

VIII. *Further particulars of the Fall of the Cold Bokkeveld Meteorolite.* By THOMAS MACLEAR, Esq. F.R.S. &c., in a Letter to Sir JOHN F. W. HERSCHEL, Bart. K.H. V.P.R.S. &c. &c. Communicated by Sir JOHN F. W. HERSCHEL.

Received February 5,—Read March 5, 1840.

Royal Observatory, Cape of Good Hope,
November 20, 1839.

MY DEAR SIR JOHN,

AS I did not receive any further communication relating to the Bokkeveld Meteor after my last communication to you on the subject, I resolved to undertake the promised journey in conjunction with our friend WATERMEYER, to whom we are so much indebted in the inquiry. Accordingly we made up a waggon party, consisting of himself and two of his sons, with Lieut. JACOB of the Indian Survey, Mr. BAILEY, Hon. E.I.C.S., and myself, and set out on the 9th instant, taking Worcester and Tulbagh in our way, for the purpose of consulting with Dr. TREUTER and the Rev. Mr. FAHN, who had been engaged in collecting information.

On the 14th we took horses at Tulbagh, and proceeded to the house of PIETER DE TOIT in the Bokkeveld, where we slept. The next morning we visited the other people who had witnessed the phenomenon.

I inclose two sketches of the Cold Bokkeveld. No. 1. was sent to me by Dr. TREUTER*. No. 2. is a copy of it with some corrections made on inspecting the place. Therefore the original is of no other use than as a voucher. The principal alteration refers to the position of VAN HEEREN's house (VAN ERDE as written by Dr. TREUTER), which is not a joint habitation, but distant some seven miles from BARAND JOOSTEEN's.

I inclose also two letters received from Dr. TREUTER, wherein he alludes to two explosions, and to two spots only where meteorolites fell, about twenty-five miles from each other.

With regard to the first, *no single individual in the Bokkeveld heard two explosions*, but persons beyond fancied they did; the second most likely was the echo among the mountains.

With regard to two spots only where meteorolites fell, I may remark that there was no witness in the interval of the line of flight between JOOSTEEN's and DE TOIT's habitations; consequently it is impossible to say what may have fallen. These re-

* Plate VII. is the sketch No. 2. here referred to. A plate of No. 1. is not given, but the original is deposited in the archives.

marks are made with the view of explaining that which otherwise would appear contradictory to the description I am about to give.

There is also inclosed an interesting affidavit of one of the witnesses.

The Cold Bokkeveld is an irregular valley or basin, bounded by high rugged mountains of sandstone, accessible only by passes of the character of the French Hoek and Sir Lowry's, but rougher, and in some parts very steep. The entrance from Tulbagh is magnificent compared with any other place I have seen at the Cape.

Within the basin the ground undulates; some of the hills are high, and covered with groups of sandstone. The farms are principally situated at the west side, or near the base of the Schurfde Berg, and are partially screened from each other. VAN HEEREN'S is low, BARAND JOOSTEEN'S is on the east side of a hill, about seven miles from VAN HEEREN'S, and PIETER DE TOIT'S is about fifteen miles from the latter, according to the map. These three habitations are completely hidden from each other. The climate is comparatively cool; European cherries grow in the orchards abundantly.

It is not necessary to give the separate conversations in detail held with the inhabitants, for they all agree in the description of the phenomenon. Their attention was first excited by a violent explosion, followed by a rumbling noise, like the rattle from heavy waggons passing over hard ground. On looking up they saw a blue stream of smoke, like that proceeding from ignited gunpowder, passing in a direction from south-west to north-east*, viz. from the summit of the Schurfde Berg opposite VAN HEEREN'S towards PIETER DE TOIT'S. The noise caused several of the inmates to rush from their houses, some of whom obtained a partial glimpse of the phenomenon.

1st. At the instant, the son of VAN HEEREN was standing midway between his father's house and the Schurfde Berg, where he saw something fall to the ground, which he picked up. His mother saw another plunge into the swampy ground north-east of the house. This is the specimen of four pounds, the second sent to you. These two positions may be about a mile from each other, and were pointed out to us by Mrs. VAN HEEREN.

2ndly. BARAND JOOSTEEN, with two servants†, were near the mountain, viz. the hill E on the map, at the instant of explosion. They saw something descend to the ground, and where it struck, the grass smoked. The direction of this spot was pointed out to us by BARAND JOOSTEEN himself, and the specimen is the one I sent to Capt. BEAUFORT by H.M.S. Scout, Capt. CRAIGE.

