

MONDAY, AUGUST 10, 1896.

The Chief Justice (Sir Lambert Dobson) presided at the monthly meeting of the Royal Society of Tasmania on Monday evening, August 10th.

The SECRETARY (Mr. Alex. Morton) read a letter from His Excellency's Private Secretary, expressing the regret of the Governor at his inability to preside. Apologies were received from Sir James Agnew and Mr. James Barnard (Vice-Presidents).

The following were elected Fellows of the Society :—Messrs. C. W. Butler, F. Lodge, B.A., and J. H. Levings.

Tuberculosis : (a) Cause, (b) Mode of Infection, (c) Prevention ; (1) by the Individual, (2) by the State ; by Gregory Sprott, M.D., D.P.H., Health Officer for the City of Hobart.

Dr. SPROTT said :—Tuberculosis is a specific infectious disease caused by the bacillus tuberculosis. It is common to man and the lower animals. In the human subject it appears in different forms—such as phthisis pulmonalis, tabes mesenterica tubercular meningitis, scrofula, lupus, etc., but these are all casually related to the bacillus of Koch. It has recently been artificially produced in fish. It may be said to be the most widespread disease we have in domesticated animals, though somewhat rare in their wild state. There is no longer any doubt about the bacteriological identity of all these forms of tuberculosis in the different animals it affects, except, perhaps, in the case of fowls. Wherever man goes we find tuberculosis, and where human beings are most crowded together there the mortality is highest. No country is free from it. In many parts of the vast space of Africa, as in the upper part of the Nile, it is almost unknown. With its distribution climate would seem to have very little to do, but some observers hold it is more severe and rapid in tropical than in temperate regions. All are agreed, however, that a moist, damp atmosphere is decidedly favourable to its prevalence. How this acts is not yet determined. Certain seasons of the year have some influence over the prevalence. In Australia the maximum occurs at different seasons in the various colonies. In Tasmania it is October to December. No race of people are exempt, but the Jews seem to enjoy a relative immunity. Females are said to be more subject to tuberculosis than males, but this varies slightly in different colonies and countries. Tuberculosis is common among infants, and it is estimated that one-fourth of all children dying die of abdominal consumption. In England alone 70,000 deaths occur on an average every year ; 50,000 of these being due to consumption of lungs, and the other 20,000 from other forms of tuberculosis. In Australasia for the three years 1890, 1891, and 1892 the total number of deaths from phthisis alone was 12,243, out of a total number of deaths of 153,069, being about 8 per cent. of all causes. Queensland and Victoria contribute about 9 per cent., while Tasmania and Western Australia contribute only about 6 per cent. With the exception of Western Australia, Tasmania has the best record of all the colonies. If you add the other forms of tubercular disease to this 12,000, you will get a total, say, of 20,000 in three years, which means over 6,000 lost to the colonies every year. What an enormous saving of life it would be to the colonies, as well as to Britain, if we could only prevent this disease in its many forms ! Tubercular matter taken from the lungs of persons buried for years has been found virulent on inoculation. The modes of entrance by which the infecting bacillus may gain entrance into the body are :—(1) By the respiratory and (2) alimentary tract ; (3) by inoculation. (4) Another mode of infection—hereditary transmission—was to be considered. The channel of infec-

