

EDITORIAL.

WHEN the present world struggle is over many things in the Nursing World will need readjusting. Nurses and their important work have come so prominently before the public that it will be a good time to press for official State recognition. We are tired of hearing and reading of the carelessness and inefficiency of willing but uninstructed persons doing duty as nurses of some sort or other and we think probably the public is tired of it too and willing to back up the effort of those who have the good of the sick and of the Nursing profession at heart. It is true that a College of Nursing has been founded—so far so good, but its object, that of gaining State Registration must not be lost sight of. If the Council or whatever the governing body is called is mainly composed of trained nurses no doubt they will not allow any halt in progress until that desirable goal is reached. At present the Council does not seem to be composed of nurses. Let us hope that Registration is not now far off, it has been waited and worked for so long.

Another thing that will need alteration is the salary of nurses too and the question of pensions needs adjustment. The British nurses' point of view will have been greatly widened by contact with many doctors and nurses of other nationalities and they will not be so ready to quietly acquiesce under the injustice of the present lack of system.

There is also the question of protected uniform, that is a subject very near to most of our hearts and we hope it may receive due attention from the authorities. It is quite true that a trained nurse's uniform should be worn by a trained nurse only, else what can be the good of it? Who dares to masquerade in the uniform of a policeman? and are we of less importance than the police force! It is to be hoped not, yet any servant girl who chooses may wear our uniform, which should stand for all that is good and trustworthy in woman, with impunity. Such a state of affairs is scandalous.

TUBERCULOSIS.

SOURCE AND MANNER OF INFECTION.

By COLONEL S. C. EVANS, I.M.S.

WITHOUT going into details about varieties of acid fast bacteria it may be stated in a general way, that there are two main types of Tubercle Bacilli—the Mammalian and the Avian. Of these the avian, so far as we know at present, has absolutely nothing to do with tuberculosis in man. The mammalian type may again be subdivided into the human, met in man, and the bovine, met with in cattle and swine. These two subtypes can be distinguished by certain morphological characters and are the sources of tuberculosis in man. The question of their identity or otherwise, and the part they play in producing the disease in human beings, has been the subject of considerable controversy, but it has now been accepted,

that both human and bovine bacilli are pathogenic in man, that pulmonary tuberculosis in adults is very rarely associated with the presence of bovine bacilli, and that a fair proportion of "ingestion" tuberculosis in children, where the bacillus has apparently entered by the alimentary canal, notably *Tabes Mesenterica*, is attributable to the bovine variety.

Carnac Wilkinson maintains that *all* cases of pulmonary tuberculosis can be traced to human infection. He also maintains that even in children the danger of infection from milk is quite subordinate to human infection. Without going any further into the question we may take Carnac Wilkinson's statements as sound for all practical purposes. The truth appears to be that children are susceptible to both human and bovine infection; that the dose is an important factor in the pathological history, children getting larger and more frequent doses of bacteria when living in dark, ill-ventilated, infected dwellings than they do from tuberculous milk which is always largely diluted with healthy milk before distribution; that in children tubercle bacilli of every kind are arrested in the lymphatic glands and give rise to disease there; that adults possess an immunity against bovine bacilli just as Japanese cattle are immune to all forms of tubercle; and that pulmonary tuberculosis in man is the result of infection from man to man.

Tubercle bacilli are destroyed by desiccation and light. Dark ill-ventilated damp dwellings will therefore harbour them longer than where the reverse conditions exist. They have been found still virulent in sputum kept in the dark for two months and in the dust of a room six weeks after the death of a consumptive.

The channel of infection with bovine tubercle is chiefly milk, perhaps meat. The obvious remedy is pasteurisation or 'V. Behring's "formalin milk," eradication of tuberculosis from dairy cattle or better methods of control and so on. But the chief thing that concerns mankind in general and anti-tuberculous institutions in particular in pulmonary tuberculosis which, it has already been pointed out, is a human infection the distributing centre of which is a previous case of pulmonary, as distinct from surgical tuberculosis. The infection from these cases is contained in the sputum, in the bacteria-laden spray emitted by patients when they cough, sneeze, shout, or even speak loudly, and in the excreta. The possibility of infection from the urine in tuberculosis of the kidneys and urinary tract, and from discharging sinuses and surfaces are exceptions to the general rule relating to surgical disease and, though quite infrequent must not be lost sight of. The infection may be conveyed direct from the patient in the act of kissing or when he coughs, sneezes, or shouts in ones face. Or it may be conveyed indirectly in various ways. Dust is a very important carrier. Sputum when dry under ordinary atmospheric conditions in England forms a tough sticky substance difficult to pulverise. It is therefore not such an important contributor to dust, but phthisical expiratory spray is. Bacteria enclosed in fine particles of secretion are shot forth, it may be as much as forty inches, at each forcible expiratory effort and then, in virtue of their weight, fall to the ground and become dried to form an infected dust which may be dis-

tributed by sweeping, or inspired by children crawling on the floor, or adhere to their hands and be conveyed to their mouths. Cultivation experiments have demonstrated tubercle bacilli in the dust surrounding the beds of phthisical patients in hospitals and private houses, and under the finger nails of children crawling on the floor in such houses. Food and drink, plates, dishes and drinking vessels, form another group of carriers which are apt to be infected by the patient's hands (probably very common among the poorer classes who use their fingers for detaching tenacious mucus from their lips and wipe their mouths with their hands) or by their coughing, sneezing or shouting over them. The house fly is another very important carrier. And lastly road mud infected by sputum may be carried into houses on boots and clothes and infect furniture or floor, and be conveyed to children or adults by methods easy to imagine.

