case very little blood was lost, not more, in fact, than in any normal labour. In extracting the child I prefer to do so head first rather than by the feet as taught in textbooks, as, the head once removed, the body follows easily when no time is given for the uterus to contract. In the case just reported this procedure was followed, as only eight minutes had elapsed from the first incision in the abdominal wall till the child was extracted. Owing to the high position of the head, the presentation being breech, before rupturing the membranes I carefully turned the child somewhat by pressing upon its right shoulder till I got the head immediately under the incision, when the membranes were opened and the child speedily extracted. The patient was sterilised by tying both tubes with antiseptic silk, a procedure at once simple and not very likely to be followed by any ill effects. The removal of the ovaries by some is now looked upon as being an operation almost likely to be followed by grave results, mental or otherwise. In any case it has yet to be shown that evil results will follow the tying of the tubes. Should this procedure eventually be free from any bad effects, I think no one looking at the results now attending the improved Cæsarean section will for a moment hesitate to perform it in preference to the modification of Porro.

To stitch the uterus I used straight needles about three inches in length with silk prepared in carbolic acid. The threads were passed from the wound outwards, and grasped only the outer two-thirds of the uterine wall, avoiding the endometrium. The number of stitches must vary according to the judgment of the operator; in this case thirteen were inserted, whereas in my first case only seven were used. In both cases no difficulty was experienced in getting complete apposition of the peritoneal surfaces. With regard to the use of silver wire and catgut, I question the safety of leaving wire in the uterine tissue, and catgut has proved untrustworthy.

Concerning any interference with the internal surface of the uterus, I may state that in neither case was the cavity washed out; and as to sponging the surface with liq. ferri perchloridi, or dusting it with iodoform, I am thoroughly opposed, as either procedure would favour the formation of clot, which would be sure to set up irritation. On no account should a drainage tube be placed in the cervix, not only because, as Garrigues alleges, it may become a source of infection, but because it acts like a foreign body, and is apt to excite hæmorrhage, with distension of the uterus and gaping of the uterine wound.

In conclusion, I may state it as my firm conviction that the time is speedily approaching when this operation will take the place of craniotomy where the child is alive, and that it only remains for each one who has occasion to perform it to faithfully follow up the work with the same spirit as Sir Spencer Wells and others, in order to sweep from our practice an operation which is antagonistic to our own feelings, and which demands the life of the child whilst it imperils that of the mother. As in this case, let us, when possible, decide beforehand if Cæsarean section is to be performed, avoid unnecessary manipulations or attempts at delivery by other means, and secure the strictest antiseptics before, during, and after the operation, which should be performed at an early stage.

Note.—Since writing the above I have had a third successful case, notes of which will be read at the Birmingham Meeting.

EXTRACTS FROM THE MILROY LECTURES ON THE ETIOLOGY AND PREVENTION OF PHTHISIS.

Delivered before the Royal College of Physicians of London.

BY ARTHUR RANSOME, M.A., M.D., F.R.S.,

Physician to the Manchester Hospital for Consumption and Diseases of the Throat.

LECTURE III.—PREDISPOSING CAUSES OF PHTHISIS.

Universal Distribution of the Bacillus.—Numbers Ejected by Consumptives. a. Reasons for Immunity, Mechanical and Physiological.—Dosage of Bacilli.—Varying Susceptibility.—Mitral Stenosis.—Lithiasis.—Copper and Wool Workers.—b. Predisposition to Infection.—The Tuberculous Constitution.—Hereditary Tendencies.—Direct Infection.—Latency.—Vulnerability.—Age, Sex, Race.—Influence of Previous Disease.—c. Modes of Infection: by the Skin, Generative Organs, the Digestive Tract, the Lungs.—Food, Flesh of Tuberculous Animals.—Milk.—The Atmosphere.—Direct Contagion.—Sputum.—Dust.—Infected Houses.—Convents.—d. Conditions enhancing Infectiveness of Bacillus.—Foul Air.—Dampness of Soil.—Organic Vapours.

