

The contagion of phthisis : read in the Section of Medicine at the Annual Meeting of the British Medical Association in Worcester, August 1882 / by C. Theodore Williams.

Contributors

Williams, Charles Theodore, 1838-1912.
Royal College of Surgeons of England

Publication/Creation

[London] : [publisher not identified], 1882.

Persistent URL

<https://wellcomecollection.org/works/evh9mpe3>

Provider

Royal College of Surgeons

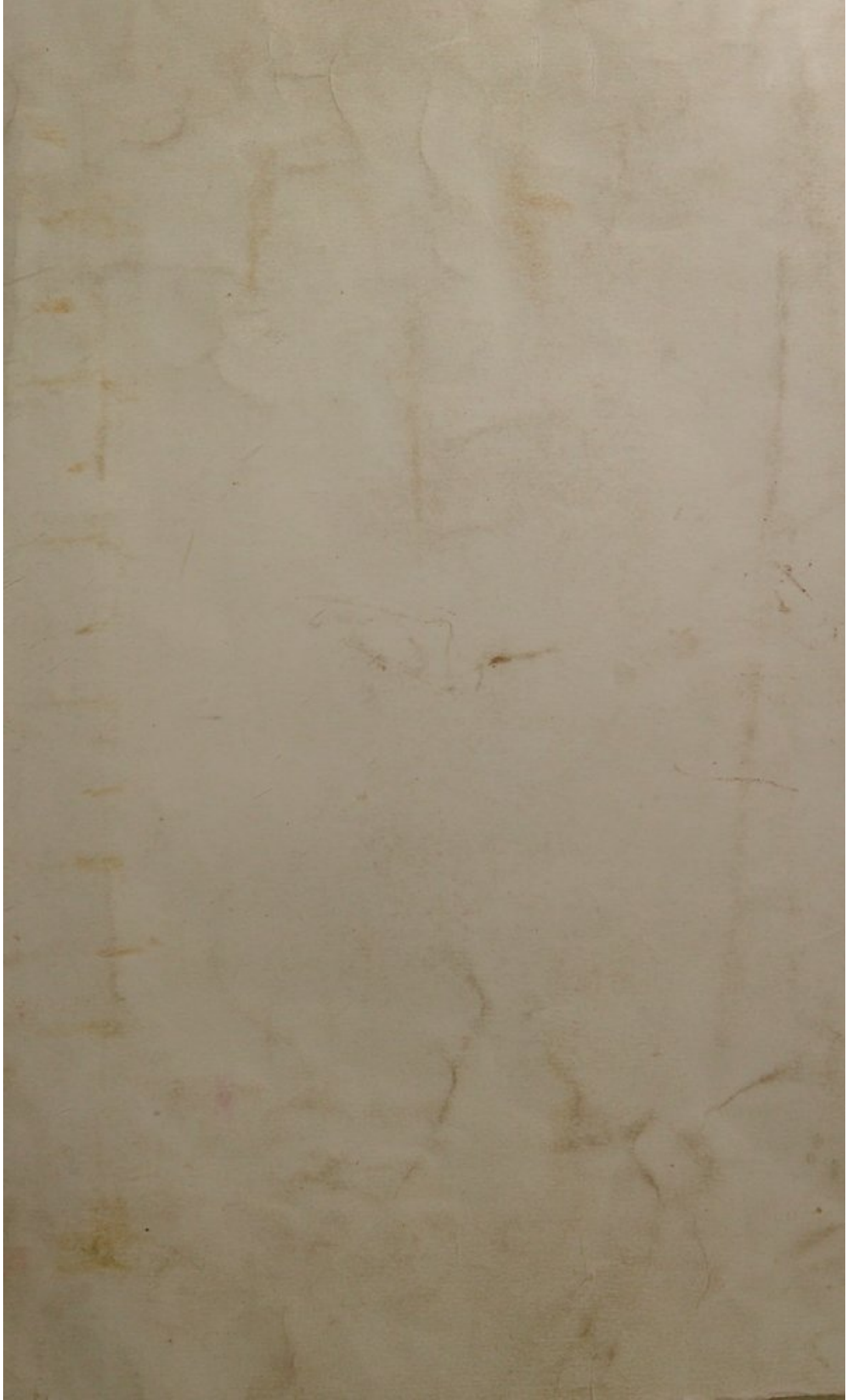
License and attribution

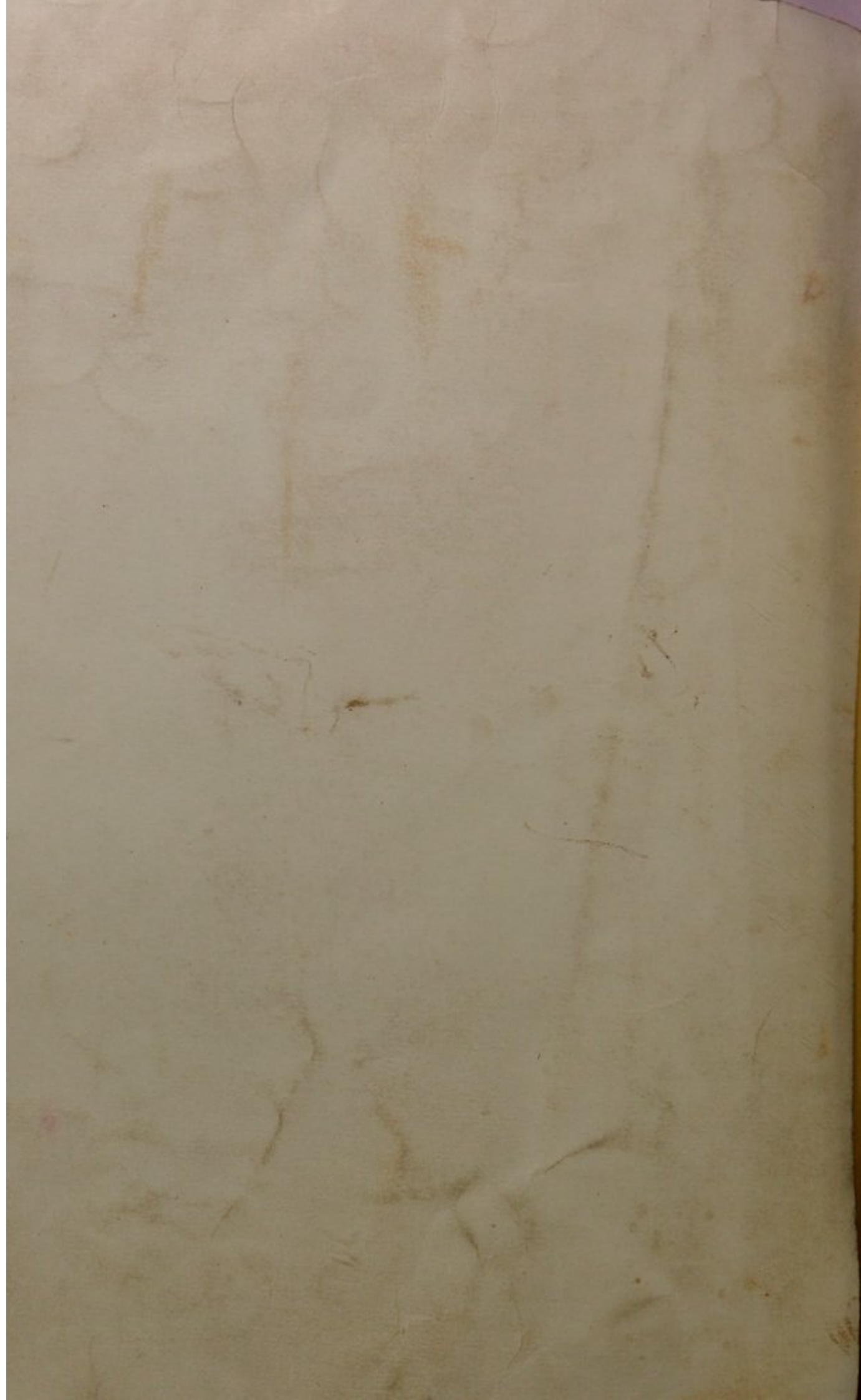
This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

