

ART. LV.—*A new form of Absorption Cell*; by ARTHUR E. BOSTWICK.

THE writer has devised and used the cell described below for the purpose of obtaining the absorption spectra of liquids which have but little selective absorption, and which would therefore have to be used ordinarily in large quantities.

The cell is a rectangular box about six inches long by three broad and three in height. The bottom and the two ends are of pine wood, covered with shellac, and the two sides are of ordinary looking-glass, cemented to the wood, so that the box is water-tight. The reflecting surface of the looking-glass is turned inward and at each of two diagonally opposite corners the amalgam is scraped away so as to make a vertical slit about two millimeters in width. One of these is placed close to the spectroscope slit, and through the other a parallel beam of light is admitted. It is evident that the box may be so placed that the beam will be internally reflected in it a number of times, depending upon the angle between the two, and will finally pass through the second slit into the spectroscope. The length of its path through the cell may therefore be varied indefinitely by turning the latter, and is limited only by the decrease in intensity caused by general absorption—not only in the liquid, but also at each reflection.

A solution of bichromate of potash, so weak that a test-tube full of it was of a barely perceptible yellow color and showed no absorption at all when held before the spectroscope slit, when placed in this cell, absorbed the whole upper end of the spectrum, the F line being scarcely visible. In this case sunlight was used, the beam being reflected six times, and having a path whose length inside the cell was about two feet. With mirrors of polished metal the result might be even better, since the absorption in the glass would be eliminated. In this case however the number of liquids which could be used in the cell would be somewhat limited.