

superior part of the right parietal bone (which was here somewhat indented on the inner side), commencing an inch external to the sagittal suture, and passing downwards and forwards a little above the anterior inferior angle of the parietal bone, crossing the coronal suture at right angles, the frontal portion of the frontal bone, and then across the orbital plate of the same bone two-thirds of an inch from the posterior margin of the lesser wing of the sphenoid, and terminating at the optic foramen. The blood had evidently come from the middle meningeal artery, which was torn across, part of the vessel remaining with the skull, and hanging from it, with a long coagulum projecting into and from this vessel. On slicing off a portion of the right hemisphere of the cerebrum, a small recent extravasation of blood was met with in its substance, a little to the outer side of the roof of the lateral ventricle, and midway between the descending and anterior cornua of that cavity; but having no communication with it, or with the clot on the exterior.

REMARKS. The following remarks were made on the case by Mr. Holthouse, at his visit on the morning of the patient's admission. He observed that it was a very grave case, and would, in all probability, prove fatal. The general paralytic condition of the patient, the profound coma, and the stertorous breathing, were symptoms which indicated a very grave lesion of the brain. He felt little doubt that a large quantity of blood was pressing on the right cerebral hemisphere; but whether it was situated between the bone and dura mater, or beneath this membrane, he was unable to say. He judged it to be on the right hemisphere, because the paralysis was more complete on the left than on the right side of the body, as evidenced by the absence of all movements of the toes when the sole of the left foot was tickled; whereas distinct movements took place each time that the sole of the right foot was tickled. He thought it further proved by the ecchymosis beneath the scalp over the right temple, showing that a heavy blow had been given on this side of the head. Was the skull fractured in this situation? It might or it might not be. But there was no evidence to show that it was. The scalp was unbroken; therefore the bone could not be examined; but no depression was felt in any part. Was the base of the skull fractured? There was no positive evidence to show that it was, but a good deal of negative evidence to show that it was not. There was no subconjunctival ecchymosis, and no bleeding from the nose, ears, or mouth; nor was any blood mixed with the matters vomited. A fracture of the base, severe enough to produce such symptoms as the present, could hardly exist without revealing itself either by hæmorrhage or local paralysis due to injury of the nerves which pass out of the skull through the several foramina at its base.

The condition of the pupils was then remarked upon, as not according with the common opinion that they are dilated in compression; neither was the pulse slow and labouring, as it is usually described to be in compression.

In some clinical remarks on the case subsequent to the *post mortem* examination, Mr. Holthouse adverted to the signs by which drunkenness might be distinguished from apoplexy, and to the different varieties of the latter, whether idiopathic or traumatic. Attention was also called to the diagnosis of the case made during the patient's life; and it was shown how far this accorded with or differed from what was found after death.

Viewed now by the additional light thrown on the case by the *post mortem* examination, the following would appear to have been what happened. In consequence of the blow or blows received while falling down stairs, the skull was fractured, and the middle meningeal artery lacerated or torn through. The blood, as it flowed from this vessel, would gradually detach the dura mater from the interior of the cranium; and, owing to the resistance it would meet with from the close adhesion of this membrane to the bones, it would tend to arrest the bleeding by its pressure on the torn vessel; while some might make its way outwards through the fissure in the bones, and so insinuate itself beneath the scalp. This, at least, is one way in which the ecchymosis there met with may be accounted for.

With respect to the treatment, the lecturer was of opinion that he ought to have trephined in this case; and he expressed his conviction that both the lancet and the trephine were too little used now-a-days, and that lives were sacrificed in consequence. He did not believe that any good could have resulted from the use of the lancet in the present case. The quantity of blood extravasated was too large to admit of absorption, and the internal hæmorrhage had probably ceased before the patient's

admission; but in slighter cases, especially where the seat of the effusion was more doubtful than in the present case, where symptoms of compression were present, and the evidences of depression absent, blood-letting was the most efficacious of remedies. If hæmorrhage were still going on, venesection arrested it; if it had ceased, it promoted the absorption of the blood already poured out.

Original Communications.

ON THE PATHOLOGICAL CONDITIONS AND TREATMENT OF CHRONIC BRONCHITIS.

By HENRY DUNCALFE, Esq., West Bromwich.

[Read before the Queen's College Medico-Chirurgical Society, Birmingham.]

