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THE PLANNING

OF

LUNATIC ASYLUMS.

BY

GEORGE H. BIBBY, F.R.I.B.A.

Architect.

i.

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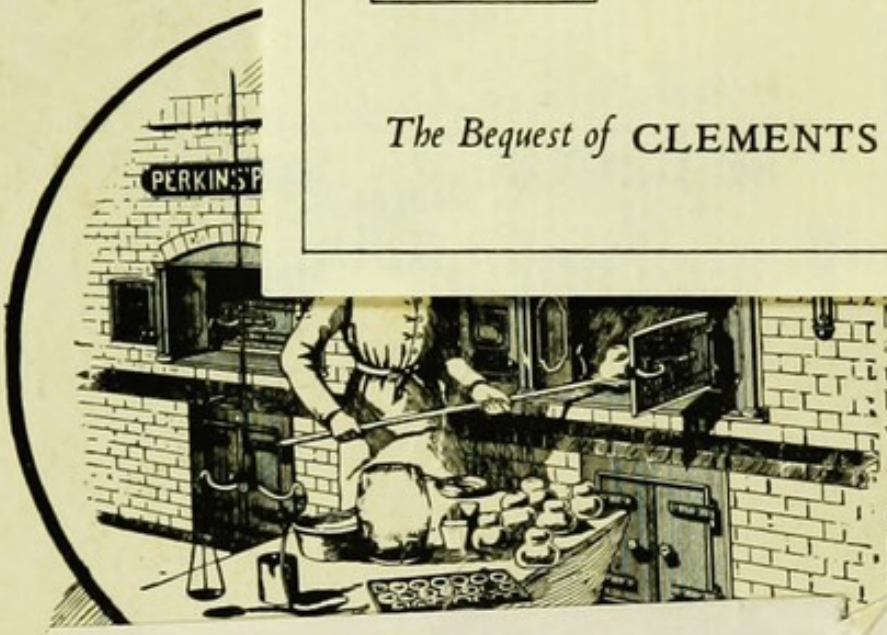

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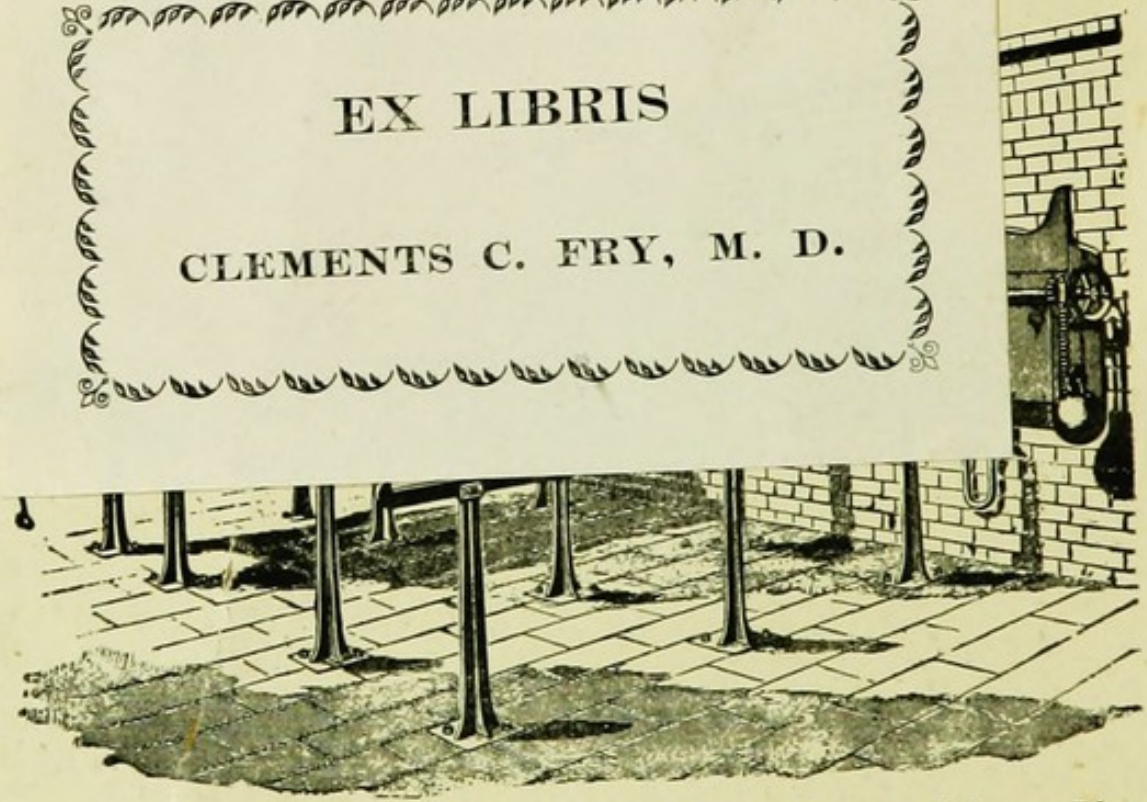

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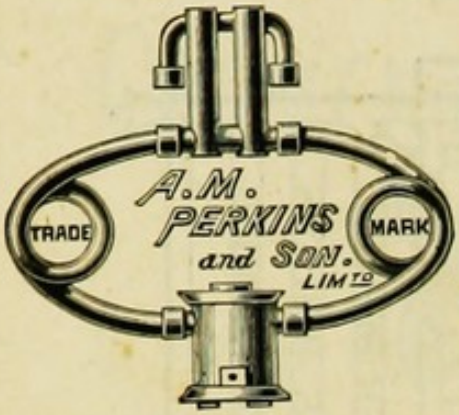

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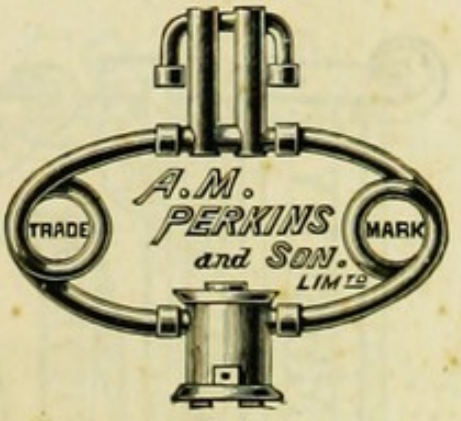

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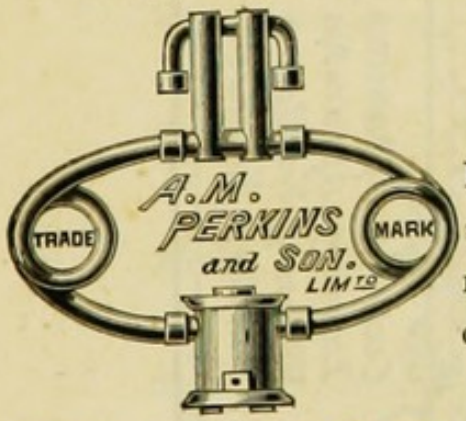

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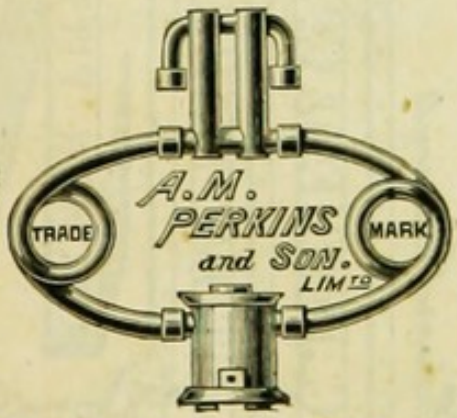

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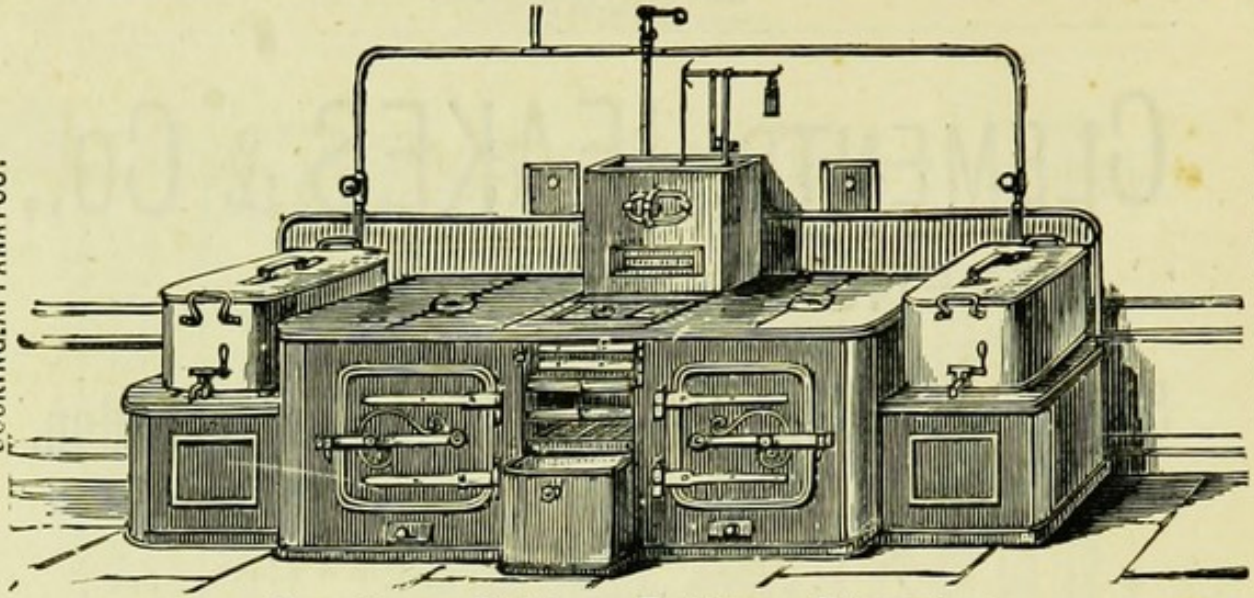

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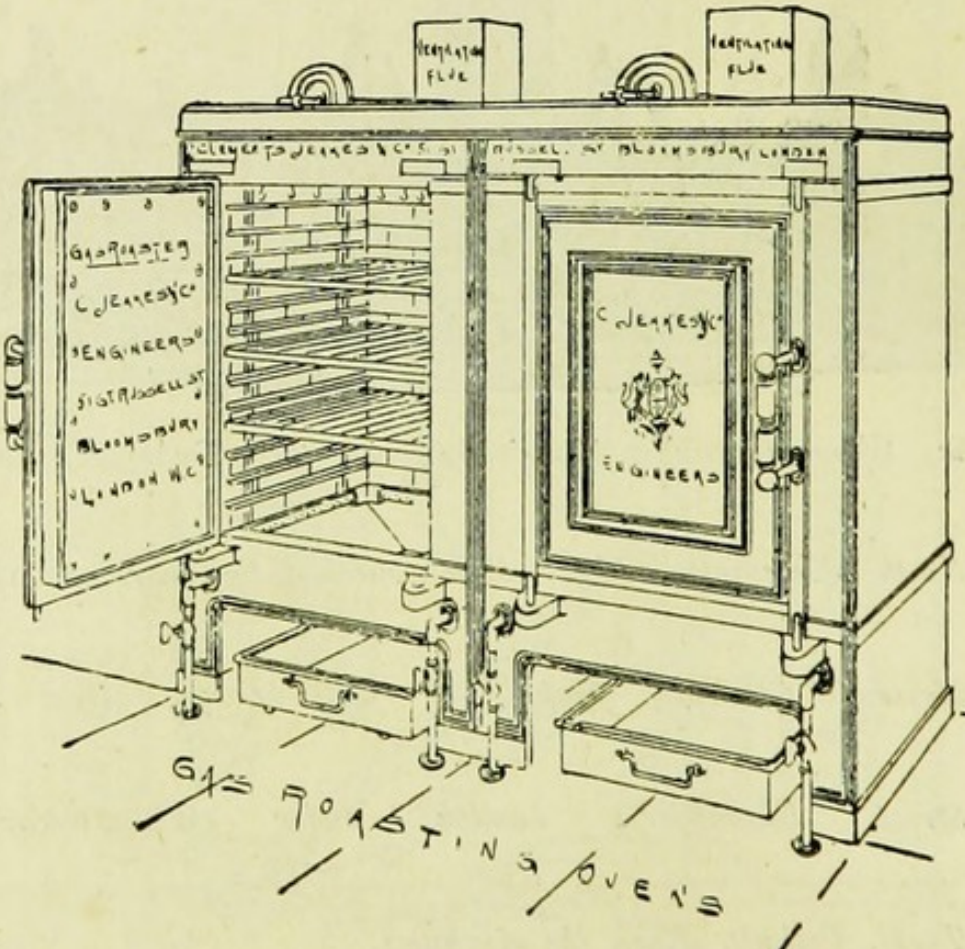

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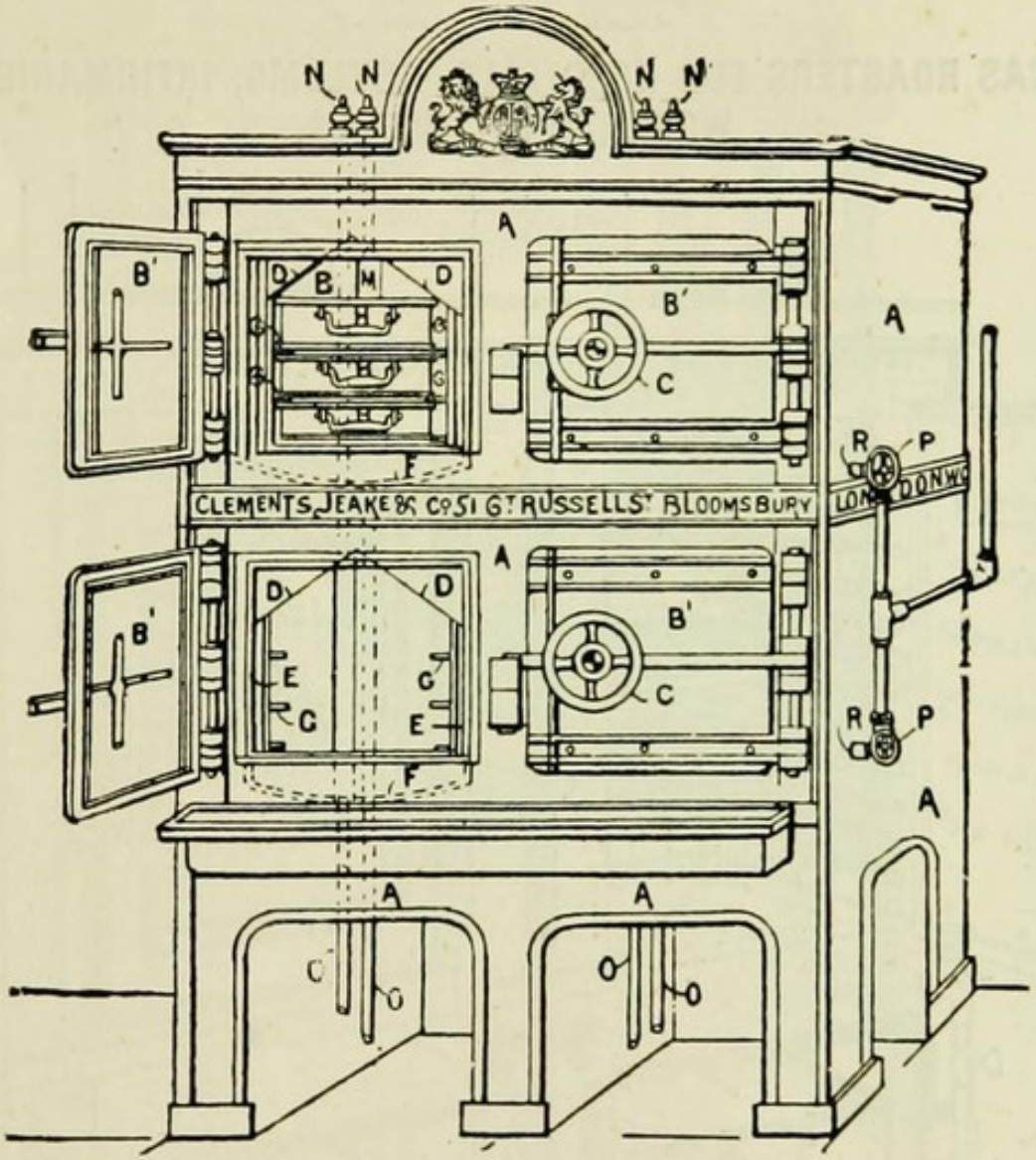

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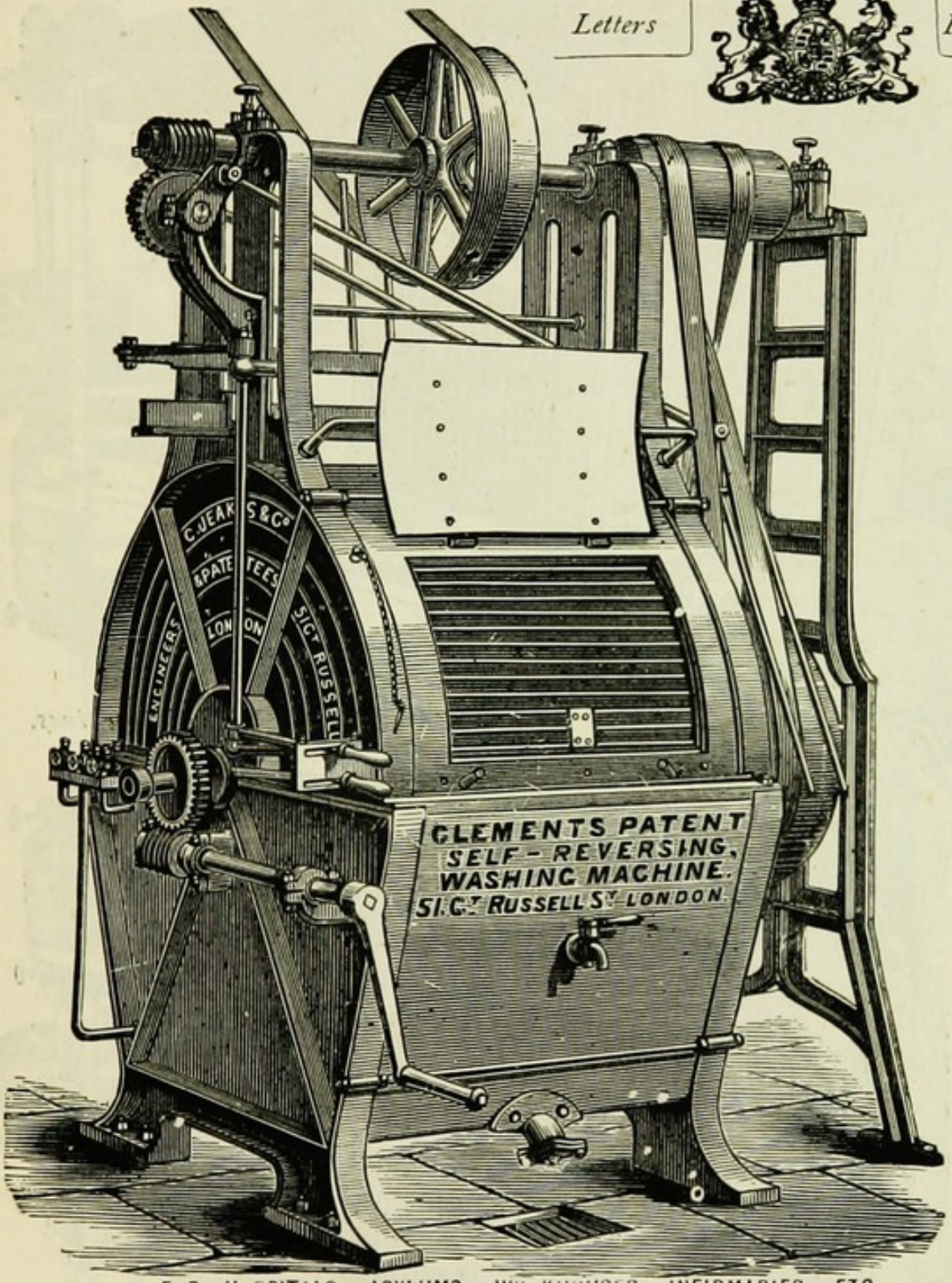

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The largest machine made, used singly or in pairs. Will wash cleaner more things in less time and at less cost than any other machine, without injury to the clothes. May be seen at work at the Herbert Hospital Laundry, Woolwich, where great saving is made, also at Netley Hospital, Southampton.

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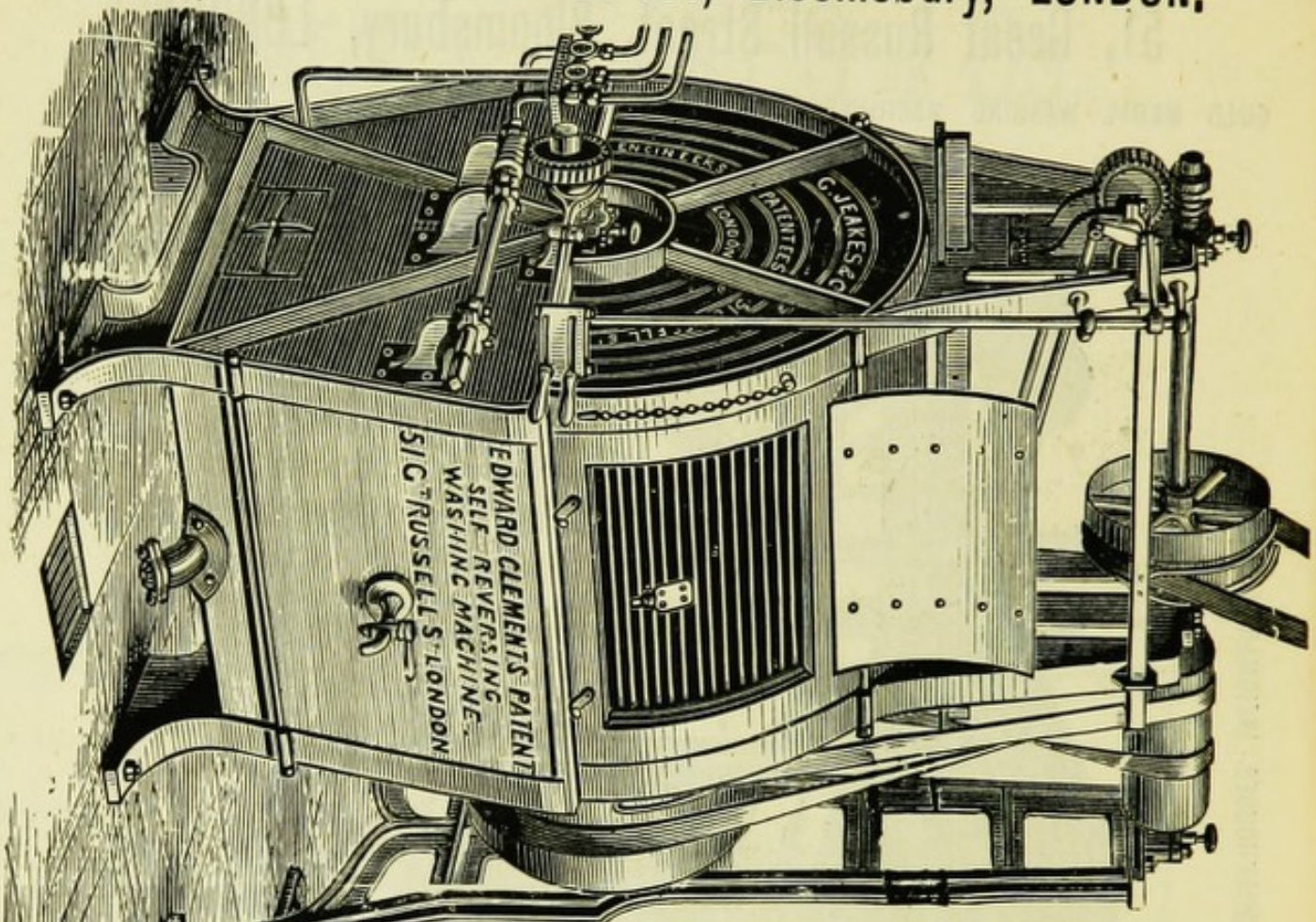
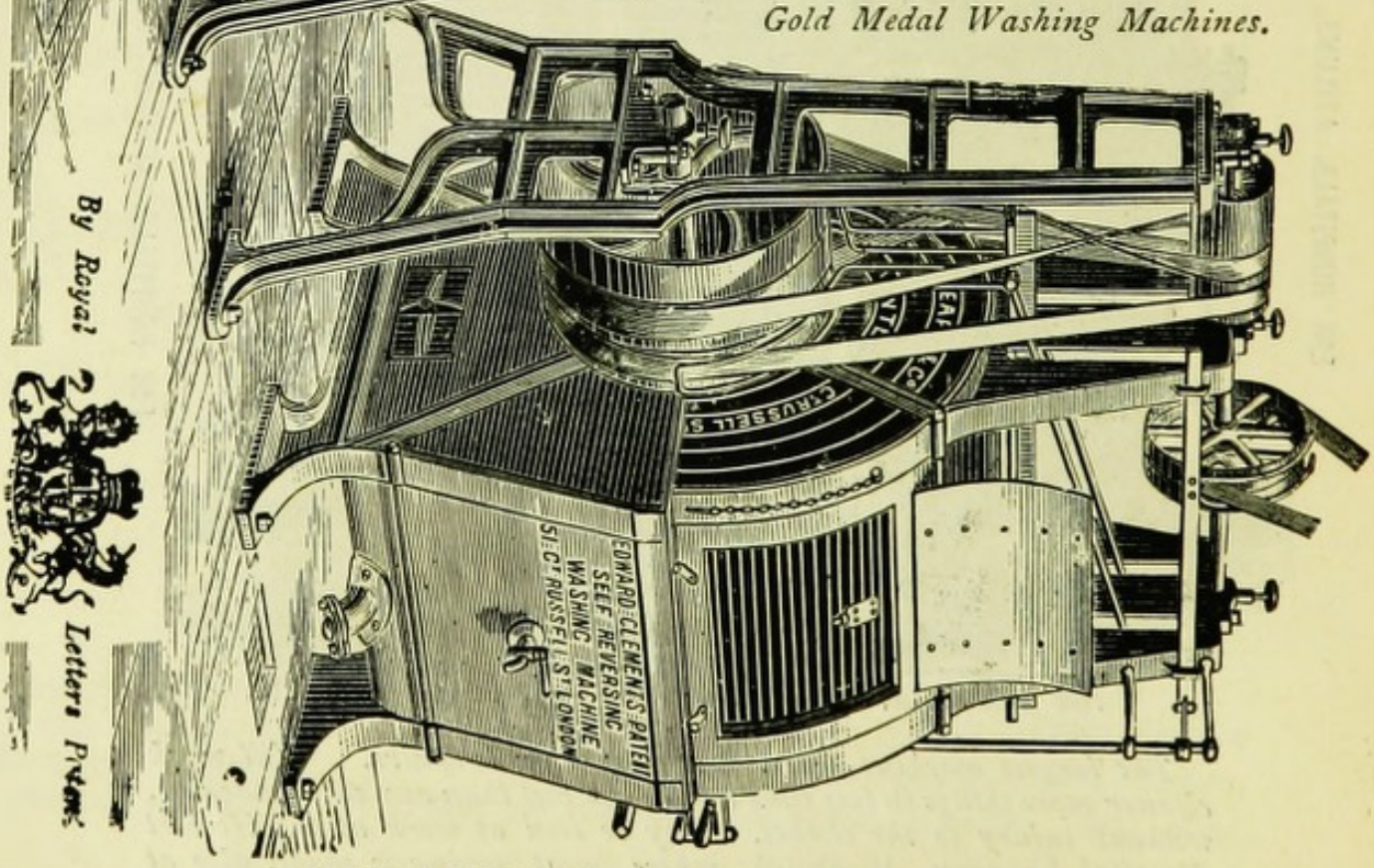


Gold Medal Washing Machines.



Gold Medal Washing Machines, 6 feet diameter.

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By Royal

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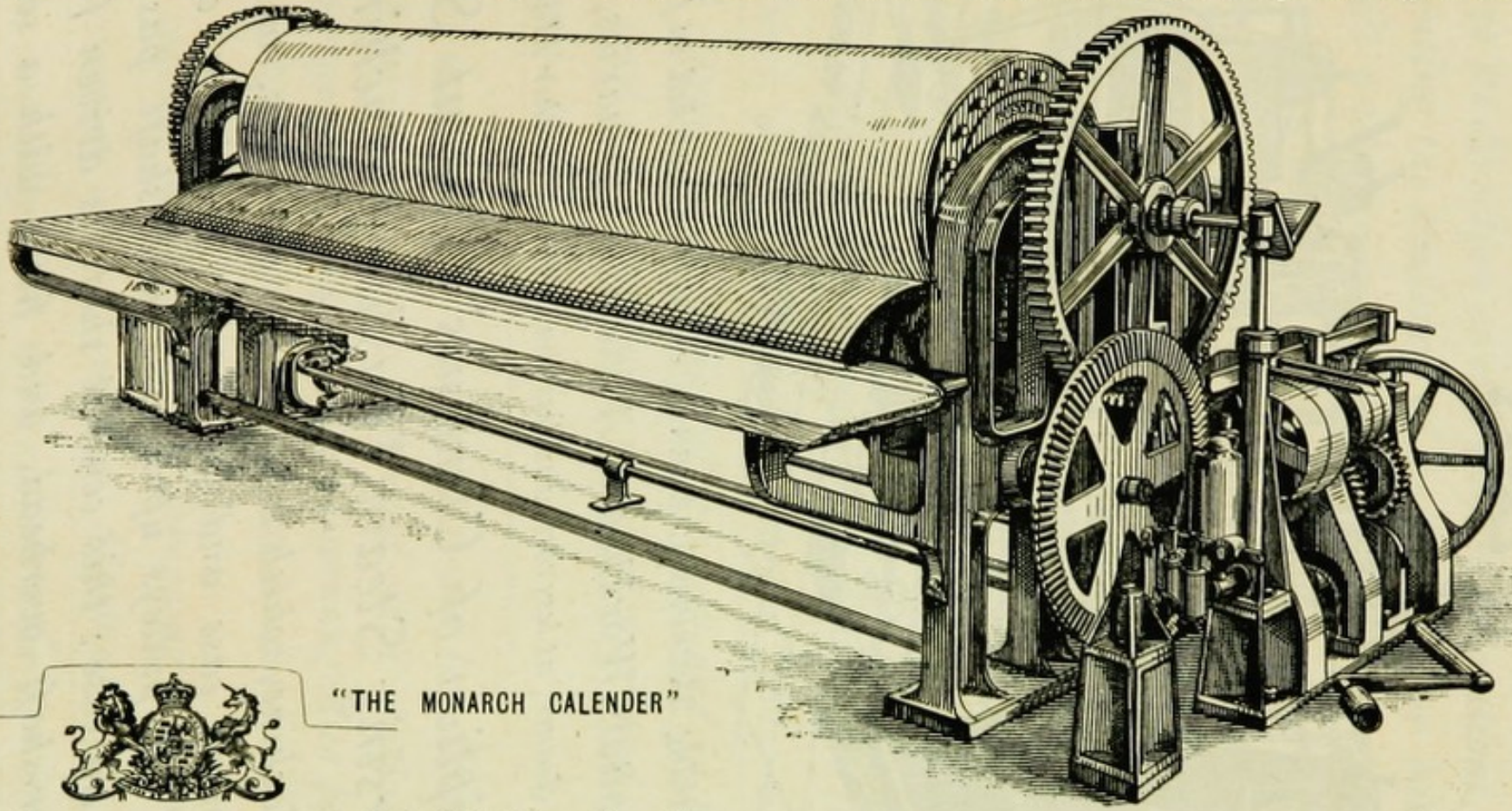
New Improved Ironing Machine. Steam Heated Roller, with a Steam Heated Bed, Roller 111 *in. long, the largest Machine made.*



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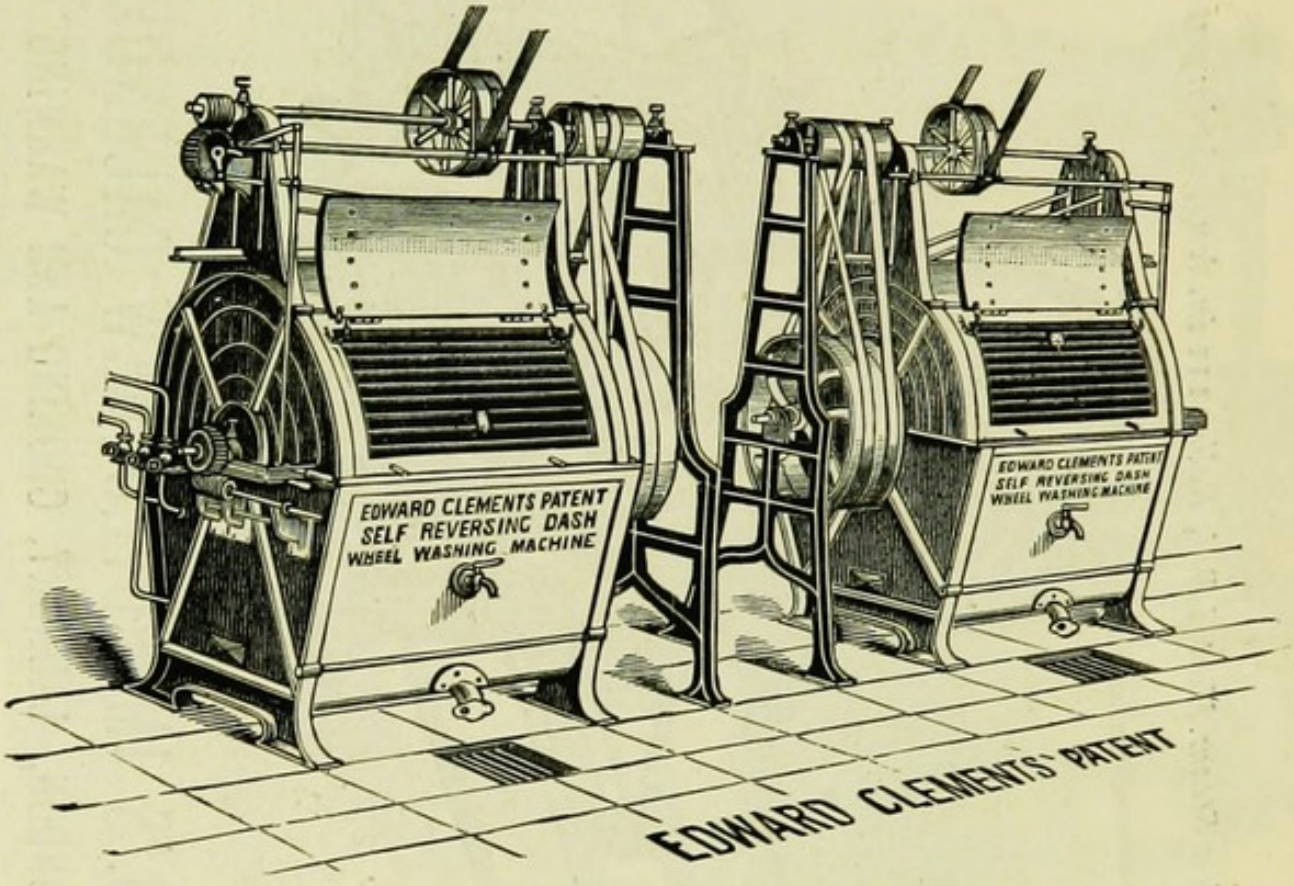

Steam Washing Machines (CLEMENTS' PATENT) *as worked in pairs.*

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Description of Clements' Patent Self Reversing Steam Washing Machine.

