

REPORT ON THE SNOW SURVEY OF GREAT BRITAIN FOR THE SEASON 1946-7

By E. L. HAWKE and D. L. CHAMPION

THIS Report is based mainly on the work of some 120 volunteer observers who have contributed each month daily statistics of snowfall and snow-cover from sites well distributed over the country. Use has also been made of data relating to the state of the ground from day to day at about 110 of the stations which supply climatological returns to the Meteorological Office, Air Ministry. Further information has come from the logs of climbers in the mountains of Scotland and Wales.

To all who have taken part in the investigation the Society expresses cordial gratitude. For valued assistance in the work of the Survey special thanks are due to Sir Nelson Johnson, Director of the Meteorological Office, who has placed the wide resources of his department at our disposal; and to two senior members of his staff—Dr. J. Glasspoole, of the Climatological Division at Harrow, Middlesex, and Dr. W. A. Harwood, Superintendent of the Meteorological Office at Edinburgh, both of whom gave much thought to the selection of the stations whence co-operation of observers might most advantageously be sought.

METRIC EQUIVALENTS OF HEIGHTS IN FEET

100 ft. = 30.5 m.	2500 ft. = 762.0 m.
500 ft. = 152.4 m.	3000 ft. = 914.4 m.
1000 ft. = 304.8 m.	3500 ft. = 1066.8 m.
1500 ft. = 457.2 m.	4000 ft. = 1219.2 m.
2000 ft. = 609.6 m.	

In general, measurements of snow-depth cited in the Report refer to 0900 h. G.M.T., or thereabouts.

OCTOBER 1946

This month was exceptionally dry, precipitation being 39 per cent. of the normal over England and Wales and 16 per cent. of the normal in Scotland. There was little snowfall, but on the 28th snow lay down to 3000 ft. on the Cuillins, Isle of Skye, and down to 2000 ft. for a short time on the Applecross Hills near Strome Ferry.

NOVEMBER 1946

The month was mild with little snow. On the 1st and 2nd snow lay above 3500 ft. on Ben Wyvis, Ross-shire, and down to 2500 ft. on the mountains around Blaircreich, Perthshire. On the 8th to 10th snow was reported to be lying at 3000-3500 ft. in Angus and the Glen Lyon area, Perthshire. In southern England there was a snowfall on the 9th at 1100 ft. on the eastern flanks of Dartmoor.

A depression on the 12th brought snow to the Applecross Hills and to the Cairngorms near Kingussie, where it lay to heights below 2000 ft. and 2500 ft. respectively. In the latter area it continued to lie at this level for the rest of the month.

The cold north-westerly air stream behind this depression brought snow to the Shetlands at sea-level and as far south as the Lake District at heights below 2500 ft. On the 14th to 16th snow lay below 1500 ft. in the Island of Lewis, Outer Hebrides, and down to below 500 ft. by Loch Broom, Ross-shire. Tomintoul, Banffshire, reported small depths of snow on the 14th and 15th; 9 in. (22.9 cm.) with drifts up to 3 ft. (91 cm.) lay at 3300 ft. in Blaircreich, Perthshire, on the 18th. On the 19th snow was reported on the Welsh mountains below 1500 ft. (Cader Idris) and on the 21st to 23rd snow was reported at 1500 ft. in Berwickshire, the Cuillins and in the Highlands.

DECEMBER 1946

This month was mainly dry and cold. Mean temperature was well below normal; during the week ending the 21st it was 10.1° F. (5.6° C.) below the average in south-east England.

Below 1000 ft. Britain was largely free from snow. At higher levels snow lay throughout the month notably at heights above 3000 ft. in Snowdonia and the Cuillins, Sutherland, and in Ross-shire, where it extended downwards to 2500 ft. on the eastern mountain flanks. There was a continuous cover down to 1500 ft. in the Applecross Hills. No snow was observed in North Uist, Outer Hebrides, throughout the month.

