perinæi*.

The testicles, which are about the common size, though rather softer than natural, are, with their vessels, unequivocally present. They are pendulous in the halves of the *scrotum*, and placed at an inch distance on either side of the *raphé*, already alluded to as occupying the situation of the *septum scroti*.

From the *meatus urinarius* to the *glans penis*, the membrane on each side of the *raphé* appears in some particulars to resemble the portion of the natural *urethra* anterior to the *bulb*. It is thin and delicate, and highly vascular; and there are observable on its surface, near the *glans*, three minute *lacunæ*, probably the orifices of Cowper's glands, from which a mucous discharge is poured out; as well as two larger valvular openings (capable of admitting fine bristles to the depth of an inch,) which are the terminations of the *vasa deferentia*, and are placed immediately below the former apertures, and at the distance of about four or five lines on each side of the elevated line, which corresponds to the *raphé* and *caput gallinaginis* of the *urethra*.

The seminal fluid which, in the act of coition, or in nocturnal emissions, is discharged from the openings of the *vasa deferentia*, has been submitted to the microscope, and found to present the usual characters.

In the last place, with regard to the *sexual desires* manifested by this individual, these are moderately strong. He has had frequently connexion with the male, from the age of fifteen years to the present period, and, indeed, up to the time when the testicles descended, he felt no inclination for connexion with the female. He has, however, since that period experienced this desire, and gratified it while at Hamburgh two years ago. The circumstance, that he cannot perfectly perform the functions of a man, may serve to explain how he has not much passion for women, and how his amative desires are still directed towards his own sex.

In addition to the detail of facts to which in this communication I have confined myself, I would observe, that the pe-

cularities of developement now described appear to me to consist almost entirely of *deficiencies of male organization*. Though I have, in compliance with the common language of authors, entitled the case one of Hermaphroditism, as this term has been commonly applied to instances of animals being brought forth whose organs of generation are preternaturally formed,—yet, in strict physiological propriety, this is a term which ought, I believe, to be confined to that species of malformation of the organs of generation, in which there is really a mixture of male and female parts in equal or in different degrees.

Under the impression, then, that such is the just and correct anatomico-physiological definition of an hermaphrodite, and that there is much reason to believe that no strict instance of such a condition of the generative organs,—a union of all the organs of both sexes in the same individual,—has ever occurred either in the more perfect animals, or in the human species, I would designate the foregoing case of Göttlich as one simply of *Hypospadias*, (or *urethra* forming but half a canal, and opening below the *penis*, or in the *perinæum*,) which is only the first step towards true and real hermaphroditism.

But a feature in which I believe *this* case of *hypospadias*, though in many particulars resembling others on record, to be perhaps unique, is in the manner in which the *urethra* opens on the upper surface of a wide canal; therein appearing to be strictly analogous to the mode of entrance of the membranous portion of the *urethra* into the *bulb*.

In conclusion, though such malformations of the parts of generation in the male, which have been mistaken for a mixture of those of both sexes, are in a great number of cases beyond the reach of surgical art, it is otherwise in the present instance, where there exists a very minor degree of imperfection in the impregnating organs; it being ascribable only to a deficiency in the *urethra*, and apparently to no other cause that Göttlich has proved himself to be incompetent to discharge the functions of his sex. Accordingly, the imperfection in the *urethra* might be materially diminished, if not altogether removed, by contracting the orifice of the wide canal in the *perinæum*, and by uniting the edges of the divided *scrotum*; thus continuing upwards the canal of the *urethra* to the *glans penis* itself. The present case is one in which we might fairly anticipate success from such an operation. When it was formerly proposed, however, by Professor Langenbeck, Göttlich declined all surgical aid, and he is now still more averse to a proposal of this kind, since it would at once deprive him of his present easy and profitable mode of subsistence.

March 1835.

Mr. Stephen Higginson
to the author
by request

6

ADDITIONAL OBSERVATIONS
ON THE
STATIC LUNG TESTS.

BY WILLIAM AUGUSTUS GUY, M. B. CANTAB.

Professor of Forensic Medicine, King's College, London; and one of the
Physicians to the King's College Hospital.

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IN a former number (No. 148) of the Edinburgh Medical and Surgical Journal, I examined the static lung tests by the aid of a larger number of observations than had previously been made available for that purpose, and I arrived at conclusions extremely unfavourable to the future employment of these tests in medico-legal inquiries. I now proceed to contrast the smaller groups of observations, collected by the several authors whose works I have laid under contribution, and to detail a few facts of interest which have come under my own notice. By this means some of the objections which lie against the conclusions contained in my former essay may be removed, and such statements as are well-founded may be confirmed. I shall treat the static lung tests in the same order as in the former essay, beginning with the absolute weight of the lungs.

The following table presents the highest, lowest, and average weight of the lungs of mature still-born children, and of children who survived their birth one month or less. The sex is either not stated, or the two sexes are thrown together.

TABLE XXX.

