

the walking is seldom rendered unpleasant. In the neighborhood of the salt works the atmosphere is very similar to that of the seashore.

The salt hills of Ischl and Hallstädt contain natural salt veins, consisting of saliferous clay mixed with gypsum, resting upon limestone seamed with marl and clay. Pure water is conveyed hither in pipes, becomes saturated with the salts, and the brine then flows into the salt houses in Ischl and Ebensee. The following is the composition of the brines coming from the Ischler and Hallstädter hills, calculated in parts per 1,000:

	Hallstädter brine.	Ischler brine.
Sodium chloride	255.26	236.13
Magnesium chloride	4.94	.93
Magnesium bromide .....	.16	.06
Potassium sulphate	4.62	.69
Sodium sulphate	3.25	3.84
Calcium sulphate	3.40	3.84
Total solids	271.63	245.49

The baths are prepared by mixing these two brines in the proportion of one-third Ischl and two-thirds Hallstädt, to which is often added a decoction of pine needles. There are also facilities for mud baths and for inhalations of salt spray.

There are also several mineral springs at Ischl. The following is their composition, computed in parts per 1,000:

	Schwefelquelle.	Klebelsbergquelle.	Maria-Louisenquelle.
Calcium carbonate	0.092	0.015	0.197
Magnesium carbonate .....	.55	.011	.010
Calcium sulphate .....	.459	.244	.078
Potassium sulphate .....	.024	.018	
Sodium sulphate	4.125	.274	.071
Magnesium chloride .....	.732	.406	.098
Sodium chloride	17.005	5.118	5.580
Total solids	22.437	6.086	6.034

In the sulphur spring (Schwefelquelle) there is a considerable amount of free sulphureted hydrogen gas.

In addition to its being a fashionable watering-place, Ischl enjoys a well-deserved reputation as a health resort. The climate and the waters combine to render it admirably adapted for the treatment of nervous and irritable individuals, and of those debilitated by disease, dissipation, or too rapid growth. Children suffering from scrofulous troubles are often much benefited by a visit to the place. Inhalations of the brine spray are used in the treatment of chronic catarrhal affections of the air passages, and many female disorders are relieved by brine baths.

The accommodations at Ischl, at least up to within a few years, have been rather inadequate for the large number of visitors; the cost of living is in consequence somewhat high. There are many private villas in the place, and the scenery in the valley is charming.*

The beautiful situation and the mild, equable, soothing climate, and innumerable charming excursions round about, all conspire to render Ischl a delightful spot for a longer or shorter visit in the season, which lasts from July to the end of September.

It is an excellent resort for an "after-cure." Besides the diseases above mentioned, there may be added neuralgia, anæmia, and rheumatoid arthritis, which are said to improve from a residence here. It is still an expensive and fashionable resort, but the accommodations are said to be excellent. There is a fine Kurhaus, two bath houses, where brine, sulphur and pine baths, and brine vapor baths are given. The "milk and whey cure" is

* Up to this point the text of the original edition has been followed.—E. O. O.

also another resource of the place. The number of inhabitants is about 7,000, and there are nearly 6,000 visitors.

The shortest route from England is via Cologne to Munich, thence via Salzburg to Ischl. It is 1,048 miles distant from Paris.

Although he visited it some years ago, the writer still vividly remembers the beautifully shaded avenue which is one of the features of the place. *Edward O. Otis.*

ISINGLASS.—**ICHTHYOCOLLA.** "The swimming-bladder of *Acipenser Huso* Linn., and of other species of *Acipenser* (Class, Pisces; Order, *Sturiones*)" (U. S. P.).

Isinglass is prepared from these sturgeons, mostly of the tributaries of the Black and Caspian seas where they are very largely consumed for food, by opening and removing their air reservoirs, splitting or slicing them, macerating them to remove their mucous surfaces, and drying; the tripe-like membranes are then rolled in cylinders (staple isinglass), folded in folios (leaf or book isinglass), or done in some other more or less fantastic shape. Its ordinary form in this market is that of "sheets," of irregular size and shape; it is stiff, of a horny or pearly appearance, whitish color, semitransparent, somewhat iridescent, tough, and flexible, but without taste or odor. Isinglass almost completely dissolves in boiling water, the structural character disappearing completely. Besides this, which is generally known as Russian isinglass, and is in this country very expensive, the swimming-bladders of the hake and other fishes are manufactured into sheets and ribbons of thin, light-brownish, gelatinous tissue, known as American isinglass. Its properties are similar to those of the above, but it is darker-colored and not so absolutely free from taste and odor.

