fication, composition, and origin of the igneous rocks and on their subsequent modification in response to changing thermodynamic environment in the earth's surface to a depth of 15 or 20 km.

In this rigorous advanced treatise, the underlying principles of phase equilibrium, the physicochemical behavior of rock-forming minerals as determined by laboratory experiment and as deduced from thermodynamic theory, and the data on the igneous and metamorphic rocks from geological field evidence are presented, correlated, and interpreted in a straightforward, lucid, and convincing manner. The complexities involved in the behavior of multicomponent systems under a wide range of changing physical conditions form the theoretical and quantitative background for the discussion of both igneous and metamorphic phenomena which, in a most unusual approach, are treated and interpreted against the same common principles.

The general plan of the book is sixfold: (1) An introduction that presents the principles of chemical equilibrium and thermodynamics, briefly discusses rock classification with the details reduced to a minimum, then presents igneous rock associations and the concept of petrographic provinces, followed by a presentation of factual information derived from laboratory studies of silicate melts. (2) A discussion and interpretation of the igneous rocks that include the crystallization of basaltic and granitic magmas, the reaction series, oceanic volcanic associations, nonorogenic continental volcanic regions with alkaline or plateau basalt affinities, volcanic associations of orogenic regions, plutonic rock associations, the calc-alkaline series, alkaline rocks, and those rocks that are high in volatiles. (3) A presentation of the constitution of the earth with a discussion of the environment, origin, and evolution of magmas. (4) An introduction to metamorphism that includes classification and the principles governing the chemical adjustment of solid rocks to metamorphic conditions. (5) A discussion and interpretation of metamorphic rocks, zones, and facies, of chemical changes, and of fabric. (6) A presentation and interpretation of the relations of metamorphism to magma and orogeny, with discussions of both regional and contact metamorphism.

This excellent treatise should be in every scientific library and on the reference shelf of every teacher and advanced student in geology.

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Smithsonian Meteorological Tables. 6th rev. ed. Compiled by Robert J. List. Washington, D. C.: Smithsonian Inst., 1951. 527 pp. $4.00.

This edition of the well-known Smithsonian publication is the first postwar revision; it replaces the fifth edition published in 1939. Although larger (58 new tables and 159 additional pages) than the former edition, it is not merely an expansion. Before noting the changes, it may be well to summarize the contents.

After a brief introduction, the book contains lists of tables under the categories: "Conversion Tables;" "Wind and Dynamical Tables;" "Barometric and Hypsometric Tables;" "Geopotential and Aerological Tables;" "Standard Atmosphere and Altimetry Tables;" "Thermodynamic Tables;" "Hygrometric and Psychometric Tables;" "Tables of Miscellaneous Physical Properties of Air and Air-borne Particles;" "Tables of Miscellaneous Properties of Water Substance and Soils;" "Radiation and Visibility Tables;" and "Geodetic and Astronomical Tables." This listing is evidence of some of the changes that have been made. For example, the new edition does not list meteorological stations (such a list occupied 31 pages of the former edition); nor does it list meteorological codes. Certain other deletions have been made, most of them good. For example, the thermometric table correcting for the temperature of the emergent mercurial column is gone. Such a table is appropriate in physics or chemistry tables but is not needed in meteorology, where the bulb and column of a thermometer will generally be at the same temperature.

The page gain resulting from the deletions and the added pages has been utilized both for the presentation of new tables and for the expansion of old ones. Obvious changes are those resulting from our increased interest and work with the upper air—the addition of standard atmosphere tables and an increased number of radiation tables. Extensions of old tables include the expansion of the range of speed tables to yield directly conversions of speeds up to 400 mph. Other revisions are those that take into account recent definitions adopted by the IMO. For example, the Beaufort scale has been extended beyond force 12. Perhaps a more important example is the use of the new definition of relative humidity (in terms of the ratio of actual to saturation mixing ratios rather than of actual to saturation vapor pressures).

A minor criticism is the failure of the compilers to adopt the meter ton second system. It is not overly important which system of units meteorologists use, but it would be convenient if they all chose the same one. Since the IMO in 1911 adopted the mts system, it might well have been utilized for these tables.

The arrangement of tables and their explanations has been altered and, I believe, improved in balance. In place of the older system in which the explanations of the various tables were concentrated in the first 86 pages, in the new edition the explanations are placed throughout the book, each near to, and often on the same page as, the table to which it refers.

This edition represents a useful updating, in terms of wartime and postwar developments in meteorology, of a standard reference work. The resulting gain in usefulness will be important to any user.

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