Name of Author.	No. of Obs.		Before Respiration.			After Respiration.		
	Before Resp.	After Resp.						
			Max.	Min.	Mean.	Max.	Min.	Mean.
Haartmann, .	4	7	1534	1066	1257	1619	1023	1327
Jörg, .	2	3	677	612	645	1133	766	945
Eisenstein and Zebitsch, .	7	18	1185	369	812	1537	616	980
Schmitt, .	36	27	1661	553	1056	2132	695	1271
Lécieux, .	29	237	1636	340	773	2440	432	1048
Procès Verbal, &c. .	5	13	1112	463	685	1514	476	976
Orfila, .	5	5	586	448	528	1314	619	884
Devergie,* .	5	2	1011	360	771	1262	1019	1140
Taylor, .	5	4	687	586	645	774	562	676
Dr Guy, .	3	3	1480	632	920	1178	510	805
Table I. and IV. .	109	322	1661	340	874	2440	432	1072

A single glance at this table will show the great difference which exists between all the values derived from small groups of observations, the insufficiency of the data hitherto employed in discussing the value of the static lung tests, and the consequent necessity for a more extended induction. My former essay was intended to supply this want as far as existing materials would permit; the present essay may serve to show that the necessity for a larger number of observations has not been exaggerated. On a closer inspection of the table it will be seen that the maximum weight of the lungs of still-born children is, according to the observations of Schmitt, as high as 1661 grains, and according to Orfila, as low as 586; the former number being nearly three times as great as the latter. In like manner the smallest weight observed in four still-born children by Haartmann is 1066 grains; the smallest number recorded by Lécieux is 340; the former number being more than three times as great as the latter. The average numbers present, as might be expected, less disparity, but the highest number is more than twice as great as the lowest.

If we now examine the second column of the table, we discover differences of nearly the same amount. The column of maxima presents 2440 as the highest number, and 774 as the lowest; the former being more than three times as great as the latter. In the column of minima, the highest number is more than twice as great as the lowest, whilst the least average is little less than half the highest.

That these differences are entirely due to the small number of facts collected by the several authors, and not to any error of cal-

* In the former essay, the maximum 1800 is given on the authority of Devergie. This is an error, the highest number observed by him in healthy lungs being 1011. In a case of œdema of the lungs the weight was 1537. The maximum before respiration, therefore, is on the authority of Schmitt, 1661.



culatation, will at once appear if we compare the numbers in the several columns. Thus, if 1661 appear too high a value for the lungs of a still-born child, the fact that Lécieux and Haartmann have recorded numbers as high as 1636 and 1534 respectively will at least lessen the improbability; and if these latter numbers, reduced from French and German weights, seem exaggerated, they receive strong confirmation from the highest number which has fallen under my own notice, viz. 1480. In like manner, the small number 586, (the maximum recorded by Orfila on his own authority), is to a certain extent confirmed by the low values obtained by Jörg and Mr Taylor. The same observations apply to the other columns. Hence it appears that the different values presented in the table are due solely to the cause now assigned,—the small number of facts from which they have been obtained.

A comparison of the weight of the lungs before and after respiration shows differences not less worthy of note between the values obtained by different observers. The maxima in the still-born, in more than one instance, fall but little short of the maxima in children who had lived one month or less, whilst in one case, the highest number in the still-born greatly exceeds the highest number in those born alive. This occurs in my own observations, which give 1480 before, and 1178 after, respiration. Again there are no less than three instances in which the minima in the still-born exceed the minima in those born alive. In one instance (that of my own observations) the average number before respiration exceeds the average after respiration by no less than 115 grains. In other instances, the difference, though on the other side, is extremely small. To show the total insufficiency of small numbers of facts, it will suffice to compare the observations of Mr Taylor with my own. The highest weight in five facts collected by Mr Taylor is 687 grains; the maximum of three observations of my own is 1480, or more than twice that number. Mr Taylor's average before respiration falls short of his average after respiration by 31 grains; my own average for the still-born exceeds the average in children born alive by no less than 115 grains.

These remarks have an important practical bearing. In a court of law, a medical witness may be asked for the result of his own experience—his personal experience—as to the weight of the lungs before and after respiration, and the consequent value of a given weight of lungs in an individual instance as a sign of live or still-birth. If this question were addressed in turn to each of the authors named in the table, how widely different would be their answers! If the word experience has any precise meaning, the numbers in the table represent that experience in the case of the several authors whose names are mentioned; and the answer which

they must give to the question proposed is already expressed by the figures themselves. The decision of the majority would be, that the weight of the lungs is not much greater after respiration than before it; one author, at least, would be bound to represent the weight as nearly the same before and after respiration; and my own personal experience would be opposed to that of all the rest in representing the weight of the lungs before respiration as exceeding by a considerable fraction their weight after respiration. It appears, then, that no medical witness can be justified in laying any stress whatever on his own personal experience in questions of this kind; and that if his personal experience be appealed to, he is bound to guard against the errors to which it may lead by pointing out its utter insufficiency. When it is recollected that the table contrasts the weight of the lungs of still-born children with that of the lungs of children who have lived one month or less, and that the crime of infanticide is generally committed soon after birth, when the process of respiration has often barely commenced, and is extremely imperfect, it will be quite unnecessary to say more in condemnation of the absolute weight of the lungs, as a test of respiration. The personal experience of all observers, if it do not condemn the general statement, that the weight of the lungs is materially increased by respiration, will at least reject the application of the theory to individual cases, and for medico-legal purposes.

According to the general and loose statement of authors, the weight of the lungs before respiration is about one ounce, or 480 grains, and after respiration, two ounces, or 960 grains. It is always extremely difficult to determine on whose authority such general statements as these are put forth. The only author whose observations give any countenance to such an estimate is Orfila, whose averages are not very remote from the assumed weights before and after respiration; but if the much higher authority of Schmitt be taken as our guide, the weight before respiration will be nearly doubled, and that after respiration increased by little less than one-half. A mere inspection of the table will show how far this general estimate of authors is remote from the truth.

