the latter part of June, 1870, explored the valley of the Amazon for a distance of about 400 miles above Pará, as well as the rivers Chingu and Tapazos, two of the principal tributaries of the Amazon. Prof. Prentiss thus had an opportunity of studying the tropical flora, and of making collections for the department. The party returned early in January, 1871. Among the large number of students who have received instruction from him, many have become botanists or teachers of botany, and a noteworthy list of names of these persons might be presented, several of whom occupy some of the most prominent botanical positions in America. In his lectures he was deliberate, clear and concise in his statement, and an easy and fluent speaker. His dignified bearing led many at first to regard him as unsympathetic, but those who came to know him well regarded him as a most delightful companion.

His keen interest in the work of the individual student, and his well chosen words of approval and encouragment kindled enthusiasm among his pupils, and stimulated them to renewed effort. The same gentle and elevating influence, with his cultivated and refined taste, exerted upon his pupils, also was felt in his home and in his social life, and it is to be regretted that the lack of a strong constitution and reserve power, coupled with failing health for a number of years, prevented the production of work and publications which otherwise might have been expected of a man who possessed such culture and natural gifts.

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CURRENT NOTES ON PHYSIOGRAPHY.

WATERWAYS OF ENGLISH LAKELAND.

Under the above title J. E. Marr discusses the origin of the river courses in the lake district of northwestern England (London Geogr. Journ, vii., 1896, 602–621). The chief streams are thought to have been superposed on the deformed paleozoic rocks of the region from an unconformable cover of the younger strata; Marr advocating the former occurrence here of Cretaceous or even of Eocene beds. Subordinate streams are subsequent, being developed along weak strata or along faulted belts. The lake basins, large and small, are not explained by glacial erosion, but by drift barriers; fuller evidence on this point being promised. The gradual retreat of the Pennine escarpment, and the beheading of the Tees headwaters by the steep 'gills' that descend to the Vale of Eden, are incidentally described.

In certain paragraphs there does not appear to be sufficient appreciation of the long perspective of events involved in the history of so old a region as Lakeland. The upper part of river Lune, flowing from carboniferous rocks to the higher-standing paleozoic beds of Howgill fells, is given as an example of antecedent drainage. Several branches of the Lune, that flow from the thrown to the heaved side of the great Dent fault, are likewise explained as antecedent. Here the possibility that many cycles of erosion elapsed since the ancient rocks of the region were deformed and faulted is not clearly set forth. Yet, during these cycles, it is quