

only just to state that, in the majority of cases, the copious subcutaneous injections were only resorted to when the patient was in a very advanced, often in a seemingly hopeless, stage of the disease.

Of the 226 cases above referred to, 101 were treated by Professor Efsio Marini, whose patients are thus classified:

"Cases of more or less serious choleraic diarrhoea and vomiting, not in the algid stage	49
Cases of incipient algidism	24
" advanced algidism	15
" very grave asphyxia (cured)... ..	4
" very grave asphyxia (died)	9
Total	101"

For scientific accuracy and practical utility, Professor Cantani subtracts from the preceding list the 49 cases which, not having attained the algid stage, may not have required, and might have recovered without, his method. That calculation leaves 52 very serious cases of cholera treated by Marini by hypodermoclysis, with the result of 43 recoveries and 9 deaths.

THE PROGRESS OF CHOLERA IN SOUTHERN EUROPE.

THE diminution in the cholera mortality in Spain is still maintained, the average daily number of deaths for each of the past three weeks having been some 800, 500, and 300 respectively. In Marseilles the cholera death record has for some days ceased, and at Toulon there are only occasional fatal attacks; so that we may hope that the epidemic, in so far as France is concerned, is at an end.

In Italy matters are otherwise. A few isolated cholera deaths occurred at Gaeta and Trivio towards the end of August, and then Sicily, the authorities and population of which are amongst the most ignorant that can be found in Europe as to measures of public health, determined on a system of stringent quarantine. But in countries necessarily having communications with each other, cholera has no respect for quarantine measures, and, as in the cases of France, Italy, Spain, and Algeria last year, so in the case of Sicily this year, the disease passed the imaginary line drawn round the island, and showed itself at Palermo. Unfortunately, countries and places trusting to quarantine do but little else in the way of disease prevention, and the result has been that Palermo was found to be essentially adapted to the development of the infection introduced. The disease rapidly spread, and within a week as many as from 120 to 170 deaths from cholera have been daily reported. Fifteen other Italian provinces are also on the list of infected ones, but in Parma only has any material mortality occurred. Except in Palermo, the tendency to rapid diffusion has not been manifested, and it is to be hoped that the conditions of season and otherwise will prevent any recurrence of the serious epidemic of 1884.

In so far as national measures of cholera prevention are concerned, the Italian Government commenced this year a rational system, based very much on the lines of the English procedure. But the ignorance of the Sicilian population has, for the moment, put an end to their good intentions, and the Government had to give way to the excited demands of a people who wander about armed with rifles, &c., to kill the imaginary persons who distribute cholera infection in powders and otherwise. Such action naturally prevents the authorities from adopting tardy remedies with disinfectants and so forth; and it has, at last, reached such a point that the Government, probably repenting that they in the first instance gave way to immoderate demands, have determined that the populations of the island shall comply with the general cholera regulations for the whole kingdom, and they have now sent troops to enforce this compliance, and to put down any attempts to interfere with the necessary intercommunication of the inhabitants of different localities. The attitude assumed by the Sicilians, and especially by those in the province of Palermo, in the face of a grave emergency, tends to bring discredit upon the nation to which they belong; and the Italian Government will do well to arrest, with a strong hand, any further development of the ignorant infatuation which has been exhibited.

STATISTICS OF FERRAN'S INOCULATIONS.

DR. FERRAN has issued a pamphlet giving the cholera statistics of several towns in which the epidemic decreased in a very marked degree from the time when a considerable proportion of the inhabitants were inoculated. He lays stress on the fact that the prophylactic virtue of inoculation is dormant until the fifth day.

In Alberique, the population of which was 4996, 1188 persons were inoculated between May 17th and June 12th, of whom, from May 17th to Aug. 6th, 11 were attacked and 2 died; while of the uninoculated population 220 took the disease and 91 died during the same period.

In Alcira, the population of which was 16,000, 2220 were inoculated once and 8830 more than once. Here no specific dates are given, but a table showing that 404 non-inoculated persons were attacked, 206 of whom died, and that 44 of the singly inoculated were seized, 15 dying; while out of the large number of the reinoculated population only 55 cases occurred, with 9 deaths.

