"and carrying inoculating matter with them, would not carry infection;" and yet he believes that "the disease can be carried in currents of air," and that it is quite a common thing to have it carried over a field of 200 yards in width. He believes that "the germs of the disease might be hanging or lying about the byre, the woodwork," etc., for six months; and yet, strange to say, "the infection does not appear to linger about the body or clothing of a man." Beneficent but inexplicable dispensation! There is no danger, he avers, when the cow whisks the virus from her tail, for it dries up; but if it is exhaled from the lung, six months' desiccation may not kill it.

The contradictions above quoted are so flat and manifest, that one may well wonder how any rational being could have made them.

But between Professor M'Call and Mr Rutherford there are on matters of fact contradictions and discrepancies, which, although less manifest, are much more important.

Mr Rutherford says that inoculation arrests the disease in the incubative stage; that if an animal is already the subject of pleuro-pneumonia, inoculation produces (in the tail) an aggravated lesion, or none at all; and that, having inoculated, he is satisfied that there will be no more slaughtering after the fourteenth day. From Professor M'Call's evidence it will be seen that on the 9th February Mr Rutherford inoculated a number of cows in a byre in Glasgow.

On 1st March Professor M'Call (not Mr Rutherford) detected that one of these cows was showing signs of pleuro, and the *post-mortem* showed that both its lungs were affected. Mr Rutherford had considered this animal "safe." Now, if this cow had been in the incubative stage on February 9th, inoculation ought to have arrested the disease. If, on the other hand, the disease had at that date advanced beyond the incubative stage, Mr Rutherford's examination of the tail lesion ought to have enabled him to discover that the animal was affected. Or, lastly, had the animal been sound on the 9th February, inoculation ought to have protected it. What is the explanation?

On the 4th March two other cows, regarded as "safe" by Mr Rutherford, were found to be badly affected. Again, on the 7th March two cows were killed, and found to be affected. These two were considered "safe," having been inoculated, in what Mr Rutherford regarded as a successful manner, three weeks previously. On 15th March another "safe" animal was found to be affected. This cow had been "protected" thirty-four days previously.

On 22nd March still another "safe" animal had to be killed for pleuro, thirty-four days after inoculation.

On 4th April a cow, "protected" forty-seven days previously, had to be killed for pleuro. This animal had been trebly inoculated, viz., February 16, 24, and 29.

Is it possible that Mr Rutherford, in giving his evidence, had forgotten about this Glasgow outbreak? If he had, no reliance can be placed on his statistics regarding the success of his own inoculations. But if he had not forgotten about this and other similar cases—well, the alternative conclusion is not more pleasant.]

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

WEDNESDAY, FEBRUARY 15, 1888.

JOHN SMITH, M.D., President, in the Chair.

Animal Tuberculosis in Relation to Consumption in Man.—Principal WALLEY, of the Royal Dick Veterinary College, Edinburgh, read a paper on this subject. After dwelling on the comparative neglect with which this

