

level, of these interesting surviving remains of the former ice cap, and I had hoped that this might have been undertaken systematically by a responsible body domiciled in East Africa. Such a service would be of utmost interest to glaciologists and climatologists alike.

Thornton Hall,
Ulceby, Lincs.

16 February 1952

P. C. SPINK (Lieutenant-Commander, R.N.V.R.)

The Editor,
The Journal of Glaciology

SIR,

The terms "Névé" and "Firn"

On page 68 of Vol. 1, No. 11 of the *Journal of Glaciology*, Dr. Brian Roberts draws attention to the confusion introduced by the synonomous use of the terms *névé* and *firn*. Certainly these terms, when used interchangeably in the same publications in English might cause one to ask whether they should in fact connote a difference in meaning.

The word *firn* is derived from the German adjective *fern* which means "of last year" (also "far" or "distant"), and thus in its most usual application is used to refer to glacier snow from the preceding year or years.* The French word *névé* by definition means "a mass of hardened snow of glacier origin."† In English we have no single descriptive word but would probably use a phrase such as "consolidated, granular snow not yet changed to glacier ice." Therefore a similar connotation exists in each language.

Several French and Swiss glaciologists, with whom I have discussed the matter recently, consider that *névé* is a more or less dense and settled, although permeable, aggregate of medium to large individual grains formed and welded together by frequent alternations of melting and freezing on original snow crystals, and in which one often finds numerous layers of ice. More generally, they use the word to refer to the overall snow cover which exists during the melting period and sometimes from one year to another.‡

The definition of *firn*, adopted by the Eidg. Institut für Schnee- und Lawinenforschung, and included in the latest "Draft on an International Snow Classification" suggested by the Committee on Snow Classification of the International Association of Scientific Hydrology, is as follows: "old snow which has outlasted one summer at least (transformed into a dense heavy material as a result of frequent melting and freezing)."

Since all of our scientific nomenclature cannot practically be reduced to one language, it should be acceptable to use the French, or German or even an appropriate English equivalent, according to the dictates of one's training or one's particular native tongue. We English speaking persons actually bear the burden because we are more willing to employ either of the foreign terms than to use a phrase of our own. This is due to the advantage of brevity and also, of course, since each has become well-ensconced in the mass of glaciological literature which has been written in French and in German.

If any differentiation is warranted, it should certainly not be one which eliminates all synonymity. On the other hand, it might be useful for publications in English more universally to adopt the word *névé* as a geographic term, e.g. the Taku Glacier *névé*, meaning the highland area of the Taku Glacier covered with perennial snow and thus lying entirely in the zone of accumulation. Then the word *firn* could be more usually applied in reference to the material itself. In this way the original meaning of both terms would be left intact and the confusion introduced by indiscriminate use of them interchangeably would be eliminated. This would also be in accordance with the view taken by some British glaciologists including Mr. Gerald Seligman, who as long ago as 1936 published the following suggestion:

"If we take 'Firn Snow' (I prefer this word to Firn) and use it for snow particles in the befirned condition and 'Névé' to indicate the accumulation area above a glacier, we give the two words distinct meanings and have neater and conciser terms for the two things than exist in either French or German." (§)

* *German-English Science Dictionary*, Louis De Vries, McGraw-Hill Book Company, Inc., 1946. Also see Cassell's *German and English Dictionary*, 1951.

† *Nouveau Petite Larousse, Dictionnaire Encyclopédique*, 1951.

‡ Roch, André. "Précisions sur quelques termes de langue française concernant le neige et les avalanches," *Die Alpen*, Jahrg. 20, 1944, p. 21.

§ Seligman, Gerald. *Snow Structure and Ski Fields*, MacMillan and Co., London, (1936) p. 110.

Concerning application of these terms to snow cover in high polar glaciers, a modified or qualified nomenclature may prove advisable. This is suggested by the fact that percolating melt water is not present in sufficient quantity in high polar firm to create the complicated and irregular diagenetic ice structures, and to help induce other characteristics which are more common to temperate firm. Such consideration may best await the progress of further field research on possible differences in physical character and genesis of polar firm, which recent as yet unpublished studies have suggested.

Weissfluhjoch,
Davos, Switzerland
30 March 1952

MAYNARD M. MILLER

NOTE.—Had not Mr. Miller cited what I wrote in 1936, I should myself have quoted this in answer to Dr. Roberts, for I still think, after these many years, that that is the correct solution. (Incidentally, I now think that the term should be just "Firn" and not "Firn Snow.")

Mr. Miller's point that the characteristics of the firm in high polar glaciers may be somewhat different to that in temperate glaciers is a new and interesting one. Whether or not this will need the introduction of an intermediate stage between firm and true ice (Specific gravity 0.82–0.84) is not yet clear; this points to the need for further research on the subject.

Finally, Dr. Robert's remark about the confusion between "firm" and "firn" seems to me to be rather a matter for editors than terminologists.—G. SELIGMAN.

GLACIOLOGICAL LITERATURE

THIS bi-annual list of glaciological literature aims to cover the *scientific* aspects of snow and ice in all parts of the world. Attention is drawn to the bibliographies in each number of the *Polar Record* (Cambridge), which aim to cover the significant work dealing with expeditions, research, equipment and conditions of living in the Polar regions. Both journals, however, deal with Polar literature having specific glaciological interest and with general matters of a practical nature such as snowcraft.

Readers will greatly assist the Editor by notifying him of their own, or any other, publication of glaciological interest.

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- ANTEVS, ERNST. Glacial clays in Steep Rock Lake, Ontario, Canada. *Bulletin of the Geological Society of America*, Vol. 62, No. 10, 1951, p. 1223–62.
- ASHMORE, S. E. Ablation of snow deposits. *Meteorological Magazine*, Vol. 80, No. 949, 1951, p. 199. [Letter.]
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