In Benifayó, which had a population of 3615, 2717 were inoculated once or oftener. From June 21st to July 27th 283 cases occurred amongst the non-inoculated population, with 186 deaths, while amongst those once inoculated there were but 23 cases with 6 deaths, 4 of the 6 fatal cases having already suffered from premonitory diarrhoea at the time of inoculation. Of the persons who had been more than once inoculated not one was even attacked.

Catarroja had a population of 5521. From June 18th to June 30th 219 persons were attacked, with 88 deaths. The local medical men then begged Dr. Ferrán to send them some of his inoculation fluid, with which they inoculated 1319 persons. From July 1st to August 5th there occurred amongst the non-inoculated 311 cases, with 222 deaths; amongst the inoculated before the fifth day 46 cases, with 22 deaths; after the fifth day 13 cases, with 3 deaths. From the table given the height of the epidemic was apparently from June 28th, on which day 40 new cases occurred, to July 5th, when 53 persons were attacked. It then decreased, and on the 13th there were only 4 cases, and after the 23rd none at all.

In Cheste, with a population of 5227, 175 cases, 65 of which were fatal, having occurred in June, Dr. Ferrán was requested to come and inoculate the people, which he did to the number of 3136 between June 30th and July 3rd. From July 1st to August 8th, 76 of the non-inoculated population were attacked, with 35 deaths, while only 13 of the inoculated were attacked, with 7 deaths, all these 13 occurring before the fifth day.

In Chiva, with 4386 inhabitants, 1308 were inoculated. From July 1st to August 10th, 140 of the non-inoculated were attacked, with 54 deaths, and 11 of the inoculated, with 5 deaths, 2 of these 5 occurring before the fifth day. In this town the inoculations were prohibited after a time, so that reinoculation could not be practised.

In Masanasa the population on July 6th consisted of 2559 persons, 1973 of whom had been inoculated. From that date to August 7th there were amongst the non-inoculated 35 cases with 24 deaths, while amongst the much larger number of inoculated persons only 11 were attacked, 6 of whom died.

CIRCULAR HOSPITAL WARDS.¹

BY H. SAXON SNELL, F.R.I.B.A.

THE proposition for constructing hospital sick wards upon what is known as the "circular system" was first made in this country during the latter part of 1878, about the same time that the foundation-stone was being laid in Belgium of a hospital intended to be built upon this principle. The design for this building, the Antwerp Civil Hospital, having received the approval of the Communal Administration of the town, was referred to the consideration of the Council of Public Hygiene at Brussels, but this body strongly condemned the erection of circular wards upon grounds which, now the building is erected, would appear to have been

¹ Read, Sept. 24th, 1885, at the Congress of the Sanitary Institute of Great Britain, held at Leicester.

correct. Nevertheless the work was proceeded with, and the building is now opened, and may be inspected by those interested in the question. No other continental nation has, to my knowledge, considered this new system worthy of imitation; but in England many similar hospitals have been erected, and it is, I believe, in contemplation to erect others. There is something very fascinating about the conception of a circular ward, and superficial consideration of the question would lead to a belief in the soundness of the arguments advanced in favour of the system; indeed, I was myself disposed, before critically examining the matter, to allow that its adoption might possibly be productive of some, if not all, the benefits promised by its advocates. This allusion was, however, dispelled when lately I had occasion to study the question in all its aspects for the purposes of a report to a public body prepared to erect this class of wards upon my recommendation, and I propose now to show the reasons that led me to the conclusion that parallelogram-shaped sick wards are in every respect much more economical, both in first cost and in management, and that no advantage is to be attained by the increased outlay consequent upon the erection of wards of circular shape.

