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## PART I.—ORIGINAL ARTICLES.

*Pavilion Asylums.* (With a Ground-plan). By C. LOCKHART  
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Psychological Association.

(Read at the Annual Meeting of the Medico-Psychological Association,  
held in Edinburgh, July 31st, 1866.)

"The essential feature of the pavilion construction is that of breaking up hospitals of any size into a number of separate detached parts, having a common administration, but nothing else in common."—*Notes on Hospitals, by Florence Nightingale.*

MR. PRESIDENT,—I wish to-day to call the attention of the MEDICO-PSYCHOLOGICAL ASSOCIATION to an adaptation of the system of hospital architecture termed the PAVILION SYSTEM in the construction of PUBLIC ASYLUMS FOR THE INSANE.

The question of hospital construction has of late years received much attention. In the Journal of this Association for October, 1864, I brought to your notice several recent important publications relating to it.\* Since that date the discussions in the press on the

\* *Hospital Construction and Management.*—1. 'Notes on Hospitals.' By Florence Nightingale. Third edition, enlarged, and for the most part rewritten. Longmans, 1863, pp. 176. (With numerous plans.)—2. 'Rapport sur les Hôpitaux Civils de la Ville de Londres, au point de vue de la comparaison de ces établissements avec les Hôpitaux de la Ville de Paris.' Par M. Blondel, Inspecteur principal, et M. L. Ser, Ingénieur de l'administration de l'assistance publique. Paris, 1862, pp. 238.—3. 'Etude sur les Hôpitaux considérés sous le rapport de leur construction, de la distribution de leur bâtiments, de l'ameublement, de l'hygiène et du service des salles de malades.' Par M. Armand Husson, Directeur de l'administration générale de l'assistance publique. Paris, 1862, pp. 607. (With numerous plans.)—*Journal of Mental Science*, October, 1864.

condition of the infirmaries belonging to the London workhouses has further tended to direct attention to this important question.

It would be difficult to overrate the extent of the reform in hospital construction and management which has resulted from Miss Nightingale's labours. Her work, 'Notes on Hospitals,' enunciates in her clear simple style, alike the past deficiencies and future steps of progress in hospital construction and management.

To-day I am limited to one such point, viz., THE APPLICATION OF THE PAVILION SYSTEM OF HOSPITAL CONSTRUCTION IN THE BUILDING OF PUBLIC ASYLUMS FOR THE INSANE.

The recent improvements in our views of hospital construction, by the introduction of the PAVILION SYSTEM, marks, indeed, a new era in the history of hospital architecture. I question much if any hospital will ever again be built except on this principle.\*

The first large hospital built in the pavilion style was the *Hôpital de Lariboisière*, in Paris, which has 612 beds. A ground-plan of this hospital is given in Miss Nightingale's 'Notes on Hospitals.'

By far the grandest modern hospital, the HERBERT HOSPITAL, at Woolwich, is constructed on the pavilion system. An admirable account of this hospital, illustrated with numerous plans, has been published by Capt. Douglas Galton.†

The new St. Thomas's Hospital, now in course of erection opposite the Houses of Parliament, is also designed in the pavilion style.

The principles of this system of construction are thus briefly stated by Miss Nightingale :—

*Principles of Hospital Construction.*—The first principles of hospital construction is to divide the sick among separate pavilions. By an hospital pavilion is meant a detached block of building capable of containing the largest number of beds that can be placed safely in it, together with suitable nurses' rooms, ward sculleries, lavatories, baths, water-closets, all complete, proportioned to the number of sick, and quite unconnected with any other pavilions of which the hospital may consist, or with the general administrative offices, except by light airy passages or corridors. A pavilion is, indeed, a separate detached hospital, which has, or ought to have, as little connection in its ventilation with any other part of the hospital as if it were really a separate establishment miles away. The essential feature of the pavilion construction is that of breaking up hospitals of any size into a number of separate detached parts, having a common administration, but nothing else in common. And the object sought is, that the atmosphere of

\* A distinguished provincial architect recently told me that he saw grave objections to the pavilion style, inasmuch as the elevation of the buildings would thereby be hopelessly destroyed—about an average idea of the requirements in hospital architecture, I fear.

