

thousand columns had been shorn short at various lengths, and left for a pavement. Whenever the exigencies of our uneven footing permit us to look up, we perceive that the mural cliff beside us is encrusted with a colonnade of brown pillars and capped with a ponderous mass of basalt; and that a pyramidal pile of columns, apparently erected round some conoidal nucleus, stands insulated to our right. A steep wooden stair, aiding the natural stepping-stones of the causeway, leads to the summit of the island, an undulating grassy plateau, whose highest point is marked by a cairn. In the hollow promising most shelter are the ruins of a cottage built by an adventurous farmer some years since; who, after a short residence, was glad to betake himself to mainland again, being terrified by the violence of the frequent storms, and not without apprehension of a visit from the ghostly giant Fingal, original proprietor of the islet.

Hence is a fine view of numerous neighbouring lands: "Ulva dark and Colonsay" to the north; westward, Linga, one of the Treshinish group, strongly resembling the outline of Stirling Castle rock as seen from a distance; eastward, everywhere the terraced cliffs of Mull. But our time is waning, and we must get a glance at the Clam-shell cave, where we find a number of curved columns resembling the bent timbers of a ship, lying over the entrance, and the perpendicular surface of the cliff honeycombed with ends of other horizontal columns. And so we leave Staffa to its primeval solitude, and strike away northwards.

We have no cause to complain of a lethargic sea this afternoon. One or two who seemed dissatisfied with the dead calm of the morning, now look rather greenish, as the vessel sways across the long surges of the open Atlantic; and some of the ladies keep their eyes perseveringly shut, while the curvature of their lips betrays that it is not the wooing of gentle sleep which overcomes them. They hardly look up, even to behold the fine outline of the Cuchullin Hills in Skye, discernible some fifty miles off; or the distant rock where

"Canna's tower, steep and gray,
Like falcon's nest, o'erhangs the bay."

Muck and Eig have no charms for them. In the euphuistic terms of our guide-book, this westerly breeze "is apt to poison the pleasures of the picturesque;" and crowns its boisterously playful exploits by bursting open a couple of cabin windows during dinner-time, and savouring the soup with genuine sea-salt.

But all this is over when we enter Loch Sunart, and, leaving on the left the "sternly-placed" castle of Mingarry, turn into the smooth bay of Tobermory, where grow the first trees we have seen since the plantations of Dunolly at Oban. Thence eastward through the Sound of Mull, the declining sun shedding golden light along the tranquil waters, and upon the purple ranges of Morven; past us as in a panorama glide promontories bearing the storied ruins of Aros, Duart, and Ardtornish. Lismore lighthouse is again before us. And now gathereth the sun all his glories to the west, kindling the blue heavens with crimson flame. Thus our day among the Hebrides is ended.

TOTAL ECLIPSE, JULY 18, 1860.*

ECLIPSES of the sun have in all ages been viewed with wondering admiration, sometimes by groups of eager spectators, sometimes by individuals; but it seems to have been reserved for our own day to record the expedition of a large and important organized body, sent forth on an errand of scientific interest to observe a total solar eclipse, such as was visible from the north-east of Spain on the 18th of July last. About sixty persons, more or less known to astronomic fame, were assembled on the deck of H. M. S. S. "Himalaya," in the fair haven of Plymouth, on the morning of the 7th of that month, and, under the rare influence of a cloudless sky, were looking forward with bright and genial hopes to the success of their enterprise.

The idea of an expedition on so large a scale originated with Professor Airy, the Astronomer Royal, whose proposal was warmly and liberally responded to by the British Government. The magnificent steam troop-ship already named was set apart for the service, and, under the kind and hospitable guidance of her commander, Captain Seccombe, contributed in no small degree to the comfort and enjoyment of the privileged party.

