With this division of labor, we may ask, what's there to be added? The answer is that there is not much left. The practicing geophysicist might wish to find more tables, such as terrain and isostatic corrections and normal gravity. The novice, as well as the college instructor, would welcome examples of surveys, maps of actual anomalies, profiles of real mountain ranges, and the like to see how the second derivative method really works, how well the anomaly of a salt dome resembles that of a sphere, or how the Airy hypothesis compares with that of Pratt. Let us hope that those matters will be incorporated in the next edition. If such additions have to be at the cost of omitting another chapter, then let them replace the thorough discussion of the torsion balance, an instrument of historical significance only.

Pícha may be too conservative in his opinions on secular variation and on some modern methods of absolute determination of the gravity acceleration.

Vyskočil may be overplaying the importance of the nonuniqueness of the inverse boundary value problem. Fortunately for gravimetry, the range of densities of rocks is so narrow that, in practice, the ambiguity of the interpretation is not as serious as the pure mathematics of the problem tells us.

While the text is fairly free of typographical errors, there are some minor flaws the correction of which would make a good book much better. Each author has his own style and jargon, and no effort toward unification seems to have been spent. Vyskočil may use the word "reduction" where Pick uses "correction," and now the index lists "topographic correction" on p. 229, "topographic reduction" on p. 180, and "reduction—topographic" on p. 101; "correction—topographic" is not listed at all, but "correction for terrain" is on p. 178.

Russian references have been transliterated according to the British system, but they are still arranged according to the Cyrillic alphabet, so that, for example, "Gromov" follows "Vyskočil" and "Fan Cziun" follows "Tyapkin."

A more consistent notation is also desirable. Thus, for example, r may be the radial coordinate and ρ density; but later, ρ becomes the radial coordinate and r is alternately the distance between two points and a summation subscript. There is also a disparity in the background required on the part of the reader: the directional derivative is defined, but he who does not know by heart what are "Lyapunov's conditions" has to go to the French *Journal de Mathématique* of 1898 to find out.

Lyapunov, by the way, plays another trick on us: in the text and in the index, he is consistent; but in the references, he changes into Ljapunoff.

But these are minor problems that will, one hopes, be corrected before long. In general, the book is valuable not only for its content, but also because it will inform the English-speaking public about an impressive program carried out in Czechoslovakia and often published in a language with which only a few of us are familiar.

Every graduate student, instructor, practicing geophysicist, and mathematician whose interests include earth's gravity should have the book within easy reach.

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Cold-Climate Geology

Periglacial Processes and Environments. A. L. WASHBURN. St. Martin's Press, New York, 1973. vi, 320 pp., illus. $23.95.

The author of this book defines periglacial as referring to "cold-climate, primarily terrestrial, nonglacial processes and features regardless of date or proximity to glaciers" (p. 2). With this broad, pragmatic definition the reader is led into 12 succinct chapters including introductory descriptions and discussion of environmental factors, accounts of specific processes or the results of processes, and an environmental overview and reconstruction. The importance of periglacial processes is best seen in the fact that the area climatically included totals 40×10^6 square kilometers of terrain.

Washburn includes among the objectives of research into periglacial phenomena understanding of the environmental significance of these processes, application of this information to reconstruct Quaternary environments, and use of the accumulated knowledge to forecast the effects of environmental changes.

In the introduction Washburn describes the range of climates within which periglacial processes are present, using the Köppen climatic classification. Climatologists would probably prefer to see a different classification scheme adopted, but the scheme is not central to the book and certainly the Köppen scheme is best known to geologists and geomorphologists. The environmental factors that influence periglacial processes are listed as: climate, topography, rock material, and time; vegetation is classified by Washburn as a dependent variable, as is snow cover.

The most exhaustive chapters are those on frozen ground, frost action, and mass wasting, and it is in these that the author demonstrates his ability to synthesize and to include his own substantial research within the framework of other observations and theories. These chapters are well illustrated with excellent photographs and a number of diagrams and maps showing distributional patterns (particularly in Europe and the U.S.S.R.) of present-day forms as well as the Pleistocene distribution. It is worth noting that the only overall environmental reconstruction of North American fossil periglacial data was attempted in 1962 and 1964 by a German. Shorter chapters, such as the one on nivation, reflect the dearth of significant research on their subjects and thus provide valuable commentary on the state of the art and suggest topics for the enterprising researcher.

In this day of exploration of the polar areas of the world for mineral and energy resources and the attendant concern with environmental impact it is even more important to understand how periglacial processes operate and what changes can occur because of human interference with the natural ecosystem. Thus this book not only satisfies an academic interest in cold region processes but, as importantly, shows the extent and limits of our knowledge on problems that are even now in the applied realm (for example, what will happen if an area is cleared for a gravel road).

The book is very well referenced with close to 600 entries, and it has a useful index. Possibly the only topic that is not covered, which might be in the planned revision, is periglacial soils, including the widespread organic soils of the U.S.S.R. and North America. *Periglacial Processes and Environments* is a timely work, well written by a respected authority, that really says it all.

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