My present remarks will be confined to a consideration of the erection of wards for general hospitals, and I do not propose in this paper to deal with the question in its application to fever or other wards for special cases. Nevertheless, I am equally convinced that the circular system as now advocated is wrong in any kind of hospital building, whatever be its special use or locality; but to deal with the question in its application to other than ordinary hospitals would involve considerations which the time at my disposal on this occasion will not allow of being entered into. It will be well to first consider what are the conditions necessary to be observed in the planning and construction of general hospital wards. First, as to the number of patients. I have the authority of Miss Nightingale and of many hospital superintendents for stating it to be essential that besides the ordinary nurses and attendants every ward should have the constant presence of one head nurse in the day time and of one nurse at night time, and that these head and night nurses could each properly overlook forty patients as a maximum; but taking into consideration all the essentials for proper discipline and facility of administration, the number of patients in any one ward should not exceed thirty-two or be less than twenty; also, that in all cases one or at most two separation wards, each for the accommodation of one, or at most two, patients, should be attached to the large ward, but not so as to communicate with it directly. All the wards should, however, adjoin the rooms occupied by the nurse having charge of the patients contained in them. Except in the case of separation wards, wards of small size are decidedly objectionable, because they are (says Miss Nightingale), "unfavourable to discipline, inasmuch as a small number, when placed together in the same ward, more readily associate together for any breach of discipline than a larger number." And it is also pointed out by her that one head nurse, or one night nurse, could not so efficiently superintend and overlook a number of small wards as one large one. Each large sick ward, whether it contains ten or thirty patients, must have attached to it at least two w.c.'s and a slop-sink, separated by cross ventilated lobbies. A bathroom should also adjoin each large ward. It is therefore clear that the fewer the patients in each ward the larger will be the total number of nurses required in the establishment, and the greater will be the multiplicity of nurses' rooms, waterclosets, slop-sinks, bathrooms, and other sanitary offices.

Suppose a hospital to be designed for the reception of 576 patients, 540 of whom are to be placed in eighteen parallelogram-shaped wards containing thirty each, and the remaining thirty-six in smaller and adjoining separation wards. If the buildings are three stories in height there would be six pavilions; but if, as I shall show, twenty-two patients only can be placed in the large wards because they are of circular shape, then eight pavilions would be required instead of six, and twenty-four wards instead of eighteen. In both cases these wards and pavilions are assumed to be of the same size.

It has been shown that the services of one head and one night nurse must be provided for each large ward, and it therefore follows that the adoption of this circular plan would involve

the additional cost of twelve nurses for the six extra wards. The two extra pavilions containing these six wards would also necessitate the additional services of one scrubber and one porter for carrying coals and meals and attending the fires, furnaces, &c., and the salaries, uniforms, and maintenance of these fourteen additional officers cannot be put at less on the average than £50 a year each, or a total of £700. The additional cost of fuel for the warming and hot water supply to these two extra pavilions may be put at a minimum sum of £200 per annum, and the outlay for soap, soda, &c., for cleaning and the periodical white-washing, painting, and repair, cannot be put at a less sum than £100 per annum. Therefore the total additional establishment charges consequent upon the adoption of the circular system would be £1000, as follows, viz.:—

12 extra nurses	}	at £50 per annum each...	£700	0	0
1 " scrubber							
1 " porter							
Extra fuel...					200	0	0
Soap, soda, &c., and repairs					100	0	0
Total ...					£1000	0	0

This sum, capitalised at three per cent. (thirty-three years' purchase) would amount to £33,000, and this represents the additional cost of maintaining the 576 patients supposed to be housed in wards designed upon the circular system. The additional cost per 1000 patients would be £57,392, and this cannot be considered a large estimate, seeing that Miss Nightingale in her work on hospitals shows that where nine patients only are contained in a ward, as against thirty-two patients in a ward, the additional capitalised outlay for nursing only would be £196,775.