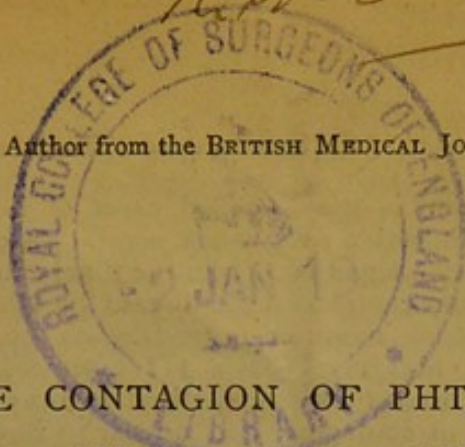
You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>







28.

THE CONTAGION OF PHTHISIS.

Read in the Section of Medicine at the Annual Meeting of the British Medical Association in Worcester, August 1882.

By C. THEODORE WILLIAMS, M.A., M.D., F.R.C.P.,

Physician to the Hospital for Consumption, Brompton.

THE discovery of the tubercle bacillus by Koch, and the highly interesting series of experiments which led up to it, have naturally caused us to review phthisis in its various aspects, and especially in that which relates to contagion.

How far consumption is infectious, is a question which has been under discussion for centuries, and on which great difference of opinion has prevailed, and still prevails, in various countries, the north of Europe holding, as a rule, its non-contagiousness, and the south its contagiousness.

The chief difficulty lies in the fact that many of the most potent agents of causation in phthisis, such as dampness of soil, bad ventilation, and deficient food, are also conditions which would promote the multiplication of low organisms; and, on the other hand, heredity, which is the source of a large amount of phthisis, cannot be reconciled in its action with the bacillus theory; for, if a man had strongly inherited phthisis in his tissues, are we to believe the bacilli have been transmitted in the seminal fluid of his father? How can we account for the cases where the parents, having died of consumption, the children are necessarily attacked on arriving at a certain age, with a severe type of the disease? And, moreover, there are several instances—of which one striking one is present to my mind—where the children, who happened to be scattered in various parts of the world, were yet attacked, and succumbed to the fell disease at about the same age.

The microscope tells us that Koch's bacilli are present in phthisical sputum in fair abundance, as well, of course, as on the walls of cavities, and in tubercle of various kinds. Now, when we consider the number of consumptive people who, being under no restriction, go about coughing and expectorating freely in the streets and parks of London, and remember that this sputum abounds in bacilli, that it dries, and, becoming dust, is wafted about in the atmosphere, and doubtless inhaled by a large proportion of the population, we must admit that the bacilli, though ever present, are not very active in ill-doing, and probably because the soil they enter is not always suitable. The forms of contagion in phthisis which have been most discussed are the following. 1. Infection through breathing the same atmosphere—*i.e.*, infection by inhalation. 2. Infection through marriage. 3. Infection through the milk of diseased animals, or even of phthisical women.

With regard to the prevalence of the first form of infection, it has been urged by the contagionists that it is far more common than is

supposed, and that many of the so-called cases of hereditary origin are really instances of infection; as, when several sisters die successively from phthisis, they allege that, given the illness and death of the first, the others probably contracted the disease by inhalation, either when sleeping in the same room, or in tending on the invalid. The greater number of Dr. Musgrave Clay's 111 instances, published in 1879, to which Dr. Wilson Fox has kindly drawn my attention, are examples of this form of contagion, and appear to have arisen from close attendance. A large number are cases of husband and wife sleeping together, when both the first and second form of infection may be suspected.

