

and for three weeks the patient was able to go about his work. On April 25th he had a recurrence of all the bad symptoms above described, but finding that the slightest exertion was attended with a return of suffering he was advised to undergo castration of the undescended testicle. Accordingly on April 29th he was placed under chloroform by Dr. William Coulter. I cut down upon the testicle, doing the bulk of the dissection with the handle of my scalpel. The main vessels leading to the tumour were ligated and the mass was cut off above the ligature. All bleeding points were quickly secured by pressure forceps so that the patient did not lose more than half an ounce of blood during the operation. The wound cavity was insufflated with iodoform and boric acid, a drainage-tube was inserted, and the incision was closed by horsehair sutures. Boric gauze dressings were applied and changed on the second day, when also the tube was removed. The subsequent progress was most satisfactory. During the operation I had the assistance of Mr. Arnold Caddy.

Remarks.—This case is interesting from the diagnostic value of the reflex testicular vomiting as the characteristic sign of the disease present. On cutting into the testicle after removal it was found to have undergone purulent inflammatory change, and as the structure of the mass seemed very much altered pathologically it was sent to Surgeon-Major J. F. Evans, the pathologist to the Calcutta Medical College, who reported on it as follows: "I find the tumour which you sent me on April 29th to be a round-celled sarcoma, with practically no trace remaining of the glandular structure of the organ in which the new growth arose. There is some evidence of inflammatory change and of hydrocele having occurred prior to the formation of the growth."

Calcutta.

RE-BREATHED AIR AS A POISON *PER SE*.

By JOHN HARTLEY, F.R.C.S. ENG.,

SURGEON TO THE DARLINGTON HOSPITAL; LATE SENIOR DEMONSTRATOR OF ANATOMY, MIDDLESEX HOSPITAL MEDICAL SCHOOL.

THE noble work which has been, and is still to be, done by the bacteriologist can never be over-valued or over-applauded, but I think our attention is apt to be so absorbingly fixed on the ever-increasing cloud of organisms that we are somewhat in danger of losing sight of the effects of those gaseous poisons which are so prone to accumulate very literally under our noses in the present state of "civilisation" and overcrowding. The "Fresh Air Treatment of Consumption," which has been so lately hall-marked in a manner absolutely unprecedented, appears to be made up of three essential factors: (1) the discontinuance of the supply of bacilli from without; (2) the supply of an abundance of nutritive material to the tissues; and (3) the supply of an abundance of fresh air uncontaminated by the products of respiration. This seems to mean that the tissues if not too enfeebled may be trusted to deal with the bacilli already present if their metabolism is kept going at high pressure. Fresh air is now the "official" remedy in the treatment of tubercle. Why is it so ignored in the case of other diseases? We are told that the expired air of the phthisical patient contains no bacilli, so that apparently re-breathed air is not forbidden to him on account of these. Does the pneumonic or bronchitic breathe out bacilli? If so he would seem to require airing more than the phthisical patient; and if he does not, what then? A rise of temperature or the presence of bronchitis or of a patch of pneumonia in the phthisical patient is, I am told, no bar to his being officially aired. Has the pneumonic or bronchitic no need of special ventilation because his microbe is of a different breed?

Within the last three years or so I have known a severe case of double pneumonia (probably influenzal) treated by a specialist, without protest, in an unventilated little room with closed door and window and no chimney but with a paraffin lamp burning day and night to keep up the temperature. When I remember this and contrast the treatment of pneumonia by one eminent authority with the treatment officially recommended for phthisis by the other eminent authorities with the weight of the Colleges at their back, am I, a poor, unscientific, general practitioner, to be blamed if

I find it, like Dickens's millband, "awe a muddle"? And it is with the greatest humility that I venture to suggest it is possible when the air was created that it was intended not only for phthisical patients or patients suffering from pneumonia but for *all*—diseased and healthy alike—and that it is still the natural medium in which the poisonous products of tissue metabolism excreted by the lungs are further broken down and rendered harmless. With even more humility I suggest that it is a work of supererogation to heat air twice over—since everyone has, I suppose, a fairly good heating apparatus inside; that, in fact, so long as the patient's surface is kept warm it is of no consequence whatever whether the air he breathes, provided it be fresh, is at freezing point or the traditional 65°.

