NOTES ON MODERN BARRACK SANITATION.

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The housing of the soldier is so important a question that no excuse is needed for returning to the subject. No exactly similar problem presents itself in civil life, large schools and lodging houses coming nearest. In a former article in the Journal an effort was made to sketch improvements possible in our older barracks. It is proposed now to indicate some of the sanitary alterations which have been effected for the benefit of the soldier in barracks, now building or recently built. In the Eastern District—where the writer was recently serving—specimens of the oldest and the newest barracks exist almost side by side, and the contrast between them is startling and very interesting.

In the older barracks the buildings are surrounded by a high wall, topped with broken glass, giving the place the appearance of a prison, and making the atmosphere stuffy and confined. This is replaced nowadays by a light iron railing, pleasing to the eye and giving free admission to the air. Instead of the forbidding architecture of the old barracks, the buildings nowadays are of cheerful elevation, generally in red brick. In the guardroom we no longer find the men on duty provided with the plank-bed as of yore, but allowed ordinary cots to lie down on, while the prisoners' cells are light and well ventilated. The barrack rooms are in two stories with verandahs, and little detached blocks contain rooms for sergeants, and for keeping stores. On each landing the visitor meets a niche with concrete base and tiled sides, intended to receive the time-honoured urine tubs. These ancient survivals will not be got rid of till the newest barracks—which at present exist only on paper—are built. Conservatism has struggled successfully for their retention so far, although their dirtiness and the risk of dissemination of typhoid attaching to them has often been pointed out. Lavatories of simple, but effective pattern, with four basins, are common to every two rooms, and here are placed "mop cupboards" with cement floors and walls in which to keep the mops, brooms and cleaning materials. The barrack rooms themselves are smaller than of old, accommodating twelve men, and are distempered in colour, the number of windows and ventilators is increased, and tiled fireplaces with solid hearths give greater heat into the rooms, which present a light and cheerful aspect.

Three systems of lighting are at present on trial. Incandescent gas mantles, carburetted gas and the incandescent electric light. All seem to give good results, especially when we contrast them with the miserable illumination which the soldier has been accustomed to in the past. The choice of system must depend upon circumstances: carburetted gas is expensive, electric light not everywhere available, and incandescent mantles are broken if there is much traffic in the rooms overhead.

In Gujerat barracks a couple of cubicles have been experimentally fitted up, but the system is not likely to be proceeded with as the cost is great; and it seriously interferes with ventilation, and necessitates heating by hot water pipes, as well as encouraging the accumulation of dirt. The cubicle must also be condemned on disciplinary grounds.

The dining hall in the newest barracks is now an accomplished fact; four are provided for each battalion, grouped in pairs. Between each pair is a kitchen, which serves the two halls and heats the hot water pipes and the baths. Thus each half battalion has its complete dining, cooking and bathing establishment. These halls are used at present for meals only, but there is no reason why they should not also be utilised as recreation or class rooms, so as to prevent the multiplication of apartments which all have to be scrubbed and cleaned, a duty which the soldier, and especially the recruit, much detests. The kitchens are spacious and well ventilated, with tiled walls, and furnished with large kitcheners of various patterns, "Dean's Improved" and "Warren's," for example. Pantries and sinks are provided in the lobbies between the kitchens and dining halls.

The flooring of these places presents a difficulty. Wood gets dirty, cement cracks and powders away, stone pavement is very cold to the feet and wears unevenly, so that it is difficult to find a smooth impermeable surface which shall be satisfactory.

Near the kitchens, and supplied with hot water from them, we find the baths, of enamelled iron, each bath partitioned off, and in every way arranged to make the path of cleanliness pleasant. Shower baths are also provided in the latest buildings. In connection with the bath house are the drying rooms, one per company, heated with hot water pipes, and hung with pegs. These are intended to receive the clothing which has got soaked during route marching or other military duty, so that it need not be hung up wet in the barrack room. This arrangement, when properly supervised by the regimental authorities, has proved very successful.

Great coats experimentally saturated with water dried completely in six hours.

Latrines have undergone progressive development since the continuous trough pattern of water closet was first installed in barracks. These gave place to an improved form with a separate container to each seat, and these in turn to separate pedestal wash-down closets.

It has now been found possible to provide each closet with a separate three-gallon flush set in motion by pulling a chain in the usual way, and refilling in about a minute—so that the periodical flushing, with the insanitary accumulation of fæcal matter between whiles, will be a thing of the past. It has been found that the wooden seats of the closets—of whatever pattern made—get fouled, so a new form, called the "inserta seat," has been brought into use. The seat is here replaced by two lateral wooden "pads" fixed into the earthernware rim of the pedestal, so that no wood work at all is exposed to possible contamination. Coincidently with this the drainage system has been improved on the most modern lines, with disconnecting traps and inspection chambers of the newest pattern. These are usually connected with the local system of sewerage, but in a few instances a separate biological treatment of the sewage of the barracks has been installed. Latrines are of amberware and stoneware, instead of the old slate slabs.

The coffee shop, supper room and regimental institutions generally, are now lodged in spacious, well-ventilated apartments, and made bright and cheerful with pictures, curtains and coloured walls. Indeed, the supper rooms, with their marble-topped tables and ornamental palms, often present quite a café-like appearance. The large recreation rooms have a permanent stage with dressing rooms underneath, and are heated throughout with hot water pipes. The present tendency is to discourage "soaking" in canteens, and to encourage the men to take their beer and then turn to some rational amusement. "Wet canteens" or drinking bars are therefore built of moderate dimensions only, with limited sitting accommodation, and the same arrangement is followed in the sergeants' messes. In these latter the main room is divided into writing and dining rooms by a movable partition.

