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LIFE AND WORK AT BEN NEVIS OBSERVATORY.

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THERE is a peculiar, and in my eyes an excellent, custom at Edinburgh University, that those who have graduated Master of Arts with Honours in Mathematics and Natural Philosophy are given the chance of spending one of the so-called summer months—June, July, August, and September—at the Ben Nevis Observatory, in order to relieve the regular staff, who need their holidays as badly as most people. I took advantage of this provision of my Alma Mater, and it was arranged that I should act as observer throughout September of 1896, along with a more experienced fellow-student. On 1st September I left the Low Level Observatory at Fort William about 9 a.m. with the assurance that, if I was in at all good form, I should reach the summit about 1. As it happened, I was not in good form, and consequently I cursed the apparent endlessness of that stony bridle-path, with its successive zig-zags up the mountain side, long before I reached the large, broad plateau which one has to cross before facing the last stiff few hundred feet, named from the builder of the Observatory Maclean's Steep. However, I did arrive at last about four o'clock, feeling more dead than alive, and much too tired to take any interest in my surroundings. Next day my duties commenced, and it was arranged that through-

out the month my companion should take the long night watch from 8 p.m. to 4 a.m. inclusive, as well as the 2, 3, and 4 p.m. observations. I was to take the rest, so that we had each our twelve observations daily, though there is little doubt that I had the more enviable lot of the two.

Before leaving on 1st October I had taken such a fancy to the place that I had volunteered to return in the middle of October and take ordinary observer's duty till Christmas (an offer which was accepted by the authorities), so that, after a fortnight's holiday, 17th October found me again on the summit after taking about six hours to ascend. I had gone somewhat out of my way in order to get a fuller view of the magnificent cliff which forms the northern side of the mountain, dropping from the summit sheer down to a depth of from 1500 to 2000 feet. Both the summit cairn and the Observatory are situated within a few feet of this precipice, and, by looking over the edge of a wooden landing-stage built on its very brink for the purpose of tipping over the Observatory refuse, one gets a thrilling idea of its awful height. On this particular day in October its whole face, as I saw it from a spur of the Ben opposite to it, presented a weird and Arctic appearance. Alternate snow, thaw, and frozen fog had transformed its face into a white sheet, relieved in its monotony by gigantic icicles and huge light green slabs of ice, all shining dazzlingly in the bright sunshine.

At the outset it seems fitting that I should rectify four errors that many people seem to fall into as regards the Observatory:—(1) that it is entirely supported by Government; (2) that it is an astronomical Observatory; (3) that in some vague way the work has to do with the weather forecasts which appear in the daily papers; (4) that Ben Nevis is pointed in shape, with a narrow summit.

As to the first, the expenses of the Observatory are certainly partially defrayed by an annual grant from Government, but public subscriptions defray the greater part. (2) The Observatory is in no sense whatever astronomical; there is not a single instrument of the kind in the place, with the possible exception of a telescope, which is em-

ployed for observing the views on a fine day. The work is purely meteorological—*i.e.*, connected with the weather. (3) The work done there has nothing to do with the forecasts issued nightly from London. Several Scottish stations do send nightly reports to London, and very valuable they are, but Ben Nevis is not one of them. (4) The summit of “the Ben” (as those who have lived there usually and affectionately term it) is not a real peak, but is practically flat, there being an area of about 70 acres, any point on which is hardly appreciably lower than the Ordnance Survey cairn.

The advantages for scientific purposes of the summit station on the Ben are twofold—(1) It is worked in conjunction with a sea-level station at Fort William, close at hand, and (2) “it is situated in the track of the south-west storms from the Atlantic, which exercise, particularly during the colder months of the year, so preponderating an influence on the weather of Europe”.

The permanent staff consists of four men, two to attend to the Low Level Station, and two for the summit, and these four interchange places when a spell of settled weather makes it safe to do so, in order that the life of none of them may become too monotonous. In addition to these four observers, there is a roadman, who looks after the bridle-path, which, from base to summit, has been made and is kept in condition at the expense of the Scottish Meteorological Society, who levy, therefore, a just tax of 1s. per head on all persons using this path to ascend the mountain. A male cook on the summit does the work of a general servant, with this difference from the ordinary “general”, that he is treated as one of the family—a small one, indeed, consisting of the two observers and himself.

