

1893.
NEW ZEALAND.

HOUSE OF REPRESENTATIVES

(REPORT UPON THE VENTILATION OF THE).

Laid on the Table by the Hon. Mr. Seddon, with leave of the House.

Mr. T. TURNBULL, F.R.I.B.A., to the Hon. the MINISTER for PUBLIC WORKS.

SIR,—

Wellington, 4th May, 1893.

When, two or three weeks ago, you invited me to make a report having for its object the better ventilating of the House of Representatives it then appeared as if nothing could be easier, having kept all the notes and other data that I had collected in 1877–78 for that purpose; but in looking over these afterwards, to investigate what progress had been made of late in this branch of sanitary science, I concluded that, to compile a report to be useful, it must be able to stand the test of criticism, and be in unison with the experiences of eminent sanitary engineers. If, therefore, you find it encumbered with extracts illustrating their works, and not in the usual form in which technical reports are written, I hope the motive will be allowed as sufficient excuse.

I am not aware that any administration in this colony has asked any one of my profession to report on a system of ventilation for the House of Representatives, though I believe that it has taken time, and has caused much expense. In the absence of any previous report, and having no knowledge of all the schemes that have been tried, and with a strong desire to find out and recommend to you a scheme of heating and ventilating your House that would insure a successful and satisfactory issue, my attention was naturally turned to England, the home of sanitary science, and to its House of Commons, a building nearly under the same conditions and used for the same purposes. Surely, I thought, something must be found in their experiences that will be instructive to us here, and my study has furnished me with the following notes:—

The first attempt at any ventilation in England of which we have any notice is the attempt of Sir Christopher Wren to ventilate the old House of Commons, in 1660, by means of a foot-square hole in each corner of the ceiling, surmounted by a truncated pyramid, and communicating with a foul-air chamber above, beyond which the heated current passed through the roof. No provision was made for inlets; hence the currents of air were reversed (result, down-draughts). Dr. De la Guiller in 1736 employed an exhaust-fan to draw out the vitiated air, but his scheme was equally unsuccessful, and was soon discarded (still no inlets for fresh supply). Sir Humphrey Davy, in 1811, contrived and set up the most notable of all the schemes attempted for the efficient ventilation of the House of Commons. The fresh air was admitted through numerous openings in the floor, and the foul air discharged by tubes in the ceiling, heated to cause quickness of discharge, whilst all windows, doors, &c., were to be kept carefully closed. This is said to be the first instance of a careful and scientific process of changing the atmosphere of inhabited interiors by equalising the inlets and outlets of air and closing all irregular openings. Davy's scheme, though an absolute failure, was founded on correct principles, and failed only through want of knowledge of applied mechanics and of atmospheric diffusion. Not long after the destruction of the House by conflagration, in the temporary Houses which succeeded, Dr. Reid had the merit of exhibiting for the first time an air-moving mechanism equal to the demand. It was his great heated chimney 100ft. high, and with internal area of nearly 100ft. Its performance gave great satisfaction.

Dr. Reid, who had charge of the warming and ventilating of the new House of Commons, in his report of the 5th April, 1852, remarked that “there are restrictions which the structure imposes on the natural movements of tempered air . . . in a building surrounded entirely with corridors and passages at two different levels”—suggesting the necessity of, if possible, equalising their temperature with that within the House.

Sir Goldsworthy Gurney, in October, 1852, in his evidence before the Committee of the House of Commons appointed to inquire into the heating and ventilating of the House, said, “The principle of ventilation laid down is that a sufficient quantity of fresh air should be extracted under control for the requirements of the House, and arrangements so made that that quantity shall be supplied by an insensible movement under nature's law. . . . The current of cold air which comes into the building on the opening of the doors arises from the state of exhaustion of the House itself, the House itself being in a state of partial exhaustion, or *minus* pressure.” (Is not this the cause of the down-draughts in the House of Representatives, and does it not suggest the plenum system of ventilation, since so successfully and satisfactorily adopted in many buildings of this