

regard to criminal lunatics in a permanent form. As is well known, it was not only as Superintendent of Broadmoor, but as the adviser of the Home Office in doubtful and difficult cases, that Dr. Orange matured his experience, so that in both relations his opportunities of observation of the delicate shades between criminal and insane conditions have been exceptionally great, and would afford materials for Commentaries of the greatest utility to experts in Psychological Medicine.

The successor to Dr. Orange is Dr. Nicolson, well qualified for the post by his practical acquaintance with Broadmoor, and widely known by his contributions to the literature of insanity and crime. The best wish we can express for him is that he may walk in the footsteps of his former chief.

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## PART II.—REVIEWS.

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*Hospital Construction and Management.* By FREDERICK T. MOUAT, F.R.C.S., Local Government Inspector, &c., and H. SAXON SNELL, Fellow of the Royal Institute of British Artists. London: J. and A. Churchill.

(*Third Notice.*)

Taking up that part of the book covered by category *c.*,—examples from abroad,—we are in the presence of a number of schemes, from which, for our purpose, a choice must be made.

Foremost would appear to be the "Johns Hopkins" Hospital of Baltimore, United States, America.

A most interesting account is given of the circumstances leading to the founding of this institution, together with a subsidiary asylum for orphan coloured children.

The hospital is a fair specimen of the pavilion system, treated in a somewhat different fashion to any other examples given in the book before us. The adjoining illustration shows the disposition of the general plan and some details.

Mr. Snell says of it: "There can be but one opinion, that the design now being carried out will produce a building worthy in every respect the object of the founder, and highly

creditable to the genius and ability of Dr. Billings and the architects engaged with him in carrying out the work.”\*

As will be seen, nearly the whole of the building is arranged to consist of one story only above a basement. A very special feature is the arrangement for warming each pavilion, and on this point Dr. Billings, in a preliminary essay, said :—

With regard to heating, it is necessary to keep in view the peculiarities of the climate of Baltimore. It will be seen that we have to provide for a temperature varying from zero to about 100° F.

For at least three months in the year special provision against cold will be needed, and this, if ventilation is allowed, can only be effectually secured by warming the air before it is admitted into the wards, which can best be effected by the use of hot water or steam in what is known as the method of indirect radiation.

He goes on to deprecate the use of open fire-places for the warming of hospital wards, and here Mr. Snell appends the following note :—“The opinion here expressed as to the utility and value of open fire-places in large sick wards is not shared by those in this country who have made the subject their especial study.”

The extraction of foul air from this building is arranged for by connecting (through several openings) a shaft crossing the ceiling of each ward and leading into an “aspiration” shaft, through which a constant up-current is sought to be produced by a powerful hot-water coil above the roof level, the whole discharging at some height above this.

Here we would observe, as specially applicable, that the weakness of all arrangements such as those above described is, that, in case of one part being defective, the whole may become inoperative and possibly dangerous.

The risk of this where fire-places of varied form are used is, of course, lessened in proportion by the number of units established as co-operative forces.

The water closets, &c., are not well situated for adopting the plan of cross ventilation, and this appears to us a serious defect in the detail of the building.

Taken as a whole, and bearing in mind the difficulty and consequent expense of meeting the requirements of such variations in outside temperature, we cannot but think that the

\* An inspection of this remarkable building while in course of construction, in 1884, entirely bears out Mr. Snell's praise. The greatest credit is due to Mr. Francis King, Dr. Thomas, and others for the pains they have taken to secure the very best plans for the hospital without parsimony and without favour.

scheme has proved an unduly expensive one, the result showing an approximate cost of £866 per bed.

We may next notice the group of French hospitals designed on what is known as the Tollet system. The chief of these are St. Eloi, Montpellier, St. Denis, Bichât, and Bourges.

The first of these is the latest in execution, and at the time of the publication of Mr. Snell's description was not complete. It is estimated that the cost, exclusive of fittings and furniture, will be about £114 per bed.

Similar in form of ward, and with a more detailed illustration ready to hand, is that of St. Denis. Mr. Snell says:—

The St. Denis hospital is remarkable as being one of the best of the executed types of M. Tollet's system of constructing sick wards.

The principle consists of forming both the sides and the roofs of the wards with curved wrought-iron I-shaped ribs, placed about five feet from centre to centre, and filled in between at the lower part with brickwork, and the upper or roof portion with tiling and brickwork or concrete.

In the building erected by M. Tollet the outer surfaces of the roof are finished with a coating of cement or tiles, and the inner surfaces with plaster, upon which are laid three coats of oil paint. M. Tollet's claim for originality rests not only upon the novelty of this mode of construction, but upon the formation of the finished interior faces of the walls and roofs in the shape of a painted arch "de forme ogivale," and it is claimed that buildings constructed in this manner are not only incombustible, but that the absorption of disease germs and other organic matter is prevented; also that free passage of air is not checked by sharp angles; and, lastly, it is pointed out that it is at all times possible, should it be requisite after an epidemic, to flush the whole of these inside surfaces either with flames of gas or streams of water.

As to sanitary arrangements —

M. Tollet has at all times strongly advocated our English plan of separating the w.c.'s from the wards by cross-ventilated lobbies, and it is really quite refreshing, after visiting other French and German hospitals, to find in the building now being described that this principle is carried out in its entirety.

One feature of this building is the form of a special provision for ventilation by an extract shaft containing the flue for the stove, the whole carried up considerably above the ridge of the roof.

