*Practical Geography for Schools.* By ALFRED HUGHES. Oxford, Clarendon Pr. 12°. (New York, Macmillan, 60 cents.)

THE present volume, which is the first part of a geography for schools, has for its object, not the explanation of geographical phenomena, for such is not given in any instance. The data of geography are considered as given and as explained, and they are used for the purposes of teaching geometrical drawing, arithmetic, and the elementary ideas of geometry. By this method the author hopes to impress the data of ordinary descriptive geography, by constant use, upon the mind of the pupil. The book deals only with mathematical geography, and many examples are given for computing distances between two places, differences of time, altitudes of the sun and of stars. As for these purposes the latitudes and longitudes of places must be known, the pupil will acquire by practice a considerable amount of knowledge in this line. But, although this may be true, we cannot recommend the author's methods. We assume that the book is not intended for teaching geography, as it does not try to prove any of the facts that are mentioned in it. The geographical problems of mathematical geography are far too difficult for boys. The author recognizes this fact, and claims as an advantage for his methods, that little or no mathematical knowledge is necessary before children can master all the methods explained in his work. But this advantage is reached only by an extreme laxity of definitions, and by applying wrong geometrical proofs: therefore the pupil will have to unlearn at a later stage the greater part of what has been taught to him according to the plan of the book. Here is an example. One of the very first chapters of the book teaches how to draw lines of latitude and longitude suitable for a map of any part of the earth's surface. First it is said, without an attempt at explanation, that it is impossible on a flat piece of paper to draw correctly lines that themselves exist on the round surface of the earth. Then a rough approximation to a rectangular projection in which the real length of the parallels is preserved, is described as the only method of projecting maps, without any further explanation than that the parallels and the central meridian have their real lengths; while it is not shown that the meridians and angles are greatly distorted. In computing distances, the author assumes, adding a brief remark that it is not quite correct, that the distance along the parallel of latitude is the distance between two places. All through the book this looseness prevails. If we agree that the teaching of geometry should train the faculty of logical reasoning, we must object to the methods advocated in this book. From the standpoint of the geographer, there is nothing in it that might not be attained just as satisfactorily by other methods which discard these unnecessary mathematical considerations, that are beyond the grasp of children of that age for which the book is intended.

*A Laboratory Manual of Chemistry.* By OSCAR OLDBERG and JOHN H. LONG. Chicago, W. T. Keener. 8°. $3.50.

THIS manual is intended for students of pharmacy and medicine, and presents a well-chosen course of experiments, the object of which is to give acquaintance with the properties of the more common elements, and to show the syntheses of the more important chemical compounds and pharmaceutical preparations. A short course in qualitative analysis, special examples of quantitative methods, modes of assay of a few important drugs (notably the alkaloids), and a sketch of the chemical and microscopical examination of urine, constitute important features of the work. In the directions for compounding, quantities are usually expressed in proportionate parts, but occasionally absolute weights and measures are employed. When such is the case, it is a pleasure to note that it is the metric system of which use is made. The pharmaceutical and chemical names appear side by side.

The work is well arranged, and admirably adapted to the use of the class of students for whom it is especially intended.

*Skeleton Notes upon Inorganic Chemistry. Part I. Non-Metallic Elements.* By P. DE P. RICKETTS and S. H. RUSSELL. New York, Wiley. 8°. $1.50.

IN the words of the authors, "It is not intended that this work shall take the place of a text-book, and the authors claim no originality beyond the general arrangement. Much matter has been purposely omitted for the student to supply in his own way. It is believed that by employing these 'Skeleton Notes' as a framework upon which to build, the beginner will be aided in following lectures, and learn to study chemistry in a systematic manner."

The plan of placing in the hands of students an outline of lecture-notes in order that attention may be given more fully to the general argument and demonstrations of the lecturer, presents many advantages, and has not wanted recognition these many years. That such a scheme may be useful to the fullest extent, it would seem to be the case that the order of topics in the notes should follow the order of discussion in the lecture, and that this should be a rational one. In this skeleton the chemical elements are taken up in the alphabetical sequence of the initial letters of their names, — an arrangement which certainly is not suggestive of existing relationships, nor likely to aid in the realization of the hope that the beginner may "learn to study chemistry in a systematic manner." The notes under individual heads are brief and orderly, in general, though occasionally inexact.

The value of such a book must depend, as a matter of course, upon the use made of it by lecturer and student.

*Weather: a Popular Exposition of the Nature of Weather-Changes from Day to Day.* By Hon. RALPH ABERCROMBY. New York, Appleton.

THIS volume considers only the practical questions involved, and is an excellent popular work, easily understood, and maintaining great interest in its perusal.

The first three chapters are elementary, and treat of weather prognostics which may be made from 'clouds,' 'audibility,' 'visibility,' 'whirling dust,' etc., without the aid of instruments. In the advanced portion our author takes up the question of weather-maps (Chapter IV.); meteograms, or records of single instruments at a station (V.); squalls, thunder-storms, and non-isobaric rain (VIII.); whirlwinds and tornadoes (IX.); diurnal variation of weather (XI.); types and spells of weather (XIII.); weather-forecasts (XIV. and XV.). These chapters are especially interesting, and deal with their subjects in a lucid and comprehensive manner.

Our author has taken advanced ground on many questions, and does not fear to admit our want of a good explanation of phenomena. No less than twenty-nine times does he profess this, and in almost all these cases there have been theoretical explanations given by others. An important principle is enunciated at p. 50, — "diurnal changes modify but do not alter intrinsic quality of weather," — and this view is maintained in many places with great force and good proof. Our author, while cutting loose from many erroneous views, yet clings to some to which we must take serious exception. On p. 117 we are told that the clouds indicate great cold in front of storms; yet at p. 139 the usual view is given, that, owing to heat, the pressure in the upper layers is augmented near a cyclone; and this latter view is again stated on p. 232. As a matter of fact, later researches have shown that this hypothetical rise in pressure is almost nothing. If we take barometer readings at Mount Washington, for example, during the passage of a cyclone, and reduce them to sea-level, we shall find the fall in pressure at the base only .04″ or .05″ less than at the summit.

On p. 126 we read, "To this ascensional movement (in cyclones) undoubtedly must be attributed the rain and cloud which we find there, — rain near the centre, where the ascensional impulse is strongest; cloud round the outside, where the uptake is less strong." And yet repeatedly our author refers to "non-isobaric rain," or rain remote from just this hypothetical uptake. There is hardly a worse fallacy in meteorology; and, moreover, no valid proof has ever been advanced of this uptake. There has been a rather good reason for the endurance of this theory in Europe, for there, in the temperate regions, rain falls largely near a cyclone-centre; in this country, however, most of the rain is far in advance of the storm-centre. Probably ninety per cent of our rain may be fairly considered 'non-isobaric.' On p. 221, Tyndall's theory that water-vapor absorbs the quality of heat radiated from the ground is accepted; and yet it is quite well known and received to-day, that this was refuted by Magnus, who showed that it was only the condensed vapor in the shape of water-droplets, and not the vapor, that produced the effect. On p. 253 the theory is