† *Herbert Hospital, Woolwich.*—'Report to the Right Hon. the Earl de Grey and Ripon, Secretary of State for War, descriptive of the Herbert Hospital at Woolwich.' By Douglas Galton (late Captain Royal Engineers), Assistant Under-Secretary of State for War. Presented to both Houses of Parliament, by command of Her Majesty. 1865, price 8s. 6d.

no one pavilion or ward should diffuse itself to any other pavilion or ward, but should escape into the open air as speedily as possible, while its place is supplied by the purest obtainable air from the outside.

The question of a general hospital plan resolves itself, first of all, into obtaining the most healthy structure of the pavilion; and second, into arranging all the pavilions in the way best suited to obtain free external ventilation, plenty of light on all sides, and convenient means of communication. To realise these advantages, pavilions may be placed side by side or in line. The arrangement of pavilions side by side should be adopted for hospitals of above 120 beds; the arrangement in line is most suitable for small hospitals, with fewer than 120 beds. In the larger class of hospitals the arrangement of pavilions side by side diminishes the distance to be traversed from block to block, and thus materially facilitates the administration.

Besides this, it allows covered communications to be kept up between all parts of the hospital without interfering with the lighting or ventilation of the wards.

The distance between the blocks should not be less than double the height of the blocks. This rule is specially applicable to English climates, in which it is necessary to preserve as much space as possible for sunshine. A greater distance would be better, but this would involve a greater cost for land and a greater distance to be traversed by the hospital staff. Generally, the distance between the pavilions should be greater than twice their height in low confined localities, where there is not a free external movement of the air. If the wards are raised on basements the rule as to distance should apply only to the height of the pavilion from the floor of the ground-floor ward. In very close positions it is difficult to say what distance will be found sufficient for free ventilation. Such localities are precisely those where no hospital should be built.

The plans of all the English county asylums erected within the last twenty years have been copied, with slight modifications, from the old monastic hospital of St. Mary of Bethlehem, A.D. 1246, after the model of which the New Bethlehem Hospital (the third) was built in 1815. These plans consist essentially of a system of wards, each in itself a distinct asylum, and consisting of a long gallery with a number of cells opening off it; of a day- and dining-room, and one or two dormitories, together with the necessary attendants' rooms, baths, scullery, water-closets, work-room, &c. Whatever modifications\* the architect may have introduced in the detail of his plan, the gallery system of construction, *i. e.* of making each ward a distinct place of living by day and by night, with all the necessary appliances for this object, were scrupulously adhered to. Two of the best county asylums, the Derby and the Essex, may be cited as illustrations of the gallery style of asylum architecture. At St. Luke's and Bethlehem this style may be seen in all its more dismal features.

\* The most valuable modification of the gallery style was that introduced, I believe, through Mr. Gaskell's advocacy, on his accession to the Commission, of giving to all the galleries and wards, without exception, a south or south-west exposure. The plan of the centre block at the Lincolnshire County Asylum was, while in course of erection, altered to carry out this important principle.

In 1857 the Commissioners sanctioned, for the first time, a departure from this gallery style of architecture, in the plans of the Sussex Asylum, in which a third story, consisting of sleeping-rooms of various dimensions, was added. Otherwise the old plan of making each ward the living and sleeping place of the patients and attendants was adhered to.

On the other hand, the practical experience of the medical superintendents of the county asylums has in each enlargement or extension of the buildings led them to depart from the gallery system, and to build instead day-rooms and sleeping-rooms more in harmony with ordinary hospital arrangements. This is a curious fact— asylum plans and asylum architects for twenty years adhering to the time-honoured Bethlehem gallery style of architecture, and, on the other side, the medical superintendents rejecting the style on every occasion, and systematically setting it aside in all subsequent enlargements of their asylums. Thus, I may refer to Dr. Bucknill's "New House" at the Devon Asylum,\* as the first effort on the part of a medical superintendent to free himself from the old gallery style of asylum architecture. A similar result may be seen in the new buildings at the Lincolnshire Asylum, as also at the Wilts and Gloucester, and markedly in those erected by Dr. Brushfield at Chester, a description of which may be found in the 'Fourteenth Report of the Commissioners in Lunacy.' The same observation applies to the new buildings at the Essex Asylum, and to the large additions in progress at Hayward's Heath. Dr. Brushfield, in his description of the new buildings at Chester, enforces this contrast with the gallery system, and points out how, in his plans, the main feature is the placing of the day-rooms all on the ground floor, and the sleeping-rooms above, and the omission of the gallery altogether. These buildings are thus all assimilated to ordinary hospital construction. Similar views have been stated by Dr. Sankey† and Dr. Arlidge,‡ and also found expression at the annual meeting of this Association in 1864, in a paper read by Mr. Toller, "Suggestions for Cottage Asylums."§

