

both the out-door animals and the walks. Two days were spent with Herr Carl Hagenbeck, who has at Hamburg a *Thierpark* of his own, quite as large as the Central Park Menagerie of New York. Probably no man living has given more study to the problems of zoological garden construction and the care of animals in captivity, and Mr. Hornaday found him not only willing but eager to explain the mistakes to avoid, as well as the latest developments in the care of animals.

The director of the very interesting garden at Cologne, Dr. Wunderlich, was quite as ready with helpful information as his colleagues of other cities, and some of the features of his establishment were found to possess exceptional interest. The Frankfurt garden contains much that is new and admirable. Prof. Milne Edwards, Director of the Paris *Jardin des Plantes*, also extended every facility for study and examination of this the oldest garden of Europe. Regarding the status of a garden which, like this, is free to the entire public, the experiences and observations of Prof. Milne Edwards were both interesting and valuable. He expressed the opinion that no zoological garden should be kept open every day in the week, principally because it is not best for the collections.

The store of photographs, sketches, notes and plans collected during this tour are now being utilized in the preliminary plans for the New York Park. It is proposed to determine the location and general design of every building and enclosure before the project is finally submitted to the city authorities in January, 1897. The site selected by the Society is the southern portion of Bronx Park, about a quarter of a mile south of the Botanical Garden. According to the Charter granted to the Society by the New York Legislature in 1895, the approval of this selection rests with the Mayor and Commissioners of the Sinking Fund.

CURRENT NOTES ON PHYSIOGRAPHY.

GLACIAL SAND PLAINS ABOUT NARRAGANSETT BAY.

THE geographical significance of glacial action is well exhibited in an account of the 'Retreat of the ice sheet in the Narragansett bay region,' by J. B. Woodworth (*Amer. Geol.*, XVIII., 1896, 150-168). Sand Plains, stretching east and west, repeatedly succeed one another on a north-south line. Each plain was formed rapidly by streams flowing out from the margin of the slowly retreating ice sheet into standing water; whether the standing water was an arm of the sea, then about fifty feet higher than now, or a local water body, is not determined. Each plain has the gently sloping surface, the lobate front and the peculiarly stratified structure of a delta; but at the head the plain falls off northward in a steep slope, associated with kames, and descending to a lowland area that is often boulder-strewn and marked by gravel mounds or occupied by swampy basins drained by sluggish streams; here the ice sheet stood while the plain was forming. This lowland is compared to the 'fosse,' a marked feature on Nantucket, between the head of the great sand plain on the south and the moranic till mounds on the north. The same might be said of the similar fosse on Martha's Vineyard.

A small but well defined boulder moraine in southwest Rhode Island is described by Woodworth and Marbut (*Chicago Journ. Geol.*, IV., 1896, 691-703).

TOPOGRAPHIC TERMS OF SPANISH AMERICA.

THE richness of some languages and the poverty of others in terms descriptive of topographic form has often been remarked. The New Englander never invented a generic name for the numerous drumlins that he early selected for clearing; they were to him simply 'hills.' The Spanish race is more appreciative and a num-

ber of Spanish-American topographic terms are now brought together by R. T. Hill, who illustrates their value by using them in a few sample descriptions (*Nat. Geogr. Mag.*, VII., 1896, 291-302): "An appropriate generic term should be provided for every possible form of the earth's surface, so that when referred to it may be as readily recognized as are the parts of a building in an architectural description."

It is to be noted that the terms quoted by Hill are purely empirical, connoting in their original usage no explanation, although Hill now gives them certain physiographic limitations. They are thus like *delta*, *atoll* and *drumlin*, and are quite unlike *anarregmatic* and *heteroptygmic*, invented by Löwl; *anaclinal* and *cataclinal*, proposed by Powell, and *beheadland* and *inface*, of other authors. The precise definition of the Spanish-American terms by an expert familiar with the ground is a valuable contribution to exact geography; but it is questionable whether a wholesale introduction of foreign words from a single language (if this be contemplated) is desirable in reports on our western country, where such terms may have a certain currency. Instead of adopting Spanish-American words, let us imitate their methods and evolve our own words; or let us be more cosmopolitan and take appropriate words from many languages. For the Spanish *teta*, the Scotch have *pap*; for *huerfano*, there is the French *témoin*, if our own *outlier* does not suffice; for *caleta*, we could import *beck* or *gill*, from north England; for *plaza*, there is the Hindu *khadar*, or the Scotch *strath*, and so with many others. The chief advantage of foreign words is that they are to us meaningless, except in their special use. This advantage is indeed shared by terms like *symptygmatic*, *diacclinal* and *obsequent*; yet such terms are for some reason hardly used by others than their inventors. After all, terms will grow rapidly enough if we have

term-users, studious observers of the face of the earth. Without these the richest terminology is of no avail.

