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CANADA
MEDICAL & SURGICAL JOURNAL.

ORIGINAL COMMUNICATIONS.

On the Pathology of Miner's Lung. By WM. OSLER M.D.,
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(Read before the Medico-Chirurgical Society)

Situated as we are, at a considerable distance from mining centres, it is only occasionally that cases of disease resulting from the inhalation of coal dust are brought before our notice. Having lately had such a case, I take this opportunity of laying it before you, together with a hitherto undescribed specimen from the Museum of the College, and also, other specimens illustrating the pathology of lung pigmentation. The man from whom I obtained the lungs of the first case I am about to describe was a powerful, well built Scotchman, 36 years of age, who died under my care in the small-pox department of the General Hospital of Variola maligna, after an illness of five days. Throughout the attack there were no symptoms referable to disease of the lungs; the breathing, it is true, was greatly accelerated, but not more than is usual in cases of hæmorrhagi small-pox.

Post-mortem examination, four hours after death—On opening the thorax the lungs appeared very full in volume, and instead of collapsing, projected slightly forward. The lower lobe of the right lung was adherent to the pleura in front and laterally by thin, delicate bands, apparently not of old date. Left lung and upper part of right free. No fluid in the pleural cavities. On removal from the chest both lungs presented over their whole surface a uniform, deep blue-black colour; so general was it, that not a trace of the

natural hue of the organ remained. At the apices and in front the colouration was not as intense as in the posterior regions, but here it was exaggerated by the hypostatic congestion existing in these parts. Both lungs were crepitant throughout and floated in water. Cicatrices existed at the apices. Several patches of collapse were noticed along the anterior free margins. Pulmonary pleura somewhat opaque, and thickened to such a degree that even with a lens the air cells could not be seen through it, except at one border where they were much dilated and emphysematous. At spots, probably corresponding to the interlobular septa, the colour was darker than at others. On section the organs presented an intensely black colour, and the serum which flowed from the cut surface was of an inky hue. The posterior lobes were sodden and œdematous, but still crepitant, and floated in water. Here and there throughout the substance small patches of apoplexy—the largest the size of a walnut—could be seen. When squeezed a fluid like ink could be expressed, which left a dark stain upon the hands. Repeated washing of a portion of lung diminished considerably the intensity of the colouration. On the surface of a portion thus treated different shades of pigmentation can be seen. Round or linear patches, ranging in size from a pea to a hazel-nut, of an intensely black colour exist in large dark, slate grey areas. In many of these spots the air cells can still be detected, in others they appear to be obliterated, and the section in this case is uniform, not porous. On careful dissection I was able to demonstrate in nearly every instance that these spots had a small bronchiole penetrating them, and this can be seen in several of the specimens. These patches when excised and placed in water always sank, even when air cells could be seen in them. Many such existed just beneath the pleura and their situation was easily told, not only by the deeper colour at these localities, but, also, by the fact that a slight superficial puckering sometimes existed. To the feel they were also firmer, more solid, than the other parts of the lungs, not so much so,

however, as the apoplectic spots. The portions of lung tissue intervening between these intensely pigmented areas were of a uniform slate grey colour, studded with the hæmorrhages already mentioned. The fluid expressed from these pieces was very dark. The air-cells when examined with a lens appeared almost universally emphysematous, more especially those in the upper and anterior regions of the lungs, occupying a superficial position. Certain limited sections of the lungs, generally situated superficially, appear denser than others, the air cells are visible but very small, and the amount of alveolar tissue in proportion to the air space is abnormally great. This may be due, of course, either to collapse or to an increase of the fibrous elements in the walls of the air cells. I am inclined to think it due to the latter from examination of the air cells, and also after comparison of it with several genuine patches of collapse, which existed at the anterior free borders. Several small cavities, the largest about the size of a pea, containing air were met with, probably large emphysematous cells, as they were quite devoid of any definite wall, and the air vesicles opened directly into them. The tissues of the larger bronchi preserved their natural colouration, but as they reached their ultimate ramifications, when diminished to the size of a crow-quill, the mucous membrane became of a deep black colour, and the surrounding elements of the walls were very generally pigmented. The bronchi were filled with a frothy mucus, but the mucous membrane was not thickened, nor were there any evidences of chronic bronchitis. The *tunica adventitia* of the blood vessels—large and small—was impregnated with the dark particles and the transverse section of an artery presented three zones of colouration, a dark one corresponding to the *adventitia*, a white fibrous one to the *media*, while the red central zone occupying the lumen of the vessel is made up of the blood corpuscles. The bronchial glands were firm, not enlarged, and presented an excessively black surface on section.

Microscopical examination : first, of the dark coloured

serum, which can be so readily expressed. A variety of cellular elements are here met with, and the colour is seen to depend upon black granules, partly free, and partly inclosed within the cells. A difference would seem to exist in this respect as to whether the drop examined was furnished by one of the darker spots, or from the intervening greyish portions; in the former case there are more free granules, in the latter they are generally inclosed within corpuscles. These carbonaceous particles range in size from almost imperceptible molecules up to portions the 1-12000 of an inch and over. The latter are, as a rule, angular and do not exhibit the Brownian movement. In addition, pieces are occasionally met with of an elongated form, and of a brownish red colour at the edges, or, if thin enough, over the whole mass. Some of these can be seen with the naked eye, and I measured several more than 1-250 of an



inch in length (See fig. 1). Other very peculiar forms were noticed, which, from the regularity of their outlines, I believe to be structures connected in some way with the coal, but upon this point I lack the necessary knowledge to decide. The cellular elements found in the expressed serum may be arranged as follows:—

I. Groups of flat cells each with a distinct nucleus, the boundaries of the cells, in many instances, being ill-defined, or sometimes similar cells are grouped together upon a portion of membrane. Free in the field are others identical with the individual ones composing the above groups. They are about the 1-1200 of an inch in diameter, nucleus large and sharply marked, borders often indistinct, cell substance granular, friable, often broken away in part, leaving the nucleus exposed. The free nuclei of these cells also are present in numbers. Carbon granules are only occasionally met with in these corpuscles, and I think they must be regarded as the original cell elements of the alveoli, and perhaps, to a large extent derivatives of them in a slight catarrhal process.

II. White blood corpuscles, distinguished from the former by their smaller size and less distinct nucleus. They only occasionally contain dark granules.

III. Corpuscles in which the bulk of the carbon is contained, and upon whose presence the black colour of the expressed juice in most instances depends. These are very variable in size, and may, on the one hand, approach the colourless blood corpuscles, and on the other, attain to five or six times their diameter. See figure 2 (*a*).

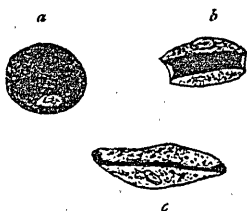


Fig. 2.

In shape they are usually round, sometimes oval, occasionally irregular, very rarely approaching the spindle form. Inside all of these the carbon particles exist in extraordinary numbers, filling the cells in different degrees. Some are so densely crowded that not a trace of cell substance can be detected, more commonly a rim of protoplasm remains free, or at a spot near the circumference, the nucleus, which in these cells is almost always eccentric, is seen uncovered. The contained carbon particles are, for the most part, angular, and when not too thickly massed together, a reddish brown colour can be observed in each. In a few of them comparatively coarse portions of coal are found imbedded, stretching the cells to their utmost limits. At fig. 2 (*b* and *c*) such cells are represented, and in the latter the corpuscle has evidently accommodated itself to the shape of the piece of coal. One most curious specimen was observed: on an elongated piece of carbon three cells were attached, one at either end, and a third in the middle; so that the whole had a striking resemblance to a dumb-bell. I could hardly credit this at first, until, by touching

the top-cover with a needle and causing the whole to roll over, I quite satisfied myself that the ends of the rod were completely imbedded in the corpuscles, and the middle portion entirely surrounded by another. So strong was the attachment that I failed to separate any of the corpuscles by pressure on the top-cover and other manipulations. Another corpuscle was seen entirely surrounding the end of a small rod, forming a miniature drum-stick, the handle of which was twice as long as the diameter of the corpuscle.

IV. Decolourized red blood corpuscles, which are very numerous in all the specimens examined. Many of them are aggregated together into masses, casts, probably, of the air cells pressed out of the apoplectic centres.

V. Amyloid corpuscles, of which a few well-marked specimens were observed.

We come now to the examination of the lung substance itself, and first of the small dark areas. On teasing portions of these, unless done very finely no structure can be made out, uniformly dark masses present themselves. If, however, the elements are more minutely separated a dense interpenetration by small dark granules of all the textures is observed. We have not here to deal with cellular bodies containing the pigment, for it is free in the interstices of the tissue, and few or no cells can be detected. So thickly is the pigment scattered over the structures, that even an isolated fibril of elastic tissue is with difficulty seen, on account of the granules attached to it. The air cells seem obliterated by the excessive accumulation of pigment and the great increase of the connective tissue, and hardly a trace of them is met with. As before mentioned, the fluid expressed from these parts contains only fine granules with an occasional cell. Thin sections show very well how intense the pigmentation is, but yield very little information as to its distribution, for a uniform black surface is presented, which only here and there in irregular spaces is penetrated by the light. To-

wards the borders, where the tissues are not so densely infiltrated, some of the carbon is seen to be contained within round corpuscles, and also confined in very irregular, somewhat spindle-shaped areas, but whether these latter are connective tissue corpuscles or not is difficult to decide. From their extreme irregularity and the number of their processes it is probable they are not, but only represent the arrangement of the carbon granules among the elements of the tissue. All the coats of both bronchioles and vessels in these areas are impregnated in the same way, but I have not found any of the latter obstructed by accumulations of coal dust.