On the 1st to 3rd considerable falls gave depths up to 3 in. (7.6 cm.) in many parts of Scotland and northern England and Wales down to levels of about 750 ft. Snow occurred at sea-level at Deganwy, Caernarvonshire, and the Black Mountains. The Brecknock Beacons were covered at 2000 ft. from the 4th to the 7th. On the 16th an intense anticyclone accompanied by very cold air encompassed the British Isles. "Snow lying" was reported down to 500 ft. in Ross-shire. On the same day as far south as Selling, Kent, 2.5 in. (6.3 cm.) of snow lay at 320 ft. and 0.5 in. (1.3 cm.) on the Sussex coast.

On the 19th snow fell as far west as St. Eval, Cornwall, and lay down to 1359 ft. on Dartmoor. Stations in several of the home and neighbouring counties had a few inches of snow lying on that day, as also did the Blagdon Hills in Somerset. Snowfalls occurred in Wales down to sea-level, but only a very thin layer lay at 3100 ft. on Snowdon and on the summit of Carnedd Llewelyn. After further falls on the Welsh mountains on the 23rd a severe gale removed most of the snow-cover from the 600–3000-ft. level in Snowdonia late on the 24th.

JANUARY 1947

The weather was generally unsettled with temperatures sometimes well above the average but reaching extremely low levels during the last week. The mean for the period *January 26th to February 1st* fell to 11.6° F. (6.4° C.) below the average. Minimum temperatures of -6° F. (-21.1° C.) occurred at Elmstone, Kent, on the 30th and -5° F. (-20.6° C.) at Writtle, Essex, on the 29th.

Precipitation was about 14 per cent. above normal in Great Britain although locally in the north there was a deficiency of 25 per cent. Snowfalls on the last three days were widespread throughout the whole country except the Outer Hebrides. North Uist was snow-free the whole month. Perhaps the most remarkable incident was a cover as deep as 7 in. (17.8 cm.) in the Scilly Islands on the morning of the 30th.

As in December, most of the country was fairly free from persistent snow except in the mountains. Snow lay continuously throughout the month down to 3000 ft. in the Cuillins, down to 2500 ft. on the Fannich Hills and on the eastern flanks of Ben Wyvis, and down to 2000 ft. around Strome Ferry. Fyvie Castle, Aberdeenshire, reported that no snow fell until the 28th.

On the 7th snow of varying depths up to 10 in. (25.4 cm.) was reported in Sutherland and Perthshire down to levels of 500 ft. Drifts blocked traffic and reached 10 ft. in places. On the 7th and 8th snow fell at sea-level at Hatston Airport, Orkney, and on the 9th to 11th at Vementry, Shetland. In north England heavy snowfalls left a cover reaching 16 in. (40.6 cm.) deep at a height of 553 ft. at High Close, Westmorland, on the 8th. In the Midlands snow lay 9 in. (22.9 cm.) deep at East Kirby, Nottinghamshire, on the 8th, and continuously in the Hednesford Hills, Staffordshire, from the 6th to the end of the month. Drifts up to 10 ft. were reported at Market Harborough, Leicestershire, and at places on the south-east and south coasts snow lay several inches deep at sea-level on the 7th.

In Wales snow lay to depths of several inches even at moderate heights in the south, while in parts of Caernarvonshire, it came down to sea-level. Most of the British snow-cover disappeared

during a general thaw on the 14th and floods occurred at Blaircreich. On the 23rd to 25th an anti-cyclone was centred over the British Isles and a fall of pressure in central Europe set up an intensely cold air stream which persisted for the remainder of the month. Snowfalls occurred at sea-level in Orkney and in the Shetlands on the 29th and 30th. In southern Scotland snow was reported lying at heights of 1000 ft. and less, while in England at similar heights there was snow-cover up to 9 in. (22.9 cm.) in depth in Yorkshire and Durham. On the lee side of the Pennines, particularly in Lancashire, however, the depths were much less. In the Midlands depths of 7 in. (17.8 cm.) occurred in several places on the 29th and considerable snow-cover was noted at coastal stations. Felixstowe, Suffolk, reported 9 in. (22.9 cm.) and Calshot, Hampshire, nearly the same depth. At Downe, Kent, at a height of 560 ft. undrifted snow lay 12 in. deep, and on the 30th at East Anstey, Exmoor, at 750 ft. a fall of 9 in. drifted in places to 6 ft. This was said to be the heaviest fall for twenty years. On Dartmoor, too, heavy drifts were recorded.

