ceived, and what gives value to this striking demonstration is that we have here the opinion of average France, not that of a political *coterie* or of a cultivated *élite*. The world knows now approximately what France thinks of her great men and what her conception is of civic duty, as well as of intellectual and moral distinction. It is the revelation to the foreigner of an idealism certainly unsuspected. Only those observers who have had the privilege of studying the evolution of the French mind and feeling over an unbroken series of years on the spot were aware of the profound transformation which the Republican school system and stable Republican government in general have affected in the points of view of the present generation of Frenchmen.

The winner of the recent contest is Pasteur. Victor Hugo runs him close, having received 1,227,103 votes against 1,338,425 for the world-renowned man of science. But it is characteristic that two men of peaceful pursuits should precede on the list those great Frenchmen who might have appeared at first sight to have most contributed to that special kind of glory known as French. Gambetta follows Victor Hugo with 1,155,672 votes. Then come Napoleon I. and Thiers with 1,118,034 and 1,039,453 votes, respectively. For the sixth place what foreigner would have suggested the name of Lazare Carnot? Yet a moment's reflection will reveal the reasons for his juxaposition with Thiers. The latter has certainly been acclaimed as the 'libérateur du territoire,' and what, after all, was that work of his but the repetition of the incomparable services rendered by Carnot in the organization of the Republican armies of the Revolution? With remarkable persistency, moreover, the French soul to-day vibrates between the primordial patriotic concern as to the defence of the integrity of French soil and its emotion of gratitude in presence of the great peaceful benefactors of the nation in the fields either of science or of art. The order of the names that succeed Lazare Carnot's is the proof of this statement—Curie, the discoverer of radium; Alexandre Dumas *père*, who has charmed several generations not only of Frenchmen, but also of Englishmen; Dr. Roux, the inventor of the diphtheritic serum; Parmentier, the introducer of the potato into France; then Ampère, the father of dynamic electricity; Brazza, the founder of French West Africa; Zola, whose place here thirteenth on the list shows conclusively what France now thinks of his courageous deed as author of 'J'accuse'; Lamartine, a consoling election for those who have always regarded the author of 'The Lake' as the most seductive Frenchman of the nineteenth century; and François Arago, the astronomer and physicist.

This brings us to the sixteenth place, which is held gloriously by Mme. Sarah Bernhardt. But immediately afterwards comes M. Waldeck-Rousseau, MacMahon, the hero of the famous "J'y suis, j'y reste"; President Carnot, who certainly incarnates here a very characteristic conception of civic duty; Chevreul, the chemist; and Chateaubriand, the most eloquently French of all the writers of the last century, unless exception be made for Michelet, who figures twenty-third on this list after de Lesseps. This is a victory which shows how short-lived is French rancour. Ten years ago no *plébiscite* in France would have given such a result, the stupendous energy of the creator of the Suez Canal having been forgotten amid the tempest of the Panama scandals. The next four names are Jacquard, the inventor of the weaving machine, Jules Verne, President Loubet, and Denfert-Rochereau. The list is to be continued until we have before us 502 names. These results constitute a lesson full of instruction not only for the rulers of France, but for foreigners curious as to the temperament and ideals of contemporary Frenchmen.—Paris correspondent of the London *Times*.

CURRENT NOTES ON LAND FORMS

In taking up again the series of 'Current Notes on Physiography,' begun in 1895 in the first of the New Series volumes of Science, the senior reviewer has as associates Professor D. W. Johnson, of Harvard, and Mr. Isaiah Bowman, of Yale. The term physiography was taken, at the beginning of the series twelve years ago, to be the modern equivalent of what has long been known as physical geography, and hence to include a consideration of air and oceans as well as of lands; but as notes on meteorology and oceanography were later handed over to other contributors, and as the attention of the writer of this series of notes came to be more exclusively directed to the forms of the lands, it was found that some readers interpreted physiography as meaning the study of land forms only. To avoid this misconception, the notes now offered are placed under an unequivocal title, for which some writers have suggested the single-word name, geomorphology or geomorphy. However named, the topic here treated is to be regarded only as a large division of physiography, and not as the whole content of that subject. W. M. DAVIS

WESTLAND, NEW ZEALAND

THE chief physiographic features of Westland, a province of the southern island of New Zealand, as described by J. M. Bell ('Geology of the Hokitika Sheet,' Bull. No. 1, N. S., N. Z. Geol. Survey, Wellington, 1906), are: An interior alpine chain, trending northeast, flanked on the west by an uplifted and dissected peneplain, and this followed by a coastal plain, which is interrupted near its inner border by outliers of the dissected peneplain and trimmed along the coast by the sea. The structure of the mountains is synclinal in the main; the highest peaks, 6,000 or 7,000 feet, are of grauwacke or sandstone. The snowfields on the higher slopes and the glaciers which descend into all the higher valleys are much reduced from their quaternary extension. With one exception, the streams issuing from the glaciers do not carry rock flour; this, it is thought, marks the inefficiency of the present comparatively weak glaciers in eroding the rocky beds of their more powerful predecessors.

