ski or a sleigh on snow. It is, however, common experience that snow also while resting, for example, on the roof of a house or on a metal spade, exhibits a considerable angle of repose.

The extremely small friction of ice surfaces near the melting point is due to lubrication by water at the points of contact between the sliding surfaces. The porosity of snow hinders considerably the establishment of thick film lubrication by the melt. This is demonstrated by the following experiments. The angle of repose of snow and of snow compressed by hand was measured on various surfaces which were at room temperature (about 20° C.). The compressed snow always has the smaller angle of repose (see accompanying table). The 'loose' snow sticks on steel even at an angle of inclination of 90°, while the molten water rises in the snow 'capillaries'.

Base plate	Angle of repose		Coefficient of static friction	
	Loose snow	Compressed snow	Loose snow	Compressed snow
Smooth bakelite	16°	3°	0·29	0·05
Glass	19°	3°	0·34	0·05
Ferrotype	16°	7°	0·29	0·12
Steel	>90°	35°	∞	0·7

The blotting action of the snow, which leaves, in contradistinction to the non-porous ice, at first only a thin adhesive intermediary water film, particularly when melting proceeds more rapidly from the solid base (for example, steel) than from the surrounding air, might become more obvious in an experiment where melting is not involved. A small heap of silica powder flows from a dry glass plate at a small angle of inclination. Addition of a sufficiently small amount of water just to wet the sand heap cements its grains together and cements the sand heap to the glass plate. It sticks to it, even at an angle of inclination of 90°. However, an addition of water, in excess of saturating the sand heap with it, leads to thick film lubrication and makes the sand slide off the glass plate at a small angle of inclination.

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[1] Bowden, F. P., and Hughes, T. P., *Proc. Roy. Soc.*, A, **172**, 208 (1939).

Snowfall in the Winter of 1939-40

WHEREAS the great ice-storm which affected a large area in western and southern England on the night of January 27 has been stressed in the various reports which have hitherto appeared on the cold weather, the magnitude of the snowfall seems to have been under-estimated.

Apart from various other snowfalls, there occurred on the very night of the ice-storm an exceedingly heavy fall of dry drifting snow over the whole of south-eastern, eastern, midland and northern England, as well as most of Scotland. In Kent, the Chilterns and East Anglia, the fall on the level was commonly between 1 ft. and 2 ft., and many villages were isolated by huge drifts ; in Lancashire, Cheshire and the Lake District the general fall was between 2 ft. and 3 ft. The fall on the Lancashire coastal plain was apparently the heaviest since February 1900. It is possible, and indeed suspected, that part of the accumulation may have been due to mass drifting from the Pennine uplands to eastward.

The late Mr. Joseph Baxendell, formerly superintendent of the Southport Borough Observatory, has frequently of recent years written to me respecting the scarcity of serious snowfall in west Lancashire, and I cannot but regret that he was not spared quite long enough to see this mighty downfall of snow.

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Points from Foregoing Letters

THE method of isotopic indicators has been used by L. Hahn and G. Hevesy to determine the rate of turnover of nucleic acid extracted from various organs of rabbits. The rate of exchange is extremely low in the liver ; it is higher in the thymus and in the muscles.

L. F. Bates and J. C. Weston show that the coefficient of thermal expansion of invar may be determined by measuring the changes of temperature which occur when a rod is suddenly stretched and when it is taken through a hysteresis cycle.

It has previously been assumed that the linear relationship existing between the parachor and critical temperatures of chemically related substances is due to similarity of cohesive effect. D. T. Lewis finds that the slopes of these lines vary in a simple manner with the number of electrons in simple molecules which do not participate in the true 'valency bond', and this is put forward by him as evidence that these electrons play a large part in determining the magnitude of the cohesive forces between molecule and molecule.

K. L. Sutherland describes effects on mineral surfaces due to minute traces of copper, lead and cyanide ions. It is pointed out that traces are more readily detected when they have been concentrated by adsorption at an interface.

S. Ramanujam describes an apetalous mutation of the turnip, with $n = 10$, which is the normal number. By crossing with the normal petalled form, the author has shown that the apetalous character is heritable but recessive.

The kinetic friction of solids is higher on snow than on ice, partly on account of the extra work done in displacing and compressing the snow crystals. R. Schnurmann finds the static friction of snow on solids at room temperature still higher, because the porous snow dries up the water arising at the contact with the warmer base, leaving only a thin film between the snow and the base.

L. C. W. Bonacina points out that though the winter of 1939–40 was relatively less remarkable for snow than for frost in the British Isles, there were a number of heavy snowfalls, that of the night of January 27 being very intense in the region lying outside the area of the severe ice-storm and quite unusual in Lancashire.