

# A SHORT DESCRIPTION OF THE ISOLATION HOSPITALS PROVIDED BY THE CORPORATION OF BRISTOL.

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FOR comparison it may be useful to state that the area of the City of Bristol is 17,004 acres, and the population over 358,000.

Hospitals for the treatment of infectious diseases have been established at two sites in consequence of the decision of the Local Government Board not to allow any other disease to be treated on the same site with smallpox. It is sometimes very difficult for a local authority to obtain a suitable area of land for the treatment of smallpox within a reasonable distance of the population where its presence may most likely be manifested. The greatest length of the city from north-west to south-east is about nine and a half miles, and its breadth from south-west to north-east nearly seven miles. The densest populations are situated in the centre, east and south, the residential neighbourhoods being distributed over the west and north, while the extreme north-west is occupied by the Avonmouth Docks and a population almost exclusively occupied thereabout. It was therefore fortunate that the Corporation was able, a few years ago, to secure land, thirteen acres in extent, at that time without, but now, through an extension of the city boundaries, just within the jurisdiction of Bristol.

## NOVERS HOSPITAL.

This area is on the extreme south of the city, about two and a quarter miles from the Council House, on the top of Novers Hill, over 200 feet above Ordnance Datum. Very few cottages have been built within the

quarter-mile radius of the hospital, and there does not at present appear to be any desire to extend the city in that direction.

The administration building has been substantially built of brick with Bath stone dressings, for the accommodation of a resident medical officer, a matron, and twelve bed-rooms for nurses and servants, with dining and recreation-rooms. An observation block of brick, having four two-bed wards and two nurses' duty-rooms, has been built in such a manner that the patients and nurses in one half of the building can hold no communication with those in the other half, the w.c., slop closet, and bath being detached from the main building, and having access therefrom by a covered verandah. Each of these two-bed wards is 24 feet by 18 feet by 13 feet high.

The laundry contains the necessary machinery for disinfecting and washing for 100 patients, and is built of brick, as is also a porter's lodge.

The ward pavilions were constructed of wood in a few weeks during the smallpox epidemic of the spring of 1904, and were intended for temporary purposes only. They are still there, and likely so to be. Although they are not such as is to be desired, still they provide something like fifty-three beds.

#### HAM GREEN HOSPITAL.

By the foresight of an alderman of the Corporation and former Mayor, Sir G. W. Edwards, a beautiful estate of ninety-nine acres, known as Ham Green, on which stood a residential mansion, two farms, and several cottages, bordering the River Avon, at a distance of four miles from the centre of the city, on a height eighty to ninety feet above high water, was secured for £8,695, and resold to the Corporation for the same price. Out of this estate, thirty-eight acres with the mansion have been assigned for hospital purposes.

The geological formation is Dolomitic Conglomerate, and borings to a depth of ninety feet have failed to find water in any quantity. It was therefore necessary to make arrangements with the Portishead water company for a supply; and to insure a constant service a tank capable of containing 30,000 gallons has been placed forty-five feet above the level of the site on a light iron structure. This tank also provides a head of water for the use, if necessary, of the fire appliances, which are freely distributed over all the buildings.

It was decided to alter and extend the mansion so that it could be used as the administration building, a natural suggestion to the lay mind, but one entailing great trouble to the professional advisers of the Corpora-

tion, and expense. Such adaptations are seldom very satisfactory, and it was soon found necessary to increase the accommodation by building a new annex containing four dormitories for servants, thirteen bed-rooms for nurses, with work-room, store-room, and other offices.

The medical officer is accommodated in the oldest portion of the house, capable of complete isolation, with a sitting-room, study, dispensary, two bedrooms, bath-room, etc.

The matron's rooms, nurses' dining hall, and recreation-room are on the ground floor of the newer part of the mansion, the bed-rooms being on the first and second floors and in the new annex. The billiard-room has been converted into a committee-room.

At the entrance to the site is the porter's lodge, a brick and half-timbered structure.