The Heidelberg University Hospital is an interesting building, the special feature of its design being thus described:—

The most important feature in this establishment, as also in that

at Friedrichshain, is the introduction of pavilions one storey only in height above the basement. The authorities, to whom the task of erecting the buildings was delegated, seem to have been in some doubt as to the advisability of introducing what was at that time (1868) a comparative novelty. It was known that huts and tents had been extensively used during the time of war and epidemics, and on all sides it had been admitted that fewer cases of hospital diseases occurred in them, than in the many-storeyed buildings of more permanent establishments, and moreover cures had been effected more rapidly. But on the other hand it was feared that the expenses of management, heating, and ventilation would be increased inordinately, and so it came about that six only of these one-storeyed pavilions were erected here, two being for the reception of a certain proportion of the medical patients, and four for a proportion of the surgical patients. At Friedrichshain similar one-storeyed huts were erected for the whole of the patients of the surgical division, but those of the medical department were provided for in pavilions two storeys in height.

The various portions of the building are connected by covered ways open on both sides.

The axes of the wards are placed nearly east and west, the result of many deliberations, but at Friedrichshain the opposite course has been taken, as the result also of much deliberation.

The chief feature of the provision for ventilation is the large lantern-light running the length of each of the wards, this being constructed on such a scale that a gallery is used with special staircase for access to the lights for opening, &c.

The sanitary departments are not well situated, and though better than in many Continental hospitals, would not be tolerated in England.

A noticeable feature is what is called a verandah, a room with a glazed side, which, as Mr. Snell says, should properly be used for giving patients the benefit of external air while remaining under cover. These do not now appear to be in use at all. Something, similar, however, is found very advantageous at the Friedrichshain Hospital.

The basement, used chiefly for stove and furnace room, is, except during very severe frost, kept in free communication with the open air by means of large window openings.

The weak point in the building, taken as a whole, seems to be the size of the wards, which are arranged to accommodate 16 patients only.

This would appear either to render an extra number of nurses necessary, or to separate in an embarrassing manner the duties of one.

We may now shortly notice the leading features of the Antwerp Civil Hospital, a building of this special interest that it was the first hospital having circular sick wards.

The design was originally prepared by M. Bæckelmans, but on being referred to a Commission appointed by the "Conseil Supérieur d'Hygiène Publique," met with such adverse criticism and recommendations incompatible with the retention of the original idea of the scheme, that he declined to act as architect, and two of his pupils undertook the work. In the result the main features of M. Bæckelmans' scheme have been largely maintained.

The diameter of each ward is 61ft. 6in., and the height 17ft., a small enclosure for the use of a nurse being reserved in the centre of each.

The water-closets and bath-room are cut off from the ward very distinctly by a bridge-like construction, and the wards are in like manner detached from the administrative departments.

It may be instructive to quote some of the arguments used by the Commission above mentioned as bearing unfavourably on the circular system. They said:—

"In the first place it is evident that in a round room the beds next the walls are a less distance apart than they would be in a rectangular ward having the same superficies, and that the beds at the feet being very close together, the nurses and doctors will be inconvenienced. Then again, although it has by some been thought otherwise, we have no doubt that this radiating position will be found distressing to the sick, since any patient can the more easily see a large number of his companions in misfortune.

"Now comes the question, 'Would superintendence be more easy?' We do not think so.

"The nurses, placed in the centre of the circle in a sort of cabin, would certainly not be able to so easily keep their eyes upon the patients confided to their care, as if they were at the extremity of an oblong ward; and when so placed in the middle of the emanations of sick patients, will they not be under much more unfavourable conditions, especially during an epidemic, than if they were out of the ward and in a separate room overlooking it, and provided with special ventilation?

"Finally, with respect to the principal argument advanced in favour of the circular system of wards, that a maximum capacity with a minimum surface is to be obtained, thus securing the acquisition without extra cost of an enormous cube of air, one of the most sure guarantees of salubrity.

"We at once admit that the volume of air will indeed be considerable, for according to the calculations of the author of the

plan each sick person would have 2,120 cubic feet. But is this great cube of air the best solution of the problem of ventilation?

“With good ventilation much less would suffice, and it is but rational to admit that a smaller quantity of air would be more easily renewed in a given time. In the matter of ventilation, the important fact must not be forgotten that it is not only necessary to supply pure air incessantly, but we must arrange for the evacuation in the smallest possible time of *all* the vitiated or altered air, and this without causing troublesome draughts. The present methods of ventilation have not yet arrived at such a degree of perfection as to give us full and entire confidence in them, and our mistrust would therefore warn us not to run the risk of constructing wards of too large a size, and so exposing ourselves too near the other of the inconveniences referred to.

“In our opinion, then, gentlemen, there is nothing which authorizes an *à priori* declaration that circular wards, as proposed by the designer, are better than oblong pavilions with rounded corners.”

This ends our examples. We may, in conclusion, refer to the chief faults found with establishments particularized by Mr. Snell, though we need not follow him into the full detail of these:—

1. Insufficient area space round sick wards.
2. Administrative offices badly placed for communication with all parts of the building.
3. Sanitary departments badly placed and badly arranged.
4. Window openings and ventilation defective in principle.
5. Method of warming inefficient in maintaining equable temperature.

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*Manuel de Technique des Autopsies.* Par BOURNEVILLE et P. BRIÇON. A. DELAHAYES et E. LECROSNER. Paris. 1885.

Part I. of this small volume treats of the practice of post-mortems in France and abroad, and of the State regulations appertaining to the same. It then proceeds to consider the organization of pathological departments in hospitals and universities, and the methods of instruction. These matters, though very important in themselves, have yet a significance quite distinct from that which, so to speak, is the kernel of the book, and to which the above are but preliminaries and accidentals—we mean the art of searching the body. This is entered upon in Part II. In this we first find a sufficiently complete list of the requisite instruments; and to this list, though we have no objections to make on the score of its being