

patients came under my own observation, that the occurrence of the indurated sore in the female was rare indeed, while constitutional consequences were constant. This observation was confirmed by testings made, and statistics taken, where soft sores capable of inoculation, and often accompanied by buboes, were nevertheless followed by constitutional signs. The records of the various Lock Hospitals in this country prove this also.

"Any and every form of sore, whether with or without induration, may, in the female, be followed by constitutional signs." So says the surgeon to the Curragh Lock Hospital, and it is idle to suppose that he is incapable of forming a judgment. The surgeon to the Cork Lock Hospital, also of great experience, says: "Practically, I know no symptom which will enable me positively to pronounce on the contagiousness of a given sore in the female."

I am sufficiently patriotic to suppose that these surgeons, and many others at home, are as competent to observe, and are as truthful in their records, as those on the Continent; and, when I find these results corresponding with what I see every day both in male and female patients, there is no alternative left but to believe that what is seen abroad does not concern the same stamp of the disease as here; some modifying influence must exist. I believe it to be the fact that syphilis is capable of modification by descent, and that the vast majority of primary sores are not derived from sores, but from the inoculated discharges of constitutionally infected women. As Mr. Oliver remarks, "soldiers' women" have usually fallen to the lowest order, and have been saturated with the syphilitic taint, the local evidences of which have long disappeared; they are, nevertheless, capable of giving a sore or sores which have by no means the aspect of the typical chancre; I have over and over again tested this property of inoculability, and produced a sore on the patient's self, or on others also syphilitic, which, though typifying the chancre or soft sore aspect and conduct, must have carried with it the virus of its parent. As these inoculated sores produced the same results as inoculations from the recognised soft sore, we may fairly assume the exciting cause was the same. All agree that the soft sore is inoculable on syphilitic patients, and pursues a certain course; but, by direct testing, I have shown that, though no sore exists, the discharge of a syphilitic female produces on syphilitics the sore identical with that produced from the soft sore or chancre; hence we have indicated the source, and a very abundant one, of the infection of soldiers alluded to, under the aspect of the soft sore or chancre, followed by constitutional signs usually of a milder type, fortunately, and without constitutional cachexia.

Some of the testings I have made are very remarkable, and point to this source of contamination with much certainty. The following is a good illustration, as proof of the inoculative power of the discharge of constitutionally infected women, such as are admitted constantly to the wards of the hospital.

A very fine ruddy complexioned girl, aged 20, had been some months previously under treatment for intense syphilis, with ulcers of a rupious character. On admission (July 6th), she was suffering from a reopening of an extensive ulceration of the nates, and from severe syphilitic pains. She also had an abundant vaginal discharge. No primary sore of any kind was to be discovered.

From a single drop of the discharge, the following inoculations were made, each with fresh and never previously used pins' points.

July 7th. On herself; produced an intense sore, which lasted for several weeks.—On Carr, on whom inoculation from a simple discharge of a non-syphilitic woman had already failed; produced a sore which lasted several weeks.—On A. Kavanagh; produced a smart sore.—On J. Byrne; produced a regular chancre sore.—On Julia Carroll; produced a regular chancre sore.—On H. Conroy; produced a regular chancre sore.

Nothing much more active as a virus could be desired, yet the patient had no primary sore whatever; and the manner in which the inoculations were performed, and then covered with watch-glasses, rendered any extra virus incapable of being admitted. In this instance, it might be said that the patient carried into hospital the virus which was capable of producing these inoculations. Such a possibility as this I, however, disposed of by another observation, which I made thus, as proof of the inoculative power of the vaginal discharge, and of its giving origin to a pustular sore, capable of reproduction in its kind.

M. White, aged 20, with tumid labium, patches, vaginal discharge, no sore to be seen, indurated inguinal glands, alopecia, pains, and cachexia—admitted June 1st. The following inoculations were performed:

June 22nd. With M. Burke's discharge; failed.

June 23rd. With Conroy's discharge; failed.

June 25th. With Eustace's discharge; failed.

June 27th. With her own discharge; succeeded.—From her discharge

on M. Lewis; succeeded.—From her discharge on A. Healy; succeeded.—From her discharge on M. Carthy; succeeded.—From her discharge on M. Burke; succeeded.—From her discharge on C. O'Donohoc; failed.