From what has just been said it is evident that pulmonary tuberculosis is essentially a 'house disease.' A fact that is brought home to one in a very striking manner by the examples every dispensary medical officer can cite of whole families being stricken with the disease after the introduction of a single case. One instance will suffice to emphasize the case. It was published in the *British Medical Journal* and is quoted by Dr. Halliday Sutherland. A crofter named Morar had occupied a house for 21 years. He, his wife, and 12 children had kept perfect health till April 1906 when his eldest daughter, aged 21, came home from service suffering with the disease. The father and five children developed pulmonary tuberculosis and the mother abdominal and joint tubercle within the following 12 months. The eldest daughter, the father, and two of the other children, died in that time. History does not record the fate of the remainder. One more argument relevant to this subject of house infection must be recorded before passing on. Most tuberculosis dispensaries keep a large scale map of the Borough in which they are situated. Upon this map is marked, either in red or by means of glass-headed pins, the deaths and cases of pulmonary tuberculosis as they occur. The results are very instructive. In districts like Marylebone or Kensington for instance the thick forest of pins or crowded patch of dots in the slum quarters, the scattered land marks in the better class artisan quarter, and the almost total absence of cases among the better class houses, is shown up in a very attractive manner.

The exact path by which tubercle bacilli reach the lungs has been the subject of a vast amount of microscopic, anatomical, and experimental work but can only be referred to here in the briefest possible manner. Inherited tuberculosis (ovular or spermatie) and post-conceptional tuberculosis (placental transmission) are possible but rare. Wound infection occasionally occurs, but man's high resistance (as compared with the guinea pig) tends to localise the trouble. The great question is pulmonary tuberculosis. There are three possible paths. 1. Direct infection by inhalation. Carnac Wilkinson believes this to be the commonest on the grounds that primary tuberculous lesions are common on the surface of the bronchial tubes especially about the bronchus apicalis posterior which is distributed

to that portion of the lung where the disease usually begins; that there is an enormous preponderance of bronchial tuberculosis in children who crawl about the floor; and that a number of successful inflation experiments have been performed by reliable persons. Soot, dust, and pigment particles moreover, inhaled by animals, can be detected in the bronchi and later on in the lungs. Against those arguments is the angularity of the air passages, the fact that the tracheal and bronchia cilia tend to carry particles upwards, the rarity of primary laryngeal tuberculosis, and the failure of a number of reliable observers to produce tuberculosis by inhalation experiments. 2. Indirect infection by inhalation or ingestion, the bacteria being absorbed by the mucus membrane of the upper part of the respiratory or digestive tracts thence *via* the lymph or blood stream to the lungs. There is a growing tendency to believe this a very important route because of the frequency with which tubercle bacilli are found in adenoids and enlarged tonsils, the occurrence of Phillip's glands (large numbers of pin head glands in the super-clavian fossa) in early cases of pulmonary tuberculosis, and the frequency of a primary tuberculous pleuresy. 3. Gastro-intestinal infection, resting chiefly on experimental evidence which necessitates the administration of enormous doses of bacteria. Over a thousand times more than required to produce fatal tuberculosis in an inhalation experiment—a condition that is never likely to occur in human infection.

Tuberculosis dispensary medical officers have systematically treated patients in their homes and they maintain that the spread of infection can be prevented, in all but the worst class of houses and in all the worst cases, by free ventilation and ordinary sanitary precautions. The whole system of domiciliary treatment is based on this idea of "Massive infection" and, though isolation is acknowledged to be safer, domiciliary treatment, with the sanitary precautions and limitations already referred to, is taken to be safe enough to justify itself in the face of the obvious fact that systematic segregation is absolutely impossible.

THE WOMEN'S MISSION HOSPITAL, AJMIR:

By Miss A. SMITH.

WE had been looking forward for many months to the 10th of March, which was the day fixed for the opening of the new Hospital for Women in Ajmir. We had been allowed ample time to get all the furniture ready but at the very end it was a great rush, for the workmen did not leave the premises until about two hours before the guests began to arrive. With the help of friends, who assisted in sewing curtains on the cots, in hanging pictures, arranging flowers and attending to the tea tables, we got everything quite straight in time and had a few moments to spare. Our usually bare compound looked changed for we had put up a large "shamiana," to give