As this subject is one of too much importance to be dismissed so long as any means remain unemployed by which its true bearings may be ascertained, I have endeavoured still farther to test the value of the static lung tests by arranging the numbers before and after respiration in children at full term in two columns, and comparing them with each other. This comparison, as might be expected, shows that by far the majority of the numbers occurring in the still-born have their counterparts in observations made in children who have survived their birth. Thus, the numbers 1534, 1492, 1480, 1449, 1364, 1297, &c. occur both before and after

respiration. In like manner, the numbers 494, 510, 541, 556, 571, &c. are met with both in the still-born, and in those born alive. Again, there are only eight observations on children who have survived their birth one month or less, in which the number exceeds 1661, the maximum before respiration; in other words, assuming 1661 to be the real maximum in the still-born, there are only eight instances on record in which we should have been justified in asserting from the weight of the lungs alone that the child had survived its birth; and if we limit the comparison to those who have lived one day or less, this number dwindles down to one. On the other hand, there are only three instances recorded, in which the weight of the lungs in the still-born fell short of their weight in those who survived their birth; or, in other words, only three cases in which, assuming 432 to be the real minimum after respiration, the weight of the lungs alone would have sufficed to decide the question of live or still-birth. It is impossible to place in a more striking light the utter inutility of the average absolute weight of the lung as a test of respiration.

I now proceed to examine the weight of the lungs compared with that of the body, or Ploucquet's test, and in doing so shall follow the same steps which I have already taken in discussing the value of the absolute weight of the lungs. The following table presents the values obtained from the observations collected by the several authors whose names are given. Here, as in the former table, no distinction of sex is made,—the observations on males and females being all thrown together:—

TABLE XXXI.

Name of Authors.	No. Obs.		Before Respiration.			After Respiration.		
	Bef.	af.	Max.	Min.	Mean.	Max.	Min.	Mean.
Haartmann,	4	7	1:40	1:65	1:57	1:39	1:77	1:54
Jörg,	2	3	1:61	1:64	1:62	1:39	1:64	1:49
Schmitt,	36	28	1:34	1:81	1:58	1:23	1:78	1:43
Lécieux	29	237	1:24	1:176	1:65	1:19	1:132	1:37
Procès Verbal, &c.	5	13	1:27	1:86	1:58	1:21	1:71	1:45
Orfila,	5	5	1:50	1:99	1:72	1:32	1:53	1:44
Devergie,	5	2	1:34	1:176	1:74	1:38	1:49	1:43
Taylor,	5	4	1:49	1:91	1:63	1:41	1:82	1:53
Dr Guy,	3	3	1:46	1:74	1:60	1:55	1:65	1:60
Table XX. XXIII.	96	314	1:24	1:176	1:57	1:19	1:132	1:38

This table, like the former one, places in a strong light the insufficiency of small numbers of facts, and of the personal experience founded upon them. The several values differ widely from one another; some giving nearly the same proportion before and after respiration, and others presenting a difference nearly as great as that laid down by Ploucquet, viz. 1:70 before respiration and

1 : 35 after respiration. The most marked differences exist in the observations of Lécieux, Orfila, and Dévergie; the remainder are much less considerable. The small group of facts collected by Haartmann gives nearly the same values before and after respiration, and the same remark applies to the results of my own observations. The average values obtained from Mr Taylor's facts and from my own are worthy of notice, and of comparison with the numbers in the first table. On referring to this table it will be seen that the average weight of the lungs before and after respiration differs very slightly in Mr Taylor's observations, whilst in my own the weight of the lungs in the still-born infant greatly exceeds that of children born alive; but a reference to the last table shows that the proportion which the weight of the lungs bears to that of the body in Mr Taylor's observations is much less before than after respiration, and that in the case of my own observations the proportion is exactly the same. This circumstance is easily explained by the aid of a fact established in my former essay, viz. the greater weight of the body of the still-born infant. The average weight of the bodies of the five still-born infants examined by Mr Taylor greatly exceeds the average weight of the four who survived their birth, the former being to the latter as about 41 to 36; and in my own observations the weight of the still-born is to that of those born alive as 10 to 9 nearly. It is this great disparity of weight which has made the average proportions before and after respiration to differ much more than the absolute weight of the lungs in Mr Taylor's observations, and this same disparity has equalized the proportions obtained from my own facts. Here, then, is an obvious advantage of Ploucquet's test over the absolute weight of the lungs; and if the question to be decided was, which of the two should be preferred, there can be little doubt to which the superiority ought to be assigned.

The superior value of Ploucquet's test is still further shown by comparing the several proportions before and after respiration, in the same manner as the absolute weights of the lungs before and after respiration have already been contrasted. From this comparison it results, that whereas there were only eight instances in which the maximum weight of the lungs after respiration exceeded the maximum weight before respiration, there are no less than 29 instances in which the proportion which the lungs bear to the body is greater after respiration than before; that is to say, there are 29 instances in which, assuming the proportion 1 : 24 to be the true maximum, we could state with certainty that respiration had taken place. On the other hand, there is only one instance in which the proportion of the lungs to the body is less before respiration than the least proportion observed in children born alive;

in other words, there is only one case recorded in which, assuming 1:132 to be the real minimum after respiration, we should have been justified in asserting that respiration had not taken place. It appears, then, that Ploucquet's test has some advantage over the absolute weight of the lungs. But this advantage is gained, so to speak, at the expense of the very principle on which a numerical test ought to be founded, viz. an exact equality in all those particulars in which equality is attainable. In employing the weight of the lungs, or their weight as compared with that of the body, as a test of respiration, we compare an individual observation with an average previously ascertained; but this average has been shown to vary with the weight of the body, the weight of the lungs increasing more slowly than the weight of the body, and the proportion which the one bears to the other diminishing as the weight of the body increases. Hence, in order to construct a correct standard of comparison, we ought to contrast the weight of the lungs, both absolute and relative, before and after respiration for different weights of the body. This is done by combining tables XIV. and XV. *

TABLE XXXII.