This Machine, which is 6 feet in diameter, consists of an outer case and an inner revolving cage, actuated by pulleys upon a centre shaft passing through the case; this central shaft is driven from a counter-shaft overhead, and fitted with a set of automatic striking gear, which by means of a crossed

and open strap causes the inner revolving drum to reverse its direction at every three revolutions, thereby preventing the tendency of rolling up or balling the fabrics undergoing cleansing. The revolving cage, for convenience, is divided into four separate compartments, and all the clothes in each compartment are passed through the washing solution at each revolution. An outer door in the case provides access to each of these compartments, and the lower part of the outer case is provided with an emptying valve for running off the waste solution.

This Machine is specially adapted for Hospitals, Asylums, Workhouses, Infirmaries, &c., and will wash cleaner more things at less cost and in less time than any other machine in existence, and without injury to the clothes.

Hot water, cold water, and steam is laid on to the Machine, which is also provided with special patent locking and striking gear, and arranged to be driven from a line of shafting doing other work.

A similar Machine to the foregoing is made 4 feet in diameter, also a smaller Machine still, which answers equally well, with rollers over for wringing

A similar Machine is also made, provided with a Vertical Steam Engine, attached to and being a part of itself, so that where no line of shafting exists, the Machine is provided with motive power of its own as an independent and self-contained Machine, and capable of driving a Wringing Machine or Mangle as well.

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THE

PLANNING OF LUNATIC ASYLUMS.

LONDON:
PRINTED BY DRAKE, DRIVER AND LEAVER, LIMITED,
ROSEBERY AVENUE, E.C.

THE

PLANNING OF LUNATIC ASYLUMS.

BY

GEORGE H. BIBBY, F.R.I.B.A.,

Architect.

Author of "ASYLUM CONSTRUCTION;"
"COUNTY LUNATIC ASYLUMS;"
"THE HOUSING OF PAUPER LUNATICS;"
"MODERN ASYLUMS FOR THE INSANE;"
"FACTORY CONSTRUCTION AND FACTORY ACTS," &c.

PUBLISHED BY
BRADLEY T. BATSFORD, 94, High Holborn, W.C.

1896.

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PREFACE.

It is interesting to note that both in England and in the principal countries of Europe during the past century, the prevailing architectural features of convents were adopted by the asylum builders of the time, as appropriate to institutions for the insane; and hence the construction of such hospitals as those of Bethlehem and St. Luke, and, as the result, the introduction of the corridor and cell system in our asylums generally, as well as in those of other nations.

Although a few of the transformed convents may be said to have fairly served the purpose of asylums, it is doubtless true of by far the greater proportion that they were most unfit receptacles for the insane. An opinion quickly gained strength (both in this country and upon the Continent), that an important condition of success is that the curable should be separated from the incurable insane. The intermingling of recent with incurable cases, and with epileptics, exerted an influence upon the former in the highest degree injurious. Apart from this, the two classes of insane require for their treatment and protection arrangements differing in many particulars, and, naturally, the area of the asylum would by such mingling become so occupied with incurables that it could no longer afford facilities for treatment or proper accommodation for curable or recent cases. In certain Continental asylums different departments of the same institution had long been set apart, the one for cases requiring active treatment, and the other for such as had become chronic; but another principle was later adopted both in England and abroad, where separated and special asylums were erected for the two classes of curable and incurable patients. Various reasons were assigned for this arrangement of special HOSPITALS *for treatment of curables and* ASYLUMS *for incurables. It was desired to bring into practice these new attempts at reform in asylum concerns (which were associated with much expense),*

at first only for those of the insane who were considered curable. New asylums were therefore built for that purpose; while the old buildings, which had been found quite inefficient for the carrying out of attempts at cure, were, with a few alterations, converted into asylums for incurables. It was soon found that the organisation of asylums for incurables would have to be in many particulars essentially different to hospitals for the treatment of recent cases, inasmuch as in the former case nearly all have to remain during their entire subsequent lives, while in the latter their residence would be probably more or less of a temporary nature.

Should a separate chronic patients' asylum be erected, it should not be a place quite retained for incurables, for although to be fitted up and designed for the reception of old chronic cases, yet the means of recovery ought still to be present, even though the hopes of recovery may be but very slight. But in chronic asylums patients do sometimes unexpectedly recover. Further than this, some authorities are of opinion that the quiet and well-behaved incurably insane may, often, without harm, be put to dwell amongst the recent and incurable cases. and some asylum officials have recognised in the presence of a stock of long-disciplined but incurable patients a beneficial and essentially curative element for the newly-admitted patients, and the system of mingling the incurable (of the quieter classes) with the curable has been adopted both in England and on the Continent with satisfactory results. A recent writer upon the subject of asylums maintains "that any reform of the present asylum system must find its chief development in the multiplication and, perhaps, the modification of the existing admission or reception wards. A rigid separation of the hospital for curable cases from the main asylum, the functions of which would be chiefly protective, would be a great error. Everyone with any knowledge of asylum management knows that the hope of discharge is the first great factor in rendering the insane amenable to discipline and treatment. The prospect of future liberty—no matter how distant—is the one bright ray which lightens the asylum gloom."

There are, then, two modes, by means of which the curable and incurable patients may be housed separately—in the first instance, in the detached blocks of buildings forming the ordinary large asylum; and, in the second instance, in a series of smaller asylums, each planned especially for either class of patients. The buildings for the smaller asylums would necessarily be far more costly in proportion, inasmuch

as it would be necessary to provide for each institution separate administration buildings, kitchens, laundries, &c., which, being upon a smaller scale, would be proportionately more expensive as regards not only the buildings, but the machinery and divided superintendences. These are amongst the disadvantages of asylums of limited extent, which, however, have much to be said in their favour as regards the facilities such buildings afford for the advantageous treatment of the patients, and in respect of the frequently higher percentage of recoveries resulting therefrom.

GEORGE H. BIBBY.

The Limes,
North End, Humpstead, N.W.,
1st August, 1896

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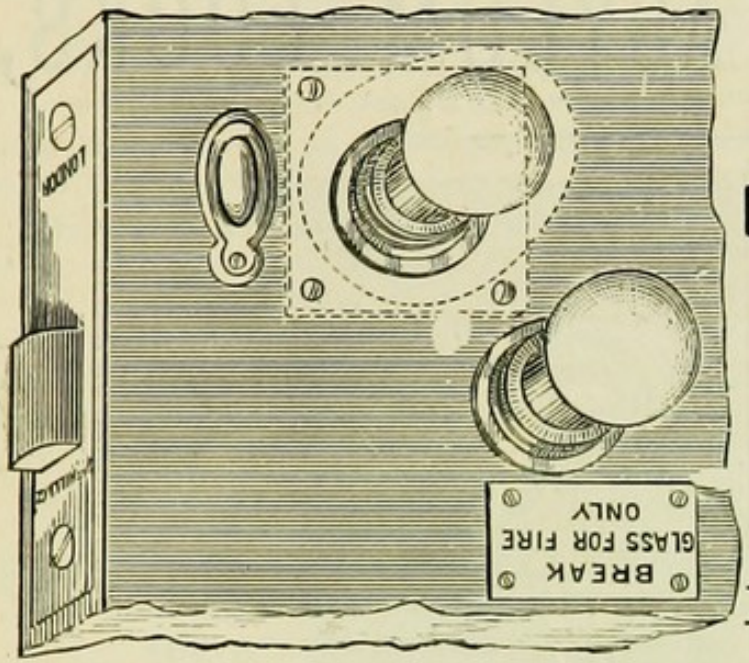

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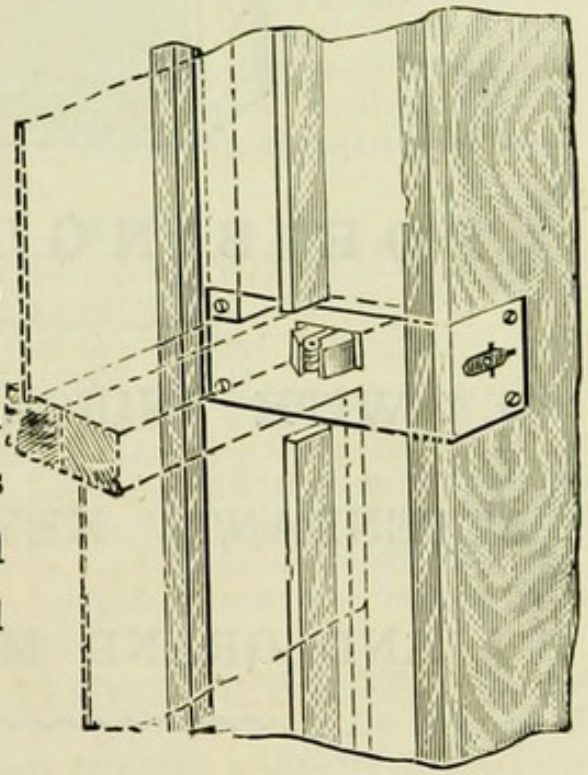

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THE

PLANNING OF LUNATIC ASYLUMS.

CHAPTER I.

INTRODUCTION.

THE conversion of private mansions into public asylums has perhaps been far more common on the Continent than in this country, and although of late years a few here have been successfully so converted,the system is one that has little to recommend it beyond reasons of economy ; but of the several kinds of accommodation set apart for the insane, that in connection with the buildings and administration of general hospitals on the Continent is said to have been by far the worst. Hospitals and asylums have practically been formed (in former years) as institutions under one roof in nearly all the principal countries of Europe ; it was most common in Italy, Spain, and Belgium, but was also found frequently in Germany and Russia, and more seldom in France ; it was to be seen at Verona, Padua, Rome, Ancona, Trieste, and other Italian cities ; at Seville and Saragossa in Spain ; at Berlin, Breslau, Brünn, Cologne, Danzig, Frankenthal, Gratz, and various other cities of Germany ; in the hospitals of St. Petersburg and Moscow, at Montpellier, Lyons, and elsewhere in France.

Until about thirty years ago the best Continental asylums are said to have existed at Auxerre, Marseilles, Quartre Mare (Rouen), Grenoble, Ghent, Meerenburg, Illenau, Halle in Saxon Prussia, Chamberry in Savoy, and Heppenheim in Hesse.

About thirty years ago the largest asylums on the Continent were the Salpêtrière with 1,431 female, and the Bicêtre with 980 male lunatics ; the Maréville, near Nancy, with 1,200 inmates ; the Vienna asylum for 800 ; and asylums at Lyons, Lemberg, Marseilles, and Stephansfeld, provided each for about 700 patients ; but these were examples of Continental asylums of unusual magnitude. Even at that period it was considered that the numbers of the insane brought together under one roof was excessive in many asylums, and it appeared to be the opinion of the Continental experts of the day that asylums should not be for more than 500 patients ; but the usual practice was to build them for a smaller number.

Whatever may be the differences between the buildings of English and Continental asylums at the present time, there is evidence to show that in former times the arrangement and construction of asylum buildings was to a considerable degree influenced by the difference in the arrangement for the supervision of the institutions. The Continental asylum architect had an entirely opposite principle to provide for to that which was required of the English architect.

On the Continent, the necessity of a medical staff in the greater proportion to the number of inmates was

earlier recognised, and the value of observation wards and of individual treatment and supervision was well appreciated; even in small asylums of 200 inmates the physician-in-chief had one or two medical assistants.

In England the medical superintendent of most asylums had long been hindered or prevented from giving that direct observation to his patients, and that individual attention to his duties, so necessary for the patient's welfare, by reason of many occupations forced upon him, in the form of reports, statistics, &c., many of which might be performed by persons other than medical men.

As an example of an asylum arranged upon a bad system may be named one at Caen, which belonged to a religious sisterhood. This was a singular instance of toleration in France—a circumstance attributable to the unwillingness of the governments to interfere with privileges accorded in a previous generation to a religious sisterhood, although those privileges had become incompatible with the welfare and happiness of those intrusted in their charge. Its patients were simply passed over to the nuns, who assumed all authority in the organisation and management of the inmates, exercised severe restraint, seclusion and penance at their discretion, and opposed improvements, which they could not understand, as antagonistic to the prejudices of the period. They supplied medical treatment by engaging the services of a physician, resident at some distance from the asylum, to prescribe for the sick.

It may be gathered from this that the buildings were unfit for an asylum, that restraint was more practised then than now, that the means of recreation and employment were very limited, and this asylum at Caen was not only used for the care of the insane, but is said to have had, under the same roof, a large boarding school for girls!

Of all the improvements in the designing of asylums, none are so desirable as those which provide for buildings in which it is practicable for the officials to give the patients a maximum of individual attention. Large wards, in either large or small asylums, are necessarily the most economical, but, at the same time, the least efficient means for the housing of the insane. By reducing the number of inmates of the wards, the troubles occasioned by the noisy or violent necessarily discomfort a reduced number of other patients; if a patient be of filthy or objectionable habits, it is obviously desirable that he should be seen as little as may be by others than the nurses or attendants.

The question as to whether the asylums and wards should be large must continue to be purely a financial matter as regards institutions for the poorest insane, and it is to be regretted that, in spite of the enormous sums expended upon modern asylums, it should remain impossible for the patients of the poorer classes to receive that careful *individual* attention which could only be advantageously given in rooms of moderate area, and by a sufficient number of officials.

The question as to how far it may be desirable for

public authorities to take charge of all insane persons, both rich and poor, is one that is not unlikely to attract much attention, and there would appear to be no reason why, in such an event, an asylum planned upon a combination of the villa with other systems should not be adopted. For instance, a great public authority possessing a large estate in connection with an asylum might possibly, with advantage to all parties, consider the advisability of providing accommodation in one set of villas for the insane of the wealthy classes; within the same grounds another set of buildings might be erected for the use of those patients whose friends might be able to pay but a moderate sum; a third set of residences being for the housing of those patients with very limited means, and only able to pay temporarily a small sum for the cost of their care and maintenance, while those absolutely dependent upon the public charity would be housed according to their degree and with the requirements of their station. Each of these four classes would reside in separate buildings, would be unassociated with each other, and have their special attendants, nurses, and surroundings in proportion to their condition, and each department having its special officials and attendants, who would be under the control of a chief medical superintendent, who would visit all the houses, and be governor of the whole community, both rich and poor, and who in fact, would require to be a specialist of ability, whose duty would be to advise with his junior officers in charge of each class in all cases of difficulty.

The houses for the paying patients would be furnished and regulated with that degree of luxury and comfort to which the occupants had been accustomed prior to their admission, and any profit that might arise could be properly applied for reducing the cost to the public of the housing and care of those patients contributing little or nothing towards their board, lodging and care.

Being in the hands of a public authority, the villas for the wealthy insane would be occupied by patients who, while paying a liberal amount, would not be subject to that risk of unduly lengthy detention which might occasionally—but, probably, seldom—arise by reason of a temptation not to part with a remunerative patient until the latest possible moment. The safeguards against such a state of matters at the present, although probably considerable, are not so great as to render an additional precaution unwarrantable.

In deciding as to the size of a new asylum, the extent to which individuality of the treatment of the patients is proposed to be carried would considerably influence the arrangements of the architect, and in the matter of cost an eminent authority states: "About the smaller weekly cost per patient in large asylums there can be no doubt. Taking ten of the largest and ten of the smallest asylums from various parts of the country, the former with an average of 1,600 patients, the latter with an average of 360, the difference in favour of the former is nearly eight per cent. If we examine the capital outlay on land and buildings, we

find that the cost per patient of the small asylums is five per cent. greater than that of large asylums. These differences are considerable, and in rate-supported institutions, not only cannot they be disregarded, but it would require very cogent reasons to outweigh them." It will, therefore, be perceived that amongst the leading reasons for the erection of large asylums (for so many as 2,000 patients each) may be included reduced cost of the buildings and maintenance of the patients, and certain advantages of the equipment more economically obtained for large than for small asylums, and the facilities for the employment of working patients upon more varied occupations than otherwise would be profitable or expedient. The disadvantages of large asylums and large wards include difficulties of the officials connected with obtaining a complete knowledge of the peculiarities, dangers, wishes, and constantly-changing conditions of the patients, both as regards their bodily and mental health; for even if the numbers of attendants and nurses be correspondingly increased with the numbers of patients kept in large wards, yet the circumstance of mixing many patients in different conditions of health and temper cannot but tend to militate against the prospects of those speedy recoveries that might otherwise be obtained, especially by patients who require quiet and careful observation and treatment in apartments of moderate area to perfect their restoration to mental health.

In the asylum at Munich, there is upon each floor,

a very large number of apartments, none of unduly large area, and the means for the separation and classification of patients compare favourably with those of many English asylums which have been erected with large wards, now filled with numerous patients, all liable to be excited or disturbed by a turbulent one. But there can be no doubt that the constantly increasing numbers of the insane and considerations of cost will continue to influence architects and asylum-building committees to increase the size of asylums, and to discourage the erection of those institutions of moderate or small size, which, upon the whole, would be best adapted to the needs of the insane, and most likely to contribute to their recovery.

Another point of interest to the asylum architects is that, if an asylum be planned to receive, say 2,000 patients, and if 300 new cases are admitted every year, that the resulting labour and responsibilities of the officials would be less in many respects than those existing at an asylum for 1,000 patients where 500 new patients are admitted annually ; for while the old cases can be cared for without great trouble, the new, unknown, and possibly highly dangerous patients have to be carefully studied and watched, and it is at the earlier stages of insanity that the prospects of recovery are more favourable. Those patients whose cases are hopeless, and who have become permanent residents, may as a rule be both housed and cared for at a less cost to the community.

One of the disadvantages of a large asylum is, that

being usually for the patients of a considerable district, their friends residing at a distance have less favourable opportunities for visiting their relatives, especially if of the poorer classes of the population, the time and cost of the journey being a deterrent. Also the attendants and nurses are in like manner at a similar disadvantage when taking advantage of the leave of absence periodically allowed to them; a large asylum also requires a large estate, and large estates are frequently only to be economically obtained at very inconvenient distances from railway stations.

The proposed erection of an asylum for the insane near to, or in, the best suburbs of a city has occasionally been greatly objected to by the suburban population, as would have been a fever or smallpox hospital; but there are cases where the erection of an asylum, even of great size, might become a permanent advantage to such a district. For instance, in many cities there may be large public parks, on one or more sides of which estates may exist, "ripe" for speculative and other builders, and whose operations might destroy all the beauty and picturesque surroundings of the park.

If a site be purchased, say, of three or four hundred acres, for a large asylum *adjoining* a public park, much of the land (especially at the boundaries) might be laid out in gardens for the use of the patients, and the planting of trees and shrubs over so large an estate would necessarily afford a highly-desirable adjunct to the public park, which might otherwise be spoiled by

the erection on adjoining land of closely built-up streets.

A striking instance of the advantage that might result from the erection of a large asylum on such a site is suggested by the position of that portion of the Hampstead Heath which lies between North End and the Spaniards, and which preserves, as yet, much of its natural beauty. Beyond the boundary of the Heath at this point there is at present a great extent of open fields possessing all that is desirable for the site of a large asylum. If this could be secured the estate might become a permanent 'buffer" against objectionable building operations upon open fields now adjoining the most rural part of Hampstead Heath. Amongst the advantages of this site are a sandy subsoil, an inclination of the land towards the south, its secluded position from public roads, open prospects, and such a moderate distance from London as would enable the patients' friends and attendants to obtain easy access. The question of obtaining a site for yet another asylum for London is, or has been lately, under discussion; but it is improbable that there can be any site so near to London with so many advantages as the one beyond Hampstead Heath, and the chief difficulty would probably be the cost of the land; but if the permanent benefit to the Heath be taken into account, this might not be considered to be a serious difficulty.

There are twenty-two district asylums in Ireland; these correspond with the county lunatic asylums in

England as regards the class for whom they are intended, and contain an insane population of a little more than 12,000 persons, these being about equal to the number of patients directly provided for by the County Council of London in its five asylums, but one-third less than the total number of lunatics chargeable to the parishes and unions within the London district. The number of patients in each Irish asylum is much less than in London institutions, and varies from 326 patients at the Kilkenny Asylum to 1,092 patients at the Cork Asylum, and to 1,467 at the Richmond Asylum near Dublin, the average number in each of the twenty-two asylums being about 500 patients; therefore, five district asylums, of the size of that at Claybury, near Woodford, would be capable of containing the whole of the Irish lunatics (exclusive of the lunatics and imbeciles in workhouses both in London and in Ireland).

From the architect's point of view it will be of interest to note that the increase of lunacy in Ireland has been such that at least six new asylums should have been erected there since the year 1882 (at 500 patients per asylum), and that since 1882 the estimated population of Ireland has dwindled from about five millions to rather more than four millions.

During the same period the population of London has greatly increased, with an increase of lunatics also, and ten or twelve new asylums (if for only 500 patients as in Ireland) should have been erected, or, say, about five asylums of the size of that at Claybury,

which, although only erected for 2,000 patients, was found to be sufficiently spacious (according to official regulations) to contain the 2,320 patients now housed therein.

The recovery rate at the Claybury Asylum has already become a noticeable feature of this, the last erected asylum for the County of London, and doubtless one of the reasons for this is that the arrangements and brightness of the institution have a beneficial effect, not only upon the patients, but upon the officials and attendants, who are thus better able to bear up against the frequently arduous duties expected of them and the depressing effect of contact with certain classes of patients. In a new asylum many inexperienced attendants have frequently to be engaged, and hence the resignations of large numbers of young persons who find themselves unsuitable for the work, or are discharged as being incompetent to take charge of the patients.

The Claybury Asylum, although an enormous institution, is yet so well planned that the numerous erections of which it is composed are not crowded, and there are ample courtyards and spaces which provide for the free access of light and air at every point; and one great advantage of the arrangement is that the wards are of moderate size and numerous, thus securing the subdivision of the patients to a greater extent than in those asylums where the wards are of great size, and increasing the opportunities for the recovery of many classes of patients. There is in this

asylum a remarkably fine recreation hall, with a stage for concerts and theatricals; here the windows are in stained glass, representing the armorial bearings of the numerous London parishes concerned with the purposes of the asylum.

The magnitude of this asylum is so great that the main buildings alone cover 20 acres of the 270 acres forming the estate belonging to it; 27 millions of bricks, 12 acres of slating, and 13 acres of flooring were required for its construction; there are 2,000 doors, 4,700 windows, 11 miles of sewerage, and 22 miles of pipes, &c.. The site is considerably higher than most other parts of Essex, and I have been surprised to obtain distinct views of the asylum from the neighbourhood of Havering-atte-Bower, Toothill, near Ongar, and other distant localities. The estate is remarkably beautiful and exceedingly well wooded; in fact, it was rather too much so, and it became necessary to make some clearings of timber for the purpose of obtaining light, air, and prospect for the inmates of the institution.

The site is upon, or adjacent to, land forming part of the ancient forest of Hainault, and the clay soil upon which the asylum is erected is of a somewhat spongy and treacherous nature. Being very considerably elevated above the surrounding district, the necessity for securing an ample water supply for all contingencies has obviously required careful consideration. In connection with some asylum schemes the architects have under such circumstances placed a

water-tower (frequently near the centre of the buildings), supplied either from a waterworks company's main, or by pumps from other available sources. In these towers the tanks are placed as high as conveniently may be arranged, and it has occasionally been contrived that the *lower* portion of the tank should be reserved for fire-hydrants only, no supply for any other purpose being taken except from a point 4ft. or 5ft. above the bottom of the tank. Thus, should the supply for domestic purposes at any time fail, it would at once be indicated to the asylum engineers that no more water remained in the tanks than might be required for the extinction of an outbreak by fire. By this means the fire-pipes and hydrants would always be charged. Not unfrequently a centre shaft to convey smoke from the boiler furnaces is arranged; but it would appear to be desirable that the water tower and chimney shaft should be as widely apart as can be arranged, or otherwise, during certain directions of the wind, smoke and gases might be forced (through the ventilators) upon the surface of the water in the tanks. Much smoke may remain in the shelter of the shaft, and be drawn in above the water in a direction opposite to the course of the wind, partly by reason of a somewhat higher temperature of the atmosphere within the water tower, and partly as a result of the ever-varying directions of the wind.

In no other class of buildings than county or district asylums can be found so great a variation in the number of cubic feet considered by architects as necessary for

buildings to contain a given number of patients. For instance, in a limited competition of architects for an asylum for 2,000 patients, architect A. gave a schedule of cubic contents amounting to about sixteen millions of cubic feet, while Architect B. gave a schedule with a total of less than nine millions. Architect A. stated that he estimated the total cost of this asylum for 2,000 patients at £152 11s. 9d. per patient, or £305,939 1s. 8½d.; but architect B. considered that the institution might be erected for £143 per patient, and that the cost altogether would be £290,000. Both these architects have had an exceptionally great experience upon large asylum works, therefore the above variations were subjects for surprise. The asylum church designed by architect A. was estimated to cost £3,700, while the church planned for this asylum by architect B. (who was lower in his estimates in most other respects) was no less than £8,500. As a matter of fact, had the estimates of architects A. and B. been added together, the total would not have been *less* than the ascertained actual cost. Another curious point in reference to these estimates is, that architect A. cubed out the various asylum buildings at from 3½d. to 6d. per cubic foot, while architect B. gave from 4½d. to 8d. as his cubing prices, and yet the total estimate of the latter was lower than that of the former.

These considerable variations in the estimated cost and cubic contents of buildings intended for corresponding numbers of patients and attendants are by no

means confined to recent periods ; for instance, there was some years ago a competition between specialist architects who sent in plans for an asylum for pauper lunatics for the county of Northampton, when the then architects to the Commissioners in Lunacy reported in reference to a scheme (submitted by the late Mr. Robert Griffiths, county surveyor of Stafford), subsequently carried into execution, that they "found it to be the most compact and convenient in disposition, affording the greatest facility for independent acc ss and circulation throughout the whole group, and presenting the largest surface to those portions of the building occupied by patients to the most favourable aspect and to the most uninterrupted views of the adjacent country. This design does not attempt any ambitious or costly architectural character out of keeping with the purposes for which the building is intended : it avoids unnecessary expense in its construction ; the height or pitch of the roofs is moderate, sufficient for all purposes of protection or durability ; whereas if, for the mere sake of effect, it were carried higher, the cost of timbering and slating would be proportionately greater."

The then architects to the Commissioners stated that Mr. Griffiths had evidently in this design availed himself of the experience he had gained elsewhere, and that he estimated the cost of the building at 5d. per cubic foot, *complete*, and also expressed their belief that this estimate, although based on a higher rate per cubic foot than that of any of the other competitors,

would not be found more than sufficient for the really substantial and complete finishing of this asylum fit for the occupation of the patients, exclusive of furniture; the prices at which the competitors estimated the cost of the proposed asylum at Northampton were 3½d., 4d., 4½d, and 5d., (Mr. Griffiths alone assuming the last price), the cubic contents varying from 1,212,851 ft. to 2,781,491 ft., or an average of 2,172,400ft., Mr. Griffiths's quantity being only 2,038,376 ft., or somewhat below the average.

From the report above referred to it was clearly expressed that the competitors were of known ability and experience in buildings intended for the care of the insane, and that much ingenuity, care, and skill had been shown in all the designs sent in, and it may be assumed, therefore, that the differences in cubic contents and prices per cube foot can be accounted for by the different competitors entertaining, on the one hand, too liberal views as to what is requisite for pauper lunatics, or, on the other hand, they may have unduly considered what may, in their opinion, have been best for the ratepayers' interests.

The late Mr. Robert Griffiths had for about 25 years (from 1860) made asylum construction his chief study, and I believe that I am correct in stating that he had as much experience in the building and alterations of county asylums as any other member of his profession. The Cheshire Asylum, which by competent authorities was at the time pronounced to be the best in the kingdom, is planned on the block or pavilion system,

consisting of a series of separate asylums connected by ground-floor corridors and single rooms. No doubt this arrangement is good, but the cost is very great, and the corridors, as in the echelon system, unduly long. Mr. Griffiths, in his design for the Claybury Asylum, combined the block or pavilion with the corridor system, by which he claimed that the cost would be very materially reduced, and the facilities for working the asylum increased by proper classification, sub-division, and general arrangement.

He also built the asylum for the county and city of Hereford, the plans for which were at the time considered so excellent that they were published by order of the Commissioners in Lunacy; he also erected the asylum for the county of Northampton, as a result of the competition with other specialists, and was engaged upon alterations and additions at other asylums. The remuneration he received as a result of his extensive asylum practice appears to have been, to a considerable extent, expended upon the purchase of pictures and other works of art by the leading artists of the day, and at the time of his death (some seven or eight years since) he possessed a collection which had, I believe, cost him something near to £80,000, and which were partly housed in a kind of drawing-room gallery connected with his residence by a short corridor; and I well recollect Mr. Griffiths directing my attention to two or three pictures which had, he said, *cost him more than the whole amount of the architect's commission paid to him in respect of a large asylum*, and saying

that if he won a then pending asylum competition, that the architect's commission (not less than £15,000) would possibly be similarly disposed of.

That a few yards of painted canvas, however rare and beautiful, should be considered as an equivalent for the labours of a skilled architect and engineer during a period of four or five years (when united with the varied responsibilities and anxieties of a great contract), cannot but offer a theme for thoughtful consideration both for artist and architect, to whatever eminence either may have attained; but in these days wealth and New Year's honours more frequently fall to the lot of the great artist than to the eminent architect.

Probably architects of asylums might be better able to make advances and improvements in asylum planning were they not somewhat hampered by the restrictions of the Commissioners in Lunacy.

