In the preceding experiments there is no necessity for any particular apparatus. For communicating heat, the spirit lamp alone should be used, and a substitute for this may be readily constructed by fitting a cork with a tin tube, about an inch long, loosely into the mouth of a wide-necked phial. The blow-pipe is employed by working jewellers and watchmakers, and therefore can be easily procured.

As the nitric acid has already been fully noticed in several papers by a correspondent, we shall, in the next Number, advert to the processes for detecting the muriatic and oxalic acids.

DISCOVERY OF THE EXPANSION OF THE
HORSE'S FOOT.

To the Editor of THE LANCET.

SIR,—In addition to my former letter, No. 361, page 687-8, I send the subjoined to disprove the *claim-all* pretensions to the discovery of the expansion of the horse's foot, asserted in No. 366, page 899, and, as brevity is the order of the day, I proceed without further preface. It is there stated, "These authors (says the writer, alluding to Messrs Freeman and James Clark) have long been familiar to me; but the passages quoted, taken as they are, without the context, would probably lead to incorrect conclusions in other minds." In what other way, than by extracts, is it possible to fairly contrast and convey the opinions of different writers to the public in a letter through a journal, let me ask? for I am at a loss even to conjecture; but I can positively assure your readers, that *all* the extracts which have been made are fully borne out by the context; and, as regards the writer's *long* familiarity with these authors, which he would have us fain believe, I must observe, that it is only a few months since, on my showing him Mr. Freeman's able and splendid work, that he expressed his very great surprise on seeing so much had been said on the subject prior to Mr. B. Clark's publication. He admitted the book was entirely new *to him*, and on my pointing out several particular passages, he acknowledged the great justness of their application, and the author's very correct views of the expansion of the horse's foot. Similar admissions have also been made by him in respect to certain parts of Mr. James Clark's writings; and I am further enabled to assert, that in a conversation with Mr. B. Clark (the writer before alluded to being also present) on the merits of Mr. Freeman's book, he admitted, if the work in ques-

tion was *genuine as to date*, that Mr. Freeman was fully acquainted with the principle of expansion of the horse's foot, and that he was wholly entitled to the merits of it; but it is necessary for me to remark, that he first used a great many plausible arguments, of which he is so able a master, in order, if possible, to convince me that the work in question had been predicated on the title page by the booksellers, and that it did not in reality appear until after his own; but on that point I was happily enabled also to meet him, by informing him, that I had seen Mr. Freeman's book long before his was published. I had previously heard Mr. B. Clark make similar assertions as to the date several times. I need not, I think, now say, "To whom is the *merit* due?"

The writer instances Jenner and Milton in support of his *claim-all*. Allow me, therefore, to observe of Dr. Jenner, that he was a man of unassuming manners, neither covetous of pelf or fame, ever ready to acknowledge whatever information he derived from others, above concealment, and he never descended to low, mean, and degrading tricks to feed avarice or revenge, for he possessed neither; nor did he vulgarly abuse his professional brethren who differed from him in opinion.

What Milton did when he was seven or eight years old I am not enabled to say, or whether he had before that age studied anatomy, or described the circulation of the blood poetically or physiologically, I cannot tell; it appears, however, that Harvey discovered the circulation in or about 1619; that Milton was born in 1608, and that he lived many years after Harvey, who died in 1657, so that I believe those points avail the writer nought. A great deal follows about inventions, steam-engines, &c., that does not in any way appear to me to apply to the case; but as I intend hereafter to show that some of Freeman's excellent statements have been wrongfully departed from; that some of Mr. B. Clark's assertions are not only erroneous but injurious; and that he does not appear to me to understand the real formation and action of the foot, or the application of Old Blundevill's, now his *own* darling shoe; I shall consequently pass over this for the present.

It is next asserted by the all-claiming writer, that "The passages which have been taken from the works of Messrs. Freeman and James Clark, contain *all* that can be advanced in their favour." I most positively assure your readers, that some of the weakest only, if possible, were purposely extracted (i. e. in my former letter). I have now added one more, and if the limits of your pages would admit I could as easily give twenty, but as Mr. Freeman's

book will shortly be republished with extensive notes, it will then be attainable by those who may wish to examine for themselves, and you will, I presume, no longer be expected to insert it in your journal for the sake of the context.

