

difficultly, being deeply seated in the inguinal canal. Some slight venous oozing continued, but was easily arrested by cold and moderate pressure. He has been rather sick from the chloroform, and complains of griping pains in the abdomen. Pulse 84, full and soft. Ordered, solution of muriate of morphia, one drachm and a half; compound tincture of cardamoms, two drachms and a half; camphor mixture, three ounces and a half: half an ounce to be taken immediately, and to be repeated every night if required.—Evening: Pain and sickness gone; oozing from wounds has ceased; slept soundly for a few hours, and feels comfortable. Pulse 84.

Nov. 22nd.—Pains in the abdomen have returned with considerable nausea; his expression is anxious, and he complains of severe pain, increased on pressure in the right iliac region. No redness or appearance of tension about the edges of the wound. Suffers from thirst. Ordered to have a grain of the solid extract of opium in the form of pill immediately, and to have a sinapism applied over the epigastrium; the pill to be repeated if the vomiting persist. Pulse 92, soft. In the evening the nausea and abdominal pain became more urgent. Pulse 94, soft. Hot fomentations were applied over the abdomen, and an opiate enema administered.

On the 23rd, vomiting having continued all night, the sinapism was re-applied to the epigastrium, and bismuth in small doses given. The lower part of the wound has healed by primary union, but at the upper part there is a slight sanguinolent discharge. The edges of the incision somewhat erythematous. Sutures removed, and warm-water dressing applied over the upper parts.—Evening: Tongue dry and furred; pulse 108, sharp. Pain in the right iliac region more severe. No appearance of tension. Bowels freely opened. Urine passed in normal quantity, high coloured, and depositing lithates and purpurates.

24th.—Vomiting unabated. Severe griping pain in the abdomen, but not increased on pressure, except in the right iliac region. Tongue dry; thirst great; pulse 120, soft and weak. During the night, morphia and afterwards sal volatile with small quantities of brandy were given, but both seemed rather to increase the nausea. A blister was then applied over the epigastrium, and this morning he was ordered ice internally, and leeches to the painful spot in the right iliac region.—Evening: Vomiting not so severe, but the erythematous blush has extended around the edges of the wound. All the points of suture were removed, and a large poultice applied.

26th.—The edges of the wound at the upper part have a dark-grey, sloughy appearance, with a very offensive discharge. Nausea still continues, but less severe. Pulse 126, soft and weak. Pain in the abdomen more severe, and is now everywhere increased on pressure. Bowels moved freely by an oleaginous enema, and a large poultice applied over the abdomen, and ordered a pill, containing opium powder, a quarter of a grain; proto-chloride of mercury, two grains; every three hours. Stimulants cautiously administered.—Evening: No amendment. Pulse weaker and intermitting. To have wine and brandy more frequently.

On the 26th he was rapidly sinking, and died on the morning of the 27th.

Post-mortem appearances, twenty-five hours after death.—Body emaciated; of a pale-yellowish hue. Rigor mortis marked. An incision, seven inches in length, extended on the right side, from three inches above the pubis to the lower part of the scrotum; edges everted; of an ash-grey colour. On extending the incision in the direction of the spermatic cord, the cellular tissue around the inguinal canal was found extensively infiltrated and gangrenous, the sloughing reaching down to the peritoneum. A large clot of blood, partially broken down, was found to occupy the right iliac fossa, having evidently passed inwards through the internal ring, and been directed downwards by the peritoneum between the latter and the transversalis fascia. Opposite the internal ring, a small perforation of the peritoneum was found, barely admitting the point of the fore-finger; outline of the opening ragged, and here the parietal layer of the peritoneum was firmly adherent to the visceral by bands of recent lymph. On opening the cavity of the peritoneum, the results of intense peritonitis were apparent, the folds of the intestine being covered and agglutinated together by layers of recent lymph, which covered, more or less, all the abdominal viscera, except the stomach and spleen. Liver normal in size; rather pale. Kidney healthy. Mucous membrane of stomach simply congested. Lungs emphysematous; very dry. Heart small; weighed seven ounces. Valves healthy.

The tumour, which weighed six pounds and a half, and measured nine inches longitudinally and four and a half inches

transversely, was found to be an admirable specimen of cephaloma, containing numerous cysts filled with glairy matter, one of which, as already mentioned, had extended into the inguinal canal. The tumour, however, was found not to arise from the testicle, but from the membranes of the cord immediately above the epididymus, the testicle lying quite free below the tumour, surrounded by a quantity of serous fluid in the tunica vaginalis. Under the microscope, portions of the tumour presented large nucleated cells, containing two and occasionally three large nuclei.

