

deodorize the place; but the remissness of the friends rendered this measure ineffectual. In Mrs. C.'s house there was nothing of an objectionable nature discovered; but it is possible that there was something faulty in the sanitary condition of the neighbourhood. It is worthy of remark, that the placenta was in each case detached naturally, and within ten minutes.

Chatham, July 30th, 1853.

PUERPERAL CONVULSIONS IN A PRIMIPARA DELIVERED OF TWINS: ADVANTAGES OF CHLOROFORM IN SUCH CASES.

By HENRY RUDGE, Esq.

SINCE the discovery of the superiority of chloroform over ether as an anæsthetic agent, by Professor Simpson of Edinburgh—a discovery destined to render his name immortal—much diversity of opinion has been expressed by accoucheurs, as to the safety and propriety of employing it in labour. It is not my intention to enter upon this field of controversy. My object is to contribute an observation from my own practice, which points out a class of cases in which anæsthesia, induced by chloroform, must be at once recognised as a great boon. I propose to give a simple history of the successful administration of chloroform in a case of puerperal convulsions, occurring in a primipara, during her labour with twins.

CASE. On the 25th of July, at 11 P.M., my assistant, Mr. Boyce, a gentleman of ability and considerable experience in midwifery practice, was called to Mrs. E. M., aged 23. The pains were ineffective, and at considerable intervals. The head presented. She was unusually restless; and it was stated by the nurse that she had been convulsed two or three times previous to the arrival of Mr. Boyce. He remained with her during the night, treating her judiciously. The labour slowly advanced until half-past five o'clock A.M. on the 26th; when, after falling asleep, she was seized with a violent convulsive paroxysm, during which she severely bit her tongue, causing considerable hæmorrhage, before a cork or any substance could be thrust between her teeth. The convulsions were suspended until nine o'clock A.M., when they returned with greater violence, and in frequently succeeding fits. The danger of the patient now being imminent, and the responsibility great, Mr. B. very properly sent for me. On examination, I found the os uteri dilated, and the head presenting. The pains were entirely arrested; and the patient was in strong convulsions, attended with considerable hæmorrhage. Under these circumstances, I quickly procured some chloroform, twenty drops of which were administered at intervals, by means of a folded cambric handkerchief, by my assistant. The effects were magical. The convulsions, after a few inhalations, entirely ceased; and I proceeded to extract the child, which was effected without difficulty. On examination, I found it was a twin case (both females); and a second head presenting, I ruptured the membranes, and extracted the second child without difficulty, with the forceps; and, in consequence of smart hæmorrhage, after a few minutes, I introduced my hand, and carefully extracted the placenta. Leeches and cold applications were applied to the head. After delivery she had, at 3 P.M., one attack of convulsions. She passed a good night; the bowels having been well cleared out. No unpleasant symptom has arisen up to this date.

Mrs. E. M. was not conscious of her delivery; and was much surprised when informed that she had given birth to twins. Both infants are well, and likely to live. I have no hesitation in attributing the favourable issue of this case to the use of chloroform: and I firmly believe that, in skilful hands, it will prove an inestimable boon to the fairest portion of the creation, relieving them from much of the danger and dreadful suffering of tedious and complicated labours—sufferings, the witnessing of which frequently unnerves the strongest of the other sex.

Cominster, Herefordshire, July 31, 1853.

BIBLIOGRAPHICAL NOTICES.

THE PATHOLOGY OF THE BRONCHIO-PULMONARY MUCOUS MEMBRANE. By C. BLACK, M.D., formerly Medical Scholar in Physiology and Comparative Anatomy in the University of London. Part i, pp. 99. Edinburgh: 1853.

Dr. BLACK has undertaken the task of showing the application of chemistry and the microscope to the investigation of pulmonary diseases; of doing, in fact, for these affections what Bowman, G. Johnson, Simon, and others, have done for the kidney and its diseases. The attempt has not, as far as we are aware, been before made—at any rate, not on so extensive a scale as is here presented before us. Although the work is as yet incomplete, the novelty and interest of the subject will tempt us to present our readers with a pretty full abstract of the author's researches; which we may at once state to form a highly valuable contribution to pathological medicine.

Dr. Black first describes the Structure of the Bronchio-Pulmonary Mucous Membrane. He differs from the majority of histologists, with regard to the question whether the pulmonary epithelium is continued into the ultimate cells. He says:

"If a very thin slice of pulmonary tissue be taken from the surface of the lung, macerated for a short time in distilled water to decolorise it, and be afterwards subjected between two slips of glass to the microscope, each pulmonary cell is seen to have a perfect layer of epithelium." (p. 1.)

The uses of the pulmonary epithelium are to protect the basement membrane on which it rests, and to secrete mucus for the purpose of lubrication. In certain forms of disease, however, the epithelial cells "act the part of true excretory organs, and thus eliminate from the blood the elements of disease, in the same manner as the renal epithelium is believed to eliminate the scarlatinic poison in cases of albuminous nephritis." There is, however, this difference; that the morbid products of the bronchio-pulmonary epithelium are physically and chemically determinable; while those of the renal epithelium, in the instance cited, as yet have eluded our means of research. To this interesting subject we shall presently have occasion to return.

Contrary to the opinion generally expressed, Dr. Black asserts that acetic acid *coagulates* albumen. He says that if to the white of egg pure acetic acid be added, and the mixture stirred with a glass rod for a few minutes, distinct flocculi of coagulated albumen will immediately form; and that, if more acetic acid be added, and the mixture be allowed to stand for a short time, the whole will pass into a firmly coagulated mass. He agrees with Kirkes and Paget, that albumen, coagulated by heat, is soluble in acetic acid if boiled with it; but he finds, contrary to their statement, that digestion in the acid produces no effect.

The author next proceeds to the investigation of the Diseases of the Bronchio-Pulmonary Mucous Membrane. These he arranges under the following heads:

- I. Inflammatory Diseases;
- II. Diseases for the most part non-inflammatory;
- III. Lesions of Structure.

Inflammation of the Bronchio-Pulmonary Mucous Membrane may be; 1. Simple, acute, or chronic; 2. Sthenic or asthenic; 3. Specific.

Acute inflammation is subdivided into

- I. Simple Acute Epithelial Bronchitis;
- II. Bronchitis involving the Submucous Tissue;
- III. Cellulitis, or Inflammation of the Epithelium of the Pulmonary Cells.

The first pathological condition of Epithelial Bronchitis is that of inordinate congestion of the blood-vessels of the mucous membrane. This produces encroachment on the calibre of the air-tubes, tightness of breathing, and, by pressure on the nerves, cough. At first, there is dryness, from deficient transudation of fluid; but afterwards exuda-

tion is poured out more quickly than in the healthy nutrition of the part. The percussion note is not appreciably modified; but the diminution in the diameter of the bronchi gives rise to the production of rhonchi, depending, for their amount of loudness and shrillness, on the smallness of the opening through which the air has to pass, the sharpness, tenseness, and rigidity of its edges, and the rapidity of the current of air.

The indications of treatment are to unload the overburdened capillaries, and to prevent their subsequent distension. The former of these is to be fulfilled by depletion and by augmenting the cutaneous circulation by warm clothing; while the tonicity of the capillary walls is to be augmented by the constant breathing of cold air.

The second pathological state of epithelial bronchitis is characterised by an increased secretion of mucus, giving rise to the production of mucous and submucous rhonchi. Dr. Black believes that in this disease "the submucous tissue is not affected, and that the disease consists in an excessive nutrition, arising out of an overplus of nutritive blastema supplied to the basement membrane, and consequently exciting inordinate cell-growth in its epithelial covering". The following is the description of the secretion in this form of disease.

