LECTURE TO THE CONGRESS.

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ARCHITECTURE IN RELATION TO HYGIENE.

WHEN the Council of The Sanitary Institute did me the honour of inviting me to give the lecture to the Congress this year, I assumed that their reason for doing so was their desire that the vast subject of Sanitation should be treated not so much in any of its particular details as from a more general standpoint. I shall, therefore, endeavour this evening to bring before you some of the points of contact between hygiene and architecture, taking each of them in their broadest aspects. I remember nearly four and twenty years ago, in a paper read before the Royal Institute of British Architects, mention was made of an architect of some eminence at that time who had built a house for a client, and some four months after its completion this architect was asked to come down and inspect the house because some of the drain pipes were stopped and there were difficulties with the plumbing arrangements. The architect was most indignant, and simply told the client to send for his plumber. I doubt if now-a-days any architect, however much he might be imbued with an exalted idea of the high artistic nature of his profession, would take up such an attitude, as we have learnt to appreciate the fact that however beautiful you may make a building, its main purpose is to be lived in or worked in, and that unless it is constructed with due regard to health, it will be but a whited sepulchre. Hence the necessity for close supervision of all details of construction, however small or apparently unimportant, and to some of these details I shall call your attention this

evening. But there is a wider aspect of the question which has not often been dealt with, viz. : How far the purely artistic side of architecture is concerned with hygiene? And this consideration may possibly carry us rather far afield, and I must ask your patience if this paper should appear at times too discursive.

It is as well to clear the ground at the outset by accurately defining the issues of the subject. I am not going to discuss the vexed question of architecture being an art, a science, or a profession, and I shall simply take it—as it was once defined—as building at its best, and hygiene embraces all matters concerned with the health and well-being, physical and moral, of the individual and the community. So you see I do well to warn you that you may find me somewhat discursive.

It would be exceedingly interesting, had we sufficient data on which to base any reliable conclusions, to take a rapid historic survey of the position which hygiene and sanitation generally held among the ancients, but unfortunately we know very little of the subject. It is, however, impossible to believe that the ancient building nations—the Egyptians, the Assyrians, the Persians, the Cretans, the Greeks, and the Romans—all of whom, in addition to erecting buildings which have been and still are the admiration of all who see their remains, held in the highest esteem physical health and physical development, can have been altogether neglectful of sanitation, though they were doubtless ignorant of the scientific principles on which it is based, and, in fact, the more recent explorations of the relics of ancient civilizations have brought to light many striking instances of careful provision for sanitary requirements. At Khorsabad in Assyria, at Persepolis in Persia, and quite recently in Crete, have been found most accurately made conduits or sewers to take away from the buildings the refuse water, etc. And with regard to fresh air, it must be borne in mind that in nearly all these countries the climatic conditions were such that a great part of the life of the people was passed in the open air. In Rome these conditions were somewhat different, but in one respect at least the Romans were in advance of us, as their solid floors, with hypocaust heating arrangements, tended in a remarkable degree to cleanliness and healthfulness. In the middle ages no doubt the sanitary arrangements were of the most primitive kind, as may be seen in an amusing manner in some old walled city like Aigues Mortes or in many an old castle, but at any rate, primitive as they were, the winds of heaven exercised their cleansing influence freely, and I firmly believe it would be difficult to find in any mediæval city worse conditions than prevailed even in my own time in many of the London theatres, as detailed

in a paper read before the Institute some few years ago, or in bakehouses, factories, and workshops all over the country. The fact is, people sometimes seem to forget how very modern sanitary science is, and how enormously difficult it is for anyone—and I include members of my own profession here—to get out of the ruts in which they have been quietly jogging along year after year. In the East the perpetual dread of cholera and similar diseases has practically no effect in causing the inhabitants to adopt cleaner habits, or to avoid taking their drinking water from putrid rivers and contaminated wells, while in our own country the insanitary survivals of old-fashioned methods of construction afford a splendid object lesson to us all. I propose to call your attention to some of these, and to show how easy it would be to substitute a very much better state of things.

