

2 SNOW SURVEY OF GREAT BRITAIN

Season 1960-61

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The basic material for this report has been obtained, as in previous years, from returns made by voluntary observers who have provided, month by month, daily records of snowfall and snow-cover within sight of their stations. These records, from a network of stations distributed over the country, have been augmented by data extracted from the monthly returns of official weather stations and of voluntary climatological and rainfall stations reporting 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 measurement of snow depths in the following pages refer in general to observations taken at 0900 G.M.T., or thereabouts.

Summary of the 1960/61 season

Table I, which gives for England and Wales and for Scotland the mean monthly temperature and difference from average temperature and also the amount of precipitation and the percentage of average precipitation for each month and the monthly average for the season, shows that the season as a whole was mild and wet in England and Wales, but mild and rather dry in Scotland. Mean temperature showed an accumulated excess of about 6°C in England and Wales and of about 4½°C in Scotland while the total precipitation for the season, rainfall plus rainfall equivalent of melted snow and hail, showed an excess of about 8 in. in England and Wales and a deficit of about 8 in. in Scotland.

TABLE I

	1960				1961					Season 1960-61
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
<i>Temperature °C</i>										
England and Wales										
Mean Temp.	13.7	10.9	7.9	4.9	4.4	7.5	8.7	10.2	11.1	8.8
Diff. from av.	-0.5	+0.2	+0.7	-0.5	-0.3	+2.7	+2.3	+1.6	-0.2	+0.7
Scotland										
Mean Temp.	11.9	9.7	6.1	3.6	3.5	5.9	7.9	8.1	10.1	7.4
Diff. from av.	-0.1	+0.6	+0.3	-1.1	-0.5	+1.8	+2.5	+0.9	+0.3	+0.5
<i>Precipitation (inches)</i>										
England and Wales										
Monthly Total	4.5	7.2	6.0	4.5	4.7	2.8	0.6	3.9	1.6	4.0
% of average	150	199	153	131	126	105	25	161	64	124
Scotland										
Monthly Total	3.5	4.9	5.9	5.6	4.8	4.9	3.1	3.8	2.2	4.3
% of average	73	88	111	104	85	125	95	115	69	96

Data for ten representative stations* in Great Britain at altitudes between 400 and 1,200 ft., which have been used for seasonal comparisons since the survey of 1946/47, give for the season of this survey a mean of 10 days with snow-lying at the morning observation, which is 13 days less than last season and 21 days less than the average for the 14 seasons 1946/47-1959/60. The mean this season is lower than any other during the previous 14 years, the nearest approach being 1956/57 with a mean of 12 days with snow-lying. Snow was less frequent than usual in all areas during each month of the season, particularly during February and March.

At altitudes of about 1,000 ft. snow fell on about 40 days in the Cairngorms and Grampians, on just under 30 days in the Lake District and northern

Pennines, on about 20 days in Snowdonia and 10 days on Dartmoor, while at stations at slightly lower levels the Yorkshire Wolds had about 20 days and the Cotswolds about 10 days of snowfall. At heights from sea level to about 300 ft. snow fell on about 50 days in the Orkneys and Shetlands, on 25-30 days along the north coast of Scotland and on 15-20 days in the Hebrides. There was snow on about 15 days at Liverpool, Manchester and Birmingham, 6 days at Edinburgh and Kew and on 1 or 2 days at Scilly and Guernsey.

The seasonal duration of snow-cover in the mountainous regions of Great Britain is summarised in Table II and illustrated for a selected number of stations in Figure 2. At lower levels there was little snow-cover before December, but from then until the end of the season snow lay on about 25 mornings in the Cairngorms, Grampian mountains and northern Pennines, but in the Orkneys, Shetlands and Hebrides it lay on only 3, 8 and 1 mornings respectively. There were about 10 mornings with snow lying in the Lake District and Snowdonia and 8 mornings on Dartmoor.

* These stations are Dalwhinnie, Braemar, Penicuik, Eskdalemuir, Huddersfield (Oakes), Buxton, Dunstable, Little Rissington, Princetown and Llandrindod Wells. Penicuik, Dunstable and Llandrindod Wells are replacements for West Linton, Whipsnade and Rhydydder respectively, the three stations used until the season 1954-55.