In the summer months, and in future possibly in winter also, observations are regularly taken by a young Edinburgh meteorologist at a hut half-way up the hill, at a height of 2200 feet, built originally for the convenience of the roadman for shelter when working on the path. At all three stations the observations regularly taken are—atmospheric pressure (*i.e.*, height of the barometer), temperature,

humidity, rainfall, direction and force of wind, rainband, and amount of cloud and sunshine. At the base station at Fort William, situated about two miles by road from where the bridle-path begins to ascend the hill, nearly all these elements are recorded continuously by the most ingenious automatic methods, chiefly photographic.

At the Summit Station, where frost, drifting snow, and frozen fogs clog and form huge accretions on all outside instruments exposed for long to the weather during nine months out of the twelve, automatic registration, with its delicate apparatus, was very soon found to be out of the question, and the more laborious, though almost as satisfactory, method of hourly observations, night and day, was resorted to, and that has been the daily routine now for fifteen years.

The Observatory is built of wood, each room having double wooden walls, padded in between with felt. On to this, however, is added, both for comfort and for stability, a stone wall varying in thickness from 4 feet at less exposed parts to 10 feet round the base of the tower. All the windows are double to prevent draughts. The tower, so often to be mentioned, is an indispensable part of the building, for, the roof being flat and the wind nearly always fairly strong, snow does not lie deeply on the roof, but gets blown off, and collects all round the house. Also, if the snow is drifting badly, the main entrance gets completely blocked, and it is useless attempting to clear it till the weather changes, as the snow drifts in quicker than it can be shovelled out. But by climbing up an inside ladder to the tower, and opening its door, we reach the roof by a few wooden steps, whence, either by a few more steps, or, if the snow is deeper, by a jump, we reach the hard upper surface of the snow-covered mountain, and thence, a few yards off, the thermometer-box and the rain-gauge. And though it is not exactly pleasant to step out of that tower door in the middle of the night to face for a few minutes drifting snow and a wind blowing steadily 90 or 100 miles per hour, still, as the poet says, "Variety's the spice of life that gives it all its flavour"; and such an experience is preferable to being

boxed up for days together without any means of exit; and, in addition, you have the satisfaction of feeling that you are doing your duty as a Briton should. As, however, this tower was not erected till the summer of 1884, "occasional interruptions in the observations occurred during the first five months on to April, 1884. As the season advanced, the interruptions became less frequent, and from 7th May, 1884, the observations have been made without the break of an hour, except for fourteen consecutive hours, from 6 p.m., 21st February, 1885, to 8 a.m. of the 22nd, this period being signalised by a storm of such unprecedented severity as absolutely precluded the possibility of any egress to the instruments" (Trans. Royal Soc., Edin., Vol. XXXIV., p. 29).

The house, excepting the tower, is one-storied, and consists of office, kitchen, four "bunks" called bedrooms, and—what constitutes half the building—store-rooms for coke, paraffin, and food. All these are brought up during the summer months, when the hill is practically free from snow, in daily instalments on ponies' backs, and it is a rare thing to get a pony up with the luxury of fresh meat between the end of September and June. For the greater part of the year, therefore, the observers exist on beef, mutton, tongue, salmon, turnips, peas, peaches, prunes, tomatoes, and milk, all tinned, along with tea, coffee, sago, rice, etc., bread, potatoes, onions, ham, dried fish, and dried apples. There being no springs on the summit, our drink in summer was rain water, and in winter melted snow, both being much more palatable than I expected. It is a rule of the Observatory that, with the exception of a small bottle of brandy kept, in case of emergencies, in the medicine chest, no intoxicating liquor is to be found on the summit—a rule which is strictly adhered to, with very rare exceptions.

As to animal and vegetable life, of the latter it may be said that it is non-existent, for, with the exception of a little moss here and there and one poor solitary flower once plucked by an observer, there is no trace of vegetable life above about 3500 feet, nothing but hard, jagged boulders and banks of small loose stones called "scree". Animal

life is scarce; but snow buntings and ravens are frequently seen on or near the summit. White weasels and stoats make their abode there also, and two of the latter now standing stuffed in the Meteorological Office at Edinburgh were caught inside the Observatory. Foot-prints of hares and foxes are frequently to be seen both over the summit and on the Observatory roof. One early morning in winter the observer on duty was sitting by the stove in the office when he suddenly felt impelled to turn round and look at the window. On doing so, he saw two bright eyes, which peered at him for a moment through the darkness and then vanished. A weird experience; but when he went out for his next observation he found the mystery explained, for outside the window and over the roof were the marks of a fox's feet. Deer and ptarmigan, though common lower down, never venture so high as the summit. Hawks and eagles have been observed, but not at close quarters. House flies are found inside the Observatory, and in May and June the surface of the snow sometimes swarms with small black insects, chiefly coleoptera and aphides.