Dr. A. Ransome has done great service not only by his onslaught on "air sewage" but also by his coinage of the term. For a thoroughly good opprobrious epithet resembles a good wall-poster in its power of arresting and enchainning the attention of the many. It was long ago pointed out that certain constituents of expired air are intensely powerful nerve poisons. Whether sewer gas has been actually proved to contain similar toxins I am sorry to say I do not know, but having regard to its largely similar origin from decomposing proteid, though coming through a different channel, one can hardly doubt that it is so. These considerations should surely make us look on re-breathed air and sewer gas, not as mere carriers of accidental poisons, such as influenza and pneumonia and the like, but as *poisons per se*, and I wish to be allowed to record a few very imperfect observations made by myself during some years past chiefly on the subject of re-breathed air, with certain inferences which I think tend, however feebly and imperfectly, to show that the poisons we expire have *per se* very definite effects on tissue metabolism and need not a mere perfumatory admixture with fresh air but very large and very continuous dilution before they are rendered innocuous—that is to say, innocuous to *all*; for while some persons appear to be almost immune others seem intensely susceptible.

The first observation I will allude to was made in the autumn of 1896, in cool weather. I had to take a long night journey by rail after a long and hard day's work. The train was full and the compartment I entered was close, so, as I was tired and fagged, I sat in the corridor by an open window, well rugged up, throughout the journey. The compartment was completely shut off from the corridor by a glass door and windows, through which I could freely inspect its occupants. Two remarkably fresh-complexioned, wholesome-looking young fellows got into the compartment at York. They formed a remarkable contrast to the pallid and fagged-looking travellers already there. The windows and ventilators were carefully closed, and the new-comers, with the rest, settled off to sleep and slept soundly for nearly four hours, with the exception of a few minutes' interval at Grantham. When aroused on nearing London they, like the other occupants of the compartment, were haggard and leaden-hued, their fresh colour was entirely gone, and they looked and moved as if exhausted. I examined my own face in the lavatory mirror at the beginning and end of the journey and could see but little alteration in my colour, if anything it was rather improved by the end of the journey, and though I had slept little I was decidedly less tired than when I started. There had been but little smoking in the compartment, every one had slept too soundly. The gas lamp, I noticed, was so fitted that the products of combustion escaped directly into the outer air; the hot-air apparatus had not been started. It seemed to me that the change in the appearance of the two young fellows must be due entirely to the effects of re-breathed air. The inferences seemed to be these: the leaden grey hue was a mixture of pallor and blueness, pallor owing to contracted arterioles, blueness due to dilated venules, whether from peripheral vaso-motor changes primarily or from central changes beginning in the heart or lungs I cannot say, but I am inclined to believe peripheral, or why do so many people get clammy feet and hands in a close room? Carbonic acid may have had something to do with it—I think not much. The colour was more pale than blue—i.e., grey; and a similar though less marked change may be seen in the faces of some of the members of most congregations any Sunday towards the end of the service even though the air space is large enough to put carbonic acid poisoning out of court.

Dr. Lauder Brunton a good many years ago recorded a

most interesting experiment designed to show the antagonistic effects of muscarin and atropin. The thorax of a curarised dog was opened and artificial respiration started; a small quantity of muscarin was then injected with the result that the right heart and lungs became greatly swollen and engorged while the left side of the heart became almost empty. Atropin quickly caused both sides to return to their usual size and the lungs returned to their usual colour. I believe no mention was made of the state of the peripheral circulation; but I have often thought that re-breathed air must contain a poison similar in its effects on the peripheral circulation to those recorded by Dr. Brunton of muscarin on the central.

Some years ago a patient of mine, who certainly had all the surroundings which can render a man liable to sewer-gas poisoning, was seized with acute illness. He lay on his back with limbs outspread, a leaden-coloured face and clammy skin, with sighing respirations, a small, quick, feeble pulse, great restlessness, and complaining of "awful" flatulence, begging me to relieve the "awful" distension of his abdomen. (These were his expressions.) There was *no* distension and *no* tympanites. His symptoms were slowly relieved by large doses of atropin subcutaneously and next day he was better, his colour was natural, and the sense of distension was gone, but his abdomen was very tympanitic. I thought the sense of distension complained of was due to overfulness of the abdominal veins, not to distension of gut—that he was, in fact, bleeding almost to death into his abdominal veins. When somewhat better he went to Norway and kept well there except for two slight attacks. The first occurred at a primitive inn where the contents of a cesspool in the closed courtyard were carried through the house in buckets on the night before the onset of his illness; the second attack, a very slight one, occurred on a return visit to the same inn. This is probably an unjustifiable digression, but the effects of sewer-gas on myself are, so far as sensations go, almost identical with those of re-breathed air.