"The secretion, in its simply physical character, resembles at first a thin viscid fluid, similar to the white of egg considerably diluted by admixture with the solution of an alkali. When, however, a quantity of it is collected together in a vessel, it is sufficiently tenacious to form a mass, which adheres to its sides, and which quits them, on inverting the vessel, in long, ropy, stringy portions or bands.

"Microscopically examined, it consists of well formed mucus-corpuscles, mingled with epithelial or basement patches, floating in a viscid fluid menstruum—the contents of cells which have already liquefied. The epithelial or basement patches are

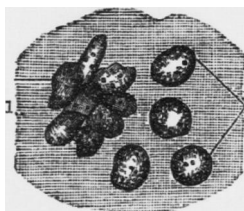


Fig. 7.—1. Epithelial patch;
2. Mucus-corpuscles.

chiefly present in the first portions of the secretion, and are caused by a blighting of their cells by the suspension of the natural fluid transudations from the blood through the basement membrane during the previous stage of the disease. Sometimes these patches are formed entirely of epithelial cells which have almost attained a perfect development, but which yet cohere by their edges, as is shown in the adjoining figure. Had such patches of cells retained their posi-

tion on the basement membrane a short time longer, they would have undergone a further trifling increase of growth, at the expense of the shred of basement membrane which yet intervenes between their edges, after which they would have fallen apart and become separate, isolated, and distinct cells. While thus united, they, in general, measure from 1-2800th to 1-3100th of an inch; but when they have attained full growth, and exist as separate and distinct cells, they have a diameter from 1-2000th to 1-2500th of an inch.

"Their outline is now well defined, and their surface, which presents a full and globular appearance, shows numerous granules, which have an average diameter of 1-18000th of an inch." (pp. 18-19.)

Dr. Black has sometimes, though not often, been able to observe the action of cilia on the mucus-corpuscles just expelled.

The indications of treatment are: 1. To diminish the supply of nutritive blastema to the basement membrane, and thereby to limit the amount of cell growth upon its free surface: 2. To restore the vital tonicity of the bronchial capillaries, and to thus enable them to reduce their quantity of blood to their healthy standard. The first of these reductions is to be fulfilled by abstinence, as much as is practicable, from food and drink, and by exciting other secretions; the second is fulfilled by the breathing of a light, dry, cool—not cold—air. Very cold air, in this stage, would only increase the exhaustion of the vital capillaries. Alkalies, from their power of liquefying mucus, are indicated in all cases of bronchitis from the time of their passing into the second pathological stage. Potassio-tartrate of antimony

exerts a beneficial effect in promoting expectoration, up to a certain point, when its depressing influence on the capillaries tends to maintain the very condition of them which it is the object of the treatment to modify.

Bronchitis involving the Submucous Tissue is next taken into consideration. This differs from epithelial bronchitis in the following particulars.

"Epithelial bronchitis is always acute, whereas the above variety may be either acute or chronic. The former is always sthenic in type; the latter is either sthenic or asthenic. In epithelial bronchitis, the epithelium and basement membrane only are affected; in the above variety, the submucous tissue is likewise involved. In the former, the discharges from the affected membrane consist of epithelial scales or patches, and an excess of the natural secretion; in the latter, certain organic and inorganic bodies are added to the above.

"The effects of epithelial bronchitis are epithelial desquamation or ulceration, and epithelial and basement hypertrophy. Of bronchitis involving the submucous tissue, ulceration, hypertrophy, bronchial abscess, and bronchial obstruction, as primary; and emphysema, bronchial dilatation, and collapse and atrophy of the pulmonary tissue, as secondary." (p. 22.)

This form, in its earlier pathological condition, may be either sthenic or asthenic. Passing over the author's lucid description of the first stage, and of the treatment which he recommends, we come to some very interesting observations on the pathology of the disease in its more advanced form, or what he terms the "second pathological condition".

In epithelial bronchitis, there is an "excessive mucous cell-growth, coupled with epithelial desquamation"; but, in the variety now under consideration, there is also invariably exudation into the submucous tissue. This exudation, the fibrinous portion of which coagulates, forms a nutritive matrix, in which are germinal centres capable of being developed into cells. The phenomena which take place are represented in figure 8.

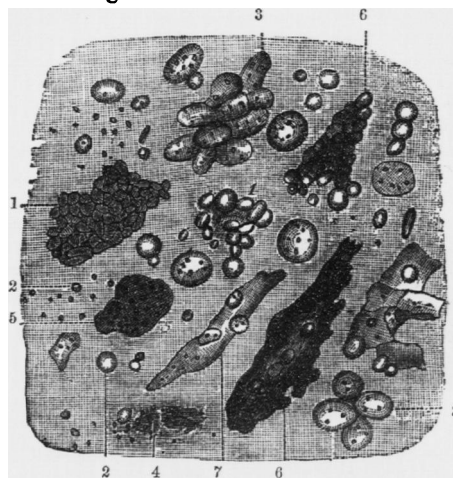


Fig. 8.—1. Exudation masses; 2. Exudation cells and molecules of fibrine; 3. Epithelial patch; 4. Superficial layer of basement membrane; 5. Entire thickness of basement membrane; 6. Mass of coagulated exudation, showing traces of cell development; 7. Bronchial cast.

Pus cells are also sometimes formed in the exudation. Of their formation, Dr. Black gives the following explanation.

"They occur when the quantity of exudation is great, and the inflammatory action continues severe; or when a scanty exudation takes place, and continues to be influenced by a slow, persistent inflammation. They originate, like the exudation cells, in the fibrinous portion of the exuded plasma, and are, in fact, no other than such cells modified by the degree and persistence of the inflammation, and the quantity of nutriment which is offered to them. The physical differences which they exhibit consist in a slight difference of colour, to be afterwards explained, and in the presence of a number of granules, which are scattered over the inner surface of their walls, and which have the same chemical composition as the walls themselves. These cells generally measure from 1-2100th to 1-2600th of an inch in their diameter, contain from three to nine granules or nuclei, are

rendered more transparent by the action of acetic acid, and are entirely destroyed by prolonged contact with liquor potassæ. Thus, in their chemical reaction, they manifest the same disposition as fibrin and albumen subjected to the same reagents. Hence the identity of composition with these substances, in the distribution, as it were, of which the fibrin represents the cell-walls and nuclei, and the albumen the liquid contents. The conditions which determine their formation may be thus explained. A severe inflammation affects the bronchial membrane, exudation takes place into the submucous tissue, but still the capillary engorgement is maintained in all its intensity. None of the fluid exudation is therefore reabsorbed, neither is the temperature of the part reduced. The necessary stimuli of growth abundantly exist, the result of which is, that the inherent vitality of the exuded fibrin germinates, and rapidly develops cells. Owing, however, to the persistence of capillary engorgement, the nutritive elements offered to the cells are in excess of the demand which is necessary for the complete development of their walls. The overplus of fibrin, still in a state of solution, consequently passes by endosmosis into the cells, in which, from the force of homogeneous attraction between it and the cell-walls, it is precipitated in minute granules or nuclei upon the inner surface of the latter, thus constituting the plastic corpuscles of Bennett. Such cells have now reached the utmost limit of development of which they, as isolated structures, are capable; and in this condition they either admit of being assimilated to the surrounding tissues, under the influence of the vital force which pervades the living organism, or they undergo a process of partial decay, during which they assume the particular character of pus-cells.

