

would consist partly of directors representing the shareholders, and partly of trustees representing the endowments. There certainly may be difficulties in the amalgamation of these different functions, but it is obvious that very great benefits must result from their co-operation.

With a view to keep up the academic status of county schools a bold step has been taken, which promises to be very successful; and, if so, will confer an incalculable benefit upon middle-class education. Hitherto the advantage of becoming graduates of the ancient Universities of Cambridge and Oxford has been almost a monopoly of the higher classes, and the clergy of the Church of England. The necessity for three years' residence, the incidental expenses, and the tendency to postpone the age of admission to eighteen or later, have practically led great numbers of English parents to think of a university degree as a luxury undesirable, or unattainable, for their sons. This practical divorcement from the universities will account for a great deal that is unsatisfactory in the middle schools—both endowed and commercial—and, perhaps, for some lines of demarcation between the higher classes of society, which are too strongly drawn. In order to break through these obstacles, and give the middle classes and their schools a real footing in the universities, Mr. Brereton, a few years ago, proposed to establish a new college for junior students in the University of Cambridge. His object, in making the proposal, was to turn the attention of middle-class parents and their sons to the great advantage which, educationally and socially, a university degree would give them, if it could be obtained, through economy of time and money, on conditions suitable to their means and prospects. He also indicated that through the

same college another great want of the middle schools might be provided—namely, a supply of well-trained masters, who should also be educated gentlemen. Mr. Brereton's proposal has been well received and supported both in the university and outside. The Chancellor of the University, the Duke of Devonshire, has given most considerate attention and a cordial approval to the proposal; and, by his permission, the name of Cavendish has been given to the new college, of which the first block of buildings is now ready to receive students. The general principles adopted in establishing the Devon County School have been followed in founding Cavendish College. The capital is raised in shares under limited liability, with a dividend restricted to five per cent. It is intended, and hoped, that a considerable portion of the share-capital will form an endowment for scholarships; and so there will be a double object in maintaining that economy without which a dividend cannot be earned at the moderate charge—eighty guineas per annum—for which the peculiar advantages of a university education, completed by a B.A. degree, are offered to intelligent and industrious youths.

Our readers may have noticed in the papers a report of a very interesting meeting that was held at Cambridge recently to inaugurate this new college. It is not often that so varied and representative a meeting is brought together for a novel object. Several of the speeches were of great interest; and we are glad to be informed that the Warden of Cavendish College is having them reprinted, as likely to furnish to parents and the public a more genuine aspect of the principles and intentions out of which the college has originated, than could be given by any formal prospectus.

## HOW TO BUILD CITIES OF HEALTH.

BY A FAMILY DOCTOR.



**D**URING the past few years a species of reform has commenced, and is going on in this country, which bids fair to do more for the people of the British Isles, both now and in future generations, than all that Parliament could do for them in a thousand years.

People are beginning to reform themselves and each other, and to take a profound interest in the laws of health, and everything appertaining to hygiene. It is patent to every one nowadays, that a very large majority of cases of disease and illness are entirely and easily preventible by means within the reach of all. Scarcely can we take up a monthly magazine without finding therein some paper or article having reference to the health of the people. These the public cannot help seeing and reading; and, no matter how fondly they may cling to bygone ways and old-fashioned prejudices, gradually the mists of ignorance are being cleared away, the truth is dawning on them, and now, men in the nineteenth century are just beginning to learn how to live—how best to live in

health and comfort, how to prevent disease, and thus extend the lives that God has given them. Personal cleanliness, pure air, pure water, a pure mind, and healthful exercise are all conducive to length of days, and enable us in a great measure to steer clear of disease; but it must not be forgotten that we ought, as far as possible, to live in healthful homes. Men spend a large portion of their lives within-doors, and women a still greater, and the state of their health and strength of their constitutions must, in a great measure, depend upon the sanitary condition of their surroundings. Now until circumstances combine to impress upon the Government of these islands the fact, that that nation which is freest from sickness will also be foremost in civilisation, will produce the hardiest, sturdiest, and bravest soldiers, the most learned statesmen, and the fairest women, and thus induce *it* to frame better sanitary laws for the protection of the life and well-being of the subject, it behoves us, each and all, to do what we can to help ourselves.

After Dr. Richardson's Hygeia has been built, and has existed long enough to prove its merits, I expect two good results to follow: first, that other "cities of health" will spring up here and there all over the country; and secondly, that strenuous efforts will be made to remodel and improve all our ancient towns and villages.