3rdly. A servant of PIETER DE TOIT'S was standing near his master's house; he saw a substance fall to the ground about a mile below the garden, which he ran

* Although in Mr. MACLEAR'S account the direction is S.W. to N.E., yet the plan, Dr. TREUTER'S second letter, and Mr. FAHN'S letter (Phil. Trans. 1839, p. 85.), all agree in giving the direction N.W. to S.E. It would therefore appear that S.W. to N.E. in the text is an error of transcription.—S. H. C.

† See the Affidavit.

towards and brought to his master. The position of the spot was shown to us by the servant. I forgot to inquire to whom this specimen was given.

Each of these persons declares that the meteorolites were so hot on approaching them that they could not lay hold of them.

I have thus enumerated all that were *seen falling*. The curiosity of the people being excited they made further search. A mass was discovered on the road to the N.E. of VAN HEEREN'S house beyond the swampy ground, but fractured, apparently in striking against the hard ground.

BARAND JOOSTEEN found a lump which separated into fragments on taking it up, owing, he thinks, to exposure to moisture. He had parted with some of it; the remainder, weighing nearly four pounds avoirdupois, he kindly presented to us.

PIETER DE TOIT found a quantity in fragments on the road near his house. Also another at position D, which was given to Mr. FAHN and is the first I sent to you. His son found a portion at position A. He showed us the places in person.

I am unable to estimate the total weight of the pieces that were found at DE TOIT'S, for he had given them away to applicants. I understand they were brought to Cape Town, and that Mr. G. THOMPSON sent a piece of one to England.

I consider I am justified in the opinion that but a small proportion of the whole mass has been found, because six persons only chanced to be sufficiently near the track to witness the fall; two of them within a mile of each other. These were close together, but six or seven miles from the first, while only one was in the open air at DE TOIT'S, seventeen miles further on, according to the map. The intervening ground is covered with brushwood and heath, similar to that on the floats about Tiger Berg, excepting a few cultivated patches of small extent.

The people, surprised by the presence of an imposing spectacle, the nature of which they could not well comprehend, would naturally follow up alone and without further consideration whatever first caught the eye, and this is supported by the fact of several portions being discovered at comparatively short distances from the witnesses, but unseen at the time of explosion. I may also remark, that beyond DE TOIT'S house for a considerable distance in the direction of the line of flight, there is nothing but rugged mountain, without, I believe, inhabitants.

It appears that the portion which sunk in the moist ground near VAN HEEREN'S is the one which gave rise to the exaggerated statement made to me, "of a piece having made a hole in the ground large enough to admit a table."

KIEVIET declares in his affidavit, that the piece he picked up was originally seven or eight pounds weight. The specimen was sent to me by Dr. TRUTER, and I forwarded it to Captain BEAUFORT as I received it. The weight was rather more than four pounds; and, so far as I can recollect the shape of the fractured surface, I do not think much had been broken off. However, I believe this to be the largest specimen yet discovered.

In my first communication to you, I stated that the line of flight was north-westerly,

which was my impression after the conversation with Mr. MENZIES, who at the time of the explosion was resting at the Blood River, ninety miles N.E.* of the Bokkeveld, in company with Mr. G. THOMPSON. But the witnesses in the Bokkeveld prove the contrary, which is further confirmed by the following extract from a letter of Mr. G. THOMPSON's to me.

"The meteor appeared to the best of my judgment to approach from the west with great velocity, and precisely similar to a Congreve rocket of large dimensions. The phenomenon expanded nearly overhead, and apparently not more than 3 or 400 feet high, dispersing in large globes the size of forty-two pound shot, of quicksilvery appearance. These fell for a few seconds towards the earth and vanished."

The latter part of this paragraph exhibits an optical deception as to distance, if "the separation into globes" was the explosion over the Bokkeveld. For be it remembered Mr. THOMPSON did not hear any noise, and the stations are separated by at least ninety miles.

If the object he saw was a portion of the meteor moving on beyond the Bokkeveld, most likely the dispersion would have been followed by a report. The first supposition is probable, and tends to prove that the object was much elevated when it exploded.

Mr. THOMPSON also learned that the explosion was heard within a few miles of Clanwilliam; on the Zonder-End River, and the Cape Downs!