June 29th. From her discharge on A. Healy; succeeded.—From the auto-inoculation from her own vaginal discharge of the 27th on M. A. Carroll; succeeded, and produced a smart sore.—From her discharge on J. Warren; succeeded.—From her discharge on J. Byrne; succeeded.

June 30th. From her discharge on Bayley; succeeded, and produced a sore lasting for several weeks.—From her discharge on M. Eustace in two places; succeeded.

July 2nd. From Lewis's pustular sore (produced by the inoculation of vaginal discharge of June 27th) on Leonard; succeeded.

[To be continued.]

THE PATHOLOGY AND TREATMENT OF SPASMODIC ASTHMA.*

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SPASMODIC asthma, in its various degrees and complications, comes across the path of all of us; and, although it is happily not a fatal disease, yet it is one which gives rise to a large amount of suffering, and tends to cripple many active-minded and otherwise healthy people. It is a complaint, too, which has not received as careful a study at the hands of medical men as it deserves; and it must be confessed that it happens not rarely that the patient knows about as much concerning the way of treating his complaint as the practitioner who is attending him. It is difficult to avoid this, where idiosyncrasy and multiple causation exercise so large an influence; but it nevertheless behoves us to study with unswerving perseverance the leading features of every case, and to aim at arriving at a classification which may in future prove a satisfactory basis for successful treatment. Now, in order to get a just idea of the pathology of spasmodic asthma, we should contemplate it in its purest form, unalloyed by bronchitis, its occasional accompaniment, uncomplicated by emphysema, its frequent result. Such an example presents itself in cases arising from inhalation of dust or certain strong-smelling particles, such as ipecacuanha, where the attack passes off on removal from the exciting cause. A person with healthy lungs, and free from any suspicion of cough or short breath, inhales the dust of a threshing-floor, experiences a sense of oppression in his chest, and finds it difficult—aye, almost impossible—to draw a deep breath; he is aware of a whistling sound accompanying each act of respiration, and speedily attempts to withdraw from the exciting cause. If he do so, his breathing will soon become easy, and the spasm will leave no after-result on his lungs. If we could examine his chest during the dyspnoea, we should find the following physical signs: sibilant and sonorous inspiration at the root of the lungs, and almost entire absence of respiration in the lower portions. There might possibly be slightly increased resonance of the chest; but, after the attack, none of these signs will be present, and the respiration-sounds will be perfectly normal. This is the purest and perhaps the slightest form of asthmatic dyspnoea. If the individual, however, remain longer exposed to the irritant atmosphere, his breathing will become more and more difficult, and his efforts to introduce air into his chest in proportion greater. By holding on to some convenient object, he will endeavour to fix his shoulders as high as possible, so as to bring all the muscles of respiration, both ordinary and extraordinary, to his aid; and yet with little relief, for his respiration only becomes prolonged and more difficult; an inharmonious concert swells within him; his thorax becomes more dilated with air, which each inspiration adds to, and imperfect expiration hardly diminishes; the diaphragm is pushed down; and thus the heart, liver, and spleen become for the time displaced, while his dusky and livid countenance shows how much the circulation is obstructed. If we now examine his chest, we find it hyper-resonant even in the cardiac and hepatic regions; sibilant and sonorous rhonchi coming and going in all directions, the expiration loudly prolonged and wheezy, and the respiration altogether more marked where the bronchi lie than where there is only vesicular tissue. I would draw your attention especially to the transitory character of the physical signs, as being

* Read before the Brighton and Sussex Medico-Chirurgical Society.

especially indicative of spasmodic asthma. The wheezing sounds, which were audible over a certain spot one instant, become inaudible in the next, and we find inharmonious noises spring up under our ears in all directions. Even from this state the sufferer may quickly recover without permanent lesion; but, should the attacks be often repeated, the emphysema, temporary during the fit, will assume a permanent character, and he will become, even in the intervals, more or less wheezy and short-breathed.