Immediately beyond the lodge is placed the building for the laundry and for the generation of electricity. Two Cornish boilers, each twenty feet by five feet, supply the motive power throughout the establishment. The electric light plant consists of two dynamos capable of running 640 sixteen-candle power incandescent lamps. There is also a storage battery provided, to allow of the dynamos ceasing work at night, and capable of discharging a supply equal to eighty sixteen-candle power lamps for ten hours. The length of this paper will not allow of a detailed description of the laundry and its disinfecting plant, but the machinery is of the latest types.

The stables have accommodation for eight horses, a van house, and living rooms over.

The hospital buildings now consist of seven blocks substantially built in late Gothic style, in red brick with freestone dressings. The roofs are covered with layers of boards, felt, and slates.

One observation block has been built of the same dimensions as that described at the Novers Hill site, and a second has been added recently of a slightly different design, the four beds of each half being distributed in three rooms instead of in two as in the earlier design, providing for yet more absolute isolation. Each half of the structure is effectually divided from and has no connection with the other, and the sections may be used for males and females respectively. The two-bed wards are 24 feet by 13 feet, and the single-bed wards 13 feet by 12 feet, the nurses' duty-rooms being 15 feet by 13 feet; all these chambers are 13 feet high. It is unnecessary to say that the cost of these buildings is very great for the eight beds accommodated, but they are invaluable from the medical officer's point of view.

Four ward pavilions have been built with all the rooms on the ground-floor, the buildings being spaced 60 feet apart; each consists of an entrance hall, a nurse's duty-room, a single-bed ward and bath-room, grouped in the centre, with pavilions on each side 48 feet by 26 feet, to accommodate eight beds in each, with a cubic space of 2,184 feet for each patient.

The brick walls are double, each nine inches thick, with a three-inch air space between. The whole site was covered with six inches of concrete. The interior walls and ceilings are plastered with Keene's cement and painted. The floors are of wax-polished pitch pine blocks.

The w.c.'s and slop closets are placed at the ends of the pavilions, being cut off from the latter by an air passage.

Much attention has been paid to the warming and ventilation of the wards. The window surface measures about 250 superficial feet per ward, the windows having a deep bottom rail to allow of ventilation at the centre rail.

The ceiling of the first four pavilions built is fourteen feet from the floor level, but in the latest structure this was reduced to thirteen feet by consent of the Local Government Board. Movement in the upper strata of air is insured by the top portions of the windows being made to fall inwards and by two ventilating shafts in the ceiling of each ward. Fresh air is introduced under each bed, the amount being controlled by hit-and-miss gratings. Warmed air is also introduced into the wards by a pair of Shorlands ventilating open fire grates placed back to back in the centre of the ward. As the ordinary flue pipe would be very unsightly and an obstruction, the flues are carried in channels underneath the floor and answer perfectly well. A small kitchen range has been put in the nurses' duty-room to keep food warm, etc., cooked in the administration kitchen, and a separate boiler provides for the hot water circulated for the baths and lavatories.

All the drains are outside the buildings, and the end of every length of drain is ventilated. The drains of each pavilion are disconnected from all the rest, and an automatic flushing tank of 200 gallons capacity insures the pipes being periodically cleansed. White glazed bricks have been freely used as a lining to all bath-rooms, water-closets, slop-closets, etc.

The latest addition to the hospital accommodation has been a new pavilion, in which the principle of having all the rooms on the ground floor has been departed from, and wards, etc., are constructed on both ground and first floors. It is evident that such a structure must be more

economical in proportion to the number of beds accommodated than the usual one, a saving being effected in foundations and roofs, and no greater thickness of external walls being necessary. It was not, however, without much consideration, many plans and interviews, that the architectural adviser of the Local Government Board agreed to the innovation.

In general design the new block follows the earlier ones, which are somewhat dwarfed in appearance by the greater dimensions of their neighbour.