The object of this paper is to illustrate the extent of the infection of phthisis by a consideration of the health statistics of the Brompton Hospital resident staff since the opening of the hospital in 1846, and it is the first form of infection that these illustrate.

In the year 1867, the late Dr. Cotton, one of the physicians, and Mr. Vertue Edwards, then the resident medical officer, gave a most complete and interesting report of the health of the residents during the first twenty-one years of the hospital's existence, to which, for the purposes of this paper, a second series, extending over the last fifteen years, has now been added, with the able assistance of Mr. Edwards, of the hospital secretary, and of other members of the resident staff, including the present and past resident medical officers and lady superintendents. The two together form a set of statistics ranging over a period of thirty-six years, and relating to several hundreds of individuals, subjected more or less to contact and association with consumptive patients for periods varying from three months and upwards. No account has been taken of officials and of nurses who were subjected to these influences for less than three consecutive months.

The hospital commenced in 1846 with ninety beds, which, in 1856, was increased to two hundred. In 1873, a temporary utilisation of the ordinary dwelling-houses, which stood on the site of the present fine new building, raised the number of beds to two hundred and forty, which was maintained till 1879, when the temporary wing was closed. At present, there are, again, about two hundred and forty beds in use, funds being as yet wanting to allow the whole number of three hundred and thirty-seven to be maintained. As the present magnificent new building has only been opened a few months, its results will not be included in our statistics.

The ventilation of the hospital is now carried on by extraction, by coils of steam pipes placed in towers in different parts of the building, the air being changed two to three times an hour. There is, in addition, extraction by the fire-places. Admission of air takes place at one wing at the level of the galleries and wards; in the other at the basement—the air being heated in winter before admission. Previous to the introduction of the extraction system, in 1877, the left wing was ventilated most imperfectly, and the impure state of the air showed itself in an outbreak of erysipelas and sore-throat in 1869, and again in 1875. Since 1877, however, the extraction of foul air has been well performed; and, as long as the proper difference of 10° Fahr. between the shaft and the wards is maintained, all goes well; whenever, through accident or other causes, this extraction-rate has been diminished, or, if the difference has been reduced to *nil*, sore-throat has appeared in some of the wards. Three-fourths of the patients are cases of phthisis, in various stages and forms; in many this disease is very advanced, accompanied by pyrexia or large expectoration, or by both. The rest of the patients are instances of other forms of chest-disease—such as pleurisy, em-

pyema, bronchitis, chronic pneumonia, bronchiectasis, and emphysema, or else of diseases of the heart. The spittoons of the patients are changed two or three times a day; but, until lately, unless the odour was unpleasant, no attempt was made to disinfect them.

It seems to me that the above facts are instructive as bearing on the bacillus-question. The deficiency in the ventilation must have led to a large accumulation in the wards of the products of respiration, and also of our friends the bacilli; we consequently ought to have seen an extension of the disease to non-consumptive cases or to the nurses, but nothing of the sort occurred, only the usual results of hospitalism—*i.e.*, erysipelas and sore-throat.

The out-patient department was, until last winter, situated in the old hospital, and was quite insufficient properly to accommodate the large numbers of out-patients attending. The ventilation was exceedingly bad, and communication with the dispensary being made by windows, the air of that department was rendered more impure—a great contrast to the lofty halls and consulting-rooms and convenient dispensary of the present out-patient department. The attendance of two hundred to three hundred out-patients daily, of whom a large proportion were consumptive, must, on the theory of infection, have proved a considerable source of danger to the assistant-physicians, to the clerk who enters their names, and to the porters who marshal them and keep order.

We will now consider the case of the residents.