The second case occurred early in 1897. I was asked to see a woman, aged about forty-eight years, who had been treated in a neighbouring town for many weeks for bronchitis and asthma following influenza. She had relapsed about a week when I first saw her. She was then sitting up in bed; her face was leaden-coloured, her skin was clammy and sweating, with a feeble, quick pulse, and the heart sounds were indistinguishable owing to wheezing; there was some crepitation at the bases. The temperature was about 101° F. The weather was cold, but after wrapping her up, with a hot bottle to her feet, the window was well opened. Her colour improved in a few minutes and the sweating ceased soon after. But it and the blueness returned if the window was shut for any time. It was directed to be kept open night and day, and I could see from my house that this order was carried out. Although on one night the thermometer showed 14° F. of frost the chest was clear of noises and she was convalescent in eight days. If fresh air needs warming she ought to have died.

The next case was that of a slight but healthy-looking young fellow, aged twenty-two years, who was admitted into the Darlington Hospital under my care in September, 1897, suffering from a strangulated congenital hernia. An operation for radical cure was performed in the usual way. The hospital was then full, and the ward in which the patient lay was in my opinion decidedly stuffy, though in other respects its sanitation was excellent. The wound gave no trouble, but the patient became very restless, with grey face, foul tongue, and irregular temperature. Within forty-eight hours retention of urine came on, necessitating the use of the catheter several times a day. Five days after operation, the patient's condition remaining unimproved, he was removed to an empty room with wide open windows. Within twenty-four hours the temperature had become normal and it remained so, and the catheter was required only once, a few hours after his removal. The wound healed without trouble and he remained in this room a fortnight, looking, eating, and sleeping well. He was then moved into the general ward, which was certainly in as good a sanitary condition as those of any London hospital. Within twenty-four hours he became restless and grey, his temperature rose, and he again required the catheter regularly. The need for this again ceased immediately on his removal back to the old room with the open windows; and though he went through a slight attack of influenza, which was then rife in the town and hospital, the old symptoms soon vanished and did not recur; but we kept him in the airy room till his discharge.

If, as I believe will be found to be the case, the poison of re-breathed air tends to cause contraction of arterioles and dilatation of venules, it is easy to understand how diminished arterial supply and sluggish venous outflow must hamper metabolism and render tissue change slow and imperfect. This alone seems to me to be a strong reason for giving operation cases all the fresh air obtainable. The greatest care must of course be taken to keep the surface and extremities warm. The common occurrence of faintness (usually ascribed to "the heat") in crowded buildings or even in crowded streets would seem to show the probability that expired air contains a poison having a powerful effect on the cardio-inhibitory function of the vagus.

And what about exhaustion? Why do most men feel so tired after an afternoon's work in a crowded out-patient room. Why is a long journey in a full railway carriage, even with a comfortable seat, so exhausting to many people? Personally an hour or two in a full carriage with the windows shut will give me numbness in my feet and legs and knock me up for the day, while a railway journey in an empty carriage with open windows does not affect me at all. But most people will be willing to admit that any kind of crowd is tiring. And it is to me difficult to resist the impression that an overdose of waste products, whether of one's own or other people's, must generally interfere with the metabolism of nerve tissue. Can constant exposure to re-breathed air (or sewer gas) be one of the causes of the unexplained neuroses and non-specific nerve-degenerations? I feel convinced that infants kept in close rooms are peculiarly liable to convulsions, and I believe that many cases of neuralgia are due to this cause. Paralysis agitans strikes me as being another possible example.