In Wales the snowfalls were generally lighter, Anglesey being free until the 26th. During the last five days of the month heavy snowstorms with severe drifting occurred in many districts.

D. L. C.

FEBRUARY 1947

Weather of excessive severity prevailed throughout the country. It was generally the coldest month since February 1895, while at Oxford none had been so cold since records were begun in 1815. Over Britain as a whole the mean temperature fell short of the normal level by about 10° F. (5.6° C.), the regional deficiency ranging from 7.7° F. (4.3° C.) in northern Scotland to 11° F. (6.1° C.) in the midland and eastern counties of England. An outstanding feature of February was the long persistence of unbroken frost. The observer at Winchester (800 ft.) in Berwickshire reported that the screened thermometer there never rose above freezing point at any time during the month. Over very extensive areas the air temperature remained continuously below freezing from the 11th to the 23rd, as well as on a number of other days. The coldest nights were in general those from the 22nd to the 25th, when minimum air temperatures below zero F. (-17.8° C.) were registered locally in both England and Scotland: the lowest readings reported to the Meteorological Office were -5° F. (-20.6° C.) at Woburn (Beds) on the 25th, -3° F. (-19.4° C.) at Appleby, Westmorland, on the 23rd, and the same figure at Luton (Beds), Rickmansworth (Herts) and Moreton-in-the-Marsh, Gloucestershire, on the 24th.

There was no day throughout the month on which snow did not occur, even at low levels, in one or another part of Britain. Among individual stations, Wrexham, Denbighshire, had either substantial falls or light showers on twenty-six days, and at numerous places not more than five or six days were wholly snow-free. For extent of persistent snow-cover February was almost certainly beyond all precedent within living memory in this country. The records indicate that more than two-thirds and perhaps as much as three-quarters of the total area of England, Wales and Scotland lay continuously under snow from start to finish of the month. This state of affairs was reported as far south as the Isle of Wight, and either widely or locally in six of the seven counties bordering the English Channel, the exception being Cornwall.

From published maps¹ showing the approximate general monthly distribution of snow-cover over the British Isles during five of the most snowy winters of the last seventy years it appears that no calendar month therein could be regarded as comparable with February 1947 in this respect. The nearest approach seems to have been made in January 1879, when the greater part of Scotland and fully one-third of England lay under snow for at least twenty-five days. On that occasion, however, the area having a thirty to thirty-one days' cover apparently did not extend farther south than the northern English midlands and was in the main confined to Scotland and the northern-most counties of England. There is evidence to suggest that Britain may have been as much snow-

bound in January 1814 as in February 1947. It was in January–February 1814 that the last “Frost Fair” was held on the Thames, and according to contemporary accounts all roads leading from London, except those into Kent and Essex, were blocked by snow during the second half of January, drifts being up to 16 ft. (4.9 m.) deep at Finchley and Colnbrook. We have no means of ascertaining how often the conditions of February 1947 were matched in earlier times. One such instance probably occurred in 1683–4. The parish register of Ubley, Somerset,² records that very deep snow which fell immediately after Christmas was not “cleane gone off the earth in thirteene weeks” and that some of the accumulation remained on the Mendip Hills until midsummer. At Westminster there were thirty-seven days of snowfall from December 1683 to March 1684, against thirty-two in the same four months of 1946–7.