important subject had been treated, he sketched the history of the pathology of tuberculosis. So early as 1872 he had been inclined to think that tuberculosis in cattle must be due to some specific poisonous principle, and this opinion he had indicated in an essay published that year. The bovine tribe were most liable to the disease; sheep showed a remarkable immunity. As to the horse there was some difference of opinion. It was sometimes said that the horse was not attacked. Certainly there had been confusion, as there had been in considering the question as a whole, through the confounding of lymphadenoma and tubercle proper. Some of the cases described as cases of tubercle in the horse were undoubtedly lymphadenomatous. His colleague, Professor M'Fadyean, however, had recently had opportunity of studying two cases of tubercle. There was also some difference of opinion regarding the pig. It was usually regarded as easily affected, but a recent authority had contradicted this view. In the dog it was a very rare occurrence, as in the cat. Water fowl were seldom attacked, while barn-door fowl were very liable to it. Wild animals were far less prone to it, in their native state, than domesticated animals. Speaking of the chances of propagation, Professor Walley indicated his belief in the possibility of congenital tuberculosis. A number of observations pointed to this, while theoretically there seemed no difficulty in supposing it possible for the tubercle bacilli to pass from mother to foetus in the same way as it was admitted that the bacillus anthracis did. It had not yet fallen to his lot to observe a case, but several such were on record, both abroad and at home. Propagation might further result from the ingestion of various affected foods (meat, milk, etc.), and by inhalation. Experimentally it had been induced both by the subcutaneous, intravenous, and intraperitoneal methods. Professor Walley then discussed fully the different secretions and organs which became affected, and illustrated his statements by exhibiting a large collection of morbid specimens. In opposition to the statement that the trachea and bronchi were never primarily affected he was able to show specimens. Turning to the practical side of the question, he deprecated the statement of the *Lancet* that veterinarians had been apathetic on this subject. He was of opinion that a charge of apathy might be lodged with much greater justice at the door of the medical profession. As to the identity of bovine and human tuberculosis, he thought there was now no room for reasonable doubt. All the lines of evidence pointed in this direction. The immediate practical issue was what should they do with a view to minimising the possibility of infection from animals to man? There was no doubt that the milk from tubercular cows was distinctly dangerous. The work of Professor Bang and others had proved this conclusively. He was inclined to believe with many observers that there was danger from the milk of such cows only as had tubercular sores in the udder. They must have powers granted to them to condemn cattle which were manifestly tubercular. This was a most important department of hygiene, in connection with which he held that medical men ought to combine with them in asking from the Privy Council that such powers be granted to their inspectors. As inspector for the city of Edinburgh, he occupied the happy and unique situation of being allowed by the Lord Provost and magistrates to exercise his own discrimination in the matter.—The PRESIDENT congratulated the Society on being the recipient of so important a paper. The subject was one worthy of their fullest consideration. Their thanks were due to Principal Walley.—Professor M'FADYEAN, of the Royal Dick Veterinary College, congratulated the Society on taking up this important subject. In his opinion, the identity of bovine and human tuberculosis was clearly established on an experimental and a histological basis. Alleged differences in size of the specific bacillus in the two cases were capable of satisfactory explanation. Infection might

he conveyed from cattle to man by the ingestion of meat and milk. It was their duty to endeavour to obtain such regulations as might be expected to meet so serious a danger. Human and comparative pathologists would find mutual benefit by combined action. In illustration, he referred to Dr Philip's recent work on certain morbid products obtainable from tubercular sputa, and suggested the possibility of obtaining these in larger quantity from their public abattoir.—Dr WOODHEAD thought Principal Walley rather hard on the medical profession. Discussing the question of identity, he thought too much had been made of mere difference of size. They all knew that the same organism varied somewhat under different conditions of growth. Further, he had prepared, in exactly similar way, specimens of the bacillus from human and bovine sources, and had submitted them to a number of qualified observers, and not only could they not say which specimen came from a given source, but it was impossible to find any difference in the series. Regarding the difficulty of inoculating certain animals from certain others, they must bear in mind the difference of temperature which existed among different species of animals. Much had been made of the comparative rareness or non-occurrence of tubercular mammitis in the human subject. But the conditions were very different. The udder of the cow was made to afford milk considerably beyond the normal period of lactation, and it was submitted to less delicate handling.—Dr LITTLEJOHN spoke of the importance of this question from the point of view of public health. He found, for example, that of forty-two cows slaughtered in Edinburgh on account of disease, seventeen had suffered because of tubercular disease. They ought to combine with their veterinary colleagues and petition the Privy Council for powers to destroy all animals manifestly tubercular. But they must remember such a measure could not be a local one, else Edinburgh would become a sink for all the tubercular animals of the country. The whole thing became a question of money, as compensation must be granted to the owners of such cows. With regard to the question of infection by sewage, it became an interesting problem whether the Craigentinny meadows (which receive much of the concentrated Edinburgh sewage) might be unsuited as pasture ground. A practical difficulty occurred as to the date at which they should condemn animals. It was matter of common observation in the human subject that phthisis was curable, as was proved by *post-mortem* examination. Doubtless the same curative process occurred in animals. In addition to all this, there was need for the utmost care in the inspection of byres and dairies.—Professor GREENFIELD thought Principal Walley had unduly magnified the work done by the veterinary profession in comparison with what had been effected by the medical profession. He should have been inclined to reverse the order. As to the main issue, he felt inclined to say that, in spite of much that had been stated and written, no satisfactory points of difference between human and bovine tuberculosis had been established. While they could not expect to have the more exact experiment undertaken—the inoculation of the human subject directly from the cow—much important assistance might be afforded by a series of experiments in which inoculation of the calf was attempted from the human subject. He did not wish to say too much, but he was doubtful if they could expect all the good results suggested by the compulsory slaughter of cattle.—Dr JAMES admitted the identity of the two affections. But in both instances the nidus was the more important factor. The bacillus was probably ubiquitous. It depended on the state of the individual whether it became noxious or not. In other words, improve the vital activity of the tissues and the bacillus remained harmless either to men or animals. Their preventive treatment of phthisis illustrated this. It was further suggested by the comparative rarity of tuberculosis in the more active horse and dog, as distinguished from the sedentary cow. Their best line of

