

## C H A P. XIII.

CASCHAU—BATHS OF RANK—OPAL MINES—REMARKABLE  
CAVERNS, &c.

CASCHAU is the metropolis of Upper Hungary; the principal street is very broad and pretty regular, and contains some very good houses of the nobility, and an elegant coffee-house, over which are the assembly rooms. The inhabitants are only estimated at about six thousand. The principal church is the only thing worth seeing here: it is in Gothic taste, and in good preservation. But the Black Eagle is another public building which interests the traveller; this is an inn where the hungry traveller may find something to eat, which is not always the case with inns in this country; but I made little use of it, from the hospitality of the Countess Sirmay, Dr. Fucker and others, whose houses were always open to me. Many of the inhabitants of this town are protestants; but they are not such strict observers of the Sabbath, as not to frequent balls and routes on the Sunday. I walked into the assembly rooms on the Sunday evening, but on account of the fine weather the company was very small. The suite of rooms is fine. The good people come here to eat as well as to dance, and the eaters are the most numerous; and

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the gentlemen are allowed to enjoy a comfortable pipe, but not in the ball room, where it is notified in large characters that smoking is not allowed. I staid whilst a few minuets were danced; they are danced in the German style, at the rate of three miles and a half to four miles an hour.

Czerwenitz, the country of the true Opal, is only a short day's journey from Caschau; I could not therefore avoid making an excursion thither. Rank, which has a mineral water, lies nearly in the road: this I took in my way, as Baron Vechey, whose post constitutes him director of the Opal mines, and who alone could give me permission to examine them, was taking the advantage of these waters. Rank has poor accommodations for valetudinarians; they are obliged to bring every thing with them, bedding, cooking apparatus and provisions. I just arrived as the Baron and his party were sitting down to dinner. I was invited to make one of them, which I did without much entreaty, as I should otherwise have fared very ill, not having brought any thing with me. It is chiefly frequented by those Caschauvians who have not time to go to Bartfeld, which is the great watering place of this part of Hungary.

The waters of Rank are chalybeate and aerated; they are taken inwardly, and used warm for bathing. But, as in most watering-places, it is the cheerful company, exercise, &c. which make the most cures. One of these *etceteras* some of the sick had brought

with them. I made the acquaintance of a very handsome young lady of nineteen, who had been lately married to an old infirm *Septuagenaire*, who had grand-children almost as old as his wife. Finding herself ill, at least *incommode*, she was come here for the benefit of the waters, and had brought with her, for disorders under which she laboured, the ablest of physicians, a stout handsome young fellow. She gravely told me, after informing me of the state of her connubial connection, that she had found great benefit from the waters, but must acknowledge, that the *regimen* she had followed had not a little contributed towards her recovery. The only moral observation I would make on this occasion is this, that old and infirm men should not marry young women, if they would not be cuckolded. This advice is as proper for Britain as it is for Hungary.

After dinner I examined some very bold cliffs in the neighbourhood: they are of a *breccia* like that about Gran, which I have so repeatedly mentioned: in some places there are needles or spires of it almost detached from the main rock. Here it is plainly seen that this *breccia* is not a mere superficial covering to other rocks, but constitutes rocks itself. I slept at Rank: a clean sheet thrown over some straw, was all the bed I could procure; and for this, and some bread and butter and common wine, I was charged about two shillings.

In the morning, as soon as it was light, I continued my journey,

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full of expectation, to the country of Opals. I stopt at the house of the priest of Czerwenitza; for this is a poor miserable village, and has no kind of public house; and from thence on foot I ascended a large swelling hill of considerable height towards the Opal mines. As I ascended, I found the rock to be formed of decomposed Porphyry and *Trafs*. The hill is some miles in extent, and has been opened in several places, but in three with the greatest success; and here guards are placed, who receive about six-pence a-day, to prevent any one from digging for this precious stone. Formerly the peasants were allowed to search for them on their own account; but within these few years, as this land belongs to the royal domains, the emperor has prohibited it, and they have been dug for on his account. Now again this has been discontinued for these last three or four years, the servants of the crown finding that the royal treasury suffered by it.