"Now, this conversion into pus cells is due to the action of oxygen on the structures of the plastic corpuscles, by which they undergo an *adipoceros* degeneration, similar to the well known effect produced on dead muscular tissue when exposed to moisture, and to a very partial contact with air. Hence the origin of the fat which invariably forms a chemical constituent of pus; and hence also the colour of the latter fluid, as a consequence of the saponification of such fat by the alkalis present in the exudation. The oxygen necessary for this purpose is, in this particular instance, derived, at least in part, from the air taken into the lungs during respiration; but when maturation occurs at some distance from a mucous surface, or from the surface of the body, it (the oxygen) is supplied by the blood as it passes through the capillaries in the immediate neighbourhood of the affected part." (pp. 29-30.)

In every well marked instance which the author has been able to examine after death, he has found pus-cells forming a part of the exudation into the submucous tissue. The

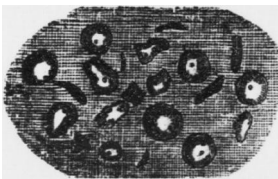


Fig. 9.—Pus cells from imperfectly vitalised exudation.

irregular appearance which they present, as compared with that of exudation-corpuscles, is well represented in figure 9. Dr. Black concludes, very reasonably, that the presence of these cells indicates an imperfect vitalisation of the fibrin from which they were formed, and

that hence the constitutional powers were deficient.

The sputa in this form of bronchitis at first contain an excess of mucus-corpuscles, mixed with a great number of epithelial scales or patches, and with portions of basement membrane, some consisting of the most superficial layer, and others of the whole thickness. (Fig. 8, 4.) The epithelial and basement patches disappear soon after expectoration has been established; and are replaced by masses of exudation-corpuscles, which are either expelled in an imperfect state (fig. 8, 1), or proceed to the form of plastic cells. After this, they must either enter into structural relation with the surrounding tissues, or be thrown off as pus-cells; in which form they now appear in the sputa.

The microscopic examination of the membrane under this condition has led Dr. Black to some important conclusions. He finds that the points, denuded by the removal of the epithelium and basement membrane, are the only parts at which exudation appears; and he concludes that the doctrine, that pus can be formed on the free surface of mucous membranes, *without there being any breach of structure*, is opposed to microscopic examination, which teaches—

"That every case of pus from mucous surfaces is invariably preceded by epithelial desquamation, and not unfrequently by ulceration of the basement membrane itself."

This is, to our mind, quite satisfactory; for how can exudation take place unless the epithelium be removed? And, after all, the exudation-corpuscle is only, in such cases, what would be an epithelium cell if it were not hurried through its development; and the pus-cell is the result of diminished vitality. The differences are in degree rather than in kind.

Bronchitic sputa sometimes also contains portions of coagulated fibro-albuminous exudation, occasionally forming casts of the bronchi, in the same way as casts are formed in the renal tubes. They are more common in subacute and semichronic than in acute attacks; and include granules, exudation and plastic-corpuscles, and occasionally pus cells. (Fig. 8, 6 and 7.) In a foot note, Dr. Black points out a strict analogy between these products of bronchitic inflammation, and the casts in acute and chronic desquamative nephritis. The renal casts, he says, are formed by

"1. Vascular engorgement of the capillaries surrounding the uriniferous tubes, arresting for a time the natural transudation of fluid into the basement membrane, with which they lie in contact; 2. Exhaustion of the vital tonicity of these vessels, exudation as a consequence, and desquamation of those portions of epithelium which have perished during the stage of congestion, and the consequent suspension of all natural transudation; 3. The escape from the denuded surfaces of the basement membrane of an exudation, which, when copious, fills the corresponding uriniferous tubes, coagulates, and thus forms a cast, but which, when scanty, remains for some time attached to the basement membrane, on which it coagulates, germinates, and undergoes the same process of cell development as characterises the products of bronchial inflammation." (pp. 34-5.)

The next subject which occupies attention is the chemical analysis of the sputa of acute sthenic bronchitis. The mean of sixteen analyses has given of

	In 100 parts.
Water	96.75
Organic matter	2.15
Alkaline sulphates	1.10
„ phosphates	
Chlorides of sodium and potassium	
Sulphate and phosphate of lime	
	100.00

The organic matter is three times as much in proportion as in healthy mucus; while the salts are increased tenfold. Again, in healthy mucus the salts are to the organic matter as 1 to 5.66; in bronchitic sputa, as 1.10 to 2.15. This remarkable increase of the salts is thus explained by the author:

"After the coagulable portion of the exuded plasma has solidified on the denuded surfaces of the basement membrane, a continual supply of alkaline fluid from the blood is required to effect its resolution, before it can be assimilated in the growth and development of cells.

"This supply of alkaline fluid, regularly taking place for some time after all inflammatory exudation has ceased, must necessarily lead to a relative increase of salts, as compared with the organic matter of the sputa, which, according to the analysis before given, is actually the case.

"If we take into consideration the absolute increase of organic matter and salts, as well as the greatly increased quantity of sputa, in acute sthenic bronchitis, we can appreciate the drain which is continually being made upon the blood by this cause alone; and if we further regard the waste produced by all the other secretions, and occasionally by the effects of medicines, as well as the negative result of almost total abstinence from food, we can readily understand how and why the bulk and weight of the body rapidly decrease in disease." (pp. 36-7.)

The indications of treatment in the second pathological condition of submucous bronchitis are to remove the exudation, to favour its tendency to cell development, and to procure its subsequent disintegration. For these purposes, alkalis are *primâ facie* the appropriate means; but, where inspissated mucus and bronchial casts exist, the obstruction

to breathing may be so great, as not to allow sufficient time for the alkalies to gradually disintegrate the causes of obstruction through the medium of the circulation. In these circumstances, we must use emetics, selecting those which are least likely to produce a depressing effect—such as sulphate of zinc, a warm solution of common salt, and mustard. When expectoration fails in consequence of debility, expectorants, such as senega, squills, ammoniacum, and the balsams and oleo-resins, must be employed.

By the term Pulmonary Cellulitis, the author designates an "inflammation confined to the epithelium of the pulmonary cells,—a disease which is extremely prevalent among children, and often regarded as pneumonia, and which is not rare even in adults. It bears the same relation to pneumonia, as epithelial bronchitis does to the severe variety of that disease." With regard to its seat, and other particulars, the author states that

"Cellulitis is more common in the lower than in the upper half of the lungs; in the posterior than in the anterior portion of the lungs; in infants and children than in adults; that it may occur suddenly and at once; or that it may supervene on either the epithelial or the more severe variety of bronchitis; and that, when it occurs in the upper half of the lungs, it is generally dependent on tuberculous or other deposit in the pulmonary tissue." (p. 39.)

From the lucid description given by the author, we condense an account of the phenomena of the first pathological condition of the bronchio-pulmonary membrane in this disease. They are, vascular engorgement, with suspension of secretion; sometimes spasm of the capillary bronchi; diminished diameter of the pulmonary cells, and of the minute bronchi; deficient breathing, and hence increased action of the lungs; cough; a sense of weight and sometimes of burning; dulness on percussion, confined to the affected part; and compensatory action of the opposite lung. This compensatory respiration may take place in one of two ways. In one, the breathing is deep, the ribs on the sound side are unusually elevated during inspiration, and the number of respirations is fewer than when activity of function is the means adopted. In the other, where activity of function prevails, the elevation and eversion of the ribs on the sound side exceed but very slightly, and sometimes not at all, those of the diseased side; but the number of respirations is always increased. The former method is invariably associated with the sthenic, the latter with the asthenic form of cellulitis.