Now, as to the relative cost of erecting the buildings—a question involving primarily a consideration of the requisite sizes for the wards—there must be much diversity of opinion amongst medical men and other authorities upon this point, if we are to judge from the dimensions of recently constructed hospitals. Captain Douglas Galton considers that between 1200 and 1300 cubic feet of air space per bed is all-sufficient. Miss Florence Nightingale asks for from 1200 to 1500 ft. Dr. Parkes, speaking of hospitals generally, says that the space should be from 1500 to 2000 ft. (the latter quantity referring no doubt to fever and the former to general hospitals). Dr. De Chaumont, in his report upon the Norfolk and Norwich hospital, shows upon mathematical bases that where good ventilation exists no advantage is gained by making the air space of large wards greater than 1200 ft. per patient. The report of the committee appointed to consider the cubic space of metropolitan workhouses and infirmaries states that the cubic space to be allotted to ordinary sick patients in large wards "should not be less than 850 ft."; but it is stipulated that no space above the height of 12 ft. from the floor-line shall be included in the calculation. This committee consisted of the following eminent authorities—viz., Drs. Thomas Watson (chairman), Henry W. Acland, Francis Sibson, W. O. Markham, and John Randall, Capt. Douglas Galton, Messrs. Uredale Corbett (Local Government Board inspector), Timothy Holmes, F.R.C.S., and Charles Hawkins, F.R.C.S. In my own practice I have erected four large parish infirmaries, holding in the aggregate upwards of 2500 ordinary sick patients, with less than 950 cubic feet of space to each, and the medical officers of these establishments have not found it necessary at any time to order the removal of any of the beds (as was contemplated), should one or more extraordinarily severe cases at any time be developed, and seem to call for increased space. The Moabit Hospital at Berlin gives a space of only 864 cubic feet for each ordinary patient; but in this building one-fourth of the cases treated are stated to be of an acutely infectious character,³ and we may presume that a larger space would be allotted for this class of patients. Yet the death-rate at this establishment, I am assured by eminent men who have examined the returns, is not above the average of other German hospitals. The proper size of hospital wards is not, however, to be determined by mere considerations of the greater or less quantity of air-space requisite for the well-being of a patient; for Dr. De Chaumont, in his report before referred to, has clearly shown that where by good ventilation a proper change of atmosphere is constantly effected, it matters not within reasonable limits what is the size of the ward. The question must be decided principally by consideration of floor space, and here

² Notes on Hospitals, by Florence Nightingale, 1863.

³ Hospital Construction and Management, London, 1883.

again examples and opinions are sadly diverse. The Moabit Hospital, and the four parish infirmaries previously alluded to, contain about 70 superficial feet of floor space per ordinary patient, and this is the quantity recommended by the before-mentioned committee of experts. Captain Douglas Galton asks for from 90 to 112 feet, Miss Nightingale from 100 to 104 feet, and Dr. Parkes and Dr. De Chaumont from 100 to 120 feet. In each case these authorities seem to determine their maximum and minimum by the question of whether or no accommodation is to be provided around the bed for students—i.e., whether the hospital is or is not to be designed for a medical school. The disposition of the superficial space determined upon, whatever it may be, involves two important questions—viz., the width of the ward, and the distance apart of the beds. Twenty-four feet is conceded to be for all purposes of administration an all-sufficient width for any hospital ward, and inasmuch as it is of the highest importance that each bed should have the largest possible space surrounding it, this width would, I apprehend, never be exceeded, were it not for the desirability of reducing the length of a ward to within a limit not exceeding 120 ft. In parish infirmaries the prescribed distance apart of the beds—i.e., the bed space—is 6 ft.; but 7 ft. 6 in. or 8 ft. is the width more generally adopted, and hence it comes about that the breadth of the wards is necessarily increased in some buildings to as much as 30 feet. And here I would point out that the advocates of the circular ward system invariably and wrongly use the term “wall space” as synonymous with “bed space,” or the distance apart from centre to centre of the beds; and they often improperly calculate this distance, apart of the beds, by dividing the total length of the circumference of the circle by the number of beds, and so arrive at a deceptive result. Take, for example, the description given in the *Builder* of May 9th last, of “A projected Military Hospital,” designed upon the circular system. It is there stated that the wards are each to be 66 ft. internal diameter, and that they are to hold twenty-six patients; “thus,” says the description, “each patient will have a wall space of 8 ft.” As a matter of fact, if this military hospital is ever erected, and twenty-six patients crowded into its wards, each will have a lineal wall space at the heads of their beds of 7 ft. 4 in., but the corresponding distance at the bottom of the beds will be but 6 ft. 3 in.; that is to say (the beds being 3 ft. wide) the distance apart of them will be 3 ft. 3 in. only. And therefore, if it is required to know what really will be the space given per bed in this proposed hospital, as compared with the quadrangular plan of ward, we must calculate the average distances apart as given above of the beds at the heads and at the feet, and then, instead of the delusive 8 ft. of wall space, we shall find that the actual bed space per patient in this proposed hospital would only be 6 ft. 9½ in.