Remarks.—I have given the details of this case at considerable length, from their manifold points of interest. In such scrotal tumours it is a very unusual occurrence to find the testicle itself free from disease, the morbid growth in this instance having been entirely confined to the membranes of the cord, and this confirms the accuracy of the statement made by the man himself, that until within three weeks from the date of his admission to the hospital the testicle could be felt separate from the tumour and below it; its apparent incorporation when he arrived here arose from the subsequent effusion of serum into the sac of the tunica vaginalis. The cause of the fatal result of the operation is, I believe, without an analogue in the records of surgery—viz., acute peritonitis, arising not as was at first supposed from extension of the inflammatory process from the wound, nor from injury to the peritoneum itself, in the necessarily very high division of the cord, but from hæmorrhage taking place internally, separating the connexions of the parietal peritoneum with the transversalis fascia, and forming a coagulum in the iliac fossa, which, partly from the process of disintegration, but mainly, I believe, from its mechanical pressure, induced ulceration and subsequent perforation of the peritoneum. The ragged appearance of the edges of the ulcerated point, the absence of blood in any shape in the cavity of the peritoneum, together with the course observed in the symptoms, are sufficient to overthrow the supposition of injury to the peritoneum having taken place during the operation—an accident which, however, as already detailed, had been most sedulously guarded against. I am aware that Mr. Curling and other writers on this subject have mentioned internal hæmorrhage as an occasional occurrence after this operation; but I do not know of any case in which this hæmorrhage was followed by ulceration and subsequent general inflammation of the peritoneum. The appearances revealed by dissection easily accounted for the symptoms observed, although the indications for treatment during life were by no means clear. Although there was constant pain above Poupart's ligament, no swelling or tension existed to indicate the accumulation of blood beneath, and leeches were not applied, lest the tendency to erysipelas along the edges of the wound should be aggravated by the irritation of the leech-bites. When the symptoms of peritonitis became general on the morning of the 25th, when perforation probably took place, bloodletting was contraindicated by the patient's extreme state of exhaustion, requiring, especially in the latter stage, the free use of stimulants. The obstinate and intractable vomiting was due at the commencement, in all probability, to the chloroform, and afterwards kept up from sympathy or irritation, as the peritoneal coat of the stomach does not seem to have participated in the general inflammation.

(To be continued.)

ON THE SUPPOSED INFLUENCE OF OFFENSIVE TRADES ON MORTALITY.

By JOHN SNOW, M.D.

THE science of public health, like other branches of knowledge, may be as much benefited by the removal of errors which stand in the way of its progress as by direct discovery; and it is with this conviction that I send for publication the result of an examination into a portion of the Registrar-General's very valuable Weekly Returns of Deaths in London. Whilst a number of eminent authors have for a long period attributed the generality of epidemic or zymotic diseases to special poisons passing in some way from one patient to another, an active section of the profession has attributed the greater number of these diseases to a variety of general causes, and in particular has asserted that they were occasioned, or greatly aggravated, by offensive gases proceeding from putrefying materials, even

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though these materials did not proceed in any way from sick persons.

An opportunity is now afforded of examining this question on, as I believe, a larger scale than previously. For the last eighteen months the Weekly Returns of the Registrar-General have contained the occupations of males aged 20 years and upwards whose deaths have been registered, and at the end of each quarter of a year the aggregate results have been given in a table. The causes of death are not contained in the table; but the diseases which offensive trades are presumed to promote are such as would increase the mortality, and in fact the mortality of persons in any occupation is the best criterion of its salubrity. The entire number of males aged 20 years and upwards in the metropolis at the last census was 632,545, and the number of deaths in this division of the population, in the year and a half just expired, was 22,889, being at the rate of 241 per annum in 10,000. The number of persons aged 20 years and upwards working and dealing in animal substances was 40,004 in 1851, and the number of deaths in the last eighteen months, 1210, being at the rate of 201 per annum in 10,000, or five-sixths as many as in the entire male population of 20 years and upwards. The greater number of persons working and dealing in animal substances are, however, occupied amongst silk, wool, and hair, which are in no way offensive; and I therefore thought it desirable to separate those trades which I believe to be really offensive, and I have included in the accompanying table all such occupations in which any death has occurred during the last six quarters. These occupations include 6943 persons, of whom 214 died, being at the rate of only 205 per annum in 10,000, which is greatly below the mortality of the whole male population of 20 years and upwards. There are some offensive trades in which no death occurred during the last eighteen months. If these trades had been included in the table, the mortality would have been shown to be lower than it appears. Butchers, poulterers, and fishmongers have sometimes been considered to follow offensive trades; but although these persons may occasionally, by a neglect of their duty and interest, be exposed to offensive gases, their proper occupations cannot be considered offensive, and I have therefore not included them in the table.

