dency has been, perhaps, too much the other way. Ten thousand years seems a short time for the completion of such great changes as we find in river-beds, in lake-margins, and in mammalian species.

In the last chapter the author discusses the relation of the Bible to science. Perhaps the time is not yet fully ripe for final adjustment here. But one thing is meanwhile certain: all the harm which has come, or will ever come, of the discussion of this subject, comes only of a narrow, intolerant spirit on both sides. Nothing but good can come of the freest inquiry, if only it is conducted in a simple, reverent, truth-loving spirit.

But as many will think that a reviewer is 'nothing unless critical,' we must find some faults, even if they be but errors of typography, or slips of the pen. Of the former, we find one on p. 329, where 70° instead of 20° from pole is given as the position of the antarctic continental ice-foot. Among the latter, we notice on p. 310 that the bluff-deposit of the Mississippi River is spoken of as the '*orange sand.*' The bluff-deposit is a very fine silt (loess) overlying the coarse orange sand. Again: the transition from paleozoic to mesozoic can hardly be called 'one from water-breathing to air-breathing animals,' since air-breathing insects lived in the Devonian, and air-breathing insects and amphibians were abundant in the carboniferous.

Finally, we should state that the book is illustrated by several plates, which greatly increase its value.

THE TOPOGRAPHICAL MAP OF NEW JERSEY.

A topographical map of a part of northern New Jersey, from surveys and levellings made, and local surveys corrected. By GEORGE W. HOWELL, C.E., and C. C. VERMEULE, C.E. *Julius Bien, lith*, 1882. 87.5 × 88 cm.

ALL of our state geological surveys have been hampered by a lack of topographic maps on which to record and publish their results. The geological maps thus far completed have in nearly all cases been based on compilations of county and other surveys, executed at different times, on different plans, and seldom with sufficient geodetic triangulation to insure accuracy. Representation of mountain form is in nearly all cases excessively incorrect. When careful topographic surveys have been made, they have unfortunately too often followed instead of preceded the geological examination. As it is now too late to go back and perform the work in proper order, the next best plan is at least to carry on topographic surveys wherever possible, and secure, as soon as may be, the good results of a close knowledge of the form of the various states. Such work is going on in New York, and a careful triangulation has been carried across the state; but, with the appropriation at present grudgingly afforded this work, many years must pass before it is completed. New Hampshire has taken advantage of a triangulation executed for it by the U. S. coast-survey, and constructed a large six-sheet map on a scale of two and one-half miles to the inch (1 : 158,400), with contour lines every hundred, and in parts every fifty, feet; but these latter are by no means of final accuracy. This map was issued with geological coloring in 1878; and that part including the White Mountains has been published apart in *Appalachia*, vol. i., uncolored, and also by the surveyor, Mr. H. F. Walling, with hypsometric coloring. Another notable contour-line map is that of 'Morrison's Cove,' surveyed by Mr. R. H. Sanders, to illustrate Mr. Fr. Platt's report on Blair and Huntingdon Counties, Penn. (*Second geol. surv. Penn., T.*, 1881). It is printed in fourteen large sheets, on a scale of sixteen hundred feet to an inch (1 :19,200), or about three and one-half inches to a mile, with contours every twenty feet, and is colored geologically. Being in a region of typical Appalachian form, it has an especial value in showing this remarkably interesting style of mountain surface. A photographic plate from a model constructed from this map by Mr. E. H. Harden has been published (*Proc. Amer. phil. soc.*, xix. 1881), and gives a finer view of the intricacies of Pennsylvanian topography than any thing else that has yet appeared. It is to be hoped that the other models constructed for the Pennsylvania survey may be treated in the same way. A second example of fine topographic work on the same large scale is in the lately issued map of the Panther Creek basin by Mr. R. P. Rothwell (see SCIENCE, p. 310), which makes the first of a series of maps that will illustrate the survey of the anthracite district of Pennsylvania, in charge of Mr. Ashburner. The large number of accurate surveys of private property in this region, and the numerous railroads crossing it, will furnish a valuable basis for the final work of the state geologists, and its interesting form and unique structure will at last find adequate representation.