"When, according to the general method, a long shoe with a broad web is unfortunately put on, which is made thicker at the heels than at the toe, the consequence which commonly ensues is, that of hindering the expansion of the heel of the foot, which, in that case, soon over-contracts itself. This circumstance produces very great pain to the foot, by occasioning too great a compression of the cartilages, and of the blood-vessels by which they are surrounded."—*Observations on the Mechanism of the Horse's Foot. By Strickland Freeman, Esq. 1796.*

"That they saw the expansion of the heels," says the all-claiming writer, "as they term it, I frankly admit, but they saw without understanding it." Oh! oh! they did see that, then; and pray what other expansion is there to be seen in the horse's foot? This the claim-all writer has very cunningly omitted to inform your readers, modestly refraining from saying one single word about the bow and string; is *In hæc signa vinces* blurred from the escutcheon; are the 12s. pastboard gewgaws gone to oblivion? "Why they did not understand it," we are modestly kept in the dark; I will, therefore, venture to conjecture they were supposed by the writer not to have possessed, like himself, a superior capacity.

"As to Freeman's losing sight of expansion altogether, and leaving it as an observation he had made, bearing no important consequences, and leading to no valuable result," is such a false assertion, that it could only have been made for wilful misrepresentation, or by a person ignorant of the real merits of the book: I will, therefore, add one more short extract from very near the end to support my assertion.

"When a horse, therefore, happens to set his foot on a large pebble, or on an uneven-pointed stone in a paved street, his heel, which for reasons before given, will receive no injury from that stone, when shod in such a manner as to be able to expand itself, will be less liable to slip upon it than if covered with a shoe with cramps to it, the points of which only contribute to make the bearing of the shoe more uneven, where from the hardness of a pebble, or of an irregular pavement, the shoe is not able to enter it. The heels of the fore-feet should, therefore, on this, as on many other accounts, be permitted to expand themselves, by having that sort of shoes on which produces the least impediment."—*Obser-*

vations, &c. By Strickland Freeman, Esq. 1796.

The writer again goes on to assert, that the expansion of the foot was not understood by these authors, and that they "nailed their shoes on both sides." Now, pray is not Mr. B. Clark's darling shoe nailed on both sides? What quibbles and shifts are there not to be found for the purpose of soiling paper!

The idea of the writer's quoting Mr. Coleman's book to serve his object, reminds me of the devil's quoting Scripture, which he has ever been said to do when it would answer his purpose. To enter fully into this, and the immediately preceding points, would fill a LANCET, and consequently, as not being of very great moment, must be passed by for the present.

"I admit (says the writer, and really one admission is something from such a quarter) that he (Freeman) saw the expansive action of the foot, but he neither demonstrated it so as to be intelligible to others, nor made any particular application of it, &c." He certainly did not take out a patent for the discovery, or make any foolish hit so as to deceive himself and others; on that score then there is much more credit due to him. But I positively assert, and stand pledged to prove, that he (at least as far as I have been able to discover), of all writers, has the most correctly described the expansive and true action of the horse's foot. While on the subject of patents, as the writer alludes to them, I must confess that I do not see the *eclat* in sneering at those gentlemen who have been disappointed on taking out patents for improvements in horse-shoes—I particularly allude to Mr. Rotch, Lieut.-Colonel Goldfinch, with others; and he appears to forget, that Mr. B. Clark is among the number.—*See a copy, dated March 25th, 1806, Repertory of Arts, &c., Vol. 51, August 1806.*

The writer next, with mighty grasp, lays claim to *all* for Mr. B. Clark, "with whom (he says) the idea of this discovery was perfectly original, that he arrived at a knowledge of it whilst making experiments to relieve contracted feet, and not by any chance or casualty."* This really is such a grasp-all and sweeping sort of claim that it is not easy to grapple with it; we will, therefore, place the writer on a par with the celebrated critic Dennis, who was always wont to claim the merit of being the author of every thing great: being on a time at the performance of a play, in which some part required the introduction and imitation of rolling peals of thunder, the effect being great and well executed, the critic vehemently exclaimed,

* How does this accord with Mr. B. Clark's own account further on?

"That's my thunder! tis all my thunder!" The writer may, therefore, console himself with not being the first who has overshot the mark; but more of this anon.