During nearly the whole of February 1947 barometric pressure was high over Scandinavia and higher still round northern and central Greenland. From time to time a vast anticyclonic belt extended over the entire region from Greenland to Siberia. As a result, the easterly winds which had set in over Britain on January 22 continued virtually without a break in most parts of the country until February 22. All through this period Atlantic depressions were consequently diverted from their more usual course to a track south of the British Isles, most of them eventually making their way into the Mediterranean. During the first few days of February the warm sector of one of these depressions brought a short-lived thaw to the extreme south of England, with heavy rain in places. Farther north substantial snowfalls were widespread, especially in upland western districts. At Mount Pleasant (523 ft.) in Flintshire the depth of the snow-cover grew from 1 in. (2.5 cm.) on February 1st to 14 in. (35.6 cm.) on the 5th, and at Clawdd-newydd (998 ft.) in Denbighshire the increase between the same dates was from 4 in. (10.2 cm.) to 42 in. (106.7 cm.). In the midland and northern counties of England falls of about 12 in. (30.5 cm.) were common during this interval, while at Eggleston (1050 ft.) in Durham there was one of 21 in. (53.3 cm.) from the 3rd to the 5th. On the morning of the 6th snow lay to an average depth of 44 in. (111.8 cm.) at Forrest-in-Teesdale, Durham. In Scotland the accessions to snow-cover during February’s first few days rarely exceeded 5 in. (12.7 cm.) except on the higher mountains.

Before the temporary thaw in the south of England Kent had a considerable snowfall, amounting to some 6 in. (15.2 cm.) at Downe (560 ft.) on the 2nd to 3rd.

Another vigorous depression which appeared off our south-west coasts on the 7th, subsequently losing intensity as it progressed slowly east-south-eastward, brought a recurrence of transient thaw to the Devon–Cornwall peninsula, but further widespread snow elsewhere in England and Wales. Locally in East Anglia and the south midlands this was the outstanding fall of the month.* In Scotland precipitation around this time was mostly in the form of snow showers: at Glen Prosen (600 ft.) in Angus these added 6 in. (15.2 cm.) to the average depth of the cover between 7th and 10th.

From the 10th to the 20th dull, bleak anticyclonic conditions ruled. In general there was little snow, and that of the powdery shower variety. At Forrest-in-Teesdale, Durham, the average depth on the ground had increased to 53 in. (134.6 cm.) by the 18th.

A series of complex depressions passing eastward across northern France and southern England on the 21st and 22nd caused a 10-in. (25.4 cm.) snowfall at Selling (320 ft.) in Kent, and one of 18 in. (45.7 cm.) at Pengwern (540 ft.) in Merionethshire. For the second time during the winter, on the 21st, the Scilly Isles had the rare experience of a substantial snow-cover. On this occasion, however, the maximum morning depth at St. Mary’s (163 ft.) did not exceed 1 in. (2.5 cm.). Farther north the amounts were extremely variable; many regions had less than 1 in. (2.5 cm.) and some none at all, though on the 21st a “blizzard” was reported from Chew Mount (1600 ft.) in the

* During the twenty-four hours ended 0900 h. G.M.T. on the 10th 12½ in. (31.7 cm.) of snow was deposited at Hindolvestone in Norfolk.

West Riding of Yorkshire and from Eggleston (1050 ft.) in Durham, where the average depth of snow lying had increased from 42 in. (106.7 cm.) on the 14th to 57 in. (144.8 cm.) by the morning of the 22nd.

Over much of the northern half of England and Wales and eastern Scotland the worst February snowstorm came on the 25th to 27th as the result of a depression which developed in polar air and passed from south-west Ireland across southern Scotland. Examples of the deposit yielded by this storm were: 13½ in. (34.3 cm.) at Wrexham (283 ft.) in Denbighshire and 13 in. (33.0 cm.) in the Braes of Glenlivet (1050 ft.) in Banffshire. On the evening of the 26th the Automobile Association announced that at least 150 important roads in northern England, North Wales and parts of Scotland were blocked.

The greatest average depth of snow-cover reported for the hour of morning observation during this extraordinarily rigorous month was 38 in. (96.5 cm.) at Clawdd-newydd (988 ft.) in Denbighshire, the daily measurements there ranging from 4 in. (10.2 cm.) on the 1st to 54 in. (137.2 cm.) on the 9th and never falling below 36 in. (91.4 cm.) from the 4th onwards.