Isinglass consists of about ninety-nine per cent. of pure, white, fine, and adhesive gelatin, which forms a jelly with twenty-four parts of water. Its medical and dietetic qualities are identical with those of other pure gelatins, which are frequently substituted for it. Its only medical use is in the preparation of water plasters (isinglass plasters, court plasters, etc.), which are essentially silk or linen cloth, varnished with a thin layer of the isinglass, and backed with some waterproof varnish, like that of gutta-percha or tolu.

Such a plaster is official under the title *Emplastrum ichthyocolle*.

Japanese isinglass has already been considered under "*Agar-Agar*." *W. P. Bolles.*

ISOLATION HOSPITALS.—In the present article it is proposed to deal only with such portions of the subject as come within the province of the medical man.

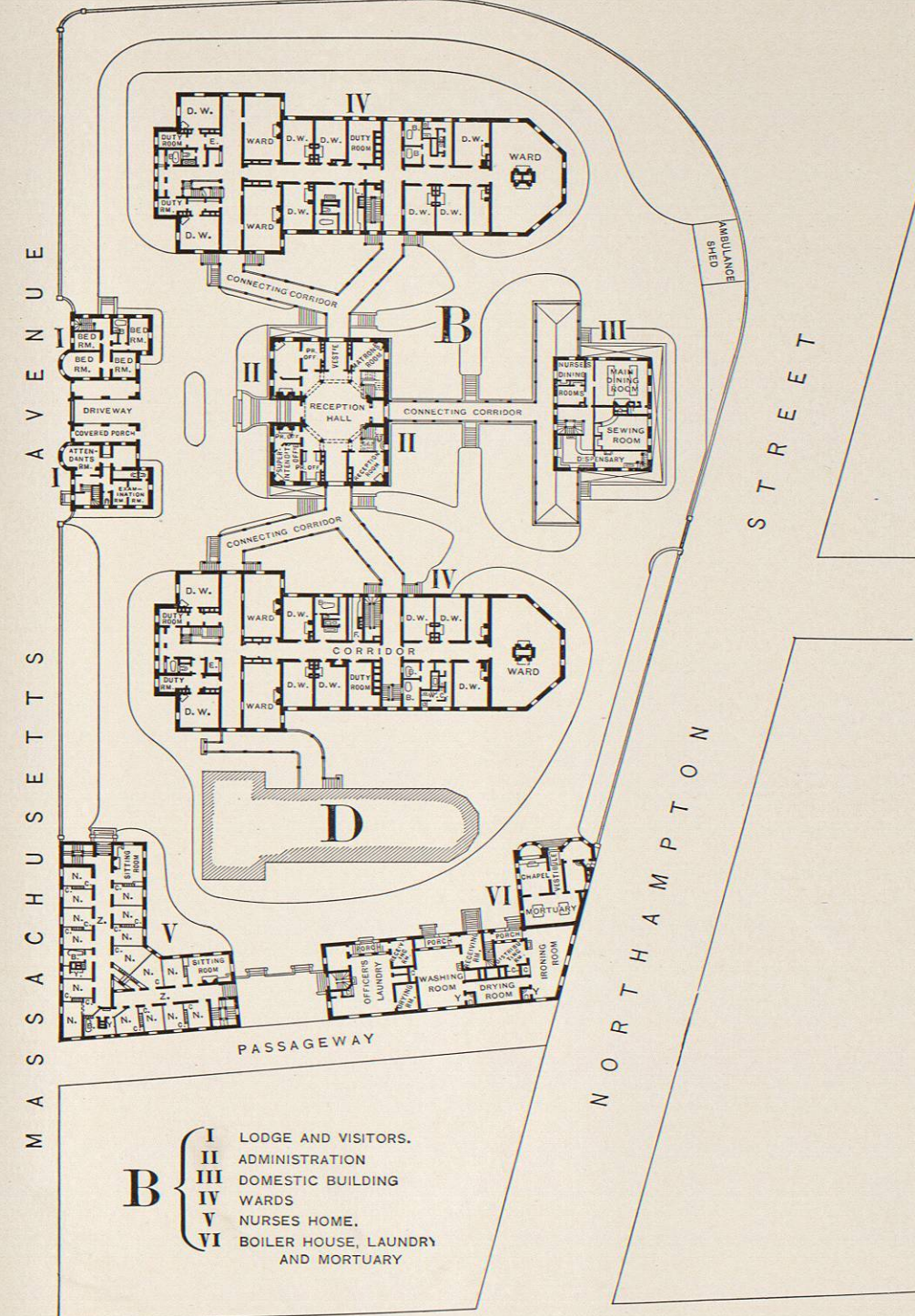
In modern days the term "pest house" no longer expresses the attitude of the public toward the segregation of infectious diseases. The necessity of isolating, in some way or other, individuals affected with such diseases, had already made itself evident in the middle ages. Communities had begun to recognize the advantages of isolation in times of epidemics, but had not learned the value of dissociating it from surroundings calculated to arouse horror or repugnance. The modern aim has been to make the conditions of care and treatment such as to invite the confidence of the public. When a community possesses an infectious hospital in which the interests of the patient are known to be better served than by any other means, a great point has been gained. In Brighton, England, for instance, over eighty per cent. of all persons with contagious disease in the city go to the isolation hospital for treatment. The law in England authorizes the health authorities to insist upon treatment, in hospital, of all persons affected with a contagious disease whose surroundings are such that home treatment would constitute a source of danger to others (Public Health Act, 1875). England was the first country to adopt such a regulation. Sending away the sick member of the family leaves the house free from the irksome quarantine, greatly lessens the expense, and, if the hos-