In the matter of dress, as can be imagined, the observers, being cut off from all civilisation for most of the year, are not very particular. Comfort and not elegance is aimed at, and in cold, stormy weather the appearance of an observer outside is something of a cross between that of a North Sea pilot and an Arctic explorer. In all weathers, unless it be exceptionally fine, or when he puts on his snow shoes, the observer discards his ordinary boots, and wears long sea boots reaching to the knee. If the weather be wet he dons his oilskin coat and trousers and his capacious sou'-wester. If it be cold and drifting hard, he puts on his Icelandic stocking, a marvellous thick worsted arrangement, which covers up all the head and neck except the eyes and nose, and even over this a sealskin bonnet with flaps does not make him too warm. If the sun shines brightly, he puts on his blue snow goggles to prevent snow blindness, and if the snow be soft he changes his sea boots for moccasins, and straps on to them his large, and at first unwieldy, snow shoes. Add to these items mufflers and gloves, and you have a fair idea of his outfit.

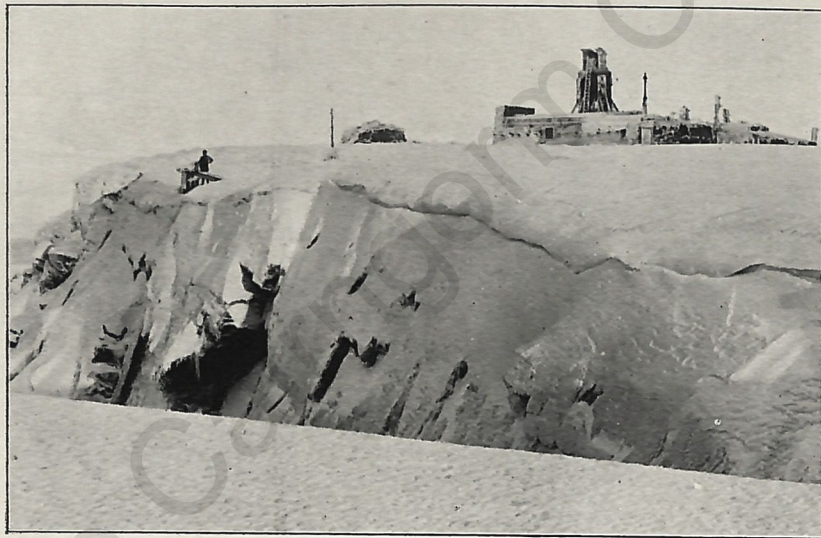
When he returns from his observations, his walk, or his tobogganing into the warm office, he discards these things, and appears just like an ordinary Scotsman, minus collar and tie, and plus, probably, a bristling beard, which he cultivates while there as an additional protection for cheeks and throat against cold.

The mean annual temperature, *i.e.*, the average of those 100,000 odd observations taken since the opening of the Observatory in November, 1883, is 31.3 deg. F., *i.e.*, $\frac{3}{4}$ of a deg. below freezing point, and 16 degs. lower than the mean annual temperature of Fort William. The highest shade temperature recorded—67.0 degs.—was in June, 1887, and the lowest in January, 1895— $\frac{1}{2}$ deg. above zero: This will doubtless surprise many readers who may have frequently heard of temperatures several degrees below zero being recorded at many places in Scotland, and indeed it is one of the most curious weather phenomena of the Ben that the very type of weather which brings hardest frost at low levels, namely, cloudless and calm with thick hoar frost, is the type which brings the finest and mildest weather on the Ben; so that it is quite a common thing to find in such weather—"anticyclonic" as it is called—the ordinary state of matters reversed, and the temperature on the summit several degrees higher than at sea-level. All will remember the few days of severe frost we enjoyed in this district before last Christmas from the 18th to the 23rd of December. Fort William also was visited with a very keen frost then, but throughout the whole period the summit was basking in a clear sky without haze or rime, light winds, brilliant sunshine, very dry air, and a temperature several degrees higher than at Fort William.