It has been calculated by Bollinger that one phthisical person may eject from his body in the course of twenty-four hours no fewer than 20 millions of bacilli. The sputum thus ejected has been found by Koch to possess a marvellous tenacity of life, being still alive and virulent in the dried up sputum after a lapse of several months. It is certain that the germs of the disease are almost everywhere present, and that we all of us inhale some of them in the course of each day or week. The presence of phthisis in our midst ought not, then, to be difficult of explanation; we should rather in the first place seek out the reasons for the exemption of so many from the results of infection.

Reasons for Immunity from Tuberculosis.—Amongst the conditions necessary for the growth of the bacillus there is yet one that was mentioned in the first lecture, and which is of great significance, namely, that it requires a sojourn of one or two weeks, and sometimes more, in a suitable medium before it can take root, so to speak, and develop into a colony. Now, from Mr. Watson Cheyne, and Dr. Kidd, and others we learn that the epithelium of the ultimate portions of the air passages is usually the first point of attack by the organism. We may therefore suppose that it is necessary for the organism to effect a lodgment somewhere in this position. Or, again, it may perhaps make its way into the interalveolar lymphatics by means of the prolongations of the branched cells of the alveolar septa, called by Dr. Klein "pseudostomata," which he has shown to be capable of taking up foreign bodies, such as oxide of iron, silica, and even carmine (Likovski), but there are in the healthy body various impediments, mechanical and physiological, which it is difficult for it to overpass.

1. We have the difficulty with which minute bodies such as the bacilli could reach the ultimate air passages.

It is true, as Professor Tyndall has shown by means of his illuminated tube, that the lungs possess a sort of filtering action, due to the entangling of the dust by the mucus lining the air passages. That this filtering action is not complete, however, I have myself proved, both by the microscopical examination of the aqueous vapour of the breath, in which there were numerous epithelial scales and other objects, and by the detection of a few very sparsely scattered bacilli in the breath of certain consumptive patients.

In some forms of lung disease, also, accompanied by copious bronchial secretion, the probability of this event is increased, especially if the accompanying cough prevents the lodgment of mucus in any of the air tubes. As has been shown in the research mentioned, the organic matter of the breath is always less when there is much secretion. The proportionate amount of this sub-

tance exhaled in the aqueous vapour from the lungs was only one-half of that from healthy persons; not that there is really less organic matter thus excreted, but because it was taken up by the mucus before it could reach the mouth. The immunity from phthisis of many cases of chronic bronchitis and emphysema is, perhaps, due to this cause. On the other hand, the influence of a lessened mobility of the chest, and the consequent partial stagnation of the air, is shown in the tendency of the upper lobes of the lungs to tubercular deposit, and we may place in the same order of predisposing causes the evil results of a stooping or constrained posture during work. Perhaps, too, the well-known tendency to tubercular infiltration of parts of the lung, confined by pleuritic adhesions or consolidated by catarrhal pneumonia, may be due to the facility afforded by a prolonged lodgment of the bacillus; and the same may be said of hæmorrhagic deposits in the lungs. In this case the organisms would receive both board and lodging for a term amply sufficient, in many cases, for its development.

2. Another barrier to infection from the bacillus, even if it obtains a temporary lodgment, may be found in the vital processes carried on in the lungs. I am not aware of any direct experiments upon the action of nascent oxygen or of ozone upon the virulence of the bacillus; but my own experiments with the latter agent in fifteen cases of phthisis seem to show that it has a distinct influence in enabling the system to tolerate the presence of these organisms, and gain health and strength in spite of their continuance in the body. In any case, whether by simple oxidation or by the energy of other vital actions, probably also, as Koch and others have shown, by the direct antagonism of phagocyte corpuscles, it is certain that the healthy human body has the power of disposing of a certain quantity of these creatures, even after they have been directly injected into the system.