EXPLANATION OF
PLATE XXXVI.

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EXPLANATION OF PLATE XXXVI.

- | | |
|-------------------------------------|---|
| <i>A</i> , Admitting-rooms. | <i>R</i> , Recovering-rooms. |
| <i>B</i> , Bath-rooms. | <i>S</i> , Students' Rooms. |
| <i>C</i> , Closets. | <i>T</i> , Etherizing-rooms. |
| <i>D</i> , Day-rooms. | <i>U</i> , Surgeons' Receiving and Waiting Rooms. |
| <i>E</i> , Elevators. | <i>W</i> , Patients' Wardrobes. |
| <i>F</i> , Linen-rooms. | <i>X</i> , Dumb-waiters. |
| <i>G</i> , Supervisor. | <i>Y</i> , Water-closets. |
| <i>H</i> , House Physician's Rooms. | <i>Z</i> , Connecting Corridors. |
| <i>I</i> , Medical Receiving-rooms. | <i>D.R.</i> , Dining-rooms. |
| <i>K</i> , Special Wards. | <i>S.R.</i> , Surgeons' Rooms. |
| <i>L</i> , Lavatories. | <i>P.R.</i> , Physicians' Rooms. |
| <i>M</i> , Medicine Closets. | <i>E.R.</i> , Examining-rooms. |
| <i>N</i> , Nurses' Rooms. | <i>D.W.</i> , Double Ward. |
| <i>P</i> , Balconies and Terraces. | <i>O.R.</i> , Operating-rooms. |
| <i>Q</i> , Splint-room. | |



B {
 I LODGE AND VISITORS.
 II ADMINISTRATION
 III DOMESTIC BUILDING
 IV WARDS
 V NURSES HOME.
 VI BOILER HOUSE, LAUNDRY
 AND MORTUARY

SCALE OF FEET
 20 0 20 40 60 80 100 200

PLAN OF BOSTON CITY HOSPITAL, DEPARTMENT
FOR INFECTIOUS DISEASES

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pital is properly built and managed, gives the patient a better chance of recovery.

The legal right to construct infectious hospitals should be vested in municipal authorities, as part of the regular functions of their board of health. In cases of private institutions for infectious disease it seems proper that some supervision should be exercised by health boards, in order to make sure that the necessary precautions are observed. Such a supervision would also secure protection for the interested parties in actions for damages alleged to be due to infectious hospitals, etc.

Isolation hospitals may be divided into four classes, in accordance with the different conditions which may exist in the community. They are: (1) Relatively large hospitals, serving the requirements of cities; (2) cottage hospitals and those required in small towns; (3) isolation wards or pavilions, in connection with general or special hospitals; (4) isolation hospitals for schools, institutions, etc. In all essential respects the second and fourth classes are virtually the same.