Notes on the Weather of the months

September. The only wintry precipitation recorded in Britain during September was some sleet showers in western Scotland on the 23rd ahead of a rain-belt which affected most of the country that night.

October was dull and exceptionally wet in the south and east. For most of the month weather was dominated by depressions off our south-west coasts, but on the 9th–16th an anticyclone was situated first to the west of Iceland and then over the British Isles. Moderate to fresh northerly winds on the 10th–14th brought rather frequent showers to all districts of the British Isles, the showers being of sleet or snow over some of the higher ground in Scotland (many slopes above 2,500 ft. were snow-covered during this period), and over the higher ground in northern England and North Wales on the 12th and 13th—mountains in Snowdonia were covered above 3,000 ft. on both days. Further sleet and snow fell over much of the high ground in Scotland on the 22nd ahead of a belt of frontal rain moving north-east across the country, and again on the 31st in a rather similar situation. Altogether snow or sleet fell on 7 days in Scotland during the month, mostly over higher ground.

November was mild with frequent rain, heavy at times in England and Wales, weather being mainly cyclonic in character with a well developed frontal system crossing the country every few days. A depression to the west of Iceland on the 3rd moved to Scotland on the 4th and thence to Scandinavia. Winds over the country slowly veered from west to north giving the first of two rather cold periods during the month. There were snow showers over much of Scotland and north and west Britain from 3rd–9th. Many of the higher slopes of the Cairngorms and Grampians became snow-covered down to 2,500 ft. and remained so until mid-March. Some of the peaks of Snowdonia, Westmorland and Cumberland were also covered down to this height. The second spell of northerly winds occurred behind a filling depression as it moved eastwards across central England on the 26th. Snow and sleet showers were reported in Scotland on the 27th and 28th and snow preceded a belt of frontal rain which approached western Scotland on the 29th; the snow line in the region of Ben Nevis came down temporarily to 1,000 ft. on the 28th and 29th. In England and Wales snow was reported at one place or another on 10 days during the month, mainly over high ground in the west and north.

December, a changeable and rather cold month, was mainly cyclonic during the first and last weeks, but weakly anticyclonic during most of the rest of the month. Troughs crossing the British Isles during the first five days brought rain or showers daily to most parts of the country and snow to the higher ground in western Scotland; at Dalness and Corpach the snow-line came down from 2,500 ft. on the 1st to 1,500 ft. on the 4th. Winds fell light on the 6th and a quiet cold period followed with the British Isles lying for more than a week in a col between anticyclones over Europe and the Azores. On the 8th a small depression

formed north of the Irish Sea and moved during the next two days, south-south-east into France. Snow was widespread on the 9th and 10th low ground in parts of the Midlands becoming snow-covered on the latter date. Minor troughs from the Atlantic moving slowly east across the country brought renewed snow to many districts on the 12th and 14th, but snow only lay on the higher ground. By the 17th a large anticyclone had become established in mid-Atlantic, and for the next week the British Isles lay in the track of troughs and depressions moving round its eastern flank. There were snow showers in many parts of Scotland on the 18th. With freshening northerly winds, wintry showers spread to East Anglia on the 19th and by the 20th most of Britain was affected, falls being heavy in places. Snow lay 7 in. deep on parts of Dartmoor at heights above 1,000 ft. The anticyclone moved south on the 24th, and from then until the end of the month, successive depressions moved east between Scotland and Iceland. A complex depression to the north of Scotland brought snow and sleet showers to Scotland and northern England on the 25th–27th, on the 28th with winds veering to the north-west these showers extended to south-west England, snow lay 2 in. deep on the lower slopes of the Grampians, and on ground above 1,000 ft. in Devon level snow 7 in. deep was reported. Scattered snow showers fell over the higher ground of Scotland during the remaining days of the month but amounts were small. Snow or sleet was recorded at one place or another in Scotland on every day of the month except the 17th, and in England and Wales on 20 days.