Opening out of the central hall are two wards, each 72 feet long by 26 feet wide, to take twelve beds, each bed having a cubic space of 2,028 feet. On the first floor are two similar wards. A wide staircase leads to these, which are completely isolated from those below. A small one-bed ward is provided on the ground floor and a two-bed ward on the first floor, otherwise all the arrangements previously described are duplicated.

The floors are constructed of cement concrete, carried on rolled steel joints.

The Shorlands stoves, of which there are two pairs in each ward, are supplemented by low-pressure hot water radiators.

A lift has been put in to raise coal, dinners, etc., to the first floor, but it is not used for the conveyance of patients.

The number of beds for patients now provided in all the buildings are as follows:—

Four pavilions of 17 each	...	...	...	68
One pavilion of 51	...	...	...	51
Two observation pavilions of 8 each	...	...	...	16
Total	...	...	...	<u>135</u>

Separate systems of sewerage have been provided, the water from the roofs and roads being carried direct into the River Avon, while the sewage proper is conveyed by pipe sewers a distance of 266 yards from the buildings to precipitation tanks of the Dortmund type, where the sewage is chemically treated before the effluent is discharged into the river, the small amount of sludge being dug into the soil of the adjoining field.

Unfortunately, all that medical skill and careful nursing can do will not always end in recovery, and a mortuary has been provided where the body can be seen for the last time by friends, without the risk of infection, from a small room provided with a glass window.

When a patient is sufficiently recovered to be restored to his friends as a final precaution he is passed through the discharging block, where he

leaves his hospital garments in one apartment, has a bath in an intermediate one, and is attired ready for his re-entry into the outer world in a third.

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[*This Discussion applies also to the Paper by DR. D. S. DAVIES.*]

THE LORD MAYOR OF BRISTOL, in offering the members a cordial welcome, said he did so the more heartily because he believed that the Institute was a most useful and beneficial agency in promoting the health and well-being of the people. Some thirty years ago, about the time of the foundation of the Institute, sanitation was in its infancy, and its value hardly recognised. The statement of one of their founders, Sir Henry Burdett, seemed almost incredible, that so short a time ago as 1876 the majority of hospitals had no plans of their drains, and that the mortality in the best hospitals after serious surgical operations was 37·8 per cent., and not only were the houses of the poor improperly drained, but many of the Government offices, and even Royal Palaces. Now all this was changed, thanks in some degree to the influence brought to bear on public opinion by their Institute. The Public Health Act and other legislative enactments had resulted in the reduction of mortality, the lengthening of life, and improvement in the physique of the nation. The mortality in regard to surgical operations in serious cases, alluded to by Sir Henry Burdett, had fallen from 37·8 to 2 per cent., while the number of these operations had increased a hundredfold. In visiting Bristol they were coming to a city with a long historic record and one of great antiquity. Of Bristol, at the end of the Stuart period, Macaulay wrote:—"A few churches of eminent beauty rose out of the labyrinth of narrow lanes built upon vaults of no great solidity. If a coach or cart entered these alleys there was danger that it would be wedged between the houses, and danger also that it would break in the cellars." All this, he was glad to say, had been changed, and, although they had to sacrifice some of the picturesqueness of their city, their broad thoroughfares and open spaces compared favourably with any other ancient city that had had to be transformed and adapted to modern requirements; and thanks to their excellent Sanitary Committee, under the able guidance of its chairman, Alderman Cope-Proctor, he thought that they could claim that Bristol was one of the best-kept cities in the kingdom. Under the care of their Medical Officer of Health, Dr. Davies, their death-rate was one of the lowest in the country, and he might refer with satisfaction to their beautiful suburb of Clifton. In the Registrar General's public returns, its death-rate had often been quoted as low as 5 per 1,000. This, they might remember, was the rate which Dr. Richardson, the first president of the Institute, imagined might

be possible in his ideal city. He was glad that their medical officer, Dr. Davies, had been honoured by an invitation to open the discussion that morning, by introducing the medical aspect of sanitation, and that Col. Yabbicom, their City Engineer, had been asked to follow by a paper on the construction of hospitals. It was satisfactory to know that under the guidance of Dr. Colston Wintle they were to visit the city isolation hospital at Ham Green, not only because they thought it well worthy of inspection, but also that they would get a glimpse, at least, of some of their surroundings, of which they, as citizens, thought the members would say they might be justly proud.

