

2 SNOW SURVEY OF GREAT BRITAIN

Season 1963-64

by R. E. Booth

The basic material for this report has been obtained, as in previous years, from observers who have provided, month by month, daily records of snowfall and of snow-cover within sight of their station. These records, from a network of stations distributed over the country, have been augmented by data extracted from the monthly returns of official stations manned by Meteorological Office staff, and also from climatological stations and from rainfall stations both of which voluntarily make returns of their observations to the Meteorological Office. Without the ready co-operation of all those responsible for voluntary observations, this report could not have been prepared in such detail. The measurements of snow depth in the following pages refer in general to observations taken at 09 GMT or thereabouts.

Summary of general weather during the season

Table I gives for each month of the season and for the season as a whole, the mean monthly temperature and the difference from the 1931-60 average, together with the monthly amount of precipitation and the amount expressed as a percentage of the 1916-50 average, for England and Wales and also for Scotland. It shows that the season September 1963 to May 1964 was considerably warmer than usual in Scotland but that in England and Wales the mean temperature was a little below the average. In England and Wales autumn, winter and spring all began with a rather cold month but ended with a month of above average temperature for the season. Scotland had a similar temperature pattern during the winter and spring, but the deficits for the first month of each season were less.

Over the season as a whole, mean temperature showed an accumulated deficit of 0.2 degC in England and

Wales, and an accumulated excess of 2.0 degC in Scotland. Rainfall was below the average both in England and Wales and in Scotland. An outstanding feature of the season was the dryness of the winter months; in England and Wales it was the driest winter in records and estimations since at least 1740.

In both 1963 and 1964 precipitation was considerably below the average in January and February, but whereas snowfall during those months in 1964 was mainly slight and did not last long, in 1963 snowfall was often heavy and prolonged and much of the country was snow-covered throughout January and February.

Comparison of snowfall during 1963-64 with that of previous seasons

Data for the 10 representative stations* in Great Britain at altitudes between 400 and 1200 feet (100 ft = 30.48 m) which have been used for seasonal comparisons since the survey of 1946-47, give for the 1963-64 season a mean of 11 days with snow lying at the morning observation. This was 58 days less than in the previous season, which had the greatest number of days with snow lying at 09 GMT since the comparison started in 1946-47. The season 1963-64 was among those with least snowfall, means of 10 and 12 days being recorded during the seasons 1960-61 and 1956-57 respectively. The mean of 11 days for the season under discussion is 20 days less than the average for the 18 successive seasons since 1946-47.

* Fort Augustus, Braemar, West Linton, Eskdalemuir, Huddersfield Oakes, Buxton, Luton, Little Rissington, Newton Abbot, and Llandrindod Wells.

TABLE 1

	1963				1964					Season 1963-64
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
<i>Temperature (°C)</i>										
England and Wales										
Mean	13·6	11·4	8·8	3·7	4·0	5·0	4·7	9·0	13·5	8·2
Diff. from average	-0·7	+0·6	+1·3	-1·9	-0·3	+0·5	-1·7	+0·2	+1·8	-0·2
Scotland										
Mean	11·9	9·8	6·0	3·8	5·1	5·1	4·7	8·1	11·2	7·3
Diff. from average	-0·5	+0·4	-0·3	-0·9	+1·6	+0·8	-0·7	+0·6	+1·0	+2·0
<i>Precipitation (inches*)</i>										
England and Wales										
Total	2·7	2·3	6·0	1·1	1·0	1·2	3·4	2·5	2·3	22·8
Per cent of average	90	67	166	31	28	46	155	109	92	84
Scotland										
Total	5·0	5·7	7·6	2·4	2·8	2·0	2·6	4·0	4·1	36·2
Per cent of average	100	92	133	43	46	48	74	114	121	84

* 1 inch = 25.4 millimetres.

Number of days with snow falling during the season

At altitudes of about 1000 feet snow fell on about 35-40 days in the Cairngorms and Grampians, and in the neighbourhood of Lowther Hill, and on about 25-30 days in the Shetlands, Sutherland and the northern Pennines. At slightly lower levels the Yorkshire Wolds, the Cotswolds and the Chilterns had 20-25 days while the Lake District, Snowdonia and Dartmoor had 15-20 days. At heights from sea level to about 300 feet snow fell on 15-20 days in the Hebrides, in the Western Isles, along the north coast of Scotland and along the east coast of Britain from Wick to Dover. Along the south coast of England eastwards of the Isle of Wight it fell on 10-15 days while to the west there were only about 5-10 days.

