

2364. Now, we find—you may assume these figures are correct—that the maximum square space that patients get in the wards in the Dunedin Hospital is 78ft., and the maximum cubic air-space there allowed, according to present conditions, is 1,093ft.—assuming you take an altitude of 14ft. for ventilation—and 1,350 if you take an altitude of 16ft.—All other books say 14ft. is the proper altitude, but Buck says 16ft. to 20ft.

2365. *The Chairman.*] That is the height of the ward. But when you calculate it means you calculate the air up to a height of 12ft.?—I believe there is very little ventilation indeed to be got any higher than 14ft. or 16ft.

2366. Supposing the ceiling of the ward was 12ft. high, do you consider you would get the advantage of the 12ft.?—Yes.

2367. Would it not be necessary to have a place in which hot vitiated air would travel along?—The walls here are about 12ft. or 14ft. high, and under those circumstances I think the air would be more under control for change or removal. When you go up to 18ft. or 20ft. there is greater stagnation of air, and it is less easily changed. That is the plan that is adopted in the Hanwell Hospital, where the walls are carried up to about 12ft. and then arched towards the centre to a height of 15ft. or 16ft. The air escapes through a cavity in the ridge-poles.

*The Chairman:* That is what I meant—that you must have a cavity for the air to travel along.

2368. *Mr. Solomon.*] So you get effective ventilation up to 15ft. With 78ft. of square space and 5ft. 6in. of bed-space, do you think that the present system of ventilation in the Dunedin Hospital is sufficient?—I do not, indeed. Certainly in a surgical ward it is not, and it is not what is desired for medical cases.

2369. Do you think that that is safe with the present system of ventilation?—No, certainly not for surgical cases, and it is not what is desired for medical cases.

2370. Now, you noticed the position of the waterclosets, and the bath-rooms and lavatories, in the ward?—Yes.

2371. And what do you say as to them?—I say they are badly placed.

2372. Is it proper for waterclosets to open directly into the wards?—No.

2373. And the bath-rooms are part and parcel of the wards?—In this case they are.

2374. Is that correct?—No.

2375. What should be the case?—They should be detached, and there should be a passage between the lavatory, or closet, or sink, with cross-ventilation.

2376. Have you examined the drainage in connection with these waterclosets?—Yes, as far as was possible. The closet seems to me to be a Twyford's Unitas Closet. The closet there shown [handing in a copy of the *Lancet*] is an excellent one. But in the Hospital there is no urinal, and they use the closet as the urinal. The consequence is that they do not pull up the plug after using it for a urinal, and there is therefore a distinct smell of urine in the place; and in going into it I felt a strong smell.

2377. Do you think that by the present system of double doors leading into the wards it is possible to avoid a bad smell coming into the wards?—No. When the fires are bringing air into the ward the air must come in under the doors. There is no other escape for it. I noticed a small window in the closet.

2378. *The Chairman.*] Did you satisfy yourself that the ventilator connection was all right?—No, because it was all closed up.

2379. *Mr. Solomon.*] Do you think the system of allowing the steam from the lavatories and the bath to come into the ward is safe?—No, it should not come into the ward. The moist air from the lavatories and baths should not come into the ward at all.

2380. It warms the air, makes it very dry, does it not?—I do not object to dry heat, but I do object to moist air.

2381. What effect has it on the germs?—It is like moisture with mushrooms, it makes them grow.

2382. You examined the traps of the waterclosets and lavatories?—I examined the traps of the sinks in the lavatories, but the traps of the closets I could not get at.

2383. Are they trapped?—Yes.

2384. *The Chairman.*] Are the traps ventilated?—No.

2385. Not at all?—No.

2386. Are there traps to the baths?—I do not know anything about them. I am talking now merely as to the sinks and the basins.

2387. *Mr. Solomon.*] Now, as to the drains. They are trapped and not ventilated?—The traps are not ventilated.

2388. Are you sure?—Yes, I am quite sure of that. I have drawn a plan of them, as I found them in all of the four wards that I examined [plan handed in].

2389. That plan shows on the top what they should be, and on the bottom what they ought not to be?—Yes.

2390. Will you tell me whether, under the conditions that you found the drains and the un-ventilated traps, sewer-gas can avoid coming into the wards?—There is no other escape for it.

2391. *The Chairman.*] There is no other escape for the sewer-gas except into the wards?—That is so; it is the only escape for the gas that accumulates in the drains, the sinks, and the pipes that lead from the basins.

2392. Have you prepared a model, and does that model show the drains as you found them?—This is a model of a ventilated drain.

2393. What prevents the rise of sewer-gas into wards under a proper system of drainage? Is it what you call a water-seal?—A perfect water-seal does.

2394. Is there a perfect water-seal when the traps are ventilated?—Yes,