It is more particularly with the smaller houses for the working and middle classes that these survivals are to be associated. In a nobleman's mansion, where there is a large staff of servants, cleanliness is generally attended to, though even here the servants' quarters often leave much to be desired; but in smaller houses the one aim should be to construct them in such a way as to leave to the inmates the very minimum of attention required to keep the places clean, because you may be sure, in many cases, that minimum will never be exceeded and often not reached. The amount of money that is expended in England and in all the more civilised countries on the cure of disease, and on buildings devoted to that purpose, is simply enormous. The greatest care possible is taken to ensure cleanliness and to minimise opportunities for the propagation of microbes, and there can be no doubt, that since the principles of sanitation have been known and carried out, the percentage of cures of all kinds of diseases has enormously increased. And yet, how much better is prevention than cure! Every year, in the outskirts of all our large towns, acres and acres of new sites are covered with houses for the lower classes, which, even when they are new, are scarcely sanitary, notwithstanding all that local bye-laws can do, and undoubtedly, in a few months, become foci, if not of disease, yet of poor health, and the inmates of such houses become increasingly unfitted to struggle against disease. In this connection I cannot refrain from quoting some sentences from an Article in the '19th Century' for May. The author says: "the economical conditions of industrial life now-a-days are such as naturally to affect injuriously the physical development of those engaged in it. The main cause affecting the physique of the nation . . . consists in the growing absorption of the population into big towns. This means that hundreds and thousands

of men, women and children now live under very unhealthy conditions. While their forefathers lived, for the most part, in the country, where light, air, exercise and contact with the woods and fields of English pastoral life, had a healthy and invigorating effect on body and mind alike, the vast majority of the people now live in large towns, and to them light, air, space, all that goes to make a happy and healthy human being, are greatly lacking." These are weighty words and should be taken to heart by all sanitarians.

I am not unmindful of the fact that a great advance has been made in artizans' dwellings, which now have the greatest possible attention given to their construction, but as soon as you get just above the artizan class, the poor struggling clerk or the shopman and the small tradesman, you will find that the dwellings themselves are not one whit better than they were 50 years ago, whilst the surroundings of these dwellings are infinitely more confined than used to be the case. The methods of construction which are good and necessary in a hospital, are equally good, and to my mind, almost as necessary in an ordinary dwelling house, and they could be provided in the latter at a very small extra outlay beyond what is generally spent. The fact is, that of late years, the working man has monopolised the attention of the benevolent and the charitable. I should like to see some capitalist take up the cause of the lower middle classes and start a company for the erection of middle-class dwellings at reasonable rents, and as our municipalities are going in for commercial speculation, they might find this not one of the least profitable. I know that the Artizans', Labourers' and General Dwellings Company, which has gone on these lines, has always managed to pay a dividend. Local bye-laws have done much to rectify flagrant abuses, but you cannot frame bye-laws to meet all small details, and the worst of it is that what bye-laws specify as a minimum in the way of requirements, is always taken by the speculative builder as the maximum.

The fact is, we want fewer hard and fast lines laid down, and literal specification of requirements in our Building Acts and Bye-laws, but more discretion left in the hands of those who have to carry out these legislative enactments. This opens up what is, to my mind, one of the most important questions relative to the health of the people; I mean the standing and qualifications of inspectors and other officials, who have practically the whole matter in their hands, from the highest to the lowest, from the District Surveyors who have to carry out the provisions of the Building Act of a great city like London, to the small building inspector of a Rural District Council. It seems almost impossible to get local

Councils to appreciate this. What do we see all over the country? A local builder, who has failed in business, gets some kind friends to propose him as building inspector, or perhaps even surveyor, to the local Council. Be he as honest and painstaking as possible, how can such a man enforce to the full, regulations which he has been for years trying to evade as far as he could, and the necessity for which he is probably very doubtful of? He will inevitably incline to leniency, which will soon become laxity, and many of the minimum provisions of the Acts will not be enforced. It cannot too often be insisted upon, that the national health is the most important factor in national life, even when looked at from the lowest pounds, shillings, and pence point of view—and that it would pay in the long run many times over to raise the salaries of the various building inspectors, etc., so that you would ensure the occupants of the posts being men of position, and above all underhand influences. I don't know whether it would be possible for the Local Government Board—which I know is already an overworked department—to add to its burden of work, but in my opinion the appointment of every health officer in the country and the amount of his salary should be subject to the approval of the Local Government Board, and then you might make the Acts themselves which have to be carried out much more elastic. The unhealthy conditions in which so many workers habitually live affect the death-rate appreciably, but they do a great deal more than that: they lessen very materially the productive power of the community, and no one can estimate the cost to the country of the persistence of such conditions.