treatment of the present evil lay in improving the sanitary conditions under which their cows lived. The mere stamping out of the diseased animals would do no lasting good.—Mr CATHCART and Dr PEEL RITCHIE also took part in the discussion.—A vote of thanks was accorded to Principal Walley.—*British Medical Journal*.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY AND TUBERCULOSIS.

As the outcome of Professor Walley's paper read before this Society, it was remitted to the Council of the Society to consider what steps might be taken with a view to pressing upon the authorities the important bearing of Animal Tuberculosis on Public Health. At a meeting of the Society held on Wednesday 21st March, the Council's report on this matter was unanimously approved, and it was resolved to at once memorialise the Lord President of the Privy Council and the Secretary for Scotland on the subject. It was further decided to approach the Town Council, at an early date, with a statement of the views of the Society on the importance of a more stringent inspection of cow-houses and dairies supplying the city with milk.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE ANNUAL MEETING of this Association was held in the County Hotel, Newcastle-on-Tyne, on Friday, 24th February 1888—the President, Mr D. Dudgeon, in the chair.

Present—Professor Walley, Messrs Wm. Hunter, J. W. T. Moore, G. Elphick, W. A. Hancock, A. Hunter, E. Bennett (Army Veterinary Department), C. Stephenson, and H. Hunter, Newcastle-on-Tyne; Wm. Stevenson, Whitburn; Wm. Awde, Stockton; C. S. Hunting, South Hetton; D. Macgregor, Bedlington; J. Gofton, North Shields; Wm. Wheatley, South Shields; F. R. Stevens, Darlington; J. G. Deans, Bishop Auckland; G. M. Mitchell, and the Secretary, Sunderland.

Visitors—Professor M'Fadyean; J. Aitken, Newcastle-on-Tyne; G. F. Prickett, Bedlington; W. E. Lawrence, Durham.

The minutes of the previous meeting were confirmed.

Apologies for non-attendance were received from Professors Williams, M'Call, and Duguid, Messrs H. Peele, P. Snaith, W. J. Mulvey, T. Greaves, J. D. Barford, T. Jack, G. A. Banham, A. C. Cope, Donald, J. C. Peele, A. Leather, R. Brydon, C. Sheather, W. W. Smart, J. B. Nisbett, G. Farrow, jun., C. Gresty, Drs Fleming, Armstrong, and Harris.

Mr Deans, Bishop Auckland, was unanimously elected a member of the Association.

The Secretary nominated Mr H. Gelsthorpe of Darlington for election as a member.

On the motion of Mr Elphick, seconded by Mr C. S. Hunting, Mr Bennett (Army Veterinary Department) was unanimously elected an Honorary Associate during his stay in Newcastle.

The President, Vice-Presidents (Messrs H. Hunter and J. Gofton), Messrs Moore, Elphick, and the Secretary were elected a Committee to revise the rules of the Association.