tion often determines the seat of the disease. The bacillus, or spores, that dry up and lie about are often inhaled into the body. The sputum of tubercular persons usually furnishes the richest supply of bacilli and their spores, and is often very virulent. Ransome and Williams have been able to demonstrate the bacillus from air collected in the ventilating shaft of the Brompton Consumptive Hospital, and inoculation experiments from the dust collected on the floor of this hospital have proved the infection to be present in the form of spores when the microscope had failed to show the bacillus. Klein kept some guinea pigs on the ventilating shaft, and they contracted the disease also. Then the spores may be communicated by the breath of the patient. Infection by the alimentary canal is, perhaps, the second important mode of infection, and the disease in this way may be communicated by means of milk or meat from diseased animals. Doubt no longer exists about milk from tubercular cows being the means of conveying tuberculosis, particularly to infants and young children. It is now considered inadvisable for consumptive mothers to suckle their infants, for although tubercular disease of the mammary gland is somewhat rare in the human subject, it would seem that the infection may be conveyed without this organ being diseased. The danger of contracting tuberculosis from meat is not so great as the taking of milk from tuberculous cows, but it is nevertheless a source of infection if meat is not properly cooked. When the disease is localised it is thought by some that there is little risk of eating the part of the carcase unaffected, but Professor McCall, of Glasgow, has shown that the bacilli, although not having their habitat in the blood, have been found there as well as in the marrow of bones. The authorities in Glasgow, acting on this, condemn the whole carcase. The parts in close proximity to the disease may be contaminated, while the parts at a distance may not. Inoculation is fortunately not a very common mode of infection. It has followed from a cut on the finger with a broken spittoon used by a phthisical patient. Medical men doing *post-mortems*, butchers, and cooks have been infected in the execution of their duties in this way. It is said to have resulted in two cases from tattooing where the saliva of a phthisical patient was used. The question whether tuberculosis can be transmitted from parent to child is one which authorities are divided upon. Many observers hold that the disease cannot be transmitted, but only a predisposition, and heredity to such as Virchow and Frankel only means greater predisposition, but to Klein it means the actual transmission of the disease. It has seldom been found in calves, and rarely in new born infants. While tuberculosis may be transmitted directly from parent to child, there is a very strong consensus of opinion that the form which affects the lungs is never so transmitted. It may then be taken for granted that "consumption is not hereditary, but only a predisposition—what that predisposition is we cannot yet say." Weakness of the constitution sets up a predisposition. Certain conditions, such as dampness of soil, impurity of atmosphere, are important factors. Dr. Buchanan and Sir John Simon have long since proved that "the drying of soil, which has in most cases accompanied the laying of main sewers in the improved towns, has led to the diminution, more or less considerable, of phthisis," and this has been abundantly proved as the result of town improvements. Dampness of soil and seaboard towns are favourable predisposing agents of tubercular disease. It would seem as if the bacilli were there in greatest numbers and most deadly in effects. Localities with dry soils and uniform temperature are least affected. Nothing tends to predispose to tuberculosis so much as a vitiated atmosphere. This is evidenced by the fact that we have consumption most common in large cities; not only so, but in the parts of them where overcrowding and bad ventilation are at a

maximum the mortality is highest. Dr. Russell, of Glasgow, shows not only the effect of overcrowding on the total death rate, but also the great effect it has on the death rate from consumption. But there are other impurities which tell on the mortality of phthisis besides those from organic vapours, namely, those from trades of different kinds, such as of knifegrinders, weavers, etc. All trades which give rise to dust predispose, and particularly where metallic dust is floating about, to phthisis. Of other predisposing causes might be mentioned improper food, in the case of infants specially, alcohol in excess, debilitating disease of any kind. In brief, it may be said that whatever reduces the vitality or resisting power of the body increases the susceptibility of the individual to tuberculosis. The lecturer then showed how prevention was effected, by diminishing the sources of infection—through the air, milk, and meat—preventing the spread of the bacilli outside the body, and by increasing the resisting power of those who are most exposed to danger. Consumptives should only spit in proper receptacles that have been infected. They should be strongly warned against spitting on cesspits, floors of workrooms, offices, and streets. Expectoration from all phthisical patients ought to be burned. Consumption does not spread through the virulence of its infecting agent, but rather because people are ignorant of its cause and mode of extension. Should the consumptive patient die, or be removed, the room and everything in it ought to be disinfected. Curtains, bedding, and clothing should be boiled, blankets steamed, and all other furniture cleaned and disinfected. Paper on the walls should be stripped off and burned, and the walls washed with chlorinated lime. Many argue that it must come under the compulsory notification Disease Act, and be treated as any other of the infectious diseases. I confess this appeals very strongly to one, but there are many difficulties in the way of notification. For instance, we know that many consumptives are continually changing their residence, and oftentimes, in the hope of being cured, their medical attendant. Are we then to have a report from each medical attendant, and will the patients be required to notify any change of residence? In New York it is subject to inspection, and inspectors are sent, unless requested by the doctor attending not to do so, to instruct patients and their families how to guard against the spread of the disease, to disinfect all premises either vacated by removal or by death of patients without any charge to owner. Boiling milk will get rid of any danger, and it is a good rule to boil all milk, as it will destroy the germs of other diseases as well as of tuberculosis. The sale of milk from infected cows should be rigidly prevented. There should be a rigid inspection of all beasts sold, under skilled supervision, before and after slaughter. The lecturer concluded by alluding to how indiscreet marriages perpetuate the disease; that special care of infants affected the physical development of youth, and the necessity to do everything that tends to strengthen the constitution. Choice of profession to those predisposed to consumption was important; and exercise in the open air was of great value, provided it was not carried to excess. Clothing should be warm and light; diet plain and nutritious, regular meals; alcohol should be avoided as a general rule; and in the choice of a healthy site for residence, high elevations above sea level were advantageous. Tuberculosis (or consumption) was not only a preventable but a curable disease, and the agents which prevent go far towards curing. He was hopeful that a specific serum would yet be found, and that instead of tuberculosis exterminating the human race, the human race would exterminate it.

