

allow the valve to have the lead, and also cause it to move in the proper direction, when the engine is working in the direction of P.

Let us now turn the crank to B. The eccentric will now stand at w . To cause the piston to work the crank in the direction of L, the eccentric rod end must be attached to the lever s , as before, which will cause it to stand at x , and consequently cause the valve to be wide open, with the exception of the little variation caused by the lead, as I spoke of in fig. 1. To reverse the motion, that is, to cause the crank to turn in the direction of P, I remove the eccentric rod end from x to r , and by this means (the eccentric rod end being properly formed) the lever will be drawn from r to n , consequently the valve will receive the same change as it did in fig. 1, by changing the eccentric rods, when the crank was at B.

By setting the cranks, in figs. 1 and 2, in any two corresponding points of their revolutions, it will be found that, when the eccentric rod in fig. 2, is attached to the lever s , the valve will be in the same situation as that of fig. 1, when the rod belonging to c is attached to the lever a . And it will also be found that the changing of the two eccentric rods in fig. 1, will effect the same change in the situation of the valve as the removing of the eccentric rod in fig. 2, from the one end to the other. Hence it is evident that one eccentric, with the two levers, arranged in the manner described, will produce the same effect, in every respect, upon the valve, as is now produced with the two eccentrics.

The distance $s r$, fig. 2, will depend upon the length of the eccentric rod, and the quantity of lead in the eccentric. If the eccentric be required to give a greater quantity of lead than common, it will perhaps be advisable to use two bell crank levers instead. But these particulars are of little importance, the principal object to be attended to is to set the ends of these two levers in the proper places.

I am afraid I am trespassing too far upon your pages, therefore I will conclude with a short explanation of a little deviation in this latter arrangement from the former, which, before, I did not think worthy of notice. When the crank is at C, fig. 1, either of the eccentric rods may be attached to the lever a , without moving it. But in fig. 2, when the crank is in that same position, it will be found that the eccentric rod cannot be removed from s to r , without making a little alteration in the levers. It would be a waste of time to enter into a minute explanation of this little alteration, which is caused by the vibration of that end of the eccentric rod which is in connection with the eccentric; upon the same principles as the piston is caused to be in the middle of the cylinder when the crank is at B.

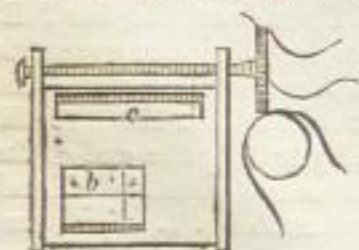
I remain, Sir, your's, very respectfully,

JOHN CHARLES PEARCE.

Leeds, Nov. 9, 1840.

IMPROVEMENT OF THE HYPSONETER.

SIR—The ingenious little instrument for taking altitudes, invented by Mr. Sang and described in your last number, appears to me greatly deficient in one particular, and that is in the means of obtaining a level base line on which to conduct operations; the absence of this quality, indeed, renders it almost useless on uneven ground, and should the base be extended over a space of 80 or 100 feet or yards, the difficulty greatly increases; in this case, to trust to the eye for obtaining a level, would be out of the question; one might as well guess the altitude at once, as a quicker and equally correct method of arriving at the desired result; the instrument, therefore, if used alone, is rather contracted in its sphere of usefulness, an additional observation with a spirit level being necessary to obtain a near approach to truth. In saying this, my intention is not in any way to detract from the merits of Mr. Sang's invention; on the contrary, I confess myself much taken with it, and on that account have been turning over the scanty resources of a cranium somewhat obtuse, in hopes of finding something that might obviate the defects, which appear as such, in my humble opinion.



I would propose, therefore, the addition of a small milled-headed steel bar, an isosceles triangle in section, on which the instrument should be suspended; balancing itself thus, a base line will be obtained constant in its level; a cross wire over the aperture b will be necessary to complete the line of collimation. By these simple additions, altitudes may be taken with much greater precision, and the instrument will also acquire the properties of a level, sufficiently accurate for the purposes of gardening, for draining, or for levelling banks, and may be used generally except where great mathematical nicety is required.