The vesicular murmur is diminished, but not, as in pneumonia, entirely destroyed. Indeed, until the tonicity of the pulmonary capillaries is impaired by the continued pressure of blood upon their walls, a sufficient quantity of air is admitted to produce an increased vesicular murmur, by acting on the as yet contractile walls. As vascular engorgement advances, the vocal resonance increases; and tubular breathing and bronchophony are always present in the affected part, modified, however, by the extent and degree of vascular engorgement, by the portion of lung affected, and by the relation of the bronchial tubes to its surface.

The consideration of the second pathological condition of pulmonary cellulitis leads the author to refer to the much debated question of the origin of crepitant and subcrepitant rhonchi. These he explains by the presence of fluid in the pulmonary cells, the slight irregularities on their surface, and the engorgement of the surrounding vessels. If the quantity of fluid fill the cells at the extreme of expiration, if it be very viscid, and if the breathing be hurried rather than deep, the bubbles formed and burst by the passage of air through the fluid are small and numerous; this is the crepitant rhonchus—a sound seldom heard in cellulitis. But if the breathing, instead of being hurried, is somewhat deep, the bubbles are larger and fewer; and subcrepitant rhonchus is produced—a sound most frequently heard in the second stage of cellulitis. Again, if the breathing is both hurried and deep, or deep only, submucous rhonchus is produced. This is heard in the sinking stage of the disease; in which it is also produced in the minute bronchi.

The sputa, when first discharged, present exactly the

same appearance as the first portion of sputum expelled in bronchitis. (Fig. 7.) Subsequently, in pure cellulitis, the sputa are more consistent, viscid, and tenacious, and present a yellowish or greenish-yellow colour. This sputum Dr. Black believes to be characteristic of cellulitis in contradistinction to pneumonia proper, which is almost invariably characterised by the presence of rust-coloured sputa, from the admixture of blood. When examined under the microscope, the sputum of cellulitis is seen to present the appearances represented in figure 11.

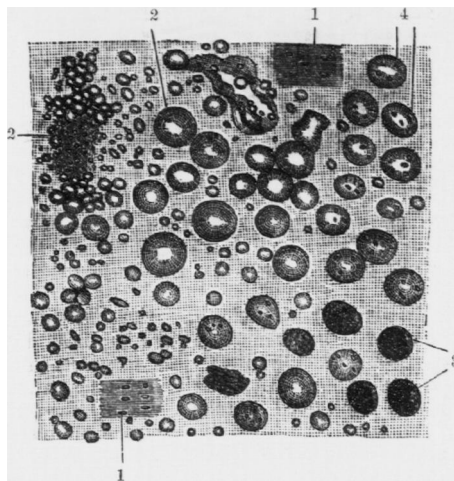


Fig. 11.—1. Portions of basement membrane; 2. Exudation masses and cells; 3. Casts of pulmonary cells; 4. Mucus cells.

If capillary bronchitis be associated with cellulitis, casts of the tubes will also be present. Sometimes the exudation obstructs the bronchi; and then what is called "bronchial abscess" is produced, by accumulation in the cells.

In the sinking stage of the disease, whether it have been of the sthenic or of the asthenic type, the sputa present the microscopic characters delineated in figure 12; and at a

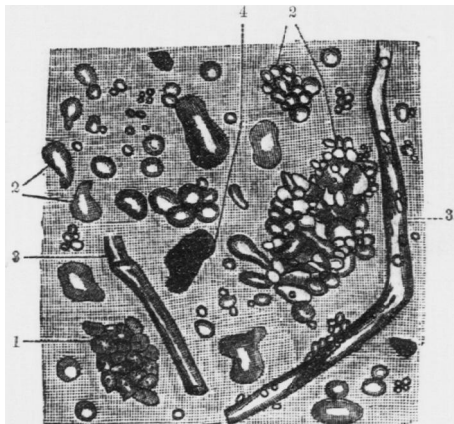


Fig. 12.—1. Epithelial patch; 2. Exudation masses and cells, showing their deficient vitality by their irregular shape; 3. Bronchial casts; 4. Mass of simply coagulated exudation.

still more advanced stage of depression, the appearances represented in figure 13 are seen.

We now come to a most interesting part of Dr. Black's investigations—one in which, to the best of our knowledge, he possesses the merit of originality. We refer to his demonstration of the fact that

"When a constitutional peculiarity, a particular diathesis or another disease, is associated with cellulitis, the exudation from the pulmonary membrane frequently contains evidence of the presence of certain products, dependent on such peculiarity of constitution or other disease in the system."

He has, in this way, found uric acid, oxalate of lime, cyst-

ine, cholesterine, and the colouring matter of the bile, in the sputum of cellulitis.

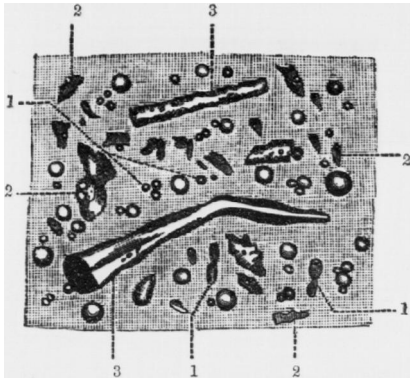


Fig. 13.—1. Minute and abortive cells and cell walls; 2. Minute basement patches of exudation; 3. Bronchial casts.

In illustration of these facts, the author relates three cases.

In the first case, the patient had acute articular rheumatism, with epithelial bronchitis. On the second day, the urine deposited a thick yellowish red sediment of urate of ammonia: the expectoration was thinly viscid and frothy, consisting of epithelial patches and mucus-corpuscles. During the night, the breathing became oppressed, with weight and burning in the lower and posterior part of the right side of the chest, cough, and partial suppression of expectoration: the physical signs indicated cellulitis. On the third day, the urine deposited urate of ammonia: the expectoration was reestablished, and becoming more copious. It was seen to consist of a few epithelial patches, mucus-corpuscles containing distinct globules of urate of ammonia, free urate of ammonia, exudation masses and cells, and irregularly shaped flakes and masses of fibrin. (Fig. 14.) During

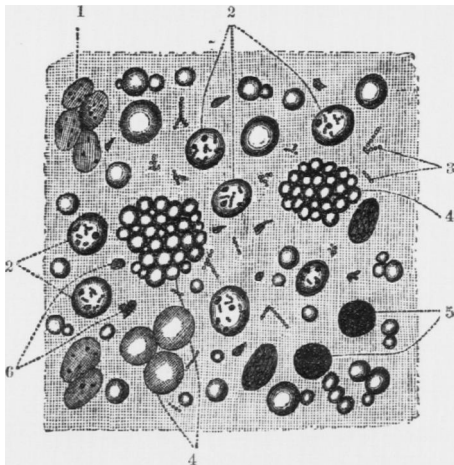


Fig. 14.—1. Epithelial patch; 2. Mucus-cells containing urate of ammonia; 3. Free urate of ammonia; 4. Exudation masses and cells; 5. Casts of cells; 6. Nodules of simply coagulated exudation.

this and the following day, the urate increased in the urine and diminished in the sputa. On the fifth day, no trace could be discovered in the sputa. On the ninth day it reappeared in the sputa, at which time the urine was quite free from it; but on the morning of the eleventh and during the remainder of that day, a copious excretion of the urate took place from the kidneys; and on the following day there was no appearance of it in the sputa. From this time the urate was confined to the urine, in which, on the fourteenth day of the disease, a very copious sediment occurred. The cellulitis henceforth rapidly disappeared: and on the twenty-second day, convalescence from rheumatism was established.