Occupations of Males, aged 20 and upwards.	Living in London at the Census of 1851.	Deaths in 18 Months, ending June 28, 1856.	Deaths per annum in 10,000 living in 1851.
Tripe dealer, dresser	194	9	
Tallow chandler ...	1239	42	226
Comb maker	398	16	
Soap boiler	338	6	
Music string maker	87	1	
Bone gatherer	34	3	
Bone worker	52	2	
Carrier	2649	79	195
Tanner	1314	35	177
Fellmonger	202	5	
Grease dealer	67	1	
Cats'-meat purveyor	60	3	
Skinner	170	5	
Parchment maker .	75	5	
Glue and size maker	64	2	
Total of offensive trades	6943	214	205
Total working and dealing in animal substances	40,004	1210	201
Total of males aged 20 and upwards	632,545	22,889	241

The Registrar-General has very properly remarked that "As the persons engaged in various callings are distributed in different proportions through several periods of life, and as the rate of mortality depends on age, an analysis of the ages of the living and dying must be made before deductions regarding the comparative salubrity of professions can be drawn with safety." In comparing the mortality of a single occupation, or any group of occupations, with that of the whole population, however, one acts as if all the persons in these occupations had entered them before the age of 20; and therefore any fallacy from the above cause tells against the occupations examined, and not in their favour. For instance, according to the figures

in the above table, the expectancy of life for the whole male population of London, at the age of 20 years, is 41 ⁵/₆ years, or, in other words, the average duration of life in those persons would be over 61 years; whilst in the persons engaged in the offensive trades enumerated in the above table, the expectancy of life at 20 would be over 48 ¹/₂ years, and the average duration of life over 68 ¹/₂ years; but if some persons enter these trades later in life than 20 years, then the expectancy of life at 20 is greater, and the average duration of life is greater in those who have arrived at 20. The mortality amongst the licenced victuallers and beershop-keepers has been at the rate of 373 per annum in 10,000 during the last eighteen months; but part of this high mortality is undoubtedly due to the circumstance that a great number of persons do not enter these trades till they are advanced much beyond twenty years of age. All these facts tend to show that if the above table does not express accurately the mortality of persons engaged in offensive trades, it errs by making the mortality appear greater, and not less, than it really is. I am quite aware that, as time rolls on, the returns of the Registrar-General will afford a greater body of facts regarding offensive occupations; but, during the six quarters that have already elapsed since these returns were commenced, the results have been pretty uniform, and are, in my opinion, sufficiently important to be commented on. The health of persons employed in any occupation is necessarily the best measure of the effects of any such occupation on the public health. As the gases given off from putrefying substances become diffused in the air, the quantity in a given space is inversely as the square of the distance from their source. Thus, a man working with his face one yard from offensive substances would breathe ten thousand times as much of the gases given off, as a person living a hundred yards from the spot. Currents of air would make a difference; but this would be the average proportion of the gases inhaled respectively by the two individuals. There are, moreover, so many causes which influence the health of a neighbourhood, that it would be almost impossible to judge from that alone of the effect of trades or occupations conducted in it. I of course attribute no benefit to offensive smells; and the reason why the persons employed in the callings I am treating of enjoy a greater longevity than the average, is probably because they are less exposed to privation and less addicted to intemperance than men following many other occupations, and because, as a general rule, they do not lead a sedentary in-door life. It is sometimes argued, that since the gases given off during putrefaction are capable of causing death when in a somewhat concentrated form, they must necessarily be injurious in the most minute quantity; but this by no means follows; for carbonic acid gas, which is a well-known poison when present in large quantity, is a natural constituent of the atmosphere; vapour of ammonia is sniffed without hesitation, and even sulphuretted hydrogen is absorbed, in considerable quantities, by the visitors at Harrogate and some other watering-places.

