partly solid and partly fluid, was found in the cavity of the peritoneum. The surfaces of this membrane did not look inflamed. On examination, a laceration was found at the root of the great omentum, near its attachment to the small end of the stomach. The omentum was here a good deal contused; and several small rents existed in it, both in the descending part and in the part passing on to the colon. In one of these, a large artery was found laid open; and, by pressing on the part, grumous blood could be made to start up from the divided vessel. The viscera of the abdomen were all uninjured and healthy.

SOUTH LONDON OPHTHALMIC HOSPITAL.

I. PARALYSIS OF THE SIXTH NERVE: OPERATION.

Under the care of J. Zachariah Laurence, Esq.

Martha H., aged 30, applied at the South London Ophthalmic Hospital on February 16th, 1859. About eighteen years ago, she was driving herself down a steep hill in the country, when the horse ran away: she jumped out of the cart, but her feet got caught in its step, and she was in this way dragged head downwards from the top of the hill to the bottom. She was picked up insensible, and bled a great deal from the mouth, throat, and ears. She ultimately recovered completely; but the right eye was noticed to "turn" about four and twenty hours after the accident, and continued so ever since, notwithstanding an operation which, she states, was performed on the eye in 1852. The right eye was now inverted to a degree not often seen; the plane of the cornea being turned at right angles to its normal position. She possessed the power of moving the eyeball slightly in every direction, but outwards. Closure of the left eye imparted no additional mobility to the distorted one. Her vision with this eye was practically useless, from its malposition.

March 19th. Mr. Laurence divided the internal rectus muscle: this was found hard and thickened, and grated distinctly under the scissors. On now attempting to evert the eye by means of a forceps, it was found as immovable as ever; and further examination showed it to be bound down by adhesions so numerous and so extensive, that it became necessary to lay bare the sclerotic to a degree that no surgeon would have dared to do in a case of ordinary strabismus. The eyeball was then kept in a central position by a ligature passed under the conjunctiva, and fastened by strips of plaister to the temple. This gave way during the night, and the eyeball was then found considerably inverted again. In fact, in the course of the case, several such ligatures had to be reinserted.

April 22nd. All traces of the operation are gone. The eye now turns in, as it would from a moderate squint; but the patient is so satisfied with the great improvement of appearance and vision, that she does not wish any further operation for the present.

Remarks. This was probably a case of paralysis of the sixth nerve from intracranial extravasation. The strong and extensive adhesions noticed in this and other recorded cases are analogous to the adhesions formed in the elbow and knee-joints, when these have remained in one contracted position for any considerable period.

II. ACUTE RHEUMATIC OPHTHALMIA: RECOVERY UNDER MORPHIA TREATMENT.

Under the care of J. Z. Laurence, Esq.

Sarah S., a middle aged woman, was admitted to the hospital on November 3rd, 1858, suffering from a severe attack of acute rheumatic ophthalmia. The sclerotic was intensely injected, the conjunctiva slightly: the "sclerotic zone" was well marked. She suffered such intense shooting pain, as to render her quite sleepless: this pain she referred to the eyeball, eyebrow, and infraorbital region. Her vision was not materially impaired, excepting by the excessive pain, which seemed to affect also the sight of the sound eye.

She was ordered to foment the eye frequently with warm water, and to take a quarter of a grain of hydrochlorate of morphia every third hour.

November 6th. She took the morphia regularly up to 4 P.M. yesterday, when she took the last powder. Towards the evening of the 4th, the pain in the eye began to abate: now, the severe shooting pains have entirely left her; she experiencing only an aching in the eye when it is exposed to the light. The sclerotic vascularity has considerably diminished.

The eye now rapidly recovered under the treatment of an ordinary case of conjunctivitis.

Remarks. Mr. Laurence has now treated a number of cases of inflammation of the sclerotic and iris by morphia, without the use of mercury or blood-letting (usually employed in these cases). He finds that the majority yield to this very simple (morphia) treatment, especially those in which intense pain is a prominent symptom; but that a certain number of cases remain, in which the old plan of treatment is the better to pursue.

ROYAL BERKSHIRE HOSPITAL.

CALCULUS IN A CHILD: ALLARTON'S OPERATION.

By W. W. Moxhay, Esq., Surgeon to the Hospital.

