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THE
GHOST



BY HENRY DIRCKS. C.E.

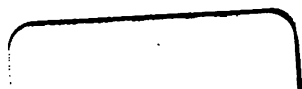


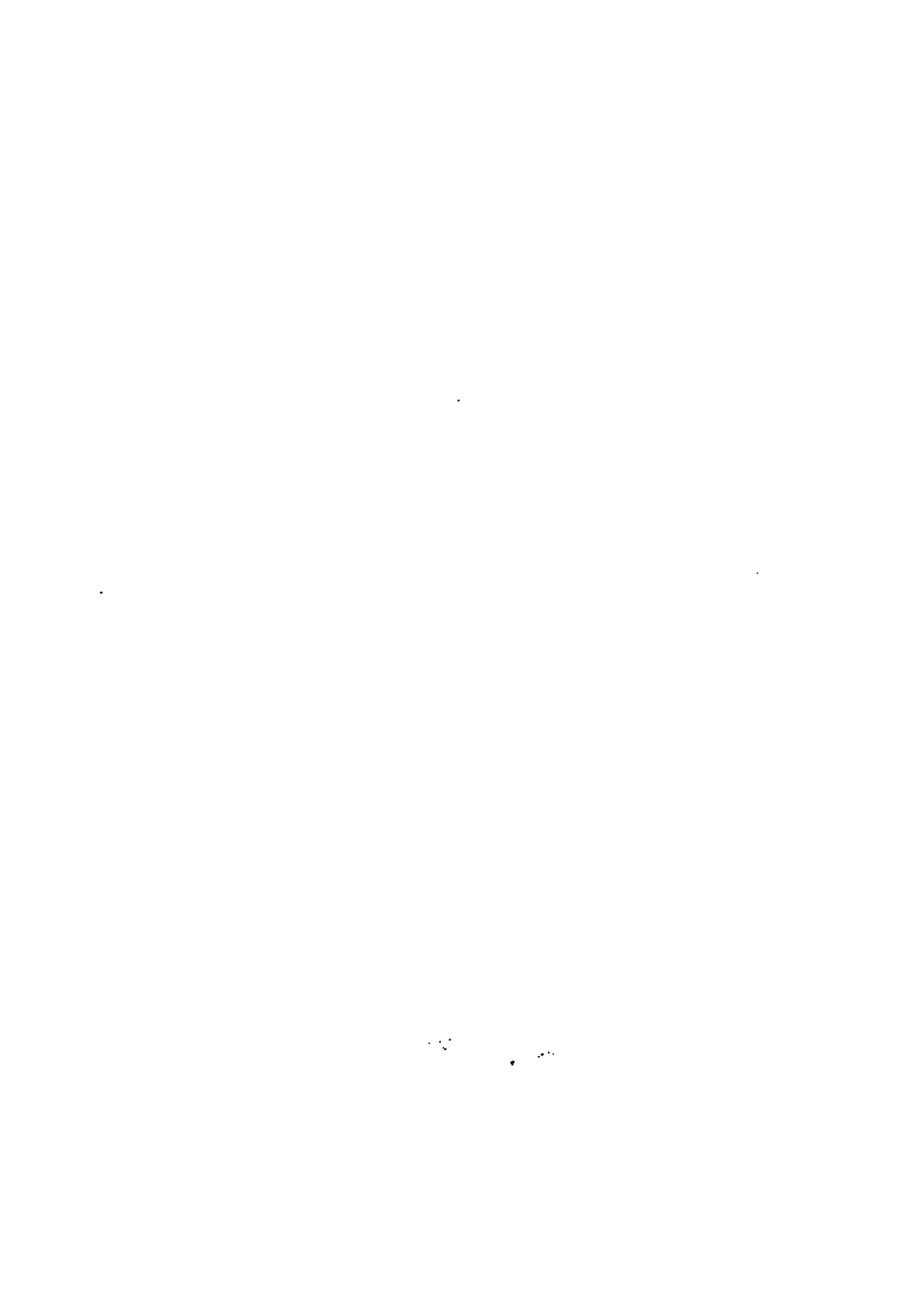
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THE GHOST! :

AS PRODUCED IN THE

SPECTRE DRAMA,

POPULARLY ILLUSTRATING THE

MARVELLOUS OPTICAL ILLUSIONS

OBTAINED BY THE APPARATUS CALLED

THE DIRCKSIAN PHANTASMAGORIA :

BEING A FULL ACCOUNT OF ITS
HISTORY, CONSTRUCTION, AND VARIOUS ADAPTATIONS.

BY HENRY DIRCKS,

CIVIL ENGINEER,

LIFE MEMBER OF THE BRITISH ASSOCIATION (1837), &c. &c.

THE INVENTOR.

— COME, LET ME CLUTCH THEE :—
I HAVE THEE NOT, AND YET I SEE THEE STILL.
ART THOU NOT, FATAL VISION, SENSIBLE
TO FEELING AS TO SIGHT ?

Macbeth.



LONDON :

E. AND F. N. SPON, 16, BUCKLERSBURY.

1863.

[The right of translation is reserved].

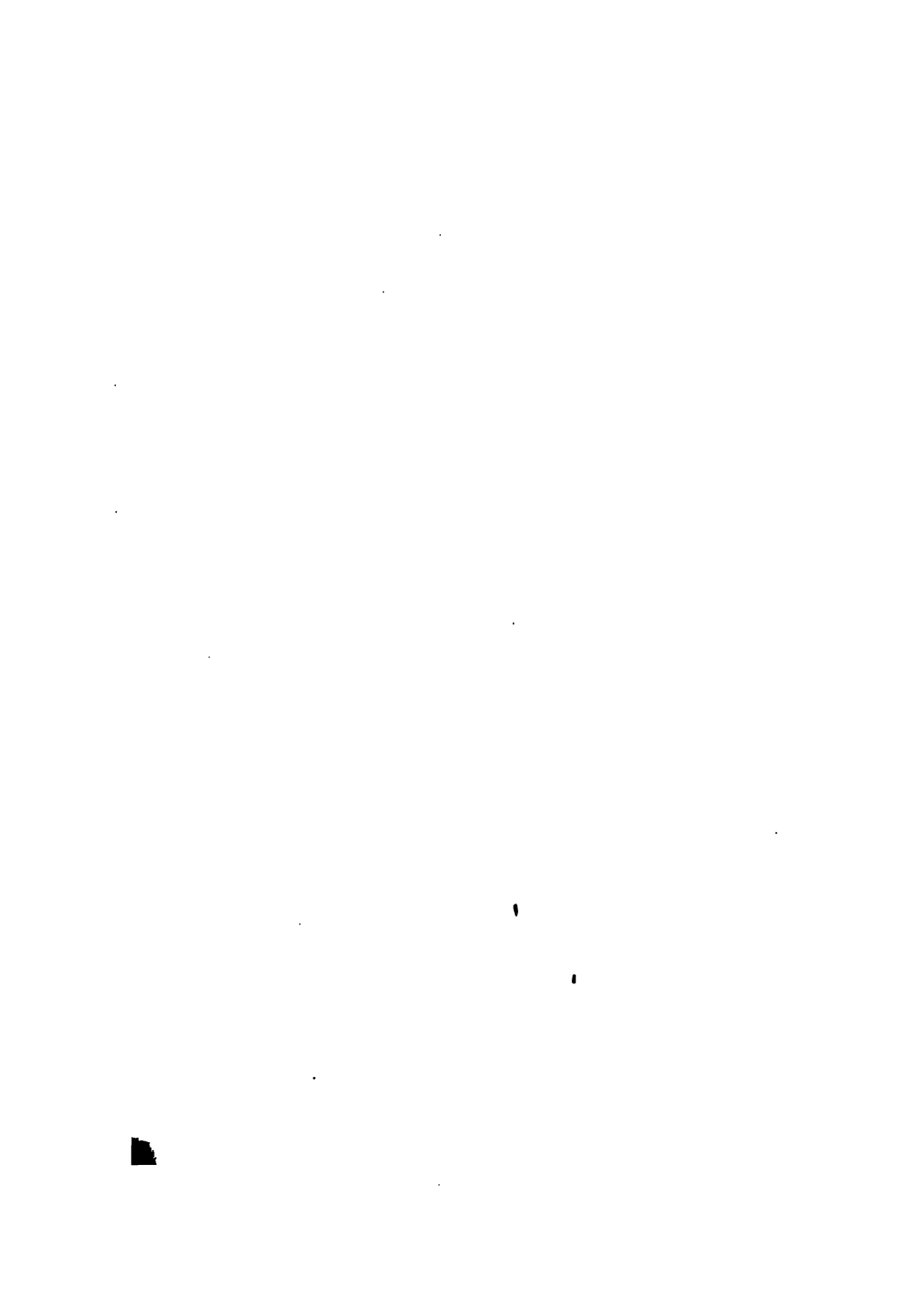
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PREFACE.



Few inventions on their first presentation to the public meet with popular acceptance. The popularity of inventions in arts and sciences is usually slow and uncertain. Among scientific inventions, it was the fate of the kaleidoscope, patented by Sir David Brewster, 10th July, 1817, that hundreds of thousands of that beautiful philosophical toy were manufactured in a very short time throughout England and the continent. Forty-six years have elapsed without any similarly popular optical instrument making its appearance, except, perhaps, the stereoscope. But the modern reader may either have forgotten or not be aware of the reverse of this picture of brilliant success. Ignorant persons, as well as designing philosophical instrument manufacturers defrauded the successful inventor of all emolument from his invention; and, driven to screen themselves from legal proceedings for either unknowingly or designedly having infringed a patent right, strenuous efforts were made to deprive Sir David Brewster of all right or title to originality.

The public cannot be too generally informed, that it is a prevalent feeling among inventors that the pro-

ducts of their intellectual looms are for the public good, through the medium of anybody but the rightful inventors. In fact, inventors, as a class, are much like a hive of bees on the old construction, in which it was thought perfectly consistent to smother the producers for the benefit of those who had afforded a convenient lodging until the spoil of the laborious workers within was worth their seizure. But modern practice in regard to inventors has not kept pace with the improved practice in regard to bees; and it would be well if, instead of stifling the poverty-stricken inventor, he were put into some asylum specially appointed for his reception. One of this class, the late Samuel Hall, Esq., Civil Engineer, of Basford Hall, near Nottingham, after spending a fortune on scheming and patenting, at the end of his days lived some weeks in a workhouse, and was only saved from dying there, at the age of about 83 years, by a small pittance from rich relations.*

What Homer and Shakespeare and Milton were, such likewise were the Marquis of Worcester, Savery, and Watt; all great inventors in different directions of powerful intellect.

* *The Times*, of December 5, 1863, concludes an article on this deceased inventor, observing:—"He had in large measure the true genius of the mechanician, and belonged by nature to that illustrious line which has in all ages bequeathed the heritage of power, and to which the world looks for her most splendid triumphs." His gassing of lace, bleaching of starch, and surface condensation, form but a small portion of his inventions.

An original idea, originating a novel invention, is not the lot of one man in a million of the population of the globe; hence probably the proverbial irritability of great poets, painters, and philosophers. But, independent of all other considerations, it is universally admitted, that authorship is inviolable. Every author of any work in art, literature, or science, has a clear claim to the labours of his own intellect. In no department is this right better understood, or more jealously maintained, or zealously guarded than in literature. The purloining of a few sentences or pages by one author from the works of another would raise the trumpet voice of a hundred papers, a dozen magazines, and three or four reviews in happy concert to denounce such flagrant literary larceny. But who cares for scientific larceny? Whoever heard of such a foolish charge, as pretending that there is anything in science which may not be appropriated with impunity at pleasure either for aggrandizement or honour? A true history of the toils, troubles, and follies of inventors has yet to be written; their wrongs would prove how cold, indifferent, and heartless has been their reception among their relatives and their countrymen. While literature has its century of channels of information, science is almost unrepresented in a popular sense; it is broken up into sections, each section is small, and each seems to be the one repellent of the other. There is no union in scientific literature or pursuits. Science is not a common interest among scientific men as a body;

but each, in his own particular pursuit, forms one of a small community. Literature has its departments, but literary men are one body, united for a common cause ; and interested alike in each other's history.

We now come to speak of "The Ghost!" after this apparent long digression. The fate of the kaleidoscope has been very nearly the fate of the great phantasmagorical apparatus by the aid of which "The Ghost" is produced ; and that not in the way of manufacture, but in that of depriving the original inventor of his honour in regard to his own invention.

It is necessary to state the case as clearly and fully as possible, without entering on any personality, or exhausting the patience of the reader by details which, however attractive to an interested party, would be devoid of sufficient characteristic illustration of the grievance complained of, to attract any public interest.

In the course of the present work it will be seen that the apparatus for producing Spectral Optical Illusions was published in 1858, and comprised two of the author's own inventions of the respective dates 1838 and 1858. Reports of the communication made by him to the meeting of the British Association, in Leeds, appear in *The Engineer*, October 1, *The Mining Journal*, October 2, *The Mechanics' Magazine*, October 7, 1858, *The Atheneum*, &c., and *The Transactions of the Association*.

In 1858, offers were made through several advertisements in *The Times*, of the Optical Illusions in question

for illustrating the story of *Dickens' Haunted Man, &c.* Communications were likewise made personally to the Crystal Palace, the Polytechnic Institution, the Colosseum, and several private parties ; but as a small royalty was demanded, although nothing was required, if not approved on explanation, yet each in succession declined the proposals then made. Being on the continent the next year, and subsequently engaged with the publication of one or two works, necessary delay took place before again offering to bring out the invention. Early in 1862, it was determined, however, to aid the sale of apparatus to be made by a manufacturing philosophical instrument maker, by publishing such a descriptive work as the present one. Through his publisher, the Inventor was introduced to a manufacturer who was willing to undertake the manufacture and sale; arrangements being also made to bring out the designed descriptive work. But meanwhile another introduction was suggested, the matter having been re-named to the Polytechnic Institution. A model was at once sent there. My plan was set up with much curtailment in the Lecture Room, yet very satisfactorily considering the small space, and that a place so ill adapted for the purpose was made at all available ; for the spectres being limited to three or four feet in height, were obliged to be exhibited reclining or sitting on the floor of the stage.

On Wednesday, December 24, the first exhibition took place before a select party, the result of which The

Times thus records on the 27th inst., in noticing winter entertainments at the Polytechnic Institution :—

“ Which consist of a series of the most wonderful optical illusions ever placed before the public, intended to illustrate *Charles Dickens’* idea of the *Haunted Man*, and by means of an apparatus called the Photodrome, invented by Mr. Rose, of Glasgow, the illusions and fancies of the *Haunted Man* are represented in a manner which baffles all attempts to explain them. The spectres and illusions are thrown upon the stage in such a perfect embodiment of real substance, that it is not till the *Haunted Man* walks through their apparently solid forms that the audience can believe in their being optical illusions at all. Even then it is almost difficult to imagine that the whole is not a wonderful trick, for people cling to the old saying, that seeing is believing, and if ever mere optical delusions assumed a perfect and tangible form they do so in this strange lecture. Why did not the medium and spirit rappers get hold of this invention before it was made public? The illusions might fail to convince, but at least they would have left all seekers after spiritual revelations in a sore state of puzzle and uncertainty, as they most certainly do now at the Polytechnic. For theatrical purposes this new discovery must be an invaluable agent.”

It is important here to observe, that my invention is attributed to a gentleman in Glasgow, not only in this but in all the reports of the week, with one or two solitary exceptions, where the reporters seem to have been aware of the exposition in 1858. I am the more desirous to impress this on the attention of the reader as it was but the commencement of a serious course of bungling of such an extraordinary and exceptionable character, that,

within the course of 30 years' experience, I never met with its equal.

Before proceeding further, I must observe that, much to the credit of Mr. Rose, his disclaimer of the invention as forming any part of the Photodrome, appeared in the *Illustrated London News*, January 10, in reply to its similar report; and his proceeding in this respect might well have been imitated by others who have not deigned to show a like honourable course of treatment towards me, on precisely the same mis-statement.

In December and January, therefore, the Polytechnic Institution, where I had placed my invention, at my publisher's suggestion, for publicity, as the work of my invention, was an immediate and lucrative source of attraction; this was of the more consequence to the Polytechnic as the International Exhibition had closed, after being a great source of benefit to it in common with other metropolitan institutions, arising from the large concourse of strangers in town.