Cholera has not been present during the eighteen months for which the mortality in different occupations has been published; but there are certain facts which bear on the alleged influence of offensive trades on this disease. A great number of skin yards, bone-boiling establishments, and other offensive factories are situated in that part of Lambeth which extends by the river side from Westminster-bridge to Vauxhall-bridge, and constitutes the sub-district called Lambeth Church, 1st part. This part of Lambeth contains also many of the other conditions which are supposed to, or which really, promote the prevalence of cholera. It is crowded with a poor population, wherever the ground is not occupied with the factories above mentioned, and it lies by the river-side, at an elevation of only two feet above Trinity high-water mark; yet the deaths from cholera in 1854 were only 29 to each 10,000 inhabitants, whilst in London at large they were 45 in 10,000; in the sub-district of Kennington, 1st part, less densely inhabited, they were 126, and in Clapham 103 in 10,000, the latter being a genteel, thinly inhabited sub-district, at the elevation of 21 feet. Again, the sub-district of Saffron-hill, with the slaughter-houses, knackers' yards, and catgut factories of Sharp's-alley on its eastern boundary, and the Fleet-ditch, at that time uncovered, flowing through it, suffered in 1854 a mortality from cholera of only 5 in 10,000; being one-ninth of that of the metropolis generally, and one-twelfth of that of the Belgrave sub-district, where the mortality was 60 in 10,000. These circumstances might be thought to prove a little too much, were it not that the prevalence of cholera is influenced by a variety of circumstances, and in London very much by the nature of the water supply; for, in the short but severe epidemic of 1854, the chief medium of its propagation in the metropolis was water, containing what-

ever passed down the sewers from previous patients. The sub-district of Bermondsey, called the Leather-market, which contains a number of factories for skin-dressing, suffered, in 1854, exactly the same high mortality as the other five sub-districts in the South division of London, which, like it, were supplied exclusively with the impure water of the Southwark and Vauxhall Company. The conclusion to be drawn from all these facts is, that the vicinity of offensive factories leaves the cholera to pursue the same course that it would do in their absence.

Sackville-street, July, 1856.

ON
THE PATHOLOGY AND TREATMENT OF
UTERINE DEVIATIONS.

By E. J. TILT, M.D.,

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SYMPTOMS, DIAGNOSIS, AND PROGRESS OF UTERINE
DEVIATIONS.

The latest works on uterine deviations include a very long account of symptoms. It seems as if the authors had ransacked works on uterine pathology to discover all the possible symptoms of the various forms of uterine disease. Dyspepsia, intercostal neuralgia, partial paralysis, hysteria, have all furnished symptoms which have been adopted as the symptoms of uterine deviations; and mental derangement has been accounted for by a twist in the womb. If writers have done so, it is because there are no proper symptoms of uterine deviations; and in their anxiety to enlarge their subject, they have been led to refer to uterine displacements all the symptoms of the uterine diseases by which they are often complicated.

In asserting that there are no pathognomonic symptoms of uterine deviations, I only assert for uterine deformities what is admitted for spinal and all other deformities of the human frame. The symptoms most complained of by women are sensations of uneasiness, or weight, at the lower part of the body, with bearing-down sensations towards the anus. There may also be pains in the back, in the inguinal regions, or in the inner part of the thighs. These pains are much increased by walking: over-walking renders them intolerable, while the reclining posture relieves, and often lulls them completely. Partial paralysis of the lower limbs, and all the nervous symptoms produced by uterine diseases, are often noticed. Constipation and urinary disturbance may also exist. Disturbance of the menstrual function is also not uncommon. The discharge is either too abundant, too scanty, or too painful. These symptoms are more constant in extensive retroversion, and occur now and then in cases of uterine inflexion, which are in general harmless, as stated long ago by Velpeau. The pendant portion of the womb becomes irritated from some unknown cause, then the return of blood becomes more and more difficult; and, with this state of congestion, menstruation becomes morbid. It will be easily understood that the menstrual process may occasion all the suffering of deviations, and I have met with cases where the deviation was never painful, except at that time. In asserting that sterility is frequently observed when the womb is deviated, I think that writers have rather expressed a preconceived notion than real facts. This is a fit object for statistical inquiry.