That the globules seen in the sputa were urate of am-

monia, was proved by the production from them of uric acid crystals by the addition of hydrochloric acid, and by the formation of murexide on the addition of nitric acid and ammonia.

In the second case related, a medical student, aged 20, while under treatment for oxaluria, took cold from incautious exposure, and pulmonary cellulitis supervened. On the establishment of the expectorant stage, examination of the sputa proved the occasional presence of urate of ammonia, and of oxalate of lime, particularly at the time when they were being eliminated by the kidneys in small quantity, and were hence accumulating in the blood. Crystals of the oxalate were present in the mucus-corpuscles to a limited extent, being for the most part free in the sputa; but the urate of ammonia was not infrequent in the mucus-cells. In the wood-cut accompanying this case, the form of crystal of oxalate of lime in the sputa is the octohedral: this, with the dumb-bell and ovoid forms, were found in the urine. (Fig. 17.)

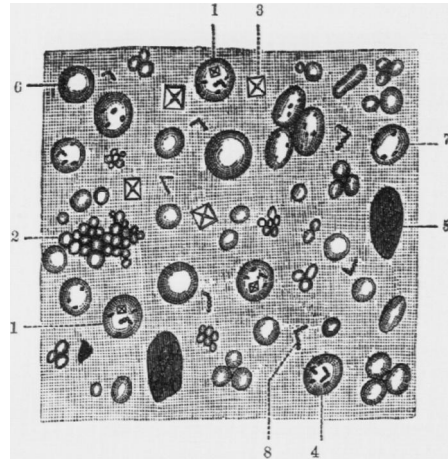


Fig. 17.—1. Mucus-cells, containing urate of ammonia and octahedra of oxalate of lime; 2. Mass of exudation cells; 3. Free crystals of oxalate of lime; 4. Mucus-cell containing urate of ammonia only; 5. Coagulated fibrin, showing the commencement of cell development; 6. Exudation cell of full growth; 7. Mucus-cell of full growth; 8. Free urate of ammonia.

In the third case, pulmonary cellulitis supervened on jaundice in a woman lately confined. The sputa exhibited plates of cholesterine.

In all these instances, Dr. Black employed the usual chemical tests, which confirmed the appearances presented under the microscope.

The demonstration of the presence of urinary and biliary products in the exudation and mucus-cells of pulmonary disease, presents several points of interest, both physiologically and pathologically. We could, if our space permitted, perhaps say much on this subject; but at present we will only remark, that the lungs are thereby demonstrated to be capable of performing the function of *secreting glands*. When they take in a vicarious action for other organs, and the secreted matters are chemically deposited within the mucus-cells, we have a proof of their analogy, in function as well as in structure, with other organs containing fine tubes lined by epithelium lying on a basement membrane.

Chronic Bronchitis is described as a continuance of the second pathological condition of bronchitis affecting the submucous tissue. To the epithelial desquamation, exudation into the submucous tissue and on the basement membrane, and increased mucus-cell growth, are added thickening of the submucous and basement membranes, from non-removal of the exudation which is poured out on them. The mucous membrane presents an increased colouration, apparently of a deeper hue in some parts; viz., where the epithelium has been shed. The parts which are unprotected by epithelium are covered with a greyish white exudation, in which are seen a number of nuclear points, manifesting a disposition to exudation cell development. In other parts,

again, the basement membrane is covered with coagulated molecules of exudation plasma; and, as these are more firmly adherent than the masses of exudation, from these are more particularly produced plastic and pus-cells. The basement membrane is also in parts removed, in the whole or in part, of its thickness. With regard to the aid afforded by the presence of basement membrane in the sputa, Dr. Black observes that—

“The presence of basement patches in the sputum is indicative of basement ulceration; but their absence is by no means diagnostic of the integrity of that structure, inasmuch as the latter may become so charged with inflammatory exudation, that when such exudation undergoes cell development, it may thereby break up the basement membrane, in the same manner as tuberculous deposits will hereafter be shewn to break up the pulmonary tissue, and that, too, into such minute portions that the original structure admits no longer of recognition. Hence, from the above facts, the advantage to be derived, in reference to diagnosis and prognosis, from microscopic examination of bronchitic sputa.” (p. 60.)

When chronic bronchitis has lasted many months, and has been of rather slow progress, there is a minor degree of coloration and puffiness, but considerable thickening, consolidation, and more or less firmness and rigidity of the bronchial tissues generally, due to the progressive organisation of the exudation; the quantity received exceeding that which is discharged. This gives rise to a narrowing of the tubes. It is chiefly manifested in cases of chronic capillary bronchitis, attended with a certain amount of constitutional vigour; and, according to the author, is generally met with in otherwise healthy subjects, from the forty-fifth to the sixtieth year of age. But, after the latter of these periods, bronchitis—

“Owing to the natural disposition to decay which now, in obedience to the immutable laws of nature, pervades every tissue—to the consequent excess of molecular disintegration, as compared with molecular nutrition—and to the looseness and laxity of tissue thereby occasioned, assumes more particularly the character of atonic inflammation of the bronchi; whilst, owing to the deficiency of the nutritive principles of the blood, as compared with early life, the products of this pathological condition exhibit but few of the characteristic structures of inflammation. There are, therefore, various shades of chronic bronchitis, some of which are characterised by a certain degree of constitutional power, others, by the sheer debility attendant on natural decay. The former cases are liable to the sudden supervention of acute attacks of bronchial inflammation; while the latter are not thus influenced. Again, the former may be limited in the extent of the membrane involved; nevertheless, they invariably extend: the latter are more general in the extent of surface affected, but they are always stationary. Of the former kind, plastic bronchitis is an extreme example; of the latter, senile bronchitis. These extremes approach each other by cases of intermediate severity, each of which, by the character of its sputa, indicates, to a considerable extent, the particular pathological condition of the bronchial membrane which exists.” (pp. 61-2.)

To the examination of the sputa in these cases, we shall presently return.

We are reluctantly obliged to pass by several interesting subjects, connected with the effects produced in this disease on the respiratory phenomena, and on the cough, and on the nutrition of the system.

The next subject which meets our notice, is the examination of the sputa in the four following varieties of chronic bronchitis:—

1. Plastic Bronchitis.
2. Early stage of simple Chronic Bronchitis.
3. Latter stage of simple Chronic Bronchitis.
4. Senile Bronchitis.

The characters of these sputa may thus be briefly exhibited:—

1. *Plastic Bronchitis. General Appearance.* Coats of bronchial tubes, solid or tubular; from 1-1000 of an inch to several inches in length; in latter case branched; of bluish-white or dirty yellowish-white colour; soft, and frequently streaked with blood; when tubular, they collapse, and appear as flattened bands. *Microscopic Appearances.* They frequently consist of a fibrous tissue, on which rests a base-

ment structure, surmounted by an imperfectly developed epithelium. If not connected with a tuberculous diathesis, they present a fibrillar arrangement, interspersed with exudation cells: but if of tuberculous origin, they are rather distinguished by an amorphous or granular state of the exudation.

2. *Early stage of simple Chronic Bronchitis. General Appearance.* Drab coloured, viscid, ropy matter, of consistence slightly less than that of white of egg; containing minute portions of yellow or yellowish-white substances, giving a mottled or corrugated appearance. *Microscopic Appearance.* The sputum contains numerous well formed and very granular mucus-corpuscles; patches and masses of coagulated exudation, some being opaque, others partially transparent; together with exudation cells, basement patches, plastic and pus cells, bronchial casts, a few epithelial scales, and granular or amorphous deposit of the sulphate and phosphate of lime. These appearances are represented in figure 18.

