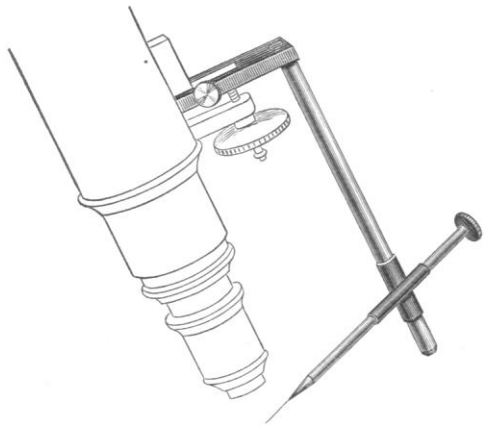
MICROSCOPY.

Mr. C. Henry Kain thus describes in the August number of *The American Journal of Microscopy*, his new mechanical finger for the microscope, which will be found a useful addition to the instrument.

A glance at the engraving will render the working of it intelligible to all. It consists essentially of a slotted bar which may be firmly clamped to the upper (immovable) bar of the fine adjustment by means of a milled-headed screw. Through the end of this is fastened a round rod, at such a distance from the objective that, when lowered, the end will not strike the stage. Over this rod slips a split tube, to which is soldered at an angle, a smaller tube. Through the small tube passes a rod carrying a glass hair at its extremity. This rod is easily rotated by means of a milled head. The capillary glass thread is attached to the extremity by means of beeswax. The arrangement of split tubes was suggested by Mr. Edward Pennock, to take the place of a binding screw which I had intended; it is a very neat and convenient affair, and much less clumsy than the arrangement I originally proposed. It will be noticed that the finger has no revolving collar, as it is quite unnecessary, especially when the microscope is provided with a revolving stage. By dispensing with the revolving collar and making all movements depend entirely upon the adjustments of the microscope, greater stability and accuracy in working are secured.

To use the finger, the point of the glass thread is first brought into the focus of the objective, or nearly so, by sliding the tube on the vertical rod and pushing or pulling the rod carrying the glass thread until the desired position is attained. It is not difficult to do this, and, having once been done by hand, it does not have to be repeated, as all further movements are made by the adjustments of the microscope. Supposing now the point of the glass thread



A NEW MECHANICAL FINGER.

to be in focus; by means of the fine adjustment throw the focus *ahead* of the point, then, by means of the coarse adjustment, rack down and search for the object you wish to pick up. Having found the object desired, again bring the point of the thread into focus by means of the fine adjustment; then rack down with the coarse adjustment and pick it up. Now rack back with the coarse adjustment, remove the slip on which the material is spread, and place your prepared slip or cover upon the stage. Again, by means of the fine adjustment, throw the focus ahead of the object, rack down with the coarse adjustment and search for the spot where you wish to deposit the object, and, having found it, again focus the object, then rack down with the coarse adjustment, and, when the object touches the slide and has been placed in proper position, fix it by means of a very gentle breath. There are many other devices by which this useful little instrument may be used for a variety of purposes, for a description of which we refer the reader to Professor Phin's journal.

PENNOCK'S OBLIQUE DIAPHRAGM.—The accompanying engravings show a new form of oblique diaphragm devised by Mr. E. Pennock, and described by him in *The American Journal of Microscopy* (August, 1881). It is designed to be attached to the under side of the stage for shutting off all light except a small pencil from the mirror. Its function is the same as Smith's >-shaped diaphragm. It is an adaptation of Mr. Mayall's spiral diaphragm, which was originally designed for use with condensers of wide aperture, and was described in a recent number of the *Journal of the Royal Microscopical Society*.

It may be mounted in either of two forms: the one to fit into the usual tube, which, in the cheaper microscopes, is attached to the under side of the stage; the other to screw directly into the stage aperture.

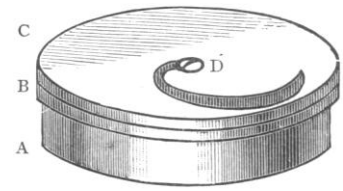


FIG. 1.

A. Tube 1½ inch in diameter, fitting into accessory tube beneath stage.

B. Upper plate (shown as under) having radial slot.

C. Under plate, having spinal slot.

D. Screw joining the plates.

The manner of using it to obtain pencils of varying degrees of obliquity will be sufficiently manifest from the construction.

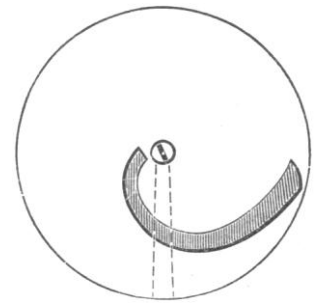


FIG. 2—PLAN OF UPPER AND LOWER PLATES MOVING FULLY ON EACH OTHER.

CORRESPONDENCE.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.*]

To the Editor of "SCIENCE."

I do not like to see so great an authority as Faraday misunderstood, as he evidently is by your correspondent on page 459 of your journal, and that too, in a way which he took particular care to caution against—as to the law of gravitating action. That it acts inversely as the square of the distance he fully believed and admitted; or, to use his own words, "I know it is so."

If your correspondent finds difficulty to account by this law for the return of the earth from aphelion to perihelion, let him try to account for the return of a stone to the earth when thrown up into the air; for precisely the same explanation applies to both, the highest point of the stone's path being "aphelion." The resistance of the air need not be regarded, for, though it modifies the stone's path, it does not affect the theory of the action of gravity.

GEO. B. MERRIMAN.

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