

its relative dryness. In this condition the air powerfully absorbs the moisture from all surfaces, those of the skin, throat and lungs not excepted. The air of every room should be supplied with moisture from the evaporation of water in connection with the stove or furnace. For a middle-sized room the evaporating surface should be about half a foot square. Unfortunately many furnaces and stoves are not provided with this arrangement, and where they are, too often the addition of water is entirely neglected, and the consequence is that the inmates of the place live in an atmosphere so dry as to injure their respiratory organs, produce pains in the throat, or rush of blood to the head, increase all kinds of pulmonary trouble, etc. On the other hand, an excess of vapour from keeping the water too hot may produce a deposit of moisture on the walls, and prove injurious. This is easily guarded against. To steam coils, a small stopcock may be attached, from which by operating it a small amount of steam may be discharged from time to time; if not neglected, this is an excellent arrangement.

In many churches and public buildings in our cities, and even in private residences, this deficiency of water in the heating apparatus is very evident in the effects it produces on delicate lungs and throats, and this dry air is often made worse still by being heated in contact with the red-hot iron of the stoves. The air should not be scorched by contact of a small surface of red-hot iron, but it should be heated by a more prolonged contact with a larger surface of iron moderately heated, and always come also in contact with tepid water, which will correct the drying of the hot iron and make the air more congenial to the moist surface of the throat and lungs.—*Scientific American*.

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## Machinery and Manufactures.

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### TRIAL OF ENGLISH & AMERICAN BURGLAR-PROOF SAFES, IN THE PARIS EXHIBITION.

Correspondence of Engineering.

PARIS, August 13, 1867.

The trial of the burglar-proof safes of Mr. Chatwood, of Bolton, and of Mr. S. F. Herring, of New York, or, as our American friends like to call it, "the great contest of American vs. English safes," has commenced at last in the British testing-house at the International Exhibition. The terms and history of the challenge we have already published, but it may be as well to refer to them in a few words before proceeding to report upon the trial itself. Mr. Herring exhibited a safe upon which he posted a challenge offering to test it against any other safe in the Exhibition. Mr. Chatwood accepted this challenge, and an agreement was drawn up to that effect. Mr. Herring then declared that his safe was not really burglar-proof at all, but simply fire-proof; but that there was a burglar-proof box inside the safe, which was the article meant, if not named in the challenge. The appearance of these after-declarations created a somewhat unfavorable impression against the American safe-maker, if not against his safe,

which occasionally manifested itself during the trial; but the jury certainly tried to do all in their power to maintain the balance as even as circumstances would allow. The jury was chosen by the two competitors; Mr. R. Mallet and Mr. R. F. Fairlie having been proposed by Mr. Chatwood, and Mr. Holmes and Mr. Pickering representing Mr. Herring's interest. These four gentlemen had chosen M. Paul Douliot, engineer of the firm of Cail & Co., of Paris, as their fifth member, and as their president; and Mr. W. T. Hoyle, secretary of the Whitworth Company, acted as secretary to this jury. The jury met at 11 a.m. to-day. After the preliminary arrangements had been completed, then the sham burglars were introduced, three in number on either side. They were some of the best workmen that could be mustered in England, America and Germany. Mr. Chatwood had brought one of his foremen and a workman from his shop; the third man, a foreman at Messrs. W. & J. Galloway & Sons, in Manchester, had volunteered his services on the day of the trial. Mr. Herring had sent expressly to America for a celebrated safe-breaker, who was assisted by a man described as particularly expert at picking locks; and the third also a volunteer, who was the foreman of an Austrian exhibitor of safes, who had a very intimate acquaintance with the construction of Chatwood's safes, having been in the Exhibition ever since its opening, and repeatedly examined Mr. Chatwood's drawings and details of construction, which are exhibited without reserve. These six men, combined in two respective groups, were an interesting match, although the unequal nature of their capabilities somewhat lessened the interest of the trial. Mr. Chatwood had in his favor the calm and business-like method of his foreman, and an extraordinary amount of skill on the part of Messrs. Galloway's man in the use of his hammer, which attracted the just admiration of every one present. On the other hand, Mr. Herring's man showed much judgment and experience, assisted, as it was, by the correct knowledge of the Austrian foreman. The *personnel* having been mustered on both sides, the tools were brought forward. Mr. Chatwood's men had their tools packed in a neat small leather portmanteau. The contents were the well-known serrated wedges used by expert burglars, some levers screwed together in short lengths so as to pack up easily, a small hand-hammer, and a block-tin hammer which gives no ringing noise in striking. Against this the Americans brought in a sledge hammer, the exact weight of which has not yet been ascertained, but which may have been somewhere about 28 lbs. There were several levers and crowbars five or six feet long, and a complete drilling-frame large enough to enclose the entire safe, and to insert the ratchet brace for drilling. Last, but not least, came some steel wedges of an enormous size. Call these burglars' implements! The jury immediately objected to the employment of this portable blacksmith's shop, and the sensible suggestion was made to allow equal weight, and a maximum size of implements only on each side. This, however, could not be adhered to, since the American tools were not prepared for such a condition, and all parties, anxious to see the trial through, agreed to allow the heavy American tools to be used, with the exception only