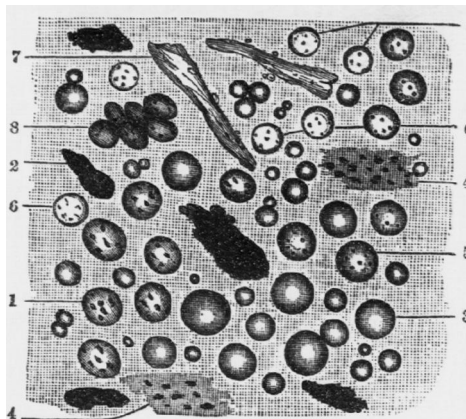


Fig. 18.—1. Mucus corpuscles; 2. Coagulated exudation mass; 3. Exudation cell; 4. Basement patches; 5. Plastic cell; 6. Pus cells; 7. Bronchial cast; 8. Epithelial patch.

Chemical Composition. The mean of twelve analyses gave Dr. Black the following result:—

Water	.	.	.	97.36
Organic matter	.	.	.	1.72
Chlorides of sodium and potassium92
Alkaline sulphates and phosphates	.	.	.	
Sulphate and phosphate of lime	.	.	.	
				100.00

3. *Latter stage of simple Chronic Bronchitis. General Characters.* The sputum is less tenacious, consistent, and variegated than in the former variety. It resembles a thinly diluted and dirty drab serum, in which grey, yellowish-grey, or greyish-white flocculi, and isolated irregular looking masses are suspended; which, after rest for a few hours, sink to the bottom of the vessel. *Microscopic Appearances.* The structures exhibited are the same as in the former variety; but they are fewer in number, and exhibit a lower degree of development. *Chemical Composition.* According to the mean of eight analyses, the composition of the sputum in this form of disease is—

Water	.	.	.	98.83
Organic matter	.	.	.	1.02
Chlorides of sodium and potassium15
Alkaline sulphates and phosphates	.	.	.	
Sulphate and phosphate of lime	.	.	.	
				100.00

4. *Senile Bronchitis. General Appearances.* The colour and consistence of the sputum are similar to those of a thin solution of gum, through which numerous small, irregular, yellowish-white or drab, flocculent, and semi-solid bodies are dispersed, which, after a short time, sink to the bottom, and occupy about 1-14 of the height of the fluid. *Microscopic Appearances.* The supernatant fluid consists of a

thin menstruum, containing numerous nodules of fibrine, from 1-1000 to 1-18,000 of an inch in diameter: a few isolated exudation cells; a few superficial basement patches; and a very scanty proportion of irregularly oval mucus corpuscles.

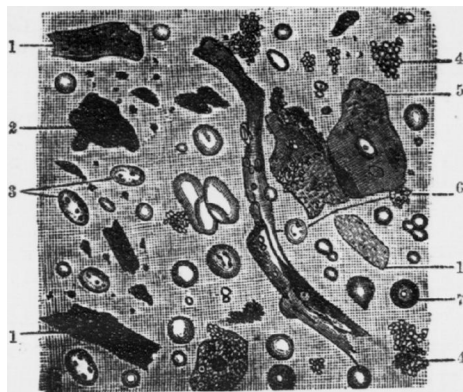


Fig. 19.—1. Basement patches; 2. Mass of coagulated exudation, showing traces of cell development; 3. Mucus-corpuscles; 4. Exudation masses, showing diminutive cell growth; 5. Thin layer of exudation, showing cell development at points of its surface; 6. Bronchial cast; 7. Collapsed blood-disc.

The sediment exhibits the same scanty numerical proportion of mucus-cells. There are, in addition, a few isolated exudation cells. The number of exudation masses is great; but they present a mere trace of cell development. There are also present superficial basement patches, bronchial casts, sometimes a few pus cells and blood globules, and thin, transparent, irregularly formed layers of coagulated exudation.

Chemical Analysis. The mean of six analyses gave the following composition:—

Water	99.14
Organic matter	.72
Chlorides of sodium and potassium	} .14
Alkaline sulphates and phosphates	
Sulphate and phosphate of lime	
	100.00

For the explanation of the pathology of these forms of sputa, we must refer our readers to Dr. Black's Essay, promising them that they will find much to repay a careful perusal. We must also pass over, with a similar recommendation to attention, his remarks on the treatment of Chronic Bronchitis, and on Specific Inflammation of the Bronchio-pulmonary Membrane.

Dr. Black concludes his work, so far as it has been presented to us, with an examination of the following question: "How far are the different forms of Asthma dependent on inflammation of the bronchio-pulmonary membrane?"

He recognised two distinct forms of asthma—

"One in which the paroxysm comes on suddenly, and is followed by an interval of perfect ease, during which there is neither the slightest difficulty of breathing, nor the least increase of the bronchio-pulmonary secretion; the other, in which the invasion of the paroxysm is more gradual, in which there is more or less straitened breathing during the interval, and in which the secretion of the membrane is somewhat greater than that of health, and is also changed as to its physical appearance to the naked eye, as well as being microscopically and chemically different." (p. 85.)

The first of these forms he dismisses with a few remarks, referring it to disorder of the general health, or to some local disease apart from the lungs. With regard to the mode of attack, the term "nervous asthma" is appropriate; but, looking to the pathological cause, that of "symptomatic asthma" is more applicable.

The second form embraces the majority of cases, and includes all the varieties of true spasmodic asthma.

The history of these cases points, in nearly every case, to their origin in chronic bronchitis; and this is confirmed by

inspection of the bronchio-pulmonary membrane, and by microscopic examination of the sputa. Dr. Black also finds hypertrophy of the structures composing the membrane, and a manifest increase in diameter in the bronchial muscular fibres, in all cases which have manifested a distinctly spasmodic character before death. He has likewise found thickening of the coats of the vessels; and, in several cases, a degree of hypertrophy of the sentient nerves.

At a more advanced period, a stage arrives, in which distinct paroxysms of dyspnoea cease to occur. The degree of respiration has been permanently brought below the standard of health; and this is attended with a diminution in the bulk of the body. The sputum in this state consists of fully formed mucus and pus-cells, the latter being numerous; and of exudation-cells. There are also a few superficial basement patches, a few minute opaque nodules of fibrin, and transparent irregular layers of exudation plasma. Very few bronchial casts, and as few epithelial patches, are found. The structures composing the mucous membrane have undergone a process of matting together; while the circular and longitudinal fibres are hypertrophied and so amalgamated, that their power of contracting is in a great measure lost. We also find occlusion of the bronchi, lobular collapse, and vesicular emphysema.

To explain the occurrence of spasmodic asthma, Dr. Black has performed some experiments in order to show the properties of the bronchial muscular fibre, and its influence in the production of the asthmatic paroxysms.

Volkman has asserted that galvanism, applied to the vagus nerve, will cause contraction of the bronchial muscles; and he states that a lighted taper, placed opposite to the open end of the trachea, could be in this way extinguished. Dr. Black relates four experiments which he performed with the pulmonary organs of animals, in which he applied galvanism both to the pneumogastric and to the sympathetic nerves, without producing the result described by Volkman. On applying the galvanic stimulus to the lungs, or to denuded portions of the bronchi, the end of the trachea being directed beneath the surface of water, bubbles of air escaped through the water, showing the contractility of the bronchial fibres. In some of the experiments, the smallest bronchi were observed to contract during the experiment. For the details of these experiments, we must refer to the work itself; merely stating the results at which Dr. Black has arrived.