It has been proposed that the Lunacy Commission should be abolished, and a recent writer states: "As at present constituted, it is absolutely inert and inadequate; the public has been so completely misinformed upon this subject, has been lulled to such deep sleep by pretentious blue-books, that it will refuse to believe that the Lunacy Commission is ridiculously inadequate to fulfil the purpose for which it was designed, and is a monstrous anomaly in these days of common-sense legislation and liberal decentralisation." Again: the same writer says: "It is known to everyone interested in asylums that the Commissioners have about a dozen

'fads' in common, and each has one or two of his own, and all that is necessary is to play up to these. These fads appear in every report as recommendations, and are repeated in some reports year after year." In place of the existing system, it has been proposed that the country should be divided into districts, in each of which inspectors should reside, and that there should be medical men in such numbers that they may be able to obtain a personal knowledge of every lunatic in their district, and that the present Commissioners being disestablished, the funds now appropriated for their support be applied to the payment of the new district inspectors.

Under such a scheme a surveyor of asylums would be required for each district, or group of districts, whose duties would include the examination and approval of all plans for new asylums, and who might either devote the whole of his time to such work, or, with some restrictions, be allowed private practice. The existing arrangements are almost hopelessly rigid, and appear to militate against asylum improvements medically, legally, and architecturally.

Perhaps few circumstances in connection with asylum competitions are more surprising to each competitor (excepting, perhaps, the decision excluding his name from amongst those of the authors of selected designs) than the excessive variations in the amounts offered as premiums—or "prizes," as these are described, and evidently considered, by some of the promoters of new asylum works—some building committees offering

sums of £300, while others only promise £30, for sets of plans which would in each case involve an equal expenditure of skill, time, and money upon the part of the competing architect.

The first item is usually the deposit of a sum of from one to five guineas to the promoters of the proposed asylum, upon the receipt of the conditions of the competition and the plan of the site, but returnable, as a rule, only upon the receipt by the promoters of a set of *bona-fide* plans. Surely this is not quite fair to the architects proposing to compete, inasmuch as the latter may, upon examination of the conditions supplied, be justly of opinion that the requirements of the committee and the regulations imposed are impracticable or unfair. In some recent competitions the committee have, upon their attention being directed to the matter, met this difficulty by agreeing to refund the deposit, should any would-be competitor return the copy of the conditions and the plan of the site within a week or so of their receipt, and with an intimation that the same were unacceptable.

A further trouble and expense is that entailed by a visit to the site of the proposed asylum, which sometimes necessitates a journey of two or three hundred miles or more; but after many such expeditions I have never found them unnecessary, for many asylums being very large buildings, and upon considerable estates, full inquiries can only be effectively made by a personal inspection of the surrounding district, and with the view of obtaining that correct impression of

the surroundings and district that can only be secured by the eye.

For the preparation of a set of competitive designs for an asylum of average size a period of from three to four months is frequently allowed, and is not more than necessary, especially as such work frequently quite disorganises an architect's ordinary practice and routine, and usually occupies a large proportion of the energy of his whole staff for a considerable time, and at much expense, to which must be added the cost of mounting the plans frequently upon exceptionally large strainers, and of printing reports, &c., and the wear-and-tear inevitably incurred by the necessity of nightwork during the later stages. Upon the whole, therefore, the three premiums, as usually offered, afford a small return for the trouble and expense incurred; yet (unless the competing architect obtains the commission) the premiums in substitution can seldom be regarded as financial "prizes."

Schemes for the building of new asylums or the enlargement of existing ones are in active progress throughout the country, but certainly not to anything like the extent that is requisite, and as overcrowding has recently been reported in thirty or forty county and borough asylums, it is surprising that the necessity for open asylum competitions has not more frequently occurred; during the past few years these have shown a tendency to increase, as for the asylums at Newcastle-on-Tyne, Cheddleton, Denbigh, Warrington, Dublin, and elsewhere, all of which were thrown open to competition.

No less than twenty county asylums in England and Wales, and many others in Ireland and Scotland, have recently been adversely reported upon as regards the insanitary condition of the buildings, in some instances, no doubt, a result of overcrowding. This will not be a matter of surprise if it be remembered that on the 1st of January, 1895, there were 2,000 more insane persons in England and Wales than during the previous year, and warnings have been issued to the authorities by the Commissioners in Lunacy that the demand for pauper lunatic accommodation is urgent, and that they "fear that troubles are ahead in that direction." Further than this, the following county and borough asylums were, at the date of their last report (June 20, 1895), still without proper detached isolation hospitals for fever and infectious cases requiring to be removed from the main buildings—namely, Cambridgeshire, Ely and Cambridge, Derbyshire, Somerset and Bath, Carmarthen, Cornwall, Durham, Leicestershire, Lincolnshire, Newcastle-on-Tyne, Notts, Norwich, Salop, Suffolk, Worcestershire, Bristol, Birmingham (Winson Green), Birmingham (Rubery), Exeter, Hull, and Plymouth.

Buildings are also required to a much greater extent in connection with workhouses for the reception or retention of harmless insane persons who could therein have all the attention and care they require, and at a reduced cost, instead of crowding out from asylums, as at present, cases in which asylum treatment is almost essential to recovery.

An asylum competition, open to all architects, is undoubtedly the most unsatisfactory method for obtaining preliminary plans and improved ideas for the erection of additional institutions; but from various causes only a very limited number of architects usually take part in them, and of those who do respond, a fair proportion depend, as regards the plans, upon architectural and medical assistance outside their own offices; a common arrangement, at all events with regard to limited competitions, being to pay a stipulated sum to a specialist, who would, in the event of success, take a further remuneration, either in the form of a commission or as a recipient of the whole or a portion of the premiums, but usually with the distinct understanding that the specialist's name must not be disclosed.

The competition plans for an asylum are frequently prepared to a scale of 16ft. or 20ft. to an inch, and these are probably the most convenient scales that could be adopted for the purpose, for when, as is not unfrequently the case, the buildings are spread over an area 1,500ft. in length, by 400ft. in width, the strainers upon which the plans have to be mounted must be of large size—say 10ft. by 4ft. 6in., but sometimes very much larger. In such cases it is advisable to draw out all the various plans of all the blocks, and to cut them in outline with a sharp knife. The long lines of corridors would then be set out on the surface of a plain sheet of paper, *after* it is mounted upon the strainer. The positions of the various blocks being

then measured out, the numerous cut-out pieces of paper upon which each block is drawn could be pasted down afterwards with great ease, and thus the inconvenience of working upon enormous sheets of paper be avoided. If this be done neatly, and the colouring left until the last, a good result can be obtained, and with the further convenience of being able to divide the work of preparing the drawings of the various blocks of buildings amongst several assistants—an impossibility, or a great difficulty, if one sheet of paper only be used. If done properly, the general appearance of a plan so prepared is very effective, and the joints should be scarcely visible, even at a close inspection.

Two or more sections, to a corresponding scale with the general plans, are always necessary, and are usually supplemented (in competitive work, as in the case of all sets of drawings to be submitted for the approval of the Commissioners in Lunacy) by drawings to a much larger scale, showing sections of important portions of the building, and with the proposed system of construction and ventilation, &c., clearly defined. Failure in these latter particulars has frequently deprived the authors of good and well arranged plans of the successful position in the competition that they might otherwise have obtained.

The report, description of the plans, and estimates presented with the competition are too often left untouched by the architect-competitor until within the last few days of the period allowed for sending in

the drawings, with hurried and incorrect estimates of the probable cost, and with statements in reference thereto which the competitor would gladly have withdrawn after more matured consideration. The report is an important item, and it is not surprising that competitors should be anxious to scrutinise each other's views upon a scheme that all have worked upon with different results, however remarkable may be the circumstance that architects *do* accumulate many copies of the printed reports issued and intended only for the use of building committees, and not only of the reports, *but of those privately circulated lithographic copies of the plans and elevations which tend to familiarise committeemen with the main requirements, and, therefore, influence the decision in those cases where an architect-assessor has not full power to decide the matter.*

With regard to the report submitted by the competitor, the conditions of the open competition under motto should distinctly disqualify any architect from making any reference, direct or indirect, to previously executed asylum works, or even from stating the fact that he has carried out such works. It is simply required for the purpose of giving the author's views in reference to the adaptation of the buildings to the site; the arrangement of the various floors, the style and construction of the proposed buildings, the precautions he proposes to adopt against fire; the provisions he suggests for water-supply, heating, ventilation and light, drainage; with some particulars in reference to the kitchen, laundry, engine-room, &c.; the manner in

which he proposes to classify and sub-classify the patients; a statement as to the cubical contents and areas allowed per patient, together with an estimate of the cost, showing separately the approximate costs of the various buildings, and the manner in which he has arrived at the same.

As the number of items to be dealt with in such asylum reports is considerable, it is very desirable that an index should be prepared, giving the particulars of all portions of the scheme in such a manner that they may be instantly found without the necessity of turning over a number of pages. Where this is carefully and thoroughly done, the result cannot fail to be of benefit to the accessors and committee, and incidentally to the competitor.

In some competitions for asylums one requirement is insisted upon—namely, there must be ample arrangements for future extension. When this is the case it appears to be necessary that the competition drawings should not only fully show the buildings to be first erected, but also indicate (not in outline, but in full detail) the arrangements proposed for the wards to be erected in the future. If this be not done difficulties and disadvantages are likely to manifest themselves later (the various parts of an asylum having so much influence one upon another). For this reason it would be preferable that the competitors should be asked to plan the complete asylum, but with the understanding that certain portions only would be proceeded with in the first instance. A writer upon the subject of

extensions has stated that it is to be much desired that "every asylum should be designed and fitted for the full number of patients that it is to contain, and that continual enlargements of an existing asylum should not be permitted. It is not the mere building of the addition and laying-out of its grounds, troublesome and absorbing as these are, that constitute the chief disadvantage of adding to asylums. When the addition is built, it is found that the old laundry, devised for a smaller number of patients, has become insufficient; then the boiler-power is deficient; it is seen that the recreation hall is too small, and a proportion of the patients are unable to take part in the entertainments, and so on, through every department. The consequence is that for a certain, usually a considerable, time the patients have to put up with inferior arrangements."

Notwithstanding such disadvantages as are above named, there are in England and Wales alone, about fifteen county and borough asylums at the present time which are being enlarged; the extensions in some instances are of considerable importance, and have necessitated the entire alteration or reconstruction of the administration buildings.

CHAPTER II.

WARDS FOR IMBECILES.

ONE of the earliest notices of the establishment of an asylum for the insane is in the life of St. Theodosius, who is said to have been born in the year 423, and to have died in the year 529, at the great age of 106 years. He is stated to have established, near Bethlehem, a monastery, to which were annexed three infirmaries—one for the sick, one for the aged and feeble, and the third for such as had "lost their sense," in which "all succours, spiritual and temporal, were afforded with admirable order, care, and attention," and possibly the fourth division of this establishment was occupied by the *working* inmates.

Perhaps the modern English workhouse exhibits, in a general way, the only corresponding existing provision (comprised in one institution) for three classes of the above description, for in workhouse buildings special wards are not only provided for the able-bodied and children of both sexes, but also for the sick, aged, and infirm, and for pauper imbeciles and lunatics, these latter being best housed when at some distance from the sane occupants, and, as far as may be, out of their sight and hearing.

The building requirements of the Local Govern-

ment Board, as regards lunatics and imbeciles in workhouses, are far less exacting than those of the Commissioners in Lunacy for patients in county asylums, the result is that patients, being maintained at a less cost in workhouse lunatic wards, are not unfrequently permanently kept there; whereas they would be better provided for in a county asylum. This appears to be particularly evident in Ireland, as may be seen from the reports of the Irish inspectors of lunatics.

Until fifty years ago the buildings for pauper lunatics were nearly always inadequate for the purpose, both as regards construction and number, and vastly different in every way (and particularly as to management) to those now provided in these Islands. There can be no doubt that the local authorities had a great horror for all such institutions, as only causes of expense to the ratepayers, and frequently permitted the insane to live how they could. In a certain district (containing many resident gentry who were not remarkable for displaying less than the usual benevolence of their class towards the poor) two helpless individuals deprived of reason were allowed for many years to live in a most miserable condition, and no further illustrations as to the then necessity for improvement in asylum construction and management would probably be considered requisite.

In the first case an insane female occupied a wooden shed, resting against a garden wall, a receptacle of very slight materials, 5ft. long by 4ft. 6in. broad,

pervious to the elements at every seam, and having no door to fill up the entrance except a bunch of rags, which could be suspended for that purpose. Her bedding was a bundle of straw, and her food was contributed according to the good-will of her immediate neighbours, for she was too old and feeble to beg. She occupied this place for about twenty years, and was supposed to have escaped from a lunatic asylum. She was at first possessed of some accomplishments (music and needlework), indicating an origin and education above the common rank. Having a horror for stone walls, she took up her quarters in an open shed; then she obtained an old hogshead, which she was permitted to occupy till it rotted about her, and subsequently obtained the garden-wall shed, where the neighbours usually contributed a few shillings at the beginning of each winter to obtain for her a rug and a few clothes. The guardians of the poor of the parish never paid the least attention to this unfortunate creature, or disbursed one farthing in her behalf.

The second instance is that of another insane woman, who resided (about a mile from the first mentioned) within an open shed near to a farm-house. In this case the shed was merely an erection, consisting of two or three pieces of wood placed in a slanting position against a wall, and overlaid with a quantity of straw. It was quite open towards the north, and hardly approachable for filth. It was also too short for the extended body of a human being; yet there, with a small log for a pillow, and a few clothes sup-

plied by the parish authorities, was the only home of this miserable woman. When she lay in this loathsome den, too wretched to be a proper habitation of a pig, she was obliged to arrange herself like a cat, with her head and feet nearly together. Her food was supplied by the spontaneous contributions of her neighbours, and otherwise she was not interfered with, although sometimes violent in her conduct.

In defence of the parish authorities it was stated that the two wretched women preferred their sheds to houses, and that "placing them in asylums would drive them frantic or destroy them." A surgeon is said to have actually given his testimony to this effect, adding, in the case of the first-mentioned woman, that "the treatment she received seems as kind and humane as the circumstances will permit." On the other hand, a newspaper reporter stated that when he went to her den he "found her sitting shivering with cold, and covered with wet rags --rags literally soaked with the rain which had fallen in torrents during the preceding night, and had come in through the numerous chinks in her wretched dwelling." Her straw was changed once a week. The attempts of these authorities to exculpate themselves only made their case the worse ; for who ever heard of the freaks of insane persons being humoured, when it was necessary to take measures for humanely disposing of them ? From this point of view an orphan might have been allowed to wander about like a wild animal, unclothed, unfed, uneducated, merely because she preferred freedom to

being reared in a workhouse. The real cause of these women being allowed their own will was that it coincided with what was considered best for the parish funds, and the policy of some local authorities of half a century ago was to unduly discourage all claimants for relief, and to endeavour to escape the necessity of sending paupers to lunatic asylums.

In the planning of wards for harmless lunatics and imbeciles under workhouse control, there are various points to which the Local Government Board direct attention.

In the first place, it must be borne in mind that in a large workhouse establishment there must be accommodation for the following classes, in addition to those kept as lunatics, and that whether a workhouse be intended for *all* the classes mentioned, or only for a single class, or for a few of those classes, it is essential that there should be a complete separation of the sexes, and also as far as may be of classes, and to this end distinct dormitories, day-rooms, entrances, staircases, yards, water-closets or earth-closets, lavatories, &c., should be provided for each sex and class. The classes to be provided for are—"Aged and Infirm," "Able-bodied," "Harmless Lunatics and Imbeciles," "Sick of all Classes," "Children," "Infants," "Aged Married Couples," "Probationers," and "Vagrants," and a complete workhouse for a large union should ordinarily comprise the following separated buildings—*i.e.*, imbecile wards, isolation wards, sick wards, schools vagrant wards, main buildings, and entrance build-

ings ; but in small workhouses, where the number of inmates and officers is very limited, some of the above-mentioned separate buildings may be dispensed with.

The following are the requirements and suggestions of the Local Government Board as to accommodation for "short-period lunatics" in workhouses, and relate to the provision which should be made in workhouses for the accommodation of persons who are alleged to be, or who are, lunatics, and who are removed to the workhouse under section 20 or 21 of the Lunacy Act, 1890.

The extent of the accommodation will depend on the requirements of the particular union ; but arrangements should be made for the simultaneous accommodation of persons of both sexes, with their attendants. In large workhouses provision for the reception of short-period lunatics may in some cases be suitably provided in connection with the wards already set apart for imbeciles ; but in the smaller workhouses it may usually suffice to so arrange two wards and an attendant's room with padded room, that one of the wards may, if necessary, be entirely shut off from the other portion, for the joint use of a patient and attendant.

Each ward should be large enough for at least two beds, to enable a person in charge to be in constant attendance, and the amount of space allowed should not be less than 100 ft. floor space, and 1,200 ft. cubic for each bed. All sharp projecting angles should be

avoided. Ward floors should be of wood. Ledges, architraves of doors, internal window-sills, and the like should be avoided. No brackets, pegs, or nails, &c., should be fixed to the walls. Door-handles should be *sunk flush*, and doors arranged so as to open outwards. For wards of this kind strong window-frames, extending for nearly the whole height of the window, glazed with small panes of stout plate glass, and working on pivots top and bottom, are suitable.

Artificial light should be furnished from the adjoining attendant's room through a fanlight glazed with ½in. plate, and under the control of the attendant, whose room should command a view of the whole ward by a small window of similar strength.

Ventilation and warmth should be provided in wards of this kind by an air-chambered grate in the attendant's room, passing fresh warmed air into the wards; air-bricks should be fixed also in suitable positions, in addition to the opposite external windows, which are indispensable in each ward.

The imbecile wards should provide for the ready sub-division of the patients according to their habits and condition, and should be so arranged as to afford the utmost facility for the constant supervision of the patients; and as respects ventilation and all arrangements for the comfort of the occupants, they should be regarded and treated as *sick wards*.

The requisite minimum space per head for this class of inmate is, in the dormitories, 5ft. of wall space (irrespective of doors and fireplaces), 50ft. of floor

space, 10ft. in height, and 500ft. cubic space ; while in the day-rooms 20ft. of floor space, 10ft. in height, and 200 cubic ft. of space are required.

Due provision should be made for securing cleanliness of person, and for the supply of hot and cold water ; but in many cases a portable bath used in the ward may suffice.

In the above arrangements generally the requirements of the Local Government Board are below the standard of the Commissioners in Lunacy, and of the corresponding authorities in Scotland and Ireland ; but for this difference there does not appear to be a satisfactory justification, the inmates of county asylums and of workhouse lunatic wards being alike dependent upon the ratepayers.

CHAPTER III.

BUILDINGS FOR THE CONVALESCENT.

IN a large asylum where the average number of resident patients was 2,249, the number admitted during one year was 519, while 215 were cured, 80 were removed or relieved, and 232 died during that period.

In many instances the patients, when discharged, are compelled to go direct to homes which contrast very unfavourably as regards locality, comfort (and inmates) with the institution from which they have been discharged; in some instances, the only "home" is the workhouse, from which they may have been sent by the board of guardians of the parish to which they became chargeable. Therefore, it would appear to be very desirable that there should be provided some buildings of moderate extent wherein the recovered patients could reside for a reasonable period prior to resuming the occupations and associations of their station in life. When a patient has been discharged from an institution, his reception order expires, and he is free to do as he pleases. It is rarely that *perfect* recoveries are made, and it is an ordinary course to grant patients, sufficiently improved, a leave of absence on trial, previous to a full and definite discharge, and the question as to whether or not the recovered or improved

patient should be returned to a workhouse-ward, his former home, or to a convalescents' house, are matters upon which the asylum authorities would obviously be better able to form a sound opinion than the guardians of the patient's parish, or the friends of the patient.

The asylum architect may, therefore, have to plan buildings for the reception of a limited number of discharged patients, or patients granted leave of absence on trial, to be erected either upon some portion of the asylum estate, at the sea-side, or in some other suitable locality, the detached institution being under the control of a master and matron, and, though in touch with the asylum, yet so planned and constructed as to allow the discharged patients very considerable freedom, but under a certain amount of quiet observation.

The buildings for convalescent patients, even if in connection with a very large asylum, need not be very extensive, and assuming, as an instance, that the asylum authorities discharge 200 patients per annum as recovered, and that the residence of each discharged patient averages one month in duration, it will be perceived that the building for the convalescents' home need not provide accommodation for more than 20 patients, discharged or granted leave of absence. The erection should be in two divisions for males and females, with single bedrooms in each, and suitable bath and lavatory accommodation must be provided. There might be a small library and writing-room for the use of both sexes, and separate dining-rooms for each sex; also kitchen and other offices, with rooms for the master and matron.

When the asylums are for the accommodation of limited numbers of patients, one of these convalescents' homes might be provided for the reception of discharged patients from two or more asylums: the great advantage of these homes would be the opportunity for the gradual introduction of the society of sane persons in place of the ordinary occupants of the main asylums, and in place of a possibly too sudden reintroduction to their former friends and associates, a close association with whom might, by reason of incompatibility of temper or other adverse circumstances, tend to cause the patient's return to the asylum in a worse condition than at first.

The buildings should be of a very simple and unpretending character. What is required is merely a temporary, but comfortable, home, where the discharged patients could reside for a limited time, while having in view the necessity of soon resuming all the duties and employments of the stations in life to which they belong, and perhaps endeavouring to obtain suitable employment, with a greater prospect of success than if directly transferred to their homes, if, indeed, they *have* any homes. The dismissal of patients chiefly depends upon the action of the medical superintendents. At first, it should, as a rule, be provisional or experimental; thus, on the first indications of a relapse, it will be easy to bring the patient back to the asylum. During this temporary dismissal, there should be occasional reports from those to whom he is sent as to the state of his health. Should the convalescence con-

tinue during a sufficient period, the patient may then, for the first time be permitted to quit all connection with the asylum. There is obviously great necessity for aid by societies for needy convalescents; these exist, I believe, both here and abroad.

From the statistics of institutions for the insane, it appears that recent mental disease allows of a far better prognosis than most other chronic affections of the brain. If we understand, however, the word "recovered" to signify, as it ought, the total disappearance of the mental disease and the complete return of the former capacity of intellect—of the whole earlier force of character—it must, of course, be but seldom that such a result can be expected. Cases are numerous where, indeed, the leading symptoms of the insanity disappear; but the individual retains a slight feebleness of intellect, continues irritable in temper, or is possessed of certain eccentricities which, however, permit him to take part in the simpler avocations of life, and, it may be, to return to his former pursuits; therefore a distinction should be made in successfully treated cases between recovered and improved. Relapses are said to occur, by far most frequently, during the first and second years after recovery. A medical authority upon the subject states:—"This is easily accounted for by the state of exalted psychical irritability, which often continues for some time after the disappearance of the disease, and the greater susceptibility to physical ailments which must exist after so serious a malady. Too early dis-

missal from the asylum is likewise a frequent cause. To the first of these causes is also probably due the fact that relapses are somewhat more frequent in the female sex. It should be remembered also, too, how rare complete and lasting recoveries are in most chronic diseases, and how difficult it is to remove certain constitutional causes which may frequently have existed from earliest infancy, whose constant action has, as a consequence, a succession of diseases following the same pathological direction. It is not in the powerlessness of our art, nor a certain predestinated incurability of these forms of disease, that we ascribe relapses in those who, on their dismissal from the asylum, return to the most deplorable conditions of life, or the full influence of those health-destroying causes which were to blame for their first attack: in the case of individuals who, on recovery, return to habits of drunkenness, to misery, to over-fatiguing employments, to the causes of violent agitations and emotions, we can almost with certainty predict a relapse; the drunkard especially is each time dismissed from the asylum only with the unsatisfactory prospect of soon seeing him again." Upon the whole, however, the prospects of recovery in insanity are much brighter than is frequently supposed by medical men and the public, and it is asserted that the prognosis in recent acute insanity is very much more favourable than in most other diseases of the brain.

The constructional arrangement and the fittings of the buildings to be appropriated to the use of recovered patients should partake, as far as may be found practi-

cable, of the character, somewhat of a boarding-house, and certainly not be suggestive in any way of their connection with the asylum with which they may be associated. At the same time the staircases should be constructed so as not to facilitate any attempts at suicide by any patient that may inadvertently have been released from the main asylum, and such other reasonable precautions of a kindred nature adopted with regard to fireplaces, and opportunities for concealment, &c., as may be necessary or convenient, having regard to the fact of the possibility of a relapse. The day and sleeping apartments should be sufficiently lofty and well-lighted, and have rather the general appearance of private rooms, suitable for the occupation of persons taking a holiday prior to resuming their various trades or during the period of the efforts to obtain employment.

The following table shows the number of persons who have recovered or improved during one year in an asylum where there were 2,249 patients, also the probable causes of their insanity, and is of some value, having regard to the arrangements for convalescents' residences. For instance, it will be noticed that 32 epileptics were admitted, and that ten of these were removed or relieved, and while only three patients recovered, on the other hand, mental anxiety sent 14 patients to the asylum, where 11 of them recovered. In this asylum a much larger number of female patients are accommodated than males, and the number of female recoveries is also greater.

CAUSES.	The Admissions.			The Discharges.					
				Recovered.			Removed, Relieved or otherwise.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Moral—									
Disappointment in love ...	...	..	...	...	2	2	...	...	...
Domestic troubles	2	12	14	2	5	7	2	...	2
Fright	1	3	4	...	3	3	...	...	...
Loss of work.....	11	...	11	...	...	...	...	...	...
Mental anxiety	11	3	14	9	2	11	...	1	1
Over-study	...	...	...	2	1	3	...	...	...
Pecuniary losses	...	2	2	1	...	1	1	...	1
Religious excitement	...	5	5	...	3	3	...	1	1
Physical—									
Accident	...	2	2	...	...	...	...	1	1
Assault	...	...	...	...	...	.	...	...	...
Congenital.....	...	...	...	...	...	...	1	...	1
Epilepsy	15	17	32	...	3	3	2	8	10
Fever	...	...	...	...	...	...	...	...	...
Hereditary taint	57	16	73	11	8	19	5	1	6
Injury to head	6	1	7	2	1	3	1	...	1
Intemperance	37	17	54	19	9	28	4	1	5
Lead poisoning.....	...	...	...	...	...	...	...	...	...
Marriage	...	...	...	...	...	...	...	...	...
Masturbation	3	...	3	2	...	2	3	...	3
Over-work.....	...	1	1	1	...	1	...	...	...
Puberty	...	1	1	..	1	1	...	...	...
Puerperal	...	23	23	...	29	29	..	1	1
Sexual intemperance	...	...	...	...	...	...	...	...	...
Smallpox	...	...	...	...	...	...	...	...	...
Sunstroke	3	...	3	1		1	1	...	1
Syphilis	...	...	...	...	...	...	...	...	...
Other diseases	...	...	...	...	...	...	...	...	...
Unascertained	78	192	270	13	85	98	19	27	46
Total.....	224	295	519	63	152	215	39	41	80

It would not be necessary for the architect, in planning the residences for convalescents, to provide any arrangements for the classification of the recovered patients; the required buildings would only be of very moderate extent, and it may be supposed that if the patients have really recovered, that it would perhaps be even less necessary to provide for special seperation in a convalescents' home than in the patients' own private residences, inasmuch as the latter are too frequently badly arranged and overcrowded.

The convalescents' home is not to be arranged by the architect as a building to be occupied by absolutely idle people, but as a place where the released patients could remain for a moderate period while making, with or without the assistance of their friends, their arrangements and plans for the future, and where their friends might visit them freely. The necessity or advisability of providing such a building cannot but be obvious if it be remembered that too frequently the only home of the recovered patient may have suffered during the insanity of the bread-winner, and perhaps even have been broken up from various causes during his absence in the asylum.

Under no circumstances, if it can possibly be avoided should an asylum be erected within the precincts of a city; but if the asylum patients' convalescent home be not upon the asylum estate (for economical reasons), there might be some advantage in having it near to a town, inasmuch as patients would have better opportunities of seeking for employment.

CHAPTER IV.

HOSPITAL AND TRAINING WARDS.

WHILE the asylum system now existing shows a very great advance upon the condition of matters half a century since, yet it does not appear to have kept pace with the progress of medical science in other departments. For instance, high authorities upon the subject of the education of medical students have approved of the establishment of an asylum building which would practically combine with a hospital for the insane, special facilities for the education of resident and other medical students, giving them opportunities of studying the subject of insanity, from the appearance of its earliest symptoms to its latest development.

The question as to whether hospitals for the insane should be maintained (with special facilities for students and lecturers upon the subject of insanity) has been recently a matter for considerable discussion. The general opinion appears to be strongly in favour of supplying further means for the education of medical students in a department of science that has been somewhat neglected. At present many medical men may be called upon to give certificates as to the sanity or insanity of persons, without perhaps having had

any opportunities of much special instruction upon the subject; and Dr. Stephen Mackenzie has expressed the opinion that it is "very difficult for every hospital to be affiliated to some institution where men will get the information they want; and therefore it is important that the knowledge, which physicians connected with those hospitals can to a certain extent impart, should be supplemented by the more accurate knowledge and more complete experience which may be gained at institutions for the treatment of patients suffering from insanity."

Therefore buildings are admittedly requisite for the purpose of dealing with those classes of the insane who, while affording special subjects for study and investigation by medical men, would, if possible, be cured by the assistance of the resident staff, and who would, more or less, afford material upon which the lecturers on insanity would discourse to a *limited* number of students. It has been proposed by medical authorities that clinical assistants should be appointed in the proportion of one to every ten patients, to observe the cases and report to the physicians and surgeons (visiting or resident), the student-assistants being appointed for terms of three or six months, and occupying the period as a portion of the time allotted to their general medical training. By this arrangement the patients would probably benefit, and scientific research would be promoted.

The buildings intended to form a *hospital* for the treatment of insanity, with suitable provision also for

lecturers and students, would obviously be far more conveniently situated in or near to a large town, so as to be easy of access to the medical profession, were it not for the difficulty in caring for patients in districts more or less thickly populated, and where exercise grounds would be limited in extent for economical reasons; but against the latter difficulty may be set the fact that a hospital asylum even in a town may be expected to be far more advantageous for the patients than the homes from which many of them are drawn.

Assuming that it be decided to add to a county asylum (situated within a reasonable distance of a large city) a block of buildings for the use of those who not only have the care of patients, but also the necessity of providing for the requirements of scientific inquiry, and for the study of insanity by the younger medical men and students, it would for some reasons be desirable that this special hospital-asylum should be near the blocks of buildings for recent cases.

The hospital-asylum, if connected with the main asylum and upon a full scale, might include provision for the following apartments, there being separate pavilions for male and female patients:—

Lecture-room, 35 ft. by 20 ft.

Lecturer's private room, 18 ft. by 15 ft.

Museum, 40 ft. by 20 ft.

Laboratory, 30 ft. by 20 ft.

Chambers for *five* resident medical students.

Administration buildings (exclusive of laundry, general stores, &c., included with main buildings of asylum).

One pavilion for male patients, with two day-rooms, dormitories, ten single rooms, and usual offices.

One pavilion for female patients, with similar accommodation.

Residences for medical officer in charge, and for attendants, matron, and nurses, &c.

The cost of an entirely detached hospital-asylum, whether erected in the town or in the suburbs, would necessarily be greatly in excess (per patient) beyond that incurred usually for either borough or county asylums, as many portions of the main asylum, including some of the administrative buildings and the chapel, could be jointly used. The following is an approximate estimate by Mr. Burford Rawlings, of the National Hospital for the Paralysed and Epileptic. These figures are only conjectural, and are for the cost of an *independent* institution for 100 patients; but they clearly show that the cost is expected to be much greater (probably double) than that incurred for ordinary asylum buildings.

The following estimate was given exclusive of site, and is the "approximate cost of erecting a hospital for the study and treatment of insanity, to contain 100 beds for patients, with a day-room attached to each dormitory, a sufficiency of isolated rooms for special cases, and needful accessories":—

	£	s.	d.
Building of, say, two pavilions of 50 beds each, an administrative block, lecture-room, and chapel	24,000	0	0
Engineering work, including hydraulic lifts for passengers and food, heating apparatus, baths, service of hot and cold water, &c.	2,500	0	0
Fittings for kitchen, dispensary, &c. ...	700	0	0
Architect's fee, at 5 per cent. on above items	1,360	0	0
Clerk of the works	250	0	0
Furniture and general equipment ...	2,690	0	0
	31,500	0	0

In this scheme no rooms are specially mentioned for pathological purposes, but these may be presumed to form a portion of the administrative buildings. What is now wanted by the medical superintendents of asylums, both here and abroad, is a greater means of promoting scientific research as to the causes and best modes of treatment of insanity, and for this purpose suitable buildings and equipments are greatly needed. It would appear desirable in some districts, to erect one hospital-asylum to be worked in connection with two or more ordinary asylums, more especially if these be not very large ones, for by such an arrangement higher salaries could be paid to the lecturers and pathologists, and the services of highly accomplished men secured. With regard to the medical superintendent and assistants of most English, Irish, and

Scotch asylums for pauper lunatics, their duties are so varied, beyond medical duties, and include business transactions connected with the reception, retention, recovery, discharge, and removal, death, escape and recapture, mechanical restraint of patients, also duties concerned with the correspondence of patients, the admission of their visiting friends, and the preparation of numerous statistics, accounts, &c., that it would be difficult for them to give adequate time to their purely medical duties, much less find opportunities for lecturing for the benefit of students upon the subject of insanity, or for making pathological inquiries.