Now let us look somewhat more in detail at the development of a new suburban estate where the roads and sewers have been made, and where the houses would probably let for about £20 to £30 per annum. When finished these houses would appear to an ordinary passer-by to be of very attractive elevation. There would probably be on the ground floor, or perhaps even carried up to the first floor, an octagonal bay window with stone jambs and head; small stone columns to a slightly recessed porch with quite elaborate carved capitals; slated roof with tiled ridge; and inside, stoves with tiled sides and elaborate cast-iron or enamelled-slate chimney pieces—and people would say: How extraordinarily cheap!

But let us look a little more closely, and follow up step by step the action of the builder who has erected these attractive bijou residences, having taken a number of plots on lease, and who desires to make the speculation a good thing. He will take care first of all to get his plans—drainage and all—passed by the local district council, then he sets to work merrily. We will suppose that the site has been pasture used for grazing

purposes, and that the subsoil has not been touched. The first thing the builder will do is to make some trial holes and ascertain if there is any gravel or sand. If this exists, he will be sure to provide a cellar; and, in addition, unless he is stopped by the freeholder, he will make extensive excavations in the space to be allocated to backyards and gardens and get out all the gravel he can. Now, this ought to be absolutely prohibited, because the ground made up over the hole excavated (even if this is not filled in with offensive stuff) will certainly not be so healthy as if the soil remained undisturbed; but so long as the house itself is not built on this made-up earth the local authorities cannot interfere. But suppose the soil is clay—waterlogged or not, as the case may be. He will then dispense with a basement, as costing too much, and he will take off the turf and a few inches of soil under it, and he will proceed to comply with the local Act by laying six inches of so-called concrete over the site to be built on. If he is not very carefully looked after, he will let this concrete act for the foundation of his walls, none of which will be more than nine inches thick, but he may take the footings of his walls a little lower down. Now, what is the concrete composed of? There will be a certain amount of lime, a certain amount of ballast, and a very uncertain amount of what looks suspiciously like garden mould mixed with it. If the freeholder's architect sends down to see how the work is progressing, and asks questions about the ingredients, he will probably be told that the dark stuff is not garden mould—far from it!—but a most excellent substitute for sand, consisting of road-scrapings. Now, I am not prepared to say that, in districts where macadamized roads are laid with granite, *thoroughly washed* road-scrapings may not form by no means a bad ingredient for concrete or mortar, but the thorough washing is an essential, as otherwise horse-droppings and all sorts of filthy materials will be mixed in. But I have never seen this stuff carefully washed in such a case as I am describing; and, in my opinion, for all intents and purposes as far as the main object is attained of excluding ground-air from the house when finished, such a layer of concrete is practically useless. The finished level of the ground floor will probably be not more than two steps, or twelve inches above the ground level; the underside of the joists will be just the bare minimum above the concrete layer; the air bricks to ventilate the space under the ground floor will be placed so low down in the face of the external wall that they will be likely soon to get stopped up and be useless for their purpose, and dry rot will probably ensue; and the floor boards of the house will not be grooved and tongued, so that the joints will soon gape. The importance of excluding ground air cannot be too strongly insisted on.

You may have your drains perfect, but if the warmer interior of a house is continually sucking up the air from the soil, which is liable to contamination from leaking sewers, gas pipes, and all sorts of organic impurities, the effect on the health of the inmates cannot but be deadly. All this would be avoided if a thin layer of asphalt were laid on the concrete, and the whole of the ground floor were laid—as to the rooms, with solid blocks of wood, and as to the passages with cement or cheap tiles; and the extra cost of finishing the ground floor in this hygienic manner would not, in my opinion, be 1 per cent. on the cost of the house.