Frederick W., aged 8, the subject of stone for some time, was operated on by the median section, made in the way directed by Mr. Allarton, on April 11th, 1859, at noon. The stone was ovoid in shape, very rough, and spiculated; it measured, round its longest circumference, two inches and a half. The wound made was hardly an inch in length. The operation was done under chloroform, and occupied about three or four minutes. Ten minims of tincture of opium were given immediately.

9 P.M. The finger has been passed three times into the bladder, each time followed by a gush of urine. A slip of oiled lint was now passed. The laudanum was repeated.

April 12th. He is quite easy. There is some slight swelling about the wound; no abdominal tenderness; pulse 124.

April 13th. Some urine passed by the natural channel.

April 14th. The urine comes chiefly through the wound. Pulse 104. He was allowed to have beef-tea.

April 15th. Pulse 94. He was allowed meat.

April 16th. There is a little œdema of the scrotum.

April 17th. Pulse 94. The bowels have acted; a large lumbricus has passed. The œdema is nearly gone.

April 23rd. He has passed most of the urine by the natural passage for the last two or three days. The wound is quite healed.

April 26th. He was discharged from the Hospital, convalescent, on the fifteenth day after the operation.

I may add my testimony to the truth of the statement Mr. Allarton makes in his book, that the anxiety about the case ceases, or, at any rate, that it is very slight indeed, after the operation. About the operation itself there seems to be no difficulty.

Original Communications.

ON THE ÆTIOLOGY OF ASTHMA.

By HYDE SALTER, M.D., F.R.S., Fellow of the Royal College of Physicians, and Assistant Physician to Charing Cross Hospital.

Two kinds of Causes of Asthma: I. *Causes of the Paroxysms: Respiratory Causes; Alimentary Causes; Nervous Causes; Psychical Causes.* II. *Causes of the Disease:* A. *Organic and Acquired;* B. *Constitutional and Inherited. Conclusion.*

The ætiology of asthma is undoubtedly the most obscure and difficult part of the whole subject.

The causes of asthma are of two kinds; the causes of the paroxysms, and the causes of the disease: the one the immediate provocative of the paroxysm, the other the original and essential cause of the asthmatic tendency. And this division is strictly natural, the two kinds of cause being entirely diverse: the cause of the paroxysm not producing the disease, and the cause of the disease not producing the paroxysm.

As for the causes of the paroxysms—the immediate excitants of the asthmatic spasm—they are plain enough. The experience of every asthmatic gives him very certain information on this point. It is of the essential cause of the disease—that which has originally rendered the individual an asthmatic, that obscure something that disposes him from time to time to fall into the asthmatic state on the occurrence of the exciting cause of the attacks, the *fons et origo mali*—that I speak, when I assert the difficulty of the subject.

I.—THE IMMEDIATE OR EXCITING CAUSES OF ASTHMA: THE PROVOCATIVES OF THE ATTACKS.

Though not in logical order, I shall consider these first, because they are so manifest and well known; and because they throw some light on the nature of the essential cause of the disease.

They differ entirely in different cases. There are probably no two cases alike in the list of things that will bring on an attack; what will be certain to do so in one case will be innocuous in another, and what will be fatal in the other will be innocent in the one; so that no one thing can be declared an inevitable provocative of asthma; but each case is constant, and the excitants of the spasm constitute a part of the individuality, and form an unchanging portion of the clinical history, of each case. In nothing, I think, does asthma shew its caprice more than in the choice of its exciting causes; every case almost furnishes something new and curious in this respect. The mere enumeration of the whole list would be portentously long. I shall merely notice the most common and characteristic, and shall group them, for order's sake, under the four following heads:—

1. Irritants admitted into the air passages in respiration.
2. Alimentary irritants (errors in diet).
3. Sources of remote nervous irritation.
4. Psychical irritants.

1. *Respired Irritants.* These constitute the most numerous class of all the excitants of asthma. Some of them are such as naturally offend the air passages; and, if admitted, produce such an irritation of the bronchial mucous membrane as secures their immediate expulsion by cough; some even, such as pungent and stifling gases, will occasionally produce temporary bronchial spasm (the true asthmatic dyspnœa and wheeze) in persons that have no asthmatic tendency; ordinarily, however, explosive cough, soon over, is the only result of breathing them. But in asthmatics the case is very different; the respiration of them immediately inducing a regular fit of asthma. Dust, smoke, pungent fumes, mephitic vapours, cold air, are irritants of this kind. And in respect to them the peculiarity of the asthmatic consists, not in their irritating his air passages, for that they do in all; but in their producing, as a result of that irritation, not a mere cough, or a slight, transient, bronchial stricture, but intense and persistent asthmatic spasm. Of these, I think the worst—the most apt to produce asthma—are dust and certain smokes, such as the smoke of pitch, or of an extinguished candle. I have known some asthmatics who could not tolerate the least dust. One in particular I remember, a clergyman, with otherwise but a slight tendency to asthma, who never dared to be present at the annual assortment and distribution of blankets to the poor of his parish, as the dust and fluff disengaged always brought on a violent fit of asthma. In another case, the small amount of smoke generated by the imperfect combustion of a night light was always sufficient to bring on an attack.