As it was desirable to secure the emoluments to the Polytechnic, I was consulted about a patent,* which I offered to facilitate, independent of the expense, a process commenced on the 5th February, 1863. Shortly afterwards, enquiry was made in a very straightforward manner as to what would be my terms in the way of commission. My terms not being pecuniary, but simply the connection of my name with my invention, there was

* See Appendix B.

no difficulty to be raised. This was followed by a letter of enquiry whether I would give a letter for empowering an arrangement to be made with Mr. Fechter for £200 down, and £300 further on approval. Such a letter I wrote, without the slightest hesitation.

The reader is now in full possession of my case to the period named. I offer my invention to a public Institution, professedly to have it published as my invention; in short, in precisely the same manner as is done, or assumed to be done, with all other inventions sent there. I go with my heart in my hand, not asking any greater pittance than the bare preservation of my good name. Would anybody believe that the letter obtained from me, colourably to confirm an arrangement with Mr. Fechter, was shortly afterwards sent to the Stamp Office to make it a legal document, and afterwards shown to my publisher to convince him of the hold obtained over me?

The animus shown by such an act is what I reprehend; it is this hateful spoiling of a gift that I abhor; and I am obliged to say that, I hope and believe there is no case on record so bad as this of the receiving of a magnificent present with so ill a grace. The exhibition of "The Ghost" at the Polytechnic and profits from patent licenses is roughly estimated at from £2000 to £3000, but suppose it were only as many hundreds, why thus go out of the way to play so ungenerous a part?

The reports of the daily papers, in omitting my name,*

* See Appendix A.

and further omissions, combined with the grudging and dubious manner in which I was afterwards named in the early prospectuses, bills, and advertisements of the Institution, excited alike my surprise and indignation. I must have written above 40 or 50 letters, commencing with mild remonstrances, and gradually enlarging my arguments in proportion as I found promises taking the place of acts of amendment. And here it may be worth while to enumerate the kind of arguments adduced. I stated in the course of the correspondence—

1. That I had no fear of losing the *scientific* merit, because of my publication in 1858. But, I enquired, why throw dust in the eyes of the public by withholding my name, merely to substitute another ?

2. That in my case such misrepresentation was peculiarly ridiculous, as my profession had called me to be the repeated upholder of the rights of inventors, both specially and generally, and here was I myself being made the subject of a scientific larceny.

3. That it was due to my publishers I should stand well with the public, and that in common with all my scientific friends, very severe verbal criticisms were passed on the obvious neglect to protect my interest in an invention from which the Institution was reaping a large benefit.

4. That though I asked little, being content with the mere honour of being the inventor of the Apparatus for producing Optical Illusions, my liberality did not

extend to also giving up whatever merit might attach to so original an invention.

5. That, properly considered, it was to the interest of the Polytechnic Institution to protect the rights of inventors committing their inventions to its charge, that so all might feel a confidence of being in safe custody.

6. That it was absurd keeping up from month to month the complaint that erroneous newspaper paragraphs arose from the stupidity of reporters; and that falsified advertisements arose mostly from the neglect of clerks, or agents, or advertisers; or, that even the majority of the cases were cases of piracy. (Appendix A.)

7. That it was an outrage on common sense to advertise my name in the metropolis as the inventor; and in the provinces to advertise another party as the inventor of my Optical Illusions, as in the examples of three weeks' advertisements in Glasgow, a like number in Manchester, and so in other towns.

8. That a certain establishment, north of the city, deserved to be indicted for the publicity given to the same mis-statement, in posters of six feet square.

9. That having consented to suppress the publication of my book and the issuing of apparatus avowedly to promote my views as originally intended, by the change to the Polytechnic, I must resort to my original plan, if the tortuous course complained of was not immediately righted.

10. That if, of all parties, licensees could not be made

to keep faith in representing me as the true inventor of my invention, and by which they were profiting, I should be compelled to license parties myself at a nominal royalty, to insure a correct statement of facts.

11. That simply making use of my name verbally in the Lectures was not a compensation for the erroneous opinion spread by falsified advertisements, and that I therefore required equal justice typographically and verbally.

And lastly, That I should be content with nothing short of the full and fair acknowledgment of my name as the inventor, agreeable to an original verbal agreement.

To this tiresome correspondence was added the necessity of writing two or three letters to every theatre (except the Adelphi) and other establishments licensed under the patent, to ask by what authority any other name had been substituted for mine, which was mostly responded to with good feeling, and the required change adopted. Living near and daily attending the Crystal Palace, there was no tampering with its advertisements, as was afterwards done at Brighton.

If the correspondent wearied of this incessant trouble, which, from the first, it had been his principal aim to avoid, it is perhaps little wonder that the recipient of so much argument against practices so utterly untenable, also became exhausted, and from very lack of argument to rebut so many charges, so pertinaciously urged, felt

justified in handing the author over to the tender mercies of lawyers! What had law to do in a case between friends? What lawyer ever had any case placed in his hands so barren of interest or so hopeless to deal with? The law must surely look on it as a mere delusion, the charging of a man with filching from another his good name in this way!

Here again was an act calculated to deprive a warm-hearted gift of all its happiest qualities.

But it would appear that the legal gentlemen employed found that the whole affair was one a little out of their province, so a referee was ultimately appointed. And why appointed? To settle, if possible, such a mode of advertising my invention in town and country, through properly drawn up licenses, and by the issue of a certain number of advertisements (about one each, in fifteen papers), and properly headed letter paper, such as should be satisfactory to myself. It is needless to say, that, in spite of so much "red tape," this heavy machinery broke down, and little came of it all.

That little, however, was very explosive; it consisted of two threats—1st, To summons me before a magistrate; and 2nd, To take out a search warrant and place it in the hands of the police!*

If ever a valuable gift was maltreated, what must the reader now think of the luckless inventor of the Optical Illusions? First, after his gift being received, he has

* See Appendix C.

great difficulty in obtaining continuous acknowledgment of his name even in metropolitan papers. Second, his too frequent urging of his claim to be nominated the inventor is considered so intemperate that he is referred to lawyers. And, Third, just when he had settled down in despair of anything being done, the peace and quiet of his home is shipwrecked by cries of police! As a fiction all this would appear ridiculous enough; as actual occurrences they outrage even fictions.

From the 23rd December, 1862, to the 10th September, 1863, is a period of eight months and a half, during which time a northern metropolitan institution, as well as provincial institutions, were continuing the system complained of, a system which had never been met by any public denial. To avoid all cause of offence I had latterly kept my own counsel by remaining silent. Parties implicated kept equal silence at their own discretion. But on the 10th of September last, a panacea was tendered me by the gentleman acting as referee, in the form of the draft of a letter for me to write, which done, all hostilities would end, advertisements would follow, framed to my entire satisfaction, and my laurels would be insured to me safe from all the rubs and annoyances endured for so many months. What I had been repeatedly assured could *not* be avoided, owing to the perversity of clerks, agents, and licensees, was, by some strange act of legerdemain to be accomplished at once by my writing a humiliating apologetical letter, eating my words, re-

pudiating all my arguments, and shifting the blame from whence blame might possibly attach. It is true, I might have thus recanted like Galileo on a more important point, but the sugar-plum thus held out was a mere trap to draw me into a legal responsibility; and on *that* ground I kept the precious document, but never complied with it.

It will now be clear, that by no act of mine had I ever connived at the affiliation of my invention, but by repeated communications urged the necessity of being fully and fairly recognised. In a matter so often urged, yet so unaccountably neglected, it was difficult to avoid the suspicion that there was more method in this grudging and hard-earned acknowledgment, where obtained, than at first appeared. It therefore became a matter of remark, that even the Polytechnic Institution itself made a very lame attempt in its display of any desire to show how it delighted to honour the man, who (as stated by a good authority) had largely contributed to enabling the Institution, for the first time, to pay its proprietors a dividend of 10 per cent. On the 9th or 10th of September, the referee was pleased to inform me that the Institution had become alive to the small proportions to which I had been reduced in all their advertisements, but that no alteration could be made until the next Friday's board meeting. On the 15th of September, *The Times* did actually contain the first improved form of advertisement, conveying to the public at large the stupendous fact that, like most other Englishmen, I ab-

solutely possessed a christian as well as a surname! But does it not appear more like a foolish fancy than a fact, to state that I am now informed, that *that* advertisement, continued to the present time, and I presume, to be continued so long as "The Ghost" has any vitality left, was obtained in fraud! It was *not* an awakening to a sense that if I reaped no pecuniary profit, while my invention poured a rich harvest into their treasury, I was entitled to the small pittance of acknowledging me as the true author of the Optical Illusions and resulting Spectre Drama.

On the 28th of November, the referee* before named, wrote to me for the return of the draft letter of September the 10th, having previously made the same request. In this letter he says:—"I hereby formally demand of you to return to me through my son, who is the bearer of this, *the draft letter* I left with you on the evening of the 10th of September last, on your promise that when you saw your name properly mentioned in *The Times'* Polytechnic advertisement, you would write such letter to ———, and forward it to me. The alteration in this advertisement was made, but you did not fulfil your promise. Now, in making the present application for the return of this draft letter, I wish you distinctly to understand, that I shall not submit to any repetition of the shuffling treatment to which you have exposed me, throughout, in my capacity of referee."

* See Appendix C.

To say the least of such a course it was not a very prudent one. The letter in question is a most Jesuitical composition ; so great a curiosity deserves retention at any cost on my part, and, therefore, its return should have been sought by the most persuasive arts, rather than by naming " a police magistrate."

I have far from any desire to injure any party personally, but to a certain length I have been obliged to go in stating the facts of this absurd attempt made to sink me as the inventor, by in any way hoodwinking the public. When Milton sold the copyright of his immortal poem for about £10, Tonson, his publisher, had not the temerity to print "Tonson's Paradise Lost." And why therefore is the honour due to the author who invents an original poem, to be more respected than that due to the inventor of an original means of obtaining remarkable Optical Illusions ? The cases are precisely parallel in literature and in science, so far as regards the giving of honour solely to whom honour is due. No amount of fine printing, or illustrating, or annotation, or ornamental binding, has ever served to remove the honour of any literary composition to the shoulders of commentators, printers, engravers, or bookbinders. Anything more obvious is scarcely to be imagined ; so obvious indeed, that, I believe any infringement of such an obvious right would scarcely be dared to be attempted in literature ; and if attempted to be forced on some luckless author or publisher, the act would be received as such

an invidious distinction, that no efforts would be spared to make all possible reparation.

In my case no reparation has been attempted; no public disclaimer made. The consequence has been the occasioning of frequent verbal disputes to settle who is the real inventor of "The Ghost" Optical Apparatus. Great praise has been bestowed on the invention, but seldom as being mine; it has been wonderfully "improved and perfected" by somebody else! This has resulted from the falsified advertisements in various forms, against which my complaints, when made where they ought to have met with prompt attention, were generally warded off by vague promises, and always by assurances that no Lectures were anywhere given without due credit being awarded to me. In short it was no doubt hoped at first that *verbal* truths were of vital importance to me, while *typographical* misrepresentations were certain to benefit those whom they most concerned.

The very excellent periodical *Once a Week*, published on the 19th of September last, had a spiritedly written article on the popular subject of "Patent Ghosts." It affords an excellent evidence of the public estimation, at the time, of the authorship and progress of the invention; but those who feel curious in such investigations have only to examine the present narrative with the one there given to discover how completely even the most intelligent writers were misled by the conflicting statements then current, and which continue to be in circulation.

In dealing with a public company, it was natural to suppose that, in their extensive communications with inventors, they had systematised such a mode of conducting their printing of bills and placards and issuing of advertisements as would ensure their orders being implicitly obeyed, or if not, that they had at least some remedy against offending clerks, agents, and others; but in my case, had I been dealing with an utter novice I could not have been met with more assurances of determination to set all right, but at the same time carefully made aware that there were a great many difficulties in the way, of which I had no conception. Independent managers of theatres, who would have their own way; agents in the country, who were most unaccountably obtuse in their intellects; clerks, most provokingly negligent—it was quite worrying.

It is exceedingly unpleasant to have to detail so much personal matter. It would have been truly gratifying to have adopted one note of praise without a single dissonance; and the public, now first informed of the facts, and that so far from being the recipient of wealth, every effort has been industriously made to mystify my having any part or lot in my invention, will ask with surprise—But what could be the cause of all this?

Had I been abroad, ignorant of what was passing at home, my name by this time, might have been ignored in every advertisement in town, as at present it is whenever my invention travels into the provinces. For, as I

have stated, I have only been enabled to retain something like a moderate representation of my connection with the Optical Illusions through engaging in a voluminous correspondence, which I should have been most happy to have been spared. It has thus been my misfortune to suffer the general penalty of inventors; but in my case, I have felt the severity of that penalty the more acutely, from the insincerity practised towards me.

As already observed, the lawyers found it was not a case that came within their province. The referee utterly forgot his position as umpire; finding he had committed himself, he wrote a letter recommending me to be represented by my publisher; a piece of very gratuitous advice and dictation. That he should afterwards charge me with "shuffling treatment," is only a lively expression of his own sense of my want of confidence in any of his proposed measures. His position was a very anomalous one. He showed me licenses, with a bundle of my own letters, with all the parade of authority. But he produced no legal authority. He all but persuaded me I had committed a great mistake, that it was only a piratical set that was to blame, except in a trivial case or two consequent on the negligence of agents, and the too common desire of advertisers to make advertisements as pithy as possible, with as few names as possible. I ought (but did not) to have replied to this last forcible argument—"Then insert my name to the omission of other superfluous names, for I pay dear enough for such a small indulgence."

Some philosophers will have it that "man is the creature of circumstances;" I know some to be the subjects of strange accidents, thus:—1. My invention as first exhibited before a body of reporters, was *accidentally* reported without name. 2. For weeks together the handbills and placards of the Polytechnic *accidentally* omitted my name. 3. A letter was obtained from me as an authority to negotiate with Mr. Fechter, but it *accidentally* struck the possessor to have it legally stamped. 4. An advertisement was sent (at the end of six months) to show me that in Glasgow I was to be mentioned in the advertisements, but *accidentally* the other advertisements in Glasgow for three weeks were all falsified. 5. From Manchester an advertisement was sent to show that a falsified advertisement in that city had been corrected, but *accidentally* it was omitted to state that it had alongside of it a falsified advertisement, in consequence of a large order given and the *impossibility* of withdrawing it. 6. Among licenses shown me by the referee was one relating to Brighton, naming me solely in the matter, but at Brighton the advertisements *accidentally* vied in trying to outshine me by adding "improved and perfected by, &c. &c." Improved and perfected by another hand! 7. A northern metropolitan establishment issued the largest posting bills, announcing "———'s marvellous Optical Illusions," but it *accidentally* happened that neither law nor equity, and that no human skill could assail so bold an advertiser; nor any reparation be made

in any imaginable way whatever. Lawyers, referee, and no doubt private friends also were most anxious to bring the culprit to account for this strange outrage. Believe it who can!

But enough has been said on this topic; so to proceed I have to remark that the principal object of the present work will be to describe the scientific nature of my invention, and various modes of adapting it for exhibiting the Spectre Drama. So far as the public at present knows, the invention is supposed to be capable of producing sloping figures only—spectres reclining in the air like ladders against a wall. But such an adaptation of my invention, while it testifies to the principle, is quite eclipsed by the extraordinary power and effects of the original invention. What has hitherto been made public is but forestalling, without fully exhibiting, the truly magical effects within the range of this invention. It becomes, therefore, requisite to be the more particular in discussing each separate part at large.

The invention, as originally published, was placed before the British Association in 1858 in a purely scientific and not in a popular point of view; hence arose the necessary omission of many applications well known at that time, and which, had it been exhibited early, would have been gladly supplied. My recent overtures to the Polytechnic were passed over with indifference, probably in consequence of seeing no immediate occasion to dip deeper than the surface, so long as superficial illustra-

tions drew large and eager audiences. A sloping or inclined mirror is consequently, as an invention, one in the inverse ratio of improvements; it is improving backwards (if there can be said to be such a process), and not one of progress or a move forwards. It may be said, to simplify the idea of the more elaborate, original invention, being something like the gamut as compared to an oratorio; it is a sketch as compared to a finished painting; it is the child's effort at drawing, where all is out of perspective, as compared to the polished productions of the well educated adult, in whose productions nature and art are in happy combination. The patent is the outside and ornamental lettered binding of an original work; it is the original invention curtailed of its fair proportions. The patent adds nothing to the original invention, besides the power of rendering the spectres "cabined, cribbed, confined," with the necessity of placing them on a railway to effect locomotion.