Besides all this I am inclined to believe that one of the essential causes of "idiopathic" anæmia will be found among the volatile products of tissue metabolism, and that expired air, and probably sewer gas also, contains something which when inspired either hinders the evolution of the red corpuscle or breaks up its hæmoglobin. Why are the majority of the members of the nursing and resident staffs of the London hospitals anæmic? As a rule they are not ill-fed or greatly over-worked. The hospitals are well lighted and well warmed, foul wounds are things of the past, sanitation is excellent, except in one particular, and it is this—within so many persons under one roof and with the ordinary means of ventilation at present in vogue it is manifestly impossible to get rid of the products of respiration so rapidly and continuously as to prevent their being re-inspired. Why do hospital patients, adults and children alike, improve so rapidly in colour and vitality when able in the summer to lie all day in the garden? What other condition is common to so many pale people of all classes? Take for instance the city clerk, the Lancashire millhand, the overfed footman, the underfed lodging-house drudge, the coffee-house waitress, the wealthy old lady with a terror of "draughts,"—all these and many and many another live almost entirely in re-breathed air. The pallor of the drudge or the waitress is certainly not due to a sedentary occupation. The fact that indoor occupations are far commoner amongst girls than youths is perhaps suggestive, so far as it goes, as partly accounting for the greater frequency of anæmia in the former. What the hæmoglobin-destroying poison may be, should it ever be proved to exist, whether one or more of the innumerable sulphur compounds, I will not attempt to guess. Why some persons seem immune, why some of those affected become deeply and variously pigmented and others slightly or not at all is to me inexplicable.

Women as they grow older are apt to live much indoors. I believe the fat, flabby, paunchy woman, whether purple or pale, with feeble, irritable heart and "inadequate" kidneys, is usually the victim of re-breathed air. I think it will turn out that many feeble hearts and inadequate kidneys, without any definite history of antecedent acute disease, may at least in part own this cause. It seems as if both anabolism and katabolism had been hindered, and inert fat formed and stored, at the expense of active protoplasm. Is it possible that unexplained and fatal "suffocative breast-pang" may be due to a muscarin-like action of this poison on a degenerate heart?

Quite lately I have had as a patient a clerk in the service of a railway company, who works in a very close office immediately under the roof of a large station. He suffers much from flatulence and constipation during the week, but he assures me he has no trouble from either when he visits his parents' home in the country for the week end. A "close" room will infallibly give me abdominal distension

and borborygmi within half an hour and I am inclined to think the purity of the air breathed by the dyspeptic quite as important as his regimen or his teeth. It must, I think, sooner or later be recognised that many of the increasing ills which it has been the fashion to charge on the "hurry and brain fag" incidental to a high state of civilisation and a large population are in reality due to the greater contamination of the air we breathe by the waste products of that population, and that toxins excreted by the lungs will in time take high rank among these as both potent and insidious. If this should come to pass the present ideas of anent ventilation must be abandoned as utterly futile, and the need will be felt, not of letting a little air in, but of rushing waste products out, a vastly different matter, for which the Tobin's tube and tiny so-called ventilator are hopelessly inadequate. Our methods of ventilation generally must be more approximated to those now approved by the Colleges for the airing of the phthisical patient; and, above all things, we must sleep in a "thorough draught" of pure air. The "surface ventilator" for sewers—that cheap and effective fouler of our street air—must surely also go.

It would seem that any departure from health is more and more to be recognised as due to some definite cause—mostly to some definite poison—which poison (or its producer) has most commonly been introduced from without; in fact, with some very obvious qualification and reservation, a paraphrase of the first law of motion might almost stand as a first law of medicine—viz., the body in health will continue in health unless acted on by some external poison. Whether or no any fresh grain of truth may have been turned up by my ignorant groping, of this I am certain, that the subject of re-breathed air in its relation to disease affords a grand field for skilled and accurate scientific research.

Darlington.

A CASE OF LARGE CYSTIC ABDOMINAL TUMOUR PROBABLY OF THE BROAD LIGAMENT OR OVARY OF UNUSUAL DURATION AND SLOW GROWTH.

By J. H. DAUBER, M.A., M.B., B.CH. OXON., M.R.C.P. LOND.,

ASSISTANT PHYSICIAN TO THE HOSPITAL FOR WOMEN, SOHO.

I AM not acquainted with any recorded case of ovarian or broad ligament cyst of large size with a history of over fifty years' duration, and as the following case appears to me to be authentic and genuine it may be of some interest to place it on record.