High winds and gales were very frequent. Consequently there was widespread and severe drifting of the snow where, as often happened, it was of the dry, powdery type. This led to serious and repeated dislocation of traffic both by rail and by road. Drifts from 10 to 15 ft. (3 to 4.6 m.) in depth were too common to receive individual mention. At Aberglanherin (1500 ft.) in Radnorshire some drifts were observed to be from 15 to 20 ft. (4.6 to 6.1 m.) deep every morning from the 8th onwards.

Exceptionally heavy deposits of fog-born rime occurred in upland areas from time to time. On the 24th outcrops of rocks just beneath the top of the Sugarloaf (1955 ft.), Brecon, were encrusted up to 24 in. (61 cm.) deep.

No observations of the total amount of February snow are available from any of the upper reaches of the Scottish Highlands. Outside that region the greatest aggregate falls appear to have been in the uplands of central and northern Wales and of the north midland and north-eastern English counties. Immunity from snow seems to have been at a maximum in western Scotland and the Hebrides. The notoriously wet stations at Glenquoich in Inverness-shire, and at Glencoe and Ardgour in Argyllshire, had no measurable precipitation during the entire month. In some districts thereabouts, and also in the Isle of Skye, dryness was so acute that heath and grassland fires were burning.

Tiree, Inner Hebrides, had no snow lying at 0900 h. G.M.T. on any day. North Uist, Outer Hebrides, which had been free from snow all through December and January, reported none in February until the 17th and thenceforward had only two light falls, each 1 in. (2.5 cm.) deep.

Other facts of interest noted in observers' returns were the freezing of Bala Lake on the 23rd to 28th for the first time since February 1895, and of Loch Stennes, Orkney Isles, during nearly the whole month. Just after mid-February sizable ice-floes were observed to be drifting westward over the North Sea, and around the 20th some of these made a near approach to the East Anglian coast, carrying away buoys set to mark wrecks and shipping channels between mined areas. At Whitstable and other places on the shores of the Thames estuary the sea bore a mass of pack-ice towards the close of the month. Severe "ice-storms" (rain freezing as it fell) affected extensive areas in the far south-west and south of England late in February and early in March.

MARCH 1947

Over much of Britain the extremely severe weather which had characterized February was not merely maintained but accentuated during the first half of March. Until the 3rd few places had snow in substantial amount; sunshine was abundant, but under clear skies by night arctic air brought the keenest frosts of the winter to many northern districts. Early on the 4th the air tem-

perature sank to -6° F. (-21.1° C.) at Braemar, Aberdeenshire, Peebles and Houghall, Durham. Meanwhile, a warm front extending from an intense depression north of the Azores was swinging north-eastward across south-western and western Europe. The warmer air eventually reached the southernmost counties of England, producing a pronounced temporary thaw, accompanied in Devon by torrential rain. North of a line from the Thames estuary to the Bristol Channel the precipitation was chiefly in the form of snow, though part of it came as freezing rain in some areas. Over the bulk of Wales and the central and northern parts of England the ascent of the mild Atlantic air over the cold layer beneath engendered the worst snowstorm of the whole winter: in many regions it was among the heaviest of modern times. From 12 to 18 in. (30.5 to 45.7 cm.) of fresh snow was very commonly added to the thick cover already on the ground. By the morning of the 6th the average depth of the layer had increased to 60 in. (152.4 cm.) at Clawdd-newydd (998 ft.), Denbighshire; 36 in. (91.4 cm.) at Lake Vyrnwy, Montgomeryshire; 30 in. (76.2 cm.) at Llanidloes (550 ft.), Montgomeryshire; 22 in. (55.9 cm.) at Crickhowell, Breconshire; 21 in. (53.3 cm.) at Wrexham and 20 in. (50.8 cm.) at Cranfield, Bedfordshire.

After this great storm England was, in the words of the Automobile Association, "virtually cut in two." Almost every road from London, Bristol and other southern cities to the north was impassable to vehicular traffic. Railway services were seriously impeded. Hundreds of villages were isolated; a number of them became dependent for food on supplies dropped by aircraft. At Birmingham eighty-three snowploughs and nine hundred men were engaged throughout the night of March 5th to 6th in an attempt to open up the main roads.