The recent observations of Bollinger on this point¹ are of great interest. He shows that very dilute solutions of sputum (1 in 100,000) and of cultures of bacilli (1 in 400,000) are virulent when injected into the peritoneum, but that much lesser dilutions were inoperative upon the intestine. In these researches the peritoneum remained sound in two-thirds of the cases, but the disease attacked the lymph glands, the spleen, and the lungs. Incidentally it may be remarked that this observation shows that lung tuberculosis need not always depend upon inhalation, but may arise from virus that has been swallowed or injected.

But in addition to these evidences of varying susceptibility to the poison, Dr. Bollinger ascertained that whilst 800 bacilli, when

injected into the peritoneum, are sufficient to cause the disease, smaller numbers than these become less and less certain in their operation.

We may gather from these facts the lesson that, up to a certain point, the healthy body is able to destroy, or at least render innocuous, the organisms that gain access into its interior. There are probably great differences in this respect in different individuals, just as we know that some people seem to be quite proof against the infection of certain exanthemata, whilst they are especially prone to others.

These being some of the reasons for immunity, what, next, are the reasons for infection? It seems highly probable that a certain form of chest, with insufficient expansive and expulsive power, may afford opportunities for the deposit of the tubercle bacillus; but, on the other hand, I have seen men of the finest physique, and with magnificently developed chests, fall victims to the disease. I apprehend that many of the cases occurring amongst Her Majesty's Foot Guards must have been of this description.

Heredit.—Few medical men who have been long in practice will doubt the existence of family predisposition to tubercular disease. Thus, Briquet found that one-third of the consumptive patients at a hospital were born of consumptive parents on one side or the other: Dr. Quain, 25 per cent.; Dr. J. Pollock, 30 per cent.; Dr. C. T. Williams, 12 per cent. of direct influence and 48 per cent. of family predisposition. Rilliet and Barthez found that 1 in 7 of tuberculous children had some hereditary taint; Mr. Phillips, only 4 per cent.; Lebert, two-fifths; Lugol states that more than half the subjects of scrofula have consumptive progenitors. Francis Galton² gives 26 per cent. of consumptive children by one method of calculation and 28 per cent. by another. But in these figures no account is taken of the influence of external circumstances, sources of infection from without that are common to all the members of the family.

Again, there are so many deaths from phthisis in the country. Nearly half of all the deaths between the marriageable ages—from 15 to 35—are due to this cause; and hence, without any such thing as hereditary taint, there would be nothing surprising in the fact that half of the consumptive patients have had consumptive relatives, unless the families were unusually large—and if we draw grandparents and collateral relatives into the statistical net, it breaks at once and holds no solid conclusion.

Dr. Walshe obtained from his hospital patients the result that about 26 per cent. came of father or mother or of both parents similarly diseased; but in discussing the significance of these

¹ *Deutsche med. Wochenschrift* for October, 1889, p. 849.

² *Nat. Inheritance*, page 173.

NOTE.—The male rate is denoted by the height at which it is placed on the diagonal line. The differences between the male and female rates by the length of the lines above or below the diagonal, and the position of these above or below shows whether the female rate is above or below the male rate.

figures, he asks whether they prove the reality of hereditary influence, and decides that they do not. "This ratio," he says, "of 26 per cent. might be, and probably is, no higher than that of the tuberculised portion of the population generally," and he concludes that "much phthisis is in each generation non-hereditary."

It is, moreover, highly probable that heredity has much less to do with consumption than is commonly supposed. A very large proportion of cases arise without any phthisical family history of the past. Many healthy families leaving the country and coming to reside in crowded towns lose some members subsequently from consumption. In the army more than 60 per cent. of cases are non-hereditary.

Whilst I admit the existence of hereditary predisposition to tubercle, I do not attribute to it a great importance, and if we set aside the few congenital cases of the disease, I believe that the transmission of an aptitude to contract it does not necessarily lead to the disease itself, if care is taken to avoid the sources of external infection. In short, I am inclined to agree with Louis when he declares that "few persons are born necessarily to die of consumption."

2. *Age, Sex, and Race.*—Somewhat similar remarks must be made with respect to the influence of age, sex, and race upon the

tendency to contract the disease. We have already seen that up to the age of puberty the mortality from phthisis is comparatively rare, but after this age the younger residents in an infected house are often the first to succumb to the disease. All races, also, as we have seen, suffer more or less from the disease, though it is acknowledged that the negro, as well as the monkey, suffers grievously when transplanted from his own land.