Number of days with snow lying during the season

The seasonal duration of snow-cover in the mountainous regions of Great Britain is summarized in Table 2 and illustrated for a selected number of stations in Figure 1. At lower levels snow-cover was mainly confined to December 1963 and to March 1964, being observed on 5-10 mornings in the Orkneys and Shetlands, the eastern coastal areas of Britain from Wick to Dover and the Lake District and on about 2-5 mornings in the Hebrides, the Western Isles and the north coast of Scotland and along the south coast of England.

Notes on the weather of the individual months

September. September was a cool month generally with day temperatures below the average during the first 10 days and the last week. There was little snowfall, but scattered wintry showers were reported locally in Scotland on the 9th, 26th and 27th, the showers on each occasion being in a west to north-west airstream associated with complex low-pressure areas to the north of the British Isles.

October. Day temperatures were below average around mid-month and during the first and last few days although October was a mild month generally. On the 15th a depression to the west of Scotland moved rapidly north-eastwards, and in the westerly airstream behind the depression showers were of sleet or snow in many western districts of Scotland. Light snow showers were also reported over high ground in Scotland on the 4th, 5th, 7th and 9th but snow did not lie below 3000 feet.

November. The coldest period was centred around the middle of the month, day temperatures then being about 2 degC below average for two or three days in south-east England, but the deficit increased and was of a longer duration towards the north. After nearly two weeks of generally mild weather, showers became widespread in a cold, unstable westerly airstream to the south of a complex depression; on the 13th and 14th some of the showers fell as snow in Scotland and northern England. The Cheviots were covered for the first time this season and other summits above 2000 feet were covered. Winds veered to the north-west on the 16th as the low-pressure system moved slowly eastwards towards Scandinavia. Wintry showers extended as far south as central Wales and there was heavy snowfall on the Cheviots and other Scottish mountains, with snow lying below

1500 feet. On the 18th a complex depression moved quickly eastward across northern England and snow showers were renewed the following day in a northerly airstream behind the depression; on the 20th and 21st snow lay 4 inches (1 inch = 25.4 mm) deep at heights above 1000 feet in the Grampians and 2 inches deep above 750 feet in eastern Scotland. In the Cheviots the snow-line fell to 500 feet on the 20th. Fresh to strong north-westerly winds associated with a complex depression over Scandinavia brought further snow showers to the higher ground in Scotland on the 23rd, and a belt of rain moving northwards was preceded by snow in parts of Scotland on the 25th.

December. In December snowfall was mainly confined to the period 17th to 21st when day temperatures in parts of the Midlands were as much as 7 degC below average and night frosts were very severe.

During the first two weeks pressure was high to the north or north-east of the British Isles and winds were mainly between east and south-east. On the 13th minor troughs of low pressure from Europe brought snow and sleet showers to most districts, and these continued, though with decreasing frequency, during the next two days. Many of the higher stations in eastern England had a thin covering of snow. During an isolated heavy fall at Goudhurst snow accumulated to a depth of 7 inches, and owing to the continued cold weather ground remained snow-covered until the 25th.

From the 16th until the 20th most eastern districts of the British Isles came under the influence of a northerly airstream from high latitudes. Snow showers now became most frequent in northern and eastern districts; on the 19th snow was 3 inches deep at Aberdeen and Durham and drifts up to 2 feet deep were reported on roads from the Scottish Highlands to Yorkshire. Widely scattered reports of light snow or sleet were received during the next week but amounts were very small.

January. Weather was predominantly anticyclonic in character and exceptionally dry—it was the driest January in England and Wales since 1880—and snowfall was confined at most places to two or three days towards the end of the second week.

After more than a week of mild, rather foggy weather, an anticyclone over the British Isles and western Europe moved northwards towards Scandinavia on the 10th and easterly winds from the continent spread over southern England. Temperatures fell sharply and rain accompanying a trough moving westwards from Europe turned to snow over an area extending from Dorset to the Humber. The next morning much of central southern England was snow-covered, snow being 2 inches deep at Cirencester and 1 inch deep at Regents Park and Oxford. Pressure fell steadily over northern France during the day and minor troughs of low pressure moving northwards into southern England brought moderate to heavy falls of snow to many places, especially near the south coast where level snow lay a foot deep in places. Snow lay up to 6 inches deep over much of the South Downs, but as the snow belt moved northwards amounts were progressively smaller, except over the higher ground. Snow-cover around Ilkley persisted until the 20th, but at most other places it had cleared by the 15th or 16th.