Resident Medical Officers.—There have been four. All are alive, and tolerably well. Mr. Vertue Edwards held the post for twenty-five years without any symptom of lung-disease, and still enjoys good health. Of the others, two showed, at some time of their residence, signs of hospitalism, but none of definite consumption.

Clinical Assistants.—These are senior students or qualified medical men, who reside in the hospital for six months, and are engaged in the treatment of patients and the recording of cases. They also assist the pathologist in making the *post mortem* examinations. About 150 have held office since the opening of the hospital; and, of 59, Mr. Edwards reported, in 1867, that 3 had become consumptive; and, of these 59, one more has since contracted the disease. Mr. Edwards states that all were free from phthisical disease during their residence in the hospital. Of the 16 before Mr. Edwards's time, one, who had strong family predisposition, died of phthisis. Of the 75 who have held office since 1867, I have traced all but 3; and of these 72, one has died from other causes than phthisis; 2 have died of consumption; in one case the clinical assistant had hæmoptysis previous to residence; and in the other case the disease came on one, if not two years after leaving the hospital, the gentleman being quite well during his term of office. Another, who was overworked, became consumptive while in the hospital, but has since entirely recovered. The remaining 69 are all well, and actively engaged in practice, many of them holding distinguished positions in the profession.

Therefore, of the 150, 8 became consumptive at some time or another of their lives, of whom 5 died; but in only one instance was it clearly proved that the disease was contracted while he resided in the hospital. This is the more remarkable, as it is by no means rare for a clinical assistant, when overworked, to suffer from sore-throat, and other symptoms of hospitalism; but these unfavourable conditions do not appear to produce definite consumptive disease any more than they do so in a general hospital.

Matrons and Lady Superintendents.—Of these there have been 6,

none of whom suffered from consumption, and who have generally enjoyed good health. One lady held this post for twenty-four years. All are alive except one, who died at an advanced age.

Nurses and Servants.—The head nurses or sisters sleep in rooms communicating with the wards through the galleries, and during the day their duties bring them constantly into contact with the patients. The assistant nurses sleep in bedrooms above the wards, but practically live in the galleries and wards, being engaged in either day or night nursing.

Among the nurses in residence up to 1867, Mr. Edwards reported one death from apoplexy and one from phthisis, the disease being in this case contracted under conditions of great poverty after she had left the hospital. Since his report, some of these nurses have died—one of cancer aged 52; one of chronic pneumonia, preceded by erysipelas, chronic rheumatic arthritis, and enlarged cervical glands. Three have died of phthisis after leaving the hospital, two of whom were quite free from chest-symptoms while in residence, and were not attacked till many years later; in one case, however, the disease seems to have commenced while she was a nurse, and I will, therefore, give her history. She came to the hospital as housemaid in 1861, aged 23, one sister having died of phthisis. She became a nurse, and married one of the consumptive patients, who died, leaving her with a child. She returned to the hospital, and remained a head nurse till 1874, when, after twelve years' service, she married again and left the hospital, but, being ill-treated by her husband, she separated from him and took to private nursing. She was sent to the Riviera, and caught a severe cold on the journey thither. Tubercular disease developed in full force, and she returned as an in-patient to the Brompton Hospital to die there of hæmoptysis in a few months. She was ascertained to have had consumptive disease during the last years when she was nursing at Brompton, though, considering the family history, and her first marriage, we can hardly draw any definite conclusion from this case, which happens to be *the only one in which consumptive disease came on in the hospital among the nurses, and this in a period of thirty-six years.* The present head nurse on the Victoria Gallery has lost her father, mother, four brothers and sisters from phthisis. She is now forty-three, and has been eleven years either nurse or head nurse, and enjoys excellent health, though she is indefatigable at her duties. We have had many nurses, residing for periods of ten, fifteen, twenty, twenty-four years, but none of them have suffered from any symptoms of consumption. Since 1867, there have been 101 nurses, 3 of whom have died; 1 was drowned at sea; 1 died of poisoning in Ireland; 1 of phthisis after leaving the hospital, but there is no evidence of her having contracted it there.