The rapid and extensive introduction of my invention is well exemplified by the following occurrence:—A gentleman connected with a large institution, calling at the Thames Plate Glass Company, was met at once, before naming the object of his visit, with the observation:—"Its no use your coming to us, we cannot supply you." "What do you mean?" enquired the unconscious customer, adding, "I only want some large plate glass." To which business-like reply he received the ready rejoinder:—"Well, Sir, I knew it the moment you entered.

It's 'The Ghost,' and we are quite out of large plates ; it is true you see three, which we are now packing, but they are ordered for Belgium ; we have, however, written to several of our agents, and may shortly be able to supply orders."

An invention of so large a scale being expensive to adopt, could have no success unless it captivated the public mind. And in this respect, considering its imperfections to the present time of its exhibition, "The Ghost" has never failed to draw crowded, admiring audiences. It was the absolute realization of all that ever had been dreamt, or ever had occupied frenzied fancies, or formed the staple conceits of dramatists and romancers.

Having thus thrown together a few general remarks in relation to my invention, the character of the present work, and the difficulties I have had to encounter from the neglects and short-comings of those into whose hands I had entrusted my invention ;—who in reality (without meaning anything in the slightest way invidious by such a remark) were to all intents and purposes but my agents, viewed simply in a business point of view, whose services to assist me in giving publicity to my invention I paid for at the rate of cent per cent of the profits ! I shall close these prefatory statements by observing, that, contrary to all expectation, I have been compelled to advocate my case in this matter as affecting right to invention, a right but little, if at all understood, even by very intelligent manufacturers and practical men generally.

In reference to the success of "The Ghost"—a few notices may not be out of place here :—

At the Polytechnic Institution, where first exhibited on a large scale in December, 1862, there was a steady increase of attendance week after week. At first they occurred on the mornings and evenings of three days a week, afterwards increasing to daily exhibitions.

At the Britannia Theatre, Hoxton, was the first dramatic exhibition in a play written for the purpose, called "The Widow and Orphans;" and continued for other pieces. The Spectre Drama there exhibited, commencing in April, continues to be performed. On its first appearance an amusing article appeared in *All the Year Round*, June 27, 1863, entitled—"Haunted Hoxton." Also in the monthly number of *Temple Bar*, for July.

The Adelphi Theatre followed in June with "The Haunted Man and the Ghosts' Bargain." The newspapers reported of the drama, "It was never really a success, and *without its new attraction it certainly would not now (June) hold the stage for a single week.*" And so it proved, for it was long continued, although in 1848, it had met with but an indifferent reception.

At the Théâtre du Châtelet, Paris, it was adopted in a new piece, in July.

In New York, August 6, we are informed by the newspapers,—"The 'Ghost' was produced at Wallack's Theatre; it had a great success, and has taken the shine out of the American Twenty-seventh street Ghost."

In August and September it was exhibited at the Free Trade Hall, Manchester, to crowded audiences, during three weeks.

During the same months also at the Merchants' Hall, Glasgow, for three weeks.

In September, it was adopted at the Crystal Palace, with remarkable success in numerous daily performances.

At Drury Lane, in Lord Byron's choral tragedy of "Manfred," in November and December.

Other large and numerous minor places of public entertainment at home and abroad speedily adopted "The Ghost" as a necessary novelty to attract audiences.

The press, ever alive to giving notices of whatever attracts public attention, was loud in welcoming the new scientific sensational entertainments.

All the weekly papers in December, 1862, and January, 1863, reported the optical discovery of phantoms on the stage, which, if anything, appeared but too real; submitting to all the most skilful cuts and stabs made by experienced swordsmen, laughing in scornful derision at the bloodless deed. Illustrations followed in the form of large wood engravings in the *Illustrated London News*, May 2, *Penny Illustrated Paper*, February 7, and May 16, and *Illustrated Sporting News*, July 18. In the *Comic News* September 26, is a large and most spirited, laughable caricature of the Adelphi Ghost, who orders a coachman to drive to "Kensal Green" (cemetery). And lastly, in prints of Ballads for the Million, appeared ori-

ginal songs referring to the "Patent Ghost:" They boast no poetic vein beyond such lines as—

At Music Halls, Theatres too,
 This "Patent Ghost" they show,
 The Goblin novelty to view,
 Some thousands nightly go;
 For such a sight they gladly pay,
 In order just to boast,
 To all their "country cousins"—they—
 Have seen a perfect Ghost.

Of illustrious visitors to these exhibitions, principally attracted by the astonishing and daily increasing reports of the strange results produced by my Optical Illusions practically illustrated, I have especially to notice an exhibition at the Polytechnic before their Royal Highnesses the Prince and Princess of Wales, &c. &c., in August; and since before Her Majesty and the Royal Household, at Windsor.

In conclusion, the Author would respectfully beg to direct attention to the Appendix marked A, B, C, D, containing matter concerning Correspondence, the Patent, the Referee, and the Polytechnic—all of slight interest to ordinary readers; but that on the Patent useful to inventors who may happen to find in this Preface any shade of a case like their own; and all the rest of the Appendix of special importance to be perused by those whose desire it is to acquire full evidence of the very awkward, unpleasant, and difficult, as well as delicate, situation into which the Author has been plunged by no blameworthy acts of his own.

THE
DIRCKSIAN PHANTASMAGORIA.

CHAPTER I.

**PRELIMINARY REMARKS ON SPECTRAL ILLUSIONS, AND THE
CHARACTER OF PHANTASMAGORIAL ARRANGEMENTS, IN-
CLUDING THE PROGRESS OF THE PRESENT INVENTION.**

EVERY country has its spectre legends. Sometimes the spectral visitants are local, with but an apocryphal history attached to them; at others they are the assured signs of some seat of crime; at others, again, they are personal, and haunt the spectre-smitten. Many ancient authors have delighted in collecting all the fictions and fancies relating to these apparitions for the especial delight of the nervous; and there are not a few sober minded religious people who peruse these mental marvels with a certain degree of awe and veneration. They admit the existence of many wicked tricks practised by designing persons, nay, are even inclined to believe that other writers, like Defoe, could invent very credible ghosts, and that many of the older mys-

teries originated in sheer superstition, yet have they a strong yearning to put faith in the great possible fact that such things may be, priding themselves on the elasticity of their own weakness.

It would be a matter of long and learned enquiry to enter upon the philosophy of apparitions, and prove to be one far more interesting to the medical profession than to the mass of readers, to whom it would be rather difficult to popularise the tracing of such marvels to disordered states of the bodily organs. The visual nerve plays a large part in the generality of this class of delusions, as often leading the patient to make many proselytes among sounder persons, and so aiding the contagious belief. The designing, ever ready to practise on the weak and superstitious, have at different times in different ages obtained unenviable notoriety by their familiar intercourse with the invisible world of spirits—hence a system of demonology, of wizards and witchcraft, of fawns, faries, elves, and imps, bearing as many characters as wild and barbarous fancies could contrive. In merry England of the olden time we hear of Robin Goodfellow; among the sober Scots, of Brownie; and in Ireland, the no less celebrated Banshee. Encouraged by ignorance, aided by its constant adherent superstition, mysticism became an art in which the first feeble efforts to penetrate the secrets of nature gave the wise men of early times a wonderful ascendancy over their weaker brethren, particularly in the sixteenth and seventeenth

centuries, in the golden days of alchemy—the twilight of chemical science.

Perhaps it would be a safe prediction, that the belief in ghosts will never die. There will always remain a sufficient number of a certain good, easy, simple-minded class of the community ready and willing recipients of any news from the spirit-world ; and so long as the most feeble tie to this belief shall exist, so long will the public mind feel an interest in attempts to place before them the real, or the nearest approach to the embodiment of their earliest fancies derived from ghost stories.

Dr. Hibbert volunteered the statement that—“The age of ghosts and hobgoblins is gone,” but he was greatly in error.

Among reputable as well as popular works on this subject, Sir Walter Scott has done good service by his “Letters on Demonology and Witchcraft ;” and so likewise has Sir David Brewster, by his “Letters on Natural Magic.” Also in the “Diary of a late Physician,” by Samuel Warren, Esq., two or three chapters of interesting matter occur.

According to most ancient traditions there was an order of men specially denominated Magicians, who had the power of raising any spirit they desired, prince or peasant ; all obeyed their spells as they moved their magic wand within the precincts of a magic circle chalked on the floor. They are generally represented as exceedingly old men, with wrinkled faces, long beards, flowing

garments, and cap and girdle bedizened with mystical symbols. As seen in their chambers they were generally surrounded with all the paraphernalia of an alchemist's laboratory, enriched with stuffed salamanders or crocodiles, bats, and other monsters. A visit to such men, in such unearthly chambers, must have had a terribly freezing effect on the effeminate and the ignorant. A small amount of science and a large amount of charlatanry effected wonders two hundred years ago. But although the mysteries have lost their pristine influence, and the dupes belong to a less dignified class of humanity, and these magicians or astrologers no longer awe society, they still exist by the tricks and practices of their pretended occult art.

An eminent writer of the present day is well known to possess a very large collection of works, the writings of astrological and other mystical writers. That he must have read and studied the most prominent authors in each department of magic his writings prove, and other known circumstances will establish. So that it is not to the ignorant alone we are to look as the patrons of superstition.

Spirit-rapping is but another phase of the old superstition—love of the marvellous, and a strong inkling to rend the veil that interposes between the obvious present and the dark mysterious future.

If the belief in these matters is really only deserving of being denounced as the result of a weak or ill-informed

intellect, then nothing can better serve to scare these birds of evil omen than bringing to bear on them the effulgent light of science. Certain we are that implicit belief lends terror to every shadow, and has a tendency more or less to disturb the intellect.

In all cases relating to these mysteries an appeal has necessarily to be made, first to the visual effects, and next to the mental impression. We first see and then exercise our mental faculties. In forming our judgments we bring to bear on the subject all our experience, reading, study, and power of investigation. If the offered mystery has its equal in some jugglery we have seen, then doubt steps in ; or, if we have seen a scientific exposition closely allied to alleged mystery, doubt again interposes ; and so on, step by step, we compare the unknown subject with what is known bearing any collateral quality.

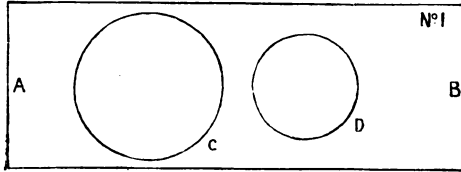
Optical science must be as old as the creation of man. The aquatic mirror, the starry firmament, and the united glories of day and night would early call forth wonder and meditation. Science so aged in its antiquity, as one may say, is to all appearance exhausted. People do not now crowd to see a telescope as they did on its first appearance. Children in our day know more about optics than some very clever men even 100 years ago. Thus worn out and threadbare, it is a matter of astonishment when any novelty appears. A marine telescope, by means of which to discover whatever is passing in

ocean's vast profound, its monsters, its unseen shells, minerals, marine products, and the sunken treasures of merchants, pirates, and mighty armaments, would indeed draw multitudes to cross the mighty deep despite its perils. But such wonders are not expected, and people are not prepared to be startled by any modern novelty in optics. Besides, when once out, it proves so easy—a bit of metal—a bit of glass—what is it? Now, as there are two things everybody likes, because nobody believes it can affect him or her, is, either to be *frightened*, or to be *puzzled*. One would think nothing could go beyond a "Ghost" in the one; and therefore we will resort to the other, as Columbus did to the egg, to *puzzle* the reader. As optics are so familiar to all, through popular lectures, popular books, and scientific soirees, the author may fail to puzzle either young or old by now giving an unpublished account of his invention, which he calls

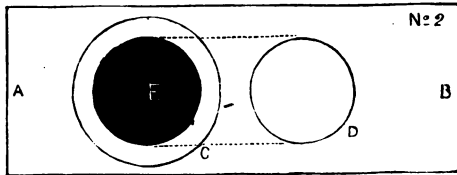
A CURIOUS OPTICAL PARADOX.

He does not restrict the experimentalist to the extent of surface called a *plane*; but, as every one knows the size of letter wafers, he recommends nothing, larger or thicker to be used; therefore let the annexed diagrams, Nos. 1 and 2, represent one perfect plane—that is, an entirely flat level surface. Provide two round discs, one larger than the other, which lay side by side; they may be wafers, paper, or wax, as represented in the annexed diagrams.

No. 1, A, B, a solid plane, on which lie, say, two wafers,



C, D. In No. 2, the same letters represent the same parts,



with the addition of a black disc, E, of corresponding size with D, being, in fact, the shadow of D.

By what means can the shadow, E, of the lesser disc, D, be thrown on to the centre of the larger disc, C?

Every reader will in this enlightened age see how to perform so simple a feat, and the inventor of the great Phantasmagorian Apparatus at the Polytechnic Institution will be told that, if he considers *that* a paradox, he must go to school again!

But suppose that not only every schoolboy fails to project the shadow of one flat wafer right on to the centre of another flat wafer lying on the same plane, precisely as represented in the diagram, visible at any point of view, then perhaps it may be the author's turn to laugh. This he will chance. And yet how odd it would be if some good astronomer, conversant with the stars, millions of

miles off, should this present Christmas, by the especial request of his boys, not long returned from Eton, be solicited—"Pray, do, Pa, unriddle for us this very easy puzzle." How pleasant if he should answer—"My dears, there are certain laws in nature which we cannot either evade or invade, and the puzzle in this case is—its impossibility." I should say in that case that the stars had taken precedence of the science of sciography. In fact, the astronomer, if capable of delivering himself of such a dictum, would be very like the learned traveller, who, though he had mapped out the face of the world, was yet lost in a very inconsiderable forest.

The materials employed in optics are few—after glass, fluids, and light, all the rest is mere metal and framework. Is it not amazing what marvels philosophical skill can bring out of a few elementary principles, enabling us almost to visit the planets, to investigate an unseen world of animated nature, to produce the most brilliant colours where no colour appears, to dispel darkness, and to give increased sight to all but the blind! And yet so old, so aged, without being quite rifled of all its rich stores—nor, indeed, ever likely to be by the utmost ingenuity, skill, and wisdom of man.

In spectral illusions, no science affords greater facilities for examining its phenomena than optics. The most imperfect knowledge of catoptrics must have been of infinite advantage to the magi of old in deluding the

mass of mankind. The introduction of glass rapidly improved the science, by the wonderful aid it afforded in forming a variety of optical instruments. Without pretending to trace these improvements through their various ramifications, it will suffice for the object of the present chapter to proceed at once to the consideration of an early published optical illusion, which many have hastily considered to be the forerunner of my discovery, if not the very same thing.

Baptista Porta in his "Natural Magic," first published in 1558, and translated into English in 1658, has, in Book 17, Chapter XII., described

"HOW WE MAY SEE IN A CHAMBER THINGS THAT ARE NOT.

"I thought this an artifice not to be despised; for we may in any chamber, if a man look in, see those things which were never there; and there is no man so witty that will think he is mistaken; wherefore, to describe the matter, let there be a chamber whereinto no other light comes unless by the door or window where the spectator looks in; let the whole window or part of it be of glass, as we used so to do to keep out the cold, but let one part be polished, and there may be a looking-glass on both sides, whence the spectator must look in; for the rest do nothing. Let pictures be set over against this window, marble statues, and such like; for what is without will seem within, and what is behind the spectator's back he will think to be in the middle of the house, as far from the glass inward as they stand from it outwardly, and so clearly and certainly that he would think he sees nothing but truth. But, lest the skill should be known, let the part be made so where the ornament is, that the spectator may not see it, as above his head, that a pavement may not come between above his head; and if an

ingenious man do this, it is impossible that he should suppose that he is deceived."

On this extract I would remark, that we have here an empty chamber with a person looking in at the window, who is represented to see in the chamber "pictures," "marble statues and such like," previously placed on a kind of platform or "pavement," "above his head." In fact, any modern plate-glass shop window in which the spectator may be looking and observes the reflection of the houses or passengers behind, is nearly in the situation described by Porta. This is one interpretation, but he says, "and there may be a looking-glass on both sides," that is, two looking-glasses, which is no unfair construction of the true reading.