The Site.—This should not be chosen in a thickly settled residential district, nor should it be situated inconveniently far from the population which it is intended to serve. Preferably a site with open space surrounding or adjoining it should be selected; the neighborhood of buildings devoted to large commercial enterprises, which of themselves would check local building of residences, without at the same time giving rise to any nuisance (noise, dust, odors, etc.), often forms a satisfactory spot. Remoteness is to be avoided, as it has been found that the distance at which the danger of infection by air can be eliminated for ordinary infectious diseases, is at most one hundred feet in the case of adjacent buildings. In the City Hospital at Boston it has been shown by experience that the frequency of occurrence of cases in the immediate vicinity of the isolation hospital is less than the average for other parts of the town. The observations made by the Local Government Board on this point (Report of Medical Health Officer, L. G. B., 1881) are very striking. An extensive inquiry made by Thorne-Thorne and Shirley-Murphy brought out the fact that even where large fever hospitals were situated within one hundred feet of dwellings no transmission appeared to take place by means of air or dust in cases of scarlet fever or typhus fever. The distances referred to were: 79 feet, 55 feet, 49 feet, 36 feet, and in one case only 29 feet. A distance of 90 feet between the City of London Workhouse and the Homerton Fever Hospital was apparently sufficient to prevent the occurrence of infection. The Local Government Board lays down 40 feet as a minimum distance between a fever hospital and the nearest point where the public are exposed, the space being called the "sanitary zone." The same distance is enforced as a minimum between various pavilions or outbuildings of the hospital and applies to any outbuilding, temporary extension, etc., none of which must be less than 40 feet from the one nearest to it.

In the case of smallpox hospitals the inquiry showed that where there was an aggregation of only a few cases no instance of the spread of infection through the air occurred. On the other hand, the case of the Fulham Smallpox Hospital (studied by Dr. W. H. Power) furnished very striking evidence of a contrary nature. It was found that a much larger number of cases of smallpox occurred in the vicinity of this hospital than in other parts of the town, and that the majority of these patients lived within the area over which the prevailing winds passed after crossing the hospital property. So far as could be ascertained, this outbreak of smallpox was due entirely to the transportation of the infection by means of air currents. The Local Government Board therefore forbade the erection of a smallpox hospital "(1) on any site where it would have, within one-quarter mile of it as a centre, either a hospital, whether for infectious diseases or not, or a workhouse, or any similar establishment, or a population of 150 to 200 persons; (2) on any site where it would have within one-half mile of it, as a centre, a population of 500 to 600 persons, whether in one

or more institutions or in dwelling houses." The Board found it advisable not to sanction the establishment of infectious hospitals unless it was agreed that cases of smallpox should not be received or treated at the same time with other infectious diseases.

Attempts to deal with the outgoing air of smallpox hospitals by passing it through furnaces or by filtering, etc., have not been found to work successfully. Upon this latter point, it should be stated, the observations are not exhaustive. On the other hand, the evidence from the inspection of the provincial institutions in England, where smallpox and other diseases were simultaneously treated, but in separate pavilions, did not show that they were frequently the centres from which infection spread to the neighboring population.

The danger of infection is due less often to the nearness to the hospital than to the way in which it is managed. The wisdom of the Local Government Board in establishing the rule that there shall be erected a close fence six and one-half feet high round the entire grounds of such an institution, is sufficiently obvious.

Capacity of Hospital.—It has been found in England that about one bed per one thousand inhabitants is needed for infectious cases. The requirements of villages and small towns are practically identical, and the necessity of providing for an effective isolation previous to the first case of infectious disease is imperative in order to prevent epidemics. Accommodation somewhat in excess of the ordinary needs of the locality should be furnished, so that recourse to temporary additions may be seldom needed and expense thus saved. This also allows for increased demands owing to growth of population. Accommodation for administrative purposes should be furnished in excess of what is actually required for the wards ordinarily in use, so that it may also prove adequate to the extra demands made upon it in time of epidemic. The minimum requirements, in the case of a village, call for accommodations suitable for isolating four patients—two of each sex.

