

by Marchand and Fabre ('Les érosions torrentielles et subaériennes sur les plateaux des hautes Pyrénées,' *C.-R. du Congrès des Soc. Sci. en 1899*, Paris, 1900) indicates that the doubt is well founded and refers the asymmetrical form to the action of the northwesterly rain-bringing winds and the associated action of lateral rills and radial torrents on the weaker and stronger strata of the fans. A determining factor is found in a compact clayey layer at about mid-height on the valley side between weaker, sandier deposits below and above. So long as the valleys are worn only in the weak upper layer, their cross-section shows a gentle slope on the side *AB* that is attacked by the northwest winds. But when the valleys are worn through the resistant clays to the weak under layers, the lower slopes, *CD*, on the wind-attacked side



are steepened, although the earlier relation may still obtain on the higher slopes; and it is in this condition that most of the valleys are found. The explanation of the process by which this change of form is brought about is not immediately convincing and is too detailed for abstract here.

THE QUEENSLAND COAST.

A 'PRELIMINARY note on the Geology of the Queensland Coast * * * ' of northeastern Australia, by E. C. Andrews (*Proc. Linnean Soc. N. S. W.*, 1902, pt. 2, pp. 145-185), presents in modern form—although not in the best arrangement—a highly appreciative account of the mainland and islands back of the Great Barrier reef. The terminology of Gulliver's essay on 'Shore line topography' is largely used. The continental shelf on whose outer edge the great reef is built at from fifteen to one hundred miles from the mainland is described a lowland and platform of subaerial and marine denudation and deposition, moderately submerged in Pleistocene time. The shelf continues south of the reef, its outer slope always rising from great depths.

Numerous monadnock-like islands of continental rocks (granite, etc.), often rugged and mountainous, rise from the shelf as far out as twenty miles from the mainland. The islands and the mainland are commonly bordered with low, sandy coastal plains and mangrove swamps, up to twenty miles in breadth, exhibiting consequent drainage; and from this a slight modern elevation is inferred. Some of the islands are made of sand only, bearing high dunes. Many of the islands are tied together or to the mainland by tombolos, bays are more or less enclosed by bars, and rivers are deflected scores of miles northward by the growth of heavy sand reefs under the action of currents and waves driven by the southeast trade wind. The monadnocks increase in number on the mainland, until the highest part of the back country gains the appearance of an undulating tableland, up to 4,000 feet in altitude. This is described as showing late-mature Tertiary valleys eroded 1,000 feet or more beneath a Cretaceous peneplain, whose remnants are often capped with basalt outliers resting on auriferous gravels. About Pliocene time the whole country was uplifted so that cañons 3,000 feet or more in depth are now cut in the Tertiary valley floors; the streams plunge down falls 1,000 feet in height from the as-yet-uncut valley floors into the canyon heads. W. M. DAVIS.

RECENT ZOOPALEONTOLOGY.

COMPARISON OF THE EUROPEAN AND AMERICAN EOCENE HORSES.

A PAPER published in March, 1901, which should have been reviewed earlier is by Professor Charles Depéret, of Lyons, entitled 'Revision des Formes Européennes de la Famille des Hyracothéridés.' It consists of the study and redefinition of all the types of Eocene horses described during the last century in France and England before the ancestral relationship of any of these animals to the horses was appreciated. Since the recognition of the Eocene horses in America by Marsh, it has become evident that they are very closely allied, if not identical in stages of evolution with contemporary forms in Europe. As a result of a close analysis, which is accompan-

ied by admirable figures, Depéret points out that *Eohippus* Marsh from our Wasatch (p. 222) is closely similar to *Hyracotherium* Owen and to *Pachynolophus* Lemoine from the Suesonian; that *Protorohippus* Wortman from our Wind River is closely similar to *Proplæotherium* Gervais and *Pachynolophus* Pomel; that *Epihippus* and *Eohippus* Marsh are similar to *Lophiotherium* Gervais. It is probably premature to attempt to establish generic identity between these American and European forms; but it is evident that the time is not far distant when such identity is likely to be established, unless we take the ground that the European and American forms were entirely independent in their evolution from the time of their first appearance.

THE PALEONTOLOGICAL LITERATURE OF 1898
AND 1899.

DR. MAX SCHLOSSER, of Munich, again places us in his debt by the continuation of his valuable résumé of the literature upon fossil and recent mammals.* This annual review began in 1884. The present section fills nearly one hundred pages of fine type, and the works reviewed are divided under three heads: (1) Those properly pertaining to Pleistocene anthropology and mammalian remains found with man; (2) the Tertiary and Mesozoic mammals; (3) the distribution and taxonomy of recent mammals. In the exhaustive library of the University of Munich, Dr. Schlosser finds practically the literature of the world, and in this review he gives a brief abstract of all that was published during the years 1898 and 1899. It is the author's custom to fairly present in abstract the works reviewed, including very brief critical remarks of his own. These digests are clear, and remarkably free from prejudice. They are simply priceless for every worker in mammalian paleontology and anthropology, and our thanks to Dr. Schlosser cannot be too heartily expressed.

H. F. O.

* 'Literaturbericht für Zoologie in Beziehung zur Anthropologie,' p. 115, für das Jahr 1898, p. 165 für das Jahr 1899.

SOME SINGULAR NICKEL-STEEL ALLOYS.

THROUGH the courtesy of M. Ch.-Ed. Guillaume, Directeur-adjoint du Bureau international des poids et mesures, Paris, there has come to hand a very interesting collection of documents* relating to a curious variety of nickel-steel alloys, regarding which little seems to have been published on this side the Atlantic, and the only notice of which, according to the inventor, has been in the form of a denial of the possibility of their existence.

M. Guillaume has discovered, has produced in quantity and has brought into use in the industries, an alloy of steel or iron and nickel which he denominates 'non-dilatable'; it remains of substantially constant dimensions with ordinarily varying temperatures. This peculiarity, as he says, is allied to a general anomaly attributable to alloys of this class capable of forming solid solutions which are in certain cases unstable. Forthcoming publications in the French technical and scientific journals are expected to give later information regarding this curious series of alloys which are expected to have important applications in the arts. They are already in use in horological work and the pendulum of constant length may now be had. Instruments of precision, and particularly measuring apparatus for geodetic and other fine work, may be thus constructed.

These alloys are actually produced commercially, at Imphy, by the Société de Commeny-Fourchambault. They are now coming into use for many purposes in Europe, and should be better known in this country. The surveyor's tape, the measuring rod for

* 'Recherches sur les aciers au nickel,' Société d'Encouragement; Paris, 1898; 'Sur les variations temporaires et résiduelles des aciers au nickel réversibles,' *Comptes rendus*, i., CXXIV., 1897; 'Das Leben der Materie,' *Physikalische Zeitschrift*, 2, 1899; 'Les déformations passagères des solides,' Cong. Int. de physique, 1900; 'Les aciers au nickel,' *ibidem*, 1900; 'Le pendule en acier au nickel,' *Journal Suisse d'horlogerie*, 1902; 'Magnetostriction des aciers-nickel,' *Journal de physique*, 1902; 'La convention du mètre et le Bureau international des poids et mesures,' *Bull. de la Soc. d'Encouragement*, 1902.