No. of Obs.	Before Resp.	After Resp.	Weight of Body.	Average weight of Body		Weight of Lungs		Proportion	
				Before Resp.	After Resp.	Before Resp.	After Resp.	Before Resp.	After Resp.
1	60		20000—30000	27030	26888	541	869	1:50	1:31
23	138		30000—40000	35263	34638	714	1061	1:49	1:32
27	69		40000—50000	44932	43549	744	1141	1:60	1:38
21	29		50000—60000	55555	54021	996	1332	1:56	1:40
17	14		60000—70000	64679	64251	1032	1431	1:63	1:45
4	9		70000—80000	77382	76127	1317	1379	1:58	1:55
1	2		80000—90000	87336	88041	1226	2193	1:71	1:40
2	3		90000 & upwards	96330	113783	1491	3273	1:64	1:34

If, after the observations which have been made on the static lung tests, any doubt remains of the inutility of these tests, and it is thought advisable still to employ them for medico-legal purposes, a table on the principle of the foregoing, but founded on a larger number of observations, will form by far the most accurate and unexceptionable standard of comparison.

I now proceed to detail a few facts which have come under my own notice, and to inquire how far the weight of the lungs and their weight as compared with that of the body corresponds with the general statements of authors, and with the numbers contained in the tables.

Obs. 1. Female at full term, still-born.

Weight of lungs, right lung, 356 grains; left lung, 276 grains; both lungs, 632 grains.

* Some corrections have been made in this table.

Weight of body, 46735 grains.

Ploucquet's test, 1 : 74.

Obs. 2. Female at full term, still-born.

Weight of lungs, right lung, 372 grains ; left lung, 275 grains ; both lungs, 647 grains.

Weight of body, 38172 grains.

Ploucquet's test, 1 : 59.

Obs. 3. Male at full term, still-born.

Weight of lungs. Right lung. $\text{3i. 3vi. Troy} = 840$ grains.

Left lung, $\text{3i. 3ii. 9ii. Troy} = 640$ grains.

Both lungs, $\text{3iii. 9ii.} = 1480$ grains.

Weight of body, lb. ix. oz. $11\frac{1}{2}$ avoirdupois = 68031 grains.

Ploucquet's test, 1 : 46.

In the first two of these observations the absolute weight of the lungs, and their weight as compared with that of the body, are such as to render it more probable that the children were still-born than that they were born alive ; the absolute weight of the lungs in both instances being much less than the average weight before respiration, viz. 874, and the proportion in both cases also falling below the average proportion, 1 : 57. Both values are also considerably less than the averages given in Table XXXII. Thus in the first observation, the weight of the lungs is 632, the average in the table for a body weighing between 40,000 and 50,000 grains being 744, and the proportion of the lungs to the body is 1 : 74, the average in the table being 1 : 60. In the second case, again, the values are 647 and 1 : 59, those in the table for bodies weighing between 30,000 and 40,000 grains, being 714 and 1 : 49. But it must be borne in mind that the numbers in the tables are merely averages, and that precisely the same numbers and the same proportions might be met with in children who had been born alive ; so that taken alone, the static lung tests will furnish a very low presumption.

In the third case, the weight of the lungs is so much greater than the averages before and after respiration, as to raise a presumption in favour of respiration much stronger than the presumption in favour of still-birth in the first two cases. The average before respiration is 874, after respiration 1072 ; the weight of the lungs in this case was 1480, being 606 grains more than the average before respiration, and 408 grains more than the average after respiration ; whilst it falls short of the maximum before respiration by only 181 grains. As far, then, as the absolute weight of the lungs goes, it would seem nearly decisive of respiration having taken place ; Ploucquet's test gain tends to strengthen this conclusion, for the proportion which the lungs bear to the body, (1 : 46) falls little short of 1 : 38, the average after respiration has continued one month or less. On referring to Table XXXII,

we have fresh reason for concluding that respiration has taken place for the absolute weight of the lungs corresponding to bodies, weighing from 60,000 to 70,000 grains, is 1431 after respiration, or somewhat less than the weight of the lungs in this case and Ploucquet's test gives 1 : 45 as the proportion after respiration being as nearly as possible the proportion in this instance. Hence, then, both the absolute weight of the lungs, Ploucquet's test, and the modified test of Ploucquet, would strongly incline us to the belief that the child had breathed ; and yet, in this instance, respiration had certainly not taken place.

Obs. 4. Male, full term ; survived its birth a few seconds, and was distinctly seen to respire more than once. Both lungs, however, sank, when placed in water, and the air-cells were not developed.

Weight of lungs, right lung, 300 grains ; left lung, 210 grains ; both lungs, 510 grains.

Weight of body, 31063 grains.

Ploucquet's test, 1 : 61.

Obs. 5. Male, full term ; respiration imperfect, and of short continuance ; air-cells developed in parts of the upper lobe of the left lung ; and of the middle lobe of the right lung ; the remainder of the lungs in the foetal condition.

Weight of lungs, right lung, 690 grains ; left lung, 488 grains ; both lungs, 1178 grains.

Weight of body, 11 pounds avoirdupois = 77,000 grains.

Ploucquet's test, 1 : 65.

Obs. 6. Male, full term ; respiration imperfect, but more extensive than in *Obs. 5.* The child had lived about an hour.

Weight of lungs, 726 grains.

Weight of body, 39,812 grains.

Ploucquet's test, 1 : 55.

Obs. 7. Male, eight months and a-half, lived two days. Respiration perfect in right lung, extremely imperfect in left lung. Blood effused in spots of variable size on the surface of both lungs. These spots small and few in number in the right lung, more numerous and larger in the left lung, especially on its posterior surface.

Weight of lungs, right lung, 295 grains ; left lung, 251 grains ; both lungs, 546 grains.

Weight of body, 32,375 grains.

Ploucquet's test, 1 : 59.