There are numerous diseases in this country which are called hereditary, descending from sire to son, from one generation to another. Many of these, if not all, might in process of time be stamped out by proper observance of the laws of health. Phthisis or pulmonary consumption, for example, that scourge of our land, would come in time to be hardly known within the gates of our cities of health; and why?—the disease is not only hereditary (by which I mean that the offspring of consumptive parents are more likely to succumb to the disorder than the children of healthy parents are), but it is also acquired in many ways, especially from inhaling impure air, working in close, confined shops, &c., and from unwholesome food. If, then, we diminished the risk of the acquisition of phthisis, we might fairly hope that the disease would die out from among the people of its own accord; and the same might be hoped for of other maladies.

The question, then, comes to be, How are we to build cities or homes of health, or convert our at present badly-constructed dwellings into little Hygeias? Without attempting to answer the question in any elaborate manner, I shall simply mention a few things that are bad in our system of home-life, and let the reader form his own conclusions.

The houses of most of our large cities are built far too high, while the streets are generally narrow, and so constructed as to exclude not only the pure air of heaven, but even, to a considerable extent, the blessed light of day itself. You will always observe that it is in the narrowest alleys and lanes of cities that diseases spread the fastest, and in times of epidemic death holds nightly revel. People who live in these places positively poison each other. The worst of these slums should in every one of our towns be pulled down and rebuilt, and the best of them only used for places of business during the day; and if a better and cheaper system of railway travelling could be adopted, this latter suggestion could be carried out with ease and comfort, and the poorest clerk, as well as the wealthiest merchant, would be able to spend his evenings in the bosom of his family, away out in some healthful suburb.

Now the value of pure air can never be over-rated. You may live well, you may be temperate, the food you eat may be good and wholesome, you may bathe regularly and take daily exercise, but if you are compelled to breathe vitiated air, you are sapping your very life's foundation, and laying in its place that of diseases which will shorten your existence, as surely as there are stars in the vault of heaven.

It is hardly necessary to remind the reader that the atmospheric air is composed of oxygen gas, diluted with nitrogen; that after being used for the purposes of respiration, it is found to have been deprived of a large

proportion of this life-giving oxygen, and to have its previously insignificant proportion of carbonic acid (the poisoner) largely increased. Neither need I remind him of the vital importance of a constant supply of oxygen to the animal economy. Food we may live without, and water too, for many days; but the moment we cease to breathe, fatal and almost instantaneous blood-poisoning is the result. Now, if instead of being cut off entirely, our supply of pure air is limited, it may be easily understood that a kind of chronic poisoning will be the result, having for its symptoms slow deterioration of the general health.

Men and women who are compelled to work all day in crowded shops or rooms, ought never to neglect the practice of taking an hour or two hours' exercise daily in the open air, in order if possible to undo the evil worked by the vitiated air they have breathed. And this brings me to say a word or two on the subject of ventilation. This ought no more to be neglected in our cities of health than water, warmth, or food itself. The rooms ought to be as large and lofty as the purse-strings will stretch to, and they ought to be so ventilated, that the air may be constantly getting purified, without any danger from disagreeable currents or draughts.

Now, there are several ways of effecting this, and the most simple plan would be—and one that ought to be enforced in every house—ventilation by means of door and windows. Both of these, in the first place, ought to be made to fit as tightly and comfortably as possible. For the windows several plans could be carried out; the best in my opinion is a long perforated strip of zinc let into the lower sash, and a similar strip let into the upper. The doors ought to be treated in the same manner, perforated zinc ventilators being let in, both in the upper and lower portions of the framework. These ventilators might easily be made to open or close at pleasure, and need be in no manner unsightly, but on the contrary, ornamental.

The system of ventilation for churches and places of amusement, as carried out at present, is faulty in the extreme; theatres, for instance, generally become considerably over-heated; while churches too often resemble vaults, where, if delicate, one is almost certain to catch a severe cold, if nothing worse. How dearly, too, many pay for the sake of seeing a pantomime or popular play! Squeezed and crowded, half suffocated with the emanations from other people's lungs, and air that has been breathed and re-breathed, till it is no longer fit to support healthy life, and perspiring as if in a Turkish bath, and thrust at last suddenly forth into the cold air of night—is it any wonder that thousands annually offer up their lives as a sacrifice to Thespis? And our public schools—I refer more particularly to what are called national schools—are but little better, as a rule, and in some cases they are worse, for in addition to a most stupid arrangement for ventilating, if ventilating it can be called, the air is laden sometimes with effluvia from the clothes, &c., of the not over-clean children. No wonder the poor teachers suffer from headaches and weakness of the heart.