January was changeable and rather cold, weather being mainly cyclonic with troughs and depressions moving eastwards over or near the country, except on the 17th–25th, when a large blocking anticyclone was centred over Northern Europe and the boundary between maritime and continental air lay over the British Isles. The first half of the month was generally unsettled and wet with widespread snow in Scotland during the first week which lay several inches deep in places on the lower ground on the 2nd–5th. Snow was also fairly widespread in England and Wales during the first ten days of the month. There were frequent squally wintry showers in northerly winds behind depressions on the 3rd and 6th. In Westmorland at heights above 2,000 ft. snow lay 12 in. deep on the 3rd and had accumulated to a level depth of 16 in. on the 6th with drifts of over 3 ft., while in the West Riding of Yorkshire snow lay 2–4 in. deep from the 3rd to the 8th. Further south in Devon it was 3 in. deep on the 3rd in some places. Snow preceded general rain on the 7th, and cold north-easterly winds behind a trough brought snow showers to parts of Scotland on the 10th. Widespread rain, unusually heavy in parts of North Wales and north-west England was preceded by snow over high ground in Scotland and northern England. There was little further precipitation until the 21st when unsettled wet weather returned to most of the country with snow in central and northern England on most days during the remainder of the month. In parts of Yorkshire snow lay 2–4 in. deep from the 21st to the 27th, and 1–2 in. deep in

south-west England and South Wales on the 25th and 26th.

February, an unusually mild month, was mainly cyclonic in character although an anticyclone centred over or near Germany dominated the weather during the third week. The 1st was fine and mild but weather soon became changeable and unsettled. Sleet and snow fell widely in northern districts the first week and lay several inches deep in places in Scotland on the 2nd–5th and in north-east England on the 4th. North-westerly winds reaching gale force at times behind a small depression which moved eastwards across Scotland on the 6th, brought snow showers to the Midlands and northern England, but snow did not settle on ground below 1,000 ft. Apart from a few snow flurries at Malham Tarn in the West Riding of Yorkshire on the 24th, there was little further sleet or snow until the 26th when wintry precipitation fell over high ground in western Scotland ahead of a deep depression moving north-east towards the Shetlands bringing the snow line on the mountains there down to 1,000 ft. in several places. Sleet and snow showers fell over high ground in Scotland and northern England during the last two days of the month as well.

March was mild and unusually dry in England and Wales, weather being generally anticyclonic. No sleet or snow was reported during the first half of the month but a marked change in the general weather pattern occurred on the 17th as an anticyclone over mid-Atlantic moved slowly eastwards and a cold northerly airstream spread over the British Isles bringing wintry showers to most districts. Snow fell at many places in Scotland around the 17th–20th and in England and Wales on the 19th and 20th, but did not settle on lower ground. After a milder spell of westerlies winds backed to north again on the 26th with severe gales locally in the north and showers of sleet or snow over high ground in Scotland and northern England; snow lay 2 in. deep in parts of western Scotland. There were scattered showers of snow or sleet in Scotland and northern England during the last two days of the month.

April, the third successive month during the season with temperatures above average, was a wet and mainly cyclonic month. During the first week a belt of low pressure lay across the British Isles, but thereafter, apart from feeble anticyclonic periods on the 15th–

18th and 27th–29th, the country was under the influence of depressions from the Atlantic for most of the remainder of the month. On the 1st a ridge of high pressure extended southwards from Greenland to Scotland and a weak cold front lay east–west across the British Isles. This moved slowly southwards from central to southern England during the first three days of the month and behind it showers of snow and sleet were widespread in Scotland and northern England, ground being snow-covered in places in Scotland from the 1st to the 6th. On the 4th a depression to the west of Ireland deepened and associated frontal rain, heavy locally, was preceded by snow in parts of the Midlands and northern England, and snow continued in many northern districts on the 5th as the depression moved eastwards across Scotland. There was little or no snow during the remainder of the month except for very scattered showers over the higher ground in Scotland on the 6th–9th, 13th, 14th, 18th and 21st.