Dr. BRIGHT characterised the paper as a most able one. He agreed with almost everything Dr. Sprott had said, and did not know he had ever heard a paper calculated to be of better service to the community

read at this society's rooms. He (the speaker) had been of opinion for 25 years that consumption was infectious. He had seen husbands taking it from wives, and wives from husbands, and he had always advised that a consumptive patient should occupy a separate room. Boiling the milk was most important. Dr. F. Swarbeck Hall strongly advised it in this city years ago. Much could be done by the efficient inspection of dairies and dairy cows. They had seen last summer what great dangers the health of the city was exposed to through bad and unwholesome milk being sold. The spread of infection by the sputum of diseased persons was a most serious thing. He believed very strongly that the disease was hereditary; that predisposition was not all that was communicated from parent to child. Tuberculosis was most common in aged milch cows. He moved a vote of thanks to Dr. Sprott, and hoped that the people would boil their milk, also that expectoration about the streets would be suppressed.

Dr. HARVEY seconded, and congratulated Dr. Sprott on the able way in which he had handled the subject. Another means of prevention was undoubtedly to be found in a reform in the manner of burying the dead. Spores of disease were often brought up by the earthworm.

Dr. CROSBY WALCH believed that the disease was not hereditary, but predisposition only was communicated from mother to child.

Mr. MAULT intimated that the Central Board of Health was seeking to obtain legislative power to inspect all dairies in the country sending milk into the city.

The CHIEF JUSTICE thought, that if it be true that there was no tuberculosis in Tasmanian cattle, as Dr. Sprott had indicated, the colony must have a great advantage, and with the use of the tuberculin test in examining all stock brought to the colony for slaughter it might be kept out of our cattle and our meat.

The vote of thanks was passed with acclamation.

Dr. SPROTT, in replying, said it was generally conceded that consumption of the lungs was not hereditary, but tuberculosis was hereditary. So long as a person kept strong and in good health, the bacilli of tuberculosis need not be feared. As to tuberculosis in stock in Tasmania, he had stated that he had not, so far, been able to find any.

ROUTES TO THE WEST.

Mr. J. B. WALKER, F.R.G.S., read a paper, prepared by Mr. T. Stephens, M.A., F.G.S., upon "Land Routes to the Western Districts," illustrated by an enlarged map. The writer first dwelt on the natural obstacles, notwithstanding that there were no savages or man-eating tigers to be encountered. Having referred to past surveys and proposed railway routes, he described the land routes along which tracks should be made. He first referred to the Linda track from Mole Creek. Another was from Sheffield to Mount Read, a distance of only 50 miles, one half of which is already covered with tracks fit for horse or foot traffic. The Marlborough and Mount Atrowsmith to Mount Lyell route was next referred to, and which it was claimed should be kept open. Then there was the route known as "Dawson's road." It was now evident that a more direct route to the Gordon was obtainable south of Mount Field. Two other routes were noticed, one passing the head of the Florentine Valley and striking out to Mount Lyell, and the other going from the head of the Florentine Valley to the Gordon. He thought a much easier way could be found south of

Mount Wedge and *via* Lake Pedder, but in the interests of mining exploration that would not be advisable. He commended very strongly the preliminary work of exploiting tracks, but the whole area should be well explored before there was any proposal for a railway.

Discussion on the paper was postponed.

OTHER PAPERS.

The Question of Land Routes from Eastern to Western Tasmania, by Thos. Stephens, M.A., F.G.S. Notes on the Nidification of the Black Cockatoo, and Description of some New and Rare Fish, *Lampris luna* and *Antennarius mitchelli*, by Alex. Morton. Classified list of the Tasmanian Minerals, by W. F. Petterd, F.Z.S.

COMET PHENOMENA.

Mr. Water F. Gale, Fellow of the Royal Astronomical Society of London, on a visit to the colony, with the aid of a lantern manipulated by Mr. Nat Oldham, gave a most interesting description of some comet phenomena, and was accorded a vote of thanks, after which the proceedings terminated.