

## SANITATION OF THE INTERIOR OF DWELLING HOUSES.

The sanitation of the interior of dwelling houses where the house drains and service pipes are directly connected with the sewer, as commonly practised in France, was the subject of a report presented by M. M. Lacau, architect (vice-president of the Sanitary Engineers and Architects of France), and L. Masson (Engineer of the Sanitation Works of the Seine), and also another report, from the English point of view, presented by Mr. Roechling, sanitary engineer (Leicester), at the recent International Congress of Hygiene at Paris. The main feature of the French report was the rejection of the disconnecting trap from the system of domestic drainage in favor of direct connection of the whole system with the public sewer, and the use of the house pipes as ventilators for the sewers. It was stated that the disconnecting device was introduced into English methods in consequence of defects in the sewers in England, which permitted of the formation of foul accumulations which emitted sewer gas that would be dangerous if admitted into a house. The effectiveness of the disconnecting trap for the purpose of keeping out of the house dangerous gases was denied by the French report, the denial being based upon the results of experiments made some years ago by the Sanitary Institute. According to this report the experiments of the Sanitary Institute proved that from 20 to 60 per cent. of fecal matters were left in the traps after flushing, only from 40 to 80 per cent. of the solid matters contained in w.c. waste finding its way into the public sewer. M. M. Lacau and Masson therefore recommended the suppression of disconnecting traps and demand that in all cases the house drains and pipes should be directly connected with the sewers, the only precaution necessary being to carry above the roof a pipe with which the whole system of pipes should be connected so as to form a ventilation conduit for both the sewer and the house drains. The chief of the eight conclusions set out in the report is the 7th, which ran thus: The conduits (canalisation) of a house comprise the waste pipes, rain pipes, and house drain which connects them to the sewer. This drain, laid with the utmost fall available, is directly connected with the public sewer without the intervention of a syphon (trap). The rain pipes connected with the system are prolonged above the roof to ensure the ventilation of the whole system.

The eighth conclusion specially concerns the plumber. It runs thus: 8. The plumbing work both for the waste water drawn off from the closets, the supply of potable or other water, and for the interior of the house ought to be the object of especial care. The plumbing arrangements ought to be such that the service of water pipes, (joints, branches, etc.), as well as the hydraulic apparatus (tanks, flushing apparatus, basins, syphons, traps, etc.), the rain pipes and waste pipes, shall be completely protected from frost.

In the long discussion that followed (after the report of Mr. Roechling had also been read) strong objection

was taken by Mr. Roechling, Mr. A. Smith and Mons. Symons (engineer), delegate from Holland, to the statements made with regard to the disconnecting system as generally practised in England. Mr. Roechling denied that the sewers in England (except in certain of the older parts of London where they were not so good as might be wished) were defective. The modern sewers (the majority) were as good as they could be made, and were as well if not better managed than in other countries. Unjustifiable deductions had been drawn from the accounts published of the experiments made by the Sanitary Institute. It had been stated in the paper that 50 per cent. of the solid matters remained in the intercepting trap, but it had not been stated that the position of the w. c. with which they had been made was equivalent to that of a w. c. placed in the cellar. If in England we lived in houses of five or six stories, containing from 60 to 100 persons each, with an allowance of 60 gallons of water per day, the flush would be so great that nothing at all would be left in the trap. It would be more just to cite the experiments of the Sanitary Institute as an argument in favor of the use of disconnecting traps rather than against it.

The report of Mr. Roechling, a resume of which was subsequently read by the author in French, presented the following conclusions, which, after a brief consideration were passed over without any resolution being taken on them:

1. The end and object of the systematic drainage of a house is to endow it with a good system of water supply and discharge for waste water.
2. The object will be the most certainly attained where the following essential rules are strictly observed: (a) To exclude from the interior of our houses all sewer gas, to avoid pollution of the soil by fecal matter or waste water, to prevent the generation of deleterious gases in the soil and in the air below and around our houses; (b) to discharge as rapidly and completely as possible into the public sewer all fecal matter and waste water produced.
3. The application of these two essential rules necessitates (a) an intercepting trap; (b) a disconnecting trap for the exclusion of gas; (c) a trap for the interception of solid matters other than those from the water closet; (d) a proper system of ventilation; (e) a flushing tank for each water-closet; (f) pipes that are air-tight and water-tight; (g) the employment of proper materials for the pipes; (h) proper dimensions and thicknesses for all pipes; (i) sufficient fall to ensure automatic cleansing; (j) junctions with very obtuse angles; (k) proper construction of water closets, baths and other sanitary appliances; (l) facility of access to all pipes for inspection and testing; (m) sufficient flush for all closets and baths; (n) periodical visitation and cleansing when necessary.

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