The topographic map now in course of construction and publication by the Geological survey of New Jersey, under the direction

of Prof. G. H. Cook, bids fair to outrank those already mentioned, as it alone combines all the elements for successful completion. It has the advantage of thorough triangulation, including twenty-six primary stations furnished by the U. S. coast-survey, — a work still in progress, but approaching an end. This is illustrated by a very delicately prepared map in Professor Cook's annual report for 1882. The process of local triangulation and levelling was begun in the northern part of the state, and field-observation is already done for most of the area lying north of a line from Belvidere to Sandy Hook. The area of which the sheets have been published contains 847 □ miles of New-Jersey land, and laps eastward on New York. Its centre is near Orange, and it includes Paterson and Perth Amboy north and south, and Brooklyn and Boonton east and west. The scale is one mile to an inch (1 : 63,360), sufficiently detailed to show all the artificial topography even in the city portions of the map, and to include many of those mythical rectangular streets laid out on town plans, and 'accepted' by the local authorities, although often entirely regardless of the lay of the land. The contours are drawn in faint red lines, showing differences of level of ten feet in plain country, and twenty feet in the hilly portions. Water-surfaces are colored blue, and depth-lines are drawn at intervals of ten feet. The chief topographic features thus shown are the strong, regular lines of the triassic trap-ridges, — the Palisades and the double Wachung Mountains, — with their bold eastern face and long slope, on the west; the more irregular highland country of the azoic rocks, on the north-west; the great area of salt-marsh lands, built up to tide level along the Hackensack River and Newark Bay; the extensive fresh marshes and flats on the upper course of the Passaic, within the curve of the Wachung range, — the remains of an old lake held by drift-barriers, as explained in the report for 1880; and, finally, the line of the terminal moraine, especially as it crosses the flat sandstone country from Metuchen northward to Locust Grove, where it climbs the trap-range. Even in this short distance, over forty of its characteristic little ponds, that would be quite unnoted on ordinary maps, are shown upon its rolling back. The completion of this map for the entire state will be an immense gain for its people.

The distinctly practical ends that mark the work of the New-Jersey survey justify the subordination of natural to artificial topography; the former being mostly indicated in the fainter red, and the latter in the stronger black lines. It would be, however, of much practical as well as scientific interest to try a reversal of these colors on a special edition of the map, in order to show more distinctly the natural features of the state, and give a properly secondary place to the towns, railroads, and lettering. As now printed, the ridges of the Wachung Mountains are rivalled by the Central railroad with the parallel roads beside it; and the mountain form is obscured, except to a very close search, among the streets of Orange and Paterson. And, as where so much good work has been accomplished we naturally look for more, it seems not too much to hope that future years may see the entire map appear with geological colors, in which the detrital surface-deposits are shown, as well as the consolidated underlying formations, the latter being indicated only where they outcrop, or are covered by an insignificant soil.

CRUSTACEA OF THE BLAKE AND TRAVAILLEUR EXPEDITIONS.

Recueil de figures de crustacés nouveaux ou peu connus. Par M. A. MILNE-EDWARDS. 1ère livraison. [Paris], April, 1883. 3 p + 44 pl. 4°.

THE coast-survey dredgings, under the direction of Pourtalès, in the Straits of Florida, first revealed the wonderful richness of the crustacean fauna beyond the shallow waters of our southern coast. The earlier collections of Pourtalès were unfortunately lost in the great Chicago fire; but Stimpson's preliminary report on the Brachyura, published in 1870, gives some indication of their extent. The subsequent explorations, under the direction of Pourtalès, the elder Agassiz, and Stimpson, more than replaced the collections destroyed at Chicago; while the work of the Blake, under the direction of Alexander Agassiz, in 1877, 1878, 1879, has far excelled all earlier explorations in bringing to light great numbers of new and remarkable forms. All the crustacea from these later explorations have been submitted to Alphonse Milne-Edwards of Paris, who has from time to time described and figured a considerable number of the Brachyura in his great work on the crustacea of Central America and the Mexican region. The progress of this work has been exceedingly slow, however, the Carcinoplacidae not yet being reached; so that the groups containing the most remarkable forms were left untouched until the appearance of the preliminary report on the Blake crustacea in the bulletin of the Museum of comparative zoölogy. This short report, though extending only to the higher Macrura,