The walls of the house are rapidly run up, and it is desirable not to enquire too closely into the composition of the mortar, but what about the workmanship? The joints are not well flushed up, the consequence being that the damp caused by rain gets completely through the wall and damages the plaster, and is an inevitable source of catarrh, rheumatism, etc., and where the walls pass through the roof, a poor cement fillet will soon begin to shrink away from the bricks and let water in which will do more damage. Then the joists of the first floor are almost invariably carried on a weak stud partition, the sill of which, on the ground floor, rests on a half brick wall, this partition is not trussed and in many cases it is a perfect marvel how it manages to carry the joists. But these stud partitions have greater drawbacks than this; the space between the plaster on each side forms a run for mice and other vermin, and a receptacle for stagnant air which can never be purified, and retains the germs of all kinds of diseases which may have attacked the inmates. Furthermore, the plaster is never taken down to the floor level, but is stopped above the grounds for the skirting and consequently the only separation between the rooms for nine or twelve inches above the floor consists of a couple of one inch boards, and I have myself seen liquids spilt in one room run under the skirting into another, where, owing to shrinkage, the floor boards are no longer tight up against the skirting. Now, how by any possibility can a building constructed in this manner be healthy? For some few months after its erection perhaps no particular harm is done, but as soon as some infectious disease has been nursed in it, contamination commences, and in a few years, my firm belief is, that such a house becomes what in a hospital ward would be termed permanently septic, and it is almost impossible to get it sweet. Everyone must have noticed in visiting many a moderate sized house the stuffiness which is apparent in the rooms, this means that for some time past the air has been in an impure condition. Now, how easily might this state of things be rectified. A half-brick wall in cement would cost no more than the stud partition and would be a far more

sanitary piece of construction, as affording fewer stagnant corners for air, and at any rate this half-brick wall would form a far more solid separation between the rooms; and on the upper floors, when a thin light partition is required some of the new inventions of solid partitions, fire proof and vermin proof, would avoid the necessity of stud partitions. The space between the ceiling and the floor is another harbouring space for dust, dirt, and germs of all sorts, but I fear it would be too much to expect that small houses should be built with solid iron and concrete floors with the boards laid direct on and nailed to the concrete. In France even in small houses the upper floors are laid with concrete and tiles and there can be no difference of opinion that such floors are far more sanitary than ours.

What is no doubt badly wanted is a cheap form of solid floor. A new-solid concrete floor, which has the merit of cheapness, has recently been patented; it is known as terrast, and can be used with ordinary wooden joists. This floor consists of some metal lathing laid over the joists and sagging down slightly between them; over this is laid a layer of thick brown paper, and above this about one and a half inches of coke breeze concrete, to which of course the ordinary floor boards may be nailed. I know nothing about this floor, but at any rate it is an attempt to diminish the cost of a solid floor in the upper storeys. But would it be very repugnant to our notions if the plaster ceiling were omitted and the joists of the upper floor shown? You find this form still existing in Yorkshire and other parts of the country; or if you do not like to show the joists, put two large beams across the room and cover first with two and a half inch planks, and then a cover floor of ordinary boards. I have seen this done quite recently, and a very good effect it has. The great objection is that sound passes through such a floor very easily, but the omission of the ceiling would pay for some good non-conductor of sound being laid between two layers of floor boards. Moreover, in the case of small dwellings such as I am thinking of, which would be generally occupied by one family, the passing of sound between two floors would not be so objectionable as in tenement houses. Of course something to serve as a skirting is needed to stop the plaster next the floor and to prevent it from being damaged, but a cement skirting could easily be used on brick walls, or a solid fillet of wood if preferred. Now let us glance for a moment at the plumbing arrangements: If a bath or a w.c. be placed on the first floor it is almost certain that the supply cistern will be placed in the roof where it is very difficult of access. Now in any large city, the inside of the roof of a small speculative-built house covered solely with slates and battens is