The above results would be arrived at by deducting 6 ft. 6 in. in width for each of the entrance lobbies, and then planning out the feet of the beds at an equal distance apart, and radiating them towards the centre of the circle.

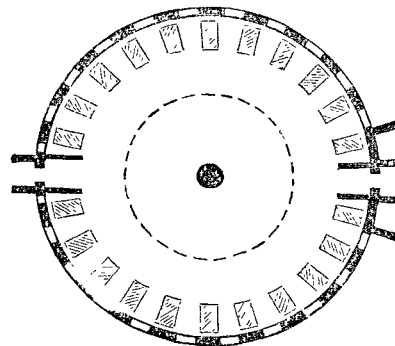
Then, with regard to the height of hospital wards: it is only Professor De Chaumont who expresses any decided opinion upon this point, and the conclusion he arrived at is, that 12 ft., or at most 13 ft., is all-sufficient. He has since been confirmed by the results of experiments made by two eminent American physicians, Drs. Cowles and Wood,⁴ who proved to their satisfaction that no benefit arises from making wards higher than 12 ft. It is also no doubt upon these conclusions that the recommendations of the cubic space committee before referred to were based. Most other authorities regard the question of height as quite subsidiary to that of floor space, as decided by considering the width of the ward and the distance apart from centre to centre of the beds.

I have been particular to cite the opinions of these great authorities as to the requisite dimensions of ordinary wards, because I am about to show that it is practically impossible to design a circular hospital ward, within the limits they have laid down, without causing a useless multiplication of wards, ward offices, nurses, and domestics, resulting in an enormous and wasteful outlay, first in the erection of the buildings, and for all time in the annual establishment charges; and my argument would therefore admit of contention if it could be shown that in the illustration I am about to give I exceeded these limits, for it will be seen hereafter that the smaller we take the units of space

the greater will be the cost of the circular as compared with the parallelogram-shaped ward; and I therefore propose to take for illustration a ward of dimensions which shall approach, as nearly as possible, the maximum quantities asked for by the before-mentioned experts. A parallelogram-shaped ward (see Fig. 2), containing thirty beds, and being 28 ft. wide, 120 ft. long, and 14 ft. high, will contain 1568 cubic feet and 112 ft. of floor area per patient, whilst the bed space will be 8 lineal feet per patient. A circular ward (see Fig. 1) of equal superficial floor space would be 65 ft. 6 in. in diameter, and if it is required (as for proper comparison it must be) to keep the beds the same distance apart as in the parallelogram-shaped ward, this space would not contain so many even as twenty-two beds. For if we consider the feet of the beds to be 7 ft. distant from the outer wall (6 ft. 6 in. for the length of a bed and 6 in. space between it and the wall), and the width of the two lobbies as 13 ft., we find that if there are twenty-two beds, the lateral distance from centre to centre of the feet of each is 6 ft. 9 in., and the corresponding distance between the heads 8 ft. 8 in., thus giving an average distance of 7 ft. 8 in., only as against the 8 ft. space of the parallelogram-shaped ward. The result is that by the adoption of this circular plan we should have a ward containing less bed space and in round numbers respectively 41

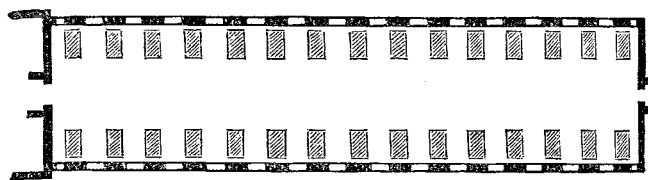
Plans of a Circular- and a Parallelogram-shaped Hospital Ward of Equal Area.

FIG. 1.



CIRCULAR-SHAPED WARD.
65 ft. 6 in. diameter; 206 ft. circumference; 7 ft. 8 in. average distance from centre to centre of beds. Contains 22 beds.

FIG. 2.