The extract is curious and interesting so far as it goes, but to presume that it anticipates my invention shows a singular incapacity for distinguishing scientific facts. If such a notice were really considered to possess any value, I would just put it to the consideration of any impartial person to distinguish between the window looking-glass named by Porta and the window looking-glass of the 305 years since he wrote. In Porta's day, when a window had to be described as "of glass, as we used to do to keep out the cold," and is obliged to desire the operator to let "one part be polished, that there may be a looking-glass on both sides," it is evident that the most minute fact occurring in the early use of such

“polished glass” windows would be noteworthy with a scientific observer.

The “transparent mirror” of my own invention above twenty years ago never appeared to me as of any practical value until some seven years back, and in principle it was most likely very nearly allied to that of Porta’s. But to say that Porta’s observations, or even my own early invented mirror, had it been published, agree in design with the phantasmagoria of my invention, would only be a display of exceedingly weak discriminatory power in forming a judgment between inventions generally.

My invention is *not* one for raising a spectral appearance at a distance, or shut up in a chamber, as a mere phantom to be gazed at in its solitary cell. By means of concave mirrors, by magic lanterns, and by the phantasmagoria as early as 1802, these solitary, inaccessible spectres could be set on a stage for public gaze.

But what comparison is there between such spectral effects and spectres that can be made to appear to act, play, fence, fight, fire, and associate and act in concert with any living actor or actors, on the same stage? Why did not Porta think of this 300 years ago? How came I to miss it above twenty-five years back? Why, for the simple reason that such an idea never struck either of us at those earlier periods; and that of the millions of persons who have seen Porta’s window spectres no one but myself ever hit upon the idea of associating a substance with a shadow possessing all the external characteristics of

a corporeal being. In this consists the gist of my invention, as I shall presently explain more at large.

Before the publication of my invention in 1858, I had conversations with several eminent theoretical, as well as with some excellent practical, opticians, principally with a view, as I stated, to correct my own estimate of my discovery. Optical science affords but limited scope for introducing a decided novelty, and I was in consequence quite prepared for the scepticism I created. One gentleman, surrounded in his study with exquisitely executed microscopes, varieties of telescopes, and numerous lesser optical instruments, after a patient hearing of the wonders I proposed to execute, recapitulated a brief history of all that had been done to the best of his knowledge. He specially noticed concave mirrors; also some costly but curious contrivances which produced phantoms something analogous, as he then thought, though the figures were rarely of more than three feet high. When I replied that by my arrangement of apparatus I was not limited to six feet in height, and that too without incurring any extraordinary expenditure, he appeared to be at once satisfied that the whole affair was either a great mistake, or a still greater discovery. Such was the result of a conversation I had early in 1858, with Dr. Bachhoffner, at the Colysseum.

Persuaded by my own early knowledge of optical science, together with the results of more recent investigation, and fortified by the opinions obtained through

verbal communications in various quarters, I felt justified in considering the originality of my phantasmagoria pretty well established. But to test it still further I determined on communicating the account of its construction and properties to the British Association, and a small model, as already mentioned, which I placed on the table, was afterward forwarded to Sir David Brewster.

As early as 1834 I had been concerned in the use of the oxyhydrogen and the electric light. I had in my capacity of honorary secretary to scientific institutions given courses of from three to twelve lectures on electricity and on chemistry; and more recently had seen the lime-light used for public lighting purposes. Every scientific man knows that the term "strong light" means a light of some one of the descriptions mentioned; and we are not to suppose that the omission of naming any of these in Sir David Brewster's "Letters on Natural Magic," is any more evidence of his want of a knowledge of such "strong lights," than a like omission in the following chapter proves anything against the author's want of acquaintance with the lime and other lights.

CHAPTER II.

THE ORIGINAL COMMUNICATION MADE TO THE BRITISH ASSOCIATION, AT THEIR MEETING IN LEEDS, SEPTEMBER 1858, IN A PAPER "ON AN APPARATUS FOR EXHIBITING OPTICAL ILLUSIONS, ILLUSTRATING SPECTRAL PHENOMENA."

AMONG the happy results of modern discoveries we may particularly notice the different use made of whatever appertains to the wonderful, as compared to the employment which the same would have been subject to in superstitious ages. Our natural magic makes no pretension to an occult science, but on the contrary tends to dissipate many vulgar errors, by disabusing the public mind, even on matters long considered supernatural. Concave mirrors, magic lanterns, phantasmagoria, and similar optical instruments, afford ample illustration of the happy tendency of modern investigation over the once degrading employment of superior knowledge only to impose on rather than enlighten the ignorant. In his excellent "Letters on Natural Magic," Sir David Brewster casually observes that :—"The concave mirror is the staple instrument of the magician's cabinet, and must always perform a principal part in all optical combinations." But why he should thus predict that concave mirrors "must always perform a principal part in optical

illusions," is by no means very apparent, and particularly as he directs attention in the same letters to a serious obstacle in their use, remarking that the apparition may be from an illuminated "plaster cast of any object made as white as possible, and placed in an inverted position," adding "the difficulty of placing a living person in an inverted position as an object has, no doubt, prevented the optical conjuror from availing himself of so admirable a resource; but this difficulty (he suggests) may be removed by employing a second concave mirror." Having thus called attention to this best and "staple instrument of the magician's cabinet," notwithstanding the limited use of such concave mirrors, the same writer proceeds to discuss certain deceptions practised with "plane mirrors," requiring the objects to be brightly illuminated and the apartment to be as dark as possible. Of these he says:—"Whatever precautions are taken, and however skillfully plane mirrors are combined, it is not easy to produce with them any very successful illusions." (P. 61, edition 1834.)

I shall now proceed to describe the phantasmagorial* apparatus of my invention for exhibiting optical illusions of a varied character hitherto unknown, except as inventions of romantic fiction, or as the result of some

* The manufacturing philosophical instrument makers having adopted this term in connection with my own name, calling the model apparatus THE DIRCKSIAN PHANTASMAGORIA, I have thought it prudent to reproduce the same designation in my title page.

unhappy derangement of the optic nerve. The author just quoted has judiciously remarked that, "although it is not probable that we shall ever be able to understand the actual manner in which a person of sound mind beholds spectral apparitions in the broad light of day, yet we may arrive at such a degree of knowledge on the subject as to satisfy rational curiosity, and to strip the phenomena of every attribute of the marvellous." I cannot say of the work in question, that the many ingenious illustrations given as the result of natural phenomena or scientific combinations, lead to the anticipated result; for, in every instance adduced, the aerial or spectral figures are but isolated visions, or, when produced artificially, are of very limited application.

Now, the peculiar features of the optical arrangements I introduce may be thus stated: Two or more figures, for example, appear on a stage, and the spectators view them as two living actors, in all respects the one as well defined and obviously round and life-like as the other, yet one shall be a material and the other only a visionary actor—results obtained in a manner by no means in accordance with the before-named views expressed by Sir David Brewster. We may suppose a theatre or apartment arranged as customary when required for dioramic exhibitions, a stage being provided, and the spectators placed in a distant, darkened, and elevated portion of the building. The spectators thus situated may, for example, see on an illuminated stage, two or more figures,

but without being aware that one or more of them bears a visionary character. The peculiarity of this mode of exhibiting spectral appearances, it will be observed, consists in thus associating a living or solid figure with a merely visionary one, and yet the illusion is so well sustained that the spectator distinguishes no visible difference between the several actors, when properly managed, until the circumstances of the dramatic scene require the visionary figure to fade away, or pass through the furniture and walls of the apartment, or play any similar spectral part.

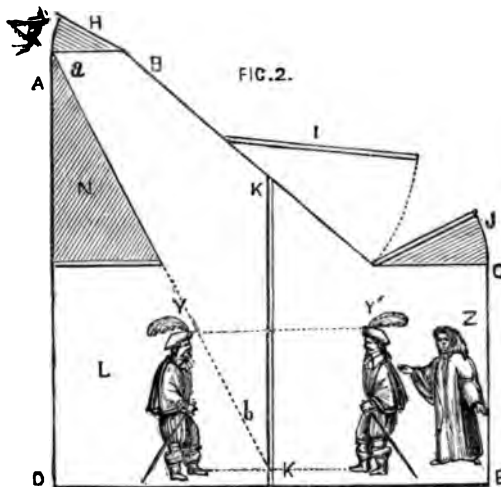
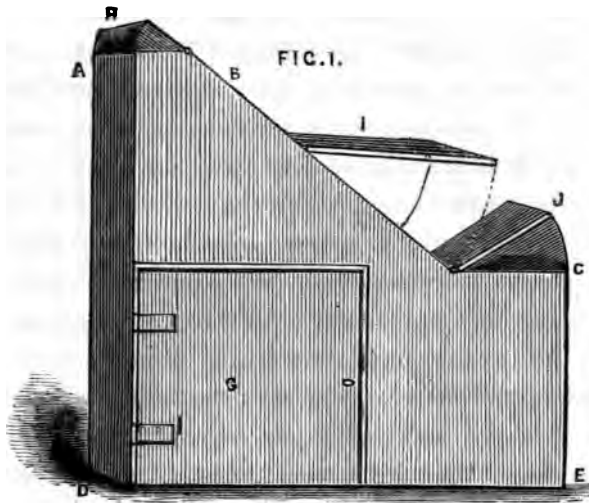
It is more than twenty years since I first invented a plane mirror of unsilvered glass, but finding no practical utility in the contrivance, it was laid aside. It happened, however, that within the last two years I accidentally observed a solid body in a peculiar situation, by which it was apparently rendered transparent. It was, in short, an effect illustrated by my plain unsilvered glass mirror in its principle. I immediately saw that, by means of this combination, the singular appearance could be produced of getting behind a mirror and communicating with its shadows. Here, then, a means was at once at hand for producing the best possible illustrations of all descriptions of spectral phenomena. For this purpose I arrange an oblong chamber into two equal portions, making the separation between the two by means of one vertical screen of thin glass having a perfectly true surface. We may suppose each chamber to measure

12 ft. square and 12 ft. high. Now let one of these be the stage on which the acting is to take place ; its floor and three of its walls are solid, and the fourth or front of it is one entire glass screen ; the ceiling must be made to open at different parts to let in light, and have suitable blinds to regulate the light and shade in which the actors perform. The chamber opposite, or facing the actors, is in reality a second stage for carrying out the spectral performances, and is differently constructed ; the two sides may be large folding or sliding doors, or may be left quite open, or one side closed and the other open ; but the ceiling must cover only that half of the top away from the glass screen or partition, thus leaving an open space in the ceiling of 6 ft. by 12 ft. ; through this space so left in the ceiling the spectators obtain a full view of the stage, their seats being above the half ceiling described, and thrown rather backwards than forwards ; the line of vision thus being at an angle of about 45 deg. with respect to the vertical glass screen, or plane unsilvered crystal mirror. It will now be obvious that the actor on the stage beneath the seats of the spectators can only be seen by reflection, and the trained actor on the opposite stage, knowing the precise situations of the reflection as seen by the spectators, performs accordingly, so that, when really seeming to stand confronting the vision, the actor, whose reflection is thus seen as a vision, is as far from the screen on one side as his reflection is cast on the other.

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Some striking effects may be produced illustrative of the illusive properties of optical apparatus constructed on the principle described. Thus, *a figure placed before a white screen* is so strongly reflected, that the spectator cannot divest his mind of their being the substance and not the shadow which he observes, particularly as he contrasts them with an adjacent solid figure. By placing *two figures of corresponding form* equi-distant, one on each side of the glass mirror or screen, they appear as one, until one is moved; and if they differ in colour, as one blue and one white, the effect seems more remarkable. If *a cabinet, box, or the like*, is placed, one on each side of the mirror, until the image of one exactly corresponds with the material figure of the other, then the spectator may see the visionary figure open a drawer or door, and remove and replace anything therein, and afterwards the solid figure repeat the same acts. If the reflection of an actor is thrown on a transparent screen it is invisible, but by gradually decreasing the light the spectral appearance will be as gradually developed until apparently it becomes a firm solid figure in all its proper costume, and acting in perfect conformity to its designed character.

The arrangement of the apparatus will be understood by reference to the annexed engravings, in which—



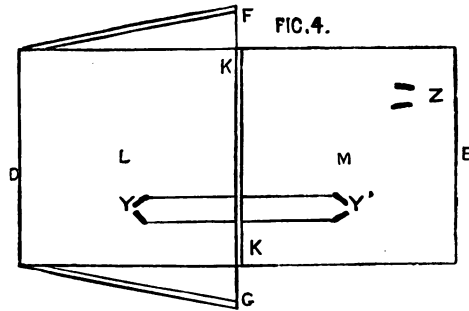
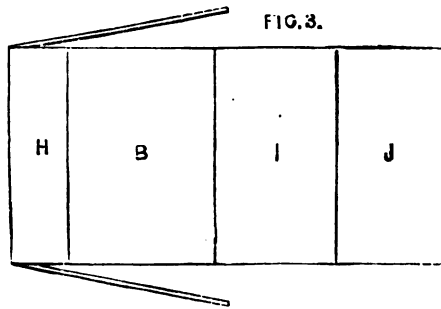


Figure 1, is an external perspective view.

„ 2, a vertical section.

„ 3, a top, or bird's eye view. And

„ 4, a plan.

A, B, C, D, E, is a box, closed on all sides, but provided at D, with

F, one door, and on the other side with

G, another door, both hinged to the back A, D.

H, I, J, flapped openings on the top of the box,

K, K, a partition dividing the interior of the box, made

of a good, clear, and even surface of thin patent plate glass, kept in its place within two side grooves.

L, M, two separate chambers or compartments produced by K, K, the transparent mirror.

N, a ceiling or screen over the compartment L, to exclude any object therein from the direct view of the operator, as shown by the dotted line *a, b*.

If two figures be now introduced, one Y; the other Z, and the eye of the spectator be fixed at A, he will observe two images, one the real figure Z, the other Y¹, the mere reflection of Y. By this arrangement it is evident that the plain, unsilvered glass, thus viewed at an angle of about 45° has all the properties of a mirror, but owing to its transparency two figures are seen, possessing little or no distinguishable difference between them. Of course a person placed at Z, sees only the figure Y, but, as a piece of acting may, under proper arrangements of a suitable stage, approach the situation apparently occupied by Y¹, and thus indicate to a spectator placed at A, any pre-arranged dramatic scene, requiring Z to be in correspondence with the visionary figure Y¹.

In using the apparatus the flap H must be open, but I, may be shut, being mostly useful to get admission for inserting or withdrawing the screen or the figures; the flap J, may be closed or opened to regulate the admission or exclusion of light. The doors F, G, may both be wide open, though one is generally sufficient, provided it is turned as direct as possible to the light. A mirror

placed at an angle close to the opening F, or G, will assist the illusion by illuminating the figure Y, thus heightening the effect of the reflection Y'.

If two geometrically proportionate figures, as spheres, cubes, or the like, be placed in the situations Y, Y', then the image at Y' will be a vision and a substance combined, as will at once appear by slightly moving the substantial body in either compartment L, or M. Let the duplicate figure be a box, and then the spectator might observe the apparent anomaly of the same box being opened and a substance taken from it and replaced either by a substantial or visionary actor. When the compartment M, is lighted up no vision appears, but the light being made gradually to fade and disappear, the vision would seem life-like, as at first. As it is evident that the right hand of the vision is the left hand of the actor in the compartment L, all his acts requiring the right would have to be performed with the left hand, to appear natural to the spectator. It is also requisite for ensuring a good effect, that no solid figure in the compartment M, shall come before or behind the visionary image, as its transparency would at once become evident; but if anything of the kind is desired, then the background, figure, or object, should be placed behind the actor Y, and become with him also visionary; in this way a *white screen* placed behind the actor Y, will allow his shadow to appear on it and give great force and solidity to his reflected figure or vision at Y'.

OBSERVATIONS ON THE PRECEDING.

Had the foregoing memoir been written for any other than the purpose specified, it would have worn a more general and popular character. In a communication addressed only to scientific men it is unnecessary to enter upon elementary matter or exceedingly minute details. When I state that from first to last I had spent in experiments, various models, drawings, printing, advertising, travelling, and incidental expenses, nearly one hundred pounds, it will be readily understood that the foregoing communication must have been considerably curtailed as compared with what it would have assumed had I given it in any other than its condensed form.