Should you consider this modification, which springs from a dull man's brain, worthy a place in your Journal, it might, by chance, be turned to good account by some of your more intelligent readers.

Liverpool,

December 9th, 1840.

AZIMUTH.

REVIEWS.

Companion to the Almanac for 1841. Knight and Co.

WE are requested to explain in our notice of the present volume of the "*Companion*," a most singularly unlucky and vexatious accident which has befallen pages 245 and 6, owing to the hurry with which the sheet containing them was made up for press, nor was the mistake discovered till it was too late to correct it by a cancel, the larger number of copies having previously been disposed of. Those of our readers, therefore, who may have happened to have already perused the architectural section, must have felt completely mystified by the descriptions of the Reform Club-house and the Corn Exchange, for they are so strangely intermixed and shuffled together, that it is utterly impossible to understand either as now put together by the printer, who has clapped down the saloon of the Club-house in Mark Lane, and *vice versa* put the newly modelled area of the old Corn Exchange into Mr. Barry's building in Pall Mall—which, it seems has been improved by Mr. Morris and decorated by Bielefeld. Perhaps this last rather startling piece of information may excite the architectural reader's suspicion, and satisfy him that there must be some mistake, although he may probably not be able entirely to unravel it,—or even if he can do so, to account for it—how by any possibility it could have occurred. In a monthly publication such a blunder would have been of much less consequence, because there the opportunity of rectifying it would have soon occurred, whereas a twelvemonth must elapse before the readers generally of the "*Companion*" can be satisfied that the architectural critic was not actually *muzzy* when he made his remarks on the two buildings in question.

The best way of correcting the mistakes will be to quote the passages where they occur. Speaking of the Reform Club-house he says: "We had imagined that the two smaller divisions both in the coffee-room and the drawing-room above it, would be separated from the other compartments into which those rooms are divided, by screens of — columns, instead of which we now find that there are only attached columns at the angles of the projecting piers which form the breaks on the sides of those rooms, &c." Thus it will be seen that the latter portion after the — in our quotation, and the rest of the article should be transposed from page 246 to the preceding one, and be connected with the line ending with "screens of." Which being done, the other blunder rectifies itself, it becoming obvious that the remainder of page 245, line 13 from bottom, belongs to the account of the Corn Exchange, where the paragraph now rendered unintelligible would read thus: "The order is an Italian Doric, the columns of which are so disposed as to form a parallelogram on the plan, having five intercolumns on each side, and three at each end, but in the upper part this shape is converted into an oblong octagon, the angles being cut off by the entablature being carried — from the column next the extreme one to the corresponding column of the adjoining side. The attic and ceiling follow the plan of the entablature, and the second of them consists entirely of a very deep cove, through which the light is admitted by means of glazed compartments. The centre, however, or what would be the flat portion of the ceiling is neither glazed nor covered in at all, but forms an opening of thirty feet by ten (surmounted by a cornice and balustrade) consequently the shelter from rain is not altogether so complete as it might be."

Having quoted enough to correct the wholesale error on the part of the printer, by connecting the passages he had dissevered, we now proceed to make some remarks of our own, noting as a curious circumstance the alteration which has lately been made in the old or south area of the Corn Exchange, in order to shelter it from the weather, at the very time that a design has been adopted for the Royal Exchange, with an uncovered area or open cortile, surrounded as formerly by a covered ambulatory, which though protected from rain above, must be partially exposed to that, and to other inconveniences attending inclement weather—to damp, fog, and wind. We do not mean to say that Mr. Tite's design is at all more objectionable in that respect than were the others; on the contrary, it is far less so than the generality of them, on account of the very great depth, he has given to the colonnades. What strikes us as singular is that the Gresham Committee should have settled that very important point,