This pure form of asthma may be excited by most of the local causes which bring on the complaint—by dust; by vegetable irritants, as the pollen of grasses; by chemical vapours, or climatic influences; by bronchial inflammation; but the form to which bronchial inflammation gives rise is somewhat more complicated in its commencement and results. A child has an attack of hooping-cough or measles, in which bronchitis has been the principal feature; and, after that time, it is liable to recurring attacks of spasmodic asthma, mixed up with catarrhal symptoms. The features by which these cases are distinguished from those of ordinary bronchitis are, first, the nocturnal orthopnoea; secondly, the paroxysmal character of the dyspnoea. Cough and expectoration are present, and often precede the asthmatic symptoms, and remain long after they have passed away. This form of the disease is not always so severe in character, but it leaves more marks behind it. The bronchial tubes, in consequence of the combined effect of inflammation and spasm, are apt to become somewhat thickened; and, as the obstruction in them depends not only on the muscular contraction, but also on this thickening and on the often tenacious expectoration, it is apt to last longer, and to give rise to more decided emphysema.

Among adults, too, catarrhal attacks may develop spasmodic asthma of this type; but, in investigating the origin of the complaint, we must bear in mind how, in this country, almost every malady, great or small, is assigned to a cold, and be cautious as to accepting it as a sole cause. In many of these cases, a hereditary predisposition is at the bottom of it; and the catarrh only acts as an exciting cause, in the same way as dust or any other mechanical irritant. A fit of asthma varies considerably in length; it may pass off in a few minutes, or it may last for days, during which time the sufferer undergoes a spell of starvation; for, as a rule, no solid food is taken during the attack. In the worst paroxysms, one often is inclined to wonder whether the patient will not be suffocated; and, when relief does come, it is so welcome, that its reason is not always inquired into. In many severe instances, the accumulation of carbonic acid in the lungs, which the spasm brings about, is the cause of its relaxation; for thus partial anaesthesia of the mucous membrane is produced, and the cramp relieved. An example of this occurred in a needlewoman under my care in the Brompton Hospital. In one of her violent attacks, she was sitting up in bed, resting on her hands and gasping for breath, the respiration being so noisy that loud cooing sounds were audible even at a distance. At length, her attempts at respiration became quite futile, and the chest seemed extended to its utmost capacity. The inspiratory muscles still worked spasmodically five or six times. She then became livid, and fell back exhausted; and soon afterwards the spasm relaxed, and she recovered.

A certain number of cases of asthma are closely associated with skin-disease, generally in the form either of eczema or of psoriasis; and it is not uncommon to find the attacks alternating with the appearance of this eruption, and subsiding when that is fully developed. Another set are those connected with gout, generally arising in advanced life; and both these classes of cases probably have their origin in a state of blood which acts more or less as an irritant to the lungs.

Let us now direct our attention to the pathology of the disease, and briefly discuss some of the theories which have been offered of its phenomena. The latest is that of Dr. Berkart, who states (BRITISH MEDICAL JOURNAL, Nov. 8, 1873) "that bronchial asthma is a symptom which accompanies diseases of the lungs in which deficient elasticity is the prominent feature, and in consequence of which the existing expiratory forces are only able to overcome an obstacle to respiration after prolonged and increased efforts"; also, "that asthma is no independent disease, no dynamic affection of a nerve; but that it really forms a link in the chain of diseases which commence with affections of the bronchi and terminate with emphysema; whilst asthma itself represents the stage intermediate between these two". He maintains that, when the emphysema is formed, we have to consider that its formation is by no means the pathological work of a day or week; and he affirms that true substantive emphysema is seldom or never found in children.

The only just way to discuss a new and somewhat bold theory is to apply it closely to the circumstances which it professes to explain. Now, how, I would ask, can diminished elasticity of the lung explain a pure paroxysmal attack of asthma, such as I have already described, which leaves no signs behind, if the fits be short, or be promptly