DR. COLSTON WINTLE (chairman of the Bristol Health Committee) remarked that there was a disease, to which allusion had not been made, which killed more people perhaps than any other complaint. They lost in Bristol annually from consumption four hundred lives, and in Birmingham there were a thousand deaths yearly from it. He then explained the co-operation of the Corporation in the Winsley scheme, where the twenty city patients were all doing fairly well. It seemed curious, he added, that they had a disease killing hundreds of people yearly, and no move had been definitely made in this direction before. It might be they had lacked knowledge, and that it was only just now they were beginning to appreciate the fact that this disease must be cured and prevented. He had received statistics, sent him from a sanatorium that had been at work for four years. Of the bad cases, forty per cent. had returned fit for work: of the cases in the second class, seventy-four per cent.; and in the slight cases, over ninety-five per cent. were cured and returned to work. In providing a sanatorium they were also educating people as to the way the disease was spread, and he trusted that they would be able in time to come to prevent the large mortality this complaint inflicted.

DR. HERBERT JONES (Herefordshire) commented upon the advances which had been made during recent years in preventive medicine and in our knowledge of the causes of disease, as shown by the fact that Dr. Colston Wintle introduced with perfect propriety the question of the treatment of consumption in a discussion upon isolation hospitals. He considered that Dr. Davies had given them the clearest arguments in favour of treating infectious disease by isolation in hospital. The question was just now a very vexed one, and could not be settled by mere statistics. It was impossible to compare one town with itself, much less with another. They must look at the question in a common-sense way, and ask themselves what happened if a case of infectious disease occurred in a moderately large house. The patient was at once removed to a separate room, and was isolated from the rest of the household. Well, the isolation hospital was the working man's spare room. When discussing the question of the cost of isolation hospitals he regretted that neither the Local Government Board,

nor architects, rendered them much assistance in solving the problem of reduced initial cost. He gave instances in which lack of care on the part of the latter would increase the capital outlay unnecessarily. For example, the putting in of tiled hearths or grates of such a size that special curb fenders would have to be made, the planning of windows for which blinds would have to be cut to waste, and the fixing of the size of rooms or passages which could only be fitted with linoleum or other covering with considerable waste. He spoke strongly of the necessity for taking into consideration, when planning a new hospital, the saving of the cost of administration.

DR. J. HOWARD-JONES (Newport) wished to draw their attention to the advantages of hospital treatment for membranous croup or laryngeal diphtheria. This disease, when treated in the old-fashioned way, was fatal in 66 to 75 per cent. of the cases, but under proper treatment the percentage should be under 10: even when those cases were included which did not come under treatment until the disease was well established. He felt confident that most medical officers of health present would agree with him that a considerable number of notifications of membranous croup arrived after the death of the patient. This was not as it should be, and showed a lack of the appreciation of the benefits to be derived from the modern treatment of the disease when energetically carried out. In order to illustrate this point he quoted the statistics for Newport for the last nine years. The total number of cases notified during that period was 87, with 50 deaths (a case-mortality of 57 per cent.) Sixty-six of these cases were treated at home, with 46 deaths (a percentage-fatality of 70). Twenty-one cases were removed to hospital, of whom four died (a case-fatality of 19 per cent.) Two of the four deaths occurred just after admission, and the other two cases were of long standing, one complicated with septicæmia, and the other with broncho-pneumonia and septicæmia. Nine of the hospital cases required the operation of tracheotomy. From these facts it was evident that the hospital cases were not less serious than those treated at home. As the successful hospital treatment of membranous croup depended partly upon the treatment previous to admission to hospital, he desired to refer to the question of treatment more fully than strictly came under the title of this discussion. The essential points in the treatment were:—(1) early recognition of the disease; (2) early injection of antitoxin in sufficient doses; (3) early notification by messenger or telephone in order to insure (4) prompt removal to hospital; (5) hospital treatment. The first point was entirely in the hands of parents and the medical attendant. The early injection of antitoxin was also in the hands of the medical attendant. It must, however, be borne in mind that the great majority of the cases of membranous croup occur among the poorer classes, consequently medical men could ill afford to give the antitoxin necessary for the successful treatment of the cases. It was the duty of sanitary authorities to try