The water supplies are as a rule derived from local or municipal sources. In Norwich they are from a water company, and in Bury St. Edmunds and Landguard from Government wells. The local supply is in each case passed through storage cisterns in the barracks to prevent any temporary water famine, should the

supply be cut off at the main. This arrangement is regarded as indispensable for all large buildings such as barrack blocks and stables, but it is now recognised that cisterns are always possible sources of pollution, and in the newer barracks taps for drinking water are attached to the service pipes, so that the soldier drinks only the incoming water, and uses the cistern water for washing, &c., only. The small cisterns formerly supplied to each married quarter are abolished in the more recent buildings, a matter for congratulation, as they are always sources of danger, being difficult to keep clean or even properly covered.

The married quarters also share in the general improvement; they contain more rooms, and each quarter has its separate water closet. The sculleries have been enlarged, so that washing can be done at home—a very popular arrangement—and the money saved by the suppression of the wash-houses goes to improve the quarters, which are now finished off with tiled floors in the passages, and washable paint in the annexes.

The officer profits least by these advances in sanitation, and with few exceptions messes are still unprovided with any sort of bathrooms. Sleeping accommodation for mess servants is still a *desideratum*.

Very different from the above is the condition of the men quartered in some of the older barracks. Something no doubt has been done for these, but more might still be effected at no great cost to the State. The difficulty is that the authorities are in many cases undecided whether these old barracks are to be retained, or rebuilt elsewhere—many of them being now, owing to the growth of population, in the centre of thickly inhabited districts. In the meantime everything has to be kept in *statu quo*, and it is devoutly to be hoped that microbial diseases will recognise the state of affairs, and proclaim a truce until the official decision on these buildings is announced. Meantime we may safely say that, in the newer barracks, the soldier is better lodged and cared for than most members of the community.

The writer had recently, by the courtesy of the secretary, an opportunity of going over one of the largest of the Rowton houses in London. These houses are often held up to us as a model for barracks. Undoubtedly they are wonderfully good in construction and arrangements, but the problem of their construction is really quite dissimilar to that of barracks. In the first place they have only to accommodate their inhabitants with dinner, bed and breakfast; the greater part of the day they are empty, so that there is no

hindrance to cleaning operations, which are facilitated by the use of tiles, cement and impermeable surfaces wherever possible—an arrangement which is hygienic, but which, if applied to barracks, would put too heavy a burden on the long-suffering tax-payer. In the next place, the idea of cubicles for soldiers is certainly taken from the Rowton houses, but the soldier is one of a corporate body and the inmates of these houses are isolated individuals unconnected with one another, merely seeking a night's lodging. Finally, in barracks we have not only to house, but to educate, develop and discipline our men, and this requires quite a different system to that of the Rowton houses, where the only and sufficient penalty for misbehaviour is—to be turned out. In the Rowton houses a special staff is kept up for cleaning purposes, in barracks nowadays the men are so constantly on duty that it is difficult to get the fatigue men necessary to keep the place in order. Therefore it is advisable to have everything of the simplest, and to avoid as far as possible additional labour. The Rowton houses have a special and up-to-date laundry of their own—a feature which might perhaps be copied in our barracks with advantage.

At present the tendency in the Army is to do away with the laundry and to allow the washing to be done at home, larger sculleries being built for the purpose. The drawbacks to this, of course, are the damp and steam generated in the dwelling and the accumulation there of dirty garments; but, on the other hand, many women always did do their washing at home, even when a laundry was provided, and the evil is minimised by a large well-ventilated scullery. Besides the laundry question, which is still in the experimental stage, one or two disputed points may be touched on.

In some places the self-flushing water closets are found not to answer, and some form of automatic flush is recommended instead. No one doubts that the self-flushing system is the more sanitary, and its misuse by the men will soon be got over by time and education. If the people who live in Rowton houses can be trusted to use self-flushing closets, surely the soldier can too! The amount of flush per closet has been laid down at two gallons, but it has been found that two such flushes are required to wash the excreta properly into the drain, while one three-gallon flush will do the work; hence the latter is more economical of water and has been adopted throughout this area.

The following details of the modern barrack room may be of interest. The room is thirty-six feet long by twenty-three-feet six

inches wide, and ten feet six inches high. It accommodates twelve men, and has three windows, two feet six inches by six feet, on each side. A bed is placed in each corner and the remainder in pairs dividing the space between the windows. At the end of the room opposite the door is a fireplace of glazed fire-brick, with solid hearth; in connection with it is a warm air inlet and a foul air extractor. In addition louvred ventilators are inserted between the beds, thus ample ventilation is secured as well as ample cubic space. At the other end of the room a small ventilated cupboard is provided for cleaning materials only, as dining halls do away with the necessity for any food being kept in the barrack room. "Mop cupboards" have not proved a success and will probably not be repeated, as they get musty and dirty; some kind of rack for brooms, &c., would be much better, but then the question of their safe custody would arise.

The sergeants have quarters quite distinct, separated from the men's rooms by the whole width of the verandah which runs along the front of each barrack room. There is one "sergeant's bunk" and one company store room to each pair of barrack rooms.

A convenient and well-lighted medical inspection room is now provided, one for every two barracks, with water laid on, cupboards, &c., and a large waiting room attached. This is a very necessary improvement now that so many cases are to be treated out of hospital.