As I had obtained permission, I found no difficulty in satisfying my curiosity. In one place this precious stone had been sought for by mining; but this was only by a gallery of a few yards in length: in most places the rock is taken out as in a common stone quarry, and they seldom go deeper than three or four yards\*. The holes I saw,

\* So I find it noted in my Journal. Delius gives nearly a similar account: he says, that the rock which contains the Opal lies under the soil, and seldom extends deeper than a few fathoms. But Mr. Fichtel says it is quite the reverse, and that the upper bed, for about four yards, is unproductive, so that this precious stone is only found after this bed has been dug through.

where they had been digging, seemed to be without any plan. The rock is thrown out, and then broken and examined. I am surprised Mr. Born can say, in his *Catalogue Raisonné*, under the article *Opale*, “*La matrice est une terre argilleuse grise et jaunâtre mêlée de sable.*” It is nothing more or less than an argillaceous decomposed porphyry: I wonder he did not here recognise his *Saxum metalliferum*. In some specimens I could plainly distinguish both the feldspar and some few particles of hexangular glimmer; though in others the decomposition is so far advanced, that nothing of a porphyrous nature can be observed. One of the excavations, made in search of this valuable fossil, is in an undecomposed basalt, or something between a *wache* and a basalt; but here nothing had been found.

Several very different kinds of Opal are found here, and some of no value to the jeweller; yet they have all one common origin, however different their value and brilliancy of colours: they form small veins, nests, grains, &c. and it is where the Opal is mixed in small particles, but close together in the stone, that it forms what is called Mother of Opal. It is likewise sometimes found in the same manner in a kind of breccia of this decomposed porphyry. As these mines, or quarries, had not been worked for these last three or four years, I had no expectation of finding any thing; but the views of the naturalist and the jeweller are very different, and I found some specimens which, though of no value to the latter, would be highly prized by the former.

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The different kinds pass insensibly into one another. I collected the following: The true Opal \* disseminated in the matrix; the *Water-Opal* † and *Milk-Opal* ‡ in one vein, and these passing into the true Opal: the *Water-Opal* § tinged of a beautiful lavender colour; another of a topaz colour ||, and most of these in a state of decomposition, being so many *Hydrophanes*. I have a *Milk-Opal* ¶ which, on immersion in water, acquires the fire of the true Opal; another *Milk-Opal* \*\*, which by a similar procedure immediately becomes a *Water-Opal*; another *Milk-Opal* ††, but without the lustre of Opal, which acquires lustre by an immersion in water, and

\* *Opalus nobilis*.

Splendens, colorum vividorum viridi violacii & aurantiaci, pro situ spectatoris variantium fulgens.

† *Opalus hyalinus*.

Splendens, hyalinus.

‡ *Opalus lacteus*.

Splendens, diaphanus lacteus.

§ *Opalus violaceus*.

Splendens, diaphanus colore dilutiore florum lavendul .

|| *Opalus luteus*.

Splendens diaphanus colore topasii.

¶ *Opalus lacteus*.

Splendens diaphanus lacteus, aqua imbutus coloribus Opali nobilis fulget.

\*\* *Opalus lacteus*.

Nitens subdiaphanus lacteus, aqua imbutus *Opalus hyalinus* evadit.

†† *Opalus hebes*.

Hebes opacus albus, aqua imbutus *Opalus nitens diaphanus lactescens* evadit.

thus

thus becomes a true milk opal; another\* of nearly a similar nature, but brown, which acquires likewise by immersion in water a considerable degree of transparency; and the same so terreous and soft as to be scraped with the nail, yet on immersion acquiring some degree of fire.

It is now generally supposed that all the more valuable Opals, which pass in commerce under the name of Oriental Opals, are from these mines. Tavernier says † “*Pour ce qui est de la Hongrie, il y a une mine d'où l'on tire des Opales; & il ne s'en trouve en aucun lieu de la terre qu'en celui-là.*” Mr. Fichtel is of the same opinion, and he says ‡ there are papers in the archives at Caschau, which show that, about four centuries ago, three hundred men were engaged in these mines, and by this endeavours to account for the quantity that has been for so long a time in the market. If so, then perhaps I have trod on the very rock which produced that Opal, to obtain which, Antony could proscribe a Roman senator; and to keep which, a Roman senator could suffer banishment. It is certain, however, that some other countries even of Europe produce them, though not probably of the first beauty.

\* Opalus ferrugineus.

Nitens subdiaphanus ferrugineus, aqua imbutus diaphanus ferrugineus evadit.

† Seconde partie, page 293.

‡ Fichtel's Mineralogische Bemerkungen von den Carpathen, page 595.