On the 15th a large anticyclone to the east of the British Isles intensified and snow showers gave place

SNOW SURVEY OF GREAT BRITAIN

to long sunny periods and milder weather. Further reports of snow during the month were confined to the Scottish mountain peaks, except on the 27th-31st when westerly winds brought more frequent showers to the higher ground in Scotland and northern England.

February. February was another dry month with mild spells during the first few days and the last week. Snow was mainly confined to cold periods towards the end of the first week and on the 14th-23rd.

During the first few days of the month a series of troughs and ridges moved eastwards across the country and behind the troughs winds veered to between west and north-west bringing snow showers to the higher ground in Scotland daily from the 2nd until the 6th. On the 5th an anticyclone developed over Ireland and northerly winds on its eastern flank brought snow showers farther south to affect many eastern districts; they were reported as far south as Gorleston. By the morning of the 6th snow lay 3 inches deep in parts of northern Scotland.

A south-easterly airstream covered Great Britain on the 13th-15th but this backed to east on the 16th leading to more than a week of cold weather as pressure fell over France and rose to the north of Scotland. Snow and sleet showers which were observed over the higher ground in Scotland on the 13th spread to many eastern and Midland districts the next day. Weather was a little milder on the 15th with light rain and drizzle but this turned to snow during the night, and there was snow over much of the British Isles during the next four days in the cold easterly airstream. Moderate falls were reported over the higher ground from the Peak District northwards and several roads in the Pennines and Lake District became impassable owing to drifts. On the morning of the 16th snow lay 8 inches deep on some of the eastern slopes of the Pennines and by the 18th was more than 12 inches deep at a number of places. On lower ground it was 3-4 inches deep in parts of north-east England and 1-2 inches deep over much of the Midlands.

March. With winds predominantly between east and south-east, March was an unusually cold month, especially in south-east England. Most of the month's snow fell during the second and third weeks though there were light scattered snow showers on other days.

East to south-east winds, associated with an anticyclone centred over southern Scandinavia brought a few scattered snow showers on the 2nd but on the 3rd a shallow depression moving southward over the North Sea brought a belt of rain and sleet over the country which was followed on the 4th by freshening easterly winds and snow showers in most districts. These showers became increasingly frequent during the next few days in the cold easterly airstream. By the 7th the higher ground in Kent and Surrey was covered to a depth of 3 inches. There were one or two scattered snow showers in eastern coastal regions on the 8th, but most of the country enjoyed almost unbroken sunshine. The next day a weak front moving southwards over the country gave some slight rain over central England but this turned to snow as the front became almost stationary over southern England.

On the 10th winds veered to south-east and the next two or three days were milder, especially in southern

districts, but a slow-moving front lying along the east coast of England gave occasional sleet and snow on the 13th and 14th.

Another wintry spell began on the 15th as a depression formed over northern France and winds over southern England backed towards the east. Rain turned to snow during the night, and snow continued in many parts of the country during the next 24 hours. Drifts up to 6 feet deep blocked many main roads in Scotland while farther south, level snow lay 6-12 inches deep in parts of Yorkshire and 3-6 inches deep in the Home Counties. With fronts associated with a deep depression in mid-Atlantic almost stationary over the country, wintry precipitation continued in most western and southern districts throughout the 16th-18th, but on the 19th milder air brought periods of heavy rain to southern England while a belt of moderate to heavy snow moved north-east from the Midlands to southern Scotland.

After nearly a week of milder weather, with heavy rain at times, easterly winds set in again on the 27th as an anticyclone became established over Scandinavia, and weather during the remainder of the month became progressively colder with rain at times and some snow in eastern coastal districts.

April. The cold weather at the end of March lasted over the first four or five days of April and most of the month's snow fell during this time. There was, however, some snow or sleet over the higher ground in Scotland around the 13th, 23rd and 29th.

East to north-east winds on the southern flank of a ridge of high pressure near Iceland brought scattered sleet and snow showers to much of the eastern half of Great Britain until about the 4th. Amounts generally were not large though some of the higher ground in eastern Scotland and south-east England became snow-covered for a time.

From the 12th to the 14th a complex depression lay between Scotland and Iceland and associated west to north-west winds brought occasional snow showers to the higher ground in Scotland. The general snow-line was between 1000 and 1500 feet during this period, but at Meggernie, Perthshire, snow lay 1½ inches deep at 800 feet for a time on the 14th.

On the 22nd and 23rd a complex depression at first almost stationary over Scotland moved south-eastwards over the North Sea to Germany; sleet and snow showers were reported from Dalness and Broughton during its passage.