In passing to the consideration of the histology of the less pigmented and by far the largest section of the lungs, it may be mentioned that a considerable part of the colouration in this is due to carbon granules retained within the cells already described. These exist in abundance throughout the whole substance, and are everywhere present, both in sections and in teased preparations. They are found chiefly in the interstices of the stroma and along the course of the alveolar septa, occasionally, also, lying free in the air cells. Nothing further need be added to the description previously given of them.



Fig. 3. (x 450.)

Secondly, isolated particles of carbon are tolerably numerous, even in situations which, under the microscope, look on superficial examination to be quite free. The membranous walls of the alveoli are constantly seen dotted over with black granules, though it is rare to see any occupying the cells upon it, and in the same way the interstices of the fibrous stroma contain them in abundance. The

manner in which these small particles gain entrance into the stroma may sometimes be observed, as sketched in figure 3, representing the margin of an air cell. Particles of various sizes are there seen, some attached to the free margin, others imbedded in its substance, while others again occupy positions a considerable distance in. A third situation is the point of junction of the fibrous septa, where, in many instances, quite a dense accumulation is met with in the form of fine granules, as is seen at fig. 4.

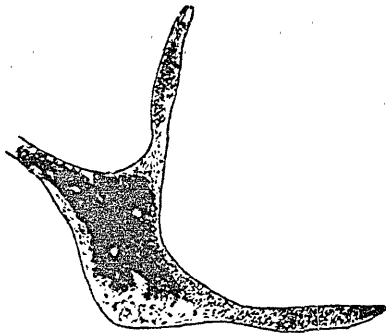


Fig. 4. (x 100.)

A fourth and most favourite locality is the interlobular connective tissue, which cannot be considered apart from that of the vessels and bronchi. Here, as can be seen with the naked eye, the deposit is excessive, and the blood vessels are readily followed as dark, irregular branching lines. The examination of sections of vessels show that in most instances the *adventitia* alone is effected, while the *media* and *intima* remain quite normal. Similarly it is only the loose fibrous coat of the bronchi in which the pigment occurs, though occasionally a transverse section of a bronchus is seen pigmented throughout.

With regard to the alveoli themselves no very great deviation from the normal structure was noticed, save that in many places an increase in cellular elements, the result of a catarrhal process, had taken place on the membranous wall. In some situations, also, a marked thickening of the

alveolar septa had occurred, which was perceptible to the naked eye and has been already referred to in the description of certain areas in which the air cells were much diminished in volume. This was rendered very evident by comparing specimens taken from these areas with others from a healthy lung, or even from more natural sections of the same one. In one or two localities isolated air cells, or small groups, were found filled with colourless tenacious plugs (very similar to those of croupous Pneumonia), consisting of an extremely delicate fibrillar network enclosing various cellular structures, among which those described under (1) and (3) of the elements found in the expressed serum of the lung were the most numerous. The large ones, filled with carbon granules, in some instances gave a dark tint to these small masses.

The most superficial layer of the pleura, composed of a fibrillar membrane upon which the pavement epithelium lies, can be stripped off as a clear transparent structure quite devoid of pigment. Immediately beneath this, however, there is a fibrous layer densely crowded with carbon granules, both free in the tissues and contained in the large round cells, which latter are very abundant in this situation. Oddly enough, just in teased portions from this sub-pleural region some of the coarsest particles of carbon were obtained.

I have been fortunate enough to procure for examination several other specimens illustrating different degrees of pigmentation in the lungs. The first of these, comprising the lower lobe of one lung, was obtained from a Cornish miner who died under Dr. Howard's care some years ago in the General Hospital of Pneumonia. The notes of the case have unfortunately been mislaid so that I am unable to state the condition of the other parts of the organ. Superficially, the whole lobe is of an intense blue black colour, due to the accumulation of the carbon beneath the pleura, and this deposition varies in thickness in different parts, in some forming a very thin layer, while in others it has a

diameter of from two to four lines. At one or two places it is absent, one spot especially, near the root, and through these the light coloured portions of the lung can be seen. On section, irregular spots of an exceedingly black colour are seen scattered over a very pale lung substance. The relation between these two areas of colouration is not the same throughout; towards the root and in the portion of the lobe which rests on the diaphragm the dark exceed the light, while in the posterior and lateral regions the reverse holds good. Closer examination shows that the favourite localities for the pigment are about the vessels and bronchi, and the interlobular connective tissue, which can be seen as dark bands stretching from the pleura into the substance. Very many of the dark areas are firm and indurated, presenting a smooth hard surface on section, with occasionally the remains of a bronchus or vessel in the centre; while others of the same pitchy hue are made up of emphysematous air cells with thick hard walls. The portions of the lobe free from pigment look healthy, the air cells are however emphysematous at the margins and beneath the pleura. Many bronchi and vessels are wholly devoid of any pigmentation at their circumference, others of the former have somewhat thickened walls and from several tenacious plugs were extracted.

The bronchial glands, three in number, attached to the root, are firm and of an intensely dark colour.

In the microscopical examination it was found exceedingly difficult to tease up pieces from the dark indurated areas, on account of their extreme hardness and brittleness. They are composed entirely of fibrous and elastic elements, in the interstices of which the carbon granules are so densely arranged that it is only from the margins, where the fibrils project, that any idea of the structure can be obtained. Sometimes, near the borders, or in a less dense portion, a trace of an air cell is found, but as a rule, all remains of them are obliterated by the overgrowth of the fibrous tissue. Very few cellular elements are found in these localities,

and those present are small and do not contain many carbon granules. On the other hand, in and about many of the less indurated areas, the cellular elements are present in abundance, though not so large and more angular in shape than in the former case. This may be accounted for, however, by the fact that this specimen has been in spirit for over ten years, while the other was put while fresh into a 1 per cent. solution of potassium bichromate. Cells, large and small, containing coarse particles of carbon or even distinct fragments are numerous. In some instances a process of atrophy, or shrivelling, appears to have gone on in these cells, for elongated portions of carbon were seen enclosed in a contracted mass which bore some resemblance to the remains of a cell; or again, others were imbedded in a yellowish coloured substance with irregular hard outlines as though a deposition of inorganic matter had taken place about them. Free in the field were many small angular black particles, also others much more minute. In this case coarse particles of siliceous matter were quite as common as those of carbon, and in one place an aggregation of 15-20 attached to a piece of lung tissue was noticed. None of these were observed within cells. The dark emphysematous localities, which usually have a small bronchus in immediate connection with them, are composed of a variable number of dilated air cells, all of a jet black colour, and with hard fibrous walls. I dissected out a small spot about the size of a cherry stone containing five emphysematous air cells and teased it up very finely, but was unable to find anything like an alveolar membrane, only fibrous tissue everywhere covered by dark granules. In other regions where the pigmentation was less profuse, a definite increase in the fibrous elements in the walls of the air cells can be seen. Instead of the isolated fibres of elastic tissue which in the healthy lung run across the alveolar wall and serve to strengthen it, we have here in many instances a perfect network. Nor are these to be mistaken with their sharp hard outlines for the collapsed capillary vessels, of which traces in the form

of irregular lines can be seen in normal alveoli. The infiltration of the pleura in this case, also, is limited to the deeper layers, the uppermost—basement membrane and epithelium—remaining free. The bronchial glands are unusually hard and fibrous, and microscopical examination shows an enormous overgrowth of the connective tissue with a corresponding diminution in the cellular elements. The few which are present contain numerous carbon granules.

The third and fourth cases do not properly come under the heading "Miner's lung," but they serve to illustrate several points in connection with the subject, and aid, also, in the understanding of the general pathology of lung pigmentation. The third specimen was obtained, like the second, from the Museum of the College, and of it I have unfortunately a still scantier history. All my information is confined to the brief record on the label, "Melanosis." It is a piece about the size of the fist, representing, I take it, a portion near the apex, and is of a bluish black colour externally. The pleura covering it is thickened, in places white and fibrous, at others intensely dark and fully one-fourth of an inch in thickness. The colouration is very uniform, but on section is seen to be chiefly superficial, extending, however, into the interior in the form of bands, between which the lung tissue retains its natural hue. To the touch the whole mass is firm and indurated. The bronchi are thickened and in some cases surrounded by circles of pigment. Several small caseous masses encapsulated in fibrous tissue, deeply pigmented, occur at the apex. The microscopical examination shows that the pigment is chiefly interspersed as small granules among the fibrous elements of the thickened pleura, and in the bands that pass from it into the lung substance. In the former situation sections demonstrate that the pigment is distributed linearly, often in alternate layers, or interspersed between fasciculi of connective tissue. There is a marked absence of the small angular particles of carbon, and very few pigmented corpuscles were met with.

The fourth specimen is from a man, 65 years of age, who died of Bright's disease in the General Hospital under Dr. Ross, to whom I am indebted for the portions of lung. As far as could be ascertained this man had never been employed in mines, nor in situations where he would have been exposed to a sooty atmosphere. An interesting point in connection with this case is that the pigmentation of the skin was deranged; he presented several large patches of Leucosis.