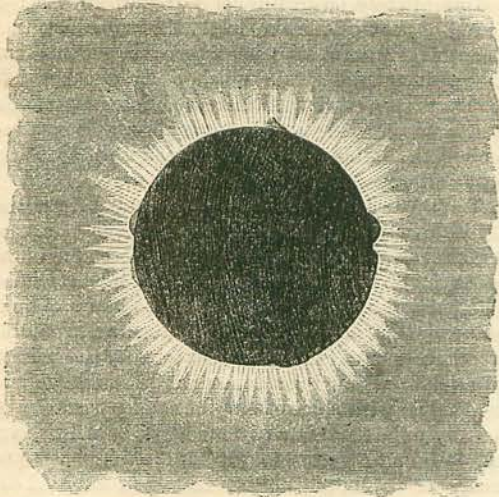
A little after ten o'clock A.M. the noble ship's machinery was set in motion, and with her screw revolving from forty-five to fifty-six times a minute, she was soon far on her way from the English coast. Before reaching Spain, the party of astronomers had agreed to divide their forces; Professor Airy, with M. Otto Struvé, the Russian Imperial Astronomer, and others more or less distinguished, electing to land at Bilbao, where the chiefs of the party were to be the guests of Mr. Charles Vignoles, F.R.S., whilst the rest, including Mr. E. J. Lowe, and Mr. Lassell of Liverpool, went on in the "Himalaya" to Santander. Each party, of course, purposed afterwards to break up into separate detachments, and betake themselves to various stations along the central line of the shadow-path. All these arrangements were duly matured in the course of Saturday, and after a quiet Sunday's rest, (partly, indeed, compulsory, of which, as landsmen, we need say no more,) the noble steam-ship anchored off the mouth of the river Nervion, twelve miles below the town of Bilbao, early on Monday morning.

Notwithstanding an interchange of civilities between Lord J. Russell and Don Xavier e Isturiz, the Spanish Ambassador, everybody was duly armed with a passport, and every piece of astronomical apparatus had been packed with a view to the unwelcome visits of custom-house officials; but, to the unmixed satisfaction of every one concerned, not a single passport was demanded, nor a single telescope or instrument disturbed from its repose. All were admitted, and accredited at once as fellow-helpers in the world-wide work of scientific improvement. The reader may be assured that loud praises and commendations of such liberality were freely mingled with the general exclamations of pleasure at so unconditional a release from official

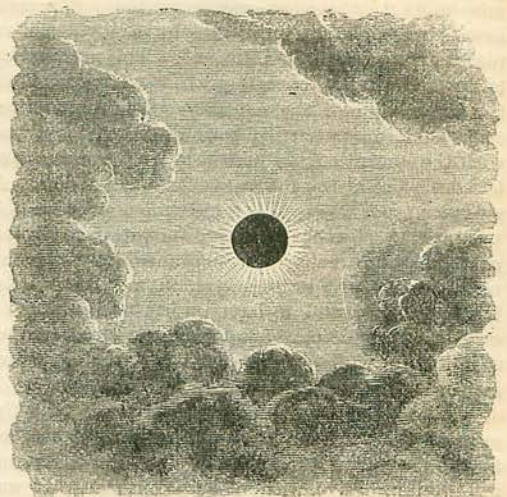
* Written for the "Leisure Hour" by one of the Astronomical Expedition to Spain.

intrusion. Thus far fortune had smiled on us; and as we approached the beautiful Biscay coast, backed by the distant heights of the Cantabrian Pyrenees, and distinguished the little dancing steamers coming out to meet us, adorned with festal flags, and radiant with the pleasant faces of our English friends, surrounded by their dark-eyed Spanish companions, we felt that so auspicious a reception was but the

thunderstorm on the night of Sunday, 15th; and when the long-wished-for 18th was ushered in by clouds and drizzling rain, it seemed to threaten with total eclipse the cherished hopes of all observers. This gloomy prospect, however, did not prevent any one from taking up his allotted position; and the event signally proved that even in a strait case like our own, the principle of



CORONA AND PROMINENCES, AS OBSERVED FROM SANTANDER BAY,
BY MR. THOMPSON.



