

# Mechanics' Magazine,

MUSEUM, REGISTER, JOURNAL, AND GAZETTE.

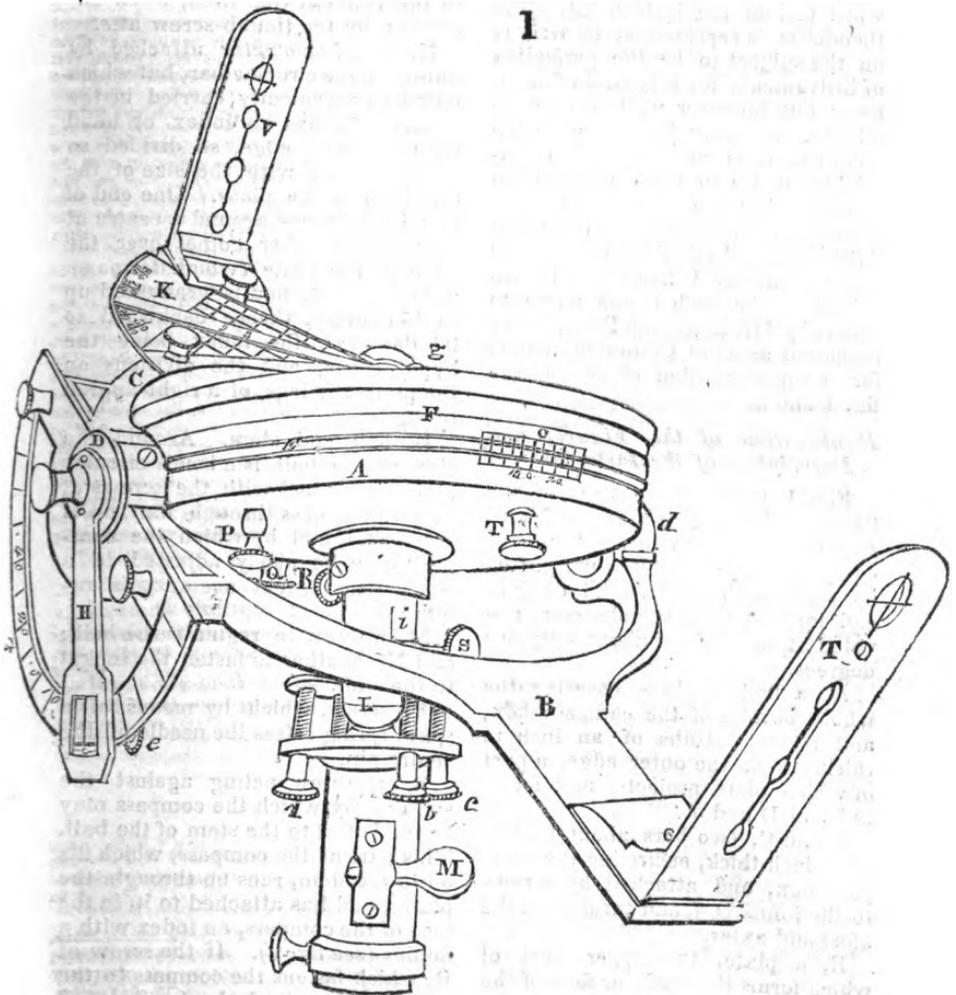
No. 264.]

SATURDAY, AUGUST 30, 1828.

[Price 3d.

“That kind of ingenuity is an essential property of the soul, which teaches man not merely to learn for the present moment, but to add everything acquired to what is already known, and thus to combine fresh and future stores with those he is possessed of. One operative power arises from another, one builds upon another, one develops itself from another.”—HERDER.

## LYON'S ELEVATING COMPASS.



LYON'S IMPROVED ELEVATING  
COMPASS.

(From the "American Journal of  
Science.")

In the course of surveying more than three thousand miles, for the United States, and in using compasses manufactured by several of our best artists, although excellent of their kind, I have frequently experienced considerable inconvenience in passing over hilly ground, from not being able to elevate or depress, as the case might require, the forward end of the instrument. The theodolite is represented by writers on the subject to be the perfection of instruments for this kind of business; but however well it may be adapted to surveying in an open country, it is altogether too unwieldy for use in the woods. Considering that an instrument combining the advantages of the theodolite in a portable form would be a desideratum, I had what I conceived to be such a one made to order, by Mr. Benjamin Platt, a very ingenious artist of Columbus, Ohio; for a representation of which, see fig. 1 and 2.

*Explanation of the Figure, and  
Description of the Instrument.*

Fig. 1 represents a view of the "improved elevating compass," from a point somewhat lower than the compass box, as standing upright on its staff, with its forward end, or end farthest from the observer, elevated at an angle of about forty-five degrees.

A, a hollow plate, covering the whole bottom of the compass box, and about 4-10ths of an inch in thickness on the outer edge, a part of which plate projects, and forms axles at D and d.