In the portions of lung given to me for examination, the pleura certainly is abnormally pigmented for a man of his age. In parts the dark colour is almost uniform, but the general arrangement is in round, often irregular shaped spots, which are tolerably closely set over the surface and do not correspond to the interlobular septa. On section they are seen to be quite superficial, in most instances confined to the pleura, though sometimes dipping into the lung substance in the form of bands, or else involving the air cells immediately beneath, in which case, these are invariably emphysematous. The lung substance itself is but little affected, only here and there presenting a dark appearance, due to the accumulation of pigment about the vessels and in the interlobular connective tissue. The dark subpleural areas contain a tolerable number of the large cellular elements, but most of the pigment is free among the fibrous tissue. Where the pigmentation extends into the subjacent air cells the septa are dark in colour, and occasionally the alveolar wall was seen to have irregular patches of pigment upon it. Cells containing carbon are also very common in the alveoli, which have been involved in a pneumonic process, and are filled with cellular elements. Sections made parallel to the pleura in these situations show very well how the alveolar septa are covered with pigment, partly free and partly intra-cellular; while the air vesicles are filled with a fine granular substance and cells, many of which contain carbon and are identical with those in the alveolar septa. Small angular particles of carbon are com-

mon in the field, but no coarse ones, like those in cases 1 and 2, were met with. An interesting fact, which will be referred to hereafter with reference to the probable origin of the pigment in this case, is that extravasations of blood were seen in the sub-pleural region, and usually in the vicinity of the dark areas. On several occasions I saw at the edges of small teased portions of an intensely black colour the reddish brown remains of an extravasation. The small pigmented areas in the lungs presented nothing remarkable, they were chiefly in connection with blood vessels.

From the description of the two first cases it is evident that we have here to deal with the early stage of the disease known as Miner's Lung, or, to give it the scientific appellation, Anthracosis. I say the early stage, meaning that the degenerative process can hardly be said to have commenced, and had not these men died of intercurrent affections, they might have lived for years under favorable hygienic conditions. No doubt, however, the point had been reached where further exposure to the impure air of the mines could only have resulted in bringing about serious lung trouble. Ultimately, as the records of *post mortems* show, there arise extensive areas of consolidation—carbonaceous Pneumonia, as it is called,—with numerous cavities containing an inky coloured fluid, and at last death takes place with many of the symptoms of chronic Phthisis, a peculiarity in some cases being the expectoration of a dark colored mucus. In the cases under consideration the intensely black consolidated spots may be regarded as the first step in a series of degenerative changes. Such general infiltration of the tissues by a foreign matter cannot be without a strongly irritating action, the final effect of which would be a proliferation of the epithelial and connective tissue elements, with the result of obliterating the air cells and the formation of firm indurated areas. The larger these become, the more the cellular elements participate in the process, so much the more likely will they be to soften at the centres, and finally form cavities. The indurated spots.

in our specimens were remarkable by the absence of corpuscular elements, and the same would probably hold good in larger areas ; still, even in these, as occurs in Cirrhosis of the lungs, a molecular degeneration goes on in the centre, with the formation of a cavity. In the lungs of all individuals who die of this disease these cavities, which are no doubt often bronchiectatic, are described, surrounded by indurated areas, while the comparatively healthy sections are intensely black and emphysematous. Several cases I find recorded of miners having died of intercurrent affections, in whom the lungs presented an appearance similar to what has been described, viz: uniformly dark in color, but with patches of variable size of a much more intense hue, the lung texture itself being healthy, or a little emphysematous. In some instances the continual inhalation of the dust in mines would appear to produce very little effect, for cases are mentioned of miners exposed for years to the same influences to which others succumb, and yet who were but slightly affected. Predisposition to lung disease is an important factor here, and it has been found that where this exists, they die at a much earlier age than those without this hereditary weakness, which need not, however, necessarily be a true tubercular diathesis. Indeed, in reading over the records of the *post mortems* in this disease, one is struck by the absence of any mention either of true tubercles or caseous masses, and in neither of the cases before us do these elements occur. It was suggested by Dr. Wilson Fox, at a discussion on this subject at the Pathological Society a few years ago, that exposure to the irritating substances in the air of the mines might directly induce the production of tubercles, and that the fibroid masses represented the final change which these had undergone. Against any such view the cases here speak strongly. There is nothing in these lungs which would be called a tubercle by a follower of Lænnec or of Virchow, and yet, if the process was one in any way connected with tuberculosis, we should expect just in this early stage to find traces of it ;

but instead, we find at the outset of the disease what is spoken of as occurring at the close, fibroid consolidation ; the difference consisting in the extent to which it has gone, and in the absence in the former of secondary changes. In its essence the whole disease would appear to consist in an overgrowth—a hyperplasia—of the fibrous tissue of the lungs, induced by the chronic irritation to which they are subjected by the inspired particles of coal dust, a veritable Cirrhosis, or, as it might appropriately be called, the black Cirrhosis of miners. This certainly is the most natural view to be taken of these two cases, and accords best with their general and histological characters. From the fact that in many instances small bronchioles are seen in connection with the fibroid masses we may infer that about them the process begins, and spreads to the surrounding alveoli. In other places the *adventitia* of the blood vessels, and the interlobular connective tissue furnish starting points. We are still in the dark as to how all this takes place, how the air cells become converted into firm, hard areas—fibroid substitution as Dr. Bastian calls it, or why, again, in the same lung, some of the intensely dark spots are solid, while others are emphysematous.

Before referring to the other specimens, which do not, I believe, come in the same class, a few words must be said upon the general subject of lung pigmentation. Briefly, two sources must be admitted, an internal and an external ; in the former, the pigment is transformed hæmatin, and the affection is termed *Melanosis*; in the latter it is inhaled carbon, and the resulting disease is *Anthracosis*. It is only within the last ten or fifteen years that unanimity has been reached on this point. Up to this time many of the leading German and French pathologists refused to recognize the latter source. Even Virchow as late as 1859, basing his observations on portions of miner's lung sent him from Edinburgh, came to the conclusion, though he describes angular particles of carbon from the same cases, that a transformation of the colouring matter of the blood

in repeated small hæmorrhages would account for the whole pigment. The English observers (and with them several French), one and all, as far as my reading goes, from Pearson, who in 1813 first described the affection, took a more practical and common sense view, and attributed to it solely an extraneous origin. Having many more opportunities of observing the conditions under which miners worked, and knowing the foul, sooty atmosphere of the mines, they were led to connect cause and effect, the dust with the disease, and so arrived at the truth years before the Germans, to whom, however, the credit is due of having placed the fact upon an histological and experimental basis. They demonstrated the presence of dotted cells and other structures characteristic of vegetable tissue in the coarser particles obtained from the lungs, and, also, proved that the lungs of animals might be made of a dark color by exposing them for a length of time to a sooty atmosphere. I have been fortunate, also, in these cases to obtain positive evidence of the external origin of the pigment. At fig. 5 a portion of coal is represented which

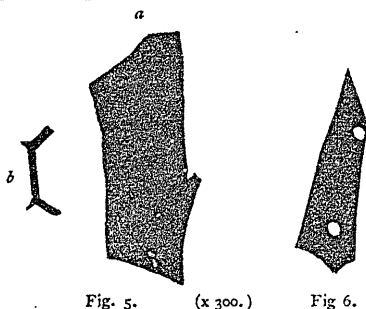


Fig. 5. (x 300.) Fig 6.

exhibits the characteristic appearance of scalariform tissue. This was a very thin flake with distinct cross bars, three of which occupied the whole breadth of the piece, while one other is less evident. The thin spots between the bars were of a brownish red colour. By manipulating I managed to break it across just below the third bar, and was then able to obtain the transverse section, which is given at

fig. 5 (b), and makes it more than probable that this was a portion of a scalariform duct rendered prismatic by pressure, a common structure in ferns, and also plentiful in cannel-coal. Another piece, seen at fig. 6, with two round holes, represents a portion of a dotted cell of fir wood.

To consider now this subject of Anthracosis more closely, and endeavour to obtain an insight into its rationale. A comparison of the lungs of a child with those of an adult, or, better still, of an old man, shows that the natural colouration of these organs undergoes a change as age advances, the rosy tint of childhood giving way to a marbled slate-grey, interspersed with patches or lines of an intensely dark colour. Similarly the lungs of an animal present a marked contrast to those of an adult man; and there can be no doubt whatever that in great measure this change in colouration depends upon the inhalation by him of the products of imperfect combustion of fuel of various sorts, gas, &c. This has been called physiological Anthracosis, in contradistinction to the more extrême condition met with among those who work in mines, and other situations in which the air is charged with soot and coal dust. Against the entrance of these noxious matters into the lungs the nasal orifices are furnished with numerous hairs, which, together with the mucus of these passages, retain a considerable quantity of the dust and coarser particles met with in the air. After a lengthened sojourn in a smoky atmosphere how common it is to see the nasal secretion quite black upon the handkerchief. Still, even if the particles escape retention at the orifice, as they all do when the breathing is carried on *per orem*, a further provision is made for their expulsion when they reach the bronchial membrane, the cilia of which are in constant motion, producing currents which set externally, and slowly and surely convey the mucus with the contained granules towards the larynx, whence they are readily coughed up. In ordinary inspiration the volume of tidal air does not probably reach further than the larger bronchi, and the coarser particles in this

case, if they reach the alveoli at all do so by the force of gravity ; but in the stronger respiratory efforts, just such as miners by the very nature of their work must constantly make, many attain this situation, and, as here no provision is found for their expulsion, nature provides that they shall at any rate be placed in less injurious localities. In what way this is effected, how the small angular particles which can be seen on the alveolar walls penetrate into the interior, has not yet I believe received a satisfactory explanation. Sharp, angular bodies are said to have a habit of working into soft textures, especially if there is any impelling force, however slight, behind ; but what of the infinitesimal particles that we find throughout these lungs, can the same apply to them? Certain it is, however, that once fixed in the alveolar wall they resist all attempts at removal, and they may be seen, as at Fig. 2, in all stages of progress towards the interior. In their further distribution they follow exactly the course of the lymphatics, and the tissues in their immediate vicinity ; where these are most abundant there the pigment is in the greatest quantity, as about the connective tissue of the vessels and bronchi, the interlobular septa, and, above all, just beneath the pleura. Once inside the lymphatic vessels a large proportion of the granules is carried on to the glands at the root of the lung, and is there permanently fixed in the cellular elements, hence the intensely dark colour of these in most persons over fifty. This fixation of the carbon granules in cellular bodies is very remarkable, and must be regarded as an effort of the economy to render harmless what might otherwise be very irritating substances. In the greater part of the lungs in the first case the pigment was contained within large cellular elements, belonging to the amœboid class of connective tissue corpuscles, and in the other cases they were by no means uncommon. These were unusually large, twice or three times the size of the colourless blood corpuscles, and very abundant, as if the supply had been equal to the demand. This pathological infiltration of corpuscles

with carbon appears to interfere just as little with the performance of their functions as does the physiological, so common to many connective tissue corpuscles of man and the lower animals ; for in the air cells which had been involved in a pneumonic process, and among the epithelial elements with which they were filled, these same large corpuscles occurred, evidently having migrated from the surrounding tissues, in which sections demonstrate them to be plentiful. To show the remarkable aptitude of cells to take up granules of various sorts, and, also, to demonstrate the rapidity with which the lymphatic glands are affected, I performed several simple experiments, of which I shall mention two :—