It is well known that certain disorders, such as enteric fever and measles and small-pox, especially after an imperfect recovery, often leave behind them a serious tendency to contract tubercular disease; but it is to previous affections of the lungs that we must look as the most common causes of bodily predisposition. Many cases of phthisis are preceded by purely inflammatory diseases of the lungs, such as pleurisy, acute bronchitis, broncho-pneumonia, and imperfect resolution of ordinary pneumonic inflammation.

That there is no necessary connection between ordinary diseases of the respiratory organs and phthisis may be shown by comparing the rates of mortality of these two classes of disease. I have here a chart, drawn from Lowe's tables, from male populations at identically the same ages (that is, from 15 to 55), from which it may be seen that the height of the line indicating the prevalence of ordinary lung diseases bears no direct relation to the prevalence of consumption. It is true that both Liverpool

and Manchester are severely visited by both types of disease, but on each side of them stand many places in which there is no such correspondence to be seen.

There are four possible modes of access to the interior of the body—the skin, the generative organs, the digestive tract, and the lungs. The first two are, I believe, comparatively rare sources of infection. I. Tuberculosis is, indeed inoculable by the skin, and there are on record cases in which it has thus been accidentally contracted.

The most common mode of origin of scrofulous lymphatic glands is well known to be some previous lesion of the skin or mucous membrane. Lupus also, which is now generally acknowledged to be a tuberculosis of the skin, does not usually spread to the general system. On the whole, then, I believe that infection of general tuberculosis by the skin is a comparatively rare event.

II. Infection by means of marital intercourse is also probably very uncommon. It is impossible to say that it may not occasionally take place, especially in view of the observations of the French pathologists, which have already been quoted, as to the presence of the specific bacillus in the generative organs and in the semen.

III. Food.—In former times the discussion of the question of the production of tuberculosis by food was limited to the subject of the adequacy of certain foods; but Villemin and Cornil succeeded in producing tuberculosis by feeding animals with tuberculous material, and their researches have been confirmed by others, notably by Von Wesener. The question as to the suitability for food of the flesh of tuberculous animals undoubtedly is one of enormous importance. It has been stated (Dr. Berendt) that as much as 80 per cent. of meat sent to the London market came from such animals;³ and in many places the prevalence of the disease amongst cattle has been found to be so great that it has been proposed, and in some places actually decided, to place an absolute veto upon its sale.

Extreme differences of opinion, however, prevail as to the necessity for so greatly restricting the supply of animal food. On the one hand, at the Congress on Tuberculosis, held in Paris in July, 1888, M. Nocard urged that if an animal presented signs of tubercle in any organ, howsoever localised, it should at once be rejected as unfit for food; and he was followed by other speakers on the same side, with the result that a resolution was passed by the Congress "that all meat derived from tubercular animals, whatever the gravity of the specific lesions found in them, should be seized and totally destroyed."

On the other hand, Kastner,⁴ after adopting most rigorous antiseptic precautions, injected the juice from the flesh of twelve beasts, in all stages of tuberculosis, into the peritoneal cavities of sixteen guinea-pigs, with absolutely negative results. My friend, Dr. Dreschfeld, of Manchester, has made similar experiments with juice from the flesh of six cows, five of them in an early stage of tubercular disease, and one in an advanced form, though no tubercles were found in the flesh. The results from the first mentioned group were entirely negative, the rabbits injected remaining perfectly healthy; but the juice from the flesh of the cow in a more advanced stage of the disease produced a small crop of tubercles at the place of puncture into the abdominal cavity of two rabbits after the lapse of from three to five weeks, and material from this tubercular growth injected into another rabbit again gave rise to still more decided tubercle.