It appears to me|| that the pavilion principle of hospital construc-

\* 'Journal of Mental Science,' April, 1858. See also two papers by Dr. Bucknill:—1. "On Asylum Architecture and Arrangements," 'Journal of Mental Science,' April, 1857. 2. "Description of a Proposed Asylum for 650 Patients on the Separate Block System," 'Journal of Mental Science,' January, 1862.

† "On the Construction of English Public Asylums," 'Journal of Mental Science,' July, 1856.

‡ 'On the State of Lunacy, by J. T. Arlidge, M.B. Lond.' London, 1859.

§ 'Journal of Mental Science,' October, 1864.

|| In 1865 I saw at Pau, through the kindness of M. Auzouy, the director of the asylum, the plans of the new asylum for the department (for 500 patients) then in course of construction. I also visited with him the magnificent site selected for this asylum. The general idea was that of a central corridor, running east

tion may, with certain modifications, be applied to systematise these efforts to free ourselves from the gallery style of asylum architecture, and that it may aid us in further assimilating the arrangement of our public asylums to those of other general hospitals.

The plan (*see ground-plan annexed*) which I now submit to this meeting, is such an attempt to illustrate the manner in which the pavilion system of hospital construction may be made to fulfil the requirements of an English public asylum for the insane. Of course, many points of detail in an asylum differ materially from those of a general hospital, such as the necessity for single-rooms, of precautions for safety and against escape, means of employment and recreation, and such like.

I have drawn this sample plan for 250 patients, with power of extension to 400 and 550 beds, a facility which the pavilion style of architecture more than any other affords.

The leading feature of this plan is a central corridor running east and west, and with which the administration block, the kitchen block, the workshops, the laundry, and the several ward-pavilions, directly communicate. Under this central corridor is a subway for water- and gas-pipes. A few words will explain the details of each block and ward-pavilion.

1. *Administration block*.—I have assigned (in accordance with the first principles of the pavilion system) a separate block to the offices and officers' quarters, and another to the kitchen and dining-hall. The *Administration block* faces north, and contains on the ground floor the main entrance, with porter's lodge, the committee rooms, and the offices of the medical superintendent, steward, head attendants, the visiting- and class-room, the housekeeper's work-room, and the surgery. On the first floor (*see first-floor plan annexed*) I have placed the private apartments of the resident officers of the asylum, and on the second floor the sleeping-rooms of the female servants (house and laundry). Thus, all the resident officers and servants of the asylum, not directly associated with the care of patients, would have their living- and sleeping-rooms in the administration block. Connected with this block at the east end I have placed the chapel, and at the west end the residence of the medical superintendent. The administration block is connected with the central corridor by the main entrance corridor, adjoining which on the east side are the steward's stores.

2. *Kitchen block*.—A second block, facing the south, and placed in the centre of the main corridor, thus dividing the male from the female side of the asylum, contains the kitchen and offices, the

and west, with detached wards opening into it north and south, thus appropriating the main feature of the pavilion style of hospital architecture. I believe this plan of M. Auzouy to have been the first attempt at the application of the pavilion system to asylum architecture.

general recreation hall, and a dining-hall for the patients of each sex, and two attendants' and servants' halls. This building is one story, and open to the roof throughout. In the basement underneath I have placed the beer-cellar, bakehouse, dairy, vegetable cleaning-room, the coal, flour, and other stores. There is ample space for a large well-lighted basement under this block, and which would have a communication under the central corridor with the steward's stores.