relieved? If the lung-tissue have partially lost its elasticity, it can seldom be regained, and the lesion becomes permanent and probably progressive; but this is obviously not the case, as the individual recovers, and his breathing becomes as free as ever. Dr. Berkart does not explain how this diminished elasticity is brought about; nor does he apply its existence to the phenomena of an asthmatic seizure. His theory also partly accounts for cases in which asthma is brought on by mere mental excitement or temporary climatic influence. It is true that, when spasmodic asthma recurs frequently, and especially when it is attended with bronchitis, the continued constriction of the upper and middle bronchial tubes, rendering both inspiration and expiration difficult, leads to an overdistension of the lungs with air; and this, if prolonged, injures their elasticity, and they become permanently emphysematous. But this is a *consequence*, not a *cause*, of the asthmatic fits, which are originally and essentially spasmodic and bronchial, and may remain so throughout life. However, I am surprised at Dr. Berkart doubting the existence of emphysema of a substantive character among children, as I am sure many here must have detected it in children who have had frequent attacks of bronchitis. Dr. Berkart does not seem to recognise the fact that in adults, as well as in children, emphysema may be of a purely temporary kind. During attacks of bronchitis and asthma, the percussion-note may be raised while the breathing is difficult; but, on the cessation of the obstruction, the percussion-sound may again become normal; and, even if the manometric measurements, which Waldenburg is mentioned as having carried out, give some evidence of slight dilatation of the chest after asthma, opposed to this we have the fact of asthmatics, in the intervals of their attacks, being able to undertake great exertion without inducing any fresh symptom; so the emphysema cannot be very extensive. Lastly, with reference to this theory, we must not forget that it involves a gloomy prospect for the unhappy asthmatic, such as clinical facts do not warrant. He is doomed to diminished elasticity of his lungs, and emphysema; and he is told that his breath will only become shorter and shorter the longer he lives, and render his life, if not a short one, in time a truly pitiable one. But, fortunately for him, such is not the case; and we can point to plenty of instances where asthmatics have been cured without the occurrence of any such melancholy results, and have been enabled to follow comparatively active occupations for the remainder of their lives. We see that this theory does not at all explain the chief features of bronchial asthma. Let us now turn to another one.

Laennec's theory of asthma was, that the attack depended on spasm of the bronchial muscles, which he had never seen, although Reisseisen had described them. It remained for my father, Dr. C. J. B. Williams, to establish their existence by means of a series of experiments, carefully conducted, on mammals. Dr. Williams fixed a hæmadynamometer to the trachea of various animals, such as oxen, dogs, and rabbits; and then applied stimuli, electrical, mechanical, and chemical, to the lungs and air-tubes. It was found that galvanism, when applied to the margins* of the lobes, caused a small rise of liquid in the tubes; but, when applied at right angles to the bronchi themselves, produced a considerably greater effect; most effect, however, when the current was passed from the margin or even the middle of the lobes to the brass pipe of the hæmadynamometer, which was in the direction of the large air-tubes—the rise of the liquid then being from half to one-and-a-half inches; and, by repeating the contact after intervals of two or three minutes, these results continued for more than an hour. On testing the contractility of small parts of the larger tubes, it was found that the greatest extent of motion was produced on passing the current through the posterior part of the two great divisions of the trachea, where it subdivides into the large bronchial tubes. In the trachea, and in the tubes below, the effect was smaller, but still well marked. Contractility was most marked in the smaller bronchial tubes, in which little or no cartilage existed, and around which the muscular coat formed a continuous circle. Even mechanical irritation of the tubes, such as was produced by scratching the epithelium or cutting across the cartilages, gave rise to considerable contraction, enough in many cases to cause the ends of the cartilages to meet. It was not uncommon to find the larger tubes contracted to one-half of their diameter; and in one case, a smaller tube, about the size of a goose-quill, was entirely occluded. The contractility seemed to be exhausted by continued stimulation, but, after rest, soon recovered. Direct irritation of the pneumogastric nerves was

* This slight contraction may be explained by Dr. Klein's recent researches on the minute anatomy of the lungs (*Proceedings of the Royal Society*, January 1874): for he demonstrates the existence beneath the pulmonary pleura of a meshwork of bundles of unstripped muscle in guinea-pigs, rats, and rabbits, though sparingly in the two latter. The muscular bundles appear to radiate from the apex to the base of the lung, and are most abundant on the anterior and internal (mediastinal) lung-surfaces. When the lung becomes the seat of chronic inflammatory processes, the muscular bundles increase in breadth and in number, chiefly over the diseased portions.

also found capable of bringing on these phenomena, which, as regards their intensity, depended to some extent on the amount of air in the lungs. If the lungs were collapsed, the stimuli acted readily; if inflated, the effect was more slowly produced, but still it *was* produced.