one of the dirtiest places that can be imagined, and yet here the cistern is to be found which supplies water for all drinking and ablutionary purposes to the whole household. In the first place, why is a store cistern needed at all? The old intermittent service is happily well nigh obsolete, and with a constant service from the mains I see no reason why every fitting should not be supplied direct. Waste goes on equally with leaky taps, whether they draw their water direct or from a cistern, and, in my opinion, a leaky fitting would be more easily found out and remedied if directly attached to the main than otherwise; and moreover, if the supply is direct from the main, much of the cause of leaky taps could be avoided by means of a good governor regulating the pressure and placed on the pipe leading from the Company's main to the house. The pressure in the mains is necessary because the water has to be forced up to a certain height, and it is this great pressure which so soon spoils the taps. When a tap is turned no one wants a rush of water—just as if it was coming from a syphon. I have often wondered why some one has not invented—perhaps they have, though I have not come across it—a regulating governor similar in action to the regulating valves which are used for gas or the transformers for electrical energy. But *if* cisterns are to be used, then it is imperative that they should be placed in an open and airy situation so that they can always be inspected and cleaned out at intervals.

It has been urged that there shall be no roof properly so called at all, but that the building should terminate with a flat, and certainly, in town, where a parapet generally hides all appearance of a roof, and gives a monotonous straight skyline, there can be no possible reason why a flat should not be formed, and if this were cemented and covered with asphalt no more sanitary covering could be provided; but in suburban houses of a small type, I think the flat roof would be horribly monotonous, and that we must adopt roofs of a fair pitch, but the more space in the roof that is given to the rooms the better. I might mention several other forms of unsanitary construction, but I hope I have said enough to show what great improvements are possible. Drainage *per se* I have not touched upon, because the subject has been treated *usque ad nauseam*, and so much attention is given to drains that the greatest abuses connected with drainage have ceased to exist; but, in my opinion, it is a mistake to think that having the drains all right makes the house sanitary, and I fear this is the position too often taken up not only by the builder but by the sanitary inspector, and I should like to see everywhere a much wider view prevail of what is required for sanitary house-building. Hospitals and infirmaries which are now built at a cost, as we have recently heard, of

£500 a bed can take care of themselves because every detail of their construction is thoroughly well thought out, and the same applies to the large blocks of artisans' dwellings which nearly all our municipalities are now erecting, though I may have something to say about these from another point of view; but how can we secure improvement in the kind of dwellings of which I have been speaking, the inmates of which form the great mass of the workers of the nation? It is no new gospel I am preaching. In the past dozen years or more much that I have said to-night has been urged, far better than in any words of mine, at Hygiene Congresses and Sanitary Institute Meetings all over Europe, and yet so little has been done; and why? Expense is generally considered the great obstacle, but I cannot help feeling that there is a greater one which is this: the people who build the houses are so rarely those who dwell in them, and there is so little fixity of tenure. I am no socialist, but I cannot shut my eyes to the fact that the improvement of the dwellings of the people is a question which is intimately bound up with that of the ownership of the land on which they are erected, and until we can get rid of the middleman in the shape of the speculative builder, who only cares to put up his buildings at the lowest possible cost, we shall never improve the separate small dwellings of the people. How this speculative builder can be abolished is a question of political economy which scarcely comes within the scope of this paper, but when we see what is being propounded in Ireland as a cure for all the ills from which the peasantry of that country are suffering, I think we get a hint of a possible solution.

I see no reason why the lower middle classes of this country should not be trusted to fulfil their obligations as well as those in the sister Isle, and although it may not yet have come within the sphere of practical politics, I should not be surprised if, in the next generation, the Government were to take up the question of loans to small householders for the purpose of helping them to buy their own freehold sites and build their own houses, and if this were done we should soon see a vast improvement in the construction of the people's homes. My own belief is that such loans would be speedily and easily repaid. I know, as a fact, that small private houses, letting for say £25 per annum, are built and sold by the builder for £275. An extra expenditure of 10 per cent. would convert an insanitary house into a healthy one, and an advance of one half the cost of the building and site to the intending householder could be repaid easily, principal and interest, in say 20 years. The State would, in fact, put itself in the position of a large Building Society. But this is wandering from the subject of my paper.