I saw the patient on two separate occasions in my outpatient department at the Hospital for Women, Soho, with an interval of several months between them—the second time being in February, 1897. On both occasions careful notes of her statements were taken and she was subjected to a somewhat severe cross-examination. She was frank, candid, and intelligent, and made no statements of a contradictory and inconsistent character. She gave her age as seventy years, and was a thin, small, and shrunken woman. Her leanness was less noticeable when she was dressed, because of the distension of the abdomen; moreover, she wore a large amount of padding over the chest, as she explained, "to correspond with her stomach." Upon examination the abdomen was seen to be completely occupied by a large tumour extending from the pubes to the ensiform cartilage and bulging on either side as she lay on her back beyond her body. The tumour was not very tense; it was uniformly dull on percussion; the flanks were resonant and the area of dullness was not altered by change of position. Fluctuation was easily obtainable wherever the dullness extended. The girth at the umbilicus was 43 in. *Per vaginam*, senile atrophic changes were well marked. The uterus was small, low, and moveable.

The history she gave was that as a girl as far back as she could remember she was always "high-stomached," but that at fourteen or fifteen years of age this became so noticeable that people commented upon it, so much so, indeed, that her father—her mother being confined to bed at the time—took her with him to consult Mr. Cumplin of Charterhouse-street, who after examining the abdomen called her father aside

and informed him that he considered she was pregnant. Her father was doubtful and said: "Well, be that as it may, she shall not leave my roof till it is over." The tumour continued to increase if at all very slowly, and at the end of about ten months her father took her to see Mr. Cumplin again, who then admitted he had been in error and advised the patient to consult Dr. Frederick Bird of Brook-street. Her mother took her to him and the patient was very positive that she was not more than fifteen years of age—certainly not more than sixteen—at the time of this visit. Dr. Bird pronounced the swelling to be due to an ovarian tumour. He seems to have taken much interest in the case and the patient speaks most gratefully of his kindness throughout a long series of years. She invariably declined all operative measures, even tapping, when suggested to her, though from time to time Dr. Bird and Sir Spencer Wells, who saw her with him on more than one occasion, pressed her to undergo operation. For a time she was in Dr. Bird's private hospital in Carey-street, Lincoln's Inn, which, according to the patient's statement, he carried on with five other medical men "each having one bed and paying the cost of it."

The patient was twice married, first in 1843, when she says she was nineteen or twenty years of age—but either age would make her over seventy years old now. Her first husband died when she was six months pregnant with her first child, about two years after marriage. She was married again in 1849, and this time to Dr. Bird's coachman, and so remained under Dr. Bird's observation for many years. She had four children, one—which was posthumous—by her first husband; three by her second. The first child was a boy; it was a "crossbirth" and stillborn. Dr. Jameson of Finsbury-pavement attended her. The second child (a girl) was born in 1850; this was also a "crossbirth" and stillborn. A "gentleman from South Audley-street," whose name she cannot recall, attended her with this child. At the third confinement Dr. Bird and Dr. Merriman of Grosvenor-street were present and they succeeded in delivering her of a live child (a girl) who lived to the age of thirty-two years. Dr. Bird, with his friend Dr. Morgan, again assisted her at the birth of the fourth child (a boy) who survived to his fourth year. All the labours were very difficult.

I think from these detailed statements, which to me bear the impress of veracity, there can be but little doubt that her present large tumour was also of considerable size at the age of fifteen years, that it subsequently complicated all her confinements and that it excited much interest in the minds of Dr. Bird, Sir Spencer Wells and some other gynaecologists at a time when ovariectomy had not become an established operation, but when the treatment by tapping was gradually being abandoned in favour of the radical cure. I may add that the patient declines all operative treatment at the present time as persistently as she has done all her life.

Charles-street, Berkeley-square, W.

A CASE OF LAPARO-NEPHRECTOMY IN AN INFANT SIXTEEN MONTHS OLD.

By J. A. CAMPBELL KYNOCH, M.B., C.M. EDIN.

THE question of operative treatment in cases of malignant tumours of the kidney in young children is one on which there is still difference of opinion. The operation has not received much favour in this country. Thus Bland Sutton states that nephrectomy in such cases is absolutely unavailing (1) on account of the frequent immediate fatal results and (2) the almost certain early recurrence of the disease in those cases that recover from the operation. He tabulates 21 cases of operation for renal sarcoma in children under six years of age with the following results: 12 died from the operation, and of the 9 that recovered all died from recurrence within one year. The late Mr. Greig Smith held that the operation was only justifiable (1) if the tumour was small; (2) if the general condition of the patient was satisfactory; and (3) if the patient was at least four years of age. Keith states that in young children it is doubtful whether it is ever right to operate. In Germany the operation is much more frequently undertaken, except in those cases in which