May was dry with temperatures mostly near average except for a very cold period towards the end of the month. After the first week weather was generally anticyclonic. A depression off north-west Scotland on the 6th moved eastward skirting the coast of Scotland to reach southern Norway on the 8th. Showers were frequent with local thunder and were of snow over high ground in Scotland on the 6th–9th. Later in the month a deep depression moving eastward from Iceland reached the Norwegian coast on the 24th and a northerly airstream from Arctic regions spread over the British Isles. With high pressure to the west of Ireland the northerly winds persisted until the 29th bringing snow and sleet showers to the high ground of northern Scotland on most days and to Snowdonia on the 27th. Ground was snow-covered at Balmoral on the 26th.

Duration of snow-cover on British Mountains

Diagrams showing the distribution of snow cover relative to height for 11 areas in the British mountains are given in Fig. I. They are based very largely upon reports received from relevant stations given in Table II in which the heights as quoted for various mountain ranges are those of the highest peaks visible from the observing stations. On a small number of occasions it was found necessary to supplement these reports with those from other stations in the same area, although it has not been possible to include the names of these additional stations in the table.

TABLE II. 1960-1961

Number of days with snow lying in the British Mountains

(a) Near summit. (b) At about 2,500 ft. (c) At station level.

* Observations not available.

		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Season
Clisham and Roneval (2,622 ft.)	a	0	5	27	16	9	6	6	2	71
Station: Liverburgh, Harris	b	0	5	27	16	9	6	6	2	71
Inverness-shire (25 ft.)	c	0	0	13	0	0	0	0	0	13
Mountains round Glen Lyon (3,407 ft.)	a	2	18	31	31	25	15	13	3	138
Station: Meggernie Castle (760 ft.)	b	1	15	30	31	20	15	11	3	126
Perthshire	c	0	0	5	9	2	3	2	0	21
Cairngorms (4,296 ft.)	a	10	21	30	31	25	20	18	6	161
Station: Achnagoichan (1,000 ft.)	b	4	19	30	31	20	8	11	3	126
Inverness-shire	c	0	0	6	12	5	2	3	0	28
Ben Nevis (4,406 ft.)	a	6	29	31	31	28	31	30		
Station: Corpach (30 ft.)	b	1	12	31	31	28	31	14	*	
Inverness-shire	c	0	0	1	1	1	0	0		
Snowdonia (3,560 ft.)	a	2	11	27	31	9	0			
Station: Capel Curig (640 ft.)	b	0	5	6	11	3	0	*	*	
Caernarvonshire	c	0	0	0	0	0	0			
South Snowdonia (2,527 ft.)	a	0	0	15	14	2	1	0	0	32
Station: Llanfrothen (475 ft.)	b	0	0	15	14	2	1	0	0	32
Merionethshire	c	0	0	0	0	0	0	0	0	0
Brecon Beacons (2,906 ft.)	a	0	3	23	31	9	1	2	1	70
Station: Tairbull (660 ft.)	b	0	3	23	31	9	1	2	1	70
Brecknockshire	c	0	0	0	0	0	0	0	0	0
Cross Fell (2,893 ft.)	a	0	3	21	30	28	31	21	1	135
Station: Alston (1,070 ft.)	b	0	3	21	30	28	31	21	1	135
Cumberland	c	0	0	8	15	1	0	1	0	25
Helvellyn (3,118 ft.)	a	0	5	8	30	7	0	1	0	51
Station: Patterdale (520 ft.)	b	0	3	7	26	7	0	1	0	44
Westmorland	c	0	0	3	1	1	0	0	0	5
Skells Range (2,668 ft.)	a	0	2	24	18	6	1	2	1	54
Station: Dalry (Forest Lodge) (500 ft.)	b	0	2	24	18	6	1	2	1	54
Kirkcudbrightshire	c	0	0	9	4	2	0	1	0	16
Ben More (3,170 ft.)	a	0	4	17	14	10	4	2	0	51
Station: Rhuvael (42 ft.)	b	0	0	17	14	10	4	2	0	47
Argyllshire	c	0	0	3	0	0	0	0	0	3