The last report of sleet during the month was of some over the Cairngorms in a westerly airstream to the south of a deep depression centred near the Faroes.

May. Mean day temperature during May was above average everywhere and unusually high in parts of east and south-east England. Over Scotland afternoon temperatures were about average until the 15th.

Fresh to strong south-westerly winds associated with a deep depression south of Iceland brought frequent showers to Scotland and some of these were of snow in the Cairngorms. Derry Lodge (1400 feet) reported snow on the 3rd and 4th and again in a rather similar situation on the 8th and 9th.

A northerly airstream from high latitudes brought sleet and snow showers to some of the higher ground in north-east Scotland on the 14th as a small but vigorous depression near the Faroes on the 13th moved rapidly northwards.

Duration of snow-cover in British mountains

Diagrams showing the distribution of snow-cover relative to height for 11 areas in the British moun-

tains are given in Figure 1. They are based very largely on reports received from stations given in Table 2 in which the heights quoted for various mountain ranges are the heights of the highest peaks visible from the observing stations. It was found necessary in a few cases to supplement these reports with reports from other stations in the same area, but the names of these additional stations have not been included in the table.

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SNOW SURVEY OF GREAT BRITAIN

TABLE 2

Number of days with snow lying in the British mountains, 1963-64

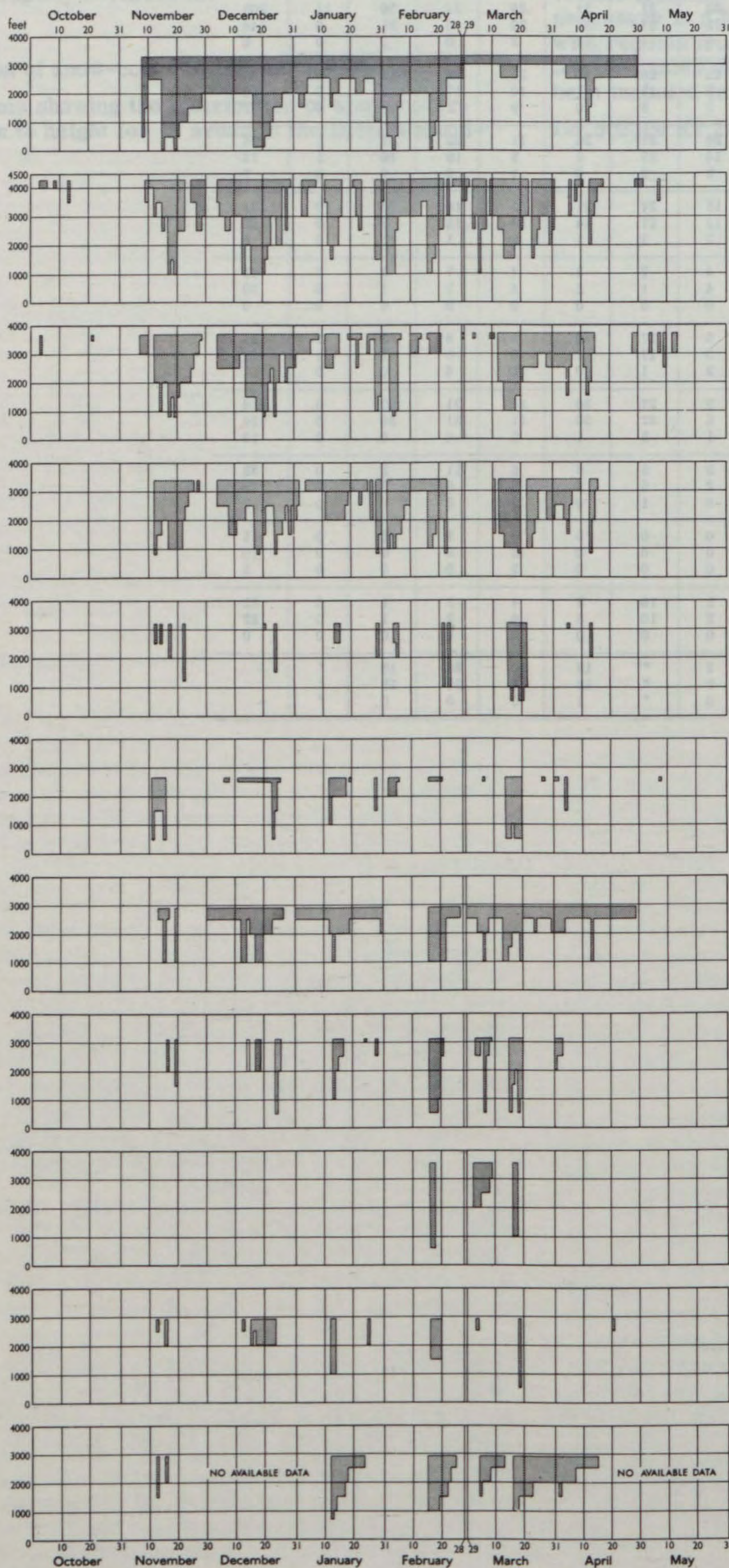
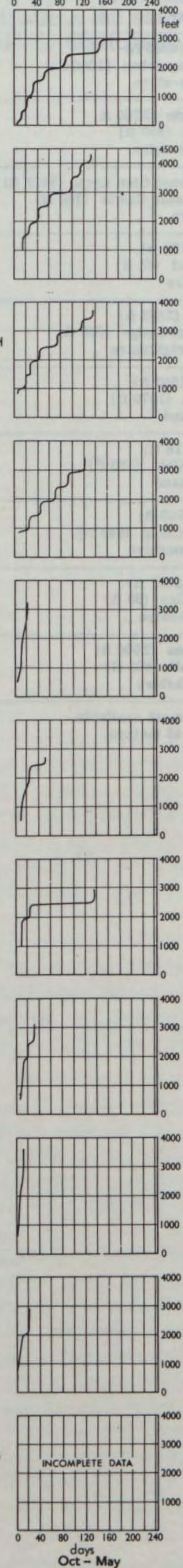
(a) Near summit. (b) At about 2500 feet. (c) At station level.

