considerations of economy it put a stop to the practise formerly permitted of computing apparent places. When, from the same cause, the *American Ephemeris* found room between its covers for tables of Polaris facilitating azimuth determinations, the survey was quick to take advantage also of these tables (p. 17).

With regard to Mr. Duvall's ingenious device for the graphical determination of the *A, B, C* factors of Mayer's formula, it may be stated that this is not the first time such a device has been put forward. Plate XII., Astronomical Observations of the U. S. Naval Observatory, Washington, 1846, with description on pp. xliv et seq., illustrates a similar solution of the same problem by Bessel's formula, the chart being adapted to the determination of $m + n \tan \delta$, and also, with the aid of an auxiliary table, of $c \sec \delta$.

The difficulty encountered in the footnote on p. 270 of the former edition has been neatly surmounted in the new.

Another novel feature is the inclusion of a treatise on time determinations with the vertical circle. It would not be surprising to find the next edition include also an account of the astrolabe. Recently developed by the French, and claimed by them to give results comparable with those obtained by the portable transit, this instrument has much to commend it. It is as portable as a theodolite, requires no firm-set pier, is easily manipulated, and the same observations employed for time may be used also for latitude.[2] On the other hand, the computations, both preliminary to and following the observations, are heavy; and the most serious obstacle encountered with this instrument, if all accounts are to be believed, would seem to be that old and familiar stumbling-block, personal equation.

From a literary standpoint the new edition is markedly improved. Where in the older volume the diction was awkward, it has here been replaced by wording more smooth and elegant. Here and there a sentence has been altered for clearness, or a phrase added to supply an idea previously left to the fruitful imagination of the reader. Where a paragraph or a sentence was superfluous, it has here been omitted. The numbering of the sections has been done away with, and more headings have been supplied for sections which properly should appear as such. It can not be said, on the other hand, that the change from words to figures when referring to numerals is a decided literary advantage; nor that all omissions have been improvements. On p. 23, for example, there might have been retained in its proper place the remark on p. 281 of the former edition, "For a discussion of this matter, see —." Among minor changes may be noted slight modifications of notation to prevent confusion, and the substitution of numerals for asterisks and daggers. The continuity is broken by continual switching from discussion of methods with the transit micrometer to those with the key, but to offset this the book is of increased value as a more complete manual.

Of the various methods for determining longitude, the ordinary telegraphic and the chronometric are treated fully. Lunar and other methods less frequently employed in the survey are merely mentioned on p. 78. Determinations by wireless telegraphy, though already employed in Europe and by the American Navy are still in the experimental stage. This will without doubt be the method of the future, and the proposed determination of the difference of longitude between the U. S. Naval Observatory and the Observatory of Paris, as well as a similar trans-Atlantic scheme under contemplation by the survey authorities for the near future, should aid greatly in the development of this method.

The publication is highly creditable to the officers of the Coast and Geodetic Survey, and the reviser and part author is to be congratulated upon maintaining so well the high standard set by his predecessors, Schott and Hayford.

David Rines

[2] See Chauvenet's "Spherical Astronomy," Vol. I., p. 280, and Claude et Driencourt's "L'Astrolabe à Prisme."

The Climate and Weather of San Diego, California. By Ford A. Carpenter, LL.D.,

Local Forecaster, United States Weather Bureau. San Diego Chamber of Commerce. 1913. Pp. xii + 118.

That a chamber of commence thinks it advisable to publish such a volume as this speaks well for the city represented. The book bears little resemblance to the ordinary "boom literature" of pushing cities, with which we are too familiar.

The book is distinctly readable and interesting. The weather phenomena of the southern California region are treated in a somewhat popular, but thoroughly scientific manner. The elements, which make up the complex called climate, are considered separately; both the conditions more or less peculiar to the region and those of more widespread occurrence are considered from the standpoint of their causes. The climate of San Diego, from the records of the Weather Bureau and its predecessor, the Signal Service, is shown by the usual tables of data and is also described in words. The record is uninterrupted from its beginning, July 1, 1849, when meteorological work was established in San Diego as a part of the duties of the post surgeon of the army; therefore the data form one of the longest records in the United States. The book is well illustrated with photographs of the region and the meteorological instruments, as well as with maps and diagrams.

This volume may well serve not only as a sample of the kind of thing which can and ought to be done by a progressive chamber of commerce or similar organization in a region climatically favored, but it is also well suited as an introduction to the whole subject of meteorology and should give a better understanding to the processes which control the weather. Both Dr. Carpenter and the city of San Diego are to be congratulated on the appearance of this volume. It is to be hoped that as interesting and accurate discussions of the climates of particular places will become the rule, instead of the exception as at present.

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NOTES ON METEOROLOGY AND CLIMATOLOGY

INTERNATIONAL METEOROLOGY

THE report of the secretary (Dr. G. Hellmann) of the meeting of the International Meteorological Committee (composed, in general, of the directors of national weather services), held in Rome, April 7–12, 1913, has recently appeared.[1]

Assistance on the question of the influence of weather on agriculture having been asked by the president of the International Institute of Agriculture, the Meteorological Committee responded by appointing a permanent commission consisting of Messrs. Angot, Börnstein, Brounow, Louis Dop, Hergesell, Palazzo and Stupart.

The recommendations of the Commission on Weather Telegraphy, which met in London in September, 1912, were adopted with but few changes. Thus on May 1, 1914, the long-desired, uniform telegraphic code throughout Europe will come into use.

The report drawn up by Messrs. Palazzo, Köppen and Lempfert showed that the mean wind velocities equivalent to the numbers of the Beaufort scale of wind force in use in different countries are widely variant. The Meteorological Committee asked for a further investigation, to consider gusts of wind as well as mean velocities for the force equivalents of the 10- or 12-point Beaufort scale.

The proposal of the International Committee for Scientific Aeronautics to have international cooperation in upper-air observations in many parts of the Arctic in 1915, during Captain Amundsen's polar expedition, was warmly supported and a small subcommittee consisting of Messrs. Hergesell, Rykatchew, Ryder and Stupart was appointed to deal with the question.

To have aerological data in convenient form for the purposes of dynamic meteorology, Professor V. Bjerknes, of Leipzig, at the meeting

[1] "Bericht über die Versammlung des internationalen meteorologischen Komitees Rom 1913," No. 260, Veröffentlichungen des Kgl. Preuss. Met. Inst. Berlin. See also *Nature*, London, Vol. 91, p. 198.