Arrangement.—The hospital should be so arranged that each disease may be treated in a separate building. In most establishments there are separate pavilions for scarlet fever and diphtheria. In addition to the isolation or observation wards, administration buildings, etc., some provision should be made for the reception of a few smallpox or other pestilential cases, in order to save the expense of maintaining an empty smallpox hospital during the periods of time intervening between epidemics. The convenience to the public of having accommodations for cases of measles and whooping-cough is greatly appreciated, but, unfortunately, such accommodations are provided in only a small proportion of existing institutions. Where tuberculosis is not provided for by special sanatoria, the patients should be received in separate wards or pavilions. In England pavilions for typhoid cases are often provided.

Cost.—For a small cottage hospital (see below), the cost averages from eight thousand to fifteen thousand dollars; for one large enough to accommodate from forty to fifty patients the expense will run from fifty thousand to one hundred thousand dollars. The cost of the maintenance of infectious patients in the Boston City Hospital, was found, for the year 1900, to be \$6.24 per week per head, or \$22.52 per case (exclusive of antitoxin). In small establishments the cost per patient is higher and may reach \$100. The expense is mainly due to the necessity of providing a relatively large staff, the actual maintenance of the patients costing rather less than in general hospitals.

Plans.—The plans for a cottage hospital recommended by the Local Government Board in their circular of 1895* will be found valuable as a guide. The accommodations comprise: (1) An administrative building with receiving room, quarters for staff, nurses, and attendants, kitchen (if not separately placed); (2) wards; (3) outbuildings, disinfecting chamber, mortuary, laundry, ambulance,

* Eyre & Spottiswoode, London; price one penny.

stables, etc. The municipal disinfection may be operated in connection with the hospital, the arrangement being found to work smoothly.

When for any reason a special hospital cannot be constructed, the next best thing is to secure the use of a

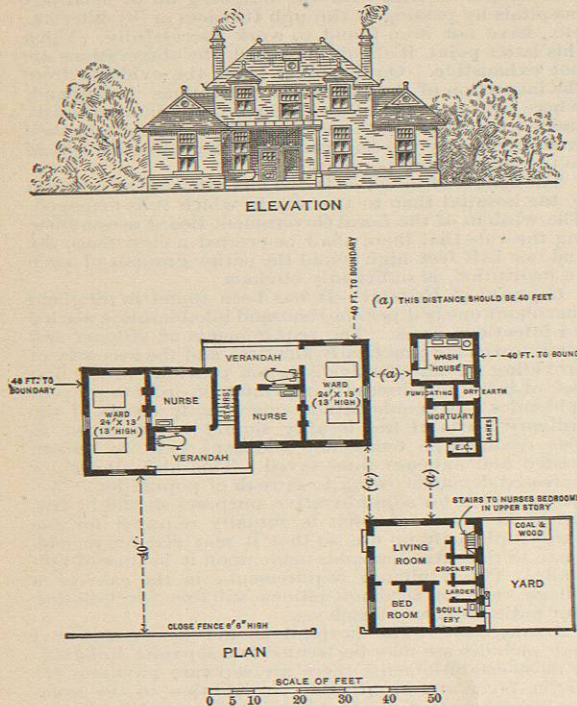


Fig. 2967.—Plan of Cottage Hospital Recommended by Local Government Board.

suitable dwelling which may be placed in the charge of a man and his wife who are willing and competent to take suitable care of cases of this nature.

The minimum requirements for four persons enabling two diseases to be dealt with is shown in Fig. 2967, this would be more efficient if it provided for the separation of sexes, having two separate wards instead of one ward with two beds. The use of the veranda as a means of communication is a good plan, and it will be noticed that the bath is movable. The conditions are as simple as possible, and provide for a dry earth closet system.

The arrangement of buildings upon a restricted site is shown in Fig. 2968.

In Fig. 2969 are shown the plans for two cottage infectious hospitals of from six to ten beds, with a drainage by the water-carriage system. These are satisfactory except in the want of provision for an observation ward.

Fig. 2970 furnishes a plan of a larger hospital, with wards or pavilions for twelve infectious cases. The amount of air space provided per head is 2,000 cubic feet with 144 square feet per bed. The dimensions of the wards are given in the plan.

Fig. 2971.—London Fever Hospital, Isolation Building. The diagram shows a plan of a building with a central corridor, two wards (one for 2 beds, one for 3 beds), and a nurse's room. A scale of feet is provided at the bottom.