I purpose adding here such additional remarks as refer to the same period of time, and rather as a commentary on than the supplying of any new matter.

I frequently quoted that first of all modern authorities, Sir David Brewster, from his "Letters on Natural Magic, addressed to Sir Walter Scott, Bart.," London, 1833, 12mo, and I shall now have again to appeal to him as an authority. In small models of my apparatus, standing on a basis of from two feet by one foot, or one foot by six inches, or less in proportion, a very moderate amount of light suffices, as that from a candle, gas, or the sun; and for such purposes, the more moderate the light the more visionary will the object appear. But in proportion with an increase of surface so must we in-

crease the intensity of the light, such as the galvanic, the oxyhydrogen, or the lime light. This effect of light is one of those elementary principles it is obviously unnecessary to urge, but to non-scientific readers it may still be useful to press upon their attention the necessity of its use. Indeed, Sir David Brewster, with his wonted attention to minutiae of detail, when describing the "magician's mirror," observes:—"The effect of this and every similar deception is greatly increased when the persons are illuminated with a *strong light*, and the rest of the apartment as dark as possible."

Having thus pointed out the necessity of the most brilliant possible light for large objects, as the human figure, statuary, &c., it may be well to notice that the interior of all model apparatus should be painted in distemper, or "flatted," using lamp-black; or, which is better, lined with black cotton velvet. On a large scale, black cloth or velvet should principally be used, although dark green baize, or even calico, might be largely substituted. Nothing varnished, glazed, or glossy should be employed on either of the stages in covering the sides of the apartments. A certain amount of gas-light is required to be thrown on the actors from above, or over the mirror or elsewhere, so as to cast a moderated soft light. That part of the stage selected for the presence of the spectre should be free from furniture, as chairs, tables, picture-frames, &c., unless it is desirable to show that those objects can be seen through the spectre. The best results are ob-

tained by bringing to bear on the spectral figure all the characteristics of an actual human being, and then causing their disappearance by means of such a well-regulated light that its gradually closing screen causes the spectre slowly to dissolve into the appearance of a thin vapour. This part alone, well managed, leaves an audience in breathless astonishment, so striking and so marvellous is the transition from the apparent robustness, vigour, and tangibility of life to untangible air.

In noticing that application of the magic lantern called phantasmagoria, Sir David Brewster says :—

“ Superior as the representations of the phantasmagoria are to those of the magic lantern, they are still liable to the defect which we have mentioned, namely, the necessary imperfection of the minute transparent figures when magnified. This defect cannot be remedied by employing the most skilful artists. Even Michael Angelo would have failed in executing a figure an inch long with transparent varnishes, when all its imperfections were to be magnified. In order, therefore, to perfect the art of representing phantasms, the objects must be living ones; and in place of chalky, ill-drawn figures, mimicking humanity by the most absurd gesticulations, we shall have phantasms of the most perfect delineation, clothed in real drapery, and displaying all the movements of life. The apparatus by which such objects may be used may be called the catadioptrical phantasmagoria, as it operates both by reflexion and refraction.”—
Page 85. (1833).

The effect here mentioned it is proposed to obtain by a combination of mirrors and lenses; and in an engraving these are represented by a man placed before an inclined concave mirror of ten or twelve feet diameter,

with a lesser inverted figure of himself over his head, which again has to be thrown on a large lens, to be thence enlarged on an adjoining screen. This statement will suffice to show how surprisingly my method simplifies any such expensive arrangements. He concludes his observations with his usual care to point out the necessity of *strong light*, observing, "In order to give full effect to the phantasms, the living objects require to be illuminated in *the strongest manner*, and should always be dressed either in white or in very luminous colours; and in order to give them relief, a black cloth should be stretched at some distance behind them." After this it will scarcely be presumed to assert that either Sir David Brewster or myself ever contemplated, or ever had the most remote idea of, employing a lime light for phantasmagoria.

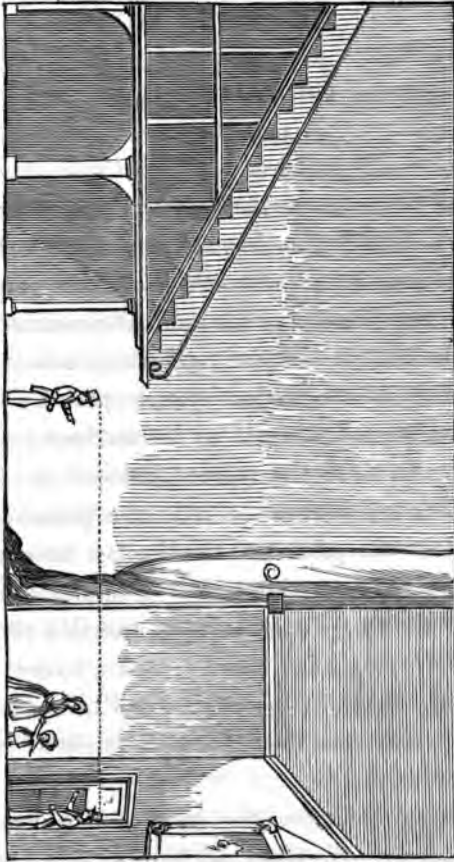
The last caution here given deserves my especial notice in this place, as it distinguishes that as a *necessity* which I can do without in my phantasmagoria. And although at first it may appear simple from the ease with which it is effected, yet I am warranted in saying that I am the first inventor in optical science who has ever shewn a phantom or spectre opposed to and throwing its shadow ON A WHITE SCREEN.

It appears, from a statement made by the same authority, that—"The art of forming aerial representations was a great desideratum among the opticians of the seventeenth century. Vitellio and others had made

many unsuccessful attempts to produce such images." And, adding a quotation from Lord Bacon, it is evident that wonderful man was all but the inventor of some such instrument, so near do his theoretical observations approach the realization of a fact. With his foot, however, on the very threshold, he drew back.

A very few words will suffice to explain one mode of adapting my original design to the purposes of a Theatre, with internal arrangements, fitted up expressly for the purpose. It will be seen by the annexed engraving that the plan is very much like an ordinary Theatre, but without the pit, or, is in fact, all boxes and gallery. Each spectator is sufficiently distant and elevated to see the entire screen from its base upwards; while beneath the lower tier of boxes is occupied with offices, apartments, and the spectre stage, or that on which the actors themselves are invisible, while their figure and acting are only observable by reflection. The acting stage with its mirror and other appointments is in all respects similar to the model phantasmagoria.*

* Model apparatus, manufactured by the well known Opticians and Philosophical Instrument Makers, Messrs. Horne and Thornthwaite, Newgate Street, City, are sold by them at very moderate prices.



CHAPTER III.

THE PATENTED AND OTHER ARRANGEMENTS OF THE PHANTASMAGORIA.

WITH the exception of the second chapter, the author intends to continue, as he commenced, to address his readers in a simply popular strain. The second chapter being the reproduction of his original communication, it will not be difficult to understand why it leaves much to the judgment of the reader. Every speaker and writer must accommodate himself to his audience or readers, from the throne to the mere debates of the million; wherefore it is that even the style of a patent specification—which the great and erudite law officers of the Crown con with amazing care: exercising the utmost stretch of their legal knowledge to ascertain the precise meaning of every point stated in such a record—no scientific body would either encourage or even possess patience to encounter the reading of, were it written with equally prolix clearness.

Comparing, therefore, the style of language in the two documents—the paper of 1858 with the specification of 1863—the expansive character of the one and the minutely precise phraseology of the other is at once

apparent. To bring this home to the most verdant understandings, we have only to imagine two lines thus:—



A, a perpendicular line; B, a slanting line—that is, at any angle which is a deviation from a vertical line. A, represents one way of placing my transparent mirror for the purposes of exhibition, as seen in the engraved illustration, Fig. 2; and B, precisely represents one plan of my early inventions, which the Polytechnic Institution desired to adopt to their high stage, not being able to alter the building by lowering the stage to suit the exact plan of the model. A consulting engineer, well versed in patent practice, the very inventor of the scheme to be protected, was reasonably the best person to consult, and I assured the Secretary or Managing Director that I was satisfied that there was sufficient matter for a patent. And that I was right was afterwards proved by the fact that, although opposed by one party before the sealing of the patent was allowed, and after the sealing was allowed by the Attorney General (in August), was again opposed before the sealing, by six parties, that the Lord Chancellor notwithstanding ordered the sealing of the patent (22nd September).

It is requisite to be particular in noticing this matter,

as it is not to be expected that general readers of any class out of the legal or some kindred profession should be able to penetrate the deep mysteries that obtain and that lie under a very large seal and still larger sheets of parchment. The subject is so interminable that it must suffice to remark that a sliding plate of glass placed like A, is one mechanical process, while another is that of a framed plate of glass which, as it must be sloped to various angles, requires some machinery, increasing in strength with the size and weight of the plate glass B; and possibly still more ingenious from the very great strength required; and then, if you slope the glass B, you must also slope the gentleman or the lady who performs "The Ghost." Again, you want back rests, pulleys, and sliding platform to draw the ghost actor along, because, as Dr. Arnott tells us in that delightful work of his, "Elements of Physics," men cannot walk, run, or move about at all the moment the head is out of that line of gravity which, passing from the head to the feet, is always a vertical line. The moment the feet touch that line, the head can never be moved past it without the person falling flat on the floor. You may place a hundred pounds close to the feet of any man with perfect safety of not losing it, provided a clear understanding is established and its terms strictly adhered to, that the ambitious ladies or gentlemen, desirous of testing their own skill, or thinking only of the golden prize, will, at every hazard, stand close to the room wall, their heels touching

it, and without moving the feet to bend forward and *fairly without stumbling* win the prize by taking it up.

This illustration is common enough, but here it accounts to those who had not thought of it before, why there may be, and indeed not only must be, but actually is, much contrivance wanted, and a certain amount of ingenuity expended in all this carpentry. The patent is for all these needful appliances, to work on a large scale an arrangement of my mirror, which having used, I was perfectly familiar with. I wish the ordinary reader to understand that an inventor may do as he pleases with his own invention : he may, if so disposed, go on patenting it every day in the week—there is nothing about it he cannot patent. The Patent Office is most liberal to patentees ; they may patent the very nails, paper, cloth, glass, wood, with the very varnishing and painting, each in a separate patent, each at great expense, if they show any value in so doing for their own particular object. Yet the law would treat any one of these extraordinary patents as impudent infringements and colourable evasions of the original invention or patent, if attempted by any second party independent of the original inventor. The connection of all this machinery with my invention is demonstrated by my heading such a patent, yet it neither adds to nor diminishes my invention ; which is not, therefore, to be split into an original invention and a patent invention. The invention is one, whatever may be its shape, size, or distribution.

If I chose, I might have made all the following adaptations before now publishing them, subjects of a new patent, or each in a separate patent :—

WITH ONE ACTOR TO OBTAIN THREE SPECTRES.

Place three mirrors on the stage, each vertical, and so arranged as to form three sides of an octagon. Let the actor take his usual station. Place three spectators, A, B, C, in the theatre, wide apart of each other, A being in the centre, the others in a line right and left. Let each proclaim what he sees. From A, we are told the spectre is in the centre, while B, declares it to be on his *right* hand ; C, however, must believe both wrong, or give up the evidence of his senses (as he might suppose), for he observes it clearly on his *left* hand side.

WITH ONE MIRROR TO TRANSFER THE SPECTRE TO THE
RIGHT OR LEFT OF THE AUDIENCE.

Let the framed mirror be perfectly perpendicular, and instead of being in a groove to slide, let it move on centres at top and bottom, placed centrally or otherwise, so as to swing like a door with a valve-like motion. By such means, the audience on one side of the house would see an apparition, which, if at all burlesque, would occasion laughter to one portion of the audience to the amazement of the other portion ; and by the time the change took place, each side would be laughing, the one at the other.

TO PRODUCE GROTESQUES.

Let the mirror or mirrors, however arranged, at whatever angle, or in whatever number, form, or colour, have those wavy effects which it is the art of every glass manufacturer to avoid; or let plate glass or other glass, when it cannot be produced at the same time both wavy and polished, be ground away in certain portions and directions, so as to distort whatever is seen through it or whatever it shows by reflection. Such indentations, groovings, corrugations, or wavy hollowings must necessarily be comparatively slight; and their situation will also be a matter of choice, for they may cover the whole or be confined to portions of the surface, and be made on one or both sides. If the mirror be left plain to four feet above the stage, then only the bust of an actor will be distorted—his head drawn to an oval or egg-shape, as seen in a bright silver spoon or dish cover; and whatever comes across such portions will show equally ridiculous. In short, what effects are there that can be obtained by a common looking-glass that *cannot* be produced and placed on any stage, with the crowning effect of seeming to treat the phantom so raised as a thing of mortal mould, by this novel process?

SPECTRES WITH RED, BLUE, OR OTHER COLOURED HEADS.

A particular portion of the transparent mirror being smeared artistically with a good clear coloured transparent varnish, the spectre will have an alternately red,

blue, or natural face at intervals. The changes would be as rapid as motion, and peculiarly strange and startling.

TO REPRESENT A SPECTRE FLOATING IN THE AIR.

Let the transparent mirror be fixed at any suitable angle for the purpose, quite immovable when once placed there, being a fixture, and hid by a curtain or other means. Beneath the mirror, lying on his back, stretched on an easily springing frame, the actor, with stretched wings, angel or dragon-like, flapping away, is seen by the admiring audience hovering over the magician, or whoever it may be beneath ; thus communicating with the invisible world, as supposed possible in remote ages, and sincerely and enthusiastically believed in by many modern proselytes to the spirit-rapping mania—a subtle superstition, which has sadly lost ground since the introduction of this later system of necromancy made popular. Mesmerism throughout all its harlequinades, down to its present disguise under spiritualism or spirit-rapping—with all its music, its passes, and its mediums—has never had nerve enough or *nous* enough to produce such thorough full-length ghosts as are now every day to be seen at the Polytechnic, Drury-lane, the Britannia, Canterbury Hall, and other popular establishments of every grade in the metropolis. The Cock-lane Ghost must for ever hide its diminished head after the warm reception given in London this year to the most hideous

as well as the most graceful companies of ghosts. "Haunted Hoxton" is nothing as compared to Haunted London, and the occasional itinerating hauntings of ghosts in the provinces. That they are real good and not evil spirits amounts to the certainty of a mathematical demonstration, for see the congregated crowds around every door where a ghost is to be exhibited! Hear you not the money dropping into the till—the cries of women and children, who squeeze to their smallest proportions in the too narrow passages—the large rents paid, fees received, and profits accumulated—plays, once dead, re-animated by "The Ghost"—institutions once not over-burdened with wealth, now enriched—advertisers wondering at the rush of advertising ghosts—then the many actors, lecturers, lime-light operators, printers, artists, "The Ghost" gives employment to? Is it not anything but a demon or evil-spirit?

CHAPTER IV.

THE SPECTRE DRAMA—AND APPROPRIATE SUBJECTS.

Adventures thicken! novelties surprise!—YOUNG.

I GAVE the name of Spectre Drama to a singular class of dramatic performances to be consummated by means of adapting my Optical Illusion to the production of an entirely new class of stage effects. In my youth I had been awed by the stately and statue-like ghost in "Hamlet;" but all the vigorous imagination of youth, united to the natural overlooking of many discrepancies arising from inexperience, I well remember I was more struck with the language and unearthly eloquence of the spectre than I was with the mailed and plumed spectre itself. The very playbills gave me his name; and to my young mind it was, with all its majesty of mien, but the "Boo! boo!" of the nursery. There was no mistaking it for other than a very well got up, real blood and life ghost. And although its bedtime was regulated by the crowing of chanticleer, I did not for a moment suppose it had retired to any neighbouring churchyard. Dramas introducing apparitional appearances have hitherto always obtained their success for other merits than any attributed to the lusty sprites brought on to the stage.

Among a long list of pieces which I had arranged in 1858, I usually directed attention to one which I proposed, calling it "Charles Dickens, Esq.'s, Haunted Man," from his well-known Christmas piece of that name, conceiving that it would command a double interest. What was then described to many secretaries of public and other institutions may possibly be called to mind by some of them on perusing the following account of my original design in the production of that piece, now purposely placed foremost in the directions for that and other pieces:—

DICKENS'S HAUNTED MAN.