After wandering about these hills for three or four hours (for the mines are scattered about in different parts), I returned to the priest's to dinner; and from thence I went to Pecklin. Here, where I was to change horses, none were to be got; and, after waiting a good while, I was obliged to continue my journey with the same horses; it was soon dark after setting out, and I had to pass through thick woods and bye-roads; yet I was neither robbed nor overturned, but it was eleven at night before I reached Caschau. Near Pecklin the soil is so unfruitful, that two thousand square fathoms are allowed for an acre. The woods, chiefly of oaks and beeches, are divided into falls of fifty years.

Saturday, July 12th, I left Caschau; but I again left the direct road to the Carpathian Alps, and struck off to the west. I was induced to this from hearing at Caschau, and not from the vulgar, but from learned doctors and professors, that at the distance of about a day's journey there were two great caverns; in one of which water froze during the summer, and ice thawed during the winter: whilst the other was so vast that one might wander about in it for a week without finding an end. Soon after leaving Caschau, I came to a quarry of the *Corneus fissilis* of Wallerius. At Csees, where I changed horses, the road began to draw nearer the hills, and the country became more pleasant: this is chiefly a corn country, Indian wheat was a good deal cultivated. Early in the evening I reached Nadaska, the seat of Countess Giulais. The hills here, which are very high, are of unstratified compact limestone, without any petrifications, but

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it is full of holes ; some of these are so deep, and at the same time so round, that they look as if they had been formed by art. I passed the evening in a very dull manner ; a rough gloomy priest was come here to be ready to perform divine service the next day ; and though he ate copiously himself, he allowed none of the family to do so ; and the Countess, and her niece, who was a very nice girl, and spoke very good French, who were all that sat down to supper, fasted. I was a dreadful thorn in the side of this fellow, and vexed him grievously by eating a hearty supper, the whole of which he seemed to wish to possess.

Next morning I set out again for the caverns. I travelled at the foot of the same chain of hills ; now and then some *Schistus* made its appearance, but in general the lately mentioned limestone prevailed. About half way I changed my horses for oxen ; but as they were only to draw me, or rather my baggage, over a high hill, where horses could have gone no faster, I did not suffer as in the last horned cattle expedition. About one o'clock I reached Akteleg, and I took up my quarters with the Calvinist parish minister : he knew not a word of German, much less French or English, only the Hungarian and the Latin. Though this was Sunday, and the villagers were Calvinists, they were dancing and making merry.

I procured a guide, and the same evening I entered the cave ; but it was chiefly with a view to ascertain the medium temperature of this part of Hungary. The thermometer in the shade, in the open  
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air, stood at 15 above 0 of Reaumur, but in the cave, a good way from the mouth, immersed in a running stream in different places, it stood at seven degrees; yet out of the water by the side of the rock it stood at seven and an half. Shall we suppose that all, or part of this water, came from melting snow, which, hid in some deep hole or cavern, had now only begun to thaw? this would render every experiment fallacious: or shall we suppose that the rock, however thick, was nevertheless affected by the heat of the atmosphere? As I left my thermometer an hour, it certainly, as it had but a small bulb, had time to take the true temperature of the medium which it was in. The water in the wells in the village was eight degrees. The above observations, though rendered less decisive by this difference, agree pretty well with those made by Mr. Haquet on the medicinal waters of Bartfeld: he says, "at six o'clock in the morning, the water was ten degrees of Reaumur colder than the atmosphere, which was then 16 degrees." This brings the temperature of the waters to six degrees, which is a degree colder than that of this cavern; but Bartfeld is about half a degree of latitude further north, and in a more elevated situation.

In the morning I returned to the cavern, to see how far I could penetrate into it, and to repeat my experiment with the thermometer, but by accident this was left behind. The report here is, that this cavern extends several miles under the hills, and that it would require several days to see the whole of it. The mouth of it is at

the bottom of a precipice about 150 feet high, at the west end of a compact unstratified limestone hill, which runs east and west. This entrance is about two yards broad, but so low that I was obliged to bend considerably to get in. I descended rapidly for a short distance, and then I found myself in an immense cave, with a very lofty vault; this has in different parts communication with other caves and passages, and these again with others. Some of these caverns are over one another; in some places I came to considerable streams of water; in one great cave my guide conducted me over a hill formed of great blocks of stone, which most probably had fallen down from the roof: in one place I had to get down a hole like the funnel of a chimney; then I was led into a cave where large stalactites, as thick as my body, hung pendent from the roof, and I was shown others where the sides were ornamented in the manner of the most curious Gothic workmanship. In some the stalactites were so thick and close together, that we were in danger of losing one another if we separated but a few yards. Here aged stalactites, overloaded with their own weight, had fallen down, and lay prostrate; and there an embryo stalactite was just shooting into existence. The most curious cavern was one apparently of modern date; the sides, and particularly the roof, seemed as if recently separated: and it was probably so, for I think most of these caverns have been formed by the falling in of the rock: very white and slender stalactites were only found here.