Experiment I.—Into the axilla of a two days' old kitten m iii. of a strong solution of Indian ink were injected, and into the right lung of the same animal a similar quantity was injected through the pleura. The kitten was killed twenty hours after and the parts carefully examined. In the axilla there was a spot the size of a marble of a dark black colour, composed chiefly of connective tissue and fat. On examination of teased portions it was seen that the particles of Indian ink were either free in the interstices of the tissue, or else contained within the numerous leucocytes, white blood corpuscles, with which the tissue was inundated. These were specially abundant along the course of the puncture, and in this situation all the leucocytes were loaded with the dark granules. The spindle shaped connective tissue corpuscles did not contain any.

On removing the sternum a dark lymphatic gland was seen, and close to it a much smaller one. Nearer the manubrium was another black spot, apparently only an aggregation of dark granules. Where the point of the syringe had penetrated the thorax the layers of the pleura were united by a dark round band about two lines in diameter. Under the dark spot on the pulmonary pleura was a portion of inflamed lung substance the size of a large pea of a dark red colour. Examination of the dark spots on the pleura

and the intervening band showed tissues everywhere infiltrated with small and large cellular elements, in which the bulk of the pigment was held. The small corpuscles in appearance and size correspond to colourless blood corpuscles, which modern pathology has demonstrated leave the vessels in large numbers in the early stage of inflammation. Among these some were sparsely, others densely, crowded with dark granules. The larger cells were more than twice the size of the ones just described, and belong to the group of connective tissue corpuscles. Many were rounded or oval in outline, and these contained the greatest number of granules, while elongated, spindle shaped ones rarely contained any. Changes in outline, amœboid movements, were seen in most of these corpuscles. In a portion of the pulmonary pleura which was under the microscope a small net work of lymphatic vessels was rendered beautifully clear by the number of dark granules inside them. Unfortunately I was unable to sketch it, as on changing the object-glass for the purpose I accidentally let it fall upon the slide and damaged it for any further use. The curious phenomenon was seen in teased portions of the inflamed lung of cells containing red blood corpuscles. A considerable number of these were met having from six to ten corpuscles in their interior, others presented only a diffuse colouration.

Experiment V.—Into the right thorax of a four weeks' old kitten *m x* of a solution of Indian ink were injected, and the animal killed thirty-six hours after. A dark spot on the costal pleura corresponded to the point of entrance of the needle, but the layers of the pleura were not adherent. The lower lobe of the right lung presented a dark firm mass, about the size of a walnut, occupying its interior, and scattered round it were several other small dark spots involving both pleura and lung substance. The sub-sternal glands were slightly coloured, and those at the bifurcation of the trachea were dark superficially. Examination of the dark mass in the lung showed the air cells in a condition of inflammation, and everywhere crowded with leucocytes, in-

side which almost all the Indian ink granules were contained. So numerous were these cells that even in very thin sections hardly anything could be seen. At the margins of the healthy and inflamed portions larger corpuscles occurred, which were also filled with the dark granules, and a few were noticed containing red blood corpuscles. The lymph corpuscles of the glands, sub-sternal and bronchial, especially in the superficial region, contained numerous pigment granules.

These experiments serve to show how quickly irritating materials are taken up by cellular elements; and it is in precisely the same way that the carbon granules which reach the parenchyma of the lungs are fixed in the connective tissue corpuscles and so rendered harmless. In experiments 2, 3, and 4 the substernal glands were also more affected than the bronchial, as in these cases the pigment was chiefly about the pleura, and adhesions having taken place between the layers, the lymph bearing the Indian ink granules was conveyed in the vessels of the parietal layer to the glands under the sternum.

In cases three and four the pigmentation is not so extensive, and there is not the same certainty as to its source. In the absence of any history it is hard to say whether in the former case we have to deal with a condition produced by the inhalation of dust, or whether it is an excessively pigmented piece from an old man with chronic lung affection. The general firmness of the piece, the thickened pleura, the existence of caseous masses, and the absence on microscopical examination of large particles of carbon favour the latter view; and if so, the pigment is to a large extent melanotic, i.e., proceeds from the hæmatin of the blood. Of course in all these cases a double origin may usually be attributed, for the process of physiological Anthracosis goes on constantly, whether there be disease in the lungs or not; but we have learned to regard the pigmentations occurring in the indurated areas about cavities or caseous masses as specially of blood origin, in as much as they are met with

in young children, in whom an Anthracosis is out of the question, and, also, because the extravasations are found in all stages of transformation from yellow up to a jet black. In the last case I think there is still less room for doubt. Here the irregular distribution of the pigment in circular patches, not following the interlobular septa beneath the pleura, to which situation it was in great part confined, a situation, moreover, shown by Virchow to be specially prone to extravasations, but, above all, the detection of extravasations in and about some of the pigmented areas, make it tolerably certain that this is a melanotic process. Whether this had any connection or not with the derangement of pigmentation in the skin, as was suggested, may be questioned. Melanosis as it ordinarily occurs is a very different thing from the physiological process of pigmentation. For the former to take place there must be either long continued congestion, amounting almost to stagnation, or else extravasation, under which circumstances the colouring matter of the corpuscles infiltrates the tissues, and there gradually undergoes a granular precipitation, forming the little particles known as melanin. If in a tissue containing cellular elements the bulk of the hæmatin finds its way into them, it may occur in them only; but if the extravasation takes place in the region of a fibrous tissue, like these indurated areas in the lungs, the colouring matter passes by imbibition among the various elements, and we find it there as a granular precipitate.

In the normal process, as it goes on for example in the *rete mucosum*, the cells obtain colouring matter from the nutritive plasma, without any stagnation or rupture of vessels. One pathological condition, met with in the pigmented Sarcomas, adheres to the physiological method, for the cells of these derive their pigment, in great part, from the plasma irrigating the tissue, but according to some observers, also from small capillary hæmorrhages.

It is interesting in this connection to refer to the corpuscles containing red blood corpuscles which were found

in the lungs of several of the kittens experimented upon. Here we have to do with an intravasation, or rather an ingestion of the coloured corpuscles within others. Many deny this, but as far as my observation goes there can be no doubt of the fact. In these corpuscles as many as six to ten were seen, in others again the outlines of the red corpuscles could not be detected, as if the cells had absorbed only the colouring matter. Nuclei and granular protoplasm were also seen—strange constituents, if, as some suppose, the appearance of a cell is caused by the separation of the fibrin round a group of red corpuscles. I have sketches in my possession of amœboid cells from newt's blood crowded with blood corpuscles of the guinea-pig, which were abundant in the serum with which the newt's blood was mixed for examination; and it is not at all unlikely that other amœboid cells, even in the tissues, should do the same thing. This is not a common way for cells to become pigmented, but there can be no doubt that these would rapidly have become so, and would then have been undistinguishable from many of the larger corpuscles containing Indian ink granules. To sum up—

I. The histological examination of these two specimens of miner's lung favours the view that in the early stage the process is confined to an increase in the fibrous elements about the bronchioles and vessels, and in certain emphysematous areas—a genuine Cirrhosis, or, as some would prefer to call it, an interstitial Pneumonia.

II. A considerable proportion of the carbon is contained in large cellular elements, which are specially abundant in the less pigmented, healthy portions, and in these it probably remains without much injury to the lung parenchyma. Another large part of the pigment lies free among the elements of the tissues, this being specially the case in the indurated spots, in the thickened pleura, and at the junction of the alveolar septa.

III. The extraneous origin of the carbon is proved by the detection in the lung of portions of fossilized vegetable tissue in the form of scalariform and dotted ducts.

Report of a successful case of *Tracheotomy in Membranous Croup*. By HENRY P. WRIGHT, M.D., C.M., Ottawa.

Peter Hogan, æt 7. On the night of August 5th. 1875, I was called to see the above who was supposed by his parents to have been suffering from a severe cold for the week previous, at length however, they thought the symptoms sufficiently alarming to have medical advice.

I found the child to be suffering from all the symptoms of membranous croup. Voice whispering, cough frequent and tiring, breathing stridulous, pulse full and regular, temperature 102° , skin moist. They said he had been suffering much in the same way for the past 48 hours.

I gave him at once, half an ounce of wine of Ipecac, emesis was soon produced, ridding him of a good deal of viscid mucus, but no false membrane. I ordered two grains of Iodide of Potassium every two hours and the compound tincture of iodine to be painted over the larynx every six hours.

Aug. 6th. 10 a.m. Found him a little easier. To continue the same treatment.

