from 9° to 17° F.: a proof that, instead of imparting heat, these currents actually carry off a large quantity from the mines.*

If we adopt M. Cordier's estimate of 1° F. for every 45 feet of depth as the mean result, and assume, with the advocates of central fluidity, that the increasing temperature is continued downwards, we should reach the ordinary boiling point of water at about two miles below the surface, and at the depth of about twenty-four miles should arrive at the melting point of iron, a heat sufficient to fuse almost every known substance. The temperature of melted iron was estimated at 21,000° F., by Wedgwood; but his pyrometer gives, as is now demonstrated, very erroneous results. It has been ascertained by Professor Daniell that the point of fusion is 2786° F.†

According to Mr. Daniell's scale, we ought to encounter the internal melted matter before penetrating through a thickness repre-

Fig. 71.
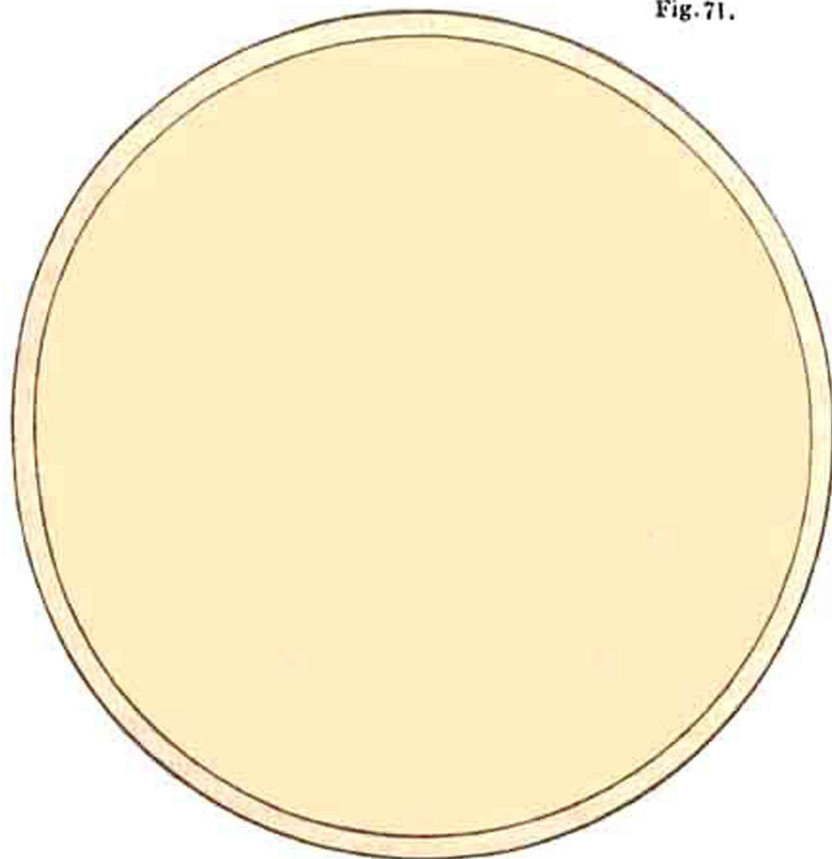
Section of the earth in which the breadth of the outer boundary line represents a thickness of 25 miles; the space between the circles, including the breadth of the lines, 200 miles.

sented by that of the outer circular line in the annexed diagram (fig. 71.); whereas, if the other or less correct scale be adopted, we should meet with it at some point between the two circles; the space

* Phil. Mag. and Ann. Feb. 1830.

† The heat was measured in Wedgwood's pyrometer by the contraction of pure clay, which is reduced in volume when heated, first by the loss of its water of combination, and afterwards, on the application of more intense heat, by incipient vitrification. The expansion of platina is the test employed by Mr. Daniell, in his pyrometer, and this has been found to yield uniform and constant results, such as are in perfect harmony with conclusions drawn from various other independent sources. The instrument for which the author received the Rumford Medal from the Royal Society, in 1833, is described in the Phil. Trans. 1830, part ii., and 1831, part ii.