For cottage hospitals convenient dimensions are: Larger wards, 26' x 22', small 22' x 13', same cubic space (ceilings 14' high); nurses' bedrooms, 15' x 10'; kitchens, 15.5' x 13'; doctor's room, 13' x 9'; matron's, 13' x 11'; two bedrooms, 13' x 11'; servant's bedroom, 9' x 7'; mortuary, 14' x 11'; ambulance shed, 14' x 11'; disinfecting room, 13' x 11'; wash-house, 13' x 11'.

There should be also a discharge room and a store for clean clothes, detached both from the wards and from

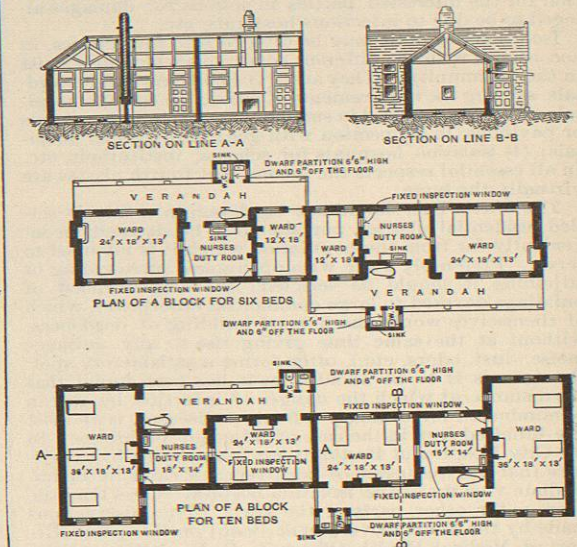


Fig. 2969.—Plans Furnished by the Local Government Board for Two Cottage Infectious Hospitals—one for six and the other for ten beds.

the administration building, for the final disinfection of the patients on leaving the hospital. The dimensions of these rooms are:

Discharge room and dressing-rooms, 8' x 10', 10' x 6', 10' x 11'; shower bathroom, 10' x 4½'; patients' bathroom, 10' x 9'; nurses' bathroom, 10' x 8'; patients' dressing-room, 8' x 10'; nurses' dressing-room, 8' x 10'; clothes store, 18' x 8'.

It is essential that com-

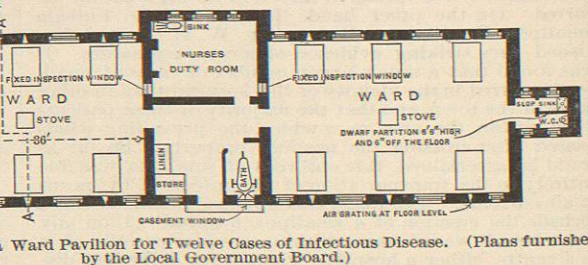


Fig. 2970.—Plan of a Ward Pavilion for Twelve Cases of Infectious Disease. (Plans furnished by the Local Government Board.)

munication between the rooms where different diseases are treated should be by means of outside passages or of corridors which should be open, if the climate permits of

it, and in any case separately ventilated from the rest of the building. One of the great difficulties in cold climates is the necessity for economizing space in order

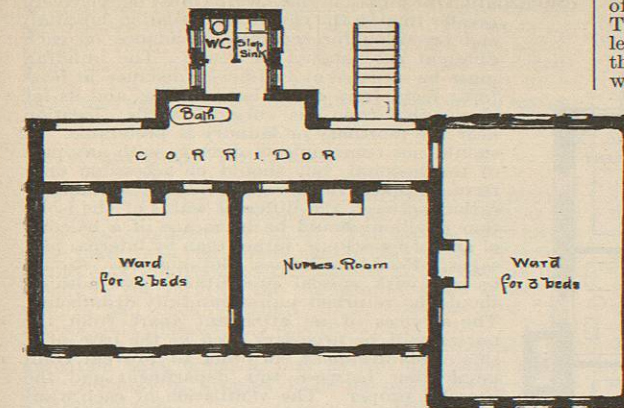


Fig. 2971.—London Fever Hospital, Isolation Building.

to permit of an economic heating arrangement. Abundant facilities for bathing and disinfection by the nurses and attendants are required, no matter how small the hospital may be.