Towards evening the symptoms again grew worse and at midnight the father brought me such a report that I deemed delay dangerous and sent him at once for Dr. Church to assist me in performing the operation of Tracheotomy. On our arrival we found the symptoms less alarming than we had been led to suppose, so we determined to give medicine and time a further trial. We administered two drachms of powdered alum, this produced full emesis and gave slight relief. We waited for a couple of hours and finding there was no increased aggravation of the symptoms, left with word to continue the Iodide of Potassium.

Aug. 7th. Symptoms continued much the same through the day only the child was evidently getting much weaker. I gave him at intervals an emetic dose of sulphate of copper. At night the symptoms again became worse and at 2 o'clock the dyspnoea was so great as to threaten suffocation. The

pulse became weak and irregular, inspiration stridulous, lips and tongue blue, skin moist and extremities cold. Auscultation revealed almost inaudible breathing, the chest walls bulging above and strongly retracted below. We now considered tracheotomy necessary and proceeded to operate without chloroform. I performed a slow dissecting operation, in doing so however I was unfortunate enough to wound a large venous trunk which was followed by the most alarming gush of blood and was arrested by inserting the finger into the wound and pressing against the sternum. As soon as I withdrew the finger the bleeding recommenced, it was at last controlled, after several ineffectual attempts to ligate, by stuffing up the place till now occupied by my finger, with a piece of soft muslin at hand and then I proceeded in the usual way and reaching the trachea divided three of its rings when brought nearer the surface by an act of inspiration. The tube was inserted at once as I feared the entrance of too much blood into the trachea. I then removed the stuffing and though the bleeding continued for some time after, yet it was not enough to cause any alarm. I feel satisfied that the vein divided was the transverse communicating branch between the anterior jugulars its course being higher up than usual. The child lost about eight ounces of blood.

Aug. 8th. Six hours after operation, respiration easy and regular, has had a calm refreshing sleep. Has had a feed of bread and milk, a good deal of the milk enters the trachea, and is coughed up through the tube. Skin moist and warm, extremities warm, lips and tongue red, countenance devoid of anxiety. Continued nicely through the day. *Diet*, bread and milk, cornstarch and beef tea. The inner tube to be cleaned out every 3 hours.

Aug 9th. Rested well through the night. Pulse respiration ratio normal, temperature normal, deglutition and inclination for food good.

The edges of the wound are rather prominent and have an ashy grey appearance. Applied nitrate of silver and in-

serted beneath the canula plate a piece of soft cotton saturated in carbolic oil—1—16.

Aug. 10th. Slept well, in good spirits. All the symptoms continue favorable, same diet. Bowels moved by an enema.

Aug. 11th. Steady improvement. Symptoms continued good and on the 14th, finding the pulse respiration ratio normal, temperature the same, and having taught him to whistle for two days before, I withdrew the entire tube and dressed the wound with carbolic oil, 1—8. He had no difficulty in breathing after the withdrawal of the tube though he felt a little nervous from want of confidence in himself. The wound healed rapidly, no untoward circumstance interfered with his complete recovery.

Remarks.—The case though highly satisfactory was uncomplicated, the age was favorable and the disease was limited to the larynx. The only difficulty was the hæmorrhage, and, in connection with that we concluded that on future occasions, when it was necessary to extend the incision it would be wiser to cut up towards the larynx than towards the sternum, and that when bleeding did occur no method of arrest could be more effectual than compression by stuffing up the wound with soft muslin or cotton. The whistling which he was made to practice seemed to thoroughly exercise his respiratory apparatus, an exercise so entertaining to the little patient as to be frequently resorted to and well done, and to it I am inclined to attribute a great portion of the ease he experienced after the removal of the tube.

Post-partum Convulsions treated by the Hypodermic injection of Chloral. Under the care of DR. RODDICK, at the Montreal University Lying-in-Hospital. Reported by Mr. A. F. RITCHIE.

F. M., a native of Canada, 26 years of age, short in stature but well proportioned, complexion dark, disposition quiet, personal and family history good, was admitted to

the Lying-in-Hospital pregnant of her second child, the first having been born in natural labour some five years since. On Friday, July 30th, at 3.30 a.m., after ten hour's labour she was delivered of a healthy child, weighing ten pounds, six ounces. The head presented in the fourth position but was readily changed to the first, and the birth accomplished without difficulty.

Nothing special was observed in the case till about twenty-four hours after delivery, when she complained of violent frontal headache with nausea, followed by repeated vomiting of bilious fluid. This continued till 2.30 p.m. Saturday (thirty-five hours after delivery), when a slight but unmistakable convulsion seized her. In the absence from the city of Dr. D. C. MacCallum the regular attending physician of the institution, Dr. Cline, of the Montreal General Hospital, was called in, who ordered her urine to be examined and found it to contain about ten per cent. of albumen. He accordingly prescribed a brisk purgative and a mixture containing the acetate of ammonia and infusion of digitalis. The first fit was followed at intervals of ten minutes by two others increasing in severity, and the patient rapidly fell into a comatose condition, which became more profound with each attack. The lochial discharge was now entirely suspended. After the first dose of the mixture there was an intermission of about two hours. The convulsions lasted about a minute, the intervals being about ten minutes, although sometimes the fits were almost continuous. When she received the second dose in three hours, an intermission of an hour occurred, after which they returned at short irregular intervals during the night. Brandy and water was ordered, but was swallowed only in small quantity and with great difficulty. The urine seemed to be secreted freely but was voided immediately.

Aug. 1st, 7.30 A.M.—Dr. Roddick has been hurriedly called in, as her condition now seems to be most alarming; pulse 140, temperature 100.6. He explained to the students present that it was desirable in such cases to employ

an anæsthetic, but on the present occasion from the urgency of the symptoms he preferred the administration of Chloral by hypodermic injection. A solution in which twenty minims contained seven grains of the salt was at once procured and thrown under the skin of the arm. A convulsive seizure followed immediately upon the withdrawal of the needle, but this proved to be the last, the total number being sixteen. Notwithstanding the cessation of the convulsions the injections were continued at intervals of an hour, the amount being subsequently increased to ten grains. At 2.30 p.m. the coma was less profound; she could feel the needle and tried to remove it, while the eyelids resisted any attempt to separate them. 3.45 p.m.—an injection per rectum of turpentine and castor oil brought away a small quantity of fœcal matter; pulse 160, resp. 30. 5.15—very restless, gr. x hypodermically. 7.35 p.m.—pulse 140, resp. 24, bowel well relieved by injection.

Aug. 2nd, 7 A.M.—Has been regaining consciousness rapidly during the night and now swallows beef tea and brandy readily. 3.30 p.m.—Very dull and stupid, but will open her eyes when called in a loud voice and protrude her tongue. No albumen in urine. 11 p.m.—Being very restless and slightly delirious, a draught of gr. xx of chloral was given.

Aug. 3rd—The patient to-day is quite rational though very feeble and easily excited by noise. The cries of another patient in labour in the neighbouring room disturbed her very much. A draught of chloral was again ordered to be given at bedtime.

Aug. 4th.—There is a marked change for the better to-day, being perfectly quiet and rational; takes abundance of nourishment. There is a hard lump in the cellular tissue of the size of a pigeon's egg where each injection was given, and below the clavicle in the situation of one is a small superficial slough of the size of a ten cent piece. None of them cause her any pain or uneasiness.

Aug. 14th.—She is to leave the hospital to-day, and with the exception of two or three brawny swellings and the remains of the small slough referred to, there is nothing to mark the positions of the injections. She is in perfect health.

Hospital Reports.

MEDICAL AND SURGICAL CASES OCCURRING IN THE PRACTICE OF THE
MONTREAL GENERAL HOSPITAL.

Case of Morbus Coxae. Death from Pyæmia. Unusual Situation of Head of Femur. Under Dr. Ross. Reported by Mr. R. L. MACDONNELL.

Daniel Fitzpatrick aged 8, was admitted into the Montreal General Hospital in the latter end of the month of June, 1875 and was placed in Dr. Reddy's wards.

He is a weak, unhealthy, cachectic boy, thin and emaciated. His limbs are wasted, the abdomen puffy and large, and the head of abnormal dimensions. Previous to his admission he was an inmate of the St. Bridget's Asylum. The little that could be gathered from his family history revealed the following facts, that his father and two brothers were alive and healthy, that his mother had died of phthisis, that none of the family had exhibited a scrofulous diathesis. Nothing reliable could be obtained as to his own history. He was admitted suffering from pain in the right knee and left shoulder joint. Little could be done in the way of examining these articulations, inasmuch as, even the approach of any one to his bedside caused him most excruciating pain. He was by Dr. Reddy, placed on alkaline treatment, which gave him no relief. An abscess was soon detected in the left shoulder, pointing on the anterior aspect of the joint. This was opened, and a quantity of pus evacuated. He then, on the 1st July came under the care of Dr. Ross, who discovered a large bag of matter on the upper and inner part of the left thigh. The abdomen was also swollen in the left iliac region, and in both situations fluctuation could easily be made out. The patient was anaesthetized, and the needle of an aspirator inserted into the femoral abscess, ten ounces of dirty, unhealthy and very foetid pus were

drawn off, the abdominal enlargement disappearing as the fluid came away. While under the influence of the chloroform a thorough examination of the joints was instituted. The legs were equal in length. Rotation of the left thigh showed great roughening of the cartilages, and grating could be felt and heard. In a few days, as no discharge came from the puncture made by the aspirator needle, and as the sac of the abscess again became filled with matter, an incision was made into it with a Symes' knife, and a quantity of matter allowed to escape. A few days after this a second incision was made lower down the thigh and a drainage tube was inserted.