Drifts 25 ft. (7.6 m.) deep were observed at Aberglanherin (1500 ft.), Radnorshire, daily from the 4th to the 14th, and depths of 16 to 20 ft. (4.9 to 6.1 m.) were by no means uncommon elsewhere in Wales and in the English midlands.

During the second week of March further vigorous depressions passed eastward across Britain from the Atlantic. The associated precipitation was often in the form of rain or sleet in southern England, though substantial snowfalls occurred from time to time in various districts. For example, Downe (560 ft.), Kent, had a 7-in. (17.8 cm.) fall of snow on the 14th to 15th.

In the north there was no real relaxation of the severe weather until after the middle of the month. A general snowstorm (locally described as the worst of the season) visited northern England and southern Scotland on the 12th to 13th as a warm front became stationary near the Scottish border and later retreated southward. Between the 11th and 14th the accession to the average thickness of the snow-cover reached 30 in. (76.2 cm.) at Clawdd-newydd (998 ft.), Denbighshire, and 24 in. (61.0 cm.) at Eggleston (1050 ft.), Durham.

After mid-March substantial snowfalls occurred only locally and were in the main confined to northern districts. Over a considerable part of England and some areas of Wales heavy rain coupled with the melting of the vast accumulations of snow led to the worst floods in living memory as the severe weather finally broke up.

Many upland regions of Scotland and North Wales remained under snow to the close of the month. At Tomintoul (1050 ft.), Banffshire, the cover still had an average depth of 38 in. (96.5 cm.) on the 24th. At low levels, Vementry (25 ft.), in the Shetland Isles, was not clear until the 29th.

As in the earlier stages of the season, a number of places in western Scotland and the Hebrides came through the whole month with very little snow. Even at the 500-ft. level, Glenshiel, Ross-shire, never had more than 1 in. (2.5 cm.) lying. At North Uist (41 ft., 12.5 m.), Outer Hebrides, the only appreciable falls were about 2 in. (5.1 cm.) on the 1st and $2\frac{1}{2}$ to 3 in. (7.6 cm.) on the 6th; neither remained on the ground for long.

APRIL 1947

This was a thoroughly unsettled and stormy month, more particularly over the northern half of Britain. For Scotland as a whole it was the wettest April for at least seventy-eight years, with

213 per cent. of the normal precipitation. Temperature was very variable, but in general rather above the average. A continuous snow-cover was reported on Carnedd Llewelyn and other Caernarvonshire mountains to below the 3500-ft. level; on Ben Wyvis, Ross-shire, to below 3000 ft.; on Fannich Hill, Ross-shire, to below 2500 ft.; and at Aberglanherin, Radnorshire, to below 1500 ft. Drifts at Aberglanherin were observed to be 14 ft. (4.3 m.) deep on the 1st and 6 ft. (1.8 m.) deep on the 19th.

The chief snowfalls occurred during the first week and the last fortnight of the month but were seldom heavy. In the wake of a low-pressure trough which passed south-eastward across the country on the 1st Redmires (1127 ft.), Yorkshire and Chew Mount (1600 ft.), Yorkshire, both had 3 in. (7.6 cm.) of fresh snow on the morning of the 2nd, and numerous northern stations a thinner cover. A deep depression moving north-eastward up the English Channel on the 4th brought a heavy snowstorm to the 1700-ft. level and above in parts of North Wales and lighter falls to an extensive area in the Scottish Highlands. Another vigorous disturbance travelling rapidly east-north-eastward from off south-west Ireland to Denmark on the 7th to 8th caused a recurrence of fairly widespread snow in Scotland, North Wales and the northern counties of England. Above 2500 ft. in Snowdonia and the Carnedd range a rather heavy storm deposited from 4 to 5 in. (10.2 to 12.7 cm.), while Eggleston, Durham, at 1050 ft. had 2 in. (5.1 cm.), Mount St. John, near Felixkirk, Yorkshire, at 540 ft., 1½ in. (3.8 cm.).

After a spell of fairer and warmer weather around the middle of the month, rough, unsettled conditions were renewed from the 20th onwards and snow was common, though as a rule it came in small quantity. Elphin (700 ft.) in Sutherland reported daily falls from the 23rd to the 30th and a light coating on each of the last three days.