The first of these four observations is classed with those in which respiration has taken place, though the effects of respiration did not manifest themselves in the lungs. The air probably did not penetrate beyond the bronchial tubes, and left the lungs, to all appearance, in the foetal condition. The small weight of the lungs,

and the low proportion which the lungs bear to the body, afford a probability in favour of still-birth. The child, however, was born alive, and was distinctly seen to respire.

In the next case, (Obs. 5) there was abundant evidence of respiration, and the appearance of the lungs corresponded with the statement of the midwife, that the child had breathed. The lungs weighed 1178 grains, which exceeds the average weight in children who have lived one month or less by more than 100 grains. The absolute weight of the lungs, therefore, furnishes a low probability in favour of respiration. This probability is strengthened if the weight of the lungs is compared with the mean weight of the lungs of children who have lived less than one hour, the average being 918 grains, or with the average weight in cases of imperfect respiration, which for males is 1010 grains, (see Table X.) On the other hand, it must be borne in mind that the body of this child weighed no less than 77,000 grains. Ploucquet's test, therefore, gives the proportion of 1 : 65, which affords as strong a probability in favour of still-birth, as the absolute weight of the lungs did in favour of respiration. By comparing the weight of the lungs with the average weight for bodies exceeding 70,000 grains in weight (see Table XXXII.) this probability in favour of still-birth is still further increased.

The weight of the lungs in Obs. 6, viz. 726 grains, though below the average weight before respiration, is not low enough to afford a very strong presumption either way, and the proportion 1 : 55 gives a slight probability in favour of still-birth, (see Tables XXXI. and XXXII.) In the last case, (Obs. 7,) the weight of the lungs, and the proportion which the lungs bear to the body, are such as to give a strong presumption in favour of still-birth; but in this instance, the child had lived two days, and the weight of the lungs was increased by the effusion of blood on the surface of the lung, around the superficial air-cells, and beneath the pleura. I may observe in passing, that this is the only case out of twenty-two which I have had an opportunity of inspecting, in which any disease of the lungs existed, and in this case, with the exception of the pulmonary apoplexy, the structure of the lungs was perfectly healthy.

The question of respiration in the seven cases which have been mentioned would have been decided by means of the static lung tests as follows. Of the three still-born children, two would have been pronounced probably still-born; in the third there would have been a strong presumption in favour of respiration. Of the four children who had survived their birth, the first would have been pronounced still-born; in the second, the absolute weight of the lungs would have furnished a strong probability in favour of respiration, and Ploucquet's test, as well as the modified

test, (see Table XXXIII), as strong a presumption against it; in the third case, there would have been a slight presumption in favour of still-birth; and in the child who survived its birth two days, a still stronger presumption on the same side. Thus out of the seven cases, the static lung tests would have given correct indications in two, they would have left two others doubtful, and would have led to erroneous conclusions in the remaining three. These remarks apply to the average weight of the lungs, and the average proportion which the lungs bear to the body when used as tests of respiration; but if the highest and lowest weights and proportions had been employed as standards of comparison, the question whether the child had or had not breathed would have remained unanswered. Now it admits of great doubt whether it is allowable to employ an average value as a standard of comparison in medico-legal inquiries. Even in the practice of medicine, where many low probabilities are allowed to assist us in our diagnosis, average values are amongst the least useful and the least trusted of our standards of comparison, and very few physicians would be hardy enough to rest any important conclusions upon so insecure a basis. What medical man, for instance, would think of placing much reliance on an average frequency of the pulse, or the average proportion of the pulse and respiration as a standard of comparison in a case of disease? They would furnish a low presumption, and nothing more. On the other hand, a comparison between the frequency of the pulse in a given case of disease, and the highest or lowest ascertained frequency in a state of health, would furnish important indications on which he would be justified in laying great stress. A mode of reasoning which would be inadmissible in a case of disease where a low probability derived from one symptom is confirmed by the presence or absence of a considerable number of other signs, can scarcely be trusted to in medico-legal inquiries, which demand a much higher accuracy, and a much stricter logic. If in a court of law, a medical witness were to state that, in a certain case, he had found a certain weight of lungs, and a certain proportion between the weight of the lungs and that of the body, and that he regarded this as a proof of respiration or of still-birth, or even as a presumption in favour of one or the other, he would be immediately met by the question—has not precisely the same weight of lung, or the same proportion, been met with in cases where the exact reverse of your inference was known to have existed? To this question an answer must be given in the affirmative, except in those instances in which the weight exceeded the highest recorded weight or proportion, or fell short of the lowest; and these cases have been shown to be extremely few in number. But even when the extremes are employed as our standard of comparison, our inference in individual cases

is open to the obvious objection, that the real extremes have not yet been ascertained. The force of this objection must be allowed, and to obviate it, it would be necessary to strengthen the presumption by collateral evidence derived from other signs.

If the static lung tests were always regarded in the same light as the symptoms of a disease ; that is to say, as furnishing merely one element of our diagnosis or prognosis, little mischief could arise from attaching some slight value to them. The low presumption which this test, taken by itself, would furnish, might be increased by other collateral evidence, so as to amount to a high probability, or even to certainty. But this is not the case, for not only are the static lung tests employed in combination with other tests, such as the size and shape of the chest, the position of the diaphragm, the size, position, consistence, and appearance of the lungs, (all of which furnish their presumptions in favour of or against respiration,) but they are also recommended, as one of the surest means of distinguishing the effects of respiration from those of inflation. It is obvious that the lungs are not increased in weight by inflation, and, taking one case with another, it is as certain that their weight is increased by respiration, for this reason, the weight of the lungs has been regarded as a means of diagnosis. Now it has been already shown that the static lung tests are not to be relied on as a means of distinguishing lungs which have respired from those which have not ; and as inflated lungs are assumed to remain as far as weight is concerned in the condition of lungs which have not breathed, it follows that the weight of the lungs is not a sufficient diagnostic mark of respiration and inflation. Whatever value is assigned to these tests as tests of respiration, exactly the same value must be given them as tests of inflation. How slight this value is has already been shown.