B and C, two bars about 4-10ths of an inch thick, encircling the compass box, and attached by screws to the joints D d, and turning on the aforesaid axles.

E, a plate, the upper part of which forms the card, or face of the compass, to which is attached the graduated ring. This plate, provided with a nonius represented at

O, and with two spirit levels in the face of the compass, is turned at pleasure by the trundle P, and made fast by the screw T. The nonius should always be made to turn off, at least 15 degrees. Compasses are usually faulty in this respect.

G, a semicircle, graduated to degrees, and attached to a projection of the circular bars.

H, an index with a nonius, by which the divisions on the semicircle may be read off for every five minutes, attached by a screw to the end of the axle at D, and made fast to the semicircular arch, when necessary, by the thumb-screw at e.

K, a *trigonometer* attached by screws to the circular bar, but which may be conveniently carried in the pocket. It has an index or hand with a fiducial edge, so divided as to correspond with the size of the divisions on the plate. One end of this index turns around a centre at g, and the other comes over the edge of the plate (which forms an arc of a circle, and is graduated up to 45 degrees, thence backward to 90 degrees), the index being the hypothenuse, and the divisions on the plate the legs, of a right-angled triangle.

L, ball and stem. Around the stem of the ball is a small circular plate in contact with the screws a, b, c, which pass through the top of the socket, and by which the compass may be nicely adjusted to a level, when great accuracy is required.

M, a screw to regulate the ball; and N, another to fasten the socket to the staff.

P, screw, which by means of a spiral spring raises the needle off the centre-pin.

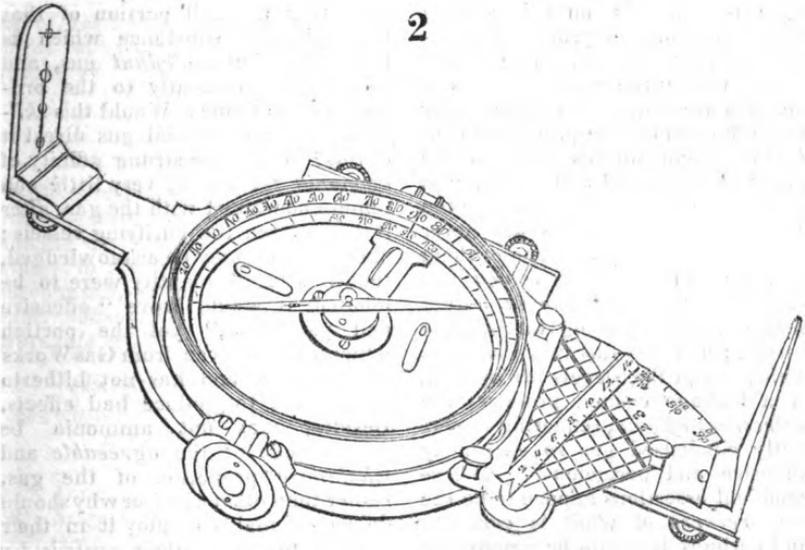
S, a screw acting against the spring i, by which the compass may be made fast to the stem of the ball. This part of the compass, which fits on to the stem, runs up through the plates, and has attached to it, in the face of the compass, an index with a nonius (see fig. 2). If the screw at R, which fastens the compass to the part just described, be loosed, and the screw S made tight, the compass may be turned around at plea-

sure, while the index remains stationary; and thus any contained angle may be measured, without reference to the needle, with great facility.

T and V are sight-vanes, with eye-holes and cross hairs for leveling. They need be but short, as they can be elevated or depressed to the direction of the object at pleasure.

Fig. 2 shows an oblique view of the face of the compass, with the needle, index, and levels; and also shows the manner in which the parts of the joints are put together.

This instrument, after a fair trial in surveying upwards of five hundred miles, has fully answered my expectations. By the addition of a telescope, which may easily be made to the sight-vanes, it will unite all



the excellencies of the theodolite, and have the advantage that it may be divested of its appendages for measuring vertical angles, and rendered as portable as a common circumferentor. The *trigonometer* which is attached to it may be carried in the pocket, and, if well made, will entirely supersede the necessity of carrying a traverse table, as

on it the latitude and departure for any course, and any ordinary distance, may be seen at a glance. The surveyor will find it a very convenient and expeditious method of measuring the distance across streams, &c., particularly if the weather be wet, and he cannot use tables.

#### GAS LIGHTING.

The "London Journal of Arts and Sciences," for July, contains an article, apparently from a correspondent at Edinburgh, on the condensation of coal gas; but it exhibits such a palpable want of information, both of the principles of chemistry and the processes of gas establishments, as may excite surprise that

the Editors should have permitted it to appear in their pages. The perusal of it will satisfy any person that its obvious purpose is to defame the greater part of the London Gas Companies, in order to blazon and puff the merits of an individual who is stated to have "had the charge of the Bow Oil and Gas Works in