

LIBRARY BOOKS AND INFECTIOUS DISEASES

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From the information which has been gathered for the purpose of this report from libraries of all kinds and sizes throughout the British Isles, it is clear that there is little danger of infection being spread by library books if ordinary precautions are taken. Not one single case is reported where infection has been traced to a library book ; and it is further noteworthy that there is not one recorded case of a member of a library staff having contracted an infectious disease through this medium, although in daily contact with circulating collections of books.

Various researches have been made from time to time in Britain into the question, and the results have been invariably to the same effect as the statement which begins this report. As will be seen later every public library takes the necessary precautions, so that danger to the public of infection through the medium of library books is absolutely negligible.

Before proceeding to report on the methods employed to deal with the matter, it will be advisable to summarize the results of the more important recent bacteriological investigations. In 1900 Messrs J. W. Y. Macalister (then Librarian of the Royal Medical Society), and W. G. Savage, M. D. (Bacteriologist, Cardiff and County Public Health Laboratory) reported on an investigation they made. Soiled library books and new books that had been used for weeks by patients

suffering from diphtheria, typhoid and tuberculosis, were subjected to bacteriological examination, and the following result was arrived at. « It almost appears as if it were impossible to carry infection by means of books. There is one exception. It is possible by wetting the thumb and turning over the leaves of an infected book to gather up disease germs, and by a repetition of the wetting process to convey them to the mouth. »

As, however, books in that infected state never get back on to the shelves of a library, even this possibility is highly improbable. In 1902, Mr W. H. Curtin (Chief Sanitary Inspector, Lincoln), conducted a series of experiments with even more satisfactory results.

He inoculated slips of paper with the spores of *bacillus subtilis*, *staphylococcus pyogenes aureus*, and the bacillus of diphtheria, and placed these slips inside books. He then disinfected with formic aldehyde—the only chemical of those he experimented with which did not injure the books—with the result that all but the first were destroyed. He came to the conclusion that the disinfectant was efficient for the destruction of non-sporing bacteria, such as the bacilli of typhoid, tuberculosis or diphtheria and the ordinary pyogenic cocci, but was probably incapable of destroying the spores of anthrax and tetanus.

Library books are most likely to become infected by non-sporing bacteria, so that for most cases this disinfection would be quite satisfactory. For the infrequent other cases, destruction is best.

In 1903 the Chicago Library Club investigated the matter, and Dr. Adolph Gehrman, the city bacteriologist, was one of those to report on the results of the experiments. He experimented on a number of much used library books, as well as books taken from homes where contagious diseases existed. He came to the conclusion that « while, under favourable circumstances, a book may be the medium of communicating almost any contagion, practically books are no more dangerous in this regard than the straps in street-cars and many other objects which we never think of disinfecting ». The

same investigation decided that formaldehyde was the most efficient chemical for the disinfection of books.

PROCEDURE FOR PREVENTING THE CIRCULATION OF INFECTED BOOKS.

The Public Health Acts Amendment Act, 1907 (7 Edw. VII. Ch. 53, sec. 59) contains the following provisions :

« (1) If any person knows that he is suffering from an infectious disease he shall not take any book or use or cause any book to be taken for his use from any public or circulating library.

(2) A person shall not permit any book which has been taken from a public or circulating library, and is under his control to be used by any person whom he knows to be suffering from an infectious disease.

(3) A person shall not return to any public or circulating library any book which he knows to have been exposed to infection from any infectious disease, or permit any such book which is under his control to be so returned, but shall give notice to the local authority that the book has been so exposed to infection, and the local authority shall cause the book to be disinfected and returned to the library, or to be destroyed.

(4) The local authority shall pay to the proprietor of the library from which the book is procured the value of any book destroyed under the power given by this section.

(5) If any person acts in contravention of or fails to comply with this section, he shall be liable in respect of each offence to a penalty not exceeding forty shillings ».

On these provisions the local library regulations governing infected books are based. Many local corporation acts also include similar provisions.