Laboratories appear to be provided to a very considerable extent in many asylums in Belgium, Denmark, France, Germany, Holland, Italy, Russia, Switzerland and the United States of America, and particularly in Germany, where it appears to be a rare exception for an asylum to be without one or more laboratories. This is more than can be said for the asylums of this country. Possibly the medical superintendents of those countries may not be required to give so much attention to general administrative matters, and the preparation of statistics and reports, &c., and have therefore more time at their disposal for laboratory and pathological work. An asylum superintendent has stated that, in his opinion, "it is unquestionable that the study of insanity is one of the most abstruce and difficult—perhaps the most abstruce and difficult subject that can occupy the mind of man." If this be true, it would appear to be desirable that

asylum superintendents should not so frequently unduly encroach upon the special province of the architects who may be engaged in adding some new annexe to their asylum buildings, or engaged upon the alteration of asylums which have ceased to be up to date; neither would they appear to have sufficient time at their disposal to interfere with the numerous details of construction, heating, ventilation, and engineering, which are surely more advantageously left to the discretion of those capable engineers and architects who may have made these subjects their life-long study.

In confirmation of this, I venture to quote evidence given by Sir James Crichton Browne, the Lord Chancellor's Visitor in Lunacy, and the former superintendent of several asylums. He said: "As a matter of practical experience, the medical superintendents of England have found that the committees of magistrates, who are their masters, are very much better able to appreciate the way in which they carry on the farm and attend to the finances or the general administration of the establishment than the way in which they do their medical work."

To return to the subject of medical students' training wards in connection with hospital asylums, there can be but little doubt that better provision for the purpose of giving instruction on the subject of the treatment of the insane is much required, and that special buildings will be eventually added to the larger county asylums with this object; the asylum architect will probably

have to arrange his plans upon a more costly basis than for other parts of the asylum—say, £300 per patient, instead of the £150 to £200, which appears to be a usual amount as matters exist.

Fewer ordinary attendants would probably be required on the *male side*, as if *resident* medical students were introduced, these might, to a moderate extent, occupy the position, not only to their own advantage by reason of the opportunities of obtaining an intimate knowledge of questions connected with insanity, but also to the advantages likely to be enjoyed by patients brought into contact with persons of a higher education, and advanced considerably in their knowledge of medical and surgical matters.

It would almost appear that more attention is directed in some foreign countries than in England to the necessity for a full complement of buildings for the training of medical men to asylum work. Dr. Giandri, of the asylum at Cuneo in Italy, states that *all* Italian asylums have good laboratory accommodation, and I have before me a lengthy list of asylums in other European countries with similar provision, with elaborate equipments and great facilities for scientific investigations into the causes of insanity.

CHAPTER V.

FOREIGN AND COLONIAL SYSTEMS.

THE whole of the buildings forming the asylum at Halle, are surrounded by pleasure grounds ; the paths in these are partly paved and partly gravelled, and at the rear there is an area of rather more than half an acre of land, which is utilised for the employment of the patients upon garden work.

All the buildings are erected with ornamental bricks, and in their application the plainest forms of the Gothic style have been adopted. The main buildings, with their one-story wings on either side, are constructed of bricks of a yellowish-brown hue, enlivened by courses of dark coloured bricks. Up to the plinths the buildings are, for the most part, constructed in stonework, but portions are faced with red brick. The roofing is slated upon asphalted felt, the pitch being about 1 in 4, the roofs of the main buildings and the chapel being somewhat steeper. The staircases throughout are of granite.

The buildings are inclosed on three sides by a brick wall about 7ft. in height, but the frontage to the street is separated therefrom by wrought-iron fencing, sunk into stone copings.

This asylum, which was erected in the year 1891, was prepared to receive 110 mental sufferers divided

into four classes—that is to say, 11 first-class patients, 6 second-class, 73 third-class, and 20 patients suffering from nervous forms of mental disease; and the cost is stated to have been about 665,000 marks.

The main building in the centre contains in the basement, 9ft. in height, the rooms of the porter, the messroom of the physicians of the institution, the remaining area being occupied by mechanics' shops, engine and dynamo-room, heating chambers, air channels, and connecting tunnels, &c.

The ground-floor rooms above these are about 14ft. in height, and contain the hall and principal entrance, which receives light from all four sides, and can be heated. On the right-hand side of the entrance is an ante-room, two call-rooms for *outdoor patients* are provided, the sexes being separated.

With regard to out-door patients in mental diseases, it may here be remarked that the German asylum authorities appear to be somewhat in advance of those in this country. Sir Andrew Clark, Dr. Stephen Mackenzie, Dr. Quain, and Dr. Batty Tuke have all expressed themselves in favour of the formation of out-door departments in connection with hospitals for the insane and upon various grounds, it being stated that it would be pre-eminently desirable to have an opportunity of bringing more frequently before medical men those earlier aspects of disordered states of mind which might or might not result in insanity. Out-patients would include many persons not looked after or understood by their friends, and who might, under

well-managed out-door guidance, obtain much benefit. And further, such an out-door department might often be of use to patients who, though discharged, are occasionally liable to exhibit incipient signs of a return of their malady.

The London County Council has, as I have already pointed out, the custody of a larger number of insane persons than any other authority in the world, and so far back as 1890 appointed a committee to report as to the advisability of forming a hospital for the insane, and this committee stated: "An element of great importance, in determining the question of site, is whether it is desirable to establish in connection with the hospital *an out-patient department.* The committee are not prepared to recommend that this should be done in the first instance, or until a certain amount of practical experience has been gained in the management of the proposed institution, but are quite clear that it should be kept in mind as an eventual development, and that it should be brought into operation at the earliest possible time. The evidence is complete with regard to the existence of large classes of cases in which the patients could not be called insane, and in which they could not be subjected to any legal restraint; but in which their friends, and sometimes even themselves, are perfectly conscious of eccentricities or of deviations from a healthy standard of thought, which, if taken in time, might be cured before more serious symptoms or conditions had displayed themselves." Such a department, upon a moderate scale,

has been in operation in connection with the new town dispensary of Edinburgh, under the direction of Dr. Batty Tuke; but I am not aware of any other institution in this country where out-patients have been treated for mental diseases; but in the German asylum at Halle the out-patients are provided with rooms specially placed for the purpose in the entrance block, and near to the physician's rooms.

On the ground plan the reception-room is arranged so as to be also used as a waiting-room for the inspector. Above this on the first floor is another lecture-room to accommodate 72 auditors, fitted with an apparatus for throwing illustrations upon a screen.

On the first floor is also an ante-room for the director, and rooms for the chemical, microscopical, and other scientific investigations, and for various collections of interest to the medical authorities.

The wings on each side are of one story only, and contain, each, two day dormitories for 10 patients, and five single rooms, the accommodation in each wing, therefore, being for 25 patients. The two large rooms are connected by a corridor, lighted by a glass-covered lantern-light. The wards are provided with bath-rooms, closets, also wardrobe, scullery, and lavatory for patients, &c.

Only small portions of each wing are under-cellared, the remaining parts have the ground floor raised about one yard above a *paved area*, thus allowing free passage of air below the floors.

The flooring of the single and the large rooms is

done in oak, the bath-rooms, closets, and sculleries being paved with earthenware; the remainder in pine, and the walls are painted in oil-colour.

The windows are not barred or fenced off, but are made with an arrangement that precludes any easy opportunities of escape. The medical officer of the Halle Asylum, Professor Hitzig, very strongly urges that all windows, while providing proper security, shall be so arranged that the patients may not imagine themselves to be in a penitentiary, and thereby have their prospects of recovery frustrated. He also points out the great advantage of keeping most of the patients upon the ground floor, especially those who may be of suicidal tendencies.

All new patients, unless noisy or dangerous, are put into the large room of the two front wings, or into single rooms if only moderately troublesome in these respects. The worst cases are taken into one of the buildings at the rear, which are isolated for the purpose. These two wings also serve at the same time as a training-school for the attendants of the asylum, no person being there employed who has been formerly engaged in asylums or hospitals.

At the rear of the main building and its two wings are two villas for patients, between which is placed a third detached building containing the kitchen, sculleries, and wash-house, the latter (as in English asylums) with a foul wash-room, and drying horses in heated closets.

The detached villas have basement, ground and first

floors, with a few rooms in the roof space ; the ground floor contains a large room 37ft. by 19ft., divided by sliding doors into two equal parts, one being used as a day-room, and the other as a dining-room for 21 patients. Around this room are grouped a number of bedrooms with southern or eastern aspects, and with accommodation for from one to six patients each.

The two isolation houses are yet further from the front buildings, and are each arranged for five beds for the very noisy and raving. The accommodation is of a simple nature, the bed-rooms, bath-room, and observation-room all leading directly into a large day-room.

Between the isolation houses is a detached building for boilers, engines, &c., and beyond this a building combining the various purposes of a mortuary and post-mortem room, which is connected with the asylum chapel.

Asylums of more or less importance exist in considerable numbers in Germany. Some two or three years since the London County Council had occasion to obtain information respecting certain asylum details, and applied to the authorities in Austro-Hungary, Belgium, Denmark, France, Germany, Holland, Italy, Norway, Portugal, Russia, Spain, Sweden, Switzerland, and the United States of America. The German asylum authorities sent no less than about 40 replies relating to as many German asylums. Numerous replies were sent from other countries ; but it would appear that the subject of lunatic asylum work, upon the whole, is better understood in Germany and the British possessions than elsewhere.

The system, which has been observed at Halle, of placing noisy and violent patients in detached buildings, is by no means a new one in Germany, where asylums in many respects appear for a considerable period to have approached nearer in their construction to those in England than to those erected in France.

German asylums erected about the year 1845 were frequently arranged in one or several central buildings of two or three stories in height; the common rooms, the offices, chapel, kitchen, wash-houses, store-rooms of the officials were all together. From these one or two-storied side wings were extended, either in direct communication or detached. In these were placed the different divisions of patients, and as a completion to the system were small single-storied buildings (as far as practicable removed from the centre), which contained the apartments for unruly patients. It was not unusual with asylums in those times for each division of the institution to have its own garden and pleasure-courts for its inmates. The French asylums, on the contrary, were then constructed upon quite a different principle, and this was particularly noticeable in those designed upon Esquirol's plans, which consisted of a series of square houses, widely separated, of merely a *ground* floor containing a number of single rooms (possibly at that time constructed as mere cells), a common day-room, work-room, &c., with a colonnade around, and, inclosed in the centre a plot of grass. Several rows of such single-

storied squares were connected by those colonnades, including the storehouses, work-room, chapel, bath-houses, and other portions. This mass of distinct buildings, which sometimes occupied an immense area, was not only more costly to erect, but rendered the oversight more difficult, and afforded fewer facilities for visiting the more distant parts of the institution or for superintendence; but in the construction of later asylums in France, these modes of designing asylums appear to have been considerably deviated from.

About one mile and a half from the centre of Munich is situated the large asylum. The general arrangement is symmetrical; the gardens and airing-courts are rather elaborately laid out with fountains, arbours, shelters, and shrubs, while pathways are arranged in all directions, and the utmost use appears to have been made of the somewhat limited extent of the asylum estate.

Two of the inner courts on both male and female sides of the asylum are also laid out for the purposes of the exercise of the patients; but (surrounded as they are on all sides by buildings) they would not be so advantageous as the outer grounds for the purpose.

The administration buildings occupy the centre buildings, while the male patients are located to the east, and the females to the west; the day and single rooms are, for the greater portion, arranged with external aspects to the south, east, and west; but there are a few which have the windows with a prospect only towards those inner courts to which I have referred.

The closets and bath-rooms are all arranged within projecting buildings; but these are not provided with the isolating or ventilating corridors found in most modern English asylums, neither does the arrangement afford a quite satisfactory means for keeping the patients under observation. A considerable area on the basement level is occupied with an elaborate system for heating and ventilation. This must have been very costly in execution; indeed, the whole of the basement works appear to be of a very substantial character, with vaulted roofs, and walls of considerable thickness. In modern English asylums it is usual, so far as practicable, to keep the levels of each floor upon one plane; also, to avoid steps in the passages, winders in the stairs, and corners or recesses which might be used by the patients for escaping observation. But in this asylum at Munich these are points which have either been disregarded, or have, from circumstances, been unavoidable.

The staircases at the Munich asylum are very numerous, and well placed with the view of convenience to the officials, and separation of the different classes of patients; but several of them have a number of winders in each angle, and may be nearly as dangerous for officials as for patients.

This asylum at Munich is conducted upon the most modern scientific principles. From 1889 to March, 1893, there were 336 *post-mortem* examinations undertaken in the customary German manner. The laboratory accommodation is said to be good, but not what

could be desired. Microscopical examinations are made, and specimens kept. Doubtless there is much pathological research to be made on the question of insanity, and such study would promote better means of treatment. Upon the whole it would appear that German and English asylums are not unalike in respect of the necessity for better (and special) laboratory accommodation than is at present usually provided for by the architects concerned with such buildings.

German architects are in agreement with English architects as to the desirability of planning asylums upon a more liberal system than was formerly thought necessary, and anything resembling the old prison-like form of asylum is considered quite out of date. Imprisonment in any form brings into simultaneous action many influences which are very dangerous to mental health: remorse, longings, concentration upon one small circle of ideas; sometimes the inability to take adequate nourishment, and the want of sufficient exercise, &c. Indeed, in houses of correction, both here and abroad, the number of instances of mental disease has been found to be relatively greater than amongst the free population; but the majority of these cases should certainly not be entirely ascribed to the imprisonment. Frequently the individual is already very strongly predisposed, and often the disease is even more than half developed before he is put into prison, inasmuch as during his previous life the criminal has sometimes been particularly exposed to the influences which contribute to insanity. Thus the inner prison-like court-

yards of the Munich Asylum for the Insane (although carefully laid out and utilised to the best advantage, so far as the limited area permitted) are obviously less suitable for the exercise of patients than would be outer airing-courts, and even these are better arranged when with open iron railings (unclimbable) than with high brick or stone walls.

The great portion of the Munich asylum consists of basement, ground and one upper floor; but there is a small second floor above the central main entrance. This arrangement of not placing insane patients upon a higher level than the first floor is generally recognised in this country as being advisable; but it is necessarily more expensive as regards the cost of the buildings.

Upon the first floor, in a central position is the asylum chapel, with two staircases, each unfortunately with many winders in its course, and it would not be difficult to imagine that in the event of a fire or panic, a congregation so situated, sane or insane, would be placed in a position of great danger. The chapel would have been better placed if on the ground floor. In many other respects the plan of the first floor is exceedingly good. The principal rooms are arranged with exits at each end leading to the numerous staircases; but, on the other hand, these are disadvantages in placing the closets in sanitary annexes which can only be reached by crossing the long corridors, for the difficulties of keeping patients under close observation are thereby greatly increased.

Another German arrangement of an asylum plan is

upon the villa system, in which a number of entirely detached buildings are provided, the unoccupied land being laid out as pleasure and garden ground. Such an arrangement is provided at Halle, and is wholely unlike that at Munich ; it is the asylum for mental and nervous patients attached to the University of Halle, and consists of a number of detached buildings erected upon a rather limited area of ground, which, however, is utilised to the utmost for the purpose of gardens and airing-courts, &c., as is the case at Munich.

This asylum was built according to the directions of Professor E. Hitzig, the medical superintendent, upon a site of about five English acres, which cost 125,000 marks. Professor Hitzig, under whose direction the asylum at Halle was erected, has expressed an opinion adverse to asylums built like military barracks, with long corridors and rows of rooms. He is in favour of the villa system, and attaches great importance to arrangements which shall house the patients separately.

These particulars, in reference to the Halle asylum, have been supplied to me by the courtesy of Professor Hitzig, to whom I am indebted for many interesting particulars on the subject of asylum construction in Germany.

The London County Asylum at Banstead, accommodated, in the year 1877, about 1,250 patients, two-thirds of whom were females ; but these numbers had been increased, at the close of the year 1894, to a total of 2,000 patients. Considerable additions have recently been made to this asylum, for the sick on the women's

side, and for acute cases in the division for males; but these are intended, I believe, for the purpose of reducing congestion in the wards, and are not intended to afford means for increasing the number of insane patients. Previous to the opening of the new annexes proper sleeping accommodation does not appear to have been given to all the patients. Many of them were obliged to sleep on the floor, and the day-room space was insufficient. The accommodation has been lately increased by about 100 beds; but the Commissioners in Lunacy have declined to allow an increase of patients, upon the ground that a greater area per patient is necessary than has been arranged for in the past, the wards for the male patients have chiefly a southern aspect, while those for the female patients (who are here greatly in excess) face the north; the buildings generally, in respect of outlook, are not favourably arranged; but the institution is a large and very important one, and under the charge of about thirty officers, assisted by 127 male and 158 female attendants, &c. About fifty carpenters, bricklayers, plumbers, painters, plasterers, slaters, masons, fitters, gardeners, and labourers are employed about the premises, and have a special mess-room. This asylum is provided with a new building, for cleansing by steam the horse-hair of mattresses.

The Commissioners in Lunacy have expressed the opinion, with regard to the day-rooms of this asylum, that they are *too large* for the proper control of the class of patients who now occupy them. Many asylums

would be far better planned if, with small wards and a more liberal supply of single rooms than often can be arranged for, by reason of financial considerations.

The Banstead asylum, in its general arrangement, is somewhat barrack like ; but the wards and corridors are so decorated with pictures, and in other ways that they are more comfortable than might be reasonably expected in an institution of this description.

At the Banstead asylum, amongst others, the temperance policy was adopted some time since, and upon this architects may assume that for many new asylums such adjuncts as brewhouses need not in future be provided for on the general plans. I may state here that the disused brewery at the Hanwell asylum has been converted into a dormitory, and as a result there has been a net gain of 30 beds secured to this asylum. Dr. Alexander, the medical superintendent at Hanwell has reported with regard to the existing temperance system in his asylum :—" I may say that this change has so far (1890) been followed by the happiest results, as evidenced by the *notable increase of contentment* and the decrease of *squabbles and bickerings* among the patients. The benefits have been most marked in the case of epileptics, *whose infirmities of temper are much less*, and whose liability to fits has been lessened."

One of the difficulties of the architect who has a large asylum plan to arrange, is that there are so many distinct departments, and that each one often appears to claim a site on the asylum estate for which another seems to have an equal suitability. The question of

adding a brewing establishment to an asylum with a population of over 2,000 persons, involves also, probably, the erection of at least two cottages for the brewer and the brewer's labourers, upon a site which might be better utilised. The Commissioners in Lunacy, however, have expressed themselves adversely with regard to the disuse of beer in asylums.

For some new asylums, therefore, architects will probably provide brewing establishments, for many medical superintendents are of the opinion that the wholesomeness of beer for those who are engaged in laborious physical work is most beneficial, and that water, thoroughly suitable for drinking, is frequently not obtainable. One authority is of opinion that apart from the possible hardness of water in certain localities "the mere ingestion of a pint or so of cold water is a serious tax on the energies of the aged, especially in the winter, when the water is at a temperature not much above the freezing-point. In the first place, the shock of the cold application to the interior of the body is depressing; and in the second, to raise, by some 70°, the temperature of a pound or so of fluid of so very high a specific heat as water, is a serious demand upon the heat-forming capacity of old people." The difficulty is to find a beverage for pauper patients that is cheap, easily made, palatable, and not liable to the objections brought against cold water and beer, the last named being probably unsuited for epileptics, either in or out of asylums.

The London County Asylum at Cane Hill, which

contained in the year 1884 about 1,000 patients, had at the close of last year, accommodation for 2,018 patients. Several additions have been made recently, including a nurses' block, containing bedrooms for 33 nurses, and on the top floor a large workroom for patients; additional farm buildings, attendants' cottages, shelters in airing-courts, a cricket-field, pavilion and other constructive matters. A large number of patients in this asylum appear to be induced to engage in useful employment of some description, the number of workers being 72 per cent. of the males and 65 per cent. of the females. Possibly these figures would not be so high were not the arrangements of the building favourably planned in the first instance, and a very excellent system of management maintained by the medical officers, of whom there are six, including the superintendent of the asylum.

Cane Hill Asylum is erected near to Goulsdon Common, upon a desirable site, adjacent to the Cane Hill, which is used for cricket, &c., by the patients and staff. The wards of the asylum are bright, pleasant, and clean, and have the reputation of being kept in excellent order, beyond what is usual in many institutions of the kind. The asylum is supplied with water of an excellent quality from its own grounds. The sewage is disposed of by gravitation, and the fields of the asylum are thereby irrigated and manured.

All the estates attached to the London County Asylums are very irregularly divided, and in the original laying out of the fields, the parallelism of

opposite sides has either not been practicable, or has not been observed. The fields and enclosures, when practicable, should be, as nearly as possible, square, if the best results are to be obtained: this being the form most suited to economy of tillage; but it is not very often possible to preserve the square or rectangular form, on account of the irregular outline of estates and farms, the intersection of highways, and the natural breaks of many kinds on the surface, such as brooks, watercourses, and inequalities of surface. All, therefore, that can be done in practice, is to approach, as nearly as circumstances admit, to the suitable form, and where irregularities are unavoidable, to cause them to be as little hindrance to an economical tillage of the ground as the case may allow; narrow strips of land, sharp corners, and intersected ridges, however caused, are always interruptions to regular tillage, and should be as much as possible avoided in the laying out of asylum fields, and where inclosures, small, irregular, or injudiciously laid out, exist, the fences should be removed, so as to bring them to the best size and form circumstances may allow. So far as is possible, the asylum fields should each inclose ground of the same nature and quality: otherwise it might be necessary to subject various parts of the same field to different kinds of culture. For instance, if a tract of stiff clay were included in the same field with a tract of gravel or sand, a different rotation of crops might be required for each division, which inconvenient arrangement would be inconsistent with the purposes of the fences.

A small asylum farm would require smaller fields than a large one ; but the general rule should be that the fields should be no smaller or larger than the case requires, for by unnecessarily multiplying inclosures the ground would be uneconomically occupied with hedges and ditches, and the cost of cultivation increased. Possibly much of the irregularity in the shapes of fields has arisen by reason of the work of fencing being left to tenants who have only done the work to meet the requirements of their passing convenience.

From my own observation I have found that the farm fences in the eastern and central States of America are vastly inferior to those of this country, being frequently of very feeble construction, and the finest parts of Europe are said to be very deficient as regards inclosures of land. England is supposed to have derived the knowledge of the art of inclosing from the Romans, who, although they did not probably carry sub-division of their grounds to an extreme extent, were yet familiar with methods of forming fences which would no doubt compare favourably with those adopted in many parts of the Continent at the present time.

In Derbyshire especially, the fences are generally made with loose stones forming walls of from 2 ft. 6 in. to about 4 ft. in height ; but in the matter of the picturesque, there can be no comparison between an estate divided by stone walls and those separated by hedges and ditches, and there is, in this respect, so great an inducement, apart from considerations of cost,

to adopt the growing fence, that there need be little fear that the beauty of the country will ever suffer by reason of the general substitution of the wall for the hedgerow, although there are undoubtedly localities where the wall must continue to be used.

I am not aware of any asylum estates where artificial lakes or ponds exist; but at the Toledo Asylum, in the State of Ohio, which stands upon an estate of 175 acres, there are three artificial lakes within a short distance of the asylum. These lakes occupy an area of about six acres, and are in some places about 5 ft. in depth, are used for skating, fishing, and rowing, and also for auxiliary water supply and sewage flushing. The area of the water surface being so considerable, it would appear a matter of difficulty to avoid disaster to suicidal patients.

The problem for architects as to the general arrangement of the asylum and the placement of the various buildings upon the asylum estate may possibly be solved eventually by a villa or cottage system, somewhat as developed in the United States; but there are some difficulties in the way of such modes being successfully adopted in this country. There can be no doubt but that the Americans have good reason for claiming that their systems may be more economical and permit of better classification than ours, and that a more home-like appearance may be given to these residences and their surroundings than can be found in English asylums as at present generally planned and designed.

The records of the Hanwell asylum date from 1831, when it appears to be able of accommodating about 500 patients; but since that period the institution appears to have been continually on the increase, for in the year 1841 there were 918 patients; in 1851, 916 patients; in 1861, 1,446 patients; in 1871, 1,797 patients; in 1881 there were 1,840 patients; and in 1891 about 1,895 patients. At the present time the sum of about £41,000 has been authorised for expenditure upon a scheme of alterations and improvements. This work will, when commenced, probably extend over three years, and will, it is proposed, be carried out by the asylum's staff of workmen.

These extensions of the asylum buildings in former years appear to have been contrary to the wishes of the Commissioners in Lunacy, and so far back as the year 1858 or 1859 the then commissioners recommended that the fresh expenditure for building should go to the erection, "on some simple and inexpensive plan of a third asylum."

It is not to be expected that such an asylum as that at Hanwell should compare favourably with modern institutions, either here or abroad, still less that such a set of buildings (erected at different periods) should resemble, in plan or otherwise, an asylum designed for the reception of a similar number of inmates.

Another type of asylum, partly a symmetrically planned set of buildings, but with many detached portions, is the Rossiville Asylum for the Insane, in New South Wales, for which Messrs. Sulman and

Power, architects, of Sydney, obtained the first premium in competition.

When, as is occasionally the case, an asylum building is to cost more than £500,000, there should be no financial difficulty in securing the services of a resident or deputy resident architect, seeing that the professional remuneration would not be less than £15,000 at 3 per cent., or £25,000 at 5 per cent., upon the actual outlay.

Amongst the older important asylums must be included Colney Hatch asylum (this was established some 20 years later than the Hanwell asylum, and was originally constructed to receive about 1,200 patients. In the year 1861 this institution had so far increased that 1,868 patients were accommodated ; and at the commencement of the year 1895, the total number of patients had risen to 2,211, or 1,000 more than the original asylum was planned to contain ; and a symmetrical arrangement of the buildings has been maintained throughout all the alterations and additions made during a period of 45 years.

Attention has been directed to a type of asylum which has been found suitable for the climate of those portions of North America where the variations of temperature are far greater than in this country. In the case of one modern American asylum the authorities in their annual report state : "The advantages of the cottage system and non-restraint treatment of the insane is illustrated by the operations of our asylum during the past year, while, as we have shown, the cost of our plant is about one-third of the one-building

plan, we continue to show that the expenses of maintaining our institution are materially less. We have been even generous in the quantity, variety, and character of the supplies for the treatment of our patients." It must be remembered that the extreme cold during the winter makes the heating and ventilation of a large asylum a very difficult matter to contend with. It has been found that the separated asylum cottages for 50 patients may be erected for about £3,000 each, to which must be added a fair proportion of the administrative buildings, when the actual cost of the whole institution (per patient) can be ascertained; but, from the figures before me, it would appear that the Americans expend per patient at least as much as the English upon their asylums. In Australia, it will be remembered that no such difficulty as extreme cold is offered against asylum heating and ventilation, the conditions of climate being wholly different. The Australians, in their Callan Park Hospital for the Insane, adhere to the system of inclosed airing-courts, while the American asylum (at Ogdensburgh), exhibits nothing of the kind, the amount of freedom given to the American insane having determined the authorities to dispense with airing-courts that are fenced in, as being too prison-like in character, and this in view of the fact that the St. Lawrence River winds around three sides of this asylum, and within a few hundred feet (a temptation, it might be supposed, to those of the patients with suicidal proclivities). The Exeter asylum plan is in

strong contrast with American and Australian plans. In this arrangement the patients' wards are mainly situated in one continuous line, over 800ft. in length The whole of the administration and other buildings are situated to the rear of these, the recreation-hall occupying the central position in the front, while the main entrance is in the centre of the buildings at the back. The architect for this asylum is Mr. R. Stark Wilkinson, of Furnival's Inn, London. This asylum was one of the first, if not the first, to be lighted by electricity; and, a special building has been provided for its production. In the basement a corridor traverses the whole length of the building, in which a small tramway was planned for supplying the wards with coals and stores from the central blocks. The rain-water is collected and stored in underground tanks, and the drainage is kept separate and carried to sewage-irrigation tanks at the lower part of the farm lands.

Under various Acts of Parliament every county and, with certain exceptions, every quarter sessions borough was compelled to provide, either independently or jointly with other counties and boroughs, lunatic asylums sufficient for the pauper lunatics of that county or borough. The County Council succeeded to the powers and duties of the quarter sessions of the county (and of the justices or town council of a quarter sessions borough, the population of which, according to the census of 1881, was under 10,000, no such borough maintaining an asylum independently).

The English law on the subject of the provision of lunatic asylums is very elaborate, and it may here be well to state that pauper lunatics are provided for in two distinct ways. In the first instance they are kept as "paupers," and maintained by the union or parish to which they, as paupers, have become chargeable but where it cannot be ascertained to which union or parish they belong, they are chargeable to the county or to the borough in which they were discovered. In the second instance they are provided for as "lunatics," and asylums must be provided for them by the county or borough upon which they have a claim.

The cost of maintaining a pauper lunatic kept in a county or borough asylum must be divided between the union or parish and the county or borough in this way.

The parish or union must pay to the authority maintaining the asylum a sufficient sum to defray the expense of the lunatic's keep, clothing, and other matters, and, in addition, provide for the salaries of the asylum officials; but the Treasury make a grant towards the maintenance of each lunatic chargeable to the parishes.

The boroughs and counties are chargeable with the cost of providing and repairing the asylum and the necessary furniture; but where a lunatic is chargeable to a county or borough (owing to the impossibility of discovering to what union or parish he belongs), the Treasury also assist that county or borough.

The erection of a new asylum, or the maintenance

of an existing asylum, is vested in a committee of visitors, who carry out all ordinary repairs of the asylum; but their total expenditure for the year in this respect must not exceed £400, and they must make an annual report (to the council of every county and borough interested in an asylum) as to the state and condition of that asylum, its sufficiency for the proper accommodation of the number of lunatics requiring care, the management and conduct of the officers and servants, and the results of the treatment of the patients and any other matters deserving of notice. A copy of this report must be sent to the Commissioners in Lunacy.

Architects may legally be authorised to prepare plans and estimates for everything necessary to be done in the erection of a new asylum or the enlargement of an old one, if instructed by a committee of visitors who have been authorised by one or more public bodies interested to expend a certain sum; but if any of the authorities interested do not approve of the plans, estimates, or resulting contracts, while others approve, the objecting authorities must forward the plans, &c., with their objections in writing, to a Secretary of State, who must decide upon the question.

I have pointed out above that the sum of £400 only can be legally expended per annum upon the ordinary repairs of any asylum. This sum appears to be rather a small one for a large asylum, and in the case of five asylums, the accounts of which are before me, the sum so expended in one year are respectively £400, £400,

£399 13s. 8d., £383 1s. 7d., and £397 5s. 11d., thus showing that the visiting committees must have considerable difficulty in adjusting their building accounts.

While in this country the asylum officials must report to the Commissioners in Lunacy, the officials and trustees of the American asylums must send in annual reports to the governors of the various States in the Union. These foreign reports are frequently of an elaborate description, and appear to be produced by men of high ability.

There has always existed, unfortunately, a strong prejudice which has led the friends of the insane to seek extreme privacy for them, and thus exposing them, not merely to inadequate accommodation and treatment, but to all the imaginable evils attending their becoming objects of financial speculation. In a great measure the deficiencies of the private and public houses for the insane of former days have long since been satisfactorily dealt with, and at the present time any defects that may be found in the smallest private asylums or the largest county asylums, whether *structural* or otherwise, are liable to be advertised in the annual reports of the Commissioners in Lunacy for England, Scotland, and Ireland. Much of the earlier legislation was directed for the benefit chiefly of the insane poor, not observing the fallacy that because the sane rich are well able to take care of themselves, the *insane* rich must be so too.

A private asylum for the richer classes might well be planned upon the lines of a good hotel or boarding

house, providing every means of cure, and every requisite for the comfort and happiness of the patients, and all precautions against their illegal detention. The question of accommodation may decide that of the terms of payment. A patient requiring special rooms and attendance, and a separate table, should contribute to the funds of the establishment a larger sum in proportion, than those who are contented with the accommodation provided for all. These are, in fact, the principles on which a family hotel (as well as many other forms of public enterprise) are carried on, and it would be well for the community that all these institutions should be frequently visited by committees from time to time, as are county asylums; and no private asylums should remain unvisited by either local or departmental authorities.

While the poor derive benefit from the better food and care of the public asylum, the rich patients in private asylums are beneficially influenced by causes relatively similar. The internal arrangements, therefore, of a private asylum should be in accordance with the tastes and occupations of the inmates, and the tedium of uniformity must be prevented by such aids as are employed for like purposes in everyday life: billiards, books, and music are not enough; there should be social reunions with a view to affording opportunities for mixing in the society of persons of sound mind. This is a point of great importance, for "to have the world and its recreations brought from time to time into contact with the insane, is less

valuable even as an amusement or a pastime than as a means of satisfying them (especially when allowed to meet their friends or relatives) not only that they are not forgotten, but that their return to the world, its business and its duties, is still looked for with anxiety and delight."

