

CORRECT EXPLANATION OF THE GHOST.

The great novelty in the theatrical world is the Ghost. Wallack's theater is crowded nightly by hundreds of our citizens to witness this truly wonderful and startling apparition.

An actor in the character of a murderer is seen asleep on a lounge in the rear of the stage, which is dimly lighted. Presently he rises in his sleep and begins to rave under the tortures of remorse for his crime. Instantly there appears at his side a bright image of a skeleton, so luminous that it sheds some light upon the obscurity around. Though startlingly distinct, it is seen to be only the image of a skeleton, as objects on the stage are visible directly through the bones. The murderer strikes his sword through the grizzly horror, but it is as impalpable as air. After a brief space the apparition vanishes as suddenly as it came. It makes no movement up or down or to either hand, but simply disappears.

Some of our cotemporaries have published explanations of the mode in which this wonderful optical illusion is produced; but, so far as we know, none of them, have given the correct explanation. This we are now enabled to give, on the authority of one of our learned professors.

The plan is exceedingly simple. A very large plate of transparent glass is set at an angle on the stage in front of the actors; an opening is made through the floor of the stage in front of the glass, and the skeleton is placed beneath the floor in front of the

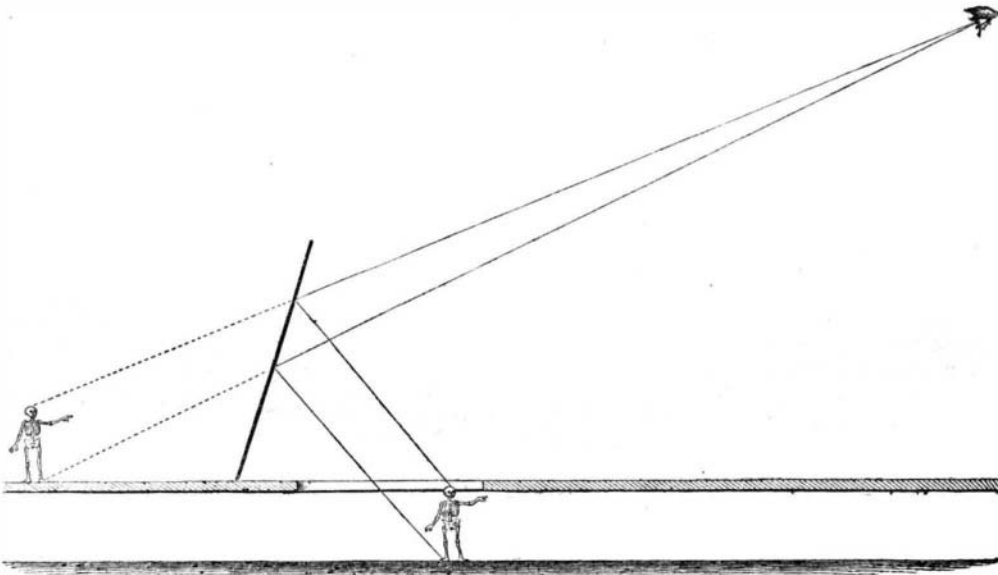
opening. As soon as a strong light is thrown upon the skeleton the light passes upward through the opening in the floor, and is reflected from the glass, producing an image in the rear. The glass is an invisible mirror, producing its image directly among the actors who are seen through it.

REPORT ON ARMSTRONG GUNS.

A select committee appointed by the House of Commons (England), "to inquire into the expenditure incurred since 1858, on various kinds of improved ordnance obtained by contract, and made at Government risks; also to inquire into the results obtained by such expenditure," has lately made a very full report. It is stated that Sir William Armstrong first brought his gun to the notice of the Government in 1854; and an order was then given for six trial guns, varying in size from 3 to 18-pounders. The reports of the officers employed to inspect them were favorable, and Lord Panmure declared, in reference to the 18-pounder, that "for all purposes of projection and accuracy of flight of the projectiles the experiments were conclusive." It was not, however, till 1858, that the idea of providing rifled ordnance for field service on a large scale was entertained by the War Office. In that year General Peel appointed a special committee to advise him on the whole subject, and this committee decided that, having regard to expense, the competition for the patronage of Government should be limited to the Whitworth and Armstrong guns. The latter was ultimately selected as the "field gun of the service." In 1859 Sir William Armstrong was appointed engineer of rifled ordnance, and superintended the ordnance works at Elswick, erected by a company of which he was a partner.

The British Government has paid £1,067,794 (about \$5,339,000), for guns, projectiles, &c., to this company; and the contract has been terminated. The sum of £1,471,753 has also been expended for guns, carriages, and ammunition, at the Woolwich Arsenal, making a total of no less than £2,539,547 (about \$12,697,000), expended for Armstrong guns and their appendages, in about two and a half

years. The choice of the Armstrong gun for military service is ratified by the committee. They admit that experiments with the Whitworth gun were "not of so extended a character" as those with its rival, but they give as a reason for this that at that time Mr. Whitworth had no system of his own for the construction of guns. "He had only rifled Government blocks of brass and cast-iron." Sir William Armstrong, on the contrary, had a complete method, capable of fulfilling the prescribed conditions, and the committee deny that, either then or now, any practical evidence was or is produced to show that any other method can be compared to it. The characteristic peculiarity of it they consider to consist in a "definite combination of construction, breech-loading, rifling, and coating the projectiles with soft metal;" and they are of opinion that its adoption in 1858 was "fully justified." With respect to the