The evidence as to the transmissibility of tubercle by the ingestion of milk from tuberculous animals is much more distinct and positive as to its occurrence, even when there was no general infection in these beasts. In the Registrar-General's report for 1888, the deaths of 3,659 males, and 3,115 females are ascribed to tabes mesenterica, and 3,722 males, and 3,021 females, to tubercular meningitis. Hirschberger declares that 25 per cent. of all children dying under one year of age, die of tuberculosis. It is assumed that many of these cases are directly the result of intestinal infection by the bacillus.

Bacilli have been found by Bang⁵ in milk, both when the udders of the tuberculous cows were affected, and when they were not and he obtained constantly positive results by feeding with the former, and occasionally with the latter; and he found that heat-

ing the milk to 70° C. did not always destroy its virulence; only boiling would entirely do so.

Ferdinand May and Gottlieb Stein have made similar observations, but these researches are open to objection on the ground that tuberculous material may have entered the milk from without; and on the other hand the digestive juices may act destructively on the infection when it is actually present.

On these grounds Dr. Hirschberger, under the guidance of Professor Bollinger, instituted a series of experiments in which extreme care was taken to avoid these possible sources of error. The milk was obtained in two ways: 1. By milking into glass vessels, sterilised by heat. 2. By drawing it directly from the udders of recently slaughtered beasts, antiseptic precautions being strictly observed. Guinea-pigs were the experimental animals employed, and the milk was injected into the free peritoneal cavity. The animals were always young, and fresh on the market, and they were kept under excellent hygienic conditions. A very large number of the animals contracted tubercle, even when, as in three cases, the udder itself was unaffected, and out of twenty udders used, in only one was the presence of bacilli demonstrated by the microscope.

In only six cases was no infection obtained; and even when the cows were in otherwise good condition, which seven of them were, positive results were obtained in three cases.

He concludes from his researches that there is great danger attending the consumption of milk from tuberculous animals, in whatever condition they may be, and whether or not the disease is localised only.

In the presence of facts such as these, we cannot deny the possibility of the transmission of tubercle by means of the flesh of cattle, and it is highly probable that mesenteric and intestinal disease is not infrequently produced, especially in children, by the use of infected milk, but there are certain broad considerations that should, I think, prevent us from attributing much of the phthisis that prevails to either source of infection.

1. The classes who eat most meat are not those who are most commonly attacked by phthisis. It would be interesting also to know how those who ascribe such dire results to the eating of the flesh of oxen would account for the fact that in India the Hindus, who abjure such meat, are as subject to phthisis as the other races, and also why the Guachos of South America, who subsist almost entirely upon beef, are so remarkably free from the disease. Dr. Thorburn, of Toronto, tells me that the North American Indians, who now get no meat, are terribly subject to consumption.

2. Somewhat similar remarks apply to the use of milk, for the poor denizens of our towns, amongst whom both phthisis and mesenteric disease are most common, are often unable to procure milk; but it must be acknowledged that, when they do obtain it, it is more likely to be obtained from diseased animals, and also more open to contamination by tuberculous dust in the small milk-shops in which it is stored. Still the comparative rarity of the disease amongst the children of the rich, who consume it largely, and who very seldom will take it after it has been boiled, shows that the danger from this source is not quite so serious as it has lately been represented to be, both in this country and on the Continent.

IV. *The Atmosphere.*—The next medium through which the bacilli may be conveyed is the air. The word contagion implies transmission by contact, and, in the case of phthisis, it would naturally be taken to mean the direct transference of the disease from person to person. That contagion from a consumptive patient is a possible event is an opinion that has been held by many eminent men; and quite recently a number of supposed cases of contagion have been contributed by medical men to the Collective Investigation Committee of the British Medical Association. In a paper on "The Limits of the Infectiveness of Tubercle" I have pointed out that, when checked by means of Dr. Longstaff's formula, supplied by the Committee themselves, the number of cases of phthisis in husband and wife, supposed to be due to contagion, is less than it would have been had only accidental and non-contagious cases been admitted into the record. Moreover, we have to take into account the possibility of contagion by sexual intercourse,⁶ and the certainty that, in most of the cases of supposed direct infection, all the persons whose cases are noted were exposed

³ This must be an exaggeration, as the Departmental Committee on Tuberculosis, in 1888, reported to the Privy Council that the proportion of tubercular disease among cattle slaughtered varies from 0.2 per cent. at Edinburgh to 50 per cent. (Quest. 4283).