THE ECLIPSE AT TIME OF TOTALITY.

prelude to success in the carrying out of our novel and interesting enterprise.

After resting a day or two, the party at Bilbao began to disperse. The largest, and perhaps the most important group, had fixed on an eminence called Riba Bellosa, of about 1600 feet elevation, in the neighbourhood of Miranda, as their scene of operations. The leader of this party was Mr. Warren De La Rue, a distinguished amateur astronomer, whose efforts were entirely directed to the securing of photographs of the different phases of the eclipse, and of the totality itself, by means of an instrument of his own invention, called the photoheliograph. The Astronomer Royal of England, with M. Otto Struvé, had chosen Pobes, a secluded and beautiful spot beyond Vittoria; while the other members of the expedition, including Captain Jacob, late of the Madras Observatory, and Professor Grant of Edinburgh, were located on different points of the central line of shadow from Bilbao to the north banks of the Ebro. The remainder of the English party who landed at Santander were posted in analogous positions, whilst the officers of the "Himalaya" contented themselves with taking their stations upon the good ship herself, or on the immediate shore.

Thus arranged, there was but little to do for a few days, except to make short excursions into the surrounding country, and to take such opportunities as were afforded by our limited intercourse with the neighbouring peasantry, to cultivate a fleeting acquaintance with the customs and language of the people. As the expected day drew nigh, the anticipations of the various parties grew less and less cheering. The weather—at the best by no means settled—seemed utterly broken up by a furious

all true adventurers should be *nil desperandum*. Throughout nearly the whole district, from Logroño to Burgos westward, and from the river Ebro to the shores of the Bay of Biscay, there was an almost simultaneous clearing of the atmosphere.* The clouds broke and rapidly dispersed, settling themselves in dark masses on the more lofty summits around, and the sun shone forth with unwonted brilliancy for more than two hours. As the predicted time drew on, eager eyes were busily watching for the first moment of contact between the discs of the sun and moon—an observation always of great use, whether for correction or confirmation of the published tables. On the near approach of totality, there were few indeed of the spectators uninfluenced by strong excitement; some were even quite unnerved, especially those to whom the glorious spectacle was new; and even the most experienced watched with the eagerness of a novice for the appearance of those imposing phenomena attendant only on a total solar eclipse. And now the sun is almost covered; but a faint crescent of light remains; even that breaks into shining beads, and, as the mysterious darkness sweeps down upon the landscape, as if from the descending sky, the sun has disappeared; but, at the same moment, from the opposite side of his disc the corona breaks forth like a flash of gunpowder, and with lightning speed encircles the now hidden king of day with a rich and dazzling luminous belt. It was as if the monarch of the skies hastened to proclaim his sovereignty, at the time when all nature was wrapped in the unwonted gloom.

The instrumental observations were now of the

* Of course, with one or two exceptions; and we afterwards learned with regret that few of the shore party at Santander had seen the totality for more than four seconds.

greatest interest. To an ordinary telescope the presence of the wonderful red flames, or prominences, as they are generally called, was made at once apparent; but a still more convincing proof of their solar character was obtained by the very successful heliographic apparatus of Mr. De La Rue, already mentioned. By means of this instrument, and the great care and forethought bestowed on its adaptation to the phenomenon, these red prominences were clearly imprinted upon the sensitive plates exposed to their influence. The marks they left were unmistakable—much more vivid than the impression of the corona, and agreeing in a remarkable manner with careful observation, and with the known effects produced by the passage of the dark face of the moon over the sun's disc. A singular proof was at the same time afforded of the insufficiency of mere ocular observation; for, on examining the sensitive plates immediately after the eclipse, one of the luminous clouds not seen in the telescope was found to have imprinted itself by its own heliographic power, appearing with a stem of 2' in length, which corresponds to a real measurement of 56,000 miles.