I have now dealt with various points connected with the construction of a house, and we have seen how some methods of building tend to promote the health of the inmates, and others to prejudice their well-being. These matters are concerned with the practical scientific side of architecture, and I would now ask you to consider a somewhat more difficult question, which is: how far is the health of a people affected by the artistic or æsthetic side of architecture; by matters which are not constructional, but are connected with site, arrangement of plan, surroundings, style, and design? Here again I would quote the old adage, "Prevention is better than cure." As I pointed out in the early part of my paper that methods of construction which are deemed essential in buildings devoted to the cure of disease must be equally beneficial for all dwellings, so you will find it to be with the matters which we are now considering. I need not dilate on the question of site, for every one knows that a wet, damp site, or one subject to inundations, can never be healthy. It is the pressure of population which brings about the utilization of low-lying, bad sites for human habitations, and I feel confident that there ought to be a power of prohibition against the erection of any houses, however small, for permanent occupation on sites which are manifestly unfit for the purpose, or if houses are built on such sites they should be raised on arches in order to make the principal or ground floor quite dry. Then again, as to surroundings, how is it possible for people to keep their health if they have never anything but dull dreary miles of streets to look at every time they come out of their house. I cannot imagine anything more depressing than the surroundings of some of the poorer quarters in many of the great towns of the North of England or in London, and bear in mind that mental depression inevitably re-acts on the physical health in a way that is too often lost sight of.

I read very lately that in the opinion of an eminent oculist, a great deal of the defective eyesight which is annually becoming more prevalent in towns, is due to the fact that these urban dwellers look so seldom on the pleasant restful green of the woods and fields, and so constantly on dull bricks and mortar, and if this opinion is well founded, it should undoubtedly make us give more consideration to the prominent tints which we use for both the insides and outsides of our dwellings. The condition of the brain is seriously affected by the state of the nerves of the eye, and the undoubted increase in diseases of the brain of late years may possibly depend, not only on the hurry and bustle of the daily life of the average business man, but also upon the dull, gloomy, repulsive nature

of his outlook for so many hours of the day. Just as light causes us to feel cheerful and warmth makes us feel comfortable, so I believe it will be found that colour in soft graduated tones has an immense effect on our well being. Staring, garish, inharmonious tints must have a somewhat similar effect through the eye on the brain, as loud cacophonous sounds have through the ear, and strange as it may sound, I firmly believe that it is almost as essential for the construction of healthy homes that the tints of the woodwork and the wall coverings should be considered as that the drains should be properly laid. Why is it that however luxurious and well furnished a house may be we frequently feel a sensation of fatigue when we pass an hour or two in its rooms, whereas in another we feel restful? Often I believe because the nerves of the eye are strained and wearied. And here certainly is an opportunity for the builder to adopt sanitary methods rather than unsanitary ones at practically no expense at all. Instead of the haphazard arrangements of wall-papers, without any consideration of the aspect of the room and the quantity of light which it enjoys, a very little knowledge and thought would show that neutral tints are desirable in rooms which get a large quantity of sunlight and warmer tints for north facing rooms. This consideration leads me to my next point, viz., the enormous importance of paying proper attention to aspect. The immense value of sunshine, especially in these northern latitudes, cannot be too strongly insisted upon, and in this respect it appears to me that the large blocks of artisans' dwellings which have lately been erected in so many cities lamentably fail. As a rule, particularly in the cases where the municipalities build these dwellings and the cost is charged to the rates, care is taken that all the blocks have an ample air space between them, but even with the London County Council, whose artisans' blocks are excellently designed, well-built, and with plenty of air space, the height to which they are carried makes them dull and somewhat gloomy. Of course, here again the question of cost comes in, and generally where old buildings have to be pulled down and insanitary areas cleared away, the capital expenditure becomes very large before a brick of the new buildings is laid, and in order to accommodate a sufficient number of families to obtain a rental that will give any return at all upon this expenditure, the buildings must be carried to a great height. I do not believe this can be done without prejudicially affecting the health of the inmates, especially the children. No doubt the conditions of life are infinitely superior to what obtained before, and the enforced cleanliness and general submission to regulations cannot but have an excellent effect

on the dwellers in these buildings; and the mortality is admittedly low. But I should be sorry to see these huge blocks multiplied in the heart of our great cities. The object should be to get the workers away from their work when it is finished by increasing the facilities for quick and cheap transit.

