It is doubtful, in any case, whether it is advisable to override a fundamental principle of civilized jurisprudence, to wit, that 'every man should have his day in court.' Fraud would be much easier under such a system. While in a mental condition unfitting him to do business but not manifesting itself to the court on casual inspection, or under undue influence through fear or other causes, a man is brought by beneficiaries under his will before a probate court and his will admitted to probate. Then his life is taken by the beneficiaries. No matter what facts they might be able absolutely to prove, the mouths of his heirs, who have never had a chance to be heard, are closed. They can not attack the probate, so the will stands and the property goes where neither the law nor the testator wished it to go. On the whole, the suggestion seems a dangerous one. The Colorado probate revision committee considered the remedy suggested much more dangerous than the disease.

JUNIUS HENDERSON.

CURRENT NOTES ON PHYSIOGRAPHY.

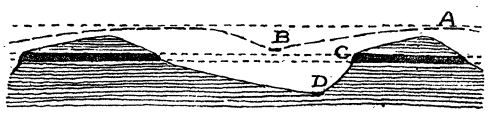
SNAKE RIVER LAVA PLAINS.

RUSSELL'S latest report on the 'Geology and Water Resources of the Snake River Plains of Idaho' (U. S. Geol. Survey, Bull. 199, 1902) is as full of physiographic matter as many of his earlier reports have been. The plains are in southern Idaho, measuring 350 miles in length by from 50 to 75 miles in width; they occupy a broad depression between enclosing mountains, and are built of extensive basaltic lava flows often overlying Tertiary 'lake beds.' The lavas have been ascribed to fissure eruptions, but Russell follows Lindgren in referring them to volcanic vents within the area of the plains or in the neighboring mountains. Several lava streams issue from the mountain valleys; one of them was so liquid when erupted that after flowing fully 50 miles as a stream from one to three miles wide it could still spread widely on the plains. The vents within the plains are either cinder cones of the ordinary type, from which very fresh flows are traceable, or low broad lava cones of gentle slope, 8 to 10 miles in basal diameter and only 200 or 300 feet high. The more liquid flows thin out gradually on the plains to feather edges; others are limited by ragged scarps 20 or 30 feet high. The border of the plains contours around the enclosing mountains, converting valleys into bays, spurs into headlands and outlying knobs into 'steptoes' (p. 34). The most remarkable examples of the latter forms are two dissected rhyolitic volcanoes, of which the highest, Big Butte, rises 2,350 feet over the plains. In one district of fresh flows, a road between two towns forty miles apart follows the slight depression between the edge of the lava and the mountain slope, turning into every valley and rounding every spur, and thus doubling the straight-line distance, rather than climb the hills or cross the bare lava. Most of the plains are covered with a soil largely æolian. Extensive gravel fans are formed where certain streams have had to aggrade their courses on passing from mountain valleys of strong slope to the level plains; here Russell unfortunately introduces the term 'upgrading streams' (p. 133), although he has used 'aggrading' in his 'Rivers of North America.' Some fans antedate the lavas and stretch under them, favoring the passage of ground water beneath the plains. Snake River and its larger branches trench the plain where it is lava-covered, and produce a mature topography in the unprotected lake beds further west. Special account is given of short canyons eroded by springs along the border of Snake River canyon.

THE FAN OF LANNEMEZAN.

THE great fan or 'plateau' of Lannemezan, with a radius of more than 100 kilom., at the foot of the Pyrenees in southwestern France, together with its smaller neighbors on the west, the fans of Orignac and Ger, have long been noted for the unsymmetrical form of their radial consequent valleys, whose side slopes are with few exceptions steeper on the right than on the left of the stream. It has frequently been suggested that this systematically unsymmetrical habit might be due to the deflective force arising from the earth's rotation, and the suggestion has as often been doubted because the deflective force must be so small. A thorough study of the problem

by Marchand and Fabre ('Les érosions torrentielles et subaëriennes sur les plateux 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-