Whilst some were thus engaged in watching the celestial orbs, the attention of others was absorbed by the terrestrial phenomena. The darkness was awfully impressive, without being intense. It was of a character unlike anything else in nature, and is only approximately described by comparing the effect to that produced by a thunder-storm after sunset. The amount of gloom was greatest in those places where the clouds were least dispersed; whilst at Pobes, the station of the Astronomer Royal, the darkness was considered much less striking than at the great solar eclipse of July, 1851, observed by him and others in Sweden.

The position occupied by the writer commanded an extensive view of a wide-spread valley, richly cultivated, and encompassed on all sides with mountains. At the time of totality, the clouds on the nearest range became of the deepest purple, whilst the small portion of sky visible near the horizon, at the mouth of the valley, appeared of a livid copper colour. The valley itself was barely discernible; but its position was beautifully defined by a winding stream which flowed through its centre, the waters of which assumed a faint silvery hue, as if illumined by the pale struggling rays of clouded moonlight. The group of dogs and horses belonging to our party almost faded from view, and our lighted lamps shone out with great brilliancy. The birds, who had been screaming wildly around us for a few seconds before complete totality, were suddenly hushed; the neighbouring flock of mountain sheep, which had run together as if for mutual protection, stood motionless; nature, animate and inanimate, was dumb, save for the rustling of the breeze which had sprung up at the moment, increasing the feeling of strange and awful desolation, but rendering more solemn that vivid realization of the glory and majesty of the great Creator, now so deeply impressed on the mind of every devout observer. We could willingly have prolonged the scene, but the time was rapidly passing as we gazed. One,

two, three minutes, and but a few seconds of the fourth,* when, as the first faint gleam of the sun's limb appeared beyond the moon's western edge, a flood of illumination seemed poured out upon the landscape, and the glorious halo of the corona shrunk up and disappeared; the fiat had gone forth from the mouth of Omnipotence, "Let there be light, and there was LIGHT!"

Immediately, on all sides of us, nature awoke; the sound of the birds broke forth, the animals roused themselves from their brief stupor; in one moment the great mental strain which every one had felt for days past, and with increased intensity at the last, was removed; and but one absorbing idea remained to all, that the great solar eclipse of 1860 was past and gone for ever.

Within two or three days, the members of the Bilbao party were re-assembled at our point of departure, and only then was it ascertained how great had been the success which had attended this portion of the expedition. Two hours of sunshine, amidst many days of continued unfavourable weather, seemed as if dispensed to us by the bounty of an over-ruling Providence; and though we had to condole with some of our Santander friends, and a stray unfortunate or two amongst ourselves, yet the feeling of gratitude was universal, that to so many of us, opportunities had been afforded for making varied and important observations of the greatest value to science.

The "Himalaya" reached the port of Bilbao from Santander on the morning of Thursday, 26th of July, and during the day was visited by crowds of eager and admiring Spaniards, all of whom were kindly and courteously received by her gallant captain. At 6 o'clock on the same evening we had waved our last farewells to our many friends. Fast sped the noble vessel over the deep blue waters of the Bay of Biscay, spread out in tranquil and unwonted repose before us, and mellowed into a crimson flood by the rapidly descending sun. The peaceful hamlets on the shore lay slumbering under the shadow of the great mountains, the evening smoke ascended, and we seemed to realize in that fast-fading Spanish scene the beautiful picture of another land described in the Virgilian *Belogues* :

"Et jam summa præcelsæ villarum culmina fumant,
Majores que cadunt altis de montibus umbre."

By 4 o'clock on Saturday afternoon we were at anchor at Spithead, after a rapid and delightful voyage of forty-six hours, which had afforded many pleasant opportunities of friendly and sympathizing intercourse. And thus was brought to a happy termination the Himalaya Astronomical Expedition, as it was unanimously agreed to call it; leaving in the hearts of all a deep feeling of thankfulness to the great Ruler of heaven, and earth, and ocean, mingled with a lasting recollection of the courtesy and kindness which had so eminently distinguished the captain and officers of the noble vessel placed at our disposal by the liberality of the British Government.

* The extreme duration of the totality on the central line of shadow was about three minutes and a half.