These experiments have been repeated by various observers, unsuccessfully by Budd and Wintrich, and successfully by Longet, Volkmann, and Valentin. Wintrich's experiments, however, were not entirely unsuccessful. He noticed that, in the smaller and muscle-surrounded bronchi, contraction took place under the influence of electricity, or even of a current of cold air—a very suggestive experiment, which ought to have brought him to a better conclusion than that the contraction was due to elasticity of the lung; else why should he not have obtained the same phenomena from the vesicular structure of the lung, where no muscular tissue exists? Longet was more successful than Dr. Williams in stimulating the pneumogastric; for, in passing a stream of electricity across several of its branches, he caused visible contraction of the smallest bronchi in horses and in oxen. Recently, the experiments of Paul Bert have confirmed the above. He also dwelt on the fact of inflation of the lung considerably interfering with the results, and explained the failures of some of the observers, as well as his own previous ones, in this way. He seems to have applied electricity only to the margins of the lungs, and not to have made any relative observations on the bronchi of various sizes, and on the lung-tissue, or his results would probably have been more striking. He found that mammals yielded slight contractions, but that reptiles, such as tortoises, lizards, and serpents, yielded it more strikingly; and the contractility of the tubes seemed to last a considerable time after death. Dr. Berkart offers as an objection to the "bronchial spasm" theory, that in catarrhal asthma the bronchial muscle is so soaked with the exuded serum, that this would preclude its contraction. Why it should do so, he does not explain; and the idea is disproved by the fact that, in many of the above experiments, the bronchi did contract, in spite of containing a large quantity of bloody frothy mucus. It is probable, also, that in all cases of acute bronchitis, where there is certainly no lack of secretion, a certain amount of bronchial spasm is generally present, causing the wheezing and prolongation of the breath-sounds. There would, then, appear to be ample muscular machinery for the occurrence of spasm; and the next point of our inquiry is, How is it set in action?

The nerve-supply to the lungs and bronchial tubes is very abundant, being derived from the two pneumogastrics, the spinal nerves, and the third and fourth thoracic ganglia of the sympathetic. The pneumogastrics give off, within the thorax, anterior and posterior pulmonary branches. The anterior, passing in front of each lung, receive branches from the sympathetic ganglia, and form a small plexus. The anterior pulmonary, from which nerves are distributed to the bronchi, chiefly in the anterior portions of the lung, posterior pulmonary branches, with branches from the left recurrent laryngeal, and from the third and fourth thoracic ganglia, form the posterior pulmonary plexus. The branches of this very complicated plexus are thickly distributed to the bronchi, forming a network which accompanies these to their finest divisions; and, in connection with these, Remak discovered small ganglia. Here, then, are ample links to connect the bronchial muscle with the outer world, and to account for the various phenomena of a fit of spasmodic asthma. When the cause is a local one, acting directly on the bronchi, as, for instance, dirt or pollen, or, again, climatic influence, the spasm may be induced by reflex action through small ganglia connected with the pulmonary plexuses.

Wintrich's experiment of the effect of the cold air on the bronchus of the lung separated from the body gives strong probability to the above proposition, as there is reason to believe that cold air and other irritants can produce a spasm in the living body, as they succeeded in doing so in the dead one. This causation would suffice to explain the phenomena when only a slight wheeze or piping sound is heard, and the thoracic muscles are not called into play. If the local effect be more severe, then the pneumogastrics become largely involved; and, the irritation reaching the medulla and spinal cord, a motor effect takes place through the upper cervical, the phrenic, and the dorsal nerves; and then the diaphragm, the scaleni, and the external intercostals, are thrown into contraction. Thus can asthma arising from local causes be explained. How, then, from general causes which act indirectly through the lungs, as asthma from indigestion and emotion? Where emotion, or fright, or laughter, starts the fit, it must be considered that the irritation is centric, and causes a motor effect on the pulmonary plexus through the pneumogastrics. Where, again, indigestion excites it, the sensation passes through the gastric branches of the pneumogastric to the pulmonary plexus, and is thence reflected through its motor filaments. Lastly, where a fit is induced by a certain state of blood, as from gout or skin-disease, we may regard the blood itself as causing the local irritation.