ALTHOUGH the pathological conditions giving rise to the disease known as chronic bronchitis will not admit of any arbitrary division, yet I have ventured to classify under three heads those states of the disease which partake to a greater or smaller extent of certain structural changes, and which, while together with their complications they are sufficiently marked to evidence the disease, admit at the same time of such a diversity of character as to require different forms of treatment. This disease is of great importance to ourselves, inasmuch as its consequences are serious, its terminations various, and its complications multiform; and, unless our patients experience some decided benefit, they soon have recourse first, legitimately, to physicians; and, failing to derive benefit at their hands, take the advice of their fellow-sufferers, and content themselves with some of the secret nostrums and certain cures, or get strongly recommended by other officious friends to place themselves under the sheltering wing and fostering care of the homœopath.

It must have occurred to most of us to have experienced the irregular action and uncertain result of remedies employed for the relief of this disease in different individuals. Take, for example, two cases, both having laboured breathing, frequent cough, and copious expectoration—the essential special symptoms diagnostic of chronic bronchitis. We give to these patients a mixture of decoction of senega and sulphuric ether; and we find that, in one case, it acts as a charm, the patient expressing himself in language so emphatic that no one could doubt but that he had found, as he would term it himself, “the best medicine in the world for that complaint”; while, in the other case, the patient may be favoured by circumstances equally good, and perhaps in a position of life capable of affording comforts which were denied to the less favoured sufferer, and notwithstanding this, no good change shall have been effected—neither has the breathing been relieved, nor the paroxysms of coughing suppressed.

With a view to inquire into the causes of such disparity, and with the belief that the disease is capable of a certain classification, I make my communication to the Society this evening.

The first division of cases to which I will direct your attention are characterised by frequent, violent, and protracted paroxysms of coughing, but attended with a slight amount of expectoration; the expectorated fluid being usually clear, thick, and gluey, holding in suspension small, roundish, tough, and greyish pellets, which from time to time become disengaged from the bronchial tubes. The pulse is generally hurried; the skin warm and dry; there is a general tendency to waste, with impaired appetite, and sometimes entire aversion to food; but, from any little irregularity, or exposure to cold, the skin becomes hot, the tongue dry, and patients have a great desire for cold drinks. The expectoration then becomes more copious and frothy; and these acute symptoms do not readily yield to treatment, but gradually diminish in intensity till the disease imperceptibly runs into its ordinary chronic form. “One attack leads, under favourable circumstances, to another. The chronic state is increased, both in extent and virulence, by the supervening of every acute attack; and such frequent revival of the disease tends materially to impede recovery. The disease, when protracted, brings about certain changes of structure, which operate as exciting and sustaining causes of the original affection, implicating other organs, and exhausting that innervation of the respiratory apparatus which is essential to health and life.” The breathing is laboured, the expirations

and inspirations being prolonged. If the throat be examined, the soft palate will be found, in the majority of cases, to be relaxed and pendulous; the uvula thickened and pellucid; whilst the posterior wall of the pharynx will be found roughened, and, from the follicles being raised, the membrane will have the appearance of being much thickened; whilst, meandering between the follicles, which sometimes appear whitened or pale from ulceration of their summit, will be seen capillary vessels, highly injected. The chest may be, and often is, well developed; and the sounds elicited both by percussion and auscultation may vary according to the more or less chronic state of the disease, and the alterations of structure which the disease has occasioned. Generally, however, the chest is clear on percussion, with decreased mobility. On applying the ear or stethoscope, the ordinary dry sounds will predominate. The inspirations and expirations will be prolonged; over some portions of the chest, interrupted and whiffing; and in others wanting, or rendered very feeble. There may be an admixture of mucous râles, but not sufficient to destroy these diagnostic characters. In many of these cases, there is a want of nutrition; and, as this condition so often accompanies the onset of phthisis, so that disease may also be diagnosed when it does not exist. A lady, lately under my care, had suffered with the symptoms just enumerated, but without any organic lesion or structural change to enable me to assign any other than chronic bronchitis. Certainly there was a disparity at the posterior part of the upper portions of the two lungs, but not more than a dilated bronchial tube would account for. I ventured to give a favourable opinion of the case, notwithstanding the tendency to waste; and she passed into the care of a neighbouring physician, who ventured to give an equally unfavourable one. She was recommended to pass the winter on the south coast, and has lately returned, improved in condition.