MATURE AND IMMATURE GEOGRAPHY.

THE current style of geographical description is essentially immature, in that it differs from the geography of school years in quantity rather than in quality. There is no reproach in designating the geography appropriate to school children as 'childish,' but it is a reproach to the science of geography to find so great a quantity of material not beyond childish quality in geographical journals intended for mature readers. The general phrasing is, of course, more mature than that adapted to school use, but the geographical terms are hardly increased beyond the small stock gathered from elementary text-books, and the relation of earth and man often has to be inferred by the reader from the diverse and disconnected facts reported by the writer. Mountains and valleys, plains and plateaus, rivers and lakes; high and low, broad and narrow, imposing and tame, fertile and barren—these are fair samples of the nouns and adjectives used by explorers in describing the varied features of the land. Manifest relations, such as the avoidance of rugged mountains and the occupation of fertile valleys, the location of trails over passes, the migration of wandering tribes with the seasons, are commonly enough stated explicitly, as they might be in an elementary school book; but the more advanced discussion of the relation of earth and man is seldom consciously undertaken.

It is plain that the advance of geography to a mature stage, appropriate to the age of adult students, explorers and readers, requires serious preparatory discipline in various directions: First, in the systematic, scientific study of land and water forms, so that new examples of known kinds may be easily recognized and briefly named, and

so that examples of novel, undescribed kinds may be attentively studied when discovered. Second, in the equally thorough study of the manifold types of weather and climate, so that they may be similarly treated. Third, in the equally thorough study of the various relations between earth and man—anthropogeography; or, if desired, between earth and all forms of life—biogeography; for then only can the human or organic element be stated in its geographical relations, and not simply in its anthropological or biological relations. A person who is untrained in these directions may, of course, follow known paths as a traveller, or break new paths as an explorer; but it is questionable whether he should be called a geographer.

GLACIAL ACTION AND SHIFTING DIVIDES IN THE SCHWARZWALD.

G. STEINMANN has recently discussed the glacial phenomena of the Schwarzwald (*Die Spuren der letzten Eiszeit im hohen Schwarzwalde. Freiburg Univ. Festprogr., 1896*). From ice fields above 700 m., many valley glaciers descended to 400 m. Glaciated surfaces, smoothed valleys, cirques, rock basins, terminal moraines and valley gravels are all described in evidence of ice action. The author is led to ascribe the diversion of former headwaters from the Wutach (Danube system) to the Höllenthal (Rhine system) by ice-barring. Map and profiles give clear illustration of the inferred process, which Steinmann naturally prefers to the cataclysmic explanation suggested by Fromherz half a century ago. But the width (about 1 k.) of the Höllenthal across the old divide seems too great to have been gained in post-glacial time. Furthermore, no consideration is given to the normal process of shifting divides by the more rapid gnawing at the steeper headwater (Höllenthal). This slow process is undoubtedly responsible for the repeated examples of

shifted divides between Rhine and Danube headwaters farther northeast in the Swabian Alp, where the 'cuesta,' as Hill might call it, or the 'Stufenlandschaft,' as Penck would say, becomes dominant. It therefore seems probable that normal shifting may find some application in the Schwarzwald also.

W. M. DAVIS.

HARVARD UNIVERSITY.

CURRENT NOTES ON ANTHROPOLOGY.

THE INDIAN QUESTION.

IN practical sociology no question has so long worried the American philanthropists as 'What to do with the Indians.' Even the archæologists—who are popularly supposed to agree with General Crook, that the only good Indian is a dead Indian—have taken it up, and in the last number of the *Proceedings of the American Antiquarian Society* is an article on the subject by Mr. J. Evarts Greene.

He makes the revolutionary suggestion that our government should scrupulously keep its promises to the Indians (!) and then proclaim them minors, keep their property and spend it for them as we see fit.

This latter item we will all gladly undertake; but the former is so totally without precedent that it sounds anarchistic! Are we, because of some short-sighted promise of our fathers, to allow the savage to impede the glorious march of civilization in this great western world? Never!

In the discussion President G. Stanley Hall rather timidly advanced the suggestion that if the Indian is met 'in a sympathetic way' he might develop his own civilization. As if our noble and active youth had time to 'sympathize' with the 'gray barbarian,' when the manifest destiny of the youth is to amass a fortune and live abroad!

Independence and land in severalty form the only honorable platform, and, as we grant that to white, yellow and black citi-