July 15th. The patient complained of pain in the wrist joint, and on examination that structure was found swollen and excessively painful. Motion was absent, the tissues around the carpus were thickened. He carried the joint in a curious manner, the carpus was extended on the radius, while the hand from the carpo-metalcarpal articulation drooped. Dr. Ross ordered a small anterior splint, as well as blisters above the seat of disease.

The constitution is very much involved, the pulse has been frequent, small and weak, the temperature is also elevated. Diarrhoea has been present at several periods in the course of the disease but has been checked by *M. Cretae Co.* combined with *Extract Rub. Villos.* He is taking tonics with wine.

July 17th. His left thigh is abducted, the leg and foot everted, the thigh is flexed forcibly on the abdomen and the leg on the thigh. The abscess is discharging freely and is daily injected with a weak solution of carbolic acid. —Carbolized tow is applied to the wound, and exercises a great influence in suppressing the fœtor.

July 20th. Complains of pain in abdomen, which is tender to the touch and tympanitic. *M. Cretae Co.* however gave him relief.

July 24th. A large abscess was noticed for the first time, to-day. The situation is over the right hip, and its sac ex-

tends upwards and inwards over the right buttock almost to the sacrum, downwards as far as the insertion of the tensor vaginae femoris. Chloroform was administered, the matter removed, and a drainage tube applied. The matter evacuated resembled that from the other side but if possible was more foetid. A similar dressing was ordered viz., carbolyzed tow and carbolic acid injections.

July 25th. Both abscesses are running freely and the dressings require constant change. Every now and then there is fullness in the left iliac fossa which disappears on the application of a poultice to the openings in the left thigh.

July 27th. Pain is complained of in the right knee. The limb is flexed, and any attempt at extension causes intense pain. The joint is hot and tender. A pillow was placed under it and warm fomentations applied. This gave great relief.

July 29th Affairs in much the same state. The constitutional disturbance seems greater, the patient being very much debilitated by the constant drain of pus. Diarrhoea, with foul evacuations is present.

Aug. 23rd. The condition is a little improved. The right knee was extended, and after no little resistance the patient was induced to retain it in that position. There is now great atrophy of the forearm. A splint is still applied to the wrist joint.

Aug. 4th. Pulse and temperature high. The former is very weak and compressible. The patient was delirious during the night and there is a great deal of perspiration. Cutaneous hyperæsthesia is present, and even the insertion of a thermometer into the axilla seems to cause pain.

Aug. 5th. Delirium persistent. At 4 30 p.m. had an attack of convulsions and died at 6 p.m.

Post Mortem Examination.—Eighteen hours after death. On manipulating the left thigh, there was great roughening found and the head of the bone felt quite loose in the acetabular fossa, there seeming to be nothing whatever to retain it in its place. The head of the right femur moved quite

freely about and by no means could roughening of the joint be detected. The left leg was shorter than the right by about an inch.

The Brain, was very large and well developed for a boy of his age, it weighed 48 oz. The arachnoid was thickened and opaque though no distinct deposit of lymph could be seen. The opacity was greatest on the upper surface of the organ, but under the fissure of Sylvius, in the vicinity of the island of Reil there was a small area of yellowish discolouration. Under the arachnoid there was extensive effusion ($3\frac{1}{2}$ oz) of a sero-purulent fluid. The convolutions of the hemispheres were distinctly marked and widely separated. The vessels on the surface of the brain were slightly congested. On section, the centrum ovale majus was preternaturally white. No central softening could be discovered, the formix however, seemed a little too friable. The ventricles contained a small quantity of fluid.

Thorax.—Heart healthy with a firmly contracted left ventricle. No effusion in the pericardial sac.

The lungs were adherent to the chest walls in several places. The base of that of the left side was hardened and collapsed, and fragments of it would not float in water. The right lung and the upper lobe of the left were healthy, though a little deficient in pigmentary material. Liver slightly enlarged.

The capsular ligament of the left hip joint was entirely obliterated. The cavity of the joint, as well as adjacent structures were bathed in pus. The upper end of the femur, exceedingly necrosed, rested in the acetabulum. This cavity was enlarged, oval in shape, and extensively diseased but was not perforated. On extending the incision backwards the epiphysal extremity of the head of the femur was found lodged in a fossa behind the brim of the acetabulum, resting on the great sacro-ischiatic ligament, which was partially disorganized. The bony part of the epiphysis was intact but it was stripped of its investing cartilage. I attribute this extraordinary state of affairs to the position in

which the patient used to hold the limb, and advance the idea, that in the extreme state of flexion in which the femur was retained, there being no capsular ligament, the head of the bone passed partially over the brim of the acetabulum, and that, while in that position, the pressure of the brim on the disk of cartilage joining the epiphysis with the neck of the femur, caused its disorganization. The epiphysis then, separated from the neck in this way, dropped over the brim and became lodged in the great sacro-ischiatic notch and found a resting place in the pulpy and disorganized tissues.

The remaining ligaments of the joint could not be found, and the bone was held in its place merely by the action of the muscles adjacent to the articulation. On the inside of the pelvis on the left side there was a large bag of pus, lying between the iliacus muscle and the iliac fascia, and communicating with the abscess on the inner and upper part of the thigh through the great sacro-ischiatic notch.

The capsule of the right hip joint was entire but full and tense. On making incision into it, a large quantity of pus escaped. The ligaments on that side were not diseased, with the exception of the ligamentum teres which was entirely destroyed. The cartilaginous covering of the head of the bone was slightly eroded and caries had just commenced in the fundus acetabuli, in the situation of the Y shaped piece.

The wrist joint contained a small quantity of pus, mingled with its synovia. There was great lack of motion in the joint.

Periscope Department.

SURGERY.

On Tracheotomy in Croup and Diphtheria. By GEORGE BUCHANAN, M.A., M.D., Professor of Clinical Surgery in the University of Glasgow.

The prevalence and fatality of diphtheria of late years, as may be seen by a perusal of the Registrar-General's returns, has drawn the attention of the profession to the etiology of that disease, and has recently given rise to a controversy

as to the identity or non-identity of croup and diphtheria. Many able papers have appeared in the pages of the British Medical and other journals on this subject, and to them I refer those interested in the question ; but there is one point of resemblance which is of the utmost importance in a practical point of view. Although the two diseases may be as distinct as to cause, course and sequelæ, as scarlet fever is from simple tonsillitis, yet both are characterised by the effusion, on the mucous membrane of the air-passages, of a tough false membrane. This membrane may differ in its nature and in situation, at least at the commencement, but the tendency in both cases is to obstruct the breathing and cause suffocation.

This seems so self-evident that I must almost apologise for mentioning it ; but I have been so often met with the objection that, because the primary disease causing the effusion is diphtheria and not croup, therefore it is hopeless to interfere, as the operation will not cure the specific disease, that I have considered it not out of place to introduce it. We might as well refuse to open an abscess of the tonsil which was about to choke a patient suffering from scarlatina, because the operation will not cure the fever, as refuse to relieve a patient from instant death from suffocation because the operation is not a cure for diphtheria.

Now, the point I wish to bring out is, that there is a stage both in croup and in diphtheria at which it becomes evident that recovery is hopeless and death from suffocation certain. It is quite true that it is exceedingly difficult to say when that stage has arrived, and mistakes may sometimes occur ; but I believe practically it is better to err on the safe side, and acknowledge the inefficacy of treatment, rather than delay till it is too late to resort to the last resource. Tracheotomy *per se*, though a difficult, is not a dangerous operation ; and I, for one, would be inclined to urge its performance before the strength of the little sufferer has been brought to the lowest ebb by the struggles which result from the approaching suffocation.

I wish, however, clearly to guard myself from being supposed to advocate tracheotomy in all circumstances of approaching death from croup or diphtheria. I have elsewhere explained my views on this subject, but I cannot avoid referring to them again.

The diseases in question, but especially diphtheria, when they prove fatal, cause death in one of two ways; either by exhaustion or by suffocation. Hence, we may say there are two varieties, viz., the asthenic and the sthenic. In the great majority of instances, croup is a sthenic inflammation attended with effusion of lymph in the trachea; and proves fatal by suffocation. In some cases, however, the attack is attended with such a depression of the vital powers that the patient sinks apparently from the virulence of the disease. This, however, is a rare case. But in diphtheria there are two well marked types: the sthenic, which closely resembles an attack of sthenic croup, except that the effusion of lymph begins on the fauces and extends through the glottis into the trachea; and the asthenic, which more closely resembles scarlet fever, and in which the effusion covers the whole of the mucous membrane of the fauces, tonsils, and even the pharynx, and in which the false membrane soon becomes foul, putrid, ichorous, and contagious.

In the former of these types, the danger is suffocation; in the latter, it is vital depression, death from asthenia.

Now, with regard to the treatment of these affections at the early stage, I wish here to make no reference; the scope of my remarks is the duty of the medical attendant, when medical treatment has failed, or is clearly failing to arrest the disease. And I think that it is very important that medical practitioners, especially those commencing practice, should be supported by the opinion of those qualified to advise them in such a delicate matter as this, seeing it is a most painful and disagreeable task to advise parents to submit their children to such a repulsive proceeding.

I believe, then, that I am justified in calling on all those who have seen much of these diseases to unite with

me in asserting that, when medical treatment has been fairly tried and when it is proving unavailing, and when death seems imminent from suffocation, not from vital depression or exhaustion, it is the duty of the medical attendant to perform, or advise the performance of, tracheotomy.

I know that here I shall be met with the objection that some cases which seemed hopeless have ultimately recovered ; but these isolated examples are very few in number, and are counterbalanced out of all proportion by others in which delay, owing to repugnance to the operation and a hope that symptoms will improve, has deprived the patient of that chance of life which the surgeon can offer.