3. *Ward-pavilions*.—On both sides of the kitchen block, and each directly connected with the central corridor, I have placed three detached ward-pavilions for the due classification of the patients of each sex.

a. *The Infirmary pavilion*.—I have made this a one-story building, with a dormitory for twenty patients, and a day-room connected with it facing south, and opening with a glass door on the infirmary gardens. I have placed six single rooms and two attendants' rooms near the entrance. The attendants' rooms have each a window looking into the dormitory. Connected with the day-room is a bath-room, with water-closet and sink, and on the other side a ward store-room for clothing, &c., and a scullery. The superficial space allotted to each patient is ninety feet, including day-room and dormitory. The infirmary ward would be warmed by four open fires.

b. *Ward-pavilion for chronic cases*.—I have placed next the infirmary a three-story building of the most simple and inexpensive kind, for the accommodation of the chronic cases. In this plan I have fixed the number at seventy. The day-rooms (two) are on the ground floor, and open directly on the airing-court. They are simply ordinary sitting-rooms. For the purpose of better ventilation, I have placed the water-closet in an abutment, with an entrance passage ventilated on two sides. On the first and second floors I have placed the dormitories, providing also attendants' rooms and lavatory, and several single rooms. The superficial measurement required by the Commissioners (being fifty feet for sleeping-room, and twenty-five feet for day-room) has been observed. These wards also are heated by two open fires in each. Additional heat might readily be obtained in each ward-pavilion by the addition of Perkins' high-pressure steam-pipes to each open fire. I have seen this simple application work thus both simply and well, and without any extra cost for fuel.

c. *Ward-pavilion for acute cases*.—I have placed the number here at thirty. The pavilion in this instance is a two-story building. On the ground floor is the day-room, bath-room, ward-store, &c., with seven single rooms opening on one side out of a gallery, an attendants' room, and padded room opening from the day-room; and on the second floor other seven single rooms, attendants' room, &c., and a dormitory for sixteen beds.

The day-room opens directly into the airing-court, and this pavilion is also heated with open fires only.

4. *Bath-house*.—I have placed a detached bath-house on each side on the north of the central corridor. Our English hospitals\* are still very defective, as compared with those of the Continent, in all that relates to the therapeutic uses of water. In no disease does water exercise so healing and soothing a power as in insanity. The bath-house of an asylum should be detached from the wards, and should contain, beyond the ordinary warm baths, a vapour bath, a Roman bath, douche pipes, &c. &c. A good bath-house would be an inexpensive addition to the plans of a county asylum.

5. *Laundry and workshops*.—These are placed at the east and west ends of the central corridor, and face north. They form a working and laundry court, and both admit of ready extension. The boiler-house may be most conveniently placed against the laundry.

6. *Total accommodation*.—The plan I have ventured thus briefly to bring to the notice of this Association is adapted for the reception of 250 patients, with arrangements for extension, by the addition of one or two pavilions for chronic cases, to 400 and 550. One of these extensions on each side of the asylum is shown on the plans in dotted lines. The numbers would be thus distributed:—

#### I. *Day-room accommodation.*

	Male.	Female.	Total.
Infirmary pavilions . . . . .	25	25	50
Ward-pavilions for chronic cases . . . . .	70	70	140
Ward-pavilions for acute cases . . . . .	30	30	60
			250

	Male.	Female.	Total.	
<i>In future extension a ward-pavilion for chronic cases gives . . . . .</i>	75	75	150	} <i>Future extension to 400 and 550.</i>
<i>And by a second ward-pavilion of the same kind, other . . . . .</i>	75	75	150	

#### II. *Sleeping accommodation.*

	Dormitory.	Single Rooms.	Total.
Infirmary pavilions . . . . .	40	10	50
Ward-pavilion for chronic cases . . . . .	120	20	140
Ward-pavilion for acute cases . . . . .	32	28	60
	192	58	250

The proportion of single rooms provided is one in four. I have

\* I would ask if any of my readers have seen the bath-cellar at St. George's Hospital, or had an opportunity of comparing therewith the splendid bath-house at the Hôpital Saint Louis, Paris?

done this, looking to future extensions by the erection of one or two pavilions for chronic cases, which would reduce the proportion of single rooms respectively to one in five and one in six, beyond which it is hardly wise to go.