"The result of these experiments shows that the muscular fibre of the bronchi, as also the fibrous tissue of the mucous lining, is endowed with the power of contractility; that this property is excited by stimuli directly applied to it; that it is highly questionable whether such property can be called into action by stimulation of the trunks of the bronchio-pulmonary nerves: that the mode of contraction is similar to that of the non-striated muscular fibre, commencing at the point of stimulation, and gradually propagating itself to neighbouring fibres; that the expulsion of air from the minute bronchi is, by virtue of their structure, more rapid than from the larger bronchi; that, in the latter tubes, the presence of their cartilages, the consequently limited action of their muscular fibres, and the greatly increased area of such tubes passively retard, rather than actively augment, the speed of the outward column of air set in motion by contraction of the smaller bronchi; that this negative opposition of forces is further increased in the trachea; and that, therefore, the expulsion of air from the lungs can never, under the above circumstances (*i.e.*, unaided by contraction of the expiratory muscles), take place in a forcible manner; but must, on the contrary, be a slow, continued, or intermittent oozing of air, according to the continued or intermittent action of the cause of the contraction of the bronchial and other fibres." (p. 91.)

According to Dr. Black, the longitudinal and circular fibres of the bronchio-pulmonary membrane take an important part in the act of respiration; and he gives the following formula, as representing the expiratory forces:—

During the commencement of Expiration, { Vesicular and Bronchial Contraction, maximum.
Muscular Contraction, minimum.

At end of Expiration, { Bronchial Contraction, minimum.
Muscular Contraction, maximum.

The term "muscular contraction" is applied to the external respiratory muscles.

To illustrate the direction of the action of the component forces of the longitudinal and circular fibres of the minute bronchi, Dr. Black makes a happy application of the principle of the *parallelogram of forces*.

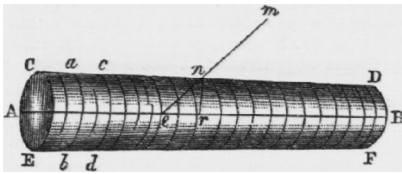


Fig. 20.

"Let A B represent the axis of a portion of the bronchial tube; C D, E F, two of its longitudinal fibres, directly opposite to each other, so that a plane passing through them would likewise pass through the axis A B; and let a b, c d, be circular fibres, and n a radius of one of the circles. Now, if we suppose the expansive and contractile forces of the circular fibres to be in operation, it is evident that the circumferences of these circles, and likewise their radii, increase and decrease respectively. It is also evident that, if the forces of the circular fibres alone are in operation, motion of any point n takes place in the direction of the radius $n r$, because n is the extremity of that radius, which increases or decreases during the act of expansion or contraction. But we have likewise the expansive and contractile forces of the longitudinal fibres in operation, which tend to move the point n in the direction C D. Hence, by the principle of the parallelogram of forces, motion of that point takes place in the direction of a straight line, $m n e$, lying in the plane C D E F, and passing obliquely through the centre of the tube, with an angle, $m e r$, greater or less, according as the ratio of the expansive and contractile forces of the circular fibres to those of the longitudinal is greater or less.

"From the above representation, it is evident, that the expansion and contraction of the minute bronchi are in the diagonal of a parallelogram described on one of the longitudinal fibres, the sides of which parallelogram represent the two forces of the longitudinal and circular fibres; and we have only to conceive the maintenance of the contraction of these fibres at any and all points of their range of action, to understand the proximate cause and the different degrees of the asthmatic paroxysm." (pp. 94, 95.)

The author then notices bronchial dilatation, which he explains on the principle of unequal progress of disease, parts of the tube having lost their contractile power, while other parts are free. The production of dilatation is further favoured when the complete or partial obliteration of some bronchi causes an excessive quantity of air to be forced into others.

The proximate of spasmodic asthma being an irregular contraction of the bronchial fibres, the next question to be determined is, On what pathological condition does it depend? Dr. Black does not believe that the nerves have any influence; and that, therefore, the direct cause of the contraction cannot exist at a remote part of the system. With this view, we can scarcely at present agree. It does not follow that, because Dr. Black has failed in producing contraction of the bronchi by stimulating the vagus nerves of healthy animals, a diseased bronchio-pulmonary structure may not be liable to inordinate muscular contraction, from stimulation of its afferent nerves through disorder of some other part of the system. And we cannot imagine such a well marked line of distinction between the cases of true *sympathetic* asthma, and those of spasmodic asthma connected with bronchitis. Further, we find the author, a page or two further on, referring to indications of treatment derived from the "presence of undigested food in the stomach". This, and other forms of gastric and hepatic derangement, certainly sometimes excite or aggravate the asthmatic paroxysm. At the same time, we fully admit, with Dr. Black, that the necessary pathological condition is

inflammation of the bronchio-pulmonary mucous membrane and its consequences.

Returning to the exciting causes, we find the author referring them exclusively to agents acting locally on the diseased membrane, viz., sudden reduction in the atmospheric temperature; inhalation of irritating vapours, or of dust; accumulation of mucus; vascular congestion of the membrane; and possibly the slight retention of carbonic acid in the blood; the two latter causes operating principally during sleep.

In the treatment of true spasmodic asthma, the indications, in order to obtain permanent benefit, are those of chronic bronchitis; while the indications during the paroxysm are thus concisely explained:—

"1. To relieve spasm of the bronchial fibres.

"2. To withdraw the exciting cause, and to correct any condition of the system which may indirectly contribute to an attack.

"The spasm is relieved by the exhibition of ether, opium and its different preparations; by lobelia inflata, camphor, colinum, henbane; by extensive counterirritation to the chest, and by the cautious inhalation of chloroform when no cardiac disease exists. Benefit is likewise derived from the use of assafetida and turpentine enemata; and, during the intervals of the paroxysm, from the exhibition of belladonna and stramonium, in conjunction with the remedies already indicated in the treatment of chronic bronchitis.

"In withdrawing the exciting cause, regard must be had to its particular nature. If it depends on any irritating qualities of the air breathed, these must, as far as is practicable, be obviated, by removal to the more congenial air of another apartment. If, on suddenly increased vascular engorgement of the bronchio-pulmonary capillaries, derivation to the skin should be energetically solicited by counterirritation to the chest, the warm stimulating pediluvium, by warmth to the general surface, in the form of warm water or vapour bath, and by the internal administration of the acetate of ammonia, camphor julep, coffee, and the different carminatives, followed immediately by a brisk purgative. If on the accumulation of mucus in the bronchi, or the presence of indigested food in the stomach, an emetic of antimony, ipecacuanha, or the sulphate of zinc, must be exhibited, according to the particular features of the case,—antimony being the preferable where the patient manifests a moderate degree of constitutional vigour, and ipecacuanha or the sulphate of zinc in cases attended by marked debility.

"To correct any condition of the system which may indirectly contribute to an attack, it will be necessary to inquire into the state of the general functions, and particularly those of the digestive organs, and to treat any deviation from the standard of health according to the recognised principles established by experience." (pp. 89, 90.)

The copious analysis which we have given of Dr. Black's work will, we believe, sufficiently justify us in declaring it to be one of the most valuable contributions, as far as it has gone, to the pathology of diseases of the pulmonary organs, which we have ever met with. The application of the microscope and the test-tube in the investigation of disease was, a very few years ago, an acquirement confined to a favoured few; but the day is evidently coming, when the physician who is not able to make at least a certain degree of use of them will be regarded in the same light as would now be one who was ignorant of the application of the stethoscope. Dr. Black has made an advance in the right direction; but while he brings prominently forward the value of chemistry and the microscope, as aids in the investigation of chest-diseases, he does not underrate the stethoscope and the pleximeter; and his remarks on treatment are on the whole highly judicious. We trust that he will not long delay presenting the profession with the results of his examination into other diseases of the respiratory organs.

