dex for each of the six languages; each term in the index is followed by a reference to a section and an item number in the first part. These indexes are supposed to enable the user to look up unknown terms. It is therefore unfortunate that there are no cross references within each index. The user soon realizes that nearly all phrases are indexed under the grammatically most important noun, but it is unreasonable to expect him to look for least squares under "*method* of least squares." There are also some inconsistencies in the indexing: for instance, "expanding shell" appears only under "shell," while "spherical shell" appears only under "spherical."

Nevertheless, the book is generally useful, and it will be a valuable addition to library shelves. Few individuals will wish to pay such a formidable price, however.

IVAN KING
University of Illinois Observatory, Urbana

Historical Account

Astronomical Photography. Gerard de Vaucouleurs. Translated by R. Wright. Macmillan, New York, 1961. 94 pp. Illus. + plates. $6.

The subtitle of this small volume, "From the daguerreotype to the electron camera," correctly indicates that it is a history of astronomical photography rather than a how-to-do-it book. In telling who first photographed a particular object—say, the moon—the author also tells what kind of instrument, refractor or reflector, was used, its aperture and focal length, the exposure time, and the size of the image. Since the book is provided with a good index, it will undoubtedly serve as an excellent reference volume.

The reader would not guess that the book had been translated, if the title page did not indicate that R. Wright was responsible for the translation. There is no indication that it was originally published in French.

A good account is given of the gradual improvement of photography as an astronomical tool. The factor of increase in sensitivity of the photographic process, which occurred between 1857 and 1957, is estimated as 100 million. The author also uses a factor, not specifically defined, to measure the inferiority of photographic as compared to visual observations. He indicates that this factor has decreased from 10 in 1889 to 1.5 in 1943. In view of this interest in the comparative effectiveness of the human eye and the photographic plate, it is a little surprising that no comment is made concerning the gegenschein or the zodiacal light, save as an obstacle to recording faint stars.

Only a single page is devoted to color photography, and about ten interesting pages are concerned with electronic devices that are intended to increase the effective sensitivity of the photographic process. The illustrations are well chosen and well reproduced; they present astronomically important photographs taken between 1845 and 1959.

This book may be recommended highly to persons who are already well informed in physics or photography, but it is probably too technical for the general public. For example, the phrase, "failure of the reciprocity law," is used on pages 43 and 69, but it is explained briefly for the first time on page 81. Also, phrases such as "radiation of relativistic electrons in a magnetic field" (page 77) are used from time to time.

CHARLES H. SMILEY
Ladd Observatory, Brown University

English-German-French

Chemical Dictionary. J. Fouchier and F. Billet. Netherlands University Press, Amsterdam, ed. 2, 1961. 429 pp. $25.

The book is made up of three approximately equal parts, each of which provides a listing of about 12,000 technical terms from chemistry and physics with their equivalents in two other languages. Each page consists of three columns of words. The left-hand column contains single words or terms arranged alphabetically in one of the languages, English, German, or French; the other columns give the equivalents in the other languages. The three sections are English-French-German, French-German-English, and German-English-French. Clearly, the work is not simply a "chemical dictionary," as its title implies. It might be more aptly described as a "Dictionary of Chemical Terms with English, German, and French Equivalents."

The usefulness of any dictionary depends on both the number and the selection of words. The number of words or terms covered in this work is, by its triplicate nature, only one-third of what might be expected from simple consideration of the total number of pages: the coverage is limited indeed. A popular German-English dictionary for chemists contains 42,000 entries, compared with about 12,000 here. A more serious limitation appears in the selection of words. Although the authors claim to have included many new terms in this edition, I was struck by the following samples of its shortcomings: none of the words pteridine, lysergic acid, testosterone, estrone, pantothenic acid, or vitamin A were in the English listing; although the structural formulas for a large number of organic dyes and simple aromatic compounds are included, only molecular formulas are provided for such important compounds as cholesterol, ergesterol, and carotene.

On the positive side, the type and the arrangement of material on the page make for easy reading. The preface contains (in three languages) abbreviations, temperature conversion tables, a periodic chart, and a table of weights and measures. Finally, and this is one of the rather charming features of the dictionary, the authors have not limited themselves to a single translation; it is fun to see the shades of meaning that cluster about a single word in any one of the languages.

The price is high for such a limited dictionary, but this one will probably find its place on the desks of those concerned with translating technical articles written at a fairly unsophisticated level.

RICHARD H. EASTMAN
Department of Chemistry, Stanford University

Earth's Landforms

L'Evolution de la Lithosphère. vol. 3, *Glyptogénèse*. Henri Termier and Geneviève Termier. Masson, Paris, 1961. 471 pp. Illus. Paper, NF. 110; cloth, NF. 122.

Probably only geologists who have read Grabau's *Principles of Stratigraphy* will recognize the scope of this book from its title. As implied by its subtitle, the book deals with the sculpturing of the lithosphere and the resultant landforms. In a sense this is a regional geomorphology on a world scale, except that the approach is not one of systematic regional description but rather