I have thus briefly stated the general features of my plan. My object to-day is, not to enter into the details of asylum architecture, but simply to indicate generally the manner in which the pavilion system may be applied to the requirements of asylum architecture.

Lastly, sir, the advantages which would result from the introduction of the pavilion style of architecture in the construction of public asylums for the insane may be thus briefly stated:—

*a. Economy in construction.*—The absence of galleries and of the various passages of communication reduces the extent of roof, always a costly item in the structure of an asylum. The central corridor of a pavilion asylum would only be one story high, and hence be found an inexpensive means of communication between the different departments and wards or pavilions.

According to an estimate furnished by the surveyor for the county of Sussex, an asylum on this principle may be constructed and fitted for £150 per patient, while £50 would represent the probable cost of future extensions.

*b. Facility of future enlargement.*—I have shown by dotted lines on the ground-plan how readily another pavilion for seventy-five patients can be added on each side without altering any feature of the building or principle of construction. The central corridor can be extended either in a straight line or at right angles, as circumstances may direct. If the administrative and kitchen blocks be designed large enough for the ultimate numbers proposed or expected, any subsequent additions to these buildings or to the number of pavilion wards would be of comparatively small cost, not £50 per patient.

*c. Separation of the several departments of the asylum one from the other.*—Thus, at the entrance facing north is placed on the plan the administration block, containing all the usual offices, stores, with officers' and servants' quarters, chapel, &c. &c. Then the kitchen block, with the dining-halls, &c., and in the basement the beer-cellars, bakehouse, vegetable-room, and so on. To the right and left are the detached ward-pavilions, comprising the male and female wards.

*d. Efficiency in working.*—The supervision of the entire establishment is rendered easy by the central corridor, which communicates with every department of the asylum. Next, the ventilation is rendered simple and effective by the detached position of the ward-pavilions, each of which has a thorough ventilation, north, south, east, and west. I consider this an inestimable gain. Again, the quiet of the several wards would evidently be much promoted by



their detached position one from the other; and yet the whole asylum life would be one complete system, through the common dining-halls and recreation-hall, the general bath-houses, laundry, workshops, &c. &c., as much, at least (I think more so) than is found in the existing gallery system of asylum architecture.

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*An Introductory Lecture read at the Opening of the Clinique for Nervous and Mental Diseases in the Royal Charité in Berlin, 1st May, 1866.\** By PROFESSOR W. GRIESINGER, M.D. Translated by JOHN SIBBALD, M.D. Edin., Medical Superintendent of the Argyll District Asylum.

GENTLEMEN,—I now commence a course of clinical demonstrations and discussions in which mental and nervous diseases are for the first time to be made the subject of instruction in union with each other. The position will also on this occasion be outwardly and practically realised, that diseases of the nervous system form one inseparable whole, of which the so-called mental diseases only embrace a certain moderate proportion. This position is by no means one which has been accepted as a matter of course. It is a scientific acquisition only of the present day, the recognition of which will cause great changes, remove many errors, and must open up new developments in all directions.

A comparatively small proportion of nervous diseases are found in asylums; and they are placed there only from outward considerations of treatment and protection, such as the necessity for separation from the ordinary conditions of life, isolation, occupation, &c. &c. The phase of our specialism in which these alone were recognised as coming within its province has now been passed through, and I believe that the time will soon arrive when only those will be true specialists in psychiatry who survey the whole domain of nervous disease, and cultivate it as widely as possible.

It has been supposed up to the present time that the study of mental disease was distinguished by some difficulty *sui generis*, and that the study of ordinary medicine had no direct bearing upon it—that the only entrance to psychiatry lay through the dark portals of metaphysics. And yet the other cerebral and nervous diseases which, with the so-called mental diseases, form an inseparable whole, have not, so far as I am aware, been hitherto much elucidated by metaphysics; and in Germany the time has quite passed away when

\* Professor Griesinger furnished some explanatory notes for the report of this lecture, which appeared in the 'Archiv der Heilkunde.' They accordingly accompany the English translation.