Those who are familiar with the changes produced in the appearance of the lungs by respiration, will readily admit that, in at least ninety-nine cases out of a hundred, the question of respiration is nearly decided by the first glance at the surface of the lungs themselves, without having recourse to the static lung tests at all, or even to the hydrostatic test. Simple inspection is sufficient to show that either respiration has taken place, or that inflation has been practised. The static lung tests, therefore, are not required to distinguish respiration from non-respiration, but merely to serve as a diagnostic mark between respiration and inflation. Here, then, where alone these tests are wanted, they fail us, just as they fail us in almost every instance in which they are used to determine the question of respiration. If we had as certain means of distinguishing respiration from inflation, as we have of determining that one or the other has taken place, the static lung tests would be as unnecessary as they are useless. Whether or

not we possess a means of diagnosis in the effects of pressure must be left for future consideration.

The conclusions drawn from the examination of the seven mature children are fully borne out by observations made at earlier periods of foetal life. Some of these observations will find a place in a future essay on the hydrostatic test. I shall content myself for the present with detailing a case of some interest in more than one point of view, and instructive in its relation to the static lung tests. For an opportunity of inspecting the lungs, and for the minute particulars which give completeness to the case, I am indebted to the courtesy of Mr Streeter, who has kindly allowed me to copy from his note-book that part of the case which came under his own notice.*

"Mrs J. R., aged 28. Her second pregnancy. 'She menstruated last on Whitsunday, June 7th 1840, and was taken with pains, December 1, about ten A. M. She came to bespeak my attendance for March next. I gave her an opiate mixture to take on her return. Of this she took one dose, but the pains continued increasing till she sent for me between two and three P. M. On my arrival I found on examination, in the intervals of the pains, that the *os uteri* was open to the size of an orange, and a bag of waters protruding. At half-past four, the bag broke, and a very large quantity of waters came away. The head of one foetus was expelled through the *os externum*; the body was extracted after some slight resistance, and the funis tied. A second gush of waters now took place, and I found the placenta occupying the vagina. I slowly brought this through the *os externum*, but, as it was still retained, I again examined, and found the arm and face of the second foetus presenting. Fixing the arm steadily with the finger and thumb of my left hand, I passed the fore-finger of the right hand over the neck of the foetus, and so succeeded easily in dislodging it from the upper part of the vagina, without causing much pain. The uterus was found firmly contracted above the pubis.

Both foetuses were females; they made respiratory efforts, but without oral sound, and, of course, shortly expired. The largest is marked 1, the smallest 2.

Weight of body,	-		{ 1. 21½ oz. avoirdupois.
			{ 2. 10½
Circumference of the head,	-		{ 1. 8½ inches.
			{ 2. 7
Abdomen,	-	-	{ 1. 7½
			{ 2. 5
Length,	-	-	{ 1. 12½
			{ 2. 10
Length of cord,	-	-	{ 1. 16
			{ 2. 11

* This case was detailed at one of the meetings of the Westminster Medical Society, and is reported in the *Lancet* 1840—41.

To the foregoing extract from Mr Streeter's note-book, I add the following account of the *post mortem* examination, which took place December 6.

Both fœtuses were found contained in a common chorion, but in distinct amnia.* The placenta belonging to the larger fœtus was of the common size; that corresponding to the smaller fœtus was about half as large, and had the cord inserted into its edge. Both placentæ were quite healthy. Having secured the vessels of the lungs by ligature, those organs were weighed, and the following numbers were noted down on the spot.

Largest Fœtus.—Weight of lungs, right lung, 73 grains; left lung, 55 grains; both lungs, 128 grains.

Weight of body, 9406 grains.

Ploucquet's test, 1:73.

Smallest Fœtus.—Weight of lungs, right lung, 23 grains; left lung, 15 grains; both lungs, 38 grains.

Weight of body, 4594 grains.

Ploucquet's test, 1:121.

The lungs of the larger fœtus, when placed in water, sank at once to the bottom, without showing any degree of buoyancy. All the lobes and the several portions into which they were divided, likewise sank, and the lungs presented no trace of respiration. The lungs of the smaller fœtus presented the following appearances:—On the convex surface of the upper lobe of the right lung the air-cells were distinctly developed in four or five different points, and nearly the whole of the concave surface was studded in the same manner. The inferior and middle lobes of the same lung had a great number of such points on the convex surface, and also on the concave surface, especially along the anterior margin. This lung, however, on being placed in water, sank at once to the bottom. The left lung presented no trace of respiration, the surface of the lung being perfectly uniform, with not a single air-cell developed. This lung also sinks on being placed in water. The right lung was now divided into its three lobes, and each lobe submitted to experiment. They all sank to the bottom of the vessel. On cutting off a small portion of the lower lobe of the right lung, containing several developed air-cells, and placing it in water, it sank rapidly to the bottom. A portion of the middle lobe, towards the posterior margin, being placed in water, floated. Very strong pressure applied to this portion did not destroy its buoyancy, but, on increasing the pressure with the finger and thumb, the buoyancy was somewhat diminished. After the entire destruction of the texture of the lung by repeated pressure, this portion slowly sank to the bottom.

* This fact was verified by a very careful examination, and admitted by more than one competent authority.