The present altitude of the flanking peneplain (Wainihinihi) suggests that the alpine chain as well as the peneplain owes its altitude to modern massive uplift, as has been found to be true in so many other ranges. The range is therefore only the less consumed part of an ancient mountain system, of which the peneplain is the more consumed part. This idea is confirmed by the occurrence of occasional elevations which surmount the uplands of the dissected peneplain. The dissection of the uplands has progressed so far in the neighborhood of the principal rivers that the isolated mountainous fragments receive distinctive names. The sides of the larger valleys have been smoothed by glacial action, and in many cases the normal preglacial spurs have been truncated. Cirques in the valley heads, hanging lateral valleys along the main valley courses, and roches moutonnées in the valley floors are frequently seen. The coastal plain, fronting the Tasman sea, is of complex form. In its first cycle a series of marine gravels and clays were elevated and dissected: the dissected plain was then submerged, partly buried under new sediments, and elevated for renewed dissection, with the higher remnants of the earlier plain rising through the surface of the newer one. The present cycle of dissection has been complicated by glaciation. The greatest width of the plain is about fifteen miles, and the elevation of its inner border is 600 feet. I. B.

RIVER TERRACES IN VERMONT

THE theory elaborated by Davis some years ago in regard to the origin of river terraces has been tested by E. F. Fisher, who has applied it to the explanation of the terraces found along West River in Vermont, near its junction with the Connecticut. This theory, as stated by Fisher, is that "the river terraces of New England may be accounted for by the behavior of meandering and swinging streams slowly degrading previously aggraded valleys without necessary change in volume, and by the control exerted here and there over the lateral swinging of the streams through the discovery of rock ledges." It is found that this theory alone is adequate to account for the features noted in the region studied.

Professor Fisher presents the results of her studies in a paper entitled 'Terraces of the West River, Brattleboro, Vermont' (*Proc. Bost. Soc. Nat. Hist.*, XXXIII., 1906, pp. 9–42). The lateral swinging of rivers by meanders, cut-offs and short cuts is considered, and the evidence in favor of a fourth process presented. This latter, called the 'partition process,' occurs when for any reason the swiftest current of a stream is withdrawn from a bank of erosion, with the resulting formation of a sandbar or island not continuous with the eroded bank, and therefore parting the stream. The deeper channel eventually acquires the entire stream, the deserted channel and former island are added to the floodplain, and the stream has thus moved laterally a certain distance.

It is shown that West River, swinging laterally by the various processes just noted, and at the same time slowly degrading its previously aggraded valley, has in its downcutting discovered numerous rock ledges, which have exerted a distinct control upon the extent and character of the lateral swinging, and hence upon the erosion which has produced the terraces. The paper is abundantly illustrated by diagrams and plates as well as by maps and sections based on original surveys, and furnishes an important contribution to the theory that river terraces are not necessarily connected with change in stream volume, or with successive uplifts of the region involved. D. W. J.

FAULT BLOCKS IN THE SIERRA NEVADA

'THE Geomorphic Features of the Middle Kern,' by A. C. Lawson (*Bull. Dept. Geol. Univ. Cal.*, IV., 1906, 397–409), deals with a district of subrecent faulting in the southern Sierra Nevada of California. The case appears to be as follows: A great mountain mass, hereabouts reduced to moderate relief, though hardly smooth enough to deserve the name of peneplain, was raised in the huge fault block of the Sierra Nevada, with a gentle descent to the west; it was subsequently more or less dissected. A local fault in the southern part of the mass, bearing north-northeast, with relative uplift on the west and depression on the east, broke the general westward descent of the range and therefore disturbed the westward flow of the rivers, deflecting some of them to new courses along the fault line, and causing all to aggrade their valleys as they approach the escarpment of the uplift. Breckenbridge mountain is the name given to the uplifted and now dissected block, west of the fault line; Walker, Havilah and Hot Springs valleys are aggraded basins lying at the base of the maturely dissected fault scarp. The basins are separated by 'spurs' which come down from the mountains on the east; the spurs appear to be either residual reliefs of pre-faulting form (modified by subsequent erosion), or indications of inequality of faulting, or both. Breckenbridge mountain is described as "an asymmetrical ridge * * * its western slope is exceedingly gentle and descends uniformly towards the great valley [of California]. * * * Its eastern side is a very precipitous mountain front. * * * The mere inspection of the profile suggests immediately that the mountain is a tilted orographic block and that its eastern front is a fault scarp." This vivid description seems to underrate the part played by erosion; for the front of the block as shown in a photograph slopes only about 25°, and is much scored by large ravines. It would, therefore, seem better to describe the front as 'determined by a fault scarp originally, but now much battered and dissected.' It was the neglect of such specific statement of the work of erosion on the fault-block ranges of the Great Basin that contributed to the misunderstanding of their origin by some observers.