Before quitting the pathology of this complaint, I should like to say one word respecting the asthmatic tendency. Why is it that, after measles and hooping-cough, children are more prone to asthma than before? It has been established that often, after these complaints, enlargement of the bronchial glands takes place; and Biermer has noted the occurrence of bronchial spasm in connection with enlarged bronchial glands involving the pneumogastric nerve. The view of Dr. Williams and myself is, that these glands become enlarged, and exercise slight pressure on the pneumogastric nerves, which is sufficient to cause the bronchial muscles to be more than ordinarily irritable; and thus spasm may be induced by even slight causes. Moreover, heredity may be put down as an important element in this tendency, as Dr. Hyde Salter has shown by his statistics; and, when we add the fact that it is not rare for consumptive parents to beget asthmatic children, and even for cases of cured phthisis to drift into well marked spasmodic asthma, the causation of the asthmatic tendency may be said to be pretty well explained. As a last link in the long chain of evidence by which the neuro-muscular theory of asthma is established, we may cite its close connection with other nervous affections. It is found alternating with cardiac angina, with gastrodynia, and with neuralgia in its varied forms; and I have even seen it closely connected with hysteria.

TREATMENT.—I feel rather timid in approaching the question of the treatment of spasmodic asthma, as I believe it is generally considered one of the most intractable maladies to which flesh is heir; and one cannot help recalling cases where all known drugs have failed, and yet the patient has recovered under the influence of fright or mental emotion, or some other irregular agencies, whose performances we have not yet been able to bring under our sway. Still, the treatment of asthma is not so unscientific as is usually thought; and a broad rule may be laid down, that the removal and avoidance of the exciting cause is the first requirement. When this is done, many of the cases arising from local causes, where no important lung-change has occurred, are relieved at once, and often cured. Such are the instances arising from dust and chemical irritants; also hay-asthma. In these cases, removal from the irritating atmosphere will often stop the whole train of symptoms. In the same way, where bronchial inflammation causes the spasm, it will subside if means be taken to subdue the inflammation, as by salines and expectorants, combined with some mild antispasmodics. In many cases, however, of asthma originating in bronchial inflammation, previous attacks have set their seal on the lung, either, as I have suggested above, by enlargement of the bronchial glands, or by some thickening of the walls of the larger bronchi, or, again, by inducing emphysema. Here iodide of potassium, after the inflammatory symptoms have passed away, does great good when given in doses of three to five grains, and was a favourite remedy of my old teacher Trousseau. Then, again, where the attacks depend upon a morbid state of blood, the treatment resolves itself into that of the particular state of blood complained of. The gout, or the syphilis, or that which causes the skin-disease, has to be treated, and then the asthma will be relieved. It is in skin-diseases alternating with asthma, where both diseases owe their origin to the same cause, that arsenic is invaluable. A steady perseverance with the drug causes both the eruption and the tendency to spasm gradually to disappear.

Where hereditary influence is the predisposing cause, the prospect is not a cheerful one, as we may look for its origin in the frame or the lung-structure of the patient. It is in these cases that I am in the habit of using gymnastics largely, and with decidedly good results. I instruct my patients to use Hodge's gymnast or some similar instrument, by which the upper extremities and upper ribs are raised, and the shoulders thrown back, and thus the asthmatic stoop is to some extent remedied. For the same purpose, a trapeze has been, by my direction, erected in the Brompton Hospital; and many of the asthmatic patients are set to swing on it for short periods every day. These exercises, combined with cold sponging, and as much out-door life as possible, to avert the tendency to catarrh, seem to me the most satisfactory general treatment in pure hereditary spasmodic asthma. In the majority of cases, asthma, being a pure neurosis, must be treated as such; and we must regard bronchial spasm in the same light as we do other muscular spasms, such as those of the intestine and urethra. It must be *relaxed, and kept relaxed*. The constant influence of the atmosphere on our lungs affords an explanation of how it is that climate often avails more in the treatment of asthma than medicine. "Find me a climate in which I can breathe, and I will for ever bless you," has often been addressed to me; but in some instances this investigation is of so empiric a nature, that it is only the individual himself who can arrive at its solution. However, a careful study of climatic influences has enabled us to arrive at certain principles which answer for the majority. There is a preponderance of evidence in favour of the climates of large and populous cities, and chiefly of the most smoky ones. Often and