In this description of asylum the patients should be the guests and associates of the superintendent and his family, amongst whom may be assigned the duties of moderating the impressions from without, and of regulating the desirable degrees of intercourse with the world. Here the first public efforts of a returning healthy mental activity should meet encouragement, and here those doomed never to know the happiness of recovery experience protection and even pleasure to the measure of their faculties.

The ever-watchful kindness, the considerate forbearance in the discharge of duties often irksome, harassing, and even dangerous, and the ready inventiveness to suggest new thoughts to cheer and amuse, are difficult to secure, and are generally looked for in vain in the private lodging or the private family, and whatever comparison may now be made between British, American, or Continental lunatic asylums (either private or public), there is reason to believe that our Continental neighbours were in progress of being freed from the evils of defective systems prior to the improvements of asylum management and construction in this country.

Many of the American asylums are of considerable

extent, and have elaborate structural arrangements; the plans in some instances are upon the separated cottage system, and the areas of land occupied are therefore very considerable; others are upon the old-fashioned block arrangements.

Those asylums built upon the cottage plan may be conveniently connected in their various departments with subways or tunnels, in which may be enclosed electric wires, gas, steam, or water pipes. Many asylums are lighted by electricity; indeed, in the United States generally, electric lighting has for many years been more extensively used than in England, and during a visit to America so far back as the year 1888 I was surprised to see quite small villages in out-of-the-way parts of the States of Ohio, Indiana, and elsewhere brilliantly lighted with electric lamps.

Amongst several American asylums where scientific management of the insane is carried into effect are the "Johns Hopkins" Hospital, Baltimore (which is said to possess the best laboratory in that country); the Maryland Hospital for the Insane, Catonsville, Baltimore; the New Jersey State Hospital, Morris Plains, New Jersey; The Danvers Lunatic Asylum, Massachusetts; the St. Lawrence State Hospital; the Government Hospital for the Insane, Washington; the Toledo Asylum for the Insane; the Utica State Hospital, New York; the Alabama Hospital for the Insane, Tuskaloosa, Alabama; and the McLean Hospital, Boston, Massachusetts.

The Utica State Hospital is said to be the oldest

established of the New York State Asylums, and is erected in the Classic style with a fine entrance; it is a three-story building, and contains nearly 1,000 patients, who are looked after by about 100 day attendants and about a dozen night nurses. It is erected in stone, upon an estate, the area of which is 200 acres; the structural arrangements are considered to be unsatisfactory. This is scarcely a matter for surprise, as it is the first building of its kind erected in this State; but the establishment having the repute of being excellently managed, with special arrangements not usually found in asylums, I regret to have been unable to call at Utica during my journey from the Western States.

Amongst other arrangements at the Utica State Asylum the bathroom appears to be particularly noticeable, as it is entirely without baths!

The bathroom is lined to a considerable height with marble polished slabs, and has a floor with inclines from each side leading to a central gutter.

The patients are provided with an adjoining dressing room, also with adjacent lavatories, urinals, and water-closets.

When ready for the bathroom, the attendants receive the patients in turn and place them under a fixed spray of water, which may be heated to the exact temperature required. If the patient be unable or reluctant to cleanse himself, or restive, &c., the attendant *(who is attired in a bathing dress)* soaps him down, and washes him by means of a portable jet, with indiarubber piping.

This appears to be a very easy mode of cleansing the insane—easier for the attendant, and better for the patient, inasmuch as no bath cleansing is necessary, neither is it possible for more than one person to be bathed with the same water.

About three miles from Ogdensburgh (which is situated on the southern banks of the River St. Lawrence, in the State of New York, and somewhat north-east of Lake Ontario) is the St. Lawrence State Hospital, which is said to stand upon an estate of nearly one thousand acres. This asylum was commenced to be built during my stay in the United States in the autumn of 1888, and has cost about £250,000, inclusive of land and all fittings and appliances ready for the reception of 1,500 patients. It was built in sections, and the patients were received in instalments as the various buildings progressed, and the grounds were laid out for the whole estate concurrently with the erection of the buildings, which are arranged with a central and several detached blocks having the usual administrative offices. The materials used are red sandstone and rock-faced granite.

CHAPTER VI.

KITCHENS AND LAUNDRIES.

THE construction of all kitchens should provide facilities for rapid serving of one course at a time, the second and later courses not being served until the whole of the patients have consumed the first. This gives the attendants a better opportunity of watching the patients at their meals, and seeing that they do not steal food from each other, refuse food, or throw it about, &c. Upon this subject, Dr. William Harding, in his work "Mental Nursing," states as follows :—

"The worst examples of refusal of food occur in those whose delusions are of a religious character. These are often very obstinate and difficult to manage. Among the delusions which we may meet with every day are the following: God has commanded that no food will be taken; the food is poisonous, or contain filth; the patient has neither throat or stomach." Dr. Harding also says :—"A small kitchen should be attached to the ward in which acute cases are received. It is impossible to have the small amount necessary for sick diet for special cases prepared in the general kitchen, and the present arrangement of having it made in mass is not satisfactory. The nurse could herself, with the same materials, vary their preparation,

and make them palatable. In the long run it would probably be cheaper, while the advantage to the patient would be very considerable. The monotonous dietary of our sick-wards could then be varied in a way which it is impossible to attain under the present system."

The manner in which the insane are fed occasions the necessity of a different kitchen scheme to that usually provided for workhouses, prisons, and hospitals. Much of the food provided for epileptics and paraleptics must necessarily be of a soft nature at certain stages, and even when taking this, close observation of the patients is absolutely required to prevent choking, &c. It is necessary sometimes to give an epileptic patient her meals in a single room, and when this is the case, a nurse should always have the patient in view.

There should always be arranged sufficient lavatory, urinal, and water-closet accommodation for both sexes employed about the kitchen, and for the servants employed therein.

Whatever apparatus be employed for cooking purposes in asylums, or indeed anywhere else, it is absolutely necessary that it be so constructed and fixed that the oven, boiler, and other flues shall be easily accessible, not only for cleansing purposes, but for such repairs as may from time to time become necessary. Some flues require to be thoroughly cleaned out once in every week, and when this is done, the persons who have been employed on the work of cleansing should see that all loose parts, doors, flanges, &c., are left in

their proper positions, or otherwise the working of the best ranges might be seriously interfered with. This work is frequently the duty of the asylums' engineers' department. The matter is a far more important one than to many would at first sight appear; but a break-down in the kitchen department of an asylum with over 2,000 inmates would frequently lead to serious complications.

For an asylum of this extent the cost of cooking apparatus (gas, steam, or coal, or a combination of these) would vary very much—say from £2,000 to £4,000, according to the quality of the materials and workmanship.

Until electrical cooking takes the place of gas and steam cooking (combined), the latter combination will probably be more economical than by coal, steam, or other arrangements; but the addition of one coal range in a large kitchen would probably be acceptable for some of the cooking for the officials, nearly all of whom are boarded to some extent, whether they reside upon the premises or otherwise.

Amongst the appliances for electrical cooking is an apparatus which may be regulated so as to work an automatic switch which will cut off the electrical current in the event of overheating, so that the cook would not have to keep so close a watch upon the ovens, &c., as otherwise might be necessary, and with the further advantage of placing an economical limit upon the amount of electrical energy consumed.

An advantage of an electrically-worked asylum

kitchen is that it may be kept very cool, to the benefit of the officials and patients who may be employed therein. And it has been stated that the temperature of the electrical cooking ovens, &c., may be regulated with far greater precision than is at present practicable with gas or coal ovens, and the results are correspondingly better and more uniform.

The apparatus for a large, or even a moderately-sized, asylum kitchen, should not be purchased piece by piece, and from small makers, without a knowledge of the very special requirements of such buildings. There are a few manufacturers who have given for many years particular attention to this class of work, and although in some instances the prices charged appear somewhat high, yet it is inadvisable that the appliances adopted should be very much cut down in the matter of cost, as good materials for the purpose cannot be obtained at a low price.

An asylum laundry should be different in many respects to the laundries for any other class of building, and the efficiency of this department is a most important factor as regards the health and comfort of the patients, for the special reason that a large number of asylum patients are very dirty in their habits, both by day and night. Employment in the asylum laundry has frequently great and special disadvantages as regards health and sanitary considerations; but, as a rule, the laundry stands in a similar position to the female patients that the workshops and farm lands, &c., do to the males, as regards opportunities for useful employment.

In the older asylums, and perhaps in many of more recent date, a great danger has existed with regard to fire, but the more modern asylums are so planned and constructed as to greatly minimise this risk; all hot pipes, flues, and fires should be isolated from woodwork, and, at all events, in large institutions steam-pipes are preferable to open fires.

Yet even with many of the latest asylums there are special fire risks for which the authorities have to adopt various precautions, especially in the ironing-room, where there must (under present conditions) be gas or fire-stoves to heat the irons, and where patients will also have easier means of reaching the burning coals or gas-flames, thus getting opportunities of doing mischief. Then, again, ironing patients may allow the irons and apparatus to become over-heated (if not carefully watched), and are more liable than sane ironers to bring the linen, &c., into contact with the flames or red-hot surfaces, or to try over-heated irons upon pieces of cloth and then throw the latter away in a smouldering condition. The ironing room is frequently kept at a high temperature, and the adjuncts are, therefore, in a condition tending to the spread of any fire that might arise.

All this trouble and risk may be averted by the use of electrical appliances both for the wash-house and the ironing-room, the drying of the clothes being accomplished by means of electric drying closets, and the ironing by hand-irons connected with detachable wires to the electric mains. Some of these appliances are

already in use in hotels and elsewhere, and I am strongly of opinion that the time is not far distant when electricity will be developed to such an extent in laundry matters that its use will entirely take the place of existing modes, when no ironing-stoves or fires of any kind will be required in connection with either the washing or the drying of clothes. The ironer would merely have to connect (instantaneously) the flat-iron with an ordinary electric cord, such as is generally in use with small electric lights; the iron would be quickly heated, and the heat regulated to a nicety without difficulty.

The drying of the clothes might either be by an electric fan, or by a direct application of electrically-produced heat.

In the construction of a laundry for an asylum, the superficial space to be allowed for each patient should not be less than 5 ft.; therefore for an asylum for 2,000 patients there would be required 10,000 ft. of area for the patients' laundry which, however, would include an area of about 500 ft. for the foul wash-house, unless there be a large proportion of patients with filthy habits.

In addition to the above accommodation there would be required a laundry area of about 1,500 ft. for the officers and nurses, &c., preferably in a separate building, or apartment, with separate receiving and delivering rooms, &c.

The construction of a large laundry of modern type is a vastly different affair to those in asylums

erected some twenty or thirty years ago, and since the introduction of gas, steam appliances, and elaborate machinery for nearly every operation.

The walls of an asylum laundry should (at all events, to a height of 5 ft. or thereabouts) be lined with glazed bricks or tiles of a light or white colour; the apartments should all be light and well ventilated. Many laundries are lighted only by skylights; but it would appear to be much more desirable that there should, in addition, be a fair supply of windows in the side and end walls. The floors of the wash-house may be either of tiles or cement, the latter for preference, and so dished, guttered, or inclined, that the waste water, soapsuds, &c., may be collected into receiving tanks. The wash-house should be constructed so as to allow the washing troughs to face the windows, not only for purposes of light, but also to secure for the patient employed therein as much cheerfulness as may be obtainable.

To a very great extent hand labour should be utilised in an asylum laundry; but in the foul wash-house and elsewhere some washing machines would generally be required, and (with proper and sufficient protection from the asylum patients) steam-power would frequently be advantageous, the belting, &c., being driven from a shaft *below* the floor-level rather than above the heads of the workers, although circumstances may sometimes make the latter arrangement more convenient.

With regard to the machines to be employed, these

must be chosen with special regard to the fact that the asylum patients engaged in working them should not have opportunities of injuring either themselves or the apparatus; and the latter should be as compact as may be, space being so valuable in this department.

There is a patent self-reversing washing machine that is made for steam-power, the dimensions of which (largest size) are 6 ft. in the clear. It consists of an outer case with a revolving cage, actuated by pulleys upon the centre shaft, passing through the case. This central shaft is driven from a counter-shaft overhead, which is a component part of the machine, and is fitted with a set of automatic striking-gear, which by means of a crossed and open strap causes the inner revolving drum to *reverse its direction at every three or four revolutions*, thereby preventing the tendency of rolling-up and balling of the fabrics undergoing cleansing.

The revolving cage is, for convenience, divided into four compartments, and all the clothes in each of these compartments are passed through the washing solution at each revolution. The outer door in the case provides access to the inner drum, and a hand-shaft with worm and wheel arrangement is fixed on the side for bringing the door of each separate compartment to the position for discharging and filling opposite the door in the outer case. The lower part of the case is provided with an emptying valve, to run off the cleansing solution; hot water, cold water, and steam are laid on to the machine, so that it may be used either as a rinser or washer, or as a boiling tub or a disinfector,

by turning the steam direct on to the clothes. Another type of this machine is made to resist pressure, and is fitted with a safety-valve, and these machines may be fitted with a vertical steam-engine as an integral part of the machine, so that where no line of shafting exists it has its own motive-power, with a sufficient reserve to drive a wringing machine or mangle if required, or for doing other work. These latter machines are suitable for asylums of moderate size, and are in use at the various hospitals and similar public institutions.

The washing troughs may be made of 2 in. wood, grooved, leaded and fixed together with lag bolts, having brass waste plugs and iron legs, and the inside measurement of each compartment may be 28 in. by 25 in. by 17 in.; the height to the upper edges may be about 32 in.

In an asylum for 800 patients (and for the officials and nurses, &c., having charge of them) the following are, approximately, the appliances for which space must be found by the architect:—

In the General Laundry, one hydro-extractor 36 in. in circumference; one box-mangle 8 ft. 6 in. by 3 ft. 3 in., with patent self-acting risers and gear, and friction rollers; one rinsing and wringing machine with sliding drainer over trough. The above would comprise all the *machines* necessary.

The *fittings* would include one galvanized iron vessel and wood frame, fitted boiling apparatus with steam supply and cold water; a range or ranges with 30 washing troughs, each 2 ft. 6 in. by 2 ft. by 1 ft. 6 in.,

all made in best manner, with copper bolts, nuts and washers ; 1½ in. pine draining boards and racks to each ; full way brass plugs, grates, washers and chains, hot and cold supply copper steam sparge pipe and valves, and strong wood supports and grids.

One range of drying-horses (in a brick-built chamber) with runners, guides, and including the steam coil and necessary heating apparatus.

There should be provided about five 10 ft. drying-horses to every 100 patients ; therefore in this case for 800 patients there would be not less than 40 of these, and a considerable area would be necessary, having in view the necessity for ample means of drawing out the horses, passage way, &c.

There would also be a laundry stove for heating about 50 irons.

In the Officers' Laundry, an area would be provided sufficient for the working of the following apparatus :— One 26 in. hydro-extractor ; one patent box mangle, 7 ft. by 3 ft., with automatic rising gear and friction rollers, and hard wood bottom ; one patent rinsing and wringing machine with drainer and trough ; one goffering machine, and one hot calender and cylinder mangle.

The fittings would comprise a boiling vessel with cold water supply, and a steam (copper) coil complete ; a range of 12 washing troughs (as for general laundry) ; one range of drying-horses (about seven 10 ft. horses), and one laundry stove for about 20 irons.

In the Foul Linen Laundry, space should be found for one hydro-extractor, one mangle, 7 ft., by 3 ft., and one rinsing and wringing machine.

The fittings here would include one boiling vessel, with cold-water service, and steam (copper) coil; one range of seven washing troughs; one foul linen tank (provision to be made for drainage and overflow to drains); and one range of seven 10 ft. drying-horses.

In an asylum for 800 patients, the total number of inmates (patients and officials) may be taken, approximately, at about 1,000 persons, and from an estimate before me the total cost of the laundry appliances for an asylum of this size, including hot, cold, and waste services for the laundry, should not exceed £1,600; the figures being divided thus:—General laundry, £1,040; officers' laundry, £370; foul wash-house, £190.

The boilers would be used for all purposes connected with the engines, hot water and steam supply, electric lighting, &c., as well as for laundry purposes, and arrangements should be made for such utilisation of exhaust steam from the engines as may be found advisable.

The laundries of all asylums should be arranged of sufficient capacity to provide the whole of the inmates with at least two changes of under-clothing every week, and with a sufficient further provision for the cleansing of bed-linen, table-linen, and the preliminary cleansing of bed-clothes and linen of patients with foul and dirty habits. Therefore, before planning an asylum laundry, full information is required by the architect as to the

numbers of the clean and dirty classes of patients; these differ in proportion in various institutions; but frequently I believe the foul laundry would not be constructed on too large a scale if arranged for about *one quarter* of the total number of patients; and in connection with this department there should be a disinfecting apparatus.

In connection with large asylums where an isolated hospital for fever and smallpox patients exists, a special laundry of small extent should be provided in proximity therewith. This may consist of three or four apartments, including a disinfecting-room or closet, a reception-room, wash-house, laundry, and drying-closets, &c. Should the fever hospital be fenced from the asylum grounds with walls or railings, &c., the laundry and drying-ground might also be inclosed, as it is obviously necessary to adopt all reasonable precautions against the intrusion of insane patients, careless attendants and nurses, workpeople and visitors within an infected area.

Unless the medical officers should consider it sufficient that all linen and cotton articles from the feverwards should be steeped for an hour or so in a mixture of disinfecting emulsion with water, with subsequent boiling, or other similar treatment, it would be necessary that the architect should include in his plan a small disinfecting closet, operated by hot air and steam, the larger goods, bedding, &c., being taken, perhaps to the disinfector attached to the general laundry, or being burnt in a destructor when advisable.

There should for all laundries always be a sufficient supply of absolutely pure soft water. In some districts the water, though soft, may be strongly impregnated with organic matters, or it may be hard by reason of its having come in contact with or passed through mineral strata. By filtering either of the above described waters these objectionable qualities can be taken from them, leaving the liquid apparently perfectly clear. Should it still remain hard, caustic soda is sometimes added in the proportion of 2oz. to each 100 gallons of water. The cisterns in which these mixtures are made should have an outlet at the bottom for the escape of the mud, &c., when necessary, and the pipe for drawing off the water should be at a height of 3in. or 4in. from the bottom that the opening may not be obstructed by the sediment. The question as to whether or not these cisterns would be required, and their size, is one that may influence the planning of the laundries, and should be considered by the architect at the outset.

In some instances the asylum committees, or county councils, prefer to take the opinion of their architects or engineers (rather than that of their medical officers or other officials) as to suitability of fittings and appliances, for laundry and other purposes; but this knowledge on the architect's part can only be the result of considerable inquiry and consideration. For instance, take the apparently simple question as to the provision of a system of drying-closets and drying-grounds. Upon this subject an American writer says: "Great

care should be taken to preserve an even temperature during the whole operation of washing and drying. A draught of cool air from an open window or door will often cause the flannels to shrink. The open air on a summer's day is the best drying-ground, but the articles *should be put in the shade*, as the sun's temperature often exceeds 100°." Again, another writer claims to have "perfected a new steam-heater for laundry drying-rooms, the design being intended to insure rapid evaporation of moisture without the possibility of *discolouring, which so often follows the use of over-heated dry air*."

In planning asylum laundries it will be observed that the alternatives of hand-washing and machine-washing may influence architects considerably in deciding upon the areas of the laundry apartments; further, some machines are much less economical than others as regards the space they would occupy. Machines are made which almost form wash-houses in themselves, and there can be no doubt that laundry machinery would be made much more use of in asylums were it not desirable to find employment at the washing-troughs for the female patients.

There is a very compact machine which should reduce the floor-space of a laundry very considerably. It consists of a circular and comparatively shallow metal tank mounted on trunnions; inside the tank there is a perforated metal cage, divided into three compartments for the reception of clothes. The outer casing has one large door, and each compartment of the

cage has a separate door. This cage is carried on a spindle running through its centre, fitted with special ball-bearings, cone, and other gearing, for enabling the transformation of one machine into another to be effected with rapidity and ease. Owing to the shape of the machine, comparatively little water is needed, and as the compartments are triangular, the linen in each one is raised and dropped three times in every revolution, and falling into the angles, is squeezed and rubbed against the sides, thus insuring thorough, but not too violent, rubbing. When the washing process is completed, the dirty water is run out; then the operator takes hold of a lever in front of a spur cog-wheel, and slips a sliding clutch out of gear. This automatically throws the reversing apparatus out of gear. Taking hold of a hand-wheel, he gives a turn or two, and the whole washer (outer casing and inner cage) swings round horizontally. A friction cone, fixed to the end of the central spindle at the bottom of the outer casing, comes into contact with a vertical cone fixed to the under shafting. The apparatus is locked in that position, and the cage inside the outer casing whirls round at a high speed, being converted into a hydro-extractor or a centrifugal wringer. At once the dirty water is forced out of the linen by the rapid motion, and escapes through a waste-pipe. When all the dirty water is extracted, the machine is reconverted into a washer; hot water is run in, steam is admitted, and the water raised to the boiling point while the machine revolves—first from left to right, then from

right to left. Once more the machine is converted into a hydro-extractor, and the fluid removed; back again it is converted into a washer, for rinsing purposes and bluing. Then there is the final "hydroing," and the linen is removed, white and dry, to the ironing room. It will be seen that there are many excellent points to this system, apart from its economic value. To begin with, there is the minimum handling of linen (apart from the frequent necessity for providing labour for female patients before referred to), there is disinfection by boiling and the admission of steam under pressure, and, above all, the dirty washing water is thoroughly removed before boiling commences, and the boiling fluid is extracted to the last drop before the linen is rinsed. We have here all the absolute requirements for a very thorough cleansing and disinfection, and upon a moderate amount of floor space, and for those asylums where laundry machinery may be advisable rather than hand-labour, the desirability of making use of such appliances as the above may well be considered by the asylum architect, and with the view of limiting the cost of the laundries by reducing the areas and cubical contents of the building as far as possible. These are frequently of great extent, and form one of the most costly departments of an asylum, the machinery and appliances being items that should always be of high-class manufacture, and supplied by firms who have had special experience in asylum requirements.

In connection with a laundry, and as a means of occasional or even permanent employment of both

male and female patients, a small dye-house might be arranged for. I believe that such accommodation has been provided in America and other foreign asylums, and it is not improbable that some asylum committees may be advised by their medical superintendent that such work as dyeing may be added with advantage to the institution, and possibly with some profit. In some districts there is a difficulty in finding suitable employment for the insane patients, and suggestions upon the subject would be of utility.

CHAPTER VII.

SANITATION.

IN few asylums is the provision of water-closets sufficient for the population, and the proportion should not be fewer than one to twelve.

In many asylums the closets are placed in small buildings, or annexes built away from the wards, and connected therewith by narrow neck-passages in the manner frequently to be found in modern hospitals, the idea being to obtain cross ventilation between the closets and the main buildings. Some authorities, however, contend that such arrangement (however excellent, to a limited extent, in connection with fever and other hospitals), are unsuitable for asylums, and for the following reasons:

In the first place this arrangement of the closets occasions considerable difficulty in reference to the necessity of a sufficient supervision and *inspection* of patients in the closets—a matter manifestly of the utmost importance if the liability of many of the inmates to commit suicide or misconduct themselves be duly considered. In the second place, some authorities are of opinion that where the closets are cold and the wards warm, there is a tendency for the air to pass from the closets into the main building through the neck-passages. The partitions between the closets

would be about 6 ft. in height: it would be unnecessary to make them higher, or to box them up to the height of the ceiling. The doors would of course open outwards, and it would be well to provide these with light closing-springs. To facilitate the work of the attendants, the doors of the closets should not come within 1 ft. 3 in. of the floor; there should be no projections, brackets, bars, or fixtures of any kind to which it would be possible for a patient of suicidal tendencies to attach a rope. The inside walls and floor should be made perfectly impervious, so that impurities cannot soak into them. For this purpose there is nothing better than glazed bricks or tiles: they form a perfectly smooth surface, and are easily and thoroughly cleaned.

Here it may be mentioned that for epileptic patients the old form of seat is to be preferred, as it protects them, to some extent, from falling *sideways* to the floor during their fits.

It may be noted that an *excessive* provision of inspection windows is to be deprecated, as it is detrimental to the patients' interests that they should in *all* cases *know* that they are constantly under close observation. Attention has been already directed to a similar point in reference to the patients' single rooms.

Opinions are divided as to whether or not automatic flushing arrangements (actuated by the door, seat, or other means) should be used in asylums; in making arrangements for the sanitary buildings of an asylum

it is most necessary that the comfort and convenience of the attendants should be thoroughly provided for. The habits of the patients are in some instances revolting beyond all powers of description, and anything constructionally practical that the architect can suggest, with a view to mitigate their distressing duties, cannot fail to be acceptable.

The lavatory basins should be sufficiently divided from centre to centre so that the patients using them shall not be liable to jostle each other. They should be supplied with both hot and cold water ; but the pipes for supplying hot water to each range of basins should have a valve so arranged that the attendant or nurse may be able to turn off the water from all the basins, so that patients may not be able to scald themselves, as some of the more demented are liable to do. The basins should not be cased-in below, but be open and free for inspection and cleansing purposes.

In all sanitary annexes attached to dormitories there should be provided slop-sinks, supplied with both hot and cold water, also a cupboard or receptacle for a *given* number of brushes, &c., all arranged so that if one be *missing*, the circumstance shall be known at once, and for the special reason that a brush-handle may become a dangerous weapon in the hands of an insane patient.

The sanitary annexes should never include within them the sculleries : these are best kept quite separate (and should be kept locked up from the patients). They should also be supplied with hot and cold water,

with plate-racks, dressers, table, towel-roller, &c., and be planned by the architect with special reference to the wards of the particular class of patients for whose benefit they may be intended. For instance, minor cooking operations, and the warming of the food for sick patients, need not be provided for in the sculleries attached to the wards for the able-bodied patients.

In no part of an asylum is the evil of overcrowding (occasioned by the constantly-increasing numbers of the insane without corresponding extensions of accommodation) more likely to be detrimental to the health and well-being of the patients than in the buildings for sanitary purposes, whether these be attached to the main buildings, or in connection with the workshops and airing-courts for patients.

The working patients in asylums may be divided into two classes: those employed upon occupations requiring physical strength in workrooms, &c., and those only capable of employment upon tailoring or light occupations.

Separate water-closet or earth-closet, urinal, and lavatory accommodation is advisable for these classes, and should be in proximity to the workshops and workyards, and so arranged that one class shall not be brought into contact with the other—*i.e.*, the stronger with the weaker.

The water-closets and urinals to be provided in connection with the workshop buildings should never be placed in direct communication with any of the apartments, whether occupied by the workers or used for storage purposes.

The water-closets for the sick and infirm or bed-ridden patients, and in the asylum fever wards, may usually correspond with those provided with the best modern hospitals, but with due attention to the precautions already referred to with regard to cases which may be suicidal, and the means of observation of the patients. The annexes in which they should be placed may also contain a space for a movable bath, and the ordinary adjuncts and utensils required for *hospital* use.

Near to the entrances to the various wards, from the airing-courts and grounds, an earth or water-closet is sometimes conveniently provided, the door should open outwards, as for all other closets intended for patients' use, and be without bolt or other fastenings.

The form of water-closet pans most in favour in asylums are the wash-out and the wash-down, both of which have the manifest advantage of being without valves or moving parts, and therefore have no mechanism liable to become disarranged or broken by the patients.

The urinals should not have any pans or receptacles above the level of the floor. There should be an automatic flush every few minutes, and there should be laid on a supply pipe from the nearest hot-water cistern, so that the urinals may be easily scalded out occasionally.

As urinal pans should not be adopted, and as a gutter in the floor is all that is necessary, it would be advisable to provide a gutter receptacle for the urinal-

tablet disinfectors, which are now in general use; or otherwise, these would be liable to removal by the patients, many of whom meddle with or steal the most trifling objects. These "Sanitas" urinal tablets are very useful, especially during hot and close weather, and they may also be used in the cisterns which supply the water-closets, and for this purpose should be placed in specially designed cases so that the pipes may not be clogged with the tablets.

The bath for patients of dirty habits, which may sometimes be advantageously placed within the sanitary annexe, should have some disinfecting arrangement. A bath is made with an internal flushing rim which is supplied with water that has passed through a disinfecting box.

The selection of a suitable apparatus is a matter of some difficulty. There are, I believe, about twenty-five well-known firms in this country who manufacture sanitary ware and apparatus of various descriptions, and of these there are several who make wash-out, wash-down, and trough closets that are suitable for asylum patients: from these may be selected fittings to meet the varying preferences of committees, medical superintendents, and others connected with asylums; but some authorities are of opinion that a perfectly suitable apparatus has not yet been contrived satisfactorily meeting all the requirements of the case as regards the most demented and dirtier classes of patients.

During the past twenty-five years, or more, I have been engaged upon the plans of as many lunatic asylums,

and from the first have noticed that the medical superintendent of the asylum frequently influences the schemes for the structures to a considerable extent, and, indeed, somewhat encroaches upon the special province of the architect.

CHAPTER VIII.

WORKSHOPS.

IT is, of course, greatly to the interest of all that a large percentage of patients should be persuaded to employ themselves upon such work as they may be found capable of performing, even if the result of such occupation should be found (as is frequently the case) financially unremunerative. Therefore, the workrooms should be very cheerful, spacious, well lighted both by day or night, and the ventilation, warming, fittings, conveniences, and appliances should be fully sufficient for the comfort and well-being of the patients, a considerable number of whom are constantly employed, and spend a large portion of their time in the room, and whose prospects of recovery depend to no little extent upon the adequacy of the provision made for them in the above matters.

The carpenter's shop and any other workrooms where shavings, wood, oil, varnishes, or other combustible materials are used or kept should be placed in an isolated series of buildings, and if for any purpose petroleum or other dangerous oils or spirits are required to be kept in considerable quantities, a detached brick building or shed, &c., with iron doors, should be provided, similar to those generally found in connection with factories and workshops, the owners of

which are compelled by the public authorities to adopt such precautions.

It is undesirable that there should be any coal or coke fire in the carpenter's shop; the glue should be heated either by a gas apparatus, or, better still, a steam pipe from the boiler department.

The upholsterer's shop of an asylum is often of considerable area, and for large institutions may be divided into two or more divisions for purposes of sub-classification, and with the view also of separating patients who may have antipathies and be liable to quarrel. This department is a most useful one, especially for large asylums where, indeed, it cannot be dispensed with; but here, again, there are dangers to be apprehended from the obviously necessary presence of hammers, chisels, and various cutting-tools which are liable to be used by would-be suicides; therefore great precautions are taken in the selection of patients, and care should also be observed that these dangerous tools are not stolen or hidden.

The workshop for painters need not be a large apartment; but there might be a shed for stores, under which large articles to be painted could be placed. The work would appear to be sufficiently easy for a much larger number of persons to be occupied upon, than is customary in most asylums, considering the enormous amount of painter's work required in connection with repairs and maintenance of the buildings. In many asylums, probably most, the attendants *work with* the patients instead of standing

by and watching them (as formerly was usually the case). Nothing could be better calculated to improve the relations of patients to attendants than this plan, and for obvious reasons.

Bricklayers, plumbers, painters, carpenters, joiners, smiths, tinsmiths, gas-fitters, fitters, and other non-patient workmen are employed upon the staff of asylums, and more or less their engagements are of a permanent nature. The men so engaged work to some extent with the assistance of the patients, but certainly not in many asylums so much as could be desired, or as is the case with tailors, shoemakers, upholsterers, and others.

The plumbers', smiths', and engineers' workshops might very conveniently be situated near to the boilers and engineer's rooms and the asylum fire-engine station. In a large asylum there is necessarily always a certain amount of engine-work, repairs to ventilating and heating apparatus, to cisterns and tanks, machinery in the laundries and cooking apparatus, and to the water supply system, hydrants, gas and electric-light fittings, &c., and it is desirable that such works as these and of a kindred nature should be brought conveniently near to each other in the workshop arrangements; while the tailors', shoemakers', and upholsterers' work-rooms may be arranged for under a second division (connected with the main buildings by an inclosed corridor, or, at all events, a covered way).

If the store and spare rooms included in the work-

shop buildings be divided, these could frequently, during pressure of space, be utilised for such work as may be contrived to occupy advantageously those patients who, although pauper inmates, have yet in happier times occupied a fairly good position as professional men, such as accountants, authors, bankers' clerks, medical men, draughtsmen, journalists, and surveyors, all of which classes, amongst others, are to be found occasionally in county lunatic asylums, and the employment of whom upon such work as the scrubbing of the ward floors, or upon the various rough trades for which they are physically unsuitable, would not be likely to promote any chances of mental recovery that they may possess.