'The Geomorphogeny of the Tehachapi Valley System' is another paper by the same author (*ibid.*, 431–462) on a similar problem of greater area and complication. It is of special value because it considers in some detail the pre-faulting topography of its district—a point that has been too generally neglected in studies of this kind.

W. M. D.

TECHNIQUE OF PHYSIOGRAPHIC DESCRIPTIONS

IT is a matter of common experience to find difficulty in the appreciation of an article, such as the one outlined in the foregoing note, in which various physiographic features are located with respect to villages like Kernville, Havilah and Vaughn, without the aid of even an outline map. Unimportant villages, presumably unknown outside of their own state—and probably not known all through so large a state as California—have no guiding value to most readers; though in the end there is a satisfaction in knowing that Havilah, for example, appears to owe its opportunity in a mountainous district to the flat floor of an aggraded valley, whose stream was there turned from a previous course down the general slope of the Sierra Nevada into a northward path along the base of a fault-block scarp, and hence is now to be regarded as consequent upon the faulting. Again, it is often the case that a reader must follow through the inductive presentation of a more or less intricate problem—if he does not turn at once to the end of the article in the hope of seeing there a summary which tells him concisely what the writer is driving at—and thus finds himself in the necessity of carrying many items in mind before he knows the conclusion on which they bear. Indeed an inductive presentation, appropriate enough for beginners who have little acquaintance with generalities, may give too much importance to the author's personal experience when employed in articles that are designed for mature readers, already informed as to generalities.

As an alternative by which both of these difficulties may be in large measure avoided, it is worth while to consider a method which has some likeness to one that we all know in geometry, where the theorem is stated at the beginning, in order that all the items of the demonstration may be at once appreciated in their bearing on the end thus placed in view. When applied to physiographic descriptions, this method would require the presentation of the explanatory conclusion at the outset. The conclusion would there be stated, independently of local names, in terms of a systematic general nomenclature, from which the reader could easily build up a mental picture of the larger features of the district concerned; for the systematic nomenclature, already familiar from previous study, would easily bring known forms to mind. Details could then be added at their appropriate positions in the larger masses; and as the description thus proceeded, more and more warrant would be found for the conclusion that had been stated in the first place. Villages and roads, hardly known outside of their immediate districts, would be located as occasion offered with respect to the larger masses and their details, instead of *vice versa*. Even if an outline map is added to indicate route and local names, a separate figure, giving in a general way the graphic equivalent of the general conclusions, is of much service; for the route followed by the observer is a relatively subjective detail, and the local names too often only distract from the main description. It is chiefly through the general features that the distant reader can reach the smaller items.

This method might work injury where the conclusion remains in doubt; for the presentation of a doubtful conclusion at the beginning of an article would probably give it too high rank. The method might be inconvenient in cases where most readers of an article were on the ground, and therefore already familiar with local names. But in such a case as the one treated in the article reviewed above, the conclusion is surely safe enough to deserve presentation in systematic terminology in an opening statement; and the local readers are probably only a small minority of the many far-away students who will profit from Lawson's excellent work.

W. M. D.

REPORT OF THE GEOLOGICAL EXPEDITION OF HON. CHARLES H. MORRILL. SEASON OF 1906

THE MORRILL geological expedition of the University of Nebraska for the season of 1906 continued the work of the previous season by developing the bone quarry on University Hill, at Agate, Sioux County, Nebraska. This quarry is situated on the eastern extremity of Mr. James Cook's ranch, which is an extensive one, and probably the best known in the state. In addition to the uplands it contains some ten square miles along the valley of the Niobrara. The high bluffs adjacent to and beyond this model ranch are fossiliferous, while at Carnegie Hill and University Hill there are literal bone beds. The discovery of these beds was made some twenty years ago by Mr. James Cook. They were first visited by the Morrill geological expedition of 1892, when a considerable number of bones were collected, several of which have