Although snow showers occurred at many places in the south of England on several occasions, especially from the 1st to the 5th, no cover was observed anywhere in this part of Britain throughout the month.

At Braemar (1111 ft.) on Upper Deeside, Aberdeenshire, the 5th was the last of seventy-three consecutive days with snow lying, a continuous layer having thus been maintained for one-fifth of the year.

A special report on conditions in the Cairngorms from April 17 to 30 has been received from Mr. R. G. Sandeman. During that period new snow fell almost every day, accompanied by frequent gales. On the 20th a "blizzard" raged on the east side of Cairn Lochain. Northward-facing corries held enormous snowfields and snowbeds, and were heavily corniced. On the 4000-ft. plateau of Braeriach there was an almost unbroken deep cover.

MAY 1947

This was a genial month—for England and Wales as a whole the warmest May of the twentieth century so far. During the first five days, however, cold weather prevailed over much of the country and snow was widely distributed, showers occurring even in south Kent. Parts of the Scottish Highlands had a heavy fall on the 3rd to 4th. In the Braes of Glenlivet (1050 ft.) a "blizzard" set in during the early afternoon and persisted all night. On the Ballater road average depths of 6 to 8 in. (15.2 to 20.3 cm.) were noted. Drifts were observed to remain throughout the month to below 2500 ft. on the Ladder Hills, Banffshire, and to below 3000 ft. on Fannich Hill, Lochbroom, Ross-shire.

Y Ffos Ddyfn, a southward-facing gully at 3000 ft. on Carnedd Llewelyn, long reputed for its late-surviving snow-beds, was found by Mr. S. E. Ashmore on May 26 to contain only a hard compacted deposit, resembling firn ice, a few square feet in area and 2 in. (5.1 cm.) deep.*

* An article by Mr. Ashmore suggesting reasons for the unexpectedly early disappearance of this snow-bed after so severe a winter will be published.—Eds.

SUMMER 1947

Fresh snow fell on Ben Nevis (4406 ft.) on *June 10*. Notwithstanding a long spell of notably hot weather in the Highlands later, corries on the north face of that mountain and of neighbouring peaks contained numerous patches of snow down to about 3000 ft. during the third week of *August*. There was good ski-ing on the Cairngorms, particularly in the Coire na Ciste, until after mid-summer. On *September 1st* it was reported that in spite of the protracted heat deep snow-beds were still to be seen in Coire Cas, on the Witches' Apron, and on the lower north-facing slopes of Carn Ban Mor.

E. L. H.

SUMMARY

The earlier stages of the season did not rank as exceptional either for frequency or for amount of snowfall, but from *January 22nd* until *March 17th* (almost eight weeks) there was no day on which greater or lesser falls did not occur down to a low level in one or another part of Britain. Over large areas the ground was continuously covered through the whole or nearly the whole of that period. Average depths ranging upwards to between 50 to 60 in. (127.0 to 152.4 cm.) were reported at times in various upland regions of Wales and northern England. Drifts, that in some areas became at least 25 ft. (7.6 m.) deep, caused severe dislocation of traffic, both by rail and by road, as well as the temporary isolation of numerous villages. According to C. K. M. Douglas,³ "there can be little doubt that the winter was the snowiest of which we have any precise knowledge." It seems probable that for general rigour over England and Wales as a whole *February 1947* was unmatched by any calendar month since *January 1814*. In Scotland the severity of *March* may be regarded as not less outstanding. The later spring months were predominantly warm and few notable snowfalls came to Britain.

Outside the higher mountainous districts of Scotland, whence adequate observations are lacking, the greatest aggregate depths of snow deposited during the season appear to have been in the uplands of central and northern Wales and the north-eastern and north midland counties of England. At the other extreme, several places in the far west of Scotland and the Hebrides had a total snowfall, from October to June, amounting to less than the 7 inches which covered the Scilly Isles after the exceptional southern storm towards the close of *January*. Whether or not such immunity on Britain's north-western fringe constitutes a normal feature of severe winters that are snowy elsewhere in the country is a matter for investigation.