⁴ *Münchener med. Wochenschrift*, August 20th and 27th, 1889.

⁵ *Tidssk. f. Landøkonomi*, 1886.

⁶ It may perhaps be regarded as favourable to this view, that in 188 cases reported to the Collective Investigation Committee, 119 are of supposed transmission from husband to wife, and only 69 from wife to husband (Report, p. 33); and Dr. Weber's experience is to the same effect.

to the same risks arising from unhealthy environment; and, again, if phthisis were directly contagious, it is remarkable that it should be chiefly contagious in badly ventilated houses, and on certain soils; and it is further difficult to see why drainage of the land and elevation above the sea level should in any way affect its contagiousness. Dr. Dewar, of Arbroath, makes the significant remark that in all his cases of supposed infection (No. 166), "the patients lived in small confined houses, and slept in the 'box beds' in use in Scotland." "During twenty-five years," he says, "I have not seen one case of contagion in the airy houses of the well-to-do."

2. As to the dissemination of phthisis by means of dust, it is well known that Koch regards this as the most common way in which it is produced—by the drying up and pulverisation of matter expectorated upon the ground, on the floors of dwellings, or on handkerchiefs.

Long before the discovery of the bacillus of tubercle, also, this view was taken by some of the most competent observers; thus Dr. Farr, in his Report to the Army Commission, remarked that "the prevalence of phthisis in the armies of Europe is probably due in part to the inhalation of expectorated tubercular matter, dried, broken up into dust, and floating in the air of close barracks."

The retention of the bacillus either in dust or in the vapour of the air would fully account for most of the cases of the supposed direct infection recorded by the Collective Investigation Committee, and especially for those in which the virus appeared to be introduced from without into houses previously entirely free from the disease (see Cases No. 188, 194, 196, and 255). It accounts fully for all the additional cases mentioned by Dr. Burney Yeo in his able defence of the doctrine of contagion in the *JOURNAL*, April 18th, 1885.

3. We have now reached, perhaps, the most difficult part of our inquiry, as to whether any conditions outside the mere presence of the bacillus are necessary, or at any rate auxiliary, to its infective power.

(1). With regard to the influence of free ventilation, it is not only possible, but highly probable, that in many of the places where its good effects have been observed, other conditions as well have come into operation, and especially greater cleanliness and more complete removal of dust and other refuse. Where people care for fresh air, they also frequently show a preference for cleanly surroundings, both of house, and clothes, and person.

(2). Somewhat similar remarks may apply to the influence of an elevated site upon even indirect infection through dust, for in these situations we probably have both more movement of air and less dust.

(3). But no such explanations as these will touch the remaining two points that we have to consider. If there is no condition outside the body that influences the viability or the virulence of the bacillus, it is very difficult to account for the comparative immunity of frosty or sub-arctic regions, and for the intensity of the tubercular action in hot or tropical climates. It is certain that chronic inflammations of the lungs are not more common in the latter, and thus one source of the disease is not so frequently present; whilst in the cold regions, where these affections are rife, phthisis is comparatively rare and much less virulent. We have no reason to suppose that bacillus-laden dust is absent in the crowded towns and close rooms which are to be found in Canada, for instance, and yet the disease does not spread as it does in the warmer and more genial air of Italy and the tropics.

(4). Again, it affords no explanation of the influence upon such infection of damp or undrained subsoils, nor yet of the improvement in the phthisis rate that has been shown to follow thorough drainage of a town.

To account for these several points, it is necessary to assume the existence of some condition necessary to infection by the bacillus, which shall either enable it to live longer outside the body, or which may even increase its power of attack.

I have ventured to suggest that the tubercle bacillus, like some other infective microzymes, may actually take up an increase of virulence by a sojourn for a time in some medium external to the body, either in polluted ground air or in an atmosphere saturated with aqueous vapour from the lungs.