To proceed, Mr. B. Clark did, however, publish some years ago an experiment which we will suppose he made, on one mare's foot for a succession of years, but that he need not have taken the trouble to do, if he had studied those authors who had preceded him; and after all it is only one instance, and as I am not aware of his having treated us with a new course in his republication, we may fairly presume he has none to give us, and, therefore, at best it is only solitary evidence, as M. Girard very justly observes.

If my memory does not fail me, Mr. B. Clark has somewhere modestly said of himself that his labours have been "blessed with many discoveries of no mean importance" (in his own opinion of course). What a blessing then it would be for us to have them in a narrow compass, as we might then fairly examine them, and contrast them with the opinions of others, who, unfortunately for Mr. B. Clark's credit and investigation, have too frequently a prior claim to them, although they may have been possibly discoveries to him! I copy, for example, the following, which will in some measure show with how little ceremony he has treated preceding writers, though the claim-all writer of the letter would perhaps have us believe, and apparently wishes us to do so, that Mr. B. Clark was wholly unacquainted with all who wrote before him, and thus to account for his perfect originality.

In alluding to the old writers' ignorance in one of his numerous publications, Mr. B. Clark says Osmer was an exception; consequently we presume he ought to have been well acquainted with his book, wherein I find the following set down, and as I did not advance it as proof in my last, I shall do so now, and if Mr. B. Clark did not understand that writer's very plain language, I can only attribute it to the dullness of his perception and comprehension. "On the other hand (speaking of the indiscriminate custom of stopping and greasing all sorts of feet), the hoof being capable of contraction and expansion, strong feet cannot be kept too full of oil, for the reasons before given."—*Treatise on the Diseases and Lameness of Horses. By W. Osmer, 1761, page 53.*

Mr. B. Clark has likewise stated that "James Clark of Edinburgh is also an exception, having a good deal of good plain sense and sound observation in his writings; and he was supposed by many intelligent persons to have exhausted the subject of shoeing and the foot, yet was he wholly unacquainted with the inflected nature of the horse's hoof or its bulbs or frog-band,

on the functions and structure of the frog; nor had he any consistent notions as to the real cause of the contraction of the foot, or any idea of the changed state of the coffin-bone in this disease." Now reader, pray contrast this with what Mr. James Clark says, page 5, and consider how far we are justified in placing confidence in Mr. B. Clark's writings without due examination. "The crust (and by some the wall) is of a tough hard substance, thick and strong at the fore-part or toe, but thinner and weaker towards the heels, it reflects inwards and forwards to the point of the frog, there it is termed the bars or binders of the foot." His opinion of the frog, which is equally correct, was quoted in my last communication, and need not be repeated here. On contraction of the foot at page 16 he states, "The heels, as has been observed, being forced together, the crust presses upon the processes of the coffin, and extremities of the nut-bones; the frog is confined, and raised so far from the ground, that it cannot have that support upon it, which it ought to have; the circulation of the blood is impeded, and a wasting of the frog, and frequently of the whole foot ensues."

I have next to revert to Mr. B. Clark's own account of, and manner of becoming acquainted with, the bars or inflections of the hoof. "The actual construction also of the horse's hoof was laid open to me in the following manner:—A young fresh hoof had lain on my desk some days, and tired almost of seeing it, I determined, without any particular object, to make an horizontal section of it, and throw it away; in inspecting it, after sawing it asunder, I observed the loose edges of the frog-band and bulbs, and tracing them found them to make one entire unbroken circle round the hoof, to my great surprise, as the hoof's structure then admitted of an easy explanation; the bars were next seen to be portions only of the wall inflected inwards towards the centre of the foot, so that the hoof consisted simply of two circles, one of elastic horn, and one of firm horn instead of several parts, as was before imagined; the sole being merely a supplementary part uniting and filling up these parts, and closing the lower opening of the hoof."

Notwithstanding the chance which let Mr. B. Clark into the knowledge of this description, every point of it which is correct was well known, and had been described years before, by Osmer, James Clark, &c. As I have already trespassed to a considerable length on your columns, I shall be compelled to defer what I have to advance on the structure of the foot, to a more favourable opportunity. And remain, Sir,

yours, much obliged, &c.,
B. HART.

September 7, 1839.