How easily this could be remedied! In cities of health, warmth and ventilation ought to go hand-in-hand, and disinfection follow in the rear.

I sincerely wish that every reader of this paper would have great belief in the beneficial power of the sun's rays. Over in bonnie Erin, as the song tells us, "the grass grows green." Down in my dark cellar I sowed some in a box for the cat, and it grew white, and was such sickly-looking stuff withal, that I wouldn't permit pussy to touch it. O ye who are sickly and nervous, who are sore stricken and weak, do not, pray do not creep along on the shady side of the walk, but come forth into the glorious sunlight, the brave bold sunlight, and see what it will do for you!

Quaint and curious, I admit, looks an old-fashioned English farm-house, with its red brick gables, and its blinking windows of wee green glass diamond panes, but windows like these will certainly not do for our cities of health. They must be large, and the glass must be clear, and they must be made to open, so that daylight may fall easily in on the sick or on the hale.

Drains and Cesspools.—As there is a Director-General over the medical department of both Navy and Army, so in London should there be a Director-General over the Department of Health, and under him Inspectors and Deputy-Inspectors, and a large and efficient staff; and if a proper system of drainage and sewage were adopted, and strenuously carried out, our hospitals would no longer be crowded with cases of typhus and typhoid fever. We have already got rid of smoke in our, alas! imaginary cities of health; the air is no longer loaded with carbonaceous matter; let us get rid of sulphuretted hydrogen next, and ammonia, and with it will go dysentery and diarrhoea, and a hundred worse ills than these, not the least of which is cholera. Let us look well out for over-flowing drains, attend to the traps of water-closets and cesspools, keep our streets clean, and banish burial-grounds and

slaughtering-houses to the outskirts at least; let us render our rivers pure as pure can be, and plant a tree wherever a tree will grow; then shall mortality decrease, and our people as a nation be more robust, and happier because healthier. Intemperance, too, would almost disappear from our cities of health, because our working classes, no longer toiling in pestiferous shops, nor sleeping at night in unhealthy homes, would not require the stimulus of alcohol to keep their shoulders to the wheel.

Reforms of this kind may not be grappled with yet awhile, it may not be truly commenced until a second plague depopulates London, and mayhap stretches its grisly fingers even as far as Glasgow; but begun it must be, if we would not have our proudest city become "a habitation of bitterns." We don't want any bitterns, and they can be kept away easily.

The streets of our cities of health should be kept extremely clean; at present those of some portions of our largest towns are reeking with fever and pestilence. They should be well paved too. Horses should no longer be worked until they dropped dead or dying on the stones; and there should be over-ground saddle-railways (as previously suggested in these pages) to relieve the traffic.

And the streets should be a little quieter than they are nowadays. This could easily be accomplished. I like street-cries as well as any one, when they are musical and moderately soft; but I have known cases in which the savage yell of a milkman, or the startling shout of a sweep, has actually hastened the death of an invalid.

Lastly, pure water ought to be one of the most important considerations. What the value of a good supply of pure water to a city is, cannot be too highly estimated. Pure water for drinking and for culinary purposes, pure water in abundance to wash with, pure water in a strong stream to wash the streets and flush the sewers—this is what we must have in our cities of health.

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## THE GATHERER.

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### Accommodating Wall-Papers.

What may possibly prove to be a most valuable idea is reported from Germany. New wall-papers have been suggested which will adjust themselves to the light within the room: growing lighter and brighter as the room darkens, and, on the other hand, getting darker in proportion as the room is illuminated. To this end it has been proposed that the papers be printed or coated with oxalate of copper, which acts in the manner above described. It is confidently expected that very curious and novel effects of colour and shade may in this way be produced; and if the proposal only turn out as well as its promoters anticipate, an entire revolution in the wall-papers of the future seems probable.

### A New Cotton Plant.

About two years ago, Signor Giacomo Russi, Austrian Consular Agent of an important cotton district in Egypt, discovered a stranger in the cotton fields in the shape of a curious plant, containing a much greater number of cotton pods than the ordinary cotton plant. The stranger attracted his attention on account of its peculiar shape and size, being taller and without any branches of its own. On a closer acquaintance Signor Russi found that the cotton it produced was of a very valuable kind; and since its discovery he has proved the plant, and finds that there is no difficulty in its cultivation in Egypt. Its seed has been sold at twelve times the amount of ordinary seed, and the cotton growers are showing