With reference to the accuracy of the map, I verified the azimuth direction of the line of flight, as it was pointed out to us, with a small azimuth compass. The distance between DE TORR's and the Schurfde Berg did not appear to us twenty-five miles, but on the whole it is sufficiently correct to explain a matter of this kind.

I forgot to mention that the witnesses described the heavens as being perfectly free from clouds and calm at the time.

If you think this communication, with Dr. TREUTER's letters and KIEVIET's affidavit, worthy of the attention of the Royal Society, be pleased to place them on the table.

Believe me, dear Sir John,

Yours, ever faithfully,

THOMAS MACLEAR.

To Sir J. F. W. HERSCHEL, *Bart.*,
&c. &c. &c.

* From the plan, this again would appear to be an error of transcription, N.E. for S.E.—S. H. C.

Dr. TREUTER's Letters to THOMAS MACLEAR, Esq.

Worcester, 4th June, 1839.

MY DEAR SIR,

I have great pleasure in acknowledging your letter of the 1st of May last, and feel much obliged for the copy of Sir J. HERSCHEL's interesting letter. Although I have been prevented returning you an earlier answer, I have not forgotten the main object of our present correspondence, and have already secured about four pound in Dutch weight of the meteorolite, and given directions to obtain all the fragments, which may be in possession of some individuals of this division, which I will give myself the pleasure to forward to you by the first fit opportunity which may offer. I am also in possession of an affidavit of a person who happened to be quite close to the spot where the burst took place and the meteorolite fell, and will be able to accompany it with a pretty correct sketch of the direction the meteor took. From all information I have been able to collect, it appears there are only two spots, distant about twenty-five miles from each other, where an explosion of the meteor occurred with the fall of stones. I should advise you not to make any public announcement of it in the papers, for the people will fancy that it is of such very great value that they may weigh it with gold.

Believe me, my dear Sir,

Most truly yours,

T. MACLEAR, *Esq.*

J. TREUTER.

&c. &c. &c.

Worcester, 10th July, 1839.

MY DEAR SIR,

I have much pleasure in availing myself of this opportunity to forward to you herewith the fragments I have been able to collect of the meteorolite. From all the information I obtained on the subject of the meteor of the 13th of October 1838, of which the sensation was felt simultaneously over an extent of upwards of 150 miles, it appears that the falling of meteorolites was only observed at two places, distant from each other, as the bird flies, about twenty-five miles; and that the fall of these meteorolites was accompanied with an explosion resembling the loudest peal of thunder. The atmosphere was in such an agitation, that the windows of the houses were shaken as from a violent wind, and the noise produced was that of a swift passing waggon heavily laden. The first conclusion the people drew from it was that of its being a slight shock of an earthquake. On the spots where the meteor was observed, it appeared to take its course from north-west to south-east, with a loud hissing noise, producing a train of evanescent light. At the time, the sky was quite clear; no wind; the atmosphere sultry.

The inclosed sketch of that part of this division where the falling of the meteorolites has been observed, will I trust give you an accurate idea of its course: it appeared to come from over the summits of the Schurfde Berg. The accidental circumstance of a waggon being near the foot of that mountain, where the meteor passed over the heads of the people employed in collecting a load of fire-wood, has enabled me to obtain a deposition from one of these persons, which I inclose herewith.

Any fragments which I may be able further to collect I shall forward to you by an early opportunity.

Believe me, my dear Sir,

Most truly yours,

J. TREUTER.

P.S. The large piece is of the first, the small one of the second explosion.—Vale!

Affidavit.