Such are the symptoms of uterine deviations; but exactly the same symptoms often constitute those of early pregnancy, of miscarriage, of many uterine affections; or even some women will present these symptoms without it being possible to trace them to any structural change of the womb, whose nerves are alone affected, as in uterine neuralgia or hystericalgia. At the same time, it is now admitted by almost all authorities, that the womb may be bent in various ways, and anteverted or retroverted to a considerable extent without determining any symptoms. This I daily find to be the case; and in lately discussing the subject with some of the Paris physicians, who, like Dr. Bernutz, at the Hôpital de l'Ourcine, have vast oppor-

tunities of observation, I found that they also had been led to the conclusion that uterine misplacements gave rise to no suffering, unless they became complicated by some uterine affection. In Germany the belief in the innocuity of uterine deviations is so gaining ground that it has been actually proposed to induce retroflexion of the womb by means of the uterine sound in order to cure prolapsus.

There are, then, cases of uncomplicated uterine deviation, and they are of very frequent occurrence, because the final destination of the womb necessitated such arrangements as would ensure to it the greatest possible latitude of movement in the midst of organs which receive support and a healthful stimulus from such movements—organs so constructed as not to feel pain, or to have their functions disturbed, by some slight alteration in the shape or position of the womb. Uncomplicated deviations are only accidentally discovered; the complicated come to us, and are variously examined, interpreted, and treated by medical men. An idea of the complications most frequently met with may be gathered from the statistics published by Dr. Saussier, in a French journal. In 102 cases of uterine deviations he found them complicated by

Ulceration of the os uteri in	67 cases.
Engorgement of the body of the womb in	53 "
" " neck of the womb in	39 "
" " broad ligaments in	68 "
Extreme uterine sensibility in	91 "
Uterine catarrh in	71 "

As I believe that the symptoms accompanying uterine deviations express some complicating uterine disease, it would be out of place to treat of them in detail, with the exception of some which are more frequently complained of. The sensation of a weight, and forcing down towards the perineum is often complained of: it is not pain, and still it is often said to be more distressing than pain. Theory tells us that this sensation should be most felt in cases of confirmed prolapsus of the womb; but we find that when the womb is visible between the thighs, women complain greatly of exhaustion, incapacity for exertion, but they do not complain of bearing-down pains, and are often able to move about. Theory likewise tells us that fibrous tumours of the womb, by their pressure on the rectum, ought to produce the bearing-down sensations; but very frequently this is not the case. The bladder and rectum are often forcibly pressed without the patient experiencing any great inconvenience; or, in other words, the sensations of weight are not experienced when the womb is forced through the body, or when it is pressed upon by solid tumours. Women suffering from uterine catarrh, from erosions, from ulceration of the neck of the womb do not in general complain of forcing down pains. Women in excellent health often suffer much every month from forcing pains just before the menstrual discharge, and during the first day or two of its flow. These forcing pains are signs of the ovarian nismus compelling the womb to rid itself of blood, and represent the stronger pains by which the womb is forced to rid itself of the produce of conception. Women suffering from habitual congestion and enlargement of some portion of the womb often complain of the sensation of weight. A few minutes after a patient affected with retroversion of the womb has left her bed she will sometimes complain of bearing-down pains, and on examination you will not find the womb more retroverted than when the patient was previously examined in bed; and her sufferings last until she again lies down. Such being the facts relating to this symptom, how is it to be explained?

It is easy to say that bearing-down pains are caused by the dragging of the ligaments of the womb, but as the forcing pains are often absent in prolapsus of the womb, when the uterine ligaments are most dragged, this explanation falls to the ground. In women, at the approach of menstruation, in those at least who are affected with chronic congestion of the womb, the forcing sensations are in direct proportion to the determination of blood to the womb. When the forcing sensations occur in women affected with uterine deviations on their assuming the erect posture, they are probably caused by a change in the hydrostatic condition of the womb, and by the over-distension of its bloodvessels deprived of valves.

The continued pelvic pains when the retroversion is considerable may be explained by the stretching of the peritoneum, and by the long-continued strain on the broad ligament. The ovaries are often more or less irritated, in cases of retroversion, by the strain on the broad ligaments, and by some obstruction in their returning circulation. Dr. Rigby has pointed out ovaritis as a frequent result of the long-continued pressure on the left ovary. Dr. Saussier found engorgement of the broad ligaments