But there is another class of respired irritants, that ordinarily are no irritants at all, but that in certain asthmatics infallibly produce their disease, such are the emanations from hay, from ipecacuan, from certain animals. One asthmatic is obliged to expatriate himself in the hay season, and take a sea voyage; another cannot stay in a room in which a bottle of ipecacuanha is opened; a third cannot stroke a cat; another cannot go near a rabbit hutch; another cannot go near a privet hedge; another cannot sleep upon a pillow stuffed with feathers; and one young lady I knew who did not dare to pass a poulterer's shop. One would hardly believe these things were not their reality placed beyond doubt; there is neither invention, nor imagination, nor exaggeration about them. I have known the presence of ipecacuanha in a room where there was no reason to suspect it, at once detected by the oppression and asthma that it produced. I have known some incredulous people open an ipecacuanha bottle, unknown to the asthmatic, for the sake of experiment, to see if he would find it out, but it was always immediately discovered. I have known the same with regard to other of these agents. Dr. Watson mentions an analogous anecdote with regard to the detection of the neighbourhood of hay. It is indeed in its intolerance of these and similar subtle and inappreciable emanations that asthma exhibits its most extravagant vagaries.

2. *Alimentary Irritants.* Errors in diet are a very fruitful source of asthma. Food may induce asthma in three ways: by being of the wrong quality; by being excessive in quantity; and by being taken too late in the day. In respect to quality, all foods generally acknowledged to be unwholesome and indigestible are apt to produce asthma; but there are some especially and above all others that have this tendency, and that quite out of proportion to their unwholesomeness. For a list of these, and for a discussion of the whole subject of the relation of food to the production of asthma, I must refer the reader to a paper on the Dietetic Treatment of Asthma in the *Lancet* for Nov. 6th, 1858.

3. *Sources of remote Nervous Irritation.* Various sources of irritation existing at, or applied to, parts of the body far removed from the chest, may act as exciting causes of asthma. In cases of hysterical asthma the source of irritation is uterine. In one case that came under my observation, a loaded rectum would always bring on an attack; in another, the sudden application of cold to the feet would instantly induce it; and in more than one case I have known organic disease of the brain the apparent exciting cause of true asthma. These cases, then, show that sources of irritation affecting the organic nervous system (uterus and rectum), the cerebro-spinal (cutaneous surface), and the brain itself, are capable of acting as the immediate excitants of asthma.

4. Lastly, there are many examples to show that psychical stimuli—excitement, fear, or other violent emotions—are adequate to the immediate production of asthma.

II.—ESSENTIAL CAUSE OF ASTHMA.

The essential cause of asthma—that in which the asthmatic differs from other men—which constitutes the asthmatic *tendency*, and renders the exciting causes operative—what is it?

I do not see that I can discuss this question, or arrive at clear ideas respecting it, better than by endeavouring to answer the following questions:—

Is organic disease at the root of the asthmatic tendency?

Is organic disease *necessarily* present in all cases of asthma?

Is asthma, in its essence, a systemic or a local affection?

Is there necessarily in asthmatics some constitutional peculiarity, inherited, congenital, or acquired?

There is one circumstance in the history of asthma that is strongly suggestive of the idea that some organic injury of the lung is at the root of the asthmatic tendency: it is that, in the narrative of cases of asthma, it will be so frequently found that the asthma dates from some disease that implicates the lungs, and in such a way as to imply injury of an organic nature, though apparently temporary, as, for example, whooping-cough, bronchitis, and measles. These diseases are, beyond a doubt, the commonest of all the causes of asthma: a large proportion (as much as 80 per cent.) of cases of asthma in the young date from one or the other of them. In two of them, a specific bronchitis forms an essential part of the clinical history. I think this fact does not admit of misinterpretation. I think this frequent association of asthma with an antecedent event implying organic, although apparently temporary, injury of the lung, must have a very important influence on our notions of the ætiology of the disease. A child reaches the age of ten years, and up to that time has never shown any tendency to asthma: it then has measles; and, although it perfectly recovers from the bronchial affection, from that time forward it is liable to attacks of spasmotic asthma. From this I think we cannot but conclude both that this disease, by some change that it works in the organisation of the lung, may leave behind it as a legacy a permanent tendency to asthmatic spasm, and that it may be the sole and efficient cause of the disease.