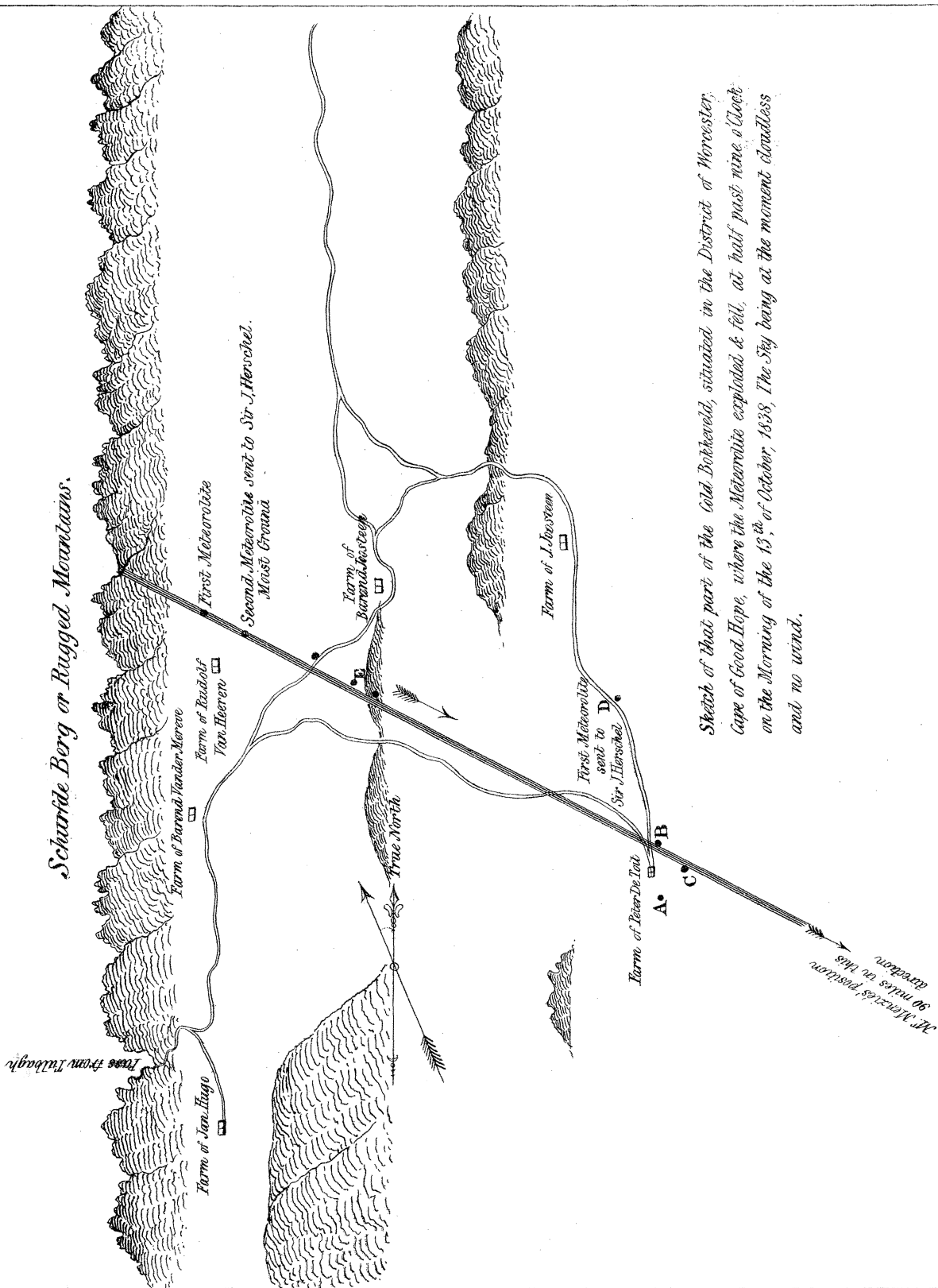
I, the undersigned KIEVIET, Bastaard Hottentot, maketh oath, that about the month of October last year I was in the service of BAREND JOOSTE, of the Field Cornetcy of the First Cold Bokkeveld District of Worcester. On the morning of the 13th of that month, my master, myself, and another Bastaard Hottentot named JACOB ROOY, proceeded in a waggon to the mountain at the back of my master's house to fetch wood. It was a fine clear morning; there were no clouds in the sky, and there was no wind. At about nine o'clock A.M., whilst we were busy loading the waggon with the wood, close to the foot of the mountain, we heard a strange noise in the air resembling the loudest thunder we had ever heard, and on looking up we perceived a stream passing over our heads, issuing a noise which petrified us with terror; a burst took place close to the waggon, when something fell and a smoke arose from the grass. My master sent me to look what it was that had fallen, when I found a stone quite warm, so much so that I could not hold it in my hands: I brought it to my master, I do not know what he did with it. This stone now produced to me is part of the one I took up; it might have been then about the weight of seven or eight pounds.

Sworn before me, at Worcester,
this 30th day of April 1839,
J. TREUTER, }

Mark of
✕
KIEVIET,
As Witnesses,
JAMES RATTRAY.

N^o 2.

Schuride Berg or Rugged Mountains.



Sketch of that part of the Cold Bokkeveld, situated in the District of Worcester, Cape of Good Hope, where the Meteorolite exploded & fell, at half past nine o'clock on the Morning of the 13th of October, 1838, The Sky being at the moment cloudless and no wind.