PARALLELOGRAM-SHAPED WARD.
120 ft. long; 28 ft. wide; 8 ft. from centre to centre of beds. Contains 30 beds.

superficial and 571 cubic feet per bed more than we started by admitting was necessary for the healthy condition of the patients. The dotted line upon the plan (Fig. 2) encloses the centre space thus wasted in each ward, amounting respectively to 896 superficial and 12,553 cubic feet.

Various ingenious suggestions have been made for the disposal of part of this space. One proposes to erect a staircase which, according to his plan, would occupy 250 superficial feet out of the 896, and at the Antwerp Hospital a still less quantity is enclosed to form a room (ostensibly, but never, I believe, in reality) for the use of a nurse. But besides the practical inutility of adopting these expedients, it will be seen that any such obstruction would only augment the difficulties of cross ventilation already created by the necessity of having the windows between 60 ft. and 70 ft. apart.

What, then, is to be done with this superfluous space? It has to be built, to be kept clean, to be ventilated, to be heated, but worst of all it has to be paid for; and at what cost I will now consider. The two additional pavilions previously shown to be necessary would cost, including heating, lifts, and fittings, £26,800, and the outlay for the additional accommodation of twelve nurses, including furniture and accessories, would amount to about £700, or together to £27,500. It will be observed

⁴ Report of State Board of Health of Massachusetts, 1879.

that I have not taken into account the fact that the six remaining wards being built upon the circular system must of necessity be of more costly construction than if they were built upon the parallelogram principle. This sum of £27,500 represents the additional cost for 576 beds, and is at the rate of £47,743 per 1000 patients. Adding to this the capitalised cost of nursing these 1000 patients, previously shown to amount to £57,392, we find that if the circular system is to come into vogue, we must be prepared for indulgence in the luxury (if it is one) at the rate of £105,135 for every 1000 patients.

Should it suggest itself to anyone to inquire how a circular ward would compare with a parallelogram-shaped ward if both were designed to contain thirty beds, an average distance of 8 ft. apart, it would be found that the circular ward must be 87 ft. 9 in. diameter, and consequently the waste or unnecessary space in the centre of it would amount to no less than 2705 superficial feet. Moreover, it would be evident that the height of such a ward must be raised considerably if any sunlight at all is to approach the centre of it, and supposing this additional height to be, say 3 ft., the quantity of waste or unnecessary space in one ward alone would amount to 64,180 cubic feet. But this is not all, for it would follow that the adjoining offices, separation wards, nurses' room, staircase, &c., must also be raised. It will hardly be necessary, I think, to trouble you with the figures which would show the additional cost of this plan to be even greater than has been proved to result from a comparison of two wards of equal area, but with fewer beds in the one of circular shape. Neither need I point out to you how much all the other difficulties of ventilation, lighting, heating, and want of cheerfulness would be enhanced. Advocates of the system, however, say, "We have nothing to do with the cost; what we desire is to erect that description of building, whatever it may be, which best adapts itself to the cure of the patients to be contained in it," and within reasonable limits this view of the question is no doubt a right one. But I have searched in vain for any substantial arguments showing that from this point of view the circular is any improvement upon the parallelogram shape of ward, and I have little doubt that no such arguments could exist unless it can be shown that in contravention of nature's laws air would as freely pass through a room from one side to another when the windows are 60 ft. or 70 ft. apart, as it would if those windows were from 24 ft. to 30 ft. apart. It would also have to be demonstrated that, in defiance of all mathematical rules, when the sun was shining or the wind blowing against the straight wall of a parallelogram-shaped ward, less air and sun would penetrate through its window openings than would penetrate an *equal* number of window openings of the same size contained in wall of a circular ward. And then, having proved this anomaly, it would be necessary to define the process by which as large a quantity of air and sun could be brought into the circular ward through its twenty-two windows as could be brought in through the thirty-four windows of the parallelogram-shaped ward. This being made evident, the contention must be upheld that a ward having the distance of its parts from the windows varying from 1 ft. to 33 ft., is as cheerful as one the parts of which vary similarly from 1 ft. to 14 ft. only. And it must be shown that this cheerfulness will not be diminished by the height of the circular ward being one-fifth only of its diameter as compared with the parallelogram-shaped ward, the height of which would be one-half its width. But supposing all these difficulties to be surmounted, it will only have been shown that in the points referred to the circular is as good as the parallelogram system, and then what is left to compensate for the £105,000 outlay before referred to? It cannot be contended that for the purposes of a medical school, where it is desirable the greatest space for students shall be given round and about the patient, that the constriction of the feet of the beds, consequent upon their radiation towards the centre of the circle, is an advantage. It cannot surely be argued that it is a desirable arrangement to place a nurse, as at the Antwerp Hospital, in the centre of a sick ward, breathing all day its more or less foul atmosphere, rather than that she should be assigned an adjoining room having a window through which she could overlook the patients. Neither can it be said that if this central space is occupied by a staircase, such staircase would not be better placed, as in the parallelogram system, away from the ward, and adjoining and giving direct access to the