The arrangements for a large hospital for infectious diseases are well illustrated by the plans of the Department for Infectious Diseases of the Boston City Hospital, which is a model establishment of its kind, easily the best on this continent, and certainly equal to any that has been constructed in Europe. These arrangements are shown in Plate XXXVI. It will be noticed that the examination room and attendants' rooms are situated at the entrance, the superintendent's and matron's rooms off the reception hall communicating with all the corridors of the building. The connecting corridors are covered ways exposed freely to the air and open at the sides. The buildings are usually detached and widely separated most commonly used. Ventilation by the open fireplaces is much in vogue in England.

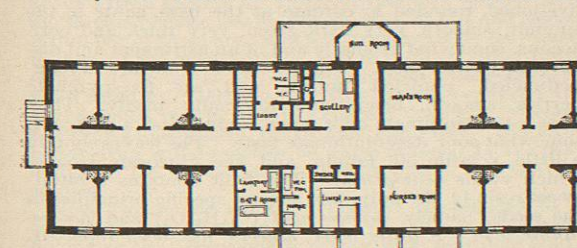


Fig. 2972.—Massachusetts General Hospital—Isolating Ward.

situated outside the buildings so that communication can be had with any flat of the wards without passing through any other wards. The relatively large number of small wards and separate rooms is a special feature. The separate blocks are provided for diphtheria and scarlet-fever patients, with some separate accommodation for those affected with measles or with whooping-cough. It will be seen that an interval of forty feet for all buildings from the street has not been maintained in all instances, but the minimum distance of the wards to the street at no point is less than forty feet.

Construction and Furnishing.—It is specially necessary that the rules as regards simplicity of construction, rounding of corners, use of washable materials for flooring and walls, etc., should be strictly followed in isolation hospitals. The less furniture the better, and that little should be of a kind readily disinfected and not likely to collect dirt.

To facilitate supervision by the nurses the use of glass partitions is very advantageous, as it absolves the attendant from the necessity of spending so much time in the same apartment with the patient. In the new wing for infectious diseases in the Pasteur Institute, the use of glass partitions for individual patients is very general.

Free ventilation is necessary not only for the well-being of the patients but also to reduce the danger of infection by free dilution. A supply of warm fresh air is of course the best available means, and as

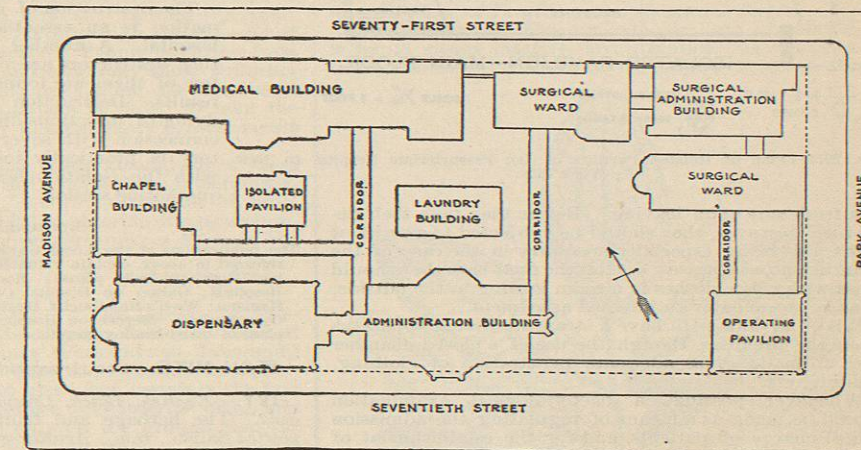


Fig. 2973.—Showing Relations of the Pavilion for Infectious Diseases to the Other Buildings of the Presbyterian Hospital in New York City.

the buildings are usually detached and widely separated most commonly used. Ventilation by the open fireplaces is much in vogue in England.

In small hospitals jacketed stoves are very convenient for heating. The apartments of the staff should be ventilated separately.

No special arrangements are called for with reference to lighting, beyond those ordinarily met with in hospitals.

The separation of the kitchen from the wards is necessary, and as a result of this arrangement some difficulty in transportation of the food supplied is likely to occur.

Routine of Admission and Discharge.—On admission patients should be received in the examining-room, and if