E. L. H.

NOTE ON DURATION OF SNOW-COVER ON BRITISH MOUNTAINS

At a number of stations in mountain districts the observers had a sufficiently open exposure to be able to note the duration of snow-cover over considerable ranges of height above and below station levels. Diagrams showing the monthly distribution of snow lying relative to height for six selected stations are reproduced on page 133. The duration is shown by horizontal columns, the length of each column representing the number of days of snow lying at the height shown by the scale, for increments of 500 ft. elevation.

The term "snow lying" applies only when at least half the area at the particular level is covered, so that where a month is left blank, if any snow was present the amounts would have been small—usually in the nature of drifts left in sheltered gulleys.

The effect of height is well brought out in these diagrams, but there is considerable variation between the individual stations. At Elphin, Sutherland, the most northerly of the selected sites, it will be seen that snow lying for the whole of a month was observed only in *December* at 3000 ft.

and above. In March at this station the duration of snow lying was the same at all levels, and no snow was reported as lying in October or May.

At Glenbrittle, in the Cuillins, Isle of Skye, snow lay continuously throughout December, January, February and March down to the 3000-ft. level, but the effect of height is more pronounced and no appreciable cover was observed in April or May. In Glen Lyon, Perthshire, the effect of height is well marked except in February, when snow lay continuously throughout the month down to 1000 ft. At High Close, Westmorland, in the Lake District, height effect is present in all months, but snow lay continuously throughout the month down to 2500 ft. in February. At Capel Curig, Caernarvonshire, on Snowdon range, the effect of height is most pronounced in December and April, but in February snow lay continuously throughout the month down to sea-level. At Tairbull, Breconshire, among the Brecknock Beacons, the distribution of snow-cover is similar to that in Snowdonia, but the height effects are less pronounced.

The above data are summarized graphically in Fig. 1 below where curves are drawn showing the total number of days with snow lying throughout the season. Here the combined effects of height, latitude, topography and snowfall are clearly apparent. The duration of snow-cover exceeds 150 days above 3000 ft. at Glen Lyon in the Grampians, and the effect of height is most pronounced at the three Scottish stations. The duration of snow-cover at 500 ft. is longer at the more southerly stations and at Tairbull exceeds fifty days. It is of interest to note that above 3000 ft. the duration of snow-cover on Snowdon is comparable with that found in the Sutherland mountains at Elphin.

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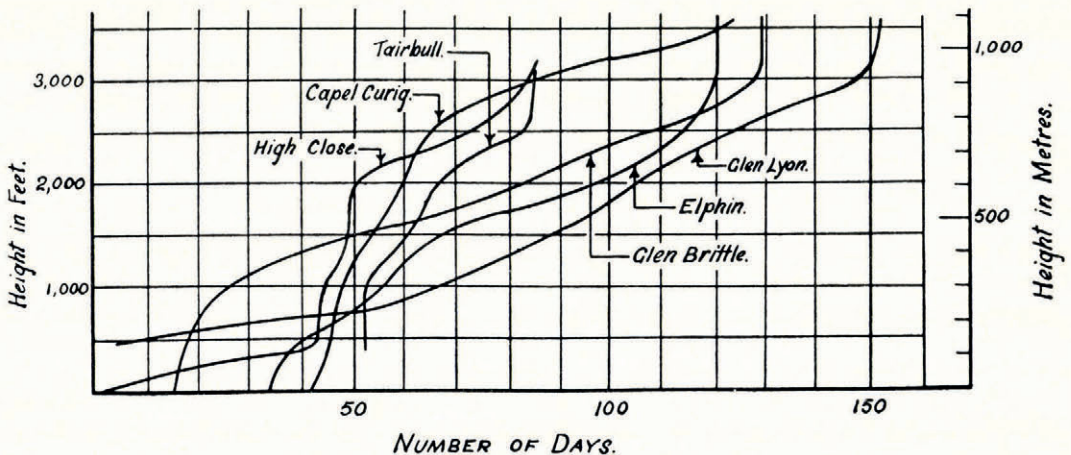


Fig. 1