to reduce the death-rates from preventable diseases. They could assist in doing this by supplying antitoxin gratis to medical men when patients could not afford it, and for use in preventing the extension of diphtheria by the inoculation of those who have been in contact with cases. An important detail in the process of removal of cases to hospital was the necessity of providing a cylinder of oxygen for use in the ambulance, and of sending a nurse in charge who was experienced in its administration, in order to tide the patient over possible paroxysms of partial suffocation during removal. On admission patients should be placed in tent beds treated with steam. (At Newport the steam kettle is heated by electricity, which is much safer than methylated spirits.) Adequate doses of antitoxin should be given immediately, say 8,000 to 12,000 units, repeated in a few hours if the disease was well established. He thought it well to supplement this by an emetic and small, but frequent, doses of strychnine and digitalis. If the symptoms of want of circulation of air in the lungs became acute, and the heart showed signs of failure, tracheotomy was performed without delay. The results that they had at Newport were most encouraging, besides having the satisfaction of seeing the patient relieved rapidly of the most painful symptoms of partial suffocation. Of the nine cases of tracheotomy for membranous croup, seven recovered and two died: neither of the latter had been treated with antitoxin previous to admission. In these cases the operation was performed more with the object of making death less terrible than with the hope of saving life, for one died soon after admission, and the other had broncho-pneumonia in addition. None of the cases which had been treated by early doses of antitoxin died. The points which he wished to lay special stress upon in reference to isolation hospitals and membranous croup were (1) the importance of early injections of antitoxin, *i.e.*, previous to removal to hospital (here the duty of the medical attendant was evident); (2) the importance of performing the operation of tracheotomy when indicated, particularly if large doses of antitoxin have been previously administered; (3) the great reduction in the fatality of laryngeal diphtheria when treated upon the above lines, combined with early removal to hospital.

DR. J. MIDDLETON MARTIN (Gloucestershire C. C.), after expressing his appreciation of the valuable paper on isolation hospitals by Dr. Davies, referred to the principles of isolation laid down by Dr. Davies, and more particularly to the first of these: "that the patient had not handed on his infection to any other person before his seclusion commenced." Attempts had been made to show that hospital isolation was ineffective on statistics of the percentage of cases isolated in different towns for the same periods, and for different periods in the same towns. The conclusions, in his opinion, were entirely fallacious, in that it could not be certain that the first of Dr. Davies' principles was strictly complied with. In urban districts, from the mass of material to be dealt