In pressing this view on my medical brethren, I am aware that I am adding nothing new to what has been frequently advanced by those who have had occasion to operate much in croup and diphtheria, but every year convinces me that it is the duty of those whose experience qualifies them to speak with authority on the matter, to reiterate their convictions, even if it be in nearly identical terms.

Last December, I was called to a case of croup, and when I arrived I found the child, a girl seven years of age, in the last stage of suffocation. The two medical gentlemen in attendance declared that the patient was beyond the reach of surgery. One of them, who had never seen the operation, strongly dissuaded me from making the attempt ; the other, who had at one time been one of my clinical students, on hearing my wish to give the child a chance, persuaded the parents to consent. The little patient was livid, and though I did not use chloroform, as I usually do, it did not wince when I made the incision through the skin. The result was that the child is now alive, and in the enjoyment of excellent health.

To one who sees the operation for the first time, the hopelessness as to the attempt is only equalled by the surprise and gratification at the result.

But, while I am so strongly advocating the operation in the circumstances referred to, there is one condition in

the suffocative form of those diseases which contra-indicates tracheotomy, and which, if discovered, should prevent any one from performing it. When the suffocation depends not only on obstruction of the trachea, but also on effusion of false membrane or the glutinous fluid which precedes it, into the smaller bronchial tubes, then the case is not one for operation. The difficulty, then, is to discover when the false membrane which causes the obstruction to breathing is limited to the trachea and larynx and when it has invaded the bronchia. Percussion and auscultation ought to assist in the diagnosis, but the restless tossing of the child and the noise of the breathing always make this a difficult proceeding.

There are two signs which appear to me to be valuable guides; one is the amount and loudness of the stridor, which is always great in proportion to the patency of the small tubes and obstruction in the trachea.

But the most valuable test is a view of the naked chest. When the obstruction is in the trachea, while the bronchial tubes are free, the respiratory movements are continued with exaggerated energy, but the chest will not respond to the muscular efforts. The result is that at each inspiration the flexible parts of the thoracic walls are drawn in with great force, the intercostal spaces are hollowed, and the ensiform cartilage sucked back. But when the small bronchial tubes, and, perhaps, the air-cells, are stopped with the viscid or membranous effusion, the muscular efforts are more feeble and the chest remains puffed out, and the whole aspect is that of a child thirsting for breath, but with the lungs already full and themselves unfit for respiration. In this latter case, I never operate; in the former, with every hope of success.

This is not the place to enter into details with regard to the operation, which vary in many respects in different cases; but one thing may be impressed on the young operator by one who has had considerable experience; and that is, that tracheotomy is not the simple plunge of a knife into

the trachea that many suppose, and that can be easily effected in the bloodless neck of a subject on a dissecting-room table. It requires coolness and patience on the part of the operator. Sometimes the trachea can be exposed by very little dissection; at others, numerous obstacles come in the way, especially in young children. Amongst these may be mentioned overabundant cellular tissue and fat, turgid veins, isthmus of the thyroid gland, which is very large in infancy, and protrusion into the wound from below of the thymus gland, a frequent cause of surprise and annoyance to those who are not forewarned. In consequence of these possible complications, the operation must be done slowly and systematically, obstacles turned and held aside, bleeding vessels secured; and the golden rule is that the trachea is never to be opened till its white rings are seen clearly at the bottom of the wound.

The following table contains an account of my operations of tracheotomy in croup and diphtheria, and the respective results.

CASE	1. Croup ;	aged 6 .	Cured.
"	2. "	" 3½.	Death in three hours.
"	3. "	" 3 .	Death immediately.
"	4. "	" 1½.	Death in sixteen hours.
"	5. Diphtheria ;	" 2 .	Death immediately.
"	6. "	" 2½.	Death in six hours.
"	7. Croup ;	" 1½.	Death in eight hours.
"	8. "	" 3 .	Death in twenty-four hours.
"	9. Diphtheria ;	" 4 .	Cured.
"	10. "	" 2½.	Cured.
"	11. "	" 1½.	Death in twenty-four hours.
"	12. Croup ;	" 5 .	Cured.
"	13. Diphtheria ;	" 2½.	Death in forty hours.
"	14. Croup ;	" 5 .	Cured.
"	15. Diphtheria ;	" 5 .	Death in twenty-eight hours.
"	16. "	" 5½.	Death in five days.
"	17. "	" 6 .	Cured.
"	18. "	" 3 .	Death in four days.
"	19. "	" 3½.	Death in seven days.
"	20. "	" 2 .	Death in five days.
"	21. "	" 2½.	Cured.
"	22. "	" 6 .	Death in two days.
"	23. "	" 5 .	Cured.
"	24. "	" 8 .	Death in thirteen days.
"	25. Croup ;	" 1½.	Death in six hours.
"	26. "	" 5 .	Cured.

CASE 27.	Diphtheria ;	aged 5 .	Death in five days.
" 28.	"	" 7 .	Cured.
" 29.	Croup ;	" 5 .	Death in three days.
" 30.	Diphtheria ;	" 5 .	Cured.
" 31.	"	" 2 .	Death in two days.
" 32.	Croup ;	" 2½.	Death in two days.
" 33.	Diphtheria ;	" 5 .	Death in six days.
" 34.	Croup ;	" 9 .	Cured.
" 35.	"	" 4 .	Death in three days.
" 36.	Diphtheria ;	" 8 .	Death in eight days.
" 37.	"	" 7 .	Cured.
" 38.	"	" 7 .	Death in three days.
" 39.	"	" 5 .	Cured.
" 40.	"	" 5 .	Death in two days.
" 41.	"	" 4 .	Death in three days.
" 42.	"	" 6 .	Cured.
" 43.	"	" 4 .	Death in two days.
" 44.	Croup ;	" 7 .	Cured.
" 45.	"	" 9 .	Death in four days.
" 46.	Diphtheria ;	" 6 .	Cured.
Total cases of Tracheotomy,			46. Cured 17; Died 29.
Tracheotomy in Croup,			16. Cured 6; Died 10.
" Diphtheria,			30. Cured 11; Died 19.

The average result is precisely the same, viz., one child is saved out of every two and two-thirds operated on ; and, as the operation was always done when there seemed no hope of recovery otherwise, it may safely be stated that the lives of these seventeen children were saved by tracheotomy—*British Medical Journal*.

A NEW HOSPITAL IN PARIS.

A new hospital, to be named the Ménilmontant Hospital, is to be opened towards the end of the year in the part of Paris from which it derives its name—one of the poorest quarters. It is situated between the Lariboisière and Saint-Antoine Hospitals, and will contain 150 beds. It consists of isolated pavilions. The wards are large, and none will contain more than twenty-two beds ; there are numerous rooms with one, two, three, or four beds. Each ward has its own staircase ; and in the centre of each pavilion is a separate staircase for conveying provisions. The pavilions are surrounded with open galleries, for the use of convalescents in fine weather. Independent of the hospital, there is a lying-in institution consisting of isolated wards.—*British Medical Journal*.

CANADA

Medical and Surgical Journal.

MONTREAL, OCTOBER, 1875.

PREVENTIVE MEDICINE.

The object of the science of preventive medicine is not the treatment of disease when it occurs, but the prevention of the occurrence of disease when threatened. In this country, Canada, much has to be done to give us the means of ascertaining facts with regard to the prevalence of diseases. Before these facts are attainable we must introduce or inaugurate a system of observation. This system of observation is comprised in a definite system of registration. The Government calls upon the people of this country to contribute large sums to keep up its various establishments. This money is cheerfully accorded, because the machinery of the Governmental system is felt to be a necessity.

In the various cities throughout this country sanitation is attracting attention, the people themselves feel that something ought to be done to insure at least public confidence, but what that something should be is indefinitely understood. Improved Governmental organization, or the inauguration of a definite system of observation would render valuable the efforts of the authorities of cities and towns so that they might be of advantage to local improvements in various necessary directions. It is not by a few spasmodic efforts on the part of certain communities that general benefit is to be expected.

If we take as a warning the experience of Great Britain we will find that sanitary legislation became cumbrous and entangled. Sanitary legislation appears to have taken its

rise in Great Britain some thirty years ago when the Imperial Parliament passed an Act, which was generally comprehensive, to promote the health of towns. Since the passing of that Act, numerous other Acts, some twenty-nine in number, have supplemented it, so that experts in hygiene and law became bewildered, as the accumulation of sanitary legislation was such that they were comparatively inoperative. Some year or two since, this being an acknowledged evil, a Royal Commission was issued under the presidency of Sir Charles Adderley, a codification or consolidation of all the Acts resulted, and during the past session the present Government of Great Britain repealed the Acts of previous years, and introduced a consolidated statute, containing all the points of value in the repealed Acts, which became the law of the land.

In Canada we are without any sanitary legislation. The Government of this country has recently introduced and passed a law in reference to the adulteration of food, liquors and drugs, and we believe that public analysts have been or are about to be appointed. This is all very well and very necessary but is a mere item in the many legislative enactments which are required for this country. In looking into this subject we must be fully prepared for its vastness and if wisdom guides our counsels we will try and take advantage of the teaching which legislation in other parts of the world affords. Laying aside all theory, we know as a fact, disease of whatever kind, will become more prevalent, more virulent, more fatal, and more permanent, in localities, where sanitary laws are ignored. It appears to be the scourge for the neglect of those ordinary rules of cleanliness which contribute to our comfort, if they do not improve our health. Wherever sanitation is laid aside, epidemic disease will arise, and with the sword of the destroying angel do its deadly work of destruction, until appeased, by arousing to a proper sense of the evil of neglect, a better condition of things amongst the sufferers.