After

After I had wandered about for three or four hours in this awful gloom, and had reached the end of the caverns in one direction, I thought it time to come out, and I desired my guide to return. After we had returned, as we thought, some way, we found no passage further; yet the guide was sure he was right. I thought I recognised the same rocks we had just left, and which had prevented our proceeding further, but the guide was positive he was in a right direction. Luckily for us I had written my name on the soft clay of the bottom of the cave, which had been the extent of our journey; on seeing this the guide was as thunderstruck, and ran this way and that way, and knew not where he was, nor what to do. I desired him not to be frightened, but to go calmly to work to extricate us from this labyrinth. As the wood which we burnt instead of lamps was nearly exhausted, and as I never adverted either to one of the guides whom we had left above, who by being charged with wood could not get down the funnel-like hole, being so near; nor to the people of the village being acquainted with our being in the cavern, who no doubt would have taken every possible means of coming to our assistance had we stayed much longer than usual, I was a good deal alarmed for our safety, and there was good reason: had our torches gone out, we should never have been able to find our way out; nor, had any accident have happened to our guide, could we by ourselves, though we had had lights, have had any hopes of extricating ourselves. After wandering about till all our wood was nearly exhausted, we found a great stalactite from which, on account

of its remarkable whiteness, I had been induced to knock off a specimen as I came by: I recollected how I stood when I struck it: this at once set us right; and after walking a little further we made ourselves heard to the other guide, from whom we got fresh torches, and we then continued our route homewards without further difficulty.

So complete a labyrinth as these caverns are in some places, is not I am sure to be found but in similar caverns: large open passages proved *cul de sacs*, whilst our road was over and under, through and amongst grotto-work of the most intricate nature. I firmly believe, that though a man should have lights and food enough to last him a month, he would not be able to find his way out.

On the soil at the bottom of the cavern, my guides shewed me impressions which, they said, were from the wheels of a carriage. I thought immediately to have detected the error by measuring the distance of the marks of the two wheels at different distances: but I was mistaken; the marks were throughout parallel. Whether these were really the marks of a carriage I cannot say: I only observed them in the first part of the caverns. If the soil at the bottom at the mouth of the cave was taken away, I do not see any impossibility, through the assistance of men, to get such a thing in thus far. It is known to have served as a hiding-place to the weak and unfortunate in time of war, and a fitter hiding-place there cannot be.

I thought

I thought it probable that I was the first English traveller who had examined this immense cavern ; but Mr. Korabinsky says \*, “ that it is of such astonishing dimensions in length, that two members of the Royal Society of London, who were sent some years ago into Hungary by the Society, to examine this and other curiosities, after remaining in it three days, could never get to the end of it, nor find an opening.”

After dining with the pastor, who seemed to possess but a small portion of the good things of this world, I set out for the other famous cavern near Szilitze. I travelled by a bye road through a pleasant, hilly, and woody country, chiefly with pasture land. There I saw again my favourite little animal the Earless Marmot, which I had not seen since I left the great plain. I reached Szilitze early in the evening, and as before, I asked hospitality of the Calvinist minister, who likewise only knew his own language, the Hungarian, and the Latin. He seemed to be in more easy circumstances than the last, and to be a considerable farmer : all this district is inhabited by Calvinists. As the cavern is a mile from the village, I deferred seeing it till the next morning, when my host, who had nothing of the four Calvinist about him, accompanied me.