SNOW SURVEY 1960-61

Fig.1. DISTRIBUTION OF SNOW COVER IN RELATION TO HEIGHT

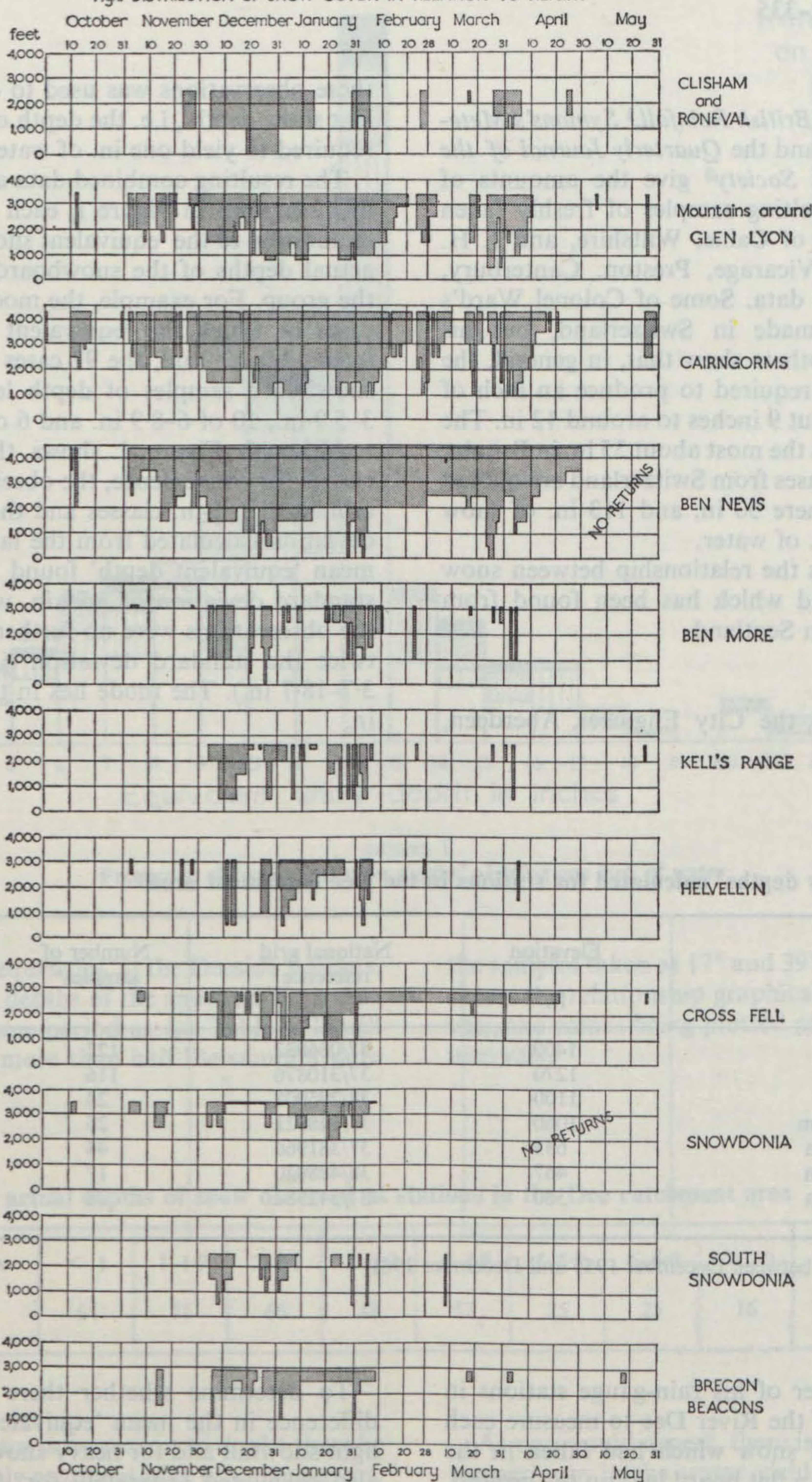


Fig 2 SEASONAL DURATION OF SNOW COVER

Number of days snow lying, October 1960-May 1961.