often have I had patients sent up to me from the country, especially from some of the damp close valleys in the West of England, where asthma is very rife; and their troubles have sometimes ceased the first night they passed in town, even before they had seen me, or undergone any special treatment. In most, however, the improvement is more gradual; and here I cannot forbear mentioning a remarkable case of a gentleman aged 55, sent to me by Mr. Mules of Ilminster, after reading my lectures on Asthma, published in the *Lancet*. It was a case of arrested phthisis of twenty years' standing, with considerable consolidation of the right lung; but the patient had been free from cough for many years till the last three winters, and since the last winter he had been subject to distinct attacks of spasmodic asthma, which came on each night, and passed away in the morning. After an attack of inflammation of the lungs in the summer, the fits became more frequent; and the breathing was so bad, that he was confined to his room, and generally to his bed; and he had not lain down or slept soundly for several months. He had tried stramonium, tatula, belladonna, opium, and a number of remedies, with only temporary relief. When I saw him (October 17th), his breathing was slow and difficult; and the least movement, even walking from the cab into my consulting-room, produced a spasm. His legs were oedematous, and the urine scanty, high coloured, highly albuminous, but of good specific gravity (1024). Besides the partial consolidation, there were signs of extensive emphysema, and abundance of wheezing and sonorous rhonchi over the entire chest. The asthma gradually subsided without the aid of antispasmodics. He slept two hours the first night in town, in Hanover Square, and gradually increased this amount until, at the end of ten days, all spasm had disappeared, and he slept well and soundly. Under the use of diuretics, the oedema and albuminuria vanished in three weeks, and the extent of emphysema in the chest was considerably reduced. He remained in London, under my charge, for three months, and regained his former vigour, being able to walk for several miles daily, and to enjoy life. The presence of albuminuria and dropsy in this case can hardly be ascribed to any other cause than the obstruction to the circulation which the asthma and emphysema gave rise to, inducing some dilatation of the heart and congestion of the kidneys; for, on this obstruction being removed, the renal symptoms disappeared.*

I think, therefore, that, for asthma at least, a claim may be put in for the climate of smoky old London, the peculiarities of whose atmosphere are, first, its dryness; second, its containing less oxygen, and more carbonic acid and free carbon, than that of the country; and these properties exercise a deadening influence on the neurosis of asthma.

The medicines useful for neurotic asthma are chiefly antispasmodics, and these may be divided into stimulant and sedative. Under stimulant, I include alcohol, strong coffee, and such medicines as spiritus ætheris and nitrite of amyl. I do not find these, as a class, so successful as the sedative antispasmodics, though occasionally spiritus ætheris and coffee have given relief. The nitrite of amyl has generally failed in my hands, and it is a very dangerous medicine to entrust to patients.

The sedative class is a large one, embracing as it does stramonium, belladonna, Indian hemp, lobelia, tatula, tobacco, and many others; and, whether smoked or taken internally, these will occasionally work wonders. The various pastilles and papers are often effective; most of them, like the famous nitre-paper, producing, by their combustion, carbonic acid, and thus providing us with a concentrated form of town-atmosphere. In the most severe spasms, almost everything fails, because it seems impossible to introduce drugs into the system through the mouth. Here, hypodermic injection of morphia or atropine often gives instantaneous relief; but it is not admissible if much emphysema be present. The same rule applies to chloroform. Ether, or possibly spiritus ætheris, may be tried in these cases, where, by the bye, I have found emetics fail. Where there is no marked lividity, chloroform generally gives signal relief, from twenty to sixty drops being usually sufficient. As this, however, is unsafe to trust to the patient himself, I tried chloral-hydrate, and with such good results, that I freely recommend it. In slight cases, it should be administered in doses of twenty to thirty grains once or twice in the night. In severe cases, fifteen or twenty grains should be given every three or four hours until sleep is induced. In by far the majority of instances of neurotic asthma, this treatment has succeeded in allaying the spasms, and in diminishing, or even abolishing, the attacks. For particulars of several cases treated by chloral, I must refer you to the forthcoming volume of the *Clinical Transactions*, where I have recorded some remarkable instances, and would strongly urge you to give a fair trial to this method of treatment.