This case is interesting and instructive in so many points of view, that I have given it entire, though my present business is merely with that part of it which refers to the static lung tests. The ages of these *foetuses* might have been six months at the most, five months at the lowest calculation, and five and a-half months reckoning from the middle period between the last menstruation and the next menstrual period. Mr Streeter thought five and a-quarter months the most probable age. In any case the abortion took place in the sixth month. Both *foetuses* had made efforts to respire, the larger one without success, (for if any air did reach the lung, it did not expand any of the air-cells,) the smaller one successfully, the air-cells being developed in large numbers on the surface of the right lung. The small quantity of air admitted was insufficient to give buoyancy either to the entire lung, or to any of its lobes, but it caused a small portion of one lobe to float. As inflation was not practised in this case, there is no room to doubt that the child had breathed. Here, then, we have two twins of the same sex, inclosed in a common membrane, and the product of the same conception, the one more than twice as large as the other, and, to appearance, far better prepared to respire, both making respiratory efforts, and yet the smaller and feebler child alone succeeded in drawing air into the lungs. The lungs of the larger child were found filled with blood, those of the smaller almost bloodless; the one weighed 128 grains, or $\frac{1}{3}$ of the weight of the body, the other 38 grain, or $\frac{1}{12}$. The weight of the bodies were as 2 to 1, that of the lung as 3 to 1. Is it not at least probable that the comparatively large quantity of blood contained in the lungs of the larger child was an obstacle to the admission of air; whilst the almost bloodless condition of the lungs of the smaller was peculiarly favourable to respiration? If this supposition be not allowable, and the larger quantity of blood contained in the lungs of the larger *foetus* was not in the lungs previous to the efforts made to respire, then these efforts must themselves have caused an influx of blood, whilst in the smaller child the same efforts led to the admission of air. My own experience, as far as it goes, has led me to the conclusion, that the presence of a large quantity of blood in the lungs is a frequent occurrence in still-born children, and in cases of extremely limited and imperfect respiration; and that where respiration has been most complete, the quantity of blood is often small as compared with their bulk. The case of the smaller *foetus* is peculiarly interesting, as the weight of the lungs is much less than in any other instance on record. The smallest recorded weight which I have met with occurred in a six months' child entered in Lecieux's tables. It is 93 grains. It is stated that this child made efforts to respire, but the lungs were compact. The body weighed 10,040 grains, and Ploucquet's test

gave the proportion of 1 to 108. I have not admitted this into the tables, as there is not sufficient evidence of respiration having taken place. 38 grains, then, is by far the smallest weight yet reported in a case where respiration has taken place, and there can be no doubt that the static lung tests, taken alone, would have led to the conclusion that the child was still-born.

There are other points of interest in this case on which it is not my present object to enlarge; such as the existence of a common chorion; the evidence thereby afforded of contemporaneous conception; the unequal weight of the two bodies, in the absence of any disease in the placenta; the correspondence of the size of the bodies with that of the placenta to which they were attached; and the absence of buoyancy in lungs in which the air-cells were so visibly developed by the entrance of the air; these points, as they do not belong to my present inquiry, I content myself with merely alluding to, and shall, therefore, conclude what I have to say upon the static lung tests, reserving the hydrostatic test for a future occasion.

The following short summary will embody the principal conclusions which I have been led to form, and will at the same time give me an opportunity of correcting some errata contained in my former essay.*

* The calculations contained in the former essay were, with one exception, originally correct, and I can only attribute the alterations which I was induced to make to my great anxiety to avoid all sources of fallacy, and the pressure of an unusual number of engagements at the time when the proof-sheets reached me. From these causes I was induced to make alterations which I subsequently found to be uncalled for. I discovered my mistake almost as soon as I had made it, and wrote to the editor, begging that he would allow the tables to remain as they were, but the proof-sheets had already gone to press. Finding that I had committed one error, I carefully reviewed my observations, and tested the accuracy of all my calculations from the French and German weights, and I discovered one other error. The maximum weight before respiration in mature children was stated on the authority of one of Devergie's observations at 1800. On examining the case from which this number was taken, I found that I had taken the weight of the heart, lungs, and thymus, instead of the weight of the lungs alone. Those who are familiar with Devergie's work, and with the manner in which his cases are recorded, will not attribute this mistake to mere carelessness. The discovery of this error has led me to convince myself of the accuracy of the rest of my calculations. I have taken considerable pains to correct this error, as well as the more important one just mentioned, and have reconstructed the whole of the tables. The corrections, with the exception of the observation from Devergie, are not material, and in no way affect the general reasoning employed. I subjoin a list of the errata.

P. 47, omit the passage beginning "In reducing, &c." and ending with "calculations," the grains in the table are Troy grains.

Table I., for 1800 read 1661; for the average values substitute 950, 809, 874. In the paragraph succeeding the table omit 1800 and 1726.

Table II. For the mean values, substitute 382, 340, 361, 600, 678, 625, 695, 690, and 686.

P. 50, line 5, for more than 300 read nearly 200.

Table III. For 1800 read 1661; for the mean values write 361, 625, 686, and 874.

Table IV. The averages are 1121, 982, 1072.

Table V. The averages are 320, 411, 401, 589, 694, 638, 761, 734, 751.

Weight of the Lungs.—1. The weight of the lungs of still-born children of the same age varies within wide limits; the chief cause of difference being the sex and the weight of the body.

2 The weight of the lungs in mature still-born children is as follows: greatest weight, 1661; least weight, 340; average weight, 874.

3. The weight of the lungs in mature still-born children of the male and female sex respectively is as follows: greatest weight, 1661, 1492; least weight, 360, 340; average weight, 950, 809.

4. The weight of the lungs in children who have respired also varies within wide limits; the chief causes of difference, in addition to those which affect still-born children, being the degree and duration of respiration.

5. In children who have survived their birth one month or less, the highest recorded weight is 2440 grains; the lowest 432 grains; and the average 1072 grains.

6. The weight of the lungs for males and females respectively, at the same ages, is as follows: greatest weight, 2440, 1745; least weight, 432, 479; average weight, 1121, 982.