There is another circumstance that strongly favours the view that the cause of asthma is organic, and seated in the lungs themselves; it is, the relative frequency of asthma in the two sexes. Purely functional nervous derangements are undoubtedly commoner in women than in men. Men, on the other hand, are much more exposed than women to sources of lung-injury, and their lungs are accordingly much more frequently the seat of organic diseases. Now, if asthma was primarily nervous and purely functional—if it were a simple neurosis—we ought to find it commoner in women than in men; whereas, according to my experience, men are more frequently the subjects of asthma than women in the proportion of two to one.

In those cases in which the attacks are produced by some irritant admitted into the air-passages we have no reason for thinking that the cause of the asthma is situated anywhere but in the lungs themselves; we have no reason for believing that in these cases there is any general constitutional vice of the nervous system, but every reason on the contrary for thinking that the mischief begins and ends in the lungs, and that, what-

ever it is in its absolute nature, it is something that renders the pulmonary nervous system unduly irritable and impressible.

This morbid sensitiveness of the pulmonary nervous system would appear to be due, in a large number of cases, to something that has organically damaged it, something that has damaged that surface to which its perceptive portion is distributed; for I think it will be found that in the majority of those cases in which the excitants of the attacks are stimuli admitted into the air passages, the original cause of the disease has been something organically affecting the bronchial mucous membrane—catarrhal bronchitis, measles, whooping-cough. In these diseases the bronchial mucous membrane is the seat of inflammation, often intense and prolonged, and in two instances specific; and it is probable that some organic although inappreciable change has been wrought in it, producing a morbid exaltation of its sensibility to which the tendency to spasms is immediately due, according to that law of the organisation of the bronchial tubes to which I have referred in a paper on the "Absolute Nature of Asthma," in the *Medico-Chirurgical Review* for July 1858. At any rate, in those cases in which the tendency to asthma is manifestly dependent on organic bronchial disease (as in asthma accompanying chronic bronchitis), the provocatives of the paroxysms are preeminently stimuli applied to the bronchial surface—smoke, fog, cold, etc. If then this is so, the converse is probably true,—if in asthma depending on organic bronchial disease the excitants of the attacks are stimuli applied to the bronchial surface, then, in those cases where the excitants of the attacks are stimuli applied to the bronchial surface, the asthma probably depends on organic bronchial disease.

But is this always so? Probably not. In cases of ipecacuan-asthma the excitant of the paroxysm is something applied to the bronchial mucous membrane, but there is nothing in the history of these cases to imply that this surface has ever been the seat of organic disease. The same in cases of hay-asthma.

While, then, the induction of spasm by bronchial stimuli furnishes a *presumption* that the asthma is due to some cause that has organically injured the bronchial mucous membrane, it does not furnish a *proof* of it,—in most cases it probably is so, in some not. And I think we may go a step further, and say, that where the mucous membrane exhibits a *general* irritability, where a great number and variety of irritants are capable of producing the asthma, there the original cause is something that has damaged the mucous membrane; where, on the other hand, the membrane exhibits a *special* irritability, where the irritant is specific and single, there is no such antecedent organic lesion. In the asthma of chronic bronchitis, for example, a multitude of irritants inhaled will give rise to the spasm: in hay and ipecacuan-asthma, on the other hand, the source of offence is single and specific. In the one case the cause of the asthma is something that has happened to the individual during his life, and the asthmatic tendency is acquired; in the other the cause is innate, and the tendency inherent.

But is it probable that there is some organic peculiarity in the lungs of *all* asthmatics? Certainly not. In a large number of cases there is not the slightest warrant for entertaining such a supposition. Take, for example, a case of emotional asthma such as the following:—A gentleman who has never suffered from any lung affection, and who is at the time in perfect health, is suddenly seized with difficulty of breathing, which proves to be spasmodic asthma, in consequence of extreme alarm from thinking that he has administered poison by mistake. His lungs were perfectly sound; there was no history of any pulmonary affection in his case; and he never suffered from dyspnœa under any other circumstances, either before or since. Moreover, the exciting cause was one not appealing to the lungs, but to the nervous system. In hay-asthma, too, there is generally no history of previous lung disease, and in every part of the year, except in the hay-season, the lungs give the most positive evidence of their anatomical and physiological soundness.