with, it is much more difficult to comply with this condition than in rural districts, where one could follow up the cases more closely. From the speaker's experience in rural districts he was convinced that mild unrecognised cases were the chief cause of any apparent failure in hospital isolation, and no system of dealing with infectious disease was complete which did not provide for a strict search for unrecognised cases. With regard to the cost of isolation hospitals, it appeared to him extraordinary that there should be such a wide variation as from £160 to £500 per bed in different cases. Some of this difference was doubtless due to unavoidable causes, but possibly the average cost might be greatly reduced by a closer co-operation of the designers of these buildings. Smaller districts in some cases appeared to consider the cost of constructing isolation hospitals of the substantial character required by the Local Government Board prohibitive, and he thought that it might tend to the more general establishment of these necessary buildings if, in certain cases, buildings of a more temporary character were allowed on inquiries by, and representations from, the county councils as a first sanctioning authority. An important item in the expense of establishing isolation hospitals was the special and necessary requirements of the Local Government Board with respect to the position of smallpox hospitals. By these a distinct site remote from buildings is required for the reception of smallpox cases; at any time it is difficult for a local authority to obtain a site for an isolation hospital, but the extra requirements for a smallpox hospital make the provision of the latter a still more difficult and expensive matter. All this extra expense might be saved to this country if revaccination at school age, and at other suitable times, were enforced in this country as in Germany. Those who have seen Dr. Bruce Low's valuable report to the Local Government Board on this subject will remember that he was unable to see any cases in that country, as none existed at the time of his visit, and that when cases of smallpox were introduced they were isolated, not in special hospitals, but in a ward of a general hospital for infectious diseases. Thus Germany was saved the expense of providing special hospitals for smallpox, and the same might be done in this country.

MR. R. READ (Gloucester) agreed with Mr. Yabbicom in his objection, as a general rule, to alter existing buildings for special purposes such as a hospital. He noted in the description of the buildings at Bristol that the hospitals depended for their water supply on a tank, holding 30,000 gallons of water, raised above the level of the site, and he thought that for fire purposes it would be advisable to supplement this by some chemical hand fire extinguishers distributed about the buildings, which would be a very useful auxiliary to the ordinary fire appliances, as there was always a time at the commencement of a fire when a bucket of water or a small chemical hand apparatus would put it out. Mr. Yabbicom appeared to have given great attention to the warming and venti-

lation of the hospitals, and, as these two things depended entirely upon one another, he was glad to see that Mr. Yabbicom had adopted the Manchester stove, to which air was admitted at the back of the fire, and after being heated was delivered into the ward at a point eight feet above the floor. As a rule, with heating arrangements by open fires for domestic buildings or hospitals, no provision was made for supplying the fire with air. The fire had to draw air from wherever it could, and it usually did so from the cracks of the doors and windows, and thus set up draughts. The only objection to the Manchester stove was that it was rather more costly than the ordinary stove and required the construction of a special flue. With ordinary stoves this difficulty of air supply could be got over by bringing the air from the outside of the building under the floor, and discharging it within one yard from the fireplace, a few inches above the floor level, in such a position that the most careless servant could not fill the tube with ashes. He also noted that it was considered necessary to keep eight horses in the stables to provide for the ambulance work, and it had occurred to him that as these were not always in use, but have to be fed, it might be cheaper to adopt a motor-van for the purpose of fetching and returning patients.

DR. J. TUBB-THOMAS (Wilts C.C.) pointed out that if a rich and ancient city like Bristol had not yet been provided with sufficient isolation hospital accommodation, one could hardly expect the smaller urban authorities, rural districts, and poor agricultural counties to be more advanced. The county which he had the honour to serve might justly claim to be on a level, if not in advance of Bristol, as it had at least two thirds of its population amply provided with isolation hospital accommodation, either completed and in use, or approaching completion. The question of the expense of providing isolation hospitals was a very serious one, especially in a county like Wiltshire, where one third of the cost of land, buildings, and furnishing of hospitals was provided from the county funds, besides a contribution of one third of the annual cost of establishment expenses. A communication had been received from the County Councils' Association saying there appeared to be a general feeling that the requirements of the Local Government Board and of the Lunacy Commissioners with regard to isolation hospitals rendered the cost of their erection unnecessarily high, and with a view of taking steps to make it possible to erect such hospitals at a less cost, the opinion of the County Councils and their officers was requested, as in what respects the requirements of the Local Government Board and the Lunacy Commissioners needed modification for this purpose, and he was preparing a report for his Council upon this subject. There could be no doubt that the feeling did exist. He feared it was largely caused by hospitals for the smaller districts being designed upon the lines of the magnificent and expensive buildings erected by the rich Hospital Boards and wealthy Corporations. He had no