The immense vaults, and the glittering stalactites arranged in

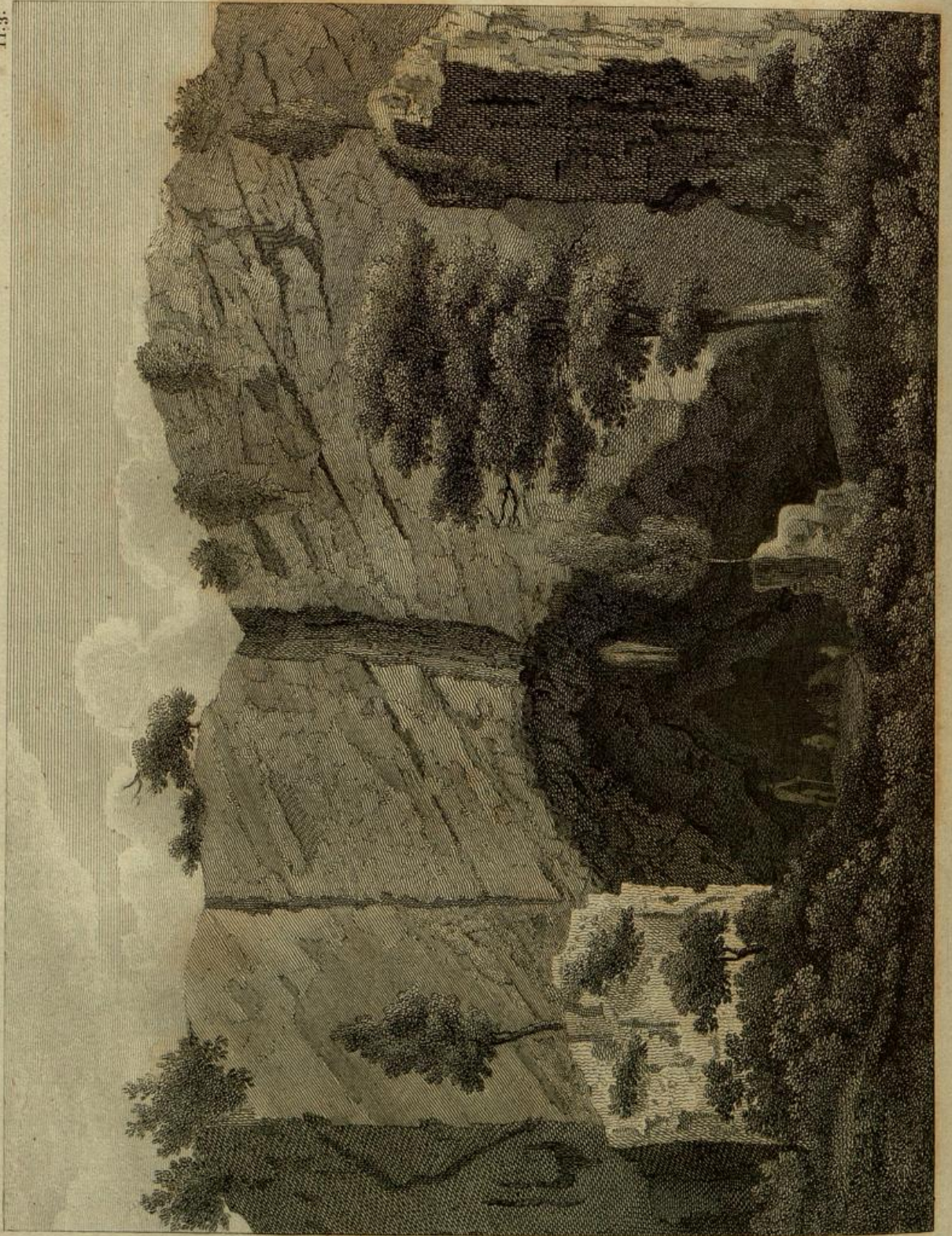
\* Lexicon von Ungarn, page 6.

Gothic style, of the last cavern, are not to be sought for here. This is only famed for possessing the remarkable nature of being *really* colder in summer than in winter; so that when the north east in winter blows, and the whole country is defaced with ice and snow, then the ice within this cavern begins to thaw; but when the parching heat of the canicule reigns, then its dripping rocks begin to be adorned with pellucid icicles.

This is not the opinion of the vulgar alone, but, in this country, of the learned likewise; it has even reached our country, and found its way into our Philosophical Transactions. The celebrated Hungarian historian Matthew Bell sent the following account of it to the Royal Society, who have inserted it in the 41st volume. “*Natura Antri id habet prodigiū, quod cum extus bruma intensissime riget, tepido sit intus aëre; frigido contra, immo glaciali, cum sunt fervidissimi soles. Nimirum, simul diffugientibus nivibus verinire cæpit, interior antri concameratio, qua ea meridiano soli dorso objicit, aquam limpidam et passim distillantem exsudat: quæ, interni frigoris vi, in pellucidam glaciem concrefcens, stirias efficit, ad ingentium doliorum molem crassas, ac pendulas, inque ramos abeuntes miris illusos speciebus.*” And further adds, “*Glaciale istud specūs ingenium, totum æstivum est: quod ideo admirationis habet plurimum; augetur enim cum increfcente solis ardore. Primo, nimirum, vere, hibernus ille tepor cessare; mox, ubi id adolevit, intendi frigus occipit, tantis accessionibus, ut quo magis aër incalescit, eo antrum frigeat exquisitius.*”







The Cavern of Subvity near Litchfield

quisitius. At ubi æstas iniit, jamque fervet canicula, in glaciale  
brumam intus abeunt omnia."

