

rate system of drainage have been reduced by one half through the work of the sanitary engineer alone. It is no Utopia that the death-rate at Rugby, for example, which was one of the towns first treated by our first General Board of Health, was then 24 in a 1000, and is now only 12. It is no Utopia that at Salisbury the old death-rate, which at the beginning of the century was as high as 40 in a 1000, is now about 16; or that at Croydon and a number of other places, death-rates of 24 in a 1000 now average 15. These reductions have been effected by the system of 'circulation *versus* stagnation,' which is yet to be made generally understood, to be by constant and direct supplies of water, by the removal of the fouled water through self-cleansing house-drains and self-cleansing sewers, and by the removal of the refuse—fresh and undecomposed, and unwasted—on to the land.

On the examination of incipient experiences, and on long and careful examination, the application of this system was proposed for the metropolis, but it was opposed by what is called 'Vestralization,' and by strong interests in expensive works in the House of Commons, by which the Government, at a morning sitting, were put in a minority. An opposite system was adopted, which has since been examined and condemned by Lord Bramwell's Commission as a disgrace to the metropolis and to civilization.' Our measure was carefully examined by German sanitary engineers, who proposed it for application to Berlin. It has been applied there, though not yet so completely as I consider it might be, and it has recently been re-examined by a deputation from the French Government and it is now adopted on that examination for the relief of the sanitary condition of Paris. I greatly lament the loss, by death, of M. Durand Claye the *ingénieur-en-chef* of Paris, a firm sanitary disciple of mine, but I hope that loss may not imperil economical execution of the work.

#### CONTRACTORS FOR PROLONGING LIFE

Various experiences in this country, by these factors alone have established with

such certainty that a contractor may contract with safety for the attainment of sanitary results, and by them the general death-rate may yet be reduced by 10 in a 1000. Beyond the reduction of the annual death-rate from the work of the sanitary engineer, nothing is yet commonly expected or sought for. I had, however, early anticipated that the reduction of the annual death-rate would be accompanied by an advance of the life-rate, and I have recently obtained from the Registrar-General examples of what that advance may be.

I find that at Rugby the life-rate has been extended to all living there, of every class, by eight years, or from thirty-three to forty-one years. At Hastings the duration of life has been advanced for males an average of five years and five months, but for females of eight years and one month; at Leek it has been extended by ten years; at Croydon and Salisbury, and other places, the extension has been from six to seven years, females, as a rule, obtaining, by our science, the greatest share—that is to say, some eight years more of life-rate, more of painless life, more of health, and strength and beauty. These extensions of the life-rates, as yet little known and regarded belong, however, to all classes, both to the well-to-do and to the lowest.

#### LENGTHENED LIFE IN THE WAGE-CLASSES

Of the wage classes, whose life-rate is largely the lowest, the extension will be found to be the greatest. To them the greatest gain developed is by the house alone, the 'model dwelling,' the work of the sanitary architect, giving ten years more of life and working ability, a result cheap to pay for by extra rents and which would be still further improvable by the removal of surrounding deteriorating conditions, especially bad schools and ill-conditioned places of work.

As against extant evils, there is yet to be provided the due exercise of the functions of medical officers of health and the aid of the sanitary inspectors in the inspection of work-shops and schools, and chiefly the half-time schools. As Commissioners of inquiry into the labor of young persons