The mean temperature of July, the warmest month, is 40 degs., being the same as that of Spitzbergen for the same month. There has only been one month since the Observatory opened in which snow has not fallen, and in which the temperature has not at some time or other fallen below freezing point, and during two Januaries—those of 1895 and 1897—the temperature never once rose over freezing point.

As to the very dry air to be found at times on the summit, the term on which the interest of the whole subject rests is "Relative Humidity". The relative humidity of air at a certain temperature is the proportion expressed as a per centage of the amount of water vapour actually present per cubic foot to the amount required to saturate the air at that temperature. Hence when the air is saturated with fog or mist, we say its relative humidity is 100, and any per centage below 50 means what we usually call very dry air. Before the erection of High Level Observatories the lowest relative humidity ever observed was 11 per cent. at Djeddah, in the Arabian desert. That certainly is very low, and much lower than will ever be observed at any low level station in Britain. But the curious thing is that during spells of anticyclonic weather—such as the one we enjoyed before Christmas—relative humidities as low as 11 are by no means rare on Ben Nevis, and a minimum of 6 per cent. has actually been observed. In such dry air I have frequently seen and heard the snow on the summit evaporating away with astonishing rapidity, though the temperature was perhaps below freezing point, and no visible melting took place. Were this the normal state of weather on the Ben, it would indeed be an unmixed delight to spend one's days there, but, unfortunately, these brilliant days are very much the exception; for the summit is enveloped in cloud, and the air consequently saturated, on an average, four days out of five.

The rainfall on the Ben is also remarkable. The mean along the Firth of Forth is 26 to 30 inches; 32 at Aberdeen; 92 at Sligachan (Skye); and 75 at Fort-William; while the fall on the Ben reaches the large annual mean of 134 inches, including melted snow, which is reduced by melting to about one-tenth of its original bulk. Six or seven inches is considered a large month's rainfall at most Scottish stations. In one September over 43 inches fell on the Ben. A rainfall of an inch per day is considered very heavy at low levels. On one day over seven inches fell on the Ben. The snow post on the summit never registers a very great depth, for two reasons—(1) It is placed in a position



BEN NEVIS—THE SUMMIT IN WINTER.

Reproduced from a photograph by Mr. John S. Begg, M.A., by the kind permission of the Directors of Ben Nevis Observatory.

where the snow has been found least liable to gather in drifts, so that much greater depth would be found in places whither the snow has been blown by the almost continuous wind; and (2) the great bulk of precipitation occurs not, as one might expect, in the form of snow, but in the form of rain or sleet, the heavy plumps always coming down during the thaws which every now and then make life so disagreeable on the summit. Hence the greatest depth of snow on the summit, as recorded in *The Scotsman* and other newspapers—occurring generally in April—varies according to the nature of the winter from 7 to 12 feet only.

More remarkable even than the rainfall is the tremendous velocity which the wind at times attains. On the night of the memorable Tay Bridge disaster the wildest gusts fell short of 100 miles per hour. "Windy Friday" is still remembered in Edinburgh as a day of phenomenal storm, when cabs and carts were blown over and people lifted off their feet in the streets, and the maximum velocity registered was 98 miles per hour. I have cited these two instances in order to give an idea of the terrific wildness of the hurricanes which sweep over the summit, where velocities of over 100 miles per hour have been frequently observed. For the first two years, when such storms passed over the Ben, the two observers used to go out roped together for greater security, but it has been found that even in the strongest gusts perfect safety can be secured by crawling, or, in extreme cases, lying down flat. While on the matter of storms, I shall quote an extract from the Observatory log-book for February 21 and 22, 1885, when the great storm, which interrupted observations for fourteen hours, swept over the summit:—"Feb. 21, at 1 p.m.—Rain gauge found blown away to near the edge of the cliff, not put out again to-day. At 4 p.m. the note book for the observation was torn in two and blown away. After 5 p.m. no temperature readings were taken, as the lamps could not be kept alight, and the observers could not stand against the wind. At 6, 7, and 8 p.m. the observer went out at the tower door with a long rope, and had to be hauled back. After that the observer did not go out. At 10 p.m. the outer

glass of south window in tower was seen to be broken, probably by a flying piece of ice, many of which were heard rattling on the tower like stones. Feb. 22—First temperature reading taken at 8 a.m. Thermometer box found badly choked with drift, and with about half its back outer louvres smashed. The top joint of snow post was also broken. The snow was much blown away by the wind, the general height being lowered several inches—even the hard crust on top was broken up”.

