IX. *Description of a Meteor, observed* Aug. 18, 1783. *By Mr.* Tiberius Cavallo, *F. R. S.*

Read Jan. 15, 1784.

BEING upon the Caſtle Terrace at Windſor, in company with my friend Dr. JAMES LIND, Dr. LOCKMAN, Mr. T. SANDBY, and a few other perſons, we obſerved a very extraordinary meteor in the ſky, ſuch as none of us remembered to have ſeen before. We ſtood upon the north-eaſt corner of the terrace, where we had a perfect view of the whole phænomenon; and as every one of the company remarked ſome particular circumſtance, the collection of all which furniſhed the materials for this account, it may be preſumed, that this deſcription is as true as the nature of the ſubject can admit of.

The weather was calm, agreeably warm, and the ſky was ſerene, excepting very near the horizon, where an hazineſs juſt prevented the appearance of the ſtars. A narrow, ragged, and oblong cloud ſtood on the north-weſt ſide of the heavens, reaching from the extremity of the hazineſs, which roſe as high as 18 or 20 degrees, and ſtretching itſelf for ſeveral degrees towards the eaſt, in a direction nearly parallel to the horizon. It was a little below this cloud, and conſequently in the hazy part of the atmoſphere, about the N. by W. ½ W. point of the compaſs,

compaſs, that this luminous meteor was firſt perceived. Some flaſhes of lambent light, much like the *aurora borealis*, were firſt obſerved on the northern part of the heavens, which were ſoon perceived to proceed from a roundiſh luminous body, nearly as big as the ſemidiameter of the moon, and almoſt ſtationary in the abovementioned point of the heavens (ſee A in the annexed figure, tab. IV). It was then about 25 minutes after nine o'clock in the evening *. This ball, at the beginning, appeared of a faint bluiſh light, perhaps from its being juſt kindled, or from its appearing through the hazineſs; but it gradually increaſed its light, and ſoon began to move, at firſt aſcending above the horizon in an oblique direction towards the eaſt. Its courſe in this direction was very ſhort, perhaps of five or ſix degrees; after which it turned itſelf towards the eaſt, and moving in a direction nearly parallel to the horizon, reached as far as the S. E. by E. where it finally diſappeared. The whole duration of the meteor was half a minute, or rather leſs; and the altitude of its track ſeemed to be about 25 degrees above the horizon. A ſhort time after the beginning of its motion, the luminous body paſſed behind the above-mentioned ſmall cloud, ſo that during this paſſage we obſerved only the light that was caſt in the heavens from behind the cloud, without actually ſeeing the body from which it proceeded, for about the ſixth or at moſt the fifth part of its track; but as ſoon as the meteor emerged from behind the cloud, its light was prodigious. Every object appeared very diſtinct; the whole face of the country in that beautiful proſpect before the terrace

* Mr. SANDBY's watch was ſeventeen minutes paſt nine neareſt; it does not mark ſeconds.

being

being inſtantly illuminated. At this moment the body of the meteor appeared of an oblong form, like that repreſented at B in the figure; but it preſently acquired a tail, and ſoon after it parted into ſeveral ſmall bodies, each having a tail, and all moving in the ſame direction, at a ſmall diſtance from each other, and very little behind the principal body, the ſize of which was gradually reduced after the diviſion (ſee D in the figure). In this form the whole meteor moved as far as the S. E. by E. where the light decreaſing rather abruptly, the whole diſappeared.

During the phænomenon no noiſe was heard by any of our company, excepting one perſon, who imagined to have heard a crackling noiſe, ſomething like that which is produced by ſmall wood when burning. But about ten minutes after the diſappearance of the meteor, and when we were juſt going to retire from the terrace, we heard a rumbling noiſe, as if it were of thunder at a great diſtance, which, to all probability, was the report of the meteor's exploſion; and it may be naturally imagined that this exploſion happened when the meteor parted into ſmall bodies, *viz.* at about the middle of its track.

Now if that noiſe was really the report of the exploſion which happened in the abovementioned place, the diſtance, altitude, courſe, and other particulars relating to this meteor, muſt be very nearly as expreſſed in the following liſt; they being calculated with mathematical accuracy, upon the preceding particulars; and upon the ſuppoſition that ſound travels 1150 feet per ſecond. But if the noiſe we heard was not that of the meteor's exploſion, then the following calculations muſt be conſidered as quite uſeleſs and erroneous.

Diſtance of the meteor from Windſor Caſtle 130 miles.
Length of the path it deſcribed in the heavens 550 miles.
Diameter of the luminous body when it came out of the clouds 1070 yards.
Its height above the ſurface of the Earth 56½ miles.

The exploſion muſt have happened perpendicularly over Lincolnſhire.

T. CAVALLO.