The chief duty of the *gallery maids* is to sweep and scrub the floors of the wards, which occupies them for several hours daily, and other household work takes them among the in-patients. Mr. Edwards mentions one who was in the hospital for fifteen months, had subsequent situations of all work; in the last she fell ill, and, coming back to Brompton as a patient, died of consumption. One died of heart-disease. Of the 32 engaged since 1867, many cannot be traced up to the present time. Some are married and known to be well, and no death has been ascertained. No case of phthisis occurred among them while in the hospital.

House-porters.—There have been twenty porters, including the gate- and out-patient porters, not all residents. None, as far as we know, have died of phthisis. All, except the gate- and out-patient porters, have

duties in the *post mortem* room, and in removing bodies from the wards and from the dead-house. One, who resides in the hospital, has to sew up the bodies after examinations; he came to the hospital a youth, and not in very robust health, about ten years ago, and has, in spite of the unhealthy nature of his duties, developed into a strong, well-knit man. We have not been able to trace the after-fate of all these men, some of whom were but a short time in service; but 5 are ascertained to have since died—1 of apoplexy, 1 of paralysis, 1 after an operation on his throat, and 2 from the results of drink. One of these last was an out-patient porter, the other out-patient porters being alive and well. I lay stress on this, because their duties entirely lie in the waiting-rooms of the out-patients, where they cannot well escape inhaling some of the breath. One gate-porter suffered from chronic pneumonia, which was attributed to his exposure to draughts; and, on his account, the lodge was rebuilt. This man was twenty years in the hospital service, and now enjoys a pension.

Non-residents.—Secretary and Clerks.—Of these there have been 9, of whom 3 have been threatened with lung disease, and of these, one went to Madeira, but has apparently recovered since, and the two others seem to be in excellent health. The present secretary has held office for twenty-four years.

Dispensers.—Of these there have been about 22, who have served for periods varying from a few months to many years, 7 have died, one committed suicide, one died of liver disease, 2 of pneumonia, 3 of phthisis; of these last, one became intemperate, left the hospital, and being in wretched circumstances, died of consumption two years after leaving. A second left the hospital well after two years' residence, but after going into business contracted phthisis and died. In a third the lung disease appeared during the three years he was at the hospital, and he died at Bournemouth, after having been an in-patient at Brompton. One dispenser, who held office for two years, and afterwards went into business on his own account, was admitted as in-patient for phthisis twenty-five years later, and is still living. There were also two dispensers who showed distinct signs of consumptive disease, but entirely recovered, and are now in good health. On the other hand, the senior and second dispenser have held office for twenty and twenty-three years each, and enjoy excellent health. These dispensers have no duties in the wards, but as before mentioned, the overcrowded out-patient department in the old hospital communicated with the dispensary by two windows, and the air of this apartment, already insufficient for the increased number of dispensers, was thus further vitiated. This may be connected with the large mortality in this department.

Chaplains.—Of these there have been 4; one has died of heart disease, the two others died at tolerably advanced ages, not of lung-disease. The present chaplain has been there eight years, and enjoys excellent health. He has no other duties than in the hospital.

Physicians and Assistant-Physicians.—There have been 29, of whom 8 have died; but only one of these deaths was from phthisis. Of the 21 survivors, all are apparently well and strong, and none of them are known to have any disease of the lungs—even though some were strongly predisposed to it. The duties of the assistant-physicians keep them for many hours at a time in close contact with a large number of consumptive patients, and it is difficult to see how they can avoid, in the course of a careful examination of the chest, inhaling a certain amount of the patient's breath. The physicians are also liable to this danger, but to a less extent, as the number of patients whom they examine is smaller.