Of peculiar optical phenomena observed on the Ben, the chief are fog-bows, coronæ, and glories. The first occur when the sun breaks through thin dispersing fog which is sinking below the level of the summit; an arch similar to a rainbow is then frequently observed. Coronæ or coloured rings round sun or moon, are sometimes observed at low levels, but never in such brilliancy as from the mountain top when a scud of thin fog passes between the observer and the sun or moon.

A glory, however, is the most striking of such phenomena, otherwise called the “Spectre of the Brocken”. Many a time have I seen that beautiful effect when the setting sun cast my shadow on a fog or cloud bank to the eastward, my form being distinctly outlined on the white cloud sheet, and round my head, what one does not associate with this earthly existence at all, a brilliant, many-coloured halo.

One of the most striking phenomena to be observed at high level stations is the formation of snow crystals from fog. “As Ben Nevis is situated in the path of the Atlantic cyclones, with their vapour-laden wind systems, the formation of snow crystals on the Observatory and all surrounding objects exposed to the drifting fogs, when the temperature is below freezing point, proceeds often at an astonishingly rapid rate. The forms and arrangements of the crystals vary with the surface to which they adhere, but all belong to the feathery or fir-cone type. On a flat board they gather first and most abundantly near its edges, forming a beautiful border round it, while the centre remains clear. On the other hand, a round post shows an almost uniformly disposed mass of crystals all over its windward

half. The rate of growth of the crystals varies with the density of the fog and the speed of the wind. On one occasion a post four inches square grew into a slab of crystalline snow of about five feet broad and one foot thick in less than a week, strong south-easterly winds with low temperatures prevailing during the whole time" (Trans. Royal Soc., Edin., Vol. XXXIV., p. 39).

A gale on the summit is bad enough, but a thunder-storm is infinitely worse, and is indeed the only real danger to which observers are exposed. Fortunately they are not common, and occur as a rule in winter; the worst type being when the thunder cloud settles on the hill-top. It is first of all seen approaching with lightning flashing from it; when it envelopes the summit in the form of mist no lightning is seen, no thunder is heard, but the telegraph needle clicks vigorously and almost continuously. The worst is yet to come, for the moment the cloud moves off the summit a flash and a crack like a pistol shot breaks from all prominent metallic objects in the Observatory, such as wires, stove-pipes, and kitchen utensils. On one occasion a flash from the stove knocked down and stupefied one of the staff who was seated at a desk close by, while another such flash set fire to some of the woodwork between the office and the kitchen. On another occasion the telegraph instrument was wrecked, being smashed and twisted almost beyond recognition.

The other electrical phenomenon of St. Elmo's Fire is quite harmless, though very peculiar. It occurs chiefly at night, and in winter, with a westerly wind. It is very seldom seen at low levels, though sailors have occasionally observed it at the top of ships' masts. When it occurs a noise something between a hiss and a crackle is heard continuously. The top of the lightning conductor, the kitchen chimney cowl, the wind vane, and even the tip of the observer's pencil emit a bluish flame, while the observer's hair glows, and, if he looks upward, he feels a prickly sensation on his face. Beyond causing in certain persons slight headache, this phenomenon is known to be perfectly harmless, but its source or cause is as yet a mystery.

June, July, August, and September are the months during which tourists climb the mountain, and their name is legion. I am quite sure throughout September we had on an average from fifteen to thirty per day. If they wanted refreshments they did not get them from the Observatory, but at a so-called hotel, a wooden erection open during the summer months only—for it is quite buried in snow in winter—with four small bedrooms, to enable tourists, if they choose, to stay all night to see the sun rise. Unfortunately, they usually arise only to say, "We viewed the mist and missed the view". With so many people coming and going, and with plenty of work to do also, the month passed quickly, but without special excitement.

One piece of advice I may offer to any reader who should ever intend climbing the Ben, and who wishes a good view—Don't go up in August, which has been, with only one or two exceptions, a month with large rainfall, much mist, and little sunshine. I was at some pains during my stay on the Ben to draw conclusions from the fourteen years' observations as to the best week on the whole in June—the best month—for visitors to ascend the hill, and I found that the week from the 18th to the 24th of June inclusive was, on the average, the warmest, driest, calmest, clearest, and sunniest, though I am sorry I cannot guarantee a good view even then.