I do not know whether the same observation has been made by other physicians to consumption hospitals, but it has certainly struck me that a fresh infection of the lung in persons already suffering from phthisis is much more likely to take place from without than from within the body. Many times have I seen in-patients, with sputum teeming with bacilli, improve in health, gain weight, and almost lose the physical signs of their disease; and then they

have returned home, and in a few weeks they have come back to the hospital, sometimes with fresh disease in the damaged lung, sometimes in the opposite lung that had been previously healthy, and sometimes with laryngeal phthisis.

Such facts as these certainly seem to show that there was something in the air of their own homes much more infective than the bacilli of which they were themselves the hosts. The one fact that might seem to bear against this theory is the high temperature required for the development of the organism; and the greater virulence of the disease in hot climates probably shows the influence of this condition, but it is by no means proved that in cold climates the bacilli contained in damp and foul dwellings may not in some way increase their power for evil.⁷

CASE OF CÆSAREAN SECTION FOR OSTEO-MALACIC PELVIS.

By WM. MCGOWAN, M.D.,

Medical Officer Maghera Dispensary, co. Derry

ON December 4th, 1889, I was called upon to attend in labour I. McC., wife of a farm labourer. I saw her at her residence about two miles distant, at 7.30 A.M. The patient, aged 37, a small, delicate, emaciated woman, was mother of five children, and all her previous labours had been natural and easy. I myself attended her at her last confinement on August 17th, 1881, when the pelvis was quite natural and roomy, and she had an easy labour, not even the forceps being required. After this I lost sight of her, but there was the history of her having, immediately following this confinement, to keep her bed for over six months from what was called "rheumatic pains." For some six months or so more she was only able to be carried to a chair at the fire. After this she began to go about a little on crutches, and gradually gained strength, but remained permanently "bent in the back," "sunk," and "stooped." During the latter months of gestation, she said her health had been very bad, and scarcely anything was retained on the stomach, so that she was very weak. When I saw her she had been about forty-two hours in labour, and yet, as she said, "it was doing no good; the lump had not gone down, as it used to do." Examination revealed an extreme degree of pelvic contraction and deformity. The tubera ischia were less than three-quarters of an inch apart, almost obliterating the pubic arch; so closely approximated were they that the index finger could only with some difficulty pass between them. The sacrum and coccyx projected forwards, leaving only a narrow chink between them and the approximated ischia. For want of space, caused by this narrowing of the outlet, it was impossible to make out the presentation. As delivery by the natural passage seemed to me an impossibility, I sent for my friend Dr. Thompson, of Bellaghy, who arrived shortly after 10 o'clock. On examining her, he agreed with me that the only chance of delivery must be the Cæsaean section. The nature and dangers of the operation were explained, and the sanction of the patient and her husband having been unhesitatingly obtained, we determined to lose no time in carrying out the operation, as the powers of Nature were already greatly exhausted by the prolonged labour. Giving directions to have the house thoroughly heated and other preparations made, I returned home for the necessary instruments, etc., and proceeded again to the house at 12 o'clock, accompanied by Dr. Thompson and Dr. Hueston, of Maghera, who kindly afforded me their valuable advice and assistance. The patient was lying in the kitchen of a farm labourer's cottage, so that the surroundings were not favourable for a serious operation. However, there was no alternative. The rectum was well cleared out by an enema, a catheter passed, and the patient placed on a suitable table, and put under the influence of chloroform. With the strictest antiseptic precautions possible under the circumstances, the usual incision was made, and without any difficulty I speedily removed a living child, healthy, and fairly well developed. In making the incision in the uterine wall, I came on the placenta attached to the anterior surface. This I cut through, and the child and placenta were removed without any trouble from hæmorrhage. Owing probably

⁷ The case against infection by sputum dust only without some increase of virulence from external conditions is well argued by Dr. Candler in his work on the *Prevention of Consumption* (Kegan Paul and Co.). Many of Dr. Andrew's observations in his *Lumleian Lectures* point in the same direction.