The occupation of female patients, beyond what work can be given them in the laundry, the kitchens, the wards and dormitories, and in the sewing and knitting-rooms, is occasionally a matter of considerable difficulty.

Long galleries or workrooms, divided at intervals (generally with glazed screens for purposes of observation), are as necessary as in the buildings for the male working patients, the worktables and seats being placed so that the women may have a cheerful look-out (the window-sills to be not more than 3 ft. in height above the floor), and, as on the men's side of the building, in lines parallel to the length of the apartments, which should be so constructed that patients may not necessarily have to pass through divisions occupied by other classes of workers to reach

their own wards or the lavatories and water-closets.

Most trades are suitable for the more intelligent classes of patients, and when the numbers to be employed upon some of these may be but few, one or more trades might be in some cases conveniently followed in the same apartment, provided that the patients thus associated can be in other respects suitably associated as regards their temper, bodily or mental health.

For female patients of a very low state of intelligence the picking of horsehair is a very suitable occupation. This work is constantly needed in asylums, and is not difficult to execute. The hair should always be thoroughly cleaned, and, if possible steamed, before it is given to the patients to be operated upon. This work should be done in a separate and well-ventilated apartment, and certainly never in the wards. The picking should be done first by the less intelligent patients, and completed by a better class in another room.

Epileptic patients are usually considered to be good workers, being very frequently strong and energetic; but they are so liable to sudden falls, that they should not be permitted to work near to open fires, high places, or under other similar dangerous conditions, and, where practicable, all sharp corners and necessary projections should be rounded off in the workrooms and approaches thereto.

The workrooms both for male and female patients should, if practicable, be always in one story buildings;

but whenever, for economical or other sufficient reasons, two-story buildings must be adopted, the staircases should be in short, easy, straight flights, and be constructed with fire-resisting material, inclosed within brick walls ; or if, by reason of the varying levels of the site or kindred causes, it be found convenient to form an inclined plane to the upper floor, the higher portions must be protected with railings, with the view of preventing any of the patients from throwing themselves over to the ground below, or from placing themselves in danger by climbing to positions from which they might fall.

In the separation of patients according to their supposed condition or outward demeanour, caution has to be observed not to carry it to such an extent in the planning of the workrooms as to subdivide the service too much, and thereby unreasonably augment the requisite amount of superintendence.

CHAPTER IX.

ATTENDANTS' QUARTERS, FARM BUILDINGS, &c.

I BELIEVE it is the general custom in many asylums for the day attendants to come on duty in the summer at 6.30 or 6.45 a.m., and for the general business of the institution to be in progress very shortly afterwards; and it will be obvious that if the night nurses and attendants going off duty at that time are to secure a proper rest after their night's anxious, and frequently dangerous and unpleasant watch, that this would be most advantageously found in buildings placed at a suitable distance from the workshops, noisy and violent patients, and also away from apartments occupied as day and mess rooms, &c., by day attendants. The precise locality would vary greatly with the arrangements for each asylum, and a block of buildings near to the chronic wards has, in the case of at least one large asylum, been adopted as a suitable position for the night nurses' buildings.

The staff of attendants at the Banstead Asylum (where the patients number about 2,000) is considered by the Commissioners in Lunacy to be moderately strong, there being 64 men and 106 women available for day duty, and for night duty 12 men and 22 women. These numbers give a proportion for

day duty of one to 11 among the men, and one to 12 among the women.

In some asylums the changes of nurses and attendants is very great, owing, in some cases, probably, to the insufficient, unsuitable, or uncomfortable arrangements made for their *residence*, and instances have occurred where one-third of the attendants have resigned during one year. It is, therefore, necessary that every reasonable provision should be made by the asylum architect for the comfort and accommodation of the nurses and attendants, whether these be housed in the main asylum or in detached cottages.

The mess room should be placed within reasonable distance of the asylum kitchen, and be provided with an adjoining scullery ; but in many asylums recreation or club rooms are given in addition, where attendants and nurses can meet for social intercourse, reading, writing, or other amusements and occupations. The club room should be comfortably furnished, and should contain a piano, be provided with book-shelves, and games of chess, draughts, &c. This room, if it opened directly out of a ward or near to rooms occupied by patients would be badly placed, as there would be constant opportunities for neglect of duties.

On the floors above these ground-floor blocks there might be provided a few bedrooms, with bath-rooms and water-closet, &c. ; which would serve either for the ordinary accommodation of nurses or attendants, or otherwise serve for the purpose of separating attendants suffering from illnesses and requiring

quiet and attention apart from their companions.

In all arrangements of apartments for attendants, it must be borne in mind that some are nearly always absent on leave, some are watching difficult or suicidal cases, others are out on the farm or estate, and supervising the exercise of patients, while others may be ill; but it would be well that the number of attendants should not be at a less rate than one to every ten patients. With fewer than these, it is the opinion of experts that proper attention cannot be given to the patients, and that it would not be fair to the attendants that there should be a less number, having in view the nursing of patients seriously ill, or with homicidal or suicidal proclivities.

Many of the patients are frequently very noisy at night, and unless an asylum is well planned, the attendants and nurses off duty are apt to suffer from loss of sleep. There is obviously less reason in a large asylum than in a moderate-sized or small one, why the attendants should suffer in this respect, as special wards in the former instance are frequently provided for violent and noisy patients, whereas in smaller institutions all classes of officers, attendants, and patients are frequently brought into much closer contact.

There should be one head attendant to about every thirty attendants, and his cottage or rooms might sometimes conveniently be placed near to the attendants' mess room. The number of patients in the charge of these thirty attendants should not, in ordinary cases, exceed from 300 to 350 persons. Therefore, in

an asylum for 2,000 patients there should not be less than six head attendants, with about 180 ordinary attendants.

It is desirable in all buildings set apart for the use of officials, attendants, and nurses, that the staircases should be constructed in a similar manner to those intended for the use of patients, the possibility being borne in mind that a patient might wander from his ward and attempt suicide by throwing himself from the upper levels of the staircase; therefore there should either be no open well-holes to the staircase, or otherwise railings should be carried up to the ceilings, even in the buildings for officials.

If it be not practicable to provide every resident attendant and nurse with separate sleeping apartments, the attendants' dormitories should certainly be divided into cubicles. In ordinary county asylums the accommodation for both attendants and patients is still very defective and insufficient, yet matters in the "short period lunatic" wards, and in the imbeciles' wards in workhouses, appear also in many instances to compare very unfavourably with asylum accommodation generally, particularly as regards the floor spaces, heights, and cubic space permitted by the instructions of the Local Government Board, which allow in the day rooms a floor space of 20 ft., a height of 10 ft., and a cubic space of 200 ft. for each patient, whereas the Commissioners in Lunacy demand that "the day rooms, of which there should be at least one in each ward, should afford not less than 40 ft.

superficial for each patient, not reckoning corridors of less width than 10 ft. Where corridors of that or any greater width exist, the day rooms may afford only 20 ft. superficial for each patient, it being understood that a space equal to 40 ft. superficial be provided for each patient *in the day rooms and such corridors combined.* Mere passages of communication are not to be considered as corridors." In other respects, the constructional arrangements for imbeciles and "short period lunatics" in workhouses are somewhat similar to those required for county asylums.

In large workhouses, provision for the reception of "short period lunatics" is sometimes provided in connection with the wards set apart for imbeciles; but in the smaller workhouses it is considered to usually suffice to "so arrange two wards, an *attendants' room with padded room,* that one of the wards may, if necessary, be entirely shut off from the other portion for the joint use of a patient and an attendant."

The requirements and suggestions of the Local Government Board state that the padded room may be most suitably fixed inside the attendants' room, against an external wall, and in any case should be entered directly from that room. Also that the padded room should have a superficial area of about 63 ft., exclusive of the padding; 9ft. by 7 ft. or 8 ft. by 8 ft., are suitable dimensions, and there are objections to more than slight variations from them in either direction; it should be at least 10 ft. high. The attendants' room should have a floor area of not less than 100 ft. superficial, exclusive of

the space occupied by the padded room. The padding which may be of cocoa fibre or other suitable material, and at least 4 in. in thickness, covered with india-rubber or painted canvas, should extend to at least 7 ft. 6 in. from the floor, and be capped with a strong slope, fixed with screws, and sloping at an angle of about 30° from the wall in order to afford no hold to a destructive occupant; the floor should always be padded, cork chips covered with indiarubber or painted canvas, so laid as to be thoroughly watertight and washable, being commonly used; it is desirable to bed the floor on concrete or similar material, to prevent damage either by vermin or dry-rot. Light may be provided by a small window of ½-in. plate glass fixed high up in the external wall; it should be furnished with a shutter either on the outer side or inside, so arranged as to lock into a recess when not in use. For artificial light a fanlight should be provided. The gas jet should be on a jointed bracket to turn away, so as to be wholly out of sight of the occupant of the padded room when necessary.

Ventilation may be furnished by air bricks near to the wall plate, and by a strong grating in the lower 3 in. of the door below the padding, when the padded room is situated wholly within the *attendant's room*, the partition may stop about 2 in. below the ceiling. Warmth in a padded room is a specially important matter, as patients of this class are frequently inclined to strip themselves. When the *padded room* is not so situated as to share the warmth of the *attendant's*

apartment, means should be provided for passing into it warmed air, either from a coil of hot pipes or from a chamber behind the grate in the attendant's room, through air bricks in the wall, at a suitable height above the padding; a roomy approach, free from awkward angles or projections, is a most important desideratum for a padded room. The door, which should ordinarily be about 3 ft. wide, should open outwards to its full extent, so that the padding on it may not diminish the clearway. The door should be so hung as to prevent danger of crushing a hand or foot in the hinges when the door is being closed, and the fastening of the door should be by means of a snap lock, with bolts near to top and bottom of door respectively, and commanded by a single handle, and it may be desirable to arrange a supplemental drop bolt in such manner as to allow of partial opening of the door for ventilation and inspection. Two inspection slits, the upper one vertical, the lower one horizontal (being for a lantern to light the floor where the gas jet may fail to illuminate it), should be provided in the door. They should be protected by strong plate glass, sunk so as to be beyond reach of a blow from the occupant.

A large proportion of the male patients in many asylums are employed upon the farms, gardens, roads, &c. The agricultural works executed by them are often of considerable value to the various institutions, whether regarded as a desirable bodily occupation leading to mental improvement, or as a profitable investment of their labour upon the land; potatoes, cabbages, and

various vegetables, as well as hay, oats, rye, grain, mangold-wurtzel, &c., are produced for consumption on the estate, and are often an important consideration, having regard to the exceptional circumstances relating to the nature and value of the labour of the insane patients, and matters of a kindred nature.

In the Banstead Asylum there are about 2,000 patients, of whom rather more than 700 are males.

The following table gives the areas and appropriation of the land :—

	A.	R.	P.
Site of the asylum	13	0	0
Recreation grounds—males	7	0	0
Recreation grounds—females	13	0	0
Farm buildings and gas-works	1	1	0
Dwellings and mortuary	0	3	1
Cemetery	2	0	0
Roads and boundary walls	5	1	1
Kitchen garden	8	0	0
Arable land...	49	2	38
Fairlawn Field—Arable	17	2	30
Total	117	2	30

In the asylum farm buildings here, provision is made for the accommodation of 203 pigs, 40 cows, 8 horses, and some 60 or 70 head of poultry, also buildings for the storage of implements, tools, &c., for garden and field use, and for the reception of carriages, carts, harness, roots, hay, seeds, manure, and other farming matters.

Conservatories should also be provided to a moderate extent, from which flowers and plants can be produced for use (especially in the wards for the sick and infirm inmates) for the decoration of the day rooms and the dining and recreation halls.

Some of the asylum roads require to be laid in a most substantial manner, and this will be admitted if it be considered how many thousands of tons of coal, provisions and materials (compelling traffic of a heavy nature), must pass to and from an asylum of even moderate dimensions. Some of the roads should be formed before the building of the asylum is commenced, to enable heavy masses of stone, bricks, and building materials to be brought to the site with due economy (unless, indeed, a branch railway be laid directly up to and on to the asylum site in connection with the nearest main railroad).

CHAPTER X.

FASTENINGS AND LOCKS, HEATING AND VENTILATION.

USUALLY there should for a large asylum be a set of keys for the ordinary nurses and attendants, which would only command the locks of the doors of those apartments with which they would be exclusively interested, thus preventing the subordinate officials from intruding upon portions of the asylum with which they would not be concerned.

There would be sub-master-keys for the head attendants and head nurses, enabling them to obtain access to all the wards under their special care, but not to apartments occupied by the opposite sex, or to rooms used for those administration purposes not connected with their duties.

Superior master-keys would be provided for assistant medical officers and other persons permitted to have the run of the greater portion of the asylum, and for the medical superintendent a grand master-key would be provided, giving him means of access to the whole of the wards in the asylum.

Other sub-suits of keys would be required for the storekeepers, kitchen, and other administrative departments; but in arranging the principle upon which asylum locks and keys should be provided, the

leading idea (after safety) is to reduce, as far as practicable, the number of different kinds of locks that any one official has to open, thus reducing the number of keys to be carried.

All exterior doors, and those doors which lead from the male to the female side, should be supplied with locks which can only be opened by superior master-keys, to be kept in the possession of the higher class of officials.

The keys of the cupboards in each ward, or set of wards, should be so arranged that the nurses and attendants shall not be able to interfere with, or take stores, &c., from each other, as it is important that waste of materials be traced to the responsible persons.

Windows, shutters, valves for gas, ventilators, fire-guards, and many other articles all require to be locked up, so as to be free from interference of the patients. The locks and keys of an asylum have to undergo very much more wear than those of any other class of buildings, and therefore should be very substantially made, and all the working parts should be of gun-metal rather than of steel in those cases where the locks are especially exposed to moisture.

In the event of a struggle with a violent and dangerous patient, the instant use of a key may be of great importance, therefore the escutcheon of the door locks should, for the patients' wards, be bowl-shaped and sunk into the door. By this arrangement some assistance is given to the attendant in directing the key into the keyhole, which at a critical moment might become of no little use.

For the attendants' and some other apartments (where the doors are to be opened with a knob inside, but with a key only on the outer side) a $6\frac{1}{2}$ in. one-bolt mortise lock, with brass bolts, may be obtained at from 11s. to 13s. The locks for water-closets must be without any bolts or fastenings on the *inside;* but there should be provided $5\frac{1}{2}$ in. dead locks to lock once from the outside, and which should cost about 5s. 6d. each. Dead locks should also be provided for the shutters of the single-rooms, and so arranged as to lock over the windows when closed, and flush back against the wall when opened.

In all large asylums there are wards in which it would be insufficient to use merely open fires, and these would certainly not be suitable for single-rooms and corridors; open fires produce good ventilation, and the heat given is frequently of a better quality as regards healthfulness; the open fire is also favoured by English prejudice, and a very important point is that its absence from a ward detracts considerably from that home-like appearance which it is so desirable should be promoted, but it must be admitted that coal-fires cause much dirt, labour, and considerable danger, while it is difficult to heat a room equally, and the waste of fuel is great.

There are in this country a very large number of engineers who have devoted special attention to the heating and ventilation of large buildings, but in many instances the results have been utter failures, and, both practically and financially, have been costly and unsuccessful experiments.

To place such works in the hands of persons without previous experience of those special difficulties to be met with in asylum construction, and which are largely connected with considerations respecting the habits and safety of the patients, and the circumstances under which asylums are administered would usually be attended with disaster, but on the other hand, there are some systems of heating and ventilating asylums which (in quite *opposite* modes) satisfactorily answer all purposes, and the following firms, whose names are placed alphabetically, have, amongst them, been concerned with the heating or ventilation (or both) of a great majority of the modern asylums of the country : the work done by these firms is frequently the result of laborious scientific research and extensive and long-continued experiments, quite beyond what could be reasonably demanded of either medical men or architects, who have so many other duties. The following firms undertake the preparation of schemes relating to the heating or ventilation of asylums :—

The Acme Ventilating and Heating Co., Liverpool.
Benham and Sons, Ltd., London.
Robert Boyle and Son, Ltd , London.
Clements, Jeakes and Co., London.
J. P. de Ridder, Liverpool.
Dinning and Cooke, Newcastle-on Tyne.
F. Dye and Co., London.
John Grundy, Ltd., London.
Hartley and Sugden, Halifax.
James Howorth and Co., Farnworth, Lancashire.
Chas. P. Kinnell and Co., London.
C. Kite and Co., London.
Moffatt and Eastmead, London.
E. H. Shorland and Brother, Manchester.
Teale Fire Place Co., Leeds.

Some of these well-known firms are accustomed to combine with their heating schemes the systems required for the supply of hot water and steam for the cooking, laundry and bath apparatus, and the supply of steam for the engines for pumping and electric light, &c.

CHAPTER XI.

CONCLUSION.

BRICKWORKS are frequently very profitable to the landowners who erect them, and advantageous to the estates on which they are situated; so they might, to a considerable degree, prove remunerative if worked by asylum patients of the able bodied class; but where this is out of the question (as would frequently be the case) it would appear to be a most desirable economy that, when a new asylum must be erected upon a clay suitable for bricks, that the estate should be purchased long before the period for the erection of the asylum, and that the manufacture of bricks should be commenced at an early period, thus saving the cost of carriage of many millions of bricks in the case of large asylums.

In certain tenacious clays soil-drains will frequently draw only to a few feet on either side, while in the freer soils they will draw to a great distance. That a multiplication of soil-drains gives a greatly increased dryness to land has long been known; but it is only within a comparatively recent period that the practice has been pursued upon scientific principles, and conducted in a uniform manner By opening up numerous underground channels, so that the whole space is acted

upon, the greatest degree of dryness which the case admits of or requires is obtained. Not only is the ground rendered more *constantly* dry by the opening up of many channels of this kind, but it is more *quickly* freed of the water conveyed to it by falls of rain, and this is felt to be peculiarly beneficial in the case of the stiffer clays, which retain the water absorbed by them for a much longer time than the freer soils.

It was in Essex that the method of draining by opening numerous outlets regularly disposed, is said to have been first practised. The old system was to run a shallow drain in each water furrow, filling it with brushwood, twisted straw ropes, or similar material. In course of time bricks and tiles moulded to a suitable form were employed, and the practice became very generally known as the "Essex" system of draining. It gradually extended to other clay-land districts of England, but in later years it has been widely pursued in districts having soils of a very different nature to the clay lands of Essex, in which the system originated.

In those many cases where pure water for the use of asylums is not obtainable from public mains or rivers, and the means of meeting this serious difficulty are frequently great, not only by reason of the scarcity of water, but of the necessity of preserving the same from contamination (*en route* from the earth) from excavated wells, artesian wells, or driven or tube wells. In such cases it is well to secure the services of competent hydraulic engineers, eminent amongst whom may be named Mr. Edward Margrett,

of Reading, and Messrs. Alfred Williams and Co., of London. I have before me very useful publications by both these firms, which describe in an interesting manner the various modes to be adopted to secure a supply of pure water, and useful data upon which to base inquiries upon the subject of obtaining pure water from lakes, rivers and springs.

Amongst the sanitary manufacturers providing articles suitable for asylums may be named: The Albion Clay Company, Limited, of Burton-on-Trent; Broad and Co., Limited; T. and C. Clark and Co., Wolverhampton; The Lambeth Brass and Iron Company, Limited; J. H. Sankey and Co.; Sharpe Brothers and Co., Limited; T. W. Twyford, Hanley; J. Tylor and Sons, Limited; George Jennings, London; John Jones, of Chelsea; and B. Finch and Co., Limited.

Mr. Edward Margrett, of whom mention has before been made, is the manufacturer of an improved patent grease trap, which article has been specially designed and manufactured for use in a large lunatic asylum abroad, it is also designed to meet the requirements of other private and public buildings, and to remedy the mischief occasioned by grease, from sculleries and other sources choking up the drain pipes, a common cause of inconvenience and nuisance; the result of numerous experiments has shewn that it is practically impossible for any grease or oily matters to pass through the trap, which retains it, and from which it is easily collected; the trap is made of cast-iron, enamelled with porcelain

inside, so as to render it very easily cleansed, there are no loose or moving parts, so that the process of cleansing is exceedingly simple ; the whole is covered with strong galvanized iron covers, one of which is screwed down with gun-metal screws, so as to form a perfect hermetically sealed trap.

Amongst the best apparatus for asylum water-closets are those of Mr. George Jennings, of Lambeth, called "The Closet of the Century ;" Clark's "Atlas" Closet ; the "Wash-down" Closets of Sharpe Brothers and Co., Limited ; Twyford's "Deluge Adamant ;" Tylor and Son's, Limited, "Column" Closet ; Jones' Patent "Syphonic Cistern and English made Closet," and the apparatus supplied by Messrs. B. Finch and Co., Limited, and Messrs. Broad and Co., Limited.

The firms manufacturing materials for the structure, walls, and roofing of asylums, include the Aldridge Colliery Company, Limited ; J. C. Edwards, of Ruabon ; Hall and Boardman, Limited ; Hamblet, of West Bromwich ; H. J. and C. Major, Limited ; Oates and Green, Limited ; William Buck, Horsham ; and Carter and Co , Poole, Dorset.

Messrs. Cox and Son, of Torquay, have special advantages in their bakers' ovens for asylums, while for asylum locks Messrs. Hobbs, Hart and Co., Limited ; Joseph Kaye and Sons, Limited ; Colledge and Bridgen ; George Price, Limited ; James Hill and Co., and Tucker and Reeves have all had great experience.

Other manufacturers specially interested and experienced in asylum construction are Messrs. Clarke,

Bunnett and Co.; Potter and Co., Limited; Stuart's Granolithic Stone Company, Limited; W. Summerscales and Co., Limited; R. Waygood and Co., Limited; the Patent Victoria Stone Company, Limited; Homan and Rodgers; Val de Travers Asphalte Paving Company, Limited; Fredk. Jones and Co.; the Adamant Company, of Birmingham; Pilkington and Co.; Willesden Paper and Canvas Works; George Wragge; W. and R. Leggott, Limited; Tonks, Limited; Bratt, Colbran and Co.; Helliwell and Co., Limited; and Messrs. Chance Brothers and Co., of Smethwick; Charteris & Longley; Taylor & Brooker; Turpin's Parquet Floor Co., &c.

Whatever the prejudices of any medical superintendent or architect of an asylum may be, yet there would, probably, be little difficulty in procuring what might be desired from one or another of the above-mentioned manufacturers.

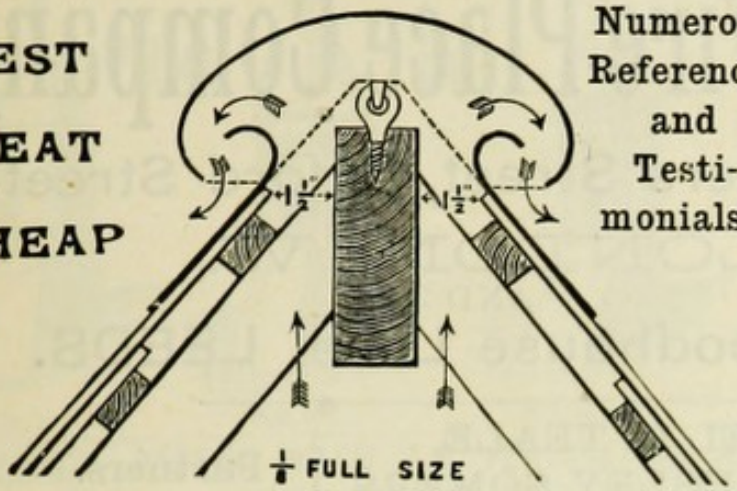
THE END.

VENTILATION—HEATING—DRYING.

BEST

NEAT

CHEAP



Sect on.

Numerous References and Testi-monials.

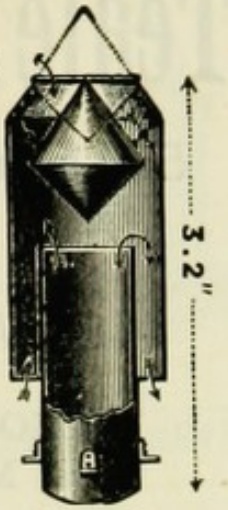


Fig. 2a.

ACME CHIMNEY COWL.

Terra Cotta or Galvanized Steel.

25/- to 35/-

As fixed, side view.

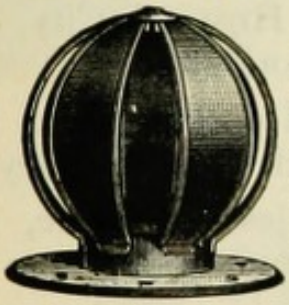
Fig. 8.

ACME RIDGE CAP EXHAUST VENTILATOR.

In Zinc or Copper.

SPHERICAL VENTILATOR.

Wave Proof.



Snow Proof

Fig. R. S.

Made of 14 G. V. M Zinc, Copper, or Steel.

From 10/-

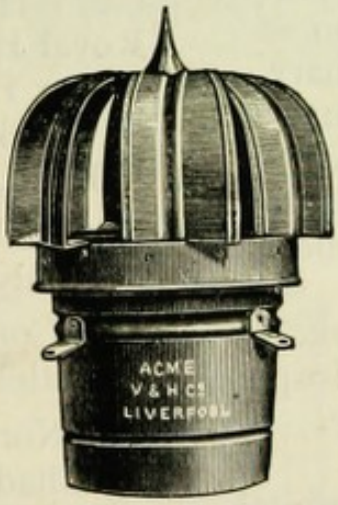


Fig. D 3.

"**ACME**" Disperser.

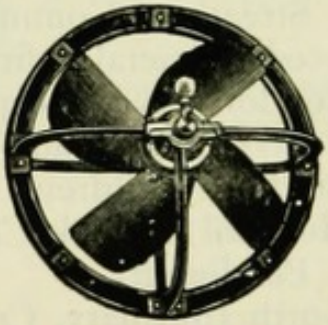


Fig. 28 M.

ACME MECHANICAL VENTILATOR.

By Electricity, Water, Gas, Steam, Hand, or Horse Power.

Cooling and Drying, removing Dust, &c.

Apply for Separate List

Fig. 24.—Inlet for Outside Wall. Prevents Damp Walls, &c.. From 1/6,

APPLY FOR ILLUSTRATED PRICE LIST.

ACME VENTILATING and HEATING CO., Liverpool.

TELEGRAMS: "KEYWORTH." "ABC" CODE USED. TELEPHONE 1877

AWARDED GOLD MEDAL, INTERNATIONAL EXHIBITION, CALCUTTA, 1884

Awarded 58 Gold and Silver Medals and Diplomas.

50,000 Testimonials and References for Successful Applications.

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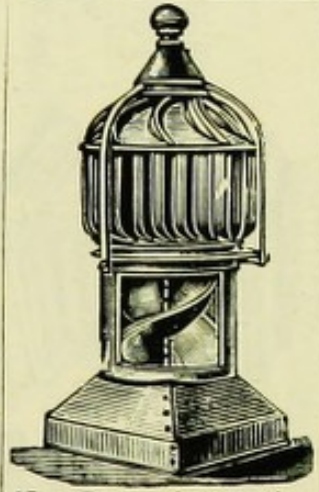
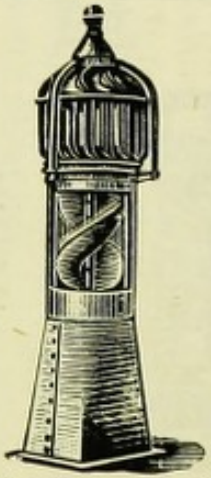
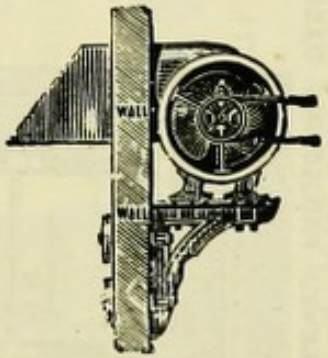


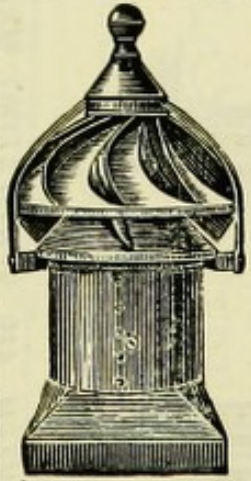
New Patent Self-Acting Archimedean Screw Ventilator, for Buildings & Works.



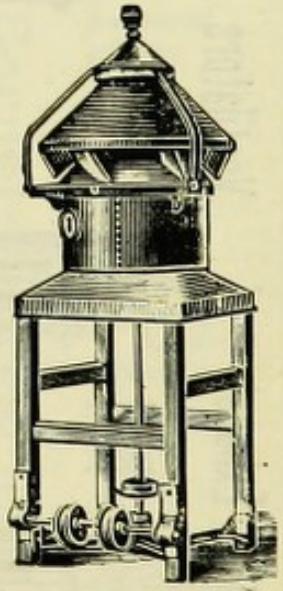
New Patent Archimedean Screw Ventilator for Curing Smoky Chimneys.



James Howorth's New Patent Horizontal Screw Exhauster and Blower, fixed on to the Wall, with Elbow Square Terminal and Self-closing Valve.



New Patent Self-acting Radial Screw Ventilator, for Buildings & Works.



James Howorth's New Patent Radial Screw Ventilator, for Power Driving.

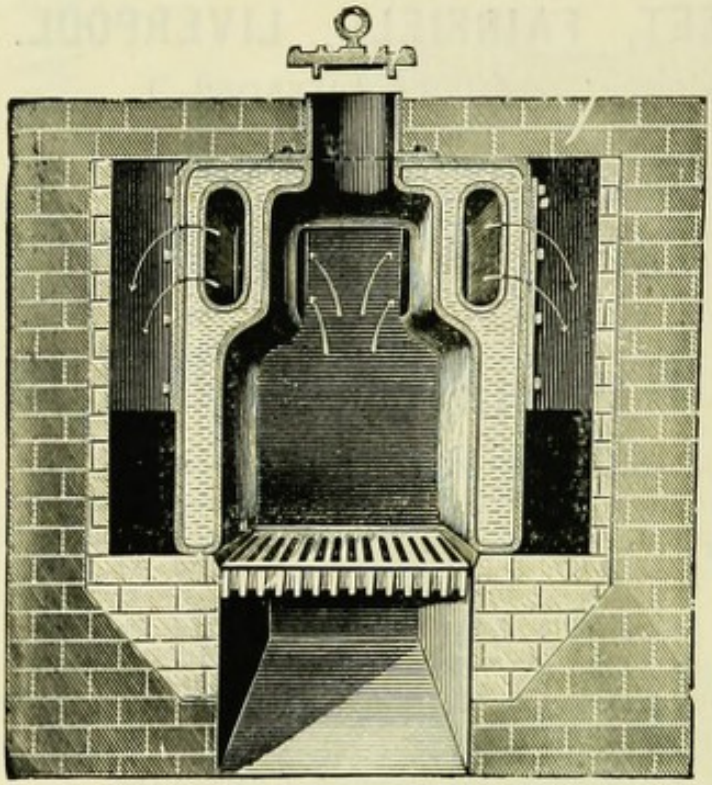
JAMES HOWORTH & CO, CONSULTING & VENTILATING ENGINEERS,

VICTORIA WORKS, FARNWORTH, near BOLTON & MANCHESTER, ENGLAND.

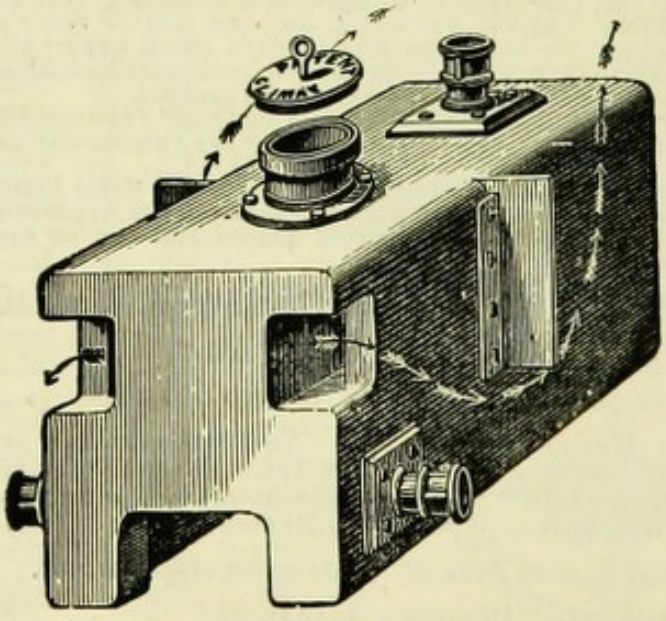
HARTLEY & SUGDEN,

LIMITED,

HALIFAX,



PATENT "CLIMAX" BOILER.