This account agrees perfectly with the information I received at Caschau, and with what I heard on the spot likewise. Yet I know I shall have no difficulty to persuade Natural Philosophers of the present day, that there is a fallacy in the observations, and that this has arisen from depending too much on our feelings, and neglecting the only proper gage of heat and cold, the thermometer.

This cavern is about a hundred feet broad, a hundred and fifty deep or long, and twenty or thirty feet high at the mouth or entrance which faces the north: the descent is pretty rapid, the last third part of the bottom or floor was covered with ice; but this was so thin that I could see the rock under it. From the roof at the further end, which was here much lower than at the entrance, hung an immense icicle, or rather a congeries of icicles; and in a corner to the right, which was not only deprived of the influence of the sun, as the whole cavern is, but likewise of light, there was a great mass of ice. It was a fine forenoon when I visited this natural ice-house, and the air was heated by a July sun: as soon as I approached the mouth of the cave, I felt a chill, which increased the further I went in, and which rendered my continuance there, to observe the state of the thermometer, very disagreeable.

Ice I truly found here in abundance, and it was near midsummer, but in a state of thaw: the bed of ice, which covered the floor of the cavern, was thinly covered with water, and the icicles dropped: every thing announced a thaw. I had no need to use my thermometer: however, I placed it in the ice, and it fell to 0 of Reaumur; I then wiped it and placed it in a niche in the rock, at the further part of the cavern, a yard above the ice, and here it remained near an hour: when I returned I found it at 0. Thinking it might not have had time to take the real degree of heat of the medium in which it was in; I tried this by breathing upon it till it rose one degree above 0; I then left it for a quarter of an hour only, and when I returned I found it again at 0. Every thing here, therefore, ice, water, and the atmosphere in the neighbourhood of these, had the same temperature, and that was the temperature of melting ice, 0 of Reaumur.

When then is the ice which is found here, and in such quantities that this cavern serves the few opulent nobility in the neighbourhood as an ice-house, formed? Surely in winter, though not by the first frost, not so soon as ice is formed in the open air. No doubt, from the little communication this cavern has with the atmosphere, it will be but little and slowly affected by its changes. Should, therefore, Mr. Bell, or any of his friends, have come here to verify the common report at the commencement of a severe frost, when the whole country was covered with ice and snow, they might still have found here nothing but water, or the ice of the preceding winter in a state of thaw, and  
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the cavern relatively warm: and likewise, should they have visited it in a warm spring, which had succeeded to a severe winter, they might have found nothing here but frost and ice; and even the fresh melted snow, percolating through the roof of this cavern, might again have been congealed to ice.—I observed frequently in Germany, in the severe winter of 1794-5, on a sudden thaw, that the walls of churches and other public buildings, on the outside were white, and covered with a hoar frost, and their windows on the same side covered with a rime. I certainly should not have said so much on this subject, were not the opinion I have been combating so very general. This cavern is like all that I have seen, in a primitive or unstratified compact lime-stone; and it is curious to observe, that the most famous in the world are in this kind of rock. I think they arise from the rock, whatever that may be, giving way which supports them.

The minister had a good deal of the *Dianthus deltoides* drying in the window; he called it Centauria, and said it was much used, steeped in wine, for the ague.—Near the house door a great block of salt was placed: when the cows came home, I observed them walk up to it and lick it. He told me, that if the common peasants did not use it, it was because they thought it too expensive.—In the afternoon I set off for Rosenau, and my host bore me company. We continually descended, and for a long way by a very steep road, into a well cultivated valley. A fine stream of water

which runs through it, has induced some Smelters to establish iron furnaces here. The ores smelted are the white sparry iron ore, *Ferrum spatiosum*, and the blood stone *Hematites*: low furnaces are used.—This valley separates the calcareous mountains, which are not metalliferous, from the schistus, which are. The bold perpendicular cliffs of the former easily distinguish them from the latter. I reached Rosenau in the evening.