Dr. C. J. B. Williams, speaking of the structural changes in the air-tubes, says:—

“When a case presents itself in which there has been cough, long continued, with expectoration, dyspnoea, loss of strength and flesh, hectic fever, and even some of the physical signs of cavities in the lungs, the practitioner should be cautious in pronouncing it to be tubercular, if it be qualified by all or most of the following conditions:—if no proofs of a serofulous habit can be traced; if the complaint have originated in a long continued and violent cough, or in an attack of pleuro-pneumonia, and, considering its duration, emaciation have not proceeded far; if the purulent expectoration have been fetid and sanious, rather than flocculent or caseous; if the bronchial or cavernous respiration or voice be heard rather in the middle than in the upper portions of the chest, and be there spread over a considerable extent of surface; if these middle portions chiefly sound differently on percussion, being dull when the rest of the side sounds pretty well, or amphoric when the side is generally dull and contracted; and if, although the cough and expectoration continue undiminished, these signs remain stationary for many weeks together. In such a case, the strong probability is in favour of its being one of dilated bronchi, and not phthisis.”

The obstruction offered to the exit of air from the lungs will sometimes cause it to be driven back by its own resiliency through the ramifications of the bronchial tubes, thereby distending the air-cells, and impairing the elasticity of the lung-tissue, sometimes causing rupture of the cell-walls, and producing emphysema in patches. Such a condition will account for the absence or feebleness of the respiratory murmur, as previously mentioned; and the inability of the lung-cells to empty themselves may, I think, account for a very peculiar sound sometimes heard during inspiration. To this character I particularly direct your attention, as several of my medical friends have expressed themselves as being unacquainted with it. The sound during inspiration more resembles that produced upon applying a sea-shell to the ear than to anything else to which I can compare it. I have known phthisis supervene in two cases where this peculiar breathing was well marked; but as it is not a very common condition, my experience is too limited to say whether it is confined to such cases or to other forms of the disease.

When bronchitis is marked by the predominance of symptoms mentioned in this division, patients will be mostly benefited by such medicines as squill, ipecacuanha, sesquicarbonate of ammonia, and the alkalies; inhalation of steam, alone or medicated, and the use of counterirritants, particularly the croton oil liniment applied over a large surface; and in every case it is advisable to have the throat inspected, for, when that

condition exists which I have purposely and minutely described, it will both give rise to the paroxysms of coughing, and will prolong the paroxysms should they arise from irritation within the lungs themselves. I have recorded cases where, after patients have experienced no benefit from long courses of medicine, relief has at once been obtained by the local applications of astringents to the throat.

In the second division will be comprised those cases, the distinguishing features of which will be an excessive amount of secretion, with dyspnoea, occasioned by the difficulty to the ingress of air through the choked up bronchial tubes. The cough is more incessant than in the affections of the former division, and accompanied by loud gurglings in the trachea and chest. Patients are generally much reduced in flesh and strength, with haggard and careworn countenances, livid cheeks and lips, and injected and watery conjunctivæ. The expectorated fluid is thick, yellowish, and muco-purulent. The chest is uniformly dull on percussion; and, on applying the stethoscope, mucous râles are found to take the place of the dry sounds, which were more or less audible in cases coming under the first division. The bronchial tubes are found, after death, filled with mucus, thickened by disease, and ulcerated in patches. The muscular fibres are weakened as the disease becomes very chronic, and their general dilatation is disproportioned to the elasticity of the lungs and the muscular power to expel the secretion. The inability on the part of the patient to rid the chest of this large collection of fluid is so great, that the whole frame may be convulsed without any sound being produced, as in ordinary fits of coughing; and in extreme cases, patients will fall down in an insensible state from the obstruction to the passage of blood through the lungs.

It is said by some practitioners that ipecacuanha exercises a beneficial action in this form of disease; and that, contrary to its recognised power in promoting secretion, it has the opposite effect of restraining it. For my own part, I cannot say that I have ever witnessed any marked good result from the employment of this drug. It must be acknowledged that the most lasting benefit will accrue to our patients by the employment of any means which will tend towards facilitating the expulsion of mucus, and diminishing its rapid formation. Ipecacuanha as an emetic is inadmissible; but I find these means to be best accomplished by the occasional employment of zinc emetics, and the internal administration of zinc and alum, which certainly seems to me to have the desirable power of checking the secretion. The expectorant gums, as assafetida and ammoniacum, together with decoction of senega and sulphuric ether, are usefully employed as adjuncts in enabling patients to expectorate with greater facility. I have not found the external application of counterirritants to be very serviceable in this form of the disease; indeed, as far as my experience will enable me to judge, I believe the value of blisters, mustard poultices, and such like, to be greatly overrated.