The first half of September, 1896, was mild, but in the middle there came a change; winter was on us, and for the last fortnight the snow was never off the summit, frost was frequent, and the mean temperature was just a trifle above freezing point. Between six and seven one evening towards the end of the month my friend was standing on the Observatory roof when he heard a cry coming from the foot of Maclean's Steep. He and the cook at once set off to see what was wrong, and found at the foot of the steep three ladies, one of them over sixty at least, bent, and old-looking, and quite exhausted. She had determined to get to the top, and had left Fort William that morning, with her companions, about nine o'clock. My friend managed to put some spirits in her in both senses, and got her safely to the

top, where she spent the night in the hotel, and was "as fit as a fiddle" next day.

It was about this time, too, I had my first experience of night duty, and a charming one it was. My companion had gone down to spend a farewell evening with the gentleman who was observing at the half-way hut, and, as he did not return quite when I expected, I had, of course, to take duty till he turned up. Luckily it was a beautiful night; though in September, the summit and for a considerable distance down the hillside was white with snow, the sky was cloudless, the wind light, and the moon full. To keep myself from falling asleep between observations I alternated cups of strong coffee with strolls down the hillside in the moonlight. After the 6 a.m. observation I mounted to the flat top of the Observatory tower, and, wrapped in a rug, for it was freezing hard, I waited for the sunrise, nor had I to wait long. The east grew brighter and brighter, till I was rewarded by the sun's rim appearing and shooting across a ray of greeting to me, first of all things animate or inanimate throughout the length and breadth of Scotland. It gave me a curious feeling of kinship to the sun; he seemed so really to be smiling and shining on myself alone as I stood there in the calm stillness, looking down on billow after billow of green hill or rocky mountain top stretching for mile after mile into the far-off horizon. Then for the next few minutes I observed the white snow on the summit turned to the most delicate pink. The other snow-clad peaks around me still looked cold and forbidding, untouched by the warm sun; but first one and then another received the impress of his rosy finger-tip, and seemed to grow kindly and warm at the touch—a lovely scene indeed, and I thanked my companion, on his return, for extending his time so opportunely.

Just a few days after returning to the Observatory in October I had rather an unpleasant experience. As I have said, on the north side of the mountain is a perpendicular cliff; the west side has a comparatively gentle slope, and is the side from which the ascent is usually made; the south side again is fairly steep, and towards the S.E. dips into a

huge, precipitous, cauldron-shaped hollow. After two o'clock dinner, having three hours to spare before my next observation, I thought I would take a stroll down the south side. I got down a good bit all right, finding the snow soft and capable of giving a good footing, when, without any warning, I found myself on a much harder snow-slope, where I slipped my foot, fell on my back, and slid. The exasperating thing was that there was nothing apparently to stop my sliding till I should pop at a nice speed into the uninviting cauldron below. However, as I was sliding quicker and quicker, wildly trying to plunge my ice axe into the hard surface to check myself, I espied right in my course the providential jagged top of a narrow rock sticking up above the snow. As I was sweeping past this I hugged it with my right arm as I never hugged anything before or since, and I had gathered so much momentum that I swung right round it; but I was safe, though I had still that hard, cold, forbidding-looking slope to ascend. It was fortunate indeed I had my ice axe with me, as with it I had to cut steps all the way up the slope until I reached the soft snow again. It had taken me, I suppose, less than a minute to go down that slope; it took me an hour to go up.

In the end of October I had my first experience of a bad gale. I was awakened as usual in time to take the 5 a.m. observation, but, when I got outside the porch, I found I had something to battle with. The wind was northerly, and came in gusts. The result was that I would bend forward with every muscle strained to resist a gust of, say, 80 miles an hour, when the wind would suddenly drop, and I, of course, would drop too, flat in the snow; also, the soft, fresh-fallen snow was blown in blinding, swirling sheets of drift all round me, so that by the time I reached the thermometer-box I was practically blind, and had to tear lumps of icy drift out of my eyes before I could see by the aid of my lantern where the box was.