What, then, *is* the cause of the asthma in these cases? I do not see that we can say anything more definite than that it consists in the asthmatic tendency itself; in that special irritability of the pulmonary nervous system (as in the case of ipecacuan asthma), or that general irritability of the whole nervous system (as in emotional asthma, etc.), which constitutes the asthmatic idiosyncrasy with which the individual was born.

That in some cases a congenital asthmatic tendency does exist is strongly implied, I think we may say positively proved, by the undoubted hereditariness of the disease: in some families asthma is as much *the* disease as gout is in others. I have lately had under my care a gentleman whose father, paternal grandmother, and two paternal uncles, as well as himself, were asthmatic. Now, there is no doubt what is inherited must be congenital—inborn.

But, Is any congenital peculiarity *necessary?* No; there appears to be no reason that a person may not *become* asthmatic, that the tendency to the disease may not be *acquired*, indeed, evidence as positive as can be imagined for believing that it may, that an asthmatic may at one time have differed in no respect from others, but that the tendency to his disease may have been engrafted on him by something that has happened to him. For example, the case of asthma as a sequela of measles, which I instanced just now. It is not conceivable that all the children whom this disease, or whooping-cough, leaves asthmatic, had any antecedent peculiarity. In no respect do they seem to differ from other cases, except that the disease from which the asthma dates has generally been of unusual severity.

It would appear, then, that in respect to causation, all cases of asthma may be broadly divided into two groups:—

1. Cases in which the essential cause of the disease—that which constitutes the individual an asthmatic—is some organic lesion, possibly not appreciable, either in the bronchial tubes, or in some part physiologically connected with the bronchial tubes.

2. Cases in which any organic lesion is not only inappreciable, but non-existent; in which the tendency to asthma is due to something from within, not from without; in which the essential cause of the disease is a congenital, and possibly inherited, idiosyncrasy.

I steer, therefore, a middle course between those who say that asthma always has at the root of it some organic disease within the chest, and those who deny that genuine spasmodic asthma ever depends on organic lung disease, and maintain that it is always a pure neurosis. I think I have shown, on the one hand, that there are numberless cases in which the supposition of any organic cause would be purely gratuitous, and in direct contravention of all clinical evidence and pathological reasoning; and on the other, that we have every reason for believing that many cases, of the pure spasmodic variety, do really depend on some organic, though inappreciable injury that previous disease has inflicted on the lungs.

CROTON OIL AS A COUNTERIRRITANT IN HYDROCEPHALUS.

By John Watson, M.D., Southampton.

It has been my lot on several occasions to witness the successful application of this remedy to the scalp, after the setting in of most formidable symptoms. The case which first led me to its use may be outlined.

C. B., aged 2 years, a strumous-looking child, came under my notice for eczema of the scalp. The eruption, which was general and attended with copious discharge, got well under ordinary treatment. A few weeks afterwards, he had an attack of acute hydrocephalus. Leeching; cold lotions to the shaved head, calomel, and antimony, etc., were immediately resorted to, but unavailingly; for the second stage of the disease came on. He now lay semi-comatose, with the neck extended, the eyes half-closed, and the pupils dilated. The pulse also had become slow and irregular, the respiration frequently interrupted with a sigh, and he had strabismus occasionally. A blister was now applied behind each ear, with no effect. Thinking it possible for his present attack to be connected with the previous condition of the scalp, as a means of best imitating the eczematous eruption, the croton oil suggested itself. With the sanction of the gentleman who was attending with me, I directed the croton oil liniment (croton oil, half a drachm; turpentine liniment, half an ounce) to be rubbed over the entire head every four hours till a plentiful crop of pustules should make their appearance; after which we soon had an amelioration of all the symptoms, and he gradually became convalescent, though he was unable to speak for several days, and could not stand alone for a considerable period.

It is now several years since the occurrence of this case, which made a deep impression upon me; for I did not remember to have seen a recovery under such unfavourable circumstances. In the same stage of the disease, whatever may have been its assumed cause, I have since adopted the