introduction of Armstrong 40-pounders and 100-pounders into the navy, the committee express a more qualified opinion. This was commenced in 1859, on the advice of Captain Hewlett, of the *Excellent*, a gunnery vessel. It is stated in the report that the old 68-pounder, at a distance of 200 yards, is superior, as a broadside gun, to a 100-pounder Armstrong, and the 60-pounder is considered the most effective gun in the service for piercing iron plates. About 3,000 Armstrong guns, altogether, have been constructed, of which number 570 of the 12-pounder class have been in service; and out of the entire number not one has yet exploded. Recently Sir William Armstrong has made some 600-pounders, but the results of trials with them are not given. Some statements had been published respecting the inefficiency of the breech-loader field pieces used in China. These assertions are contradicted. No difficulty was found in keeping them in perfect order under all circumstances, and their range and accuracy were unequalled. But for large guns, movable breeches are condemned and muzzle-loaders preferred.

One part of the report puzzles us. It is stated therein, that the old 68-pounder is the most effective gun against iron plates; and the *London Times* dwells upon this as a prominent fact. And yet not long ago it was reported in the English journals that the Whitworth, Armstrong, and Horsfall guns, penetrated and smashed targets, at Shoeburyness, that were perfectly invulnerable to the efforts of the old 68-pounders.

Yosemite Valley—California Scenery.

The scenery in some parts of California is grand and sublime, far surpassing that among the mountains on the Atlantic coast range. The following are extracts from a communication in the *San Francisco Bulletin*, by a lady who had visited the valley of Yosemite, to see its giant cliffs and wonderful waterfalls:—

"The descent into the valley is frightful—the pathway so steep in many places as to be absolutely precipitous. For miles we pursued this perilous way, unwilling to stop, and yet half afraid to go on. There

are many places where a false step, a broken girth, a restive horse, or a dizzy brain, would have sent us into eternity. Fortunately for us we reached the valley in safety. Our party halted for a few moments on the bank of the Merced river, that our guide might adjust our saddles, our horses rest awhile, we regain our composure, and take breath after our rapid and exciting ride. It was a scene for an artist. The river flowing at our feet—a noble stream, clear, deep, and rapid; the tall pines rising majestically above us, their thick shadows turning aside the slanting sunbeams, or breaking them in checkers of golden light, the horses quietly cropping the rich grass. The grouping of the party was in itself artistic. While some were stretching themselves at full length under the trees, others were drinking from the stream, or, leaning idly upon their saddles, looking up at the towering cliffs which rose solemnly and sublimely

around, completely isolating us from the world and shutting us up within a wall of adamant 4,000 feet in height! Down the valley the river came, winding its way like a huge serpent, its silver scales glistening in the sunlight. The light winds chased the shadows over the waving grass, which grew tall and even, like a field of grain. Opposite, down the giant wall, the delicate Pohnono threw its bridal veil in misty wreaths, 900 feet into the valley; and from afar the sound of falling waters from half-a-dozen cataracts came to us on the breeze, like the breaking of the surf upon a rock-bound shore.

"In a little while we were safely landed on the

opposite bank and cantering gaily up the valley. As we advanced, cliff after cliff loomed grandly before us, each one looking larger than the last, until the white walls of Tuchoanoola rose sternly and solemnly before us. Words cannot paint the sublimity of this giant crag; no artist can do it justice. We rode under its shadow for miles, and it seemed no nearer and no further off. Turn which way we would, there it stood frowning down upon us threateningly, grim and white, like destiny itself. It is an event in one's life to have looked upon a sight like this. The Sentinel Rock is a sharp gray peak towering up above its fellows, like a watch-tower, on this giant wall. The Three Brothers are stupendous, and their great domes seem to prop the very sky. But wonderful as they are, and past all description, they do not impress one like El Capitan. After a ride of forty miles we at last arrived at the Yosemite Hotel—a house very pleasantly situated within a few yards of the river, in the midst of a magnificent forest, directly opposite the falls of the Yosemite. Tired as we were, we could not resist the temptation of lingering at the door to look at this beautiful fall, or rather succession of falls, for there are three in number, making in all 2,500 feet of descent. It looks like myriads of water rockets (if one can imagine such a thing) bursting into foam, waving and fluttering in the wind. It looks like anything but water; it is more like some long, white, flowing garment—some snowy descended drapery, as if an angel had dropped its mantle in its upward flight. There was a fascination about it which charmed us to look at and listen to its solemn anthem, as it rose high and clear above all other sounds, like the voice of some mighty organ. It is unfortunate for the dusty, weary pilgrim, that the waters of the Merced are too cold for bathing, for after such a journey there is no luxury which could be so acceptable as a bath. The water is so beautifully clear, and the soft white sand at the bottom of the river gleams so temptingly, that it is difficult to resist the impulse to plunge in.

"We spent our first day in the valley, sight-seeing in a small way. We visited the falls of the Yosemite, and afterward rode several miles up the valley to visit two little lakes, picturesquely situated in a