* This patient afterwards returned to Somersetshire, and remained tolerably well till the hot weather, and luxuriance of vegetation induced thereby, caused a return of the asthma, and necessitated a withdrawal to London.

PENETRATION OF BOWEL BY A STAB: RECOVERY.

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AT midnight, on November 2nd, I was called to see T. B., a farm-labourer, thirty-five years age, who had been stabbed in a drunken fight. On arriving at the patient's home, I found him lying on a bed, nearly pulseless, and suffering from great collapse. On examining him, I found three incised wounds on the left side of the abdomen, and one on the buttock (this was only a flesh-wound). Through the lowest and largest of the abdominal wounds, which was situated midway on a line from the umbilicus to the anterior superior spine of the ilium, there protruded about five feet of intestine. On examining this carefully for perforations, I found two corresponding incisions in the intestine: one, where I suppose the knife entered, measuring about one inch and a half; while the one where it emerged was about one inch in length. The two smaller abdominal wounds lay on a level with the umbilicus, about two inches apart. These had both penetrated the abdominal cavity, but no bowel protruded; only a small piece of omentum, through the one nearest the umbilicus. After administering a little brandy, the patient rallied; and then, after sponging the intestine, and removing all clots from the interior of the bowel by gentle pressure, the wounds in the intestine were closed with a very fine silk thread, and the bowel returned, to do which, the enlarging of the external wound was found necessary. The omentum protruding from the other wound having been pushed back with a director, the external wounds were closed with sutures, and a pad of dry lint placed over them. No chloroform was given, as, on attempting to administer it, his pulse sank rapidly. There had been great hæmorrhage from the largest wound; he was, therefore, ordered half an ounce of brandy in a little milk every two hours; and, having in the course of a few hours rallied sufficiently, he was given two grains of powdered opium, and one grain was ordered to be taken in three hours, and repeated if required.

November 3rd, 9 A.M. He had slept two or three hours during the night. He complained of pain on pressure, mostly on the right side, where, he told me, he was kicked. He had some difficulty in passing urine. Pulse 82. Temperature nearly normal. I ordered ten minims of tincture of opium, and ten minims of spirit of nitrous ether every four hours. 4 P.M. His urine was passing freely. Pulse 86. There were more pain and tenderness. Temperature higher. Hot fomentations were ordered to be applied to the abdomen. He was given ten minims of tincture of opium and half a drachm of dilute solution of acetate of ammonia every two hours. The brandy and milk were continued.

November 4th, 10 A.M. He passed a restless night. Pulse 90. Temperature the same. The tongue was coating. The pain and tenderness were increasing. The treatment was continued. 3 P.M. He was little altered. Pulse 94.

November 5th, 9 A.M. He had a very restless night. Vomiting set in at midnight. The tongue was very foul. The pain was still increasing. Pulse 97. Temperature higher. I ordered a grain each of powdered opium and calomel every three hours, and the fomentations to be carefully attended to. 3 P.M. He complained very much of the right side. The vomiting was little better. He was ordered soda-water instead of milk. Pulse 94.

November 6th, 9.30 A.M. He had a bad night. The vomiting increased, and there was great tenderness. Pulse 95. The temperature was no lower. He had some difficulty in passing urine. Gin was substituted for brandy. I ordered the dose of calomel in the pills to be increased by one grain in each pill. About half an ounce of castor-oil was given. 4 P.M. He had a small motion. The symptoms were relieved. Pulse 89. The vomiting was less violent; and he felt easier.

November 7th. He passed a better night. The bowels were relieved twice. The tongue was cleaning nicely. Pulse 86. The vomiting ceased. The temperature was much lower. I ordered strong beef-tea, and brandy and egg mixture every four hours alternately, and plenty of milk. The pills were stopped, unless when required.

November 8th. He passed a good night. Pulse 82, and stronger. Tongue cleaner. The bowels were acting regularly. The beef-tea and milk were continued; the brandy was stopped. A small piece of bread with egg was allowed. November 9th. He was passing good nights. The bowels still were regular. He was ordered oatmeal porridge, and a small mutton-chop for dinner. From this time he made a rapid recovery, and was sitting up on November 13th, it being the tenth day of his illness. There remained a small hernial protrusion. A truss was applied on November 16th. I may state that his assailant received, very properly, a sentence of ten years' penal servitude.