Certain epidemics have seemingly disappeared by the improvements of modern modes of living. The plague which spread over Europe some two hundred years ago decimating whole communities has apparently been shut out by sanitary barriers of modern times although it is a disease still known to the inhabitants of the East, and is still as fatal and as contagious as of old. In the matter of small-pox, it has been remarked that this disease occurs in the epidemic form very frequently, every four or five years. From 1837 to 1842 small-pox was prevalent in a very virulent form throughout Europe and indeed extended to our own side of the Atlantic. The mortality from small-pox during this epidemic was considerably higher in the United Kingdom than in continental countries. Vaccination had been voluntarily submitted to, and very generally practiced up to this period in Britain, but in consequence of the virulence and general prevalence of this epidemic, a reaction occurred and persons were numerous who absolutely refused to submit their children to the protective influence of vaccine. This led to legislative interference and by a succession of Acts, compulsory vaccination was at length introduced into the United Kingdom.

Previous to the introduction of these laws three fourths of the cases of death from small-pox occurred amongst children under five years of age. In the epidemic of 1870, less than one third of the deaths from small pox in England and considerably under one fourth of the deaths from this cause in Scotland and Ireland were observed in children under that age. Let it be stated furthermore that when the epidemic of 1870 occurred a large proportion of the children under five years of age were unprotected by vaccination. Another significant fact has been established in respect to the recent epidemic of small-pox. During previous epidemics continental Europe suffered less in proportion than Great Britain; in the epidemic of 1870 the proportion of deaths from small-pox in some of the large towns on the continent was in many instances six to one

of towns of the same size in Great Britain. To sum up we may give the figures of the late Sir James Y. Simpson in an article which appeared shortly before his lamented death, as proving the beneficial influence of Dr. Jenner's great discovery, in saving from death from small-pox, some 80,000 persons annually, provided the same rate of mortality from that disease existed as did exist at the close of the last century; whereas, the present annual average mortality in Great Britain is about 5000 souls—all too many when it is conceded on all hands that small-pox is a preventible disease. We have illustrated small-pox in this connection because it is prevalent throughout this country at present, but the same may be said of other contagious diseases.

On a recent occasion the Right Honorable Dr. Lyon, Playfair, M. P., in speaking about the House of Commons and sanitary matters, stated that, "the distinguished man who is now at the head of the Government" had said to that house "that the keynote of the parliament was to be 'Sanitas Sanitatum omnia sanitas' * * relating to all subjects connected with the social welfare of the people, he (the speaker) had always admired this, that the House of Commons, of which he had the most experience, forgot altogether that it was divided into two great political parties, and acted as one body in trying to frame measures most productive of good for the public interest." We can only utter a fervent hope that the Government of this Dominion will take a leaf from the British House of Commons and in legislating for the people cast aside all the littleness of party politics and engage in the earnest and much needed reform of sanitary legislation.

We have great pleasure in announcing that our friend and colleague Gilbert Prout Girdwood, M.D., M.R.C.S. England, Professor of Practical Chemistry McGill University, was on the 26th August last elected a member of the Society of public Analysts of Great Britain.

We observe with regret that our old and esteemed friend Sir Duncan Gibb of London, England, has resigned the office of physician to the Westminster Hospital in consequence of the state of his health. Sir Duncan has we believe, recently suffered from an attack of pleuro-pneumonia, but we sincerely hope that rest from the arduous public duties of physician to a large hospital will enable him to rally from his attack of illness and that many years of usefulness may be added to his career.

AS OTHERS SEE US.

The British Medical Journal of September 4th in an editorial item under the heading Anti-vaccinators at Montreal says—"Montreal has been recently the scene of some disgraceful rioting on the part of anti-vaccinators. It appears that of late years, small-pox has been very prevalent in the city, especially amongst the French Canadians; and in consequence the Provincial Government passed an Act to empower the municipalities to enforce vaccination. This, however, has been strenuously resisted by the French section of the community, under the leadership of a Dr. Coderre and other *savants* and a mob of 7000 roughs assembled a few Sundays since, who stoned the aldermen and gutted the house of one of the vaccination supporters, and in other ways conducted themselves in an irrational manner. The police were utterly powerless against the rioters, whilst, as a natural collateral incident, severe small-pox still prevails." There are several inaccuracies in this brief account, but it is sufficiently correct to show how we deserve this reproach. It is to be regretted that there should be amongst us men willing to excite to opposition a few fanatics, to that degree as to lead to a serious breach of the peace. For the information of our contemporary however, we would state that the "French section" alluded to, are a very small part of that nationality in our city, anti-vaccination views are by no means believed in by the large majority of our fellow citizens of French descent.

The more educated portion of our French Canadian citizens are as firmly impressed with the value of vaccination as a means of lessening, at least, if it does not actually stamp out small-pox, as are their fellow citizens of British extraction. The riot in question did not so much arise, so far as we can learn, from a desire to oppose compulsory vaccination, as it was a forcible condemnation of a by-law which was about to be submitted, but which we believe never would have been accepted by the City Council without such modifications as would have deprived it of many objectionable features. We abstain from saying more on this subject at present. We understand that the matter is before our criminal tribunals and we suppose that the rioters will be equitably dealt with by the law. We may moreover state for the benefit of our contemporary that Dr. Coderre did not, we believe, lead the mob of 7000 roughs at the time they stoned the aldermen, and gutted the house of one of the medical health officers.

PRESCRIBING LARGE DOSES.

At the Pharmaceutical congress held at Bristol on the 25th and 26th August last, the President Mr. Groves in his opening address observed in substance as follows: That it was to be regretted that in prescribing extreme doses the prescriber did not indicate by some sign that such dose was intended. There should certainly be a means of indicating to the dispenser that the prescriber knew he was ordering an unusually large dose, and that he meant it. This would prevent the assumption on the part of the dispenser that there must be some error, and that in the exercise of his own discretion he should dispense a smaller dose. For instance, quite recently we heard of an apothecary who exercised his own discretion in dispensing a dose of quinine, that had been ordered for a patient with typhoid fever, and instead of giving the patient twenty grains which was prescribed by the physician, he gave two, of course the two grains failed to produce the expected lowering of the temperature which would have followed

the exhibition of the larger dose. The physician suspected the cause, procured the quinine and dispensed it himself with a very different result. This we mention, as we think in justice to both parties, some means should be adopted to give the dispenser notice that the prescriber is in earnest in prescribing a larger dose than usual.

ZIEMSEN'S CYCLOPEDIA OF THE PRACTICE OF MEDICINE

Many of the subscribers to this great work are aware that the Volumes of the German Edition are not being issued in regular succession—some of those treating upon subjects of greatest interest having the precedence, although numbered to conform to the plan of the entire work. It has been concluded to follow the same course with this translation; and in compliance with the expressed wish of many subscribers, Volume X., SCHROEDER'S "DISEASES OF THE FEMALE SEXUAL ORGANS," is now published. Volumes IV. and V. will follow, the former to be published in December next and vol. V. in March, 1876. Vol. X., is issued from the press amply illustrated, the wood cuts, one hundred and forty-seven in number are of superior finish and add considerably to the value of the work. They are not a repetition of cuts to be found in other books on this subject, but are new in design and give a tolerably correct view of cases which have come under the authors observation. We congratulate Messrs Wood & Co., on the excellent finish of these books so far as received, and we believe that at the completion of the work, those subscribers who have secured a copy of these volumes will possess an invaluable cyclopedia, one which few real students can afford to be without. The publishers have announced their intention to refuse the supply of single volumes. The work will be published alone for, and issued to subscribers. Let all desirous of supporting this vast undertaking send in their names forthwith to Messrs. William Wood & Company, 27 Great Jones street, New York.

We have received from a friend in Chicago the copy of a circular which we understand is being distributed from door to door in that city. We should not take any notice of this thing were it not that there are some inaccuracies contained therein which demand contradiction. The circular reads as follows:—

NO CURE. . . NO PAY:

H. R. BIGELOW, M. D.

Of McGill University, Montreal, and of Laval University, Quebec, late lecturer on Nervous Diseases at the Indiana State Medical College, can now be found at

253 W. Madison St., cor. Sangamon

where he will examine all who may call at above place

FREE OF CHARGE.

TAPE WORMS REMOVED IN THREE HOURS.

As one of the staff of the Lying-in Hospital, of Montreal, he has had large experience in the treatment of female complaints, to which he gives especial attention. Ladies suffering from Flexions of the Womb, Leucorrhœa (Whites), Prolapses, etc., can obtain positive relief. Whites cured in three days.

Now, with regard to this circular we may state that no such person as H. R. Bigelow holds the degree of M.D., from McGill University, nor is he a graduate in any of the faculties of that University, nor does there appear the name of H. R. Bigelow on the list of graduates of Laval University, Quebec. In this advertisement the person calling himself H. R. Bigelow, M.D., states that "as one of the staff of the Lying-in Hospital of Montreal, he has &c." Now, we do not know to which lying-in hospital H. R. Bigelow formed one of the staff. It appears to us he is lying in the face of it as no hospital in this city ever had any connection with any such person, as a member of its staff as H. R. Bigelow, M.D. We might request our medical exchanges to pass this round, as H. R. Bigelow, M.D., may be a travelling doctor, and may in all likelihood appear in some other city than Chicago, but perhaps our contemporaries may think with the countryman, "what pleases him, doesn't hurt I," and therefore where the use of circulating this man's unblushing advertisement; we agree with this in principle, but as this choice morceau, contains lies with regard to the connection of H. R. Bigelow with some of our Canadian Institutions we deem it a duty to give them a flat denial.