doubt, and it had been proved in his own county, that really good, useful, and efficient isolation hospitals could be constructed at a moderate cost, under £300 per bed. The result was obtained by employing an architect who knew his work, and planned his buildings with strict economy as regards arrangement and construction on simple utilitarian lines, depending for effect upon good proportion and grouping: the materials used being such as were not only suitable but obtainable at reasonable cost in the neighbourhood. There could be no doubt that hospitals constructed on the basis of one bed per 1,000 of the population were practically useless in times of epidemic, and they should be largely used for dealing with first cases, and the prevention of epidemics rather than as fever hospitals in the strict sense of the term. He agreed with Dr. Herbert Jones' definition of an isolation hospital as the "poor man's spare room." He agreed with Dr. Davies' figures with regard to the prevention of smallpox during the last ten years in his district, and thought that the figures would equally apply to scarlet fever and other infectious diseases, if the local authorities were more alive and medical practitioners were more exact in their diagnosis, and the early isolation of first cases insisted upon. He had an excellent object-lesson in this direction whilst acting as medical officer of health of a large seaside health resort, largely used for children where the success of a season depended upon the absence of epidemic disease. Medical men, keen to their own interests and those of the town, were smart in detecting first cases, and the authority backed them up by instant removal, with the result that they never had an epidemic during the season, although the introduction of scarlet fever, etc., was of constant occurrence. One of the difficulties in rural districts and small urban districts lay in the fact that very few of the smaller hospitals were properly staffed, so many depending upon the unskilled caretaker in residence, and the sending for nurses to various institutions when cases required treatment. Authorities in consequence were very loath to open their hospitals for first cases on account of cost; the natural result was that the hospital was not opened in time, epidemics resulted, and isolation hospitals were held up to contempt as useless, and this solely because their primary object, to deal with first cases, had been forgotten. His experience of temporary hospitals, of wood or corrugated iron, had been very unsatisfactory, and he would want very strong reasons to induce him to advise their adoption, as the only provision of isolation accommodation: they have their uses as an extra provision in epidemic times.

DR. JAMES FLETCHER (Resident Medical Officer, Ham Green Hospital, Bristol) discussed the fourth essential condition of successful isolation in Dr. Davies' paper, and in referring to the occurrence of return cases said that, though the general public thought otherwise, in only a few of the infectious diseases was there any hall-mark of freedom from infection. He advocated strict segregation of scarlet fever patients and antiseptic treatment of nose and throat throughout

the illness, pointing out that no better result could be expected till the specific germ was discovered: in diphtheria, large doses of antitoxin as early as possible along with local antiseptic measures and the absence of cachexia, as well as a negative bacteriological examination, should be insisted on before discharge. He was of opinion that return cases were more likely to follow the discharge of mild cases of both diphtheria and scarlet fever than severe ones, inasmuch as little reaction in the patient was produced and the micro-organisms often persisted for long periods. The results of home treatment of cases of fever were often well seen in patients admitted to hospital late in the disease, *e.g.*, untreated and often unrecognised otorrhoea, mastoid abscess, nephritis, diphtheritic paralysis, etc., and considering that the knowledge of the public regarding the nature of infection, asepsis, and the use of antiseptics was so very meagre, he was convinced that it would be a long time before home treatment could in any way compete with that in hospital.

DR. J. C. HEAVEN (Keynsham) emphasised the value of hospitals in rural districts, and pointed out that their usefulness in such districts could be more readily demonstrated than in large towns. He questioned whether the proportion of one bed per 1,000 of a small population was sufficient, as a small provision on this basis might easily be insufficient to meet a sudden outbreak; in fact, this had occurred in his experience. In small districts a certain minimum provision, say 20 beds, should be adopted; in districts with large populations the standard of 1 per 1,000 appeared to suffice. He questioned the easy working of joint hospital boards, and agreed that missed cases were undoubtedly fertile sources of the spread of disease.

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