nurses' rooms, separation wards, and other offices, and so avoiding the necessity of all persons and things passing through and disturbing the occupants of the large ward. If, then, these deviations from past practice cannot be shown to be improvements, what is left for those who would still be admirers of the new system to put forward as a claim for its superiority over the old one? I cannot say; neither can I imagine.

THE SANITARY CONFERENCE.

THE proceedings in connexion with the National Sanitary Congress, under the auspices of the Sanitary Institute of Great Britain, began at Leicester on the 22nd inst. The mayor of the borough (Alderman Hart) having formally opened an excellent exhibition of sanitary and health appliances divided into five groups—viz., building material, construction, and machinery, water-supply and sewerage, heating, lighting, and ventilation, personal hygiene, foods and disinfectants, and miscellaneous articles of sanitary interest,—the inaugural address was delivered in the lecture-hall of the Town Museum by Professor De Chaumont, the president elect. After thanking the mayor and corporation for their invitation to Leicester, and the hospitable reception extended to the delegates to the Congress, Professor De Chaumont said they did not wish the Congress to be a mere meeting of experts in the various branches of hygiene, but to make it the occasion of bringing home the subject to the community at large, and of bringing the knowledge already acquired to the amelioration of existing evils, and for the prevention of others. The beneficial effects of sanitation were nowhere more evident than in the Army. Thirty years ago the soldiers at home died at the rate of 18 per 1000, whereas now the rate was only 6.28; so that instead of having a higher mortality than the filthiest and most poverty-stricken parts of crowded cities, the Army had now a mortality of 40 per cent. less than the most healthy districts in England and Wales. The result was that, calculating sickness and death, there was a saving in the home Army of two battalions per annum. The case was made even more startling when he stated that at the time he entered the Army there were dying of consumption alone more men in two years than now died from all causes whatsoever in three years. Equally valuable results had followed good sanitary measures in India and the West Indies, and, putting on one side some pestilential spots which were specially dangerous to human life, they might confidently say that there was hardly a spot on the globe where men might not be kept in health and vigour by proper attention to hygiene. The Sanitary Institute was already in close connexion with the Parkes Museum, and they hoped soon to be able to make the union permanent, so that really a great central institution might be formed, which should be a centre of instruction and sufficiently powerful to make its views and opinions heard and respected by the State and among the people. It was a remarkable fact that at present there was no official recognition of the competence, or the necessity for the competence, of any of the officers connected with sanitary work. The medical officer of health, the local surveyor, and the inspector of nuisances might each and all be appointed without showing any proof of sanitary knowledge, and were, indeed, sometimes appointed without the possession of it. He earnestly hoped that the time was not far distant when it would be compulsory on all sanitary officials to show undoubted proof of their competency for office before being entrusted with the health of the people and the expenditure of their money. The importance of a Health Department of the State was becoming more and more evident, and the success which has attended its labours up to the present time demonstrates the propriety of advancing its position to that of one of the great departments of Government. They had now in the office of the President of the Local Government Board a *quasi*-Minister of Health, but as sanitary knowledge progressed the position must be vastly increased in power and in importance. There could be no question that unity in administration would add greatly to the efficiency and materially diminish the expense of sanitary work. A premature death was reckoned as a loss of £100; and if it was the head of the house and the breadwinner, it was evidently much more. There were 750,000 deaths every year in the United King-