The first week of November was brilliant, cloudless skies, and air very dry; but the fortnight in the middle of the month was one of the most disagreeable, as regards weather, one could imagine. With the exception of one day through-

out that fortnight we never saw more than ten yards in front of us; thick, soaking mist; with the temperature mostly above freezing point; heavy showers of rain and sleet, and occasional gales from the S.E., reaching one day a velocity of 100 miles per hour. The house, too, leaked badly, and the floors both of office and kitchen were pretty much covered with basins, pails, etc., to catch the water. That fortnight would indeed have been a wearisome one had it not been that we had loads of work to do, and when we got tired of that, a good library or a game at cards to resort to. However, about the 23rd, the mist rolled away, and once more we revelled in the sunshine. Such a revolution, in fact, did this delightful change in the weather work in our spirits that we got quite excited, ending by dancing on the roof the Highland fling. Never did I realise before how true were the words of the preacher—"Truly the light is sweet, and a pleasant thing it is for the eyes to behold the sun".

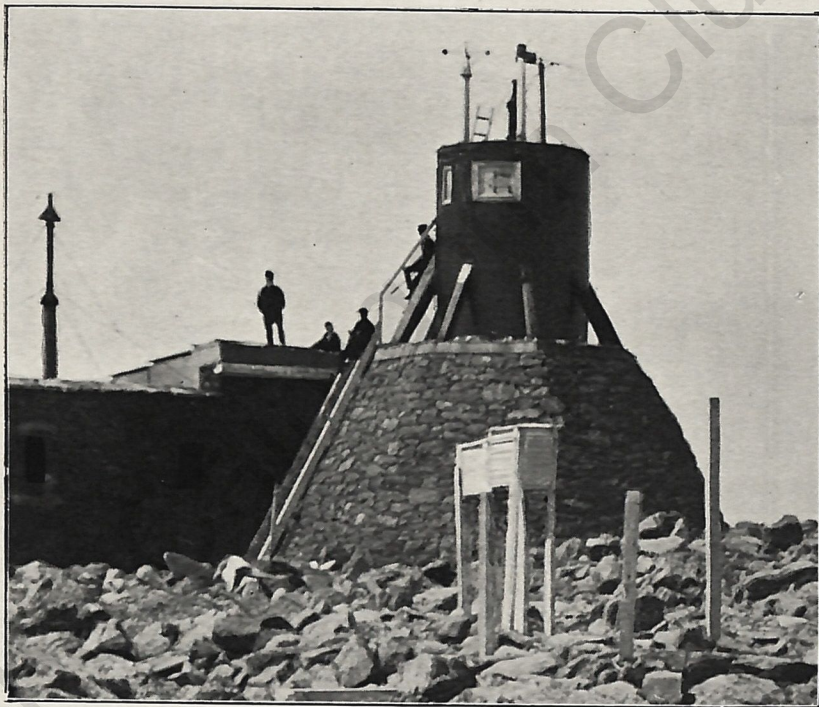
The mist, though it had left us, did not disappear, but sank below the level of the summit, and for the next few days we scored over our low level friends. For we were perched entirely above the clouds, which stretched like a white, billowy sea uninterruptedly round and below on every side, as far as the eye could scan, and that, in clear weather, is about 100 miles. At times the sheet of cloud sea would sink somewhat, so that the other mountain tops of Scotland, east and west and north and south, peeped through like islands in the sea; at other times it would rise till Ben Nevis alone of Scottish peaks kept its head above the snowy billows, and then indeed we felt that in splendid isolation we held the highest office in the United Kingdom. During these few days the weather at Fort William was raw, cold, and overcast, with occasional drizzle, while we were revelling in a brilliant sun, shining from a perfectly clear and hazeless sky, through air so dry that the snow disappeared quickly by evaporation. The weird beauty of the night time under such circumstances I shall never forget, and I shall do my best to describe one particular scene. I had just taken the 7 p.m. observation, and the

air was so delightful that I took a constitutional up and down the Observatory roof. The lightest of southerly airs blew gently and caressingly, and prevented the stillness of the whole scene from becoming oppressive. Above, the sky was cloudless; below, the clouds were sinking like great white lakes into the hollows between the hills. From the bosom of one of these lakes to eastward rose the moon, and while it was rising the upper half was as gold, while the half still in the cloud was red as blood. But not till it had risen quite above its white bed and shone with all its pale splendour in the opal sky did one feel the full charm of the scene. Over all the clear blue island mountain tops around it seemed to cast a fairy-like shimmer; and in that calm and impressive stillness, far, far above the noise and feverishness, the sin and misery of man, cut off from it all by those white sheets of cloud, amid the everlasting hills, bathed in the soft, ethereal moonlight, one's spirit felt linked to the eternal and at rest.