The procedure adopted for the prevention of the circulation of infected books is essentially the same throughout the public libraries of the British Isles. The Sanitary Authority and the Library Authority act in conjunction, and the result is entirely satisfactory. The method is as follows. The Sanitary

Authority, when visiting a house in which an infectious disease has occurred, seize any library books which may be there and take them away to be either disinfected or destroyed according to the nature of the disease. They notify the Library Authority of the books so taken, and the Library Authority then takes precautions that no more books are issued to that house until it is officially certified to be free from infection.

In some places this procedure is varied slightly, as follows: The Sanitary Authority notify the Library Authority each morning of *all* the cases of infectious disease in the district. This list of cases is then compared with the register of borrowers, and notices are sent to such persons as are on the latter giving them notice that the library books they have in their possession must be handed over to the Sanitary Inspectors. *In no cases are infected books returned to the library.*

METHODS OF DISINFECTION

A large number of local authorities do not disinfect books at all, but destroy every book which has come into contact with infectious disease. The majority, however, treat cases on their individual merits, destroying some books and disinfecting others.

Various methods of disinfection have been tried with more or less success. Some of the methods while being satisfactory as regards disinfection, leave the book in a disagreeably unpleasant condition, and have therefore been abandoned by most authorities. Fumigating with Sulphur, Compressed steam, Heat (200° to 230° F.), and Spraying followed by exposure to sunlight, are methods which have been mostly abandoned.

The method found most satisfactory and now in almost universal use is disinfection by Formalin vapour or Formaldehyde.

The books are placed in the disinfecting oven, either spread out on strings, or fanned out and placed on end or with backs up, so as to allow the vapour to penetrate to every part. Then either formalin lamps are lit and placed in the bottom of the

oven, or formalin solution is used in a temperature of 86° to 95° F. The books are left in the oven for from 3 to 6 hours, about 5 hours being an average time, and are by that time thoroughly disinfected.

The book is not damaged, and the odour of formalin does not last long. A more detailed account of a process of disinfection, which I am able to give through the courtesy of Dr. A. E. Harris (Medical Officer of Health, Islington), is as follows. It is stated to be a cheap and efficient method and has been successfully employed at Montreuil, near Paris. If it does all that is claimed for it, it deserves the attention of librarians and school authorities in this country.

« The books first go through the beater. It is a long box containing a number of wooden rods which by means of a crank attachment are caused to rise and fall alternately. A ventilating fan and sliding drawer complete the apparatus. The rods strike the covers of the books and dislodge the dust. The heavy dust falls into the drawer upon a mass of sawdust, saturated with a powerful disinfectant, while the lighter dust, carried off by the air-current, is consumed in the stove to which the box is attached. After this treatment, the books are suspended singly by pincers from a series of open metal racks, the covers of the books being bent back. Thus the pages are free separated and give easy access to the antiseptic vapor. These racks are mounted on rails, on which they are run into the disinfecting ovens. The ovens are sheet iron boxes, hermetically closed. In the centre is a vessel filled with a solution of formic aldehyde, into which dips a strip of felt, which can be moved up and down from the outside of the oven. The ovens are heated by steam pipes, placed below them, to 122 degrees F. The irritating vapor of formic aldehyde makes its escape through a pipe at the top of each oven. The operation of disinfection is simple. The vessel is filled with formic aldehyde, and the racks laden with books are pushed into the ovens which are then closed and heated to the required temperature for a few hours. The volumes are allowed to remain in the ovens until the next day, when

they are found to be entirely aseptic. Neither paper nor cardboard is injured ».

REPLACEMENT OF BOOKS DESTROYED.

Under the Public Health Acts, the Sanitary Authority are legally bound to replace any books destroyed, but the point is one for local arrangement. In places where the number of books destroyed is small, it seems hardly worth while for the Library to ask the Sanitary Department to replace them. The practice is much divided. In many places the Sanitary Department replace all books so destroyed ; and in others the Library replaces any that are necessary. In only one place reported are readers asked to replace books, and there the claim is not pressed. No doubt this place will soon fall into line with the general practice.