A student is seen sitting at a table spread over with books, papers, and instruments. After a while he rises and *walks about* the chamber. In this there is nothing remarkable. But the audience is perplexed by a different circumstance: they see a man rising from his seat and see him walking about, but they also see that *he still sits immovably in his chair*—so that evidently there are two persons instead of one, for, although alike in dress, stature, and person, their actions are different. They cross and recross; they alternately take the same seat; while one reads, the other is perhaps walking; and yet they appear very sullen and sulky, for they take no notice of each other, until one, after pushing down a pile of books, passes off by walking through the furniture and walls.

The art in this arrangement is to have two actors suf-

ficiently alike in person, similarly dressed, and placed so that the phantom figure sits so exactly like the living figure as to match into it (as stated in Chapter II., of the cube, or other figure). It consists in having two actors, two chairs, and two tables exactly matching each other. On the acting stage, the actor, table, and chair have each their duplicate; so that, if they were pulled a little to one side, the audience would see two actors, two tables, and two chairs. But such an exhibition would be a defect, as the table and chair are mere guides for the spectre actor: if there were no chair he could not sit, and if no table he could not appear as leaning upon one, or seem to do so.

In this and other pieces of a like nature, forming the Spectre Drama, it is presumed that the parts are not performed in dumb show, but that an able speaker either explains and gives the dialogue, or that concealed actors address the audience, timing their speech to the action before them. I, therefore, omit all such stage directions.

THE RETURNED MARINER.

A naval officer or other sea-faring character, belonging to some particular vessel reported to have been wrecked, is seen in a chamber, into which his wife or sister, &c., on entering rushes forward to embrace him, but, clasping nothing, immediately falls down in a swoon.

THE CALIFORNIAN GAMBLERS.

Two men, dressed almost like brigands, engage to

play some game with cards or dice. They sit one on each side of a table, on which they place their revolvers. After a short play they dispute and wrangle, during which, one seizing his pistol discharges it at the other. He is horror-stricken by the bullet being returned to him, and his playmate passing away by neither window nor door.

THE MISER AND MONEY LENDER.

He is an aged man, counting his money, and writing up his unjust gains. His room is furnished with bookshelves and cabinets. With a small taper before him he is absorbed in monetary calculations. Presently a careworn female enters. He shudders—with cold. She opens a cabinet, takes out a long roll of parchment, replaces it, and closes the door again—not quietly but with a clap like thunder. The miser is colder than ever—shivers more and more, and rises to look into his cabinet, from which he apparently takes the *same* roll, replaces it, and returns to his seat, followed by the reappearing phantom, which again rapidly disappears.

This requires a duplicate cabinet, parchment, &c.

A STRANGE CHRISTMAS BOX.

A porter enters the sitting-room of a bachelor while at breakfast. He lays down a deal box, is paid for it and retires. It is a present—and after being turned over and over, hammered a good deal to burst it open, and seemingly as hard to open as an oyster would be

with a pair of scissors ; the cord off, the nails out, and all ready for inspection, the bachelor is suddenly called to any little attention, as the over boiling of his kettle. He has but turned his back a moment and behold—a cupid sits on the box ! On his approach it walks round to his breakfast table. He removes the box lid and finds it crammed full of old clothes returned to him from his last residence. He is very angry, takes a seat, and is rather startled to see the box lid open, cupid get into it, and at the risk of the pretty boy being smothered, down goes the lid again. He re-opens the box, taking from it cloaks, coats, boots, pipes, &c. But, where is cupid ?

The box has its duplicate, and the appointed place marked out for each. The box seen by the spectators, however tossed and carelessly used, is very carefully placed *at last* in one precise spot, where it matches an opposite empty box, large enough for a child trained to perform the part. The lid supposed to open does not open, but by rapid action the eye is so easily deceived as not to observe the duplicate lid.

THE DUEL.

It is to be fought with swords. After various passes, one is stabbed, but instead of falling, he either holds his sword behind him, as if in support, or elevates it, as if appealing to the justice of his cause ; but in an instant, to the horror of his affrighted antagonist, he rushes on him with a blazing sword.

The sword is a suitable flat perforated gas tube, with a vulcanized gas tube attached to the handle. A small gas jet above, or an assistant below, enables the actor instantly to produce the desired result.

This example is curious, as showing with what nicety the required effect can be obtained, so as actually to bring the two blades opposite and crossing each other, when the space intervening may be twenty feet or more. It is easily done by stretching a cord or wire, or having moveable metal or wood rods held upright by a solid base, placed equi-distant on both stages; for it can readily be ascertained where to place them, so that a sword blade crossing a wire on one side is absolutely seen crossing the same on the other side.

THE MILLINER BEWITCHED.

A dressmaker and assistants are in a work-room containing a number of empty props, each with a kind of wire-shaped body for displaying dresses upon. She scarcely turns round to her work before every pole has upon it white, black, red, and other dresses, to her evident consternation. Calling in a friend, they are again empty; so, settling down, she is once more terrified by a total change of millinery in cloaks, shawls, bonnets, &c.

All this is brought about by employing corresponding wired props.

THE GIPSY'S PROMISE.

A plain country servant-girl in a white under-dress

stands at her glass, and, having had her fortune told, is ardently wishing to be a fine lady. As she retires from the glass in her mistress's room, she is all amazement to find herself suddenly transformed to a princess. She is attired in a splendid pink or other silk dress, and wears a turban with ostrich feathers; but before she can show herself off to her friends the whole proves a vision!

The arrangement is like the former, only requiring more care and management.

A HAND SEEN WRITING.

Many months ago, one scheme among others sent for rehearsal was that of a hand writing "NAPOLEON." All the arrangements were very minutely described. The spectre hand may actually write or gradually withdraw a slide over the letters. Either way is very surprising. The actor is behind a black curtain, his hand only seen by reflection. There are corresponding boards, that on the acting stage being black *without* any writing. If the board has a piece inserted in it like a valve, working on centres, the written words or name can thereby be turned out of sight with remarkable rapidity.

These examples are sufficiently various both to show what may be achieved by this Optical Phantasmagoria, as well as to satisfy the intelligent reader that it would be impossible to carry out any one of the subjects proposed in a way so imposing by any other means whatever.

APPENDIX.

A.

CORRESPONDENCE—EXHIBITIONS AT THE POLYTECHNIC—PARIS— SYSTEM OF ADVERTISING.

ANY one who is in doubt (as the writer is at present) as to what course of pleading an adverse party may adopt, naturally makes many statements which could be avoided by friendly intercourse. I therefore, consider it prudent to trace the progress of transactions, by a few extracts, under their respective dates, taken from correspondence with the Secretary of the Polytechnic Institution, whose authority is enhanced by his also being Honorary Director, omitting only names and extraneous matter, for the sake of brevity, as follows:—

“December 16, 1862.—For the practical working of your Illusion, I have arranged one large plate of glass, and shall be glad to see you here on Thursday next, at 11 o'clock, to see some experiments with it.”*

“December 19.—Directly the large glass plate is in its place I will let you know, and with best thanks for your kind offers of assistance, I am, &c.”

“December 31.—I have ordered a programme to be sent you, and am much obliged for the new scenes, which I will have put up in rehearsal.” [Which was never done.]

* The Honorary Director always wrote and spoke in the first person; indeed every silk mercer's manager and assistant does the same.

“January 24, 1863.—As you were kind enough to say that I might make what money I could of your admirable invention, I shall, with your permission, insert the following advertisement,* and with kind regards and best thanks.”

[Calling at a public Institution, and not on a private gentleman, I did not then, nor do I now, construe this into a private affair. My business was with the Institution and not with a stranger. It is a redeeming point in these transactions that no such quibble has ever been expressed; and it is due to the Honorary Director to state this clearly, lest any ordinary reader should form an opinion so derogatory to his character.]

“February 1.—Will you kindly meet me here [Regent Street] to-morrow, Tuesday, at a quarter to 12 precisely, to arrange your per centage, or any profits that I may make by contracts with persons away from this Institution.”

[At that meeting I expressed my intention to make no charge whatever, whether my invention realized £500, or £5000, reserving only my authorship of the invention. After this clear statement of my terms, I was requested to express the same in writing, ostensibly to give authority to the Institution to arrange with Mr. Fechter, as a party over whom the Institution had no control, being away from the Institution, and who, as was openly stated to me, had verbally engaged to pay £200 down, and a further sum of £300, on approval of the working of the apparatus at his Theatre. I should not name such a circumstance only for an occurrence which has since excited my utmost surprise. *That* letter was, it seems, stamped, to make it a legal document, and after the transference of my correspondence from the Polytechnic to the Solicitors, that very stamped

* See *The Times*.

letter was shown by the "referee" last September to my publisher; not to show it was stamped, of course, but well assured that the fact would come to my knowledge. Anything more galling to a generous-hearted man, making a humble claim, while he at the same time was the medium to render the Polytechnic the envy of all similar Institutions, can scarcely be conceived.]

"February 22.—Pray stop Warner* selling the models. I understand he has made three different sizes. Please buy them up quietly, and say that when —— has done with it at the Polytechnic, he shall make and sell more; otherwise I am ruined, and the models will get down into the country before I do. Pray do all you can to stop it, and oblige, &c."

[The sale of models was immediately stopped, and I gave the Polytechnic an order to take away my own large model from the working optician, which—it has since been represented to me—was lately carried off by some foreigner, or other unauthorised person in August.]

The following extracts not only prove the frequency of my complaints, but are evidence that I must have employed a prudent course to obtain redress, as from April to August, four tedious months passed in thus urging my simple claim. I should have had answers very differently worded had I given the least just cause of quarrel.

* About September or October (being some weeks *before* going to the Polytechnic) I had been in personal communication with Mr. J. Warner, of Northampton Square, extensively engaged as a Manufacturing Optician and Mechanical Engineer, about his very superior safety arrangements and appliances for obtaining the LIME LIGHT, purposely to recommend its adoption, through him, wherever my invention should be exhibited on a large scale, and particularly as he was making models of my apparatus; but the Polytechnic being already supplied, rendered such recommendation unnecessary.

“April 16, 1863.—I pay so little attention to the public announcements that I did not notice the Britannia Theatre, but will speak to Mr. L—— to alter it *immediately*. I am to see Mr. —— on Saturday next. Pray do not think for one moment that I ignore your credit for the invention. * * * The bustle I live in makes me a little forgetful, but I believe I always remember and am grateful to friends like yourself good and true.”

“April 18.—I fear that busybodies have been to work with you, and tried to poison your mind against me. Whenever you think I am not doing what you like write, or come and see me at once. I have hitherto pursued a straight-forward course and intend to do so. Your name as the inventor has been in our bills and programmes for months and months. * * My dear friends [opposing parties] cannot forgive my *success*, and I really forget in the overwork of this place to ask you to come behind the scenes.”

[In noticing neglects, I frequently reported the precise remarks of friends, what one or another had said or written, and might continue making matter of conversation. I was constantly urged “*not to mind such friends*.”

Here I am invited with pleasing candour to conceal no cause of complaint; to which request I responded from time to time, in at least forty to fifty letters.]

“April 20.—I have written to Mr. L——, Britannia Theatre, to alter his advertisement, to oblige me, although of course I have no power to dictate to an independent manager.”

“April 21.—I certainly have, by a strange oversight, neglected to put your name prominently before the public, * * and will as speedily as possible correct all the bills, &c. &c.”

“April 22.—You will see our advertisement completely altered next week. * * I am very sorry to have caused you

any annoyance, and I will cheerfully make all the amends I can."

A letter of the 12th of May here intervenes, but being marked "Private and Confidential," the only use I shall make of it at present is, to state, that it gives me the first intimation of there being no agreement between the Polytechnic and Mr. Fechter. With that transaction I have no concern. But at the end of three months it comes out that the letter obtained from me had been useless for its original named purpose; mentioned under date February 1.

From Bath, May 21, a small handbill, for the Assembly Rooms there, was sent me, wherein my invention is as fully and sufficiently noticed as ever I required. Once right, who would ever expect deviation into old courses of misrepresentation?

"May 28.—I shall see Mr. L—— to-morrow or the next day, and will ask him to alter the advertisement. I saw a friend of yours here the other evening, who spoke in the highest terms of *your* invention; there was no mistake in his mind about the authorship, and there ought not to be any in the minds of other persons unless they have sinister motives."

"June 1.—We shall put your name in the Polytechnic bills directly the *long* holiday advertisement is shortened, as it costs so much to put in so many names."

[“Costs so much” after enjoying the profits arising from my invention for seven months!]

"June 9.—I have written to Mr. ——, who brings out the 'Ghost' at the Adelphi Theatre, next Saturday, to be kind enough to make the advertisement as above. [See *The Times*, &c.] I have also agreed with the proprietor of the Théâtre Impérial Châtelet, Paris, to bring out the Spectral Illusion, and have made it a special clause in the agreement that your name is to be placed in all the bills as the original inventor."

[I had, on the 31st of March, signed a power for obtaining a patent in France, nothing could therefore be more satisfactory; here was a clear desire expressed of my participation in the affair, with the avoidance of any transference of my right, under any pretence, to any other party. I had reason to expect and believe that my laborious correspondence had obtained the *âcme* of success.]

“June 15.—Kindly meet us at the London Bridge Station to-morrow morning; we go by the express tidal train. * * Pray give us an opportunity of showing our gratitude to you, and with kind regards, I am, &c.—Address Théâtre Impérial du Châtelet, Paris.”

[I was delighted. Surely, surely, I was lifted fairly out of a Slough of Despond. Here was just cause to be jubilant.]

“July 8.—I have been looking everywhere for a French newspaper, but have unfortunately lost it, en route from Paris, suppose I left it behind. I will go to —, where they take French papers, and see if I can find anything about it.”

[No French papers were ever sent me in proof of the promise made me being fulfilled.]

“July 29.—I have written several times to my friends in Paris, to send me over a newspaper account of the Ghost, but nothing has yet come to hand.”

[Put so forcibly before me, as this was, I now feel entitled to remark that, a friend resident six weeks in Paris sends me an ironical letter noticing how “cleverly I am put under a cloud, to add to the brilliancy of the London Polytechnic, not having been able to see my name *in a single Parisian advertisement.*”]

“June 10.—The French director of the Theatre has given a

liberal price, and I do hope now, after all my hard knocks to get into some smooth water with your very kind help, and with best regards, I am, &c..”

[My correspondent assured me, on his return, he had come home with £130, and other sums would arrive in due course.]

“Manchester, August 20.—I hope you are now convinced that I did all I could to have the advertisements, &c. [in Manchester], properly placed before the public. Mr. — undertook to do all, and I never knew anything about it until your very inflammatory letter arrived. It is a very great pity that Mr. —, or, whoever it is, tries to set us at variance. If ever I come near him I shall speak my mind.”

[A copy of the altered form was sent, but it was concealed from me that the falsified advertisements accompanied it in the Manchester papers; a twin association necessary in consequence of the erroneous ones being a contract! The editor of one paper innocently wrote me— “It is only fair to Mr. — that I should take the burthen from his shoulders, and place it on those of my *clerk*.” A *clerk* from the Polytechnic had called on me long before, stating that he was solely to blame for the falsified advertisements in another quarter; and this shifting of the burthen from the Polytechnic office to outside offenders in ubiquitous *clerks*, *agents*, and *reporters*, had grown quite stale with me. There was singular method in this simulateff bungling. But by whom I never learnt, nor can I succeed in interesting others in a search after the offender or offenders. How, why, or wherefore done, I have been unable to fathom.]

“Manchester, August 22.—My numerous duties and anxieties may prevent me noticing the newspapers, but whenever

you see anything you do not like let me know, and I will soon rectify it. With kind regards, &c."