		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Season
A'Chailleach (3276 ft)	a	0	22	31	31	29	31	30	31	205
Station. Glackour (80 ft)	b	0	22	31	31	29	6	25	0	144
Ross-shire	c	0	0	4	0	2	0	0	0	6
Cairngorms (4296 ft)	a	5	19	26	16	25	28	12	3	134
Station. Achnagoichan (1000 ft)	b	0	9	15	7	10	17	2	0	60
Inverness-shire	c	0	2	6	0	8	1	0	0	17
Creag Meagaidh (3700 ft)	a	2	20	27	24	17	22	17	5	134
Station Fersit (850 ft)	b	0	14	23	6	3	16	10	1	73
Inverness-shire	c	0	2	2	0	1	0	0	0	5
Mountains around Glen Lyon (3407 ft)	a	0	15	27	27	21	18	13	0	121
Station Meggernie Castle (760 ft)	b	0	12	27	14	15	15	9	0	92
Perthshire	c	0	2	2	1	1	1	1	0	8
Ben More (3170 ft)	a	0	4	2	3	4	7	2	0	22
Station Rhuvaal (63 ft)	b	0	4	1	3	4	7	1	0	20
Argyllshire	c	0	0	0	0	0	0	0	0	0
Kell's Range (2668 ft)	a	0	5	17	8	9	8	3	1	51
Station Forrest Lodge (500 ft)	b	0	5	17	8	9	8	3	1	51
Kirkcudbrightshire	c	0	2	1	0	0	4	0	0	7
Cross Fell (2893 ft)	a	0	5	27	30	11	31	30	0	134
Station Alston (1070 ft)	b	0	5	27	30	11	31	30	0	134
Cumberland	c	0	1	5	1	2	4	0	0	13
Helvellyn (3118 ft)	a	0	2	5	6	5	11	3	0	32
Station Patterdale (520 ft)	b	0	2	5	5	5	9	3	0	29
Westmorland	c	0	0	1	0	3	3	0	0	7
Snowdonia (3560 ft)	a	0	0	0	0	2	9	0	0	11
Station Capel Curig (640 ft)	b	0	0	0	0	2	8	0	0	10
Caernarvonshire	c	0	0	0	0	2	0	0	0	2
Cader Idris (2927 ft)	a	0	2	10	3	4	2	1	0	22
Station Dolgellau (90 ft)	b	0	2	10	3	4	2	1	0	22
Merionethshire	c	0	0	0	0	0	0	0	0	0
Brecon Beacons (2906 ft)	a	0	2	*	12	10	24	15	*	—
Station Tairbull (660 ft)	b	0	2	*	12	10	24	15	*	—
Brecknockshire	c	0	0	*	1	0	0	0	*	—

* Observations not available.
100 feet = 30.48 metres.

SNOW SURVEY 1963-64

DISTRIBUTION OF SNOW-COVER

NUMBER OF DAYS WITH
SNOW LYINGOct - May
days

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