Manufacturers of

Hot Water

AND

Steam

Boilers,

AND

Appliances

FOR

Heating

Apparatus

FOR

PUBLIC & PRIVATE

BUILDINGS.

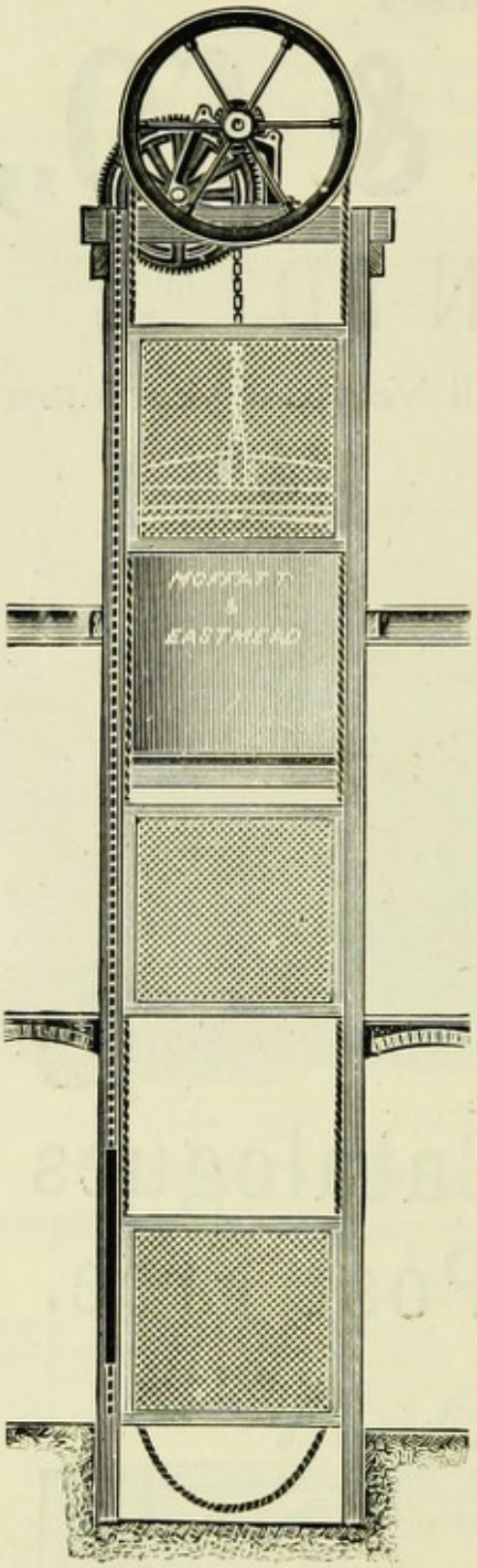
---

45 MEDALS

and AWARDS,

1896.

LIFTS.



IMPROVED PATENT

SELF SUSTAINING LIFTS

FOR

ASYLUMS, INFIRMARIES, HOSPITALS, LAUNDRIES.

Fitted with

Patent Safety Self-Closing Doors

at each floor, automatically opened and closed by the cage of the Lift.

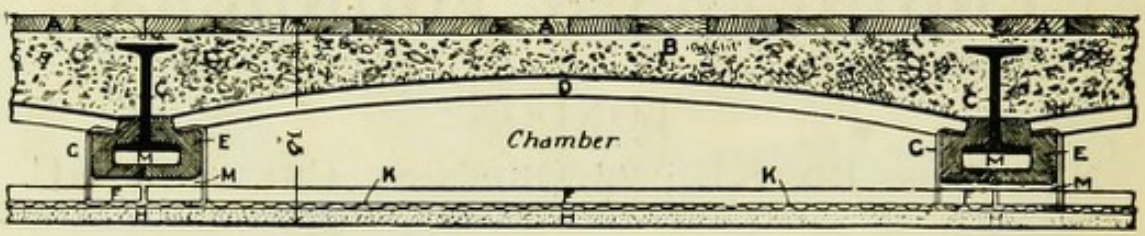
HAND, HYDRAULIC, ELECTRIC, & BELT POWER LIFTS.

MOFFATT & EASTMEAD,

39, VICTORIA STREET, LONDON, S.W.

POTTER'S
PATENT
FIRE PROOF FLOOR

IS SPECIALLY ADAPTED FOR PUBLIC BUILDINGS.



POTTER'S FLOOR

Is very light, weighing about 26 pounds per superficial foot only.

It possesses immense strength, having been tested to 4 cwt. per superficial foot.

The bottom flanges of joists are more *efficiently protected from fire* than by any other system, having fire-clay encasements **E**, double air spaces **M M**, and plastered ceiling on metalling lathing **K H**.

It is sound proof; the ceiling and hangers are entirely disconnected from the floor, and an unimpeded area over the whole space between floor and ceiling is provided.

It occupies no more depth than an ordinary wood floor, and owing to its light weight, less than most other patented systems.

It is a perfect sanitary floor, affording no harbour for dust, vermin, or insects, as there is no space whatever between the floor-boards and the concrete, a marked improvement upon the ordinary system of resting small wood joists on the concrete for the floor-boards to be nailed to. Architects can be referred to floors laid in this way 12 years since, in as good condition now as when first done. **A** is a wood floor casing; **B** concrete; **D** corrugated iron permanent centre; **E E** fire-clay flange shields; **G G** iron hangers; **H** ordinary plastered ceiling; **K** metal lathing; **F** iron lathing bar; **M M** air spaces.

The materials are distributed in a form to obtain a maximum of strength with a minimum of materials.

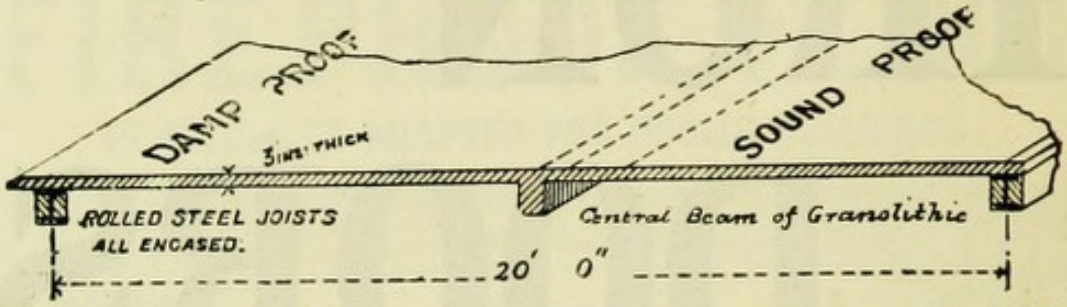
Mr. BALDWIN LATHAM, in his report on the fall of floors at the Comparative Anatomy School, Cambridge, says:—"**Concrete Floors between iron girders should be cambered or curved, so that the strains may be in compression and not in tension.**"

Complete as shown, including inch floor board casing, and expanded metal lathing ready for plastering, from **£5 10s.** per square, upward.

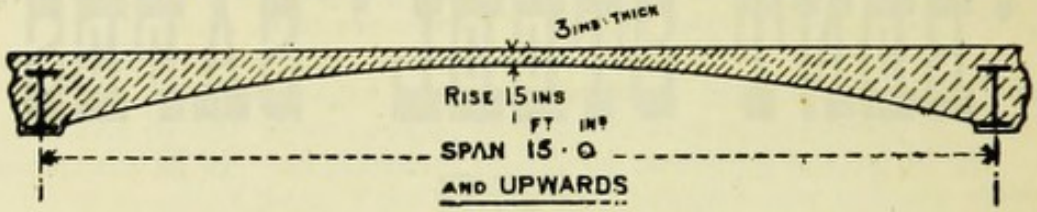
POTTER & Co. (Limited),
39, VICTORIA ST., LONDON, S.W.

STUART'S PATENT
GRANOLITHIC FIRE-PROOF FLOORING.

Telegrams .. .. GRANOLITH, LONDON.



PANELLED FLOORS as above made to span LARGE INTERVALS without INTERMEDIATE STEEL JOISTS. These Floors are perfectly FIRE-PROOF, and of EXTRAORDINARY CARRYING CAPACITY; they can be laid with Finished Working Surfaces, or left for Mosaics, Wood, &c.



ARCHED FLOORS as above made to any span and to carry HEAVY LOADS, with finished working surfaces; they can be made suitable for any load per square foot.

SPECIALITIES.

GRANOLITHIC CORRIDOR PAVINGS. GRANOLITHIC STAIRCASES. GRANOLITHIC STONE FACINGS. GRANOLITHIC FIRE RESISTING FLOORS, ROOFS, &c.

Amongst others may be mentioned the following Asylums, &c., where our Patent Granolithic has been extensively used :—

CLAYBURY, Essex.
BRENTWOOD, Essex.
WADSLEY, Yorks.
POWICK, Worcester.
CO. ASYLUM, Surrey.
WOODLEE, Lanark.
GARTNAVAL, Glasgow.
INVERNESS, Inverness.
HANWELL, Middlesex.
MENSTONE, Yorks.
MOULSFORD, Berks.
CO. ASYLUM, Notts.
MORNINGSIDE, Midlothian.
MONTROSE, Forfar.
LIVERPOOL, Lancs.
COTFORD ASYLUM.
PARK HOSPITAL, Lewisham
LONDON HOSPITAL.

WHITTINGHAM ASYLUM, &c., Lancs.

Estimates and Designs free on application to

STUART'S GRANOLITHIC STONE CO., LTD.,
REGENT DOCK, LIMEHOUSE, LONDON, E.,

AND AT

Edinburgh, Glasgow, Birmingham, Liverpool, and New York.

PATENT VICTORIA STONE.

Established 1868.

REGISTERED TRADE MARK: "**VICTORIA STONE.**"

BRONZE MEDAL—SANITARY EXHIBITION 1883.
THE ONLY MEDAL AT THE INTERNATIONAL HEALTH EXHIBITION FOR ARTIFICIAL FLAG STONE, 1884.
THE ONLY MEDAL FOR ARTIFICIAL STONE PAVING AT THE LEICESTER EXHIBITION, 1885.
GOLD MEDAL—INTERNATIONAL EXHIBITION, CRYSTAL PALACE, 1884.
GOLD MEDAL—BUILDING TRADES EXHIBITION, 1886.
BY APPOINTMENT TO THE HEALTH EXHIBITION, 1884.
GOLD MEDAL—INTERNATIONAL EXHIBITION, ALEXANDRA PALACE, 1885.
DIPLOMA OF HONOUR, INTERNATIONAL FISHERIES EXHIBITION, 1883.
BY APPOINTMENT TO THE ROYAL AGRICULTURAL SOCIETY.
GOLD MEDAL—MINING EXHIBITION, CRYSTAL PALACE, 1890.
AWARDED GOLD MEDAL AT THE BUILDING TRADES AND HOME COMFORTS EXHIBITION MANCHESTER, MAY, 1896.

HAS BEEN USED IN THE LARGEST

ASYLUMS, SCHOOLS, AND BARRACKS

IN ENGLAND, FOR LANDINGS, STEPS, SILLS, and HEADS.

As PAVING it has stood the test of 28 years' traffic in London.

INDURATED CONCRETE SLABS AND IN-SITU PAVING.

In view of the extension of powers under Local Government Acts to comparatively rural districts, the Company manufacture, on a large scale, cheap and useful first-class Concrete Slab Paving, and lay Paving *in-situ*, in order to meet the requirements of places where traffic is less severe, and where the first cost is of importance.

Paving on deferred payments extending over twenty years.

Laid on London and Tower Bridges; the Foot Traffic on the former exceeds 120,000 Passengers per day—the heaviest traffic in the world. This Pavement will last a century in ordinary Suburban Roads.

THE PATENT VICTORIA STONE Co., Ld.

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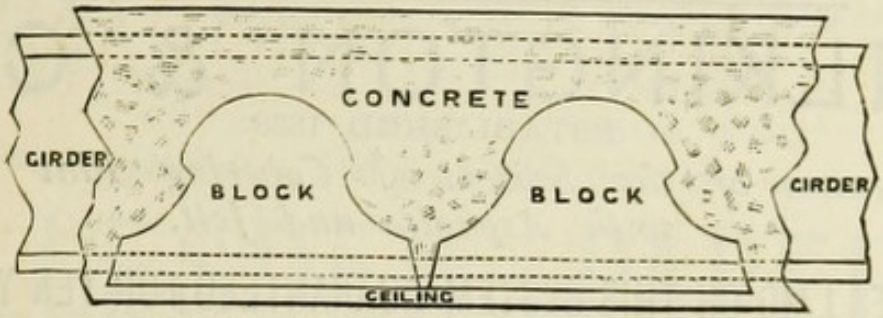
Works: Stratford Market Station, G.E.R., Essex.

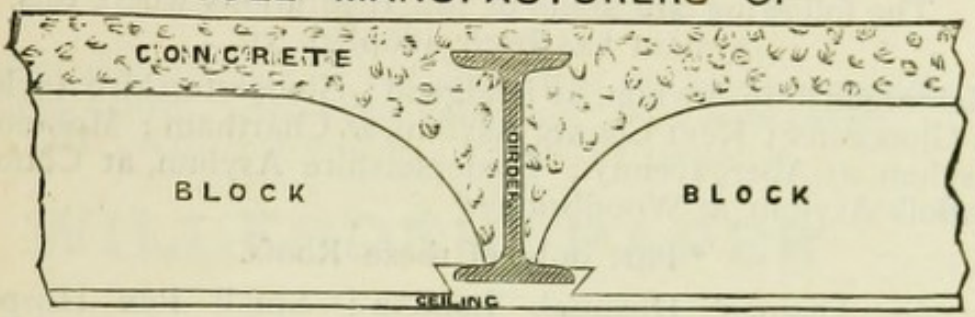
AND AT

GROBY QUARRIES, NEAR LEICESTER.

The ADAMANT CO., Ltd.,



SOLE MANUFACTURERS OF



ADAMANT PLASTER

AND

CHROMOLITH,

For Walls, Ceilings, Cornices, &c.

RECOMMENDED BY LEADING ARCHITECTS AND BUILDERS.

BIRMINGHAM WATERPROOF CEMENT

Plain and in Colours.

Patent Fireproof Floors and Ceilings.

FIBROUS SLABS. PUGGING SLABS.

LONDON OFFICE: 90-91, Queen St., Cheapside, E.C.

REGISTERED OFFICE AND WORKS: 6-11, Commercial St., Birmingham.

Managing Director, J. WILKINSON. Secretary, RHEECE W. PALK.

Telegraphic Address, "ADAMANT, BIRMINGHAM."

WILLESDEN PAPER.

(ESTABLISHED 1870).

TRADE 

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For underlining Slates or Tiles the 2 ply

WILLESDEN PAPER

Is the Best Material in the Market.

Can be used with boarding, or laid direct upon the rafters, under the slating battens. Absolutely waterproof. Free from smell. Will not harbour vermin. A good non-conductor.

WILLESDEN PAPER

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PRESTWICH ASYLUM, near LIVERPOOL.
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St. ALBAN'S WORKHOUSE.
NEW GENERAL HOSPITAL, BIRMINGHAM.
DEAF & DUMB INSTITUTE, LIVERPOOL.
CHAPEL, DEVON COUNTY ASYLUM.
SEAMEN'S ALMSHOUSES, EAST COWES,
And on a large number of other Public Works.

WILLESDEN 1 PLY PAPER

FOR UNDERLINING DAMP WALLS.

WILLESDEN ROT-PROOF CANVAS

For Outside Blinds and Awnings, Wagon Covers, Rick Cloths, Tents, &c.

SAMPLES AND PRICES FREE.

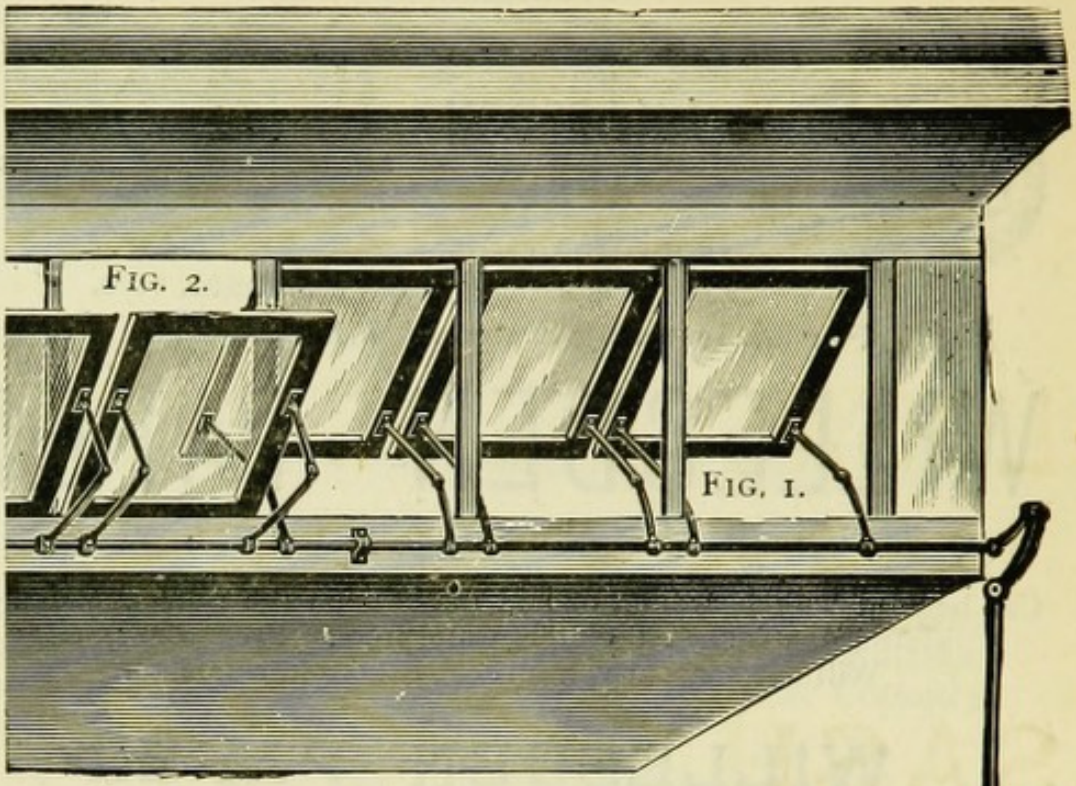
SOLE MANUFACTURERS;—

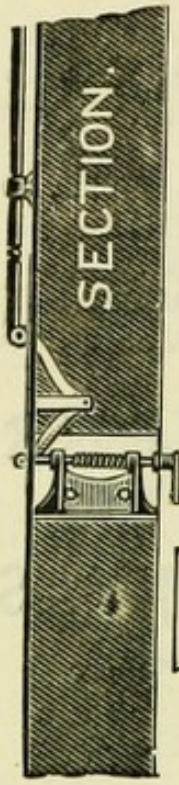
Willesden Paper & Canvas Works

WILLESDEN JUNCTION, LONDON, N.W.

— ESTABLISHED 1870. —

Telegraphic Address—"IMPERMEABLE, LONDON."





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FOR LANTERN AND OTHER LIGHTS.

SECRET GEARING FOR ASYLUMS

A SPECIALITY.

As supplied and fixed at the Claybury, Dorchester, Sunderland Nottingham Maryborough, Carlow, and other Asylums.

Drawings and Estimates on Application.

Loose Key

Gun Metal Plate fixed flush with wall, covering the screw regulator.

Testimonial.

35, Parliament Street, London, S.W.
February 17th, 1893.

Dear Sir,—I find the Casement Opening Apparatus, which you fixed for me at the Nottingham and Claybury Asylums, is giving every satisfaction. Your system is particularly adapted for Asylums where a range of upper lights require to be opened simultaneously, and works so easily that a child can use it.—Yours faithfully,

(Signed) GEORGE T. HINE,
Mr. George Wragge. Architect.

SEVERAL DESIGNS OF REGULATORS CAN BE SUPPLIED.

Wrought and Cast Iron Sashes, Casements and Metal Work.

Write for Catalogues and all information to

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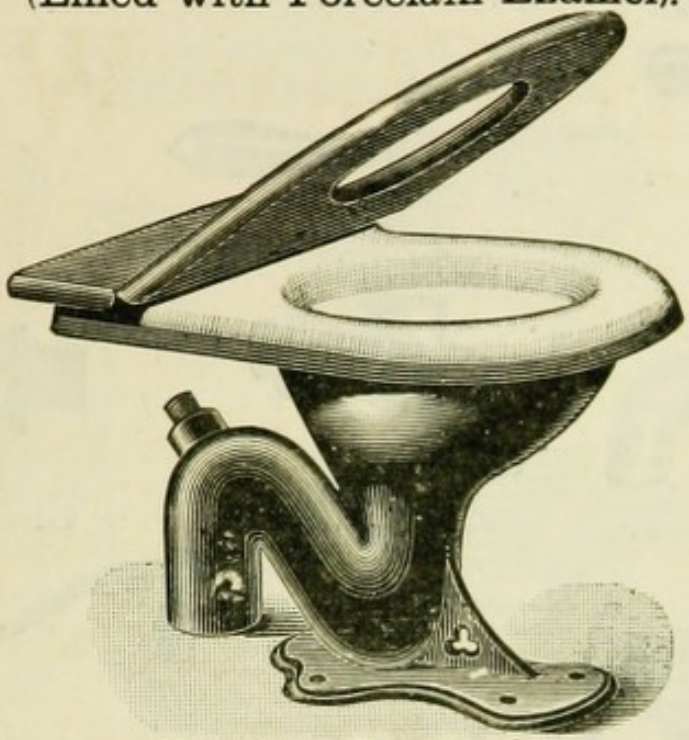
T. & C. CLARK & CO. of WOLVERHAMPTON.

CLARK'S "ATLAS" CLOSET

(Lined with Porcelain Enamel).



No. 4620. Fig. Q. 18⅞.

Enamelled Complete with Mahogany Seat	...	**65/- each.**
Ditto, without Wooden Seat	...	**45/- ,,**
Ditto, ditto, with P Trap, as Fig. S 18½	...	**43/- ,,**

If Brass Cap is sent to screw on Nipple, 1/6 each extra.

In introducing their "Atlas" Combined Water Closet, Urinal, and Slop Closet, T. & C. CLARK & CO. have every confidence in recommending it, as it has been in use with rough usage for over a year at their Works, and there has not during that time been a hitch in its action, which is that of a Wash-down Closet worked with a 2-gallon Cistern.

It requires no brackets to support the seat which is necessary with the Earthenware ones.

It has another advantage over the Earthenware ones, there need be no fear of the frost cracking it.

The "Atlas" Closet, now that the Pan System is condemned in most Towns, is just the article within the reach of all owners of small house property where Earthenware Closets so frequently get broken.

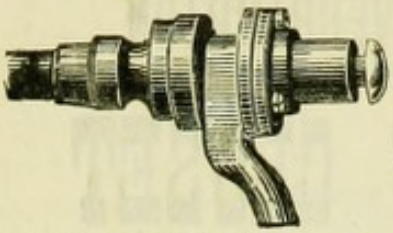
Where space is an object, for an extra 2/6 the S Trap can be put on either side of Hopper instead of at the back.

For Prison, Workhouse or Factory use they are sometimes ordered without Wood Seats, the Enamelled top being kept more easily cleaned, and as the Enamel is a non-conductor of heat, it is not so objectionable for use as may be imagined.

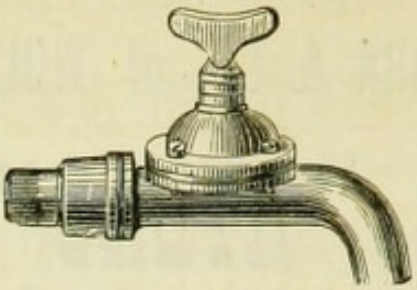
THE LAMBETH BRASS AND IRON COMPANY, LTD.,

Makers of Gun Metal Steam Valves and Fittings, Plumbers' Brass Work, Sluice Valves, Fire Hydrants, &c.,

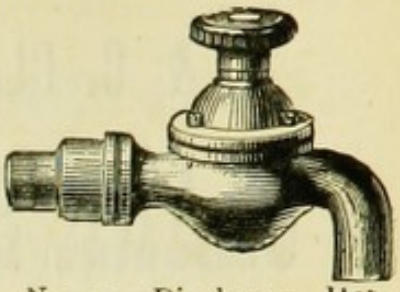
SHORT STREET, LAMBETH, LONDON, S.E.



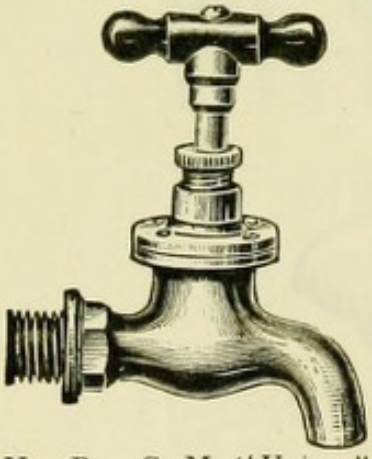
No. 17.—Self-closing Fountain Valve.



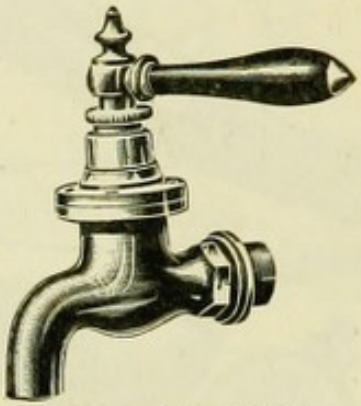
No. 6.—Diaphragm Bib Valve.



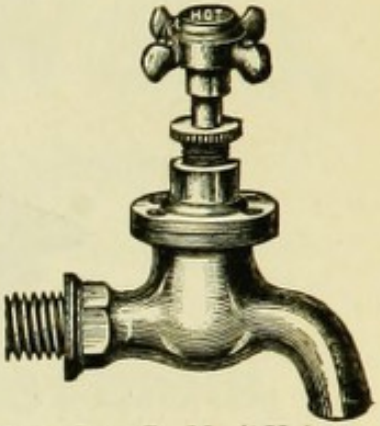
No. 07.—Diaphragm Hot Water Valve.



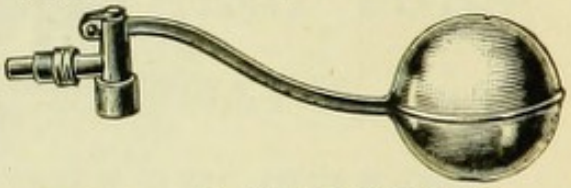
No. B7.—G. M. "Unicus" Boiler Valve, with Buffalo Horn Handle.



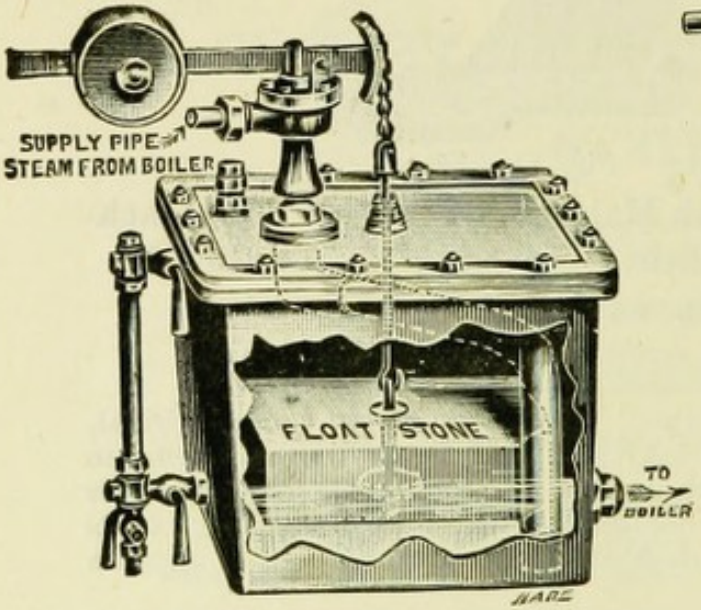
No. 20.—Gun Metal "Quarter turn" Valve.



No. C7.—G. M. "Unicus Valve, with Capstan Head

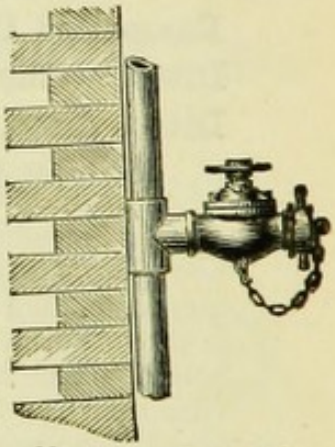


No. 01.—Equilibrium Ball Valve.

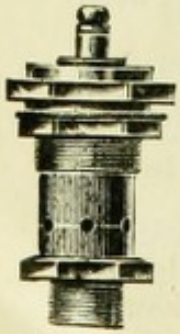


No. 367A.—Automatic Boiler Feed Cistern, for Steam Cooking Apparatus.

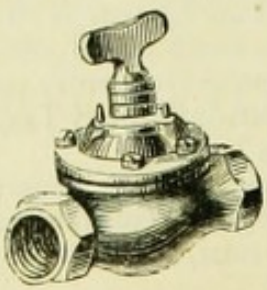
No. 400. Range Safety Valve.



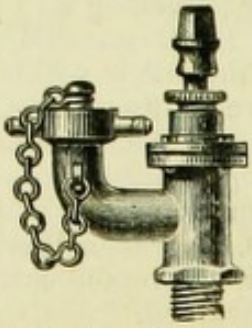
No. 72.—Brass Fire Valve.



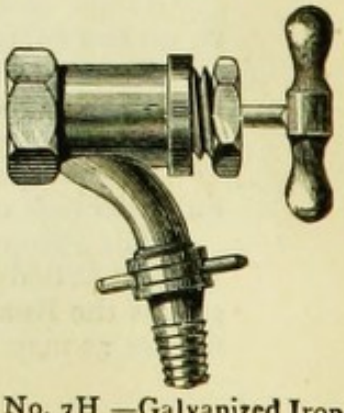
No. 369. Range Safety Valve.



No. 4.—Diaphragm Stop Valve.



No. 40.—Garden Hydrant.



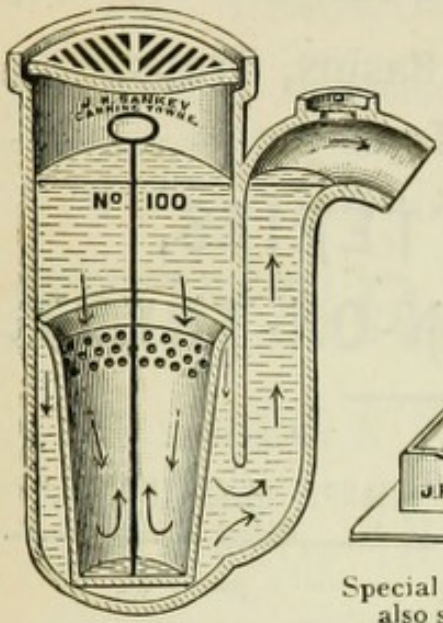
No. 7H.—Galvanized Iron Garden Hose Valve.

SANKEY'S

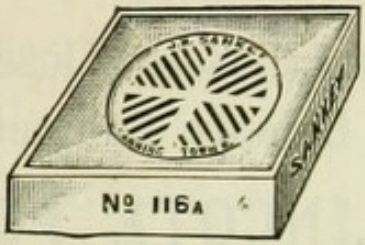
(PATENT)

DEEP INTERCEPTING GULLY

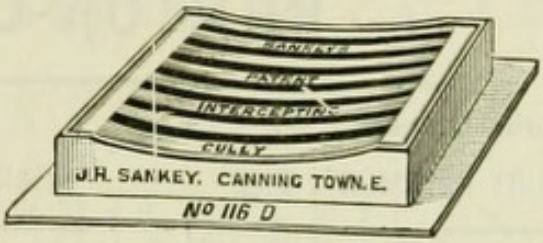
The most simple and efficacious in the market. Specially adapted for Asylums, Hospitals, etc.



SECTION



STONEWARE KERB.



Special new GRATING and FRAME, also supplied with key to lock.

Also specially constructed Channels, and Channels and Kerbs combined for receiving waste water from house, to meet requirements of the Board of Works.

N.B.—No drains can block or sewer gas escape where these gullies are used. Made of imperishable glazed stoneware.

DIMENSIONS.			PRICES.		
Stock sizes. Inside diameter.	Across grid.	Depth.	Gully No. 100. With special bucket and grid.	No. 116a. Stoneware square kerb.	No. 116a Special strong iron grating and frame.
6 in.	8 in.	1 ft. 6 in.	9/6 each.	1/9	4/9
9 in.	11 in.	2 ft. 0 in.	14/6 ,,	2/3	7/2
12 in.	14½ in.	2 ft 6 in.	25/- ,,	3/-	12/6

Other sizes to order. Inlets, side or back, charged 1/3 each extra.