To the third division I refer those cases where dyspnoea and expectoration of a tolerably large quantity of thin fluid leads to the supposition of true bronchitis. Sometimes the expectorated fluid is greenish, or varies in tint from yellow, through rusty red, to the florid red of blood itself. On examination, it will be found that the lower lobes of both lungs crepitate; that there is more dullness than usual over the lower portions of the chest; and that the breathing is laboured, in consequence of the air-cells and small tubes being pressed by the quantity of blood always contained in the lungs, rather than from any structural change having taken place in the mucous lining of the bronchi, or from collections of mucus.

In fact, the organ mostly at fault, and the one upon which all these accessories depend, is the heart, the right side of which has become dilated and hypertrophied. Dr. Watson very justly remarks, “that Nature does, as it were, make use of the lungs as the readiest and nearest channel through which to relieve the oppression of the heart. The area of every bronchus and its ramifications afford altogether an immense extent of mucous surface; and Nature calls sometimes on a part, and sometimes on the whole, to relieve the circulation in its embarrassment; and sometimes she requires an augmentation of its natural secretions, in the profuse expectoration of mucus. For a long time this state may exist without any disorganisation; and, when the lungs are unable to hold out any longer, a change of structure takes place, which more and more embarrasses, and finally abolishes, the vital functions.”

In the treatment of this form of disease, I place the greatest reliance upon digitalis. That it has an action over the capillary circulation, independently of its action on the heart itself,

cannot be doubted, from the effect produced in some cases where I have administered it to my patients with great relief. Pereira says: "In some cases, the frequency of the pulse is augmented; and, in other cases, the slowness of the pulse is preceded by an increased activity of the vascular system." Dr. Sanders, in his *Treatise on Pulmonary Consumption*, asserts that foxglove invariably excites the pulse, and refers to an experience of two thousand cases in proof. He says that he has seen the pulse rise from 70 to 120 under the use of foxglove, and, at the end of twenty-four hours, or sooner, fall with greater or less rapidity to 40, or even below this. The occasional abstraction of small quantities of blood from the arm relieves the distressing dyspnoea, and greatly assists the action of medicines; and the administration of such remedies as will powerfully excite the skin and kidneys in their secretions will always produce a beneficial change in this state of disease.

There is also another condition with alteration of the air-tubes seen in very old people, and sometimes in children, the most marked symptom; indeed, I have seen it the only symptom, being a panting respiration. In one case where I had an opportunity of examining the lungs after death, I found the cells collapsed, and the bronchi dilated. This state of disease appears to me to be described by different authors under the names of atrophy of the lung-substance, and *ascid emphysema*. Andral and Stokes endeavour to account for this condition, by supposing that parts of the lungs do not receive their proper amount of air and nourishment, and that the disease affects the lungs of those whose sphere of respiration is limited. Dr. West describes a disease which he recognises in children after hooping-cough and chronic catarrh, as collapse of the lung; and he quotes the experience of Dr. Baly, where large portions of the lungs in adults assumed appearances similar to those in children. Dr. W. T. Gairdner, of Edinburgh, in his *Essays on the Pathological Anatomy of Bronchitis*, mentions this condition of lung as being of common occurrence in the epidemic of 1847. Stourman and Dechambre, in their researches on the structure of the lungs at different periods of life, remark that, on opening the thorax of old persons, even where no serious disturbance of respiration has been noticed, the lungs appear greatly shrunken, distending the cavity far less perfectly than in young individuals. These organs are preternaturally dry; deficient in elasticity; not audibly crepitant; soft and woolly to the touch. This state is due to marked wasting of the walls of the vesicles, and the condition closely borders on genuine atrophy. The changes which ensue as age advances, and when the autumn of life bears a resemblance to the spring of infancy, shew that many of the operations within the body become closely allied in their performance, and such changes are as marked in the respiration as they are in the mind itself.

"Nascentes morimur, finisque ab origine pendet."

Amongst the changes of structure resulting from bronchitis, must be first mentioned a thickening of the mucous membrane, without any other marked alteration. When the disease has existed for a time, an effusion of serum takes place upon the true surface of the mucous membrane, elevating the epithelial covering, which, it must be borne in mind, is not tessellated or laminated, but composed of a single layer; in time, a rent occurs through this, and the clear glairy fluid flows into the interior of the tubes; so long as the ciliary cylinders retain their position, the sounds produced by breathing will be the dry ones; but as the disease proceeds, ill treated or neglected, the ciliary epithelia are detached, as small flakes, or a greater length of a tube becomes stripped, and the ciliary cylinders mixed with the small granules of inflammatory exudations are rolled into pellets, and remain suspended in the expectorated mucus, in the manner I have already described, as the peculiar sputa of the first division of cases. In time, and as the disease advances, the submucous layers become thickened, and the epithelial layer is not produced in a manner fitting it to remain as a covering; the secretion then becomes abundant, and assumes the character I have described under the second division; viz., mucopurulent. This specific discharge was stated by Professor Badham, as early as 1808, to be the result of a transformation of mucus-corpuscles into pus-corpuscles, without the membrane so secreting being ulcerated; and Vogel has since confirmed the assertion by the microscope. Patches of ulceration do, however, occur, and generally about the ducts of the muciferous glands; the mucous coat around becoming softened, and surrounded by a network of injected capillaries. The hypertrophy does not cease here, but the longitudinal fibres are considerably augmented, and