The startling development of electric traction, which is the most marked feature of these last few years, offers a solution of the difficulty. I do not think the time is far distant when it will be the exception and not the rule for the workers to live in close proximity to their work when this is performed in crowded areas, and this would result in an enormous amelioration of the average health of the people as well as a great increase in the output of their work. There can be no doubt that the success of the bold experiment, of which such places as Port Sunlight are the result, will encourage other large private firms to follow this example, and that manufacturing industries will have a tendency to be carried on at a distance from our large towns, but there must always be a large army of workers connected with the distribution and not the manufacture of commodities who will be compelled to carry on their work in the day time undersome what depressing conditions, and for these will come salvation in the shape of the tramway or the light railway. It is in this direction, combined with the erection of good small houses, amid bright and cheerful country surroundings, that I hope municipal enterprise will soon be turned. If some such policy could be carried out, just think how far-reaching would its results be. I sometimes look at the costly, well-equipped, Board Schools, which have been erected in thousands during the last 30 years, and when I see these places, as they often are, in the most dingy and depressing surroundings, I wonder how the children who attend these schools can possibly grow up healthy. Asphalted playgrounds, surrounded often by high walls, where the only view is of bricks and mortar, are not the ideal training ground for the future mothers and fathers of the people. You have only to compare the pale faces and weakly forms of the town-bred children with the ruddy bloom of those who are in the country, to see what an advantage the latter have, and I look forward to the day when all the elementary education will be carried on away from the large towns. You will think that I am wandering from my subject, but while on the question of schools there is one matter which I have very much at heart, and which I have more than once alluded to in other places, and this is directly relevant to the subject of this address. I have been speaking of the outer surroundings of our elementary schools, but turn to the inside;

these buildings are well-built and well-found in all respects, but are they beautiful? As a rule, perfectly plain walls, with no decoration on them, are all that you will find. Could not this be altered and improved at practically no cost at all to the ratepayers? There is scarcely a large city in the kingdom that has not its art school, founded by the ratepayers and under municipal control, where most excellent work is done in painting, modelling, iron work, &c. Why should not the art school students be employed in decorating the Board Schools? It would be far better practice for a student than merely designing and painting a coloured decorative frieze to be placed he knows not where, that he should, of course under the guidance of the art master, take an actual class room and decorate it well. Or why should not a modelling student design and carry out some plaster enrichments or a little statuette for a niche? It might all be done as part of the work of the session, as I said, at no appreciable cost at all. And just think of the effect on the Board School children of spending so much of every day in surroundings which are bright and cheerful and which would teach them to know and appreciate what is beautiful. Their work would be better done, their characters improved, their minds trained unconsciously, and undoubtedly their physical health would be better. I might considerably amplify these remarks, but I cannot do better than conclude with a quotation from the old Greek philosopher, Plato, who says: "In the case of our artists, the bad habit must be stopped of depicting in statues or buildings or any other artistic production, what is coarse or illiberal or ugly. If a man cannot refrain from this, we must forbid him to produce anything, lest our children, if reared among images of evil as in a bad soil, drawing their impressions one by one from many sources every day, may unconsciously establish an evil precedent in their own souls. We must rather seek for artists to trace out what is noble and beautiful in nature, and thereby enable our children, like plants in a good soil, to be assisted by their environment, so that whatever meets eye or ear from these beautiful works may, like a health-bearing breeze, lead them unconsciously from their earliest years to love and be in accord with beauty and reason." These words are as true now as they were 2,500 years ago.

It is impossible to over estimate the good which has been done in the last thirty years by The Sanitary Institute, by its examinations, its publications, and not least by its Congresses, which do so much to spread abroad in all parts of the country a knowledge of the principles of sanita-

tion, and if its founders could see the results achieved, they would feel fully repaid for their exertions. But there must be no cessation of activity. Very much has been done, salient abuses have been abolished, and an excellent foundation has been laid, but the superstructure has yet to be erected. And everyone can help in the work. It cannot too often be dinned into the ears of the governing bodies that upon the health of the people depends the wealth and well-being of the nation, and the suggestions which I have thrown out will, I hope, show you that the health of the people depends upon very much wider considerations than the mere regulation of drains and ventilation, and that architecture, not only on its constructural side but on its highest and artistic side, has a closer and more intimate connection with hygiene than might be at first sight supposed.