7. The weight of the lungs increases with the increasing perfection of the respiration, but is very slightly augmented by imperfect respiration.

8. The weight of the lungs also increases with the duration of the respiration; but appears to be less when respiration has continued more than one hour and less than twelve, than when it has lasted less than one hour.

9. The mean weight of the lungs in mature children who have

Table VI. The averages are 401, 638, 751, 1072.

Table VII. The averages are 911, 780, 918, 955, 726, 853; 1001, 1018, 1000.

Table VIII. In the male *read*, 911, 955, 1001, 1067, &c.; in the female 780, 726, 1018, 725, 980, 913, &c.; and in the third line *read* 918, 853, 1000, 985, 1001, 1128, &c.

Table IX. Under the head one day and less, *read* male 943, female 826, m. and f. 925.

Table X. For 1800, *read* 1661. In the first column of the line of averages, write 950, and in the last but two 874.

Table XI. For 1800 *read* 1661. The average values are 874, 918, 853, 1000.

P. 9, in text following table XI., for 38, *read* 44, and for 34, *read* 21.

Table XII. The averages are 361, 401; 625, 638; 686, 751; 874, 1000.

P. 54, 9 lines from bottom, for "exceeds," *read* "falls short of," for 75, write 64; for 1800, *read* 1661, for 37 *read* 21, for 38 *read* 44, and for 122, *read* 126.

Tables XIV. and XV. are connected and combined in table XXXII. of the present essay.

P. 60, for 1800, *read* 1661.

Table XX. The averages are 1 : 53, 1 : 63, and 1 : 57.

Table XXI. The averages are 1 : 40, 1 : 41; 1 : 41; 1 : 41, &c.—1 : 46

Table XXII. The averages are 1 : 41, 1 : 41, 1 : 46, 1 : 57.

Table XXVIII. The averages are 1 : 57, 1 : 51, &c. In the text *read* 57 for 56.

Table XXIX. The averages are 1st column, 1 : 41, 5th column, 1 : 46, 7th column, 1 : 57.

Many of the above corrections are merely repetitions, and some are typographical errors, which were unavoidable in so large a mass of figures.

lived one month or less exceeds the mean weight in mature still-born children, by somewhat less than one-fourth, the numbers being 574 and 1072.

10. The average and extreme values drawn from small numbers of facts differ widely from each other, and cannot be depended upon for medico-legal purposes.

11. The average values cannot be safely employed as standards of comparison, and the extreme values admit of very rare application.

12. If the absolute weight of the lungs is employed as a test of respiration, the value obtained in an individual case ought to be compared with the average or extreme numbers obtained for the same weight of body. (See Table XXXII.)

The following propositions have an important bearing on Ploucquet's Test.

1. The weight of the lungs both before and after respiration increases with the weight of the body; but the proportion which the lungs bear to the body decreases as the weight of the body increases.

2. For the same weight of body the weight of the lungs varies within wide limits, and *vice versa*, for the same weight of lungs the weight of the body varies within wide limits. This variation is more considerable after respiration than before it.

3. The weight of the body in still-born children is greater than in children born alive; the former exceeding the latter by nearly one-third.

4. The weight of the lungs is subject to much greater variation than that of the body.

5. The weight of the lungs is much greater in the male than in the female.

1. *Ploucquet's Test*.—The proportion which the weight of the lungs bears to that of the body, like the absolute weight of the lungs, varies within wide limits; the proportion in mature still-born children being as follows: greatest proportion, 1 : 24; least proportion 1 : 176; average proportion, 1 : 57.

2. The proportion in males and females respectively is as follows; greatest proportion, 1 : 24, 1 : 36; least proportion, 1 : 176, 1 : 119; average proportion, 1 : 53, 1 : 63.

3. In children who have survived their birth one month or less, the highest recorded proportion is 1 : 19; the lowest, 1 : 132; and the average, 1 : 38.

4. The proportion for males and females respectively at the same ages is as follows: greatest proportion, 1 : 19, 1 : 19; least proportion, 1 : 132, 1 : 96; average proportion, 1 : 35, 1 : 43.

5. The proportion which the lungs bear to the body increases

with the increasing perfection of the respiration, but is very slightly augmented by imperfect respiration.

6. The proportion also increases with the duration of the respiration, but appears to be less when respiration has continued more than one hour and less than twelve, than when it has lasted less than one hour.

7. The average proportion in mature children who have lived one month or less, exceeds that in mature still-born children ; the numbers being 1 : 57 before respiration ; and 1 : 38 after respiration.

8. The proportions calculated from a small number of facts differ widely from each other, and cannot be depended upon for medico-legal purposes.

9. The average proportions cannot be safely employed as standards of comparison, and the extreme values, though more to be depended on than the highest and lowest weight of the lungs, are of very limited application.

10. If the average or extreme proportions are employed as standards of comparison, the proportion obtained in any individual case must be compared with the average or extreme numbers calculated for the same weight of body. (See Table XXXII.)

The observations contained in the present essay lend strong confirmation to the unfavourable opinion expressed on a former occasion of the static lung tests as tests of respiration. Whether employed to distinguish respiration from non-respiration, or respiration from inflation, they are alike insufficient, except in cases of extremely rare occurrence, where we can make use of the extreme values. On the supposition that the question of inflation has no place, the static lung tests are as unnecessary as they are useless ; if we have proved that either respiration or inflation has taken place, they can only be employed with advantage in the extremely rare instances just alluded to, viz. where we can employ the extreme values. Hence, then, the proposition which concludes my first essay requires to be slightly modified, and will stand thus.

The static lung tests are utterly useless for all practical purposes, and ought not to be relied on in medico-legal inquiries, except in rare instances, where the extreme values can be employed.