[Who would think from the tone of this letter that, within one short week I should find that further correspondence with the same quarter was stopped; that my letters would be handed to a solicitor; and finally appear before me in the hands of a "referee?" What frightful indiscretion could I have committed in that time? The advantage I had in seeing newspapers was often urged by way of meeting the total absence of such advantage on the part of Polytechnic officials, as if town or country newspapers delighted in composing advertisements to place in their columns for the mere honour of advertising "The Ghost!" Was the Polytechnic treating with a child; or was the Inventor of the Optical Illusions treating with a novice or novices in the conduct of so old, large, and flourishing an Institution as the Polytechnic? On the 28th of August, I wrote to the Polytechnic about an offending falsified six feet poster in Cheapside and elsewhere, adding:—

"It is now plain to me that you cannot, or will not, induce licensees and agents in dealing with my Optical Illusions to advertise correctly. I therefore, beg to apprise you that, I see no alternative to secure my right position, other than my making *a free gift of my invention to the public*, issuing a cheap descriptive pamphlet, with my latest improvements, and consenting to ——'s issuing for sale to the trade my moveable and other Optical Illusion Model Apparatus. Waiting your immediate reply, I am, &c."

I had throughout felt bound, in honour, to assist the Polytechnic Institution in every possible way for a reasonable time:—first by withdrawing my original

plan of publishing and allowing the manufacture of models; and next by securing a patent at the cost and charges of the Polytechnic; and I found myself in a very false position at the end of nine months, after patient waiting for the fulfilment of my original compact, to be fully and fairly represented to the public as the inventor of the Optical Illusions. Dust was being continually thrown into the eyes of the public; reporters were mystified, and the exception was rare indeed for any newspaper paragraph to notice the "Marvellous Optical Illusions at the Polytechnic," or elsewhere, as my invention. None of my letters justified the employment of solicitors. I had a manifest right to withdraw from the Polytechnic and adopt my original course. But if my continued silence beyond August were desirable, how easy to have obtained it. 1st, By an assurance that all future licenses would be drawn legally, instead of being left to ordinary office clerks. 2nd, By proofs that the course of provincial advertising was generally *correct* (if so), and that where *incorrect*, either in town or country, steps were being taken to bring the culprits to a sense of the damage incurred by their unjustifiable falsifications. And 3rd, Offering, *without restrictions of any kind*, to give me ample further proofs within the next three months, that, so far from having any further cause of complaint, I should have the satisfaction to find that the provocations of the past should be more than compensated, if possible, by the satisfaction of having no justifiable cause of complaint for the future.

I should only have been too happy to have closed at once with any such rational course.

Does the reader enquire, why I have not made this suggestion before? What! both present a large gift, and

go begging its acceptance; the donor become the suppliant! No, I had no favours to ask; and what commenced bunglingly, entailing vast trouble on me, attended with endless petty provocations, did not promise any serious change by means short of proposals made to me direct from the Institution itself. And after all what was my claim? What to make a fuss about? What to go to law about? or, What even to send floating on the ocean stream of daily press publication? It was like a squabble for the mere ribbon which tied up the rolls of bank notes rolled into the Polytechnic. So old as Shakespeare has been the enquiry—"What's in a name."

B.

THE PATENT—OPPOSITION—AFFIDAVITS—AND CASES.

THE progress of the Patent—commencing 5th February, 1863—seems to have exercised a magic influence in giving courage to bear with my complaining correspondence with the Polytechnic Institution. The course of the patent through the Patent Office routine was anything but smooth, and led to my receiving several letters couched in confidential and flattering terms. Of these I need not offer more than the following selected extracts:—

"July 29, 1863.—I particularly want to consult you about the Patent; . . . has done sad mischief, and I fear I shall *lose it*." [In which case, the patent charges incurred would be an additional loss.]

"July 31.—Best thanks for your very kind invitation, which I am unable to accept, being so hard worked in prepar-

ing to leave London. . . Our claim to a patent the Solicitor General refuses to grant, because he says Mr. Dircks published it all, or rather it was already known in the *Athenæum*. . . I am now straining every nerve to get a re-hearing."

"Manchester, August 4.—I trust with your excellent drawn declaration all may go well. . . I am greatly obliged to you for taking so much trouble in the affair. . . I did not trouble you in the original *opposition*, because (knowing you to be so much occupied) I was told he [the opposition party] would be beaten, and I was dreadfully mortified to find the contrary to be the case."

[I had mildly remonstrated on not being informed of the Opposition until after all was over—another instance of attempting to put me aside. I firmly believe the first Opposition would have failed had my professional services in my own case been called in; else why had it such force when, in the second Opposition, at the sealing, it proved of weighty importance? "Knowing me to be so occupied" as to be indifferent to a patent in which I myself was a principal party, was a lame excuse indeed, from a man unacquainted with patent practice, addressed to a patentee in respect to his own patent, fully versed in such practice during many years. But why not at least inform me of what was going on? It was well known how anxious I was to be relieved from a most burdensome and unpleasant correspondence, with but small show of any such consideration for my having better occupation for my time. Who so proper to consult or obtain assistance from as an original inventor, dating part of his invention twenty years back? Surely if men know their *own* business best, it should not have been overlooked, as forcibly applying in my case, and *not* likely to apply to a

“prentice hand.” It is true three gentlemen of the first eminence wrote most decidedly in favour of the invention, and equally true that their letters were submitted; but they were not legal documents, and, although of undoubted authenticity, could in legal phrase only be “taken for what they are worth,” because they were not in the required form of attested affidavits. They may have had some weight in seconding two or more sworn affidavits; but they were documents which would have been powerless to strengthen insufficient affidavits.]

“Manchester, August 7.—My sins are rather those of omission than commission. It was a sad oversight, but really I thought so little of the Opposition, and was so sure it would be upset, that bothering you about it was not to be thought of; moreover I have been so overworked that great excuses must be made for all my shortcomings. . . . Will you kindly meet me at —— [Chancery-lane], on Monday, at twelve, and help me with your advice to regain that which I seem to have lost from *blindness*?”

“Manchester, August 12.—The right of being re-heard and having patent granted was settled last Monday. We go again on Saturday at twelve, when, please God, I trust we shall secure the Patent.”

“Manchester, August 20.—The Solicitor General granted the Patent after reading the important letters.” [The three private letters just named.]

[The wisdom of this remark will be obvious to professional gentlemen; it shows my correspondent’s profound knowledge of the subject, and brings me to my proper level in this tangled transaction !

My occupation was now gone; I was no longer wanted. I believe, however, that the solicitors to whom my corres-

pondence was referred must have pointed out a trifling legal difficulty in wholly parting with me, and may have felt considerably perplexed by their client's position, into which he had hastily plunged himself, when perhaps a month or two of further endurance might have saved the clumsy artifice of electing a "referee."]

CASES AND OBSERVATIONS.

Non-professional readers, together with non-professional inventors, may desire to hear more about this Patent—the first class out of mere curiosity, and the other to ascertain my position in respect to that instrument, which I shall popularly explain.

The case is this:—A and B join in patenting an invention. A is the inventor, B is the capitalist. So far as the invention goes it is a joint partnership—B engaging to assist A with money, and A engaging to supply some practical invention. It is of little consequence in point of law whether one or both are inventors, and both capitalists as well. Some hold that *both* ought to be inventors, which, if a serious point, there are hundreds of patents deposited every year in which the co-patentee, or capitalist, invents no part whatever—his real interest, so to speak, being one of purchase. This being the position of parties jointly patenting an invention, when I am desired to secure the right of invention, as best I can, by the Honorary Director of the Polytechnic, I recommend our going to Messrs. Carpmael & Co., eminent patent agents. I give a full account of the invention for a provisional specification; I am asked whether my co-patentee has in any way assisted; I show that he has—that, assisted by my model, he set up the plan with a vertical mirror—that, being stinted for room, he inclined the mirror towards the object and the object towards the mirror.

by the aid of certain mechanical arrangements. As all parties were present, there was no concealment. Does the non-professional reader exclaim, "How strange you should commit so suicidal an act!" *That* is just the curious and interesting point I wish to explain to all ignorant patentees—those who ignorantly lose their inventions; and those also who ignorantly puff themselves up with the idea of being inventors, occasioning many expensive, useless actions at law. It will be lucky, therefore, if I can hit off a popular description of this popular patent error to the comprehension of either the ignorant or designing—of the ignorant, to save their own money; of the designing, to save them the very unnecessary trouble they take in causing other people to lose their money.

In the present instance, when the patent was first Opposed before sealing, great trouble was given to obtain affidavits in time, although through no neglect on my part or that of the agents, as the above letters may explain.

In August I waited on the Patent Agent, with whom I spent four hours, dictating in what terms I could make an affidavit, and in what terms the co-patentee (then in Manchester) could make an affidavit—thus speaking for myself and becoming the mouthpiece of another (see letter above, August 4). Worse and worse, the reader may exclaim! So most ignorant persons would express themselves. It was a common interest, with this advantage that I lost nothing legally by this act, and no sensible scientific man would be so simple as to say it any way militated against me. Patents are not like a loaf, to be divided among the partners in the patent; that is, it cannot be said A can walk off with a slice of this patent for his vertical mirror, and B with the other slice for his sloping mirror.

To prove this :—Suppose instead of A and B we join in the

patent both honorary and other directors, making A, B, C, D, E, and F. In this partnership, Mr. Carpmael would desire to know in what way these gentlemen had unitedly produced an Optical Illusion Apparatus. I have no doubt *they* would be taken aback and look agast. My professional skill might aid them by calling to their recollection a few facts, thus :—

- A, the original inventor, calls in
- B, who slopes the glass ;
- C, a glass manufacturer ;
- D, an engineer ;
- E, a builder ; and
- F, an optican.

The affidavits would state all the facts about A, and B, as at present ; C, has vast experience, and recommends a superior article ; D has no end of screws, bolts, pulleys, &c. ; the thing could not have existed without E ; and as to F, he does more than Sir David Brewster in his “ Letters on Natural Magic,” who leaves out all mention of a lime-light—a thing, in short, never before seen, heard, or thought of until F, steps in. With such an affidavit, any Attorney, or Solicitor General, or Lord Chancellor would be compelled to succumb ; and as to the patentee, here he would have five-sixths of the firm against him !

Now reverse the picture. Suppose nothing of the kind mentioned had taken place ; suppose the original inventor, A, declined to take out a patent ; and further suppose that B, C, D, E, and F, all or any of them, had applied for a patent, A, could have opposed and successfully beaten them out of the field. I should have proved to the satisfaction of the law officers by models, drawings, affidavits, and all needful evidence, that there was nothing new or patentable in the schemes offered ; and where new, that such novelty was my sole pro-

perty, and *not* the property of B, C, D, E, or F; who, while aiding or assisting me in the practical working of my invention, did so under my advice and directions, with my full concurrence, and at a time when they were acting in my service; and further, that it was my intention to patent the same as wholly and solely my invention.

And supposing after my patent being obtained and some action at law pending, when the defendant would look out for all manner of proof possible, B, C, D, E, or F, all or any, might rejoice in their opportunity to show—B, how he sloped the mirror; C, the remarkable excellence of his glass, and my delight with its beauty; the engineering of D, would possess many singularly curious qualities; the builder, E, would prove that such frames, floors, stages, and slides to make the living ghost slide properly, were such as had never been conceived before; and then F, would be certain that, let all the others win or fail, there was no getting over the novelty of his lime-light, and that as to anybody having thought or dreamt of such an extraordinary application before was not for a moment to be thought of.

To those who do understand such matters this must appear very elementary and trifling; but patent agents, and they more than any other professional gentlemen, well know the ignorance of very well-informed men on all other matters the moment their conversation trenches on subjects like these—and which is patent, perhaps, to the legal profession generally. I feel persuaded that in thus plainly and simply arguing my case I am, while engaged on a personal affair, rendering the explanation it calls forth of importance and value to a large class of intelligent readers.

I say without fear of contradiction that *no patent conveys separate rights to two or more patentees.*

And I further say that, *if a co-patentee can prove a separate interest, his evidence would go far to peril the validity of the patent.*

No two or more men can legally combine to put distinct inventions in one patent, in this sense.

The *Times* has levelled its thunder against not only the whole system of patenting but the present system in particular. It would be easy to turn my patent and my affidavits as instruments against me among persons satisfied to be convinced with superficial examinations of colourable statements made by non-professional friends and advisers. Nothing of the kind, I am happy to say, has been attempted against me. I am proud to be able to state that, amidst all I have had to endure, I have never heard the slightest whisper to give me reason to believe that such a flimsy, foolish, untenable refuge would be taken to cover, to account for, and justify the manifest wrong which has been done me during the last twelve months—time sufficient to disarm any charge of precipitation on my part.

I have given every man his just due for what he has done. The affidavit I dictated at a time when there were sufficient annoyances springing up every week to have induced a passionate man to have acted differently. Had I not interfered, the patent would have been in a most hopeless condition. Mr. Carpmael expressed his astonishment when I told him of my never having been informed of the first Opposition, which was successful. When re-heard, it passed with my affidavit; but my co-patentee assures me (August 20, above) that three private letters addressed to himself did the business, although not legal documents—unstamped, not sworn! Nine days later and all correspondence ceased, being transferred for some unexplained reason to the hands of solicitors. Of this, my own explanation is, that my patent has changed hands, and is now, as I ever intended it should be, the property of the Polytechnic

Institution. If my surmise is right, I am glad, and I trust that while losing one friend I shall gain another. Any explanation of the mystery that hangs over this affair would long ago have been most gratifying to me; and, now once before the public, any spark of light to unearth the mystery will become a matter of almost equal public interest. Explanations withheld from me will possibly yet come to light, until which time it will be well to abstain from forming any decided opinion one way or another.

It may concern some parties to know that, as I have *not* assigned the patent, and can any day supersede it, no license is safe *without* my concurrence and my engagement to keep faith with *them*; therefore licensees satisfied *without* any such agreement on my part, take *all risks and hazards on themselves*.

C.

“THE REFEREE.”

I WOULD gladly have omitted all allusion to the interposition of a “referee,” could I but have persuaded myself that my so doing would be incapable of misinterpretation. My readers certainly will be better able to judge than myself (as an interested party), whether I have or not really missed a golden opportunity, after perusing the following particulars. As I have nothing to conceal on my part, neither have I any reason to believe that others concerned are in any different position, for—

’Tis great, ’tis manly to disdain disguise.

The *first* I heard of this matter was communicated in a letter dated—

“September 2, 1863.—It may possibly be in your recollection, that some few years ago . . . we had occasional business relations together. An opportunity presents itself for the renewal of our acquaintance through my learning, casually, that some misunderstanding exists between yourself and our mutual friend. . . . In the hope of being able to set this difference right, I propose having the pleasure of calling on you to-morrow morning between 10 and 11 o’clock, and meanwhile remain, &c.”

[When waited upon, I was assured that a letter, as drafted for me for the purpose, would settle all differences, as follows:—“Dear Sir, Disclaiming all intention of imputing to . . . or his solicitors any wilful participation in the annoyance I have felt, from the careless manner in which many advertisements have been worded, relating to the exhibition of the ‘Ghost Illusion,’* I shall be perfectly satisfied if henceforth all future advertisements relating to the invention describe the exhibitions as I remain, &c.

* My invention is known as *Phantasmagoria*, or *Optical Illusions*, and in whatever form it is used, by licensees or others, whether patented or otherwise, it cannot be appropriated by name, by *any other party*, and so advertised, except as an act of gross ignorance or worse—deceit. The *Spectre Drama* also originates with me, and is due to my *Phantasmagorial Apparatus*, however it may be altered to adapt it for the different purposes of such a drama. But I lay no claim whatever to specific spectral scenes produced in any way by the aid of my Optical Illusion Apparatus. It is as though I had invented a novel kind of Printing Press, for a new kind of printing—the novelty in each would be mine; although such right would give me *no claim* whatever to any of the books or pictures printed by my press, illustrating a new art of Typography. Here would be two things both mine; and the resulting product *not mine*, precisely as in the case of the above Optical Illusions and the resulting Spectre Drama.

[This is the only practical result of the "referee's" interference. As I never could find out those mysterious meddling "clerks, agents, reporters, advertisers, and independent managers of theatres" who were everywhere continually tampering with the advertisements, I had no party in particular to charge with "any participation," and to the date of this publication I remain in ignorance of them, as I have not been able to trace my invisible enemy or enemies. I have no person in particular to blame, indeed they must be legion, otherwise I cannot but think the Secretary or some Director or Directors of the Polytechnic would, ere this, have been able to trace his or their whereabouts.]

"September 11.—To-morrow I shall learn from —— when the change in the Polytechnic advertisement will take place. Upon this being effected you can write and forward to my care the letter I suggested [Draft, September 10, Appendix D.], and on receiving this, I will see to the advertisements being inserted in 12 London Newspapers. . . . These arrangements being all carried into effect, I TRUST YOU WILL BE FREED FROM COMPLAINT OF ANY KIND IN FUTURE.