the entire tubes become permanently indurated. When this occurs, the inspirations are rendered difficult, and the expirations comparatively easy. The vesicular murmur is diminished, the chest loses its mobility, and the irregular calibre of the tubes creates a wheezing which accompanies every breath.

Another very important and common structural change is a dilated state of the bronchial tubes. This condition was first pointed out by Laennec, who ascribed it to a mechanical and accidental cause; viz., the accumulation of mucus and the efforts employed to get rid of it; and the continual recurrence of the distension, he believed, led to the permanent dilatation. Andral, dissatisfied with the exciting causes assumed by Laennec, attributed it to a want of proper nutrition of the textures composing the tubes. It remained, however, for Dr. Stokes to advance the most plausible cause. He supposes that, through inflammation, there is a loss of elasticity in the longitudinal and of contractile power in the annular fibres, with incapacity on the part of either to resist the mechanical influence of forcible inspiration, or of violent cough. Dr. Clendinning first drew attention to an absolute increase of lung-tissue, and showed that in some cases of bronchitis, the substance was more dense and heavy, although the vesicular structure be filled with air; and Dr. Corrigan, in the *Dublin Journal* for 1838, advanced an hypothesis to account for this morbid change. He assumed that a fibro-cellular texture becomes developed within the lung, and that the normal longitudinal fibres of the bronchial walls unite therewith, and produce constriction, and ultimately atrophy and obliteration of the pulmonary cells. The bronchial tubes then seek, through excessive dilatation, to fill up the vacated space; and to this disease he gives the title, *cirrhosis of the lung*. Dr. Williams, in his Lectures published in the *Medical Gazette*, says:—"One cause of dilated bronchi arises from the smaller bronchial tubes becoming permanently closed together with the air-cells, from adhesion of their sides, owing to pressure exercised upon them; and that the larger and middle sized bronchi which are not obliterated have to bear the full pressure of the inspired air, and become consequently dilated by it."

EMPHYEMA AND THORACENTESIS.

By WM. VALENTINE BIRD, M.D., M.R.C.S., Seacombe.

ABOUT two years ago, a young man, aged 25, clerk in a merchant's office, who had been under my care for twelve months previously for fistula *in ano*, which had yielded to operation, but the discharge from which had greatly reduced him, sent for me. On interrogating him, I learned that he had been exposed to cold, keeping late hours, and living irregularly with regard to diet. As the symptoms of which he complained were referrible to the chest, I directed my attention there, and the following was the result of the examination. Distinct crepitant rhonchus was heard on the inferior lateral, and dorsal regions on the left side, and in the inframammary, inferior lateral, and lower dorsal on the right, joined with bronchophony, pleuritic friction, and lancinating pain, clearly indicating that the case with which I had to do was one of pleuropneumonia. Tartar emetic and calomel were the agents then employed; but, finding upon the following day the inflammation still high, and the pain excruciating, I reluctantly abstracted blood by means of leeches. In a few hours the pain had quite subsided, and there were agophony and slightly increased dulness. Small doses of Dover's powder were then added to the powders.

It is unnecessary to pursue the daily history of the case; suffice it to say, the patient so far recovered, as for several months to cross the Mersey regularly, and attend to business, although the effusion in the pleura was considerable, for which absorbents, counterirritants, and diuretics were tried, until the poor fellow grew tired, and determine to let nature have her course; and being of a determined and energetic spirit, he would not be persuaded to take things quietly, but entered heart and soul into duties which involved great anxiety, and exposed him to all sorts of weather and late hours. After some unusually heavy days, however, he became rapidly worse; his left lung, with having to do double work, had evidently been overtasked, and there was great disturbance of the whole system, with excessive dyspnoea. As effusion appeared to be rapidly increasing, I at once determined to tap; and, as on the following day there was oedema of the integument, and nature appeared to be making an effort to point between the fifth and sixth ribs, I made an opening there, first dissecting down, and then dividing the pleura with