We may here state that, in order that the descriptions transferred to our pages might be more easily apprehended by our readers, we applied to Dr. Black for the loan of some of the woodcuts with which his work is illustrated. Dr. Black at once more than acceded to our request, by placing the whole of them at our disposal.

EVERY MOTHER'S BOOK: Plain Advice on the Management and Diet of Infants, with Observations on the Symptoms of the Diseases to which they are liable. By WILLIAM PEARCE, Esq. 12mo., pp. 46. London: 1853.

We cannot commend this tract. It contains certainly some truths, but it likewise contains errors of serious magnitude. Take for example the following passage:—

“Where the unfortunate mother has surrendered her own life in giving birth to the infant which survives her, or where, from malformation of the breast, or other causes, it is impossible for the mother to suckle her child, we must endeavour to provide something as nearly as possible similar to the milk which, under more fortunate circumstances, the child would have received. Good cow's milk, prepared according to the following form, is an excellent substitute for mother's milk in the early months of feeding:—

“Take half an ounce of fresh mutton suet, cut into small pieces, and tie them in a muslin bag, taking care that they are not pressed upon; boil in a pint of cow's milk, to which half an ounce of good oatmeal and a teaspoonful of powdered sugar candy have been added.

“Of this give an ounce (*two tablespoonfuls*) every two hours, or a smaller quantity more frequently.” (p. 15.)

We have had a considerable experience in directing and observing minutely the rearing of infants upon a substitute for mother's milk. We never allow a healthy infant, for the first two months, to have any other food as a substitute for its mother's milk than cow's milk diluted with two-thirds of water, and well sweetened with fine sugar. Of this fare we sanction *an unlimited supply*, at intervals of from one and a half hours during the day, and three or four hours at night, provided it be sucked from a teat. Upon this simple fare, we have seen children grow up in the plenitude of health and strength. If the food be as thin as we have described, no evil can arise from overfeeding: and by allowing an interval to elapse between the times of feeding, digestion goes on better, and fretfulness is averted. To weak or scrofulous infants, the addition of a little mutton suet is good, or the same benefit may be obtained by giving two teaspoonfuls of cod liver oil daily. Oatmeal, and all farinaceous foods, are unsuitable and unnatural for the first two months, and are certain to induce fits of feverishness and griping pains. How oatmeal should be set down in the above receipt, we cannot imagine. After the second month, rusk, melted down in the sweetened milk and water, is useful; but the food must still be thin, and sucked from a teat by the infant. The exertion of sucking is, for many reasons, very salutary.

EDITOR'S LETTER BOX.

CHLOROFORM IN MIDWIFERY.

LETTER FROM F. H. RAMSBOTHAM, M.D., TO THE EDITOR.

SIR,—In the number of your Journal for June 19th, which did not come under my notice till a few days ago, there is a paper by my friend Dr. Snow, on the exhibition of chloroform in obstetric practice. He notices a case that proved fatal, subsequently to the inhalation of that drug,—reported by me in the last edition of my *Principles of Obstetric Medicine*,—in a manner which might lead your readers to suppose that the patient referred to had been under my own care. This was not the case: I obtained the history from a friend, who conducted it, who kindly supplied me with the facts, and permitted me to publish them.

Although I am quite sure the chloroform was given with caution and judgment; and although I consider the treatment, after the dangerous symptoms had appeared, as the best that could have been devised; nevertheless I think it right to state thus much, that no misapprehension may exist.

Dr. Snow says, “he doubts whether I would have considered this death as due to the medicine, if I had had extensive experience in the use of chloroform, either in obstetric, or any other class of cases.” I have myself seen quite enough of the action of this medicine, and a sufficient number of deaths under its

use have been reported, to impress me with the conviction that chloroform can in no case be given, to the production of an *entire annihilation of the mental faculties*, and the *complete destruction of sensation*, without some risk; and, in regard to the instance under discussion, notwithstanding Dr. Snow's authority, I am still of opinion that the fatal event was occasioned by the inhalation.

Dr. Snow argues that, as the symptoms I have detailed differ from those hitherto observed in poisoning by chloroform, therefore they must be referred to some other cause, probably disorganisation of the kidneys; and, in confirmation of his view, he gives the outline of a case with similar symptoms, that occurred under the hands of Dr. Murphy, in which chloroform was taken, and where granular degeneration of the kidney was detected on dissection.

As no *post mortem* examination was made in the case that I have put on record, we must remain in the dark as to the condition of the internal organs; but, as I never saw such symptoms supervene after labour as those that appeared in that case, and as I do not recollect of any such on record, I think we may fairly refer them to the chloroform itself. It is not unlikely, indeed, that some organic disease might have been lurking in the system; but the question raised ought to be, not whether any important organ was the subject of degeneration, but whether, if that were so, the train of unhealthy action, which terminated in death, did not arise from the influence of the medicine on the diseased structures; or, in other words, whether the lady would have died in this way, if chloroform had not been exhibited. I cannot help believing that such would not have happened; and therefore attribute the distressing result to the noxious qualities of the drug.

With respect to a case of puerperal mania following the administration of chloroform, which I have alluded to in the same work, but without going into particulars, Dr. Snow remarks that “I do not state at what period after labour the mania commenced; whether, for instance, an hour or a month.” He is quite correct; for I merely mentioned the case casually for the purpose of illustrating an argument not strictly professional, and did not propose to detail it. But, being called upon in this way, I may be allowed to state, that the first decidedly maniacal symptoms shewed themselves within three or four days after delivery, as far as I can recollect; and that the account given to me when I saw the lady induced me to believe that she had never been quite herself since her labour. I was told that she had scarcely slept; and that, until her mind succumbed, she was constantly exclaiming, “Oh! that chloroform; I cannot get rid of the smell of that chloroform!”

Dr. Snow remarks, “it is well known that out of the vast number of patients, to whom this agent has been administered for the performance of capital operations, a few have unfortunately died while inhaling it, or a minute or two afterwards; but it is satisfactory to know that no accident of the kind has happened in the practice of midwifery.” Dr. Snow should rather have said that no case of the kind has come before the notice of the public. We can be by no means sure that such cases may not have happened, though they have not been made known. I sincerely hope I may be wrong in this supposition; and that future experience may demonstrate that these vapours can be administered under labour, not only with safety, but with all the advantages that their advocates teach us to expect from them. It does not require a great stretch of credulity, to believe that every one who possessed the least spark of humanity would receive with joy and gratitude so easy a method of abrogating or assuaging the pains of parturition, if only it can be proved that the practice is void of danger.

Dr. Snow truly says, “when the practice of inhalation in midwifery was first introduced by Dr. Simpson, he adopted the plan, which is universally followed in surgical operations, of making the patient unconscious at once, and keeping her so to the end of her labour.” It was against this thorough subversion of mental consciousness as well as personal sensibility, thought it might be comparatively temporary, that I ventured to raise a warning voice. Believing, as I did, that we are not warranted in encountering the hazard attendant upon such a complete prostration of the faculties as was then insisted on, merely for the purpose of deadening the physiological pains of parturition, I considered that I should not be doing my duty, as a public teacher, if I withheld from my professional brethren the fears with which my own mind was so deeply imbued.

Contrary to the belief formerly entertained, it is now said (and from the trials I have myself made, I have no doubt with truth) that a large proportion of the suffering of labour can be removed by placing the patient only partially under the influence of the