[At the end of ten months, I find myself placed in the hands of solicitors, and now of a "referee," yet I must confess nothing came before me to induce me to put my trust in all this show of earnestness.]

"September 16.—I have no doubt that your eye has caught the altered advertisement in this day's "Times," and I trust you are satisfied as to the *bonâ fide* intentions of ——."

[While I was fighting to uphold an established principle, here I am treated like a child weeping for its bauble!

I wrote stating I had met —— [the Honorary Direc-

tor], at Norwood, and that our conversation rendered further interference unnecessary.]

“November 28, 1863.—Now in making the present application for the return of this draft letter, I wish you distinctly to understand, that I shall not submit to any repetition of the shuffling treatment to which you have exposed me, throughout, in my capacity of referee. Therefore, unless my son brings away with him the document hereby demanded [Draft, Sept. 10], I shall forthwith instruct ———, of Ely Place, to summon you before a police magistrate for its illegal detention.”

[So much for the first attempt to obtain a sheet of note paper, being the Draft of a letter for me to copy and sign.]

[Appendix D.]

“November 30.—Expressions . . . of my indignation at your conduct towards me, personally, as the accepted joint referee of — and yourself, and not the individual representative of the former. . . . throughout this disagreeable controversy; — [the Honorary Director] has invariably forwarded your letters to me, without comment, except to reply to any necessary enquiry I have made of him.”

[I had no reason to believe that I could entrust my case with a gentleman almost a stranger to me; who came unasked, and obtained from me no assurance of my satisfaction with this self-election of a referee, to the exclusion of some friend of my own electing, of 20 to 30 years' standing.]

For some unexplained reason it was thought necessary to send me the following intimation:—

“December 4.—(Polytechnic Institution). Sir, I have to inform you, in reply to your letter, that — is not my referee; and I knew nothing about the summons to which you refer, until I received your letter. I am, &c.

“P.S.—Mr. — was *our* mutual arbitrator, but not *my* referee.”

[No letter since August, and now in December to receive a letter in the Secretary’s own hand quite mollified me; I thought that a thaw had decidedly set in! But I had judged in haste.]

“December 5.—The inference any right-minded person could not fail to draw from your present pretext of having *lost* the draft letter must be unfavourable to your character. Although I have made several applications to you for its restoration, this flimsy plea was never advanced before, and, only a week ago, when I formally demanded the document through my son, the exact words of your reply (which he wrote down after leaving you) were, ‘*I will speak to my Solicitor to give it up.*’

“I have sufficient past experience of your carefulness in preserving letters and documents, likely to effect your personal interests, to be most unwilling to place even the least reliance on your pretended loss of the Draft Letter in question.

“Fortunately I have been able to send its counterpart to —, in a letter, formally relinquishing my office of joint referee, so that the absence of the document, whether real or simulated, will not frustrate my placing on record the terms I arrived at for the equitable settlement of the differences existing between you; but which after you had assented to [?] you forbore to ratify.

“I am so thoroughly pleased at the termination of the irksome task which I had assumed, that I care not to make any comment on the personally insulting tenour of some of the remarks in your recent letters to me, beyond assuring you of the thorough contempt in which I hold your shuffling conduct. Yours, &c.”

[This letter is anti-dated, being received by hand on the 9th of December. The "referee" speaks of his task as one "I had assumed"—a course on his part which I should be sorry to doubt. I would not have undertaken the same dreary labour for five guineas a day. Two guineas a day would be cheap indeed, amounting to only £25 or £30. But who is to pay this "referee?"]

These letters of the 4th and 5th of December drew from me the following separate replies, with which I shall close this portion of the Appendix. That to the Secretary of the Polytechnic is as follows:—

"Redhill, December 7, 1863.—I am in receipt of your letter of the 4th inst., and am heartily sorry that that Mr. — should have acted so indiscreetly as he has done, considering, as you say, it was without your knowledge. But allow me to observe, you sent him to me, and I never heard of him until you or the solicitors induced him to make an appointment to see me; and when he called he came entrusted with your licenses and my letters to you, and further fully satisfied me that he was in communication both with you and the solicitors. If he were not *your* referee, he acted very inconsistently, to say the least of it, in recommending me to appoint my publisher or *my* referee.

"But the principal object of my present letter is specially to notice that there are certain little courtesies between gentlemen, and particularly between friends, the dropping of which wears a plain character too obvious to be mistaken. Pray in what have I offended you or your Institution that you now for the first time address me with plain 'Sir,' instead of your accustomed 'My dear Sir?' You will not surely refuse me an answer to this enquiry. It is a good old English custom to be plain and straightforward, and I give you my word of

honour I am perfectly in the dark why you act so strangely. It would be so un-English and so ungracious not to tell a man placed in my position in what he has offended to cause this withdrawal of kindly recognition, that I will not even allow myself to suspect other than an immediate, satisfactory reply. In what have I offended you? What have I done to warrant this discourtesy on your part? If I have sinned, I will make you every possible reparation if you put it in my power to do so. I cannot say more; yet my conscience assures me that the man who intends right and can expect no advantage from doing wrong is not a very likely person to commit any fault of sufficient magnitude to deserve such treatment as that to which you have been and are now subjecting me."

To the "referee" I wrote:—

"Blackheath, December 8, 1863.—Dear Sir, I am back here for a few days, and have this evening received your letter dated the 5th inst., but not left at my publishers until this afternoon. It seems to demand some reply from me, to remove, or at least to modify your wrong impressions on a matter which, as it no way concerns you individually, might rather be a source of amusement to you, if anything, than vexation. You could never surely intend to dictate to me the proper management of my own business, whatever might be your well-meant suggestions. But certainly, if I am to understand that you considered you could and ought to have succeeded in some premeditated course which has now broken down, then, indeed, I can understand your at first satirical and now angry expressions of disappointment.

"When you wrote to me on the 2nd of September you referred particularly to the shadowy nature of our acquaintance, and spoke of hoping to be able to arrange differences between myself and a mutual friend connected with the Polytechnic

Institution, in respect to some misunderstanding between us. My previous acquaintance with you as a publisher induced me to hope you were about to enlighten me in regard to a certain ubiquitous set of pirates, clerks, agents, and reporters, leagued together to upset my claims to my invention, at every theatre and other establishments in London as well as in the country, and especially in all newspaper paragraphs. I so heartily abhorred the odious system of puffery in practice, that I gladly received you at Norwood as a casual friend, and one likely to convey to me the solution of a great mystery. I was the more rejoiced at this anticipated explanation, through any channel, because the Polytechnic had placed my grievance for settlement in the hands of solicitors, whose first letter to me is dated August 29, 1863. It was a very mild communication. They told me, 'We can quite understand your feelings of annoyance at seeing the advertisements you refer to,' &c. &c. But in all other respects it was the case of the defendant, without knowing that of the plaintiff. And it was only after I had laid before them my own case that you first wrote, and then called on me, stating that I had offended the solicitors by the way in which I had addressed them, observing that I must know that '*More flies are caught with honey than vinegar.*'

"So late as December 4 Mr. — writes to me that you were not *his* referee. Then I ask, Who sent you? Whose referee were you? Were you sent down by the Polytechnic? or by the solicitors? or came you of your own accord?

"Mr. — at the same time adds that you were '*our* mutual arbitrator.' Who (I again ask) proposed you? Was it Mr. —? or the Polytechnic? or the solicitors? I never asked for a referee or arbitrator; therefore, Who was the first mover? and who ratified the appointment?

"Since I last wrote to you, within the last few days I have

found the draft of the letter you allude to, but which now can be of no advantage to you. On my word of honour, I had been unable to find it up to the time I last wrote, not having seen it for some months.

“Your ‘*formally*’ relinquishing your office of joint referee is a course which has my full approval, because in cases of disagreements the more *formally* every act is performed the better. So pray inform me, Who *formally* appointed you to the arbitration now so *formally* given up? Were your credentials the licenses drawn up by the solicitors, with those letters of mine addressed to the Polytechnic, which you exhibited? or had you also other credentials which you omitted to show me? If so, who gave you those credentials?—and, indeed, how came you by the licenses and my letters?”

“To threaten me as you have done, and now to write to me of ‘the thorough contempt in which you hold my shuffling conduct,’ is only making that a personal affair between you and I, which you professedly came to arrange between myself and the Polytechnic, by some method so indefinite for the purpose intended that I never could fathom it.

“If such is your construction of the office you undertook—one which I never sought and never could rightly account for—I confess our opinions are so widely different, that I can afford to make every allowance for your most unparliamentary language—not doubting you yourself will be glad on reflection to retract such uncalled for violence of expression.—Yours, &c.”

No answer came to the two preceding letters, but on the 14th of December, I received another and last application for the return of the Draft Letter (Appendix D.), couched in such intolerant language that I never replied.

D.

THE POLYTECHNIC INSTITUTION.

As a superficial perusal of the present work might lead to the false impression that the author has some unexplained lingering personal feeling against the Institution, its board of directors, or servants, he is most desirous to express in explicit terms his approval of the Institution, and his desire to maintain its prosperity by every possible means.

The Polytechnic Institution is unrivalled among metropolitan establishments for its means and successful efforts in supplying on easy terms a large amount of instruction, mingled with a large fund of amusement. It is of long standing, and every one who has ever been within its noble halls must be alive to the fact that the least injury done to such an Institution calculated to diminish the lustre of its character or occasion its decay, would subject the offender to the heaviest possible penalty of the severest censure of the all-powerful press of this country—if not, also, to more serious consequences.

But no institution of any kind whatever is infallible—the largest and wealthiest, private or public, benevolent, scientific, or commercial, have not uniformly proved incapable of falling into abuses, however unintentional on the part of their proprietors or managers, or well provided against by the laws of the institution, or still more stringent laws of the country. Banks have been defrauded in the very teeth of presumed vigilance; and even railway companies, with all their desire to protect life and property, occasionally fall under the censure of the press and the public.

I can and do feel for any large establishment, of whatever nature it may be, that has some internal plague-spot somewhere. Government exercises all manner of careful controul

over its extensive establishments, and perhaps none more so than the Post Office; yet it is patent to all that even that trustworthy establishment has many internal and external annoyances, occasioning many personal and public grievances, sometimes arising from one cause and sometimes from another—but no one for a moment supposes any complicity, and none but a lunatic would throw out the hint. No; it is not the Polytechnic Institution as an institution, but a something or other somewhere that is an unquestionable plague-spot. If the patient is ever so little out of order, administer a pill, however bitter; or apply the scalpel and cut deep enough to root out this molecule, as it may be, of ill-conditioned blood.

When in November, 1862, I presented my invention to the Polytechnic, its walls, fittings, &c., were all put in requisition to adopt my Optical Illusions for exhibition, first in the small, then in the large Lecture Hall.

On January 5, 1863, a note was received signed by its Honorary Director, or Secretary, thus:—

“Dear Sir,—I am requested by the Directors of the Polytechnic to beg your acceptance of an Honorary Admission, which they hope you will use frequently. Any suggestions on scientific matters will be thankfully received by

“Your obedient servant, &c.”

And another ticket of the same nature on September 20. These, with about two dozen free admissions for friends, are all I have to acknowledge; but even these small courtesies were grateful to me in my position, who sought only to aid the Institution. The correspondence thus friendly commenced was continued as given in Appendix A.

Having myself at different times filled the office of Honorary Secretary to three Institutions of a scientific character, and been thirty years connected with both business and science, it will

be understood why that, which might have been treated differently in other hands, meets with the censure it now receives.

I am bound to believe that what I hear and learn from correspondence with the Institution, in one form or another, from the Secretary, the solicitors, and the referee, is the fact; and that the Polytechnic is the victim of outside pirates, clerks, agents, and other designing persons, who tamper with its advertisements, and spread abroad mis-statements to the injury of even its most liberal contributors, whether of inventions or any other valuable property—strange as such statements sound to the ear of a man of large experience and mature age. It is not my place to show how much of this confusion might be avoided in the most simple possible manner, yet I have occasionally even gone out of my way to volunteer advice, hoping to save all unpleasantness.

On the 10th of September, 1863, the “referee” proposed my writing a letter to the Honorary Director of the Polytechnic, of which he handed me a draft on note paper, thus:—

“Dear Sir,—After the explanations given to me by Mr. —, I quite acquit you of any complicity with any party whatever in withholding my name from the public in connection with the Ghost Illusion, and I beg to express my regret that anything I may have said in any letter should have given you offence.

“Mr. — states to me that you are willing to insert the printed form of advertisement he has handed to me, in twelve London newspapers, and to forward a circular with copy of such advertisement to all licensees, requesting them to adopt the same.

“Now in consideration of your so doing within a week of this date, I agree forthwith to give you all the assistance in

my power towards obtaining the Patent; and when the same is sealed, I will at your expense ratify my present contract with you by executing an assignment, containing all the usual clauses, of the Patent to you, with this stipulation, That in all future licenses granted by you there shall be a clause requiring licensees to advertise with the heading of the printed form of advertisement, before referred to."

Why the Directors should sanction this course—or, if not sanctioned by them, how it ever came to be proposed to me—is one other difficulty I have been unable to account for. It is all the more unaccountable to me after twelve month's forbearance; and I remain in a perplexity to understand what immunity Regent Street has obtained over Paternoster Row. However, this letter never went beyond the draft; and from what occurred afterwards in relation to it, I daily expected a communication somewhat in the spirit of the following:—

"By order of the Directors of this Institution I am desired to inform you that while fully alive to the value of your invention, and for which they thank you, so far as you have gone; yet it is my painful duty to add that they unanimously express their surprise and regret at your singular neglect in not forwarding them a letter agreeable to the *draft* letter of the 10th of September, as furnished to you by the referee, through the Honorary Director; by which untoward conduct of yours we presume you decline a legal assignment to the Trustees of the patented apparatus for operating the motions requisite to be given to your Transparent Mirror in our exhibitions of your invention."

Any communication of this nature, or however widely differing from it, would at least have afforded an opportunity for mutual explanations. But the Directors, probably advised otherwise, seem to have left the entire management in the

hands of their Honorary Director, acting in his capacity of Secretary. It would have been gratifying to me had I ever had such an opportunity for stating, as I now state, that I was prepared to explain away any misunderstanding and to assign the Patent to Trustees, or to whomsoever the Directors might appoint, as usual with corporate bodies. But I repudiated, as shown by all my acts sacrificing myself to individual interests, to make as their gift what was wholly my gift, and even possibly peril those of the Institution.

Such then is my feeling in regard to the Polytechnic—a sincere respect for so valuable an institution; a sincere wish to promote its welfare; and a desire in my own case to advocate the torturing wrongs to which a large body of my fellow-inventors are subjected, in spite of law and equity and the exercise of common sense.

It is sometimes difficult, as in the present instance, to avoid being discursive without sacrificing precision and clearness; I shall, however, be as brief as possible in my closing remarks.

Those who obnoxiously pin themselves to the skirts of others should be reminded that the best devised schemes of charlatanry sooner or later come to light, for borrowed plumes are less honourable than rightful tinsel; yet all experience proves that there are men in every class of society against whose grasp it is not always easy to escape, for they are too dull to understand that—

“Pigmies are pigmies still, though perched on Alps;
And pyramids are pyramids in vales.”

Hence it is we hear so much complaint against the wily, subtle tricks of the designing, plunging many an original inventor into every conceivable shade of misery—in cases where no refinement in this stealthy art of moral phlebotomy has been spared, to transfuse into other veins the virtue they had

never before possessed; the victim thus becoming a martyr, cruelly realizing the maxim—

“The man who merits most must most complain.”

The rights of Inventors, a class to whose genius our boasted land of liberty owes much of its gigantic military, naval, and commercial power, is very vaguely comprehended by men of letters; the few among other classes who uphold their claims, although like good leaven, are as yet hid among the multitude, and the mass of mankind is least of all alive to any grievances arising out of merely mental cultivation. Deep injustice to inventors has been rife in this country for above 200 years, if we date no later back than to the birth of the steam-engine, the inventor of which died in abject poverty, although a nobleman. No statue affords him posthumous fame; no press has yet published the history of his life! This growing, crying, crushing evil has gained in strength with years, been refined as knowledge has increased, and in our day boldly seeks patronage in high places.

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