There is a small institution called the "Home" in connection with the hospital, where male patients wait their turn for admission. It is an ordinary dwelling-house of ten rooms, with no arrangements for artificial ventilation, and often contains 12 to 14 inmates. It has been open about twenty years, and during this period there have been four matrons, all of whom have enjoyed good health, and the present one has resided there thirteen years as matron, after being six years general assistant.

A consideration of the above statistics, furnished by the largest institution for the treatment of consumption in the world, will lead us, as Dr. Cotton says, to hesitate before classing phthisis among the infectious diseases in the ordinary sense, for such an amount of phthisis might be found in any large institution not specially devoted to consumption, nay more, in any mass of town population. We cannot altogether account for the small percentage of this disease by the excellent system of ventilation, as in the case of the "Home" no special advantages of this sort exist, and yet the resident matrons escaped.

When we consider the habits of the lower classes who live in close contact with phthisical members of their families under the depressing influences of poverty and crowding, it is remarkable that in so few cases direct infection is traceable, and this is again an argument against the contagiousness of phthisis.

Dr. R. Thompson, in a paper published in the autumn of 1880, gives as the result of a careful inquiry as to the extent to which phthisis is due to infection, that excluding all cases of hereditary taint, he found among 15,000 consumptives, fifteen instances of wives becoming infected through nursing consumptive husbands.

Dr. R. Thompson describes a particular group of symptoms which characterise those cases in which rapid emaciation and disproportionate pulmonary disease appear to be the chief features; and he cites a case under my care in the hospital, in which, after death, the lungs showed more the appearances of infective pneumonia than of phthisis, though some tubercle was present. He concludes that phthisis is not a zymotic disease, capable of sowing itself and reproducing the same form of disease, with identical signs and symptoms, but rather an ulcerative process, capable of giving rise to pyæmia. He thus opposes the view of similar contagion, which is strongly supported by Musgrave, Clay, and others. Dr. Hermann Weber's cases, recorded in the *Clinical Transactions* (vol. viii, p. 144), prove the possibility of phthisis being communicated from husband to wife, and were interesting, as showing that the fact of pregnancy considerably increased the danger of infection to the wife, and the acuteness of the disease thus generated. According to him, the danger to the husband is comparatively small.

In my own hospital practice, extending over more than fifteen years, I confess I have never, with the exception of the case cited by Dr. R. Thompson, come across an instance referable to infection alone; but I remember a few cases in private practice not characterised by any special group of symptoms, and in all of which the persons attacked had been living a very intimate life with those who affected them. On the other hand, when we bear in mind the far greater number of examples of consumptives living in close intimacy with healthy people, in such relationships as husband and wife, mother and daughter, or sisters sleeping together, where no spread of tubercular disease has taken place, we must admit that the negative evidence against infection greatly preponderates over that of the very few positive instances.

Omitting for the present, on account of lack of time, the question of infection through the milk of diseased animals, I would sum up in the following conclusions.

1. The evidence of large institutions for the treatment of consumption, such as the Brompton Hospital, directly negatives any idea of consumption being a distinctly infective disease, like a zymotic fever.

2. Phthisis is not, in the ordinary sense of the word, an infectious disease; the opportunities for contagion being most numerous, while the examples of its action are exceedingly rare.

3. In the rare instances of contagion through inhalation, the conditions appear to have been—(1) close intimacy with the patient, such as sleeping in the same bed or room; (2) activity of the tubercular process, either in the way of tuberculosis or of excavation; (3) neglect of proper ventilation of the room.

4. In addition to the above, a husband may, though he rarely does so, infect his wife by coition; and this risk is considerably increased in the event of pregnancy.

5. By the adoption of proper hygienic measures, such as good ventilation, and separation of consumptive from healthy people at night, all danger of infection can easily be obviated.

I cannot close this paper without a due acknowledgment of the great help given me in collecting the data by Mr. and Mrs. Vertue Edwards, both of whom were long connected with the hospital, as resident medical officer and matron respectively.