In the next day or two the clouds below gradually dispersed, and November ended with cloudless weather above and below. There had been so much sunshine, fresh weather, and dry air throughout the month that when December opened the boulders were showing through the snow on the summit—an unusual occurrence for the time of year.

On 28th November a pony was brought up almost to the summit with, among other things, thirteen legs of fresh mutton, which were a very great treat; so much were they appreciated, in fact, that we had them for breakfast, dinner, and tea, at the rate of one per day!

On the morning of the 29th November, between five and six, while I was sitting in the office, I was startled by a tap at the window. It was, of course, quite dark outside, but I took my lantern and went out, when I found two men standing shivering; they had not been able to find the door, so I took them in and gave them breakfast, and thereafter one of them told me—the other had gone fast asleep in the chair—that they had been drinking at Fort William the night before, and while in



BEN NEVIS—THE OBSERVATORY.

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their cups had made a bet with their companions that they would climb the Ben. They had been guided by the marks of the ponies' hoofs where the path was covered with snow. Thereafter, during that day—a Sunday—four or five other visitors ascended the hill, the most interesting of whom was a ragged Irishman, a workman at the Ben Nevis water-works, who, having heard that the observers wore out their old clothes on the summit, came all the way to beg for an addition to his own wardrobe.

I returned again to the summit in the beginning of April, 1897, for a few weeks, and found the Observatory practically buried, *i.e.*, no jump was required to reach the surface of the snow from the roof, and the summer hotel was invisible. April is often one of the most wintry months on the Ben, and it will give the reader an idea of this when he knows that for the first three weeks of April, 1897, the temperature never once rose above freezing point, and the weather was stormy, with much fresh snow. Whenever it cleared at all, we all set to work and dug out the windows, so that we might enjoy daylight till the next heavy fall came on, when the windows at once got blocked, and we had to resort to lamplight, sometimes for days together. On the 21st, however, the weather cleared, temperature rose, and, till I left at the end of the month, the weather was of that perfect kind previously described. The roadman was now able to ascend the hill with letters. His arrival is always hailed with joy and excitement as, owing to bad weather, the observers are sometimes five or six weeks without letters or newspapers, though if any important letter is lying below it can be wired up.

During this spell of fine weather, we had the good fortune to witness a wonderful mountaineering feat. At the western extremity of the northern cliff the hill takes a sharp bend, and another cliff runs out to the north-eastward, and at this bend of the V-shaped precipice there is, therefore, an almost perpendicular narrow corrie or gully running right down for about 2000 feet. Up this, with ropes, ice axes, and all the other paraphernalia of the Alpine climber, came three members of the English Alpine Club.

It certainly seemed a rash and foolhardy experiment, but their coolness and courage were rewarded, after six hours' hard work, by their reaching the summit in safety, when the four of us greeted them with a hearty cheer and all-round hand-shaking, and finished up with a merry meal in the Observatory kitchen.

The sun by the end of April shines, of course, pretty strongly, and the last day I spent on the Ben before coming down I shall remember always as one of the most delightful of my life. How charming it was to sit on the dry, powdery snow on a sun-exposed slope, lazily dreaming away the time, basking in the sunlight, and enjoying the glorious view to the west; the calm expanse of Loch Linnhe, in the distance the jagged peaks of Skye, the green hill-tops elsewhere rising through the soft blue haze, the peace and stillness and quiet harmony of everything; no sounds save now and then the croak of a raven, or the bark of a fox, or far, far down in the smiling valleys, softened by the distance, the plaintive bleating of the lamb for its mother, the hoarse call of the red deer, or the subdued murmur of some distant waterfall. Could anything be more soothing, more inspiring, more refreshing both to mind and body? True, there was a charm in returning to lower levels, a charm in the varied colouring after the perpetual white glare of the snow, a charm in the old familiar sounds and sights of a country springtime, a charm, too, in seeing fresh faces of men, and more particularly of women; but when all is said, the impressions which I will bear with me always of my few months on Ben Nevis are among the most delightful of my life, thanks not only to the novelty and interest of the work, but also to the unfailing kindness and courtesy of all those officially connected with the Observatory.