The Stoneware Kerbs and Iron Frames have a Collar which fits closely into gully preventing back drop.

For Testimonials and other Particulars apply to

J. H. SANKEY & SON,

CONTRACTORS TO H. M. GOVERNMENT,

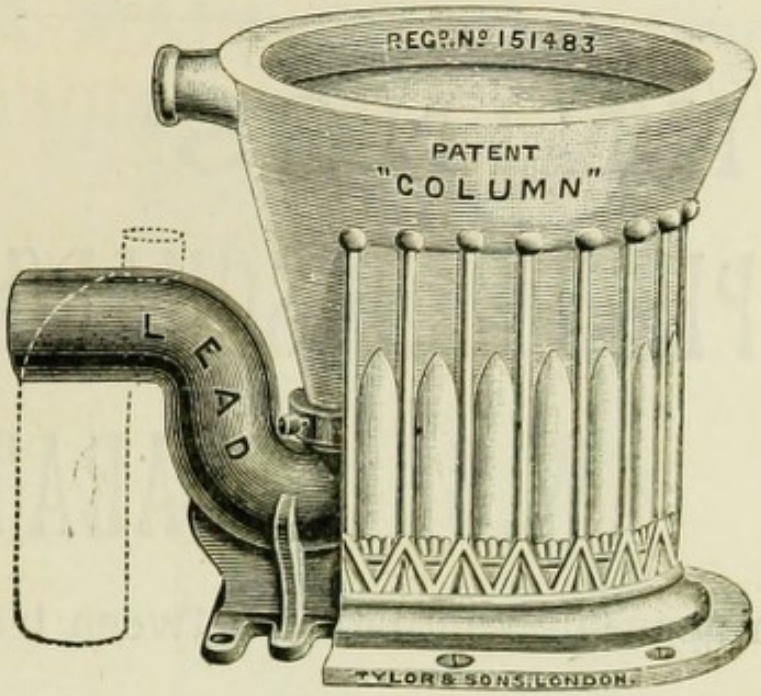
ESSEX WHARF, CANNING TOWN, E.

ESTABLISHED 1857.

Also Bricks, Slates, Tiles, Pipes, Sanitary Goods, Fire Bricks, etc. Largest and most varied stock in the Kingdom.

PATENT "COLUMN" CLOSET,

WITH LEAD TRAP.



This closet is made of best white earthenware, with lead trap to shoot either out or down. The use of a lead trap ensures the joint between the closet and soil-pipe being well made.

The lead trap is joined to the earthenware basin by a simple brass collar, as in the ordinary valve closet.

This joint between earthenware and metal—always a difficult joint to make—being *above the trap*, there is no danger of sewer gas entering the house through careless fixing.

The water stands higher than the joint; careless fixing is therefore instantly detected by the water falling on the floor.

The seat can be fixed to rest upon the earthenware.

A ventilating pipe should be carried from the top of the trap.

J. TYLOR & SONS, LIMITED,

SANITARY ENGINEERS,

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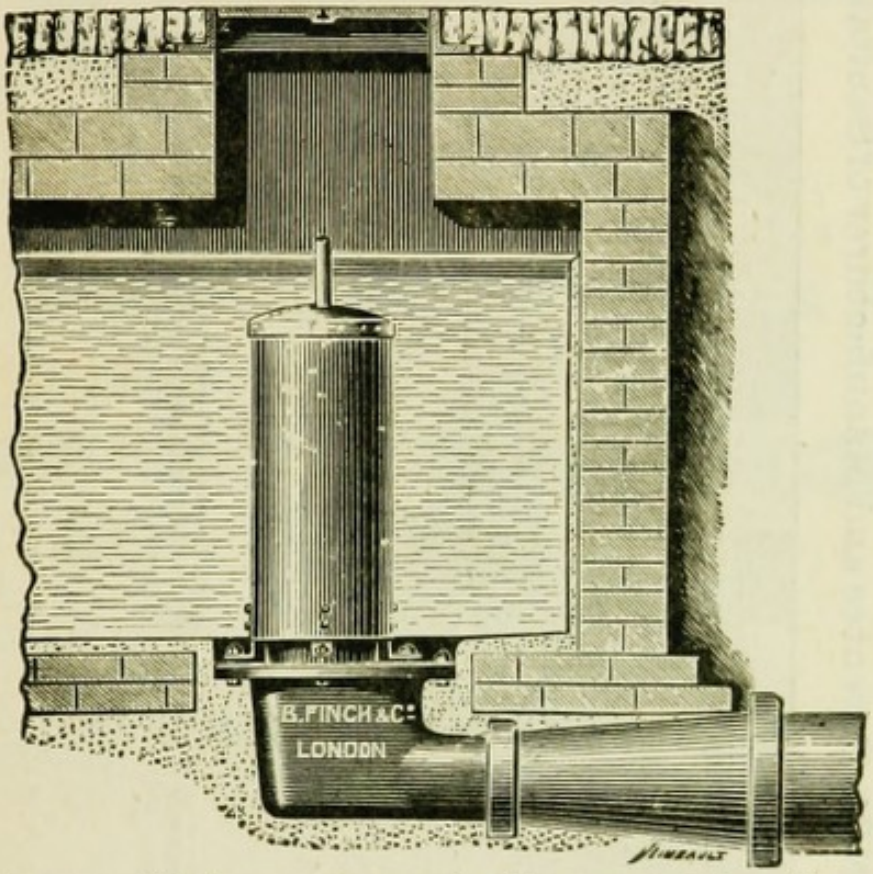
FINCH'S

'FLUSH TANKS' & 'SIPHONS'

FOR MAIN DRAINS (Patent).



Flushing Siphons are indispensable for the effectual scouring out of both main and house drains. Every Siphon guaranteed to work drop by drop.

SEND FOR ILLUSTRATED PRICE LIST.

B. FINCH & CO., Limited,

Manufacturing Sanitary Engineers,

82, BELVEDERE ROAD,

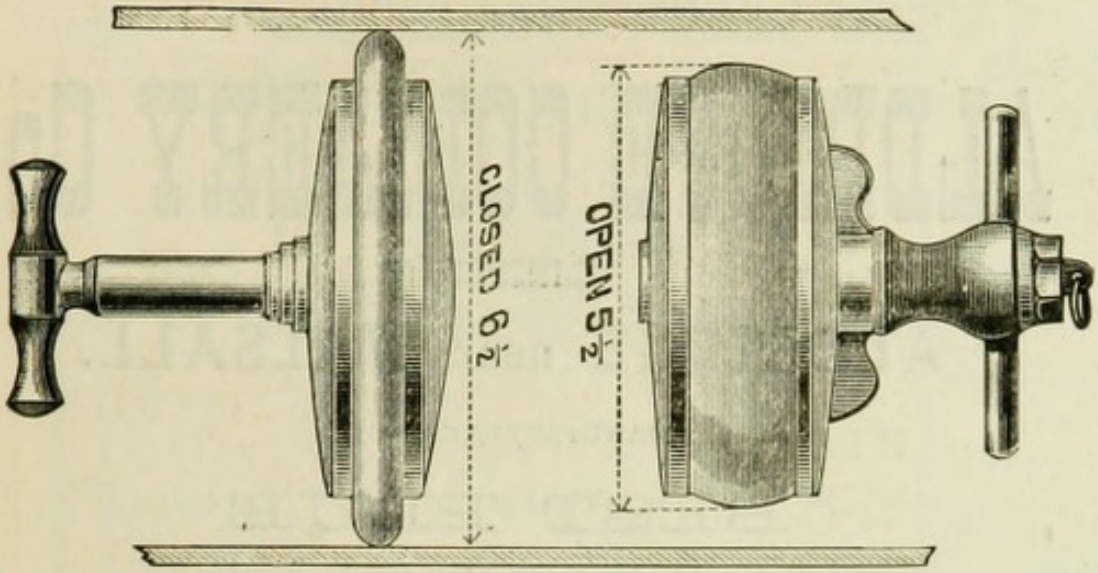
LAMBETH, LONDON, S.E.

JONES' PATENT "SYDNEY SYPHONIC" CISTERN AND ENGLISH MADE CLOSET.

The Cistern is on entirely new lines to anything hitherto brought out. The action is absolutely certain, and simplicity itself. They are being largely used in Lunatic Asylums, &c. Made Square and Angular. The Closet is a perfect Wash-down, and when used in connection with the "Sydney Syphonic" Cistern, has a clearing power equal to many Syphonic Closets.

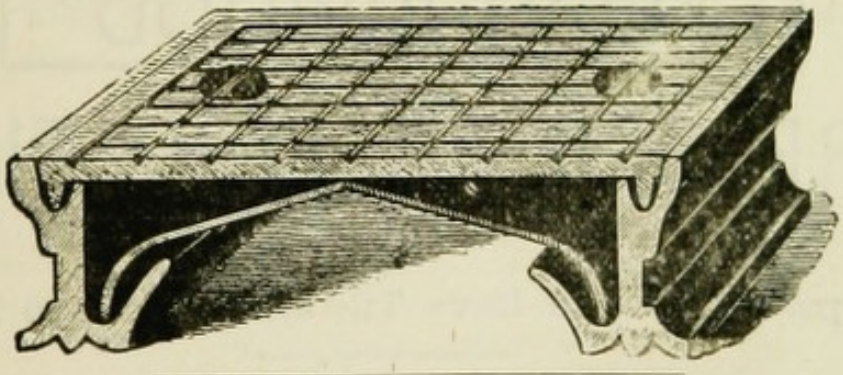
For Catalogue giving full Particulars apply **JOHN JONES, Patentee and Manufacturer of Sanitary Specialities**

JONES' PATENT SCREW EXPANDING DRAIN STOPPER.



JONES' PATENT BAG DRAIN & PIPE STOPPER.

JONES' PATENT AUTOMATIC SEAL MANHOLE COVER.



HEAD OFFICE:

40, Sydney Street, Fulham Road, Chelsea, S.W.

GENERAL OFFICES AND WAREHOUSE:

Bury Street, Fulham Road, Chelsea, S.W.

WORKS:

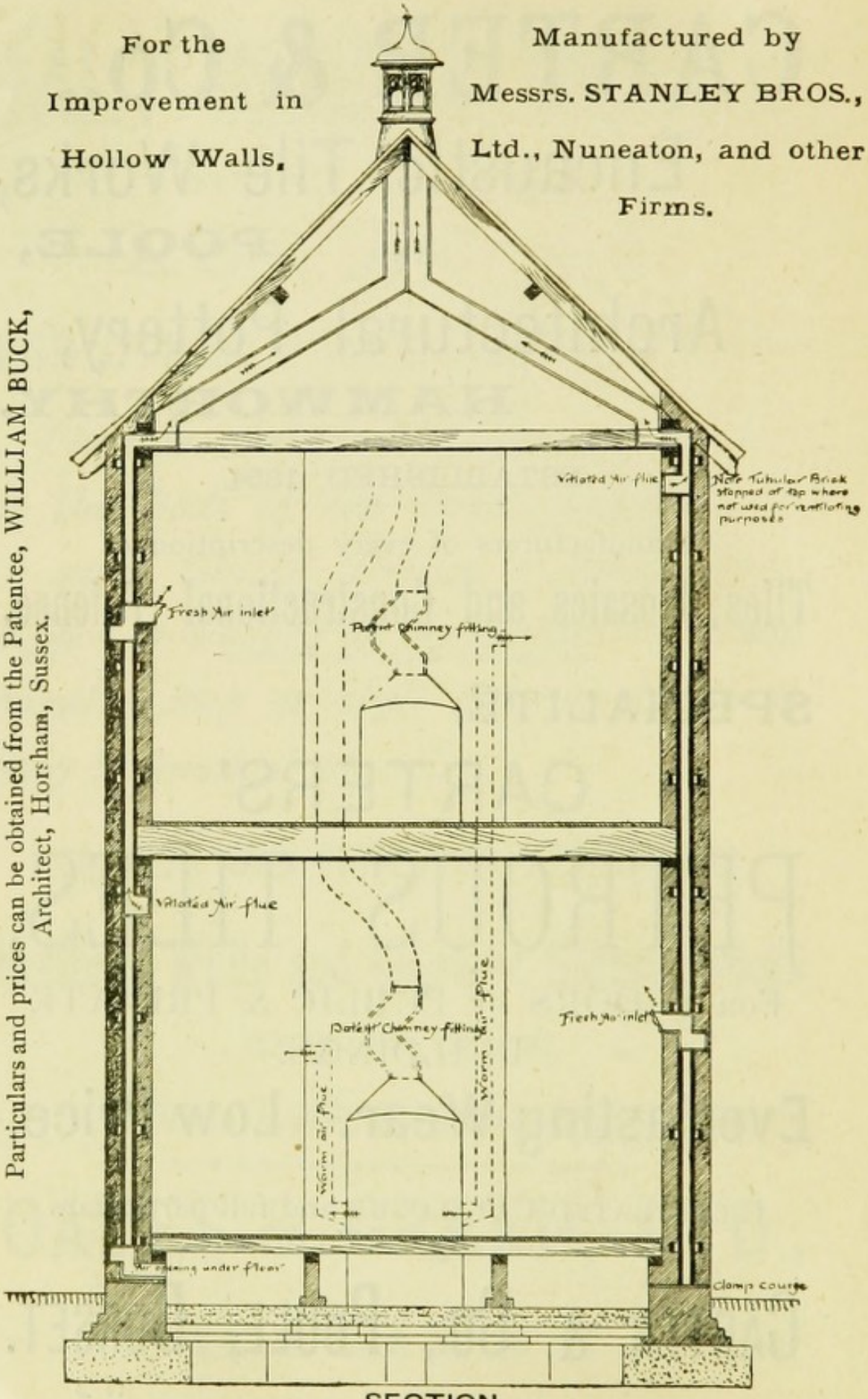
Selah Place and Leader Street, Chelsea, S.W.

PARTICULARS of all above on APPLICATION.

BUCK'S PATENT TUBULAR BRICKS.

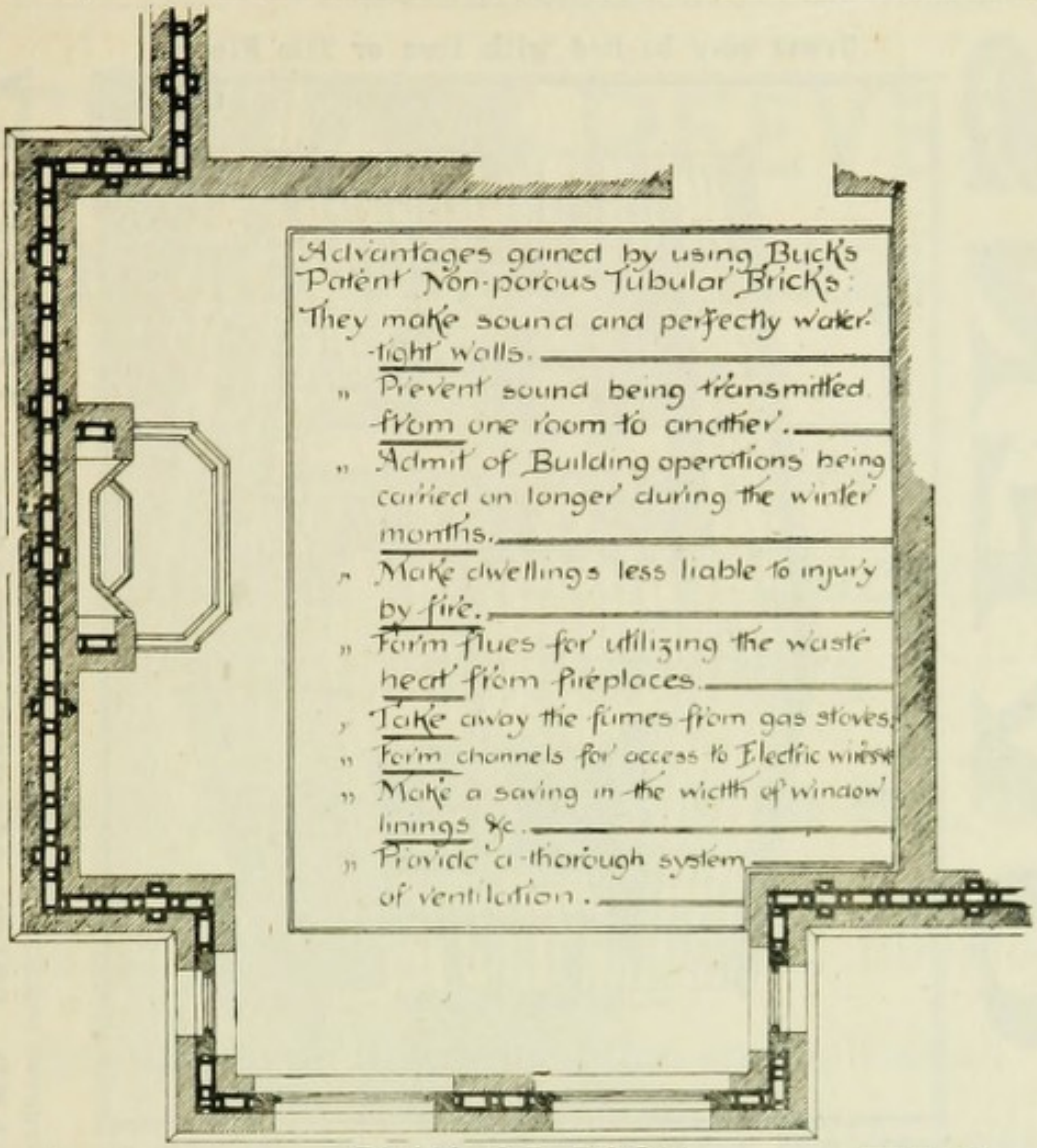
For the Improvement in Hollow Walls,

Manufactured by Messrs. STANLEY BROS., Ltd., Nuneaton, and other Firms.

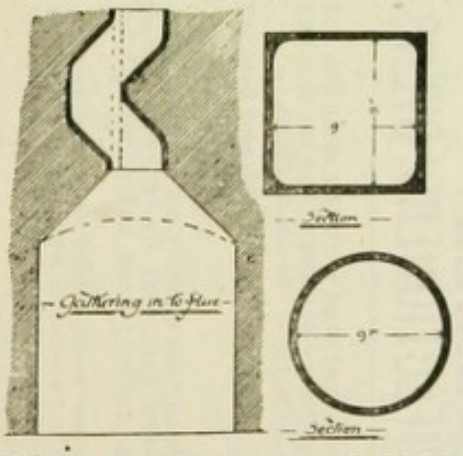


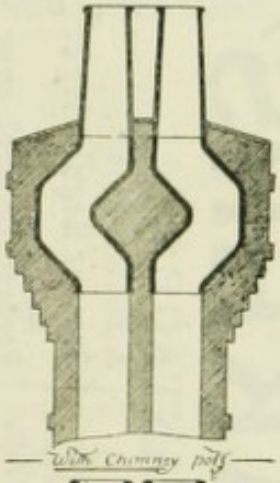
SECTION.

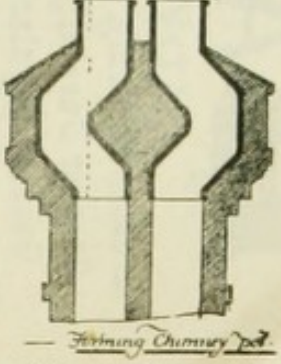
Particulars and prices can be obtained from the Patentee, WILLIAM BUCK, Architect, Horsham, Sussex.



PLAN OF ROOM







BUCK'S PATENT CHIMNEY FITTINGS

For prevention of Down Draughts and Smoky Chimneys.

These Fittings are made in Stoneware—square or round in section to suit any Flue. They form the necessary bend in Chimney breast for preventing Down Draughts, and obviating the imperfect gathering in of the Flue over Fireplaces. They are also capable of being fixed in Chimney Heads, forming a low pot, and effectually preventing Smoky Chimneys. Manufactured by Messrs. STANLEY BROS., Ltd., Nuneaton, and other Firms.

BAKERS' OVENS

ADVANTAGES.

Greater Economy.
Greater Durability.
Greater Regularity.
Greater Cleanliness.
A Better Bloom.
Greater Regularity of Heat.
Perfect Control over Temperature.
Absolutely Continuous Baking.
Less Loss of Heat During Baking.

COMBINED

BAKERS' & CONFECTIONERS' OVENS.

These Ovens are so arranged that with the same fire the several decks can at one time be worked at the same or any different temperatures for various classes of goods.

Messrs. Cox & Son,
4, Victoria Parade,
Torquay.

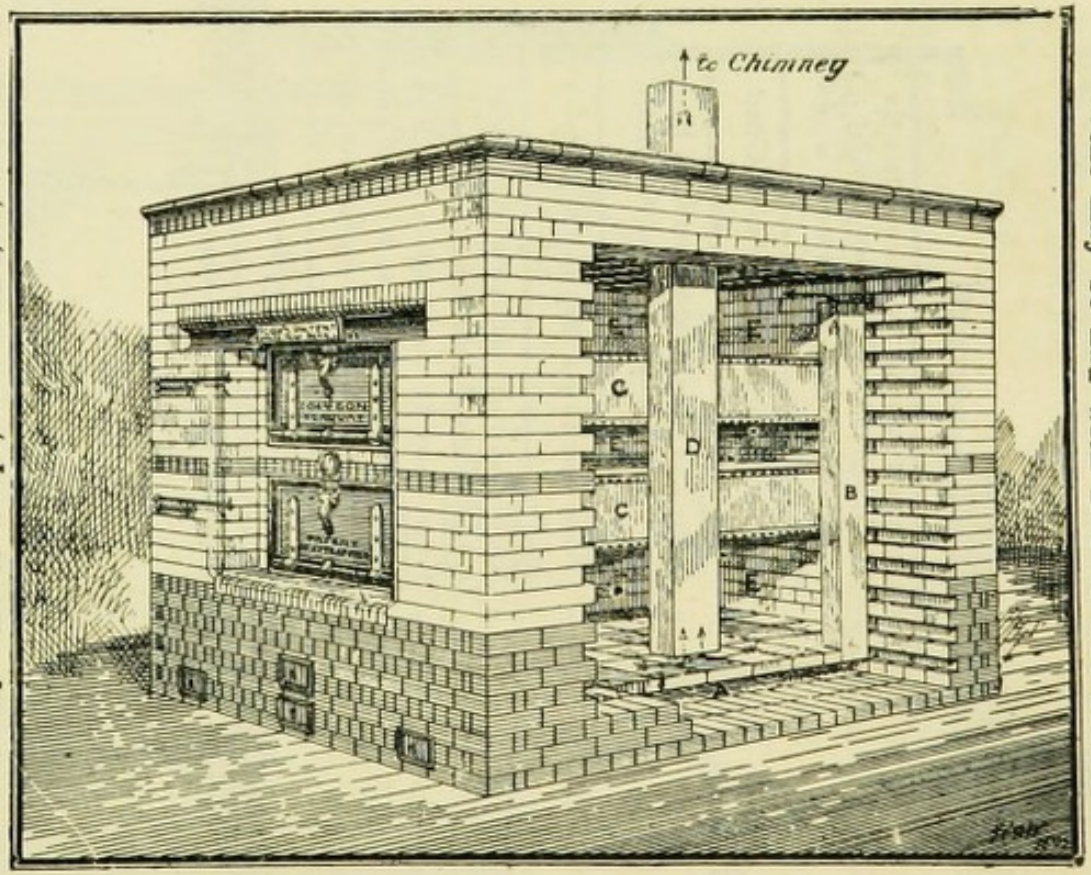
Meaby's Reading Biscuit Factory
Reading,
November, 5th, 1894.

Gentlemen,—In reply to your enquiry we are glad to say that the Double-Deck Oven (each 10 ft. by 8 ft.) you erected for us last April is doing excellent work, in fact we wish for nothing better

It is always ready for work, absolutely continuous, under perfect control, the two Ovens working at the same time at different temperatures; they are also extremely economical in fuel.—Yours faithfully

(Signed) MEABY & CO., Ltd.,
GLOYL J. CARTER, *Secretary.*

Made in any Size or Shape, and with 1, 2, or 3 Decks.



Ovens may be had with Iron or Tile Floors.

Apply, stating size required and if for Bread only or Mixed Goods, to

COX & SON, PATENTEES AND SOLE MANUFACTURERS, TORQUAY.

COLLEDGE & BRIDGEN,

Manufacturers of all kinds of

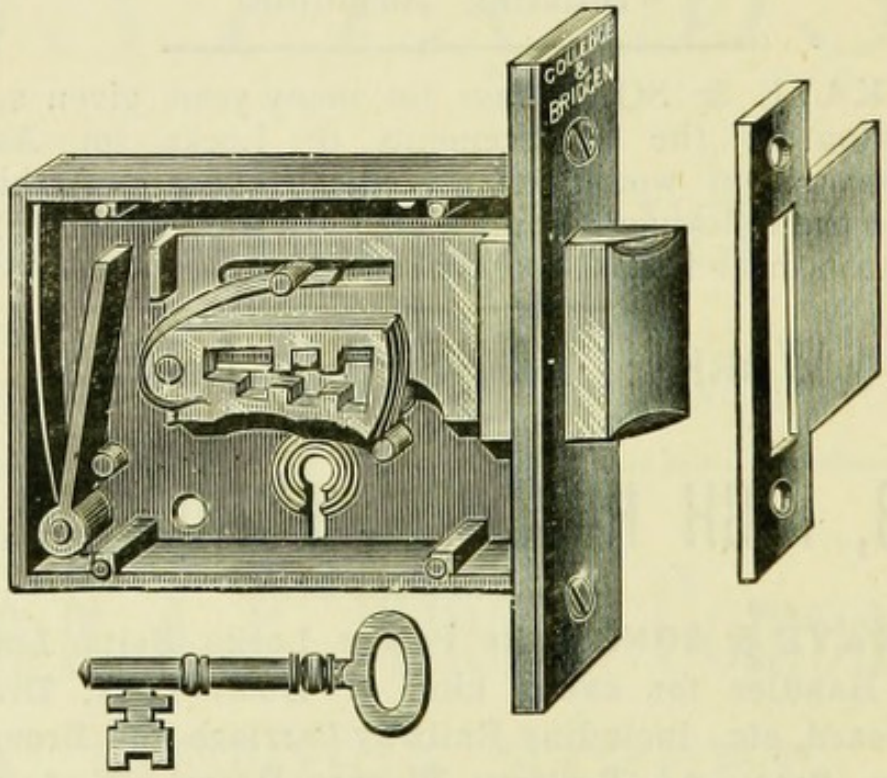
LOCKS FOR LUNATIC ASYLUMS,

Made to the Special Requirements of Architects.

ESTIMATES GIVEN ON RECEIPT OF SPECIFICATIONS.

LOCKS, LOCK FURNITURE AND FITTINGS OF EVERY DESCRIPTION,

SUITABLE FOR PUBLIC BUILDINGS, MANSIONS, &c.

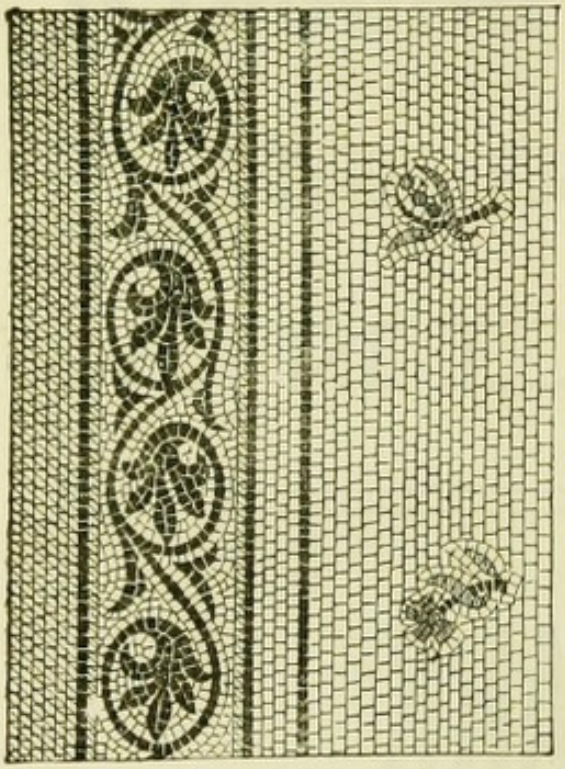


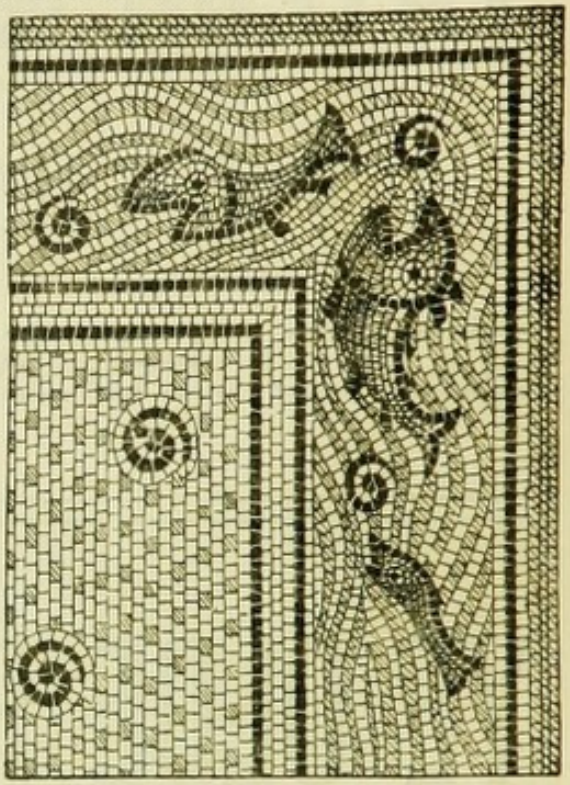
MIDLAND WORKS,

WOLVERHAMPTON.

TURPIN'S

ITALIAN MARBLE AND CERAMIC MOSAICS FOR FLOORS AND WALLS AND TERRAZZO PAVEMENTS.

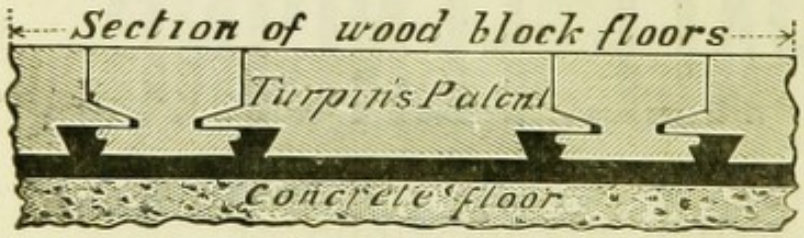




WOOD BLOCK FLOORING (TURPIN'S PATENT),

OAK, ANTISEPTIC BEECH, TEAK, PITCH PINE, DEAL,

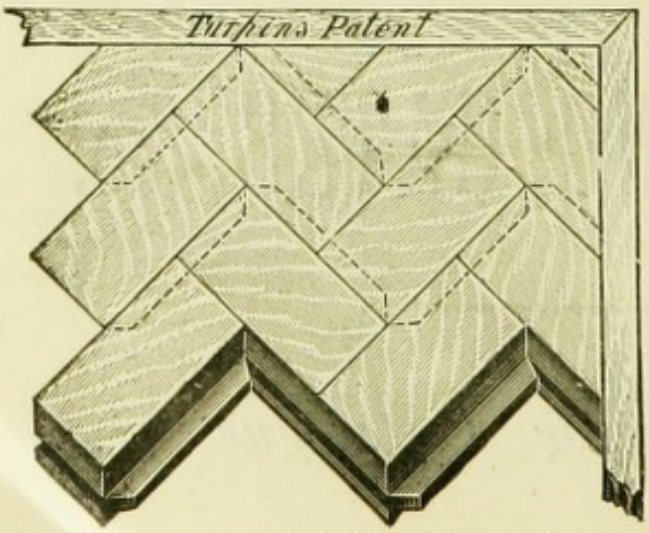
1, 1¼, 1½, and 2 inch thick in Stock.



1 INCH OAK BLOCK FLOORING,

At 4/10½ per yd. super.

Prepared on TURPIN'S PATENT SYSTEM of laying on Concrete, Wood, and Stone Floors, perfectly interlocking all the Sections with each other by means of specially constructed grooves and tongues rendered further bonded and secured to foundation by means of dovetail groove joints filled in with Waterproof Patent Cement Composition.



The dotted lines shown on the drawing illustrate the perfect System of Interlocking the Blocks with each other.

1 INCH ANTISEPTIC BEECH BLOCK FLOORS.

At 4/6 per yd. super.

Prepared by TURPIN'S System of Antiseptic Infusion, by which the sap is forced out of the wood and replaced by ANTISEPTIC CHEMICALS, at the same time hardening the timber. Especially adaptable for CHURCHES, BOARD SCHOOLS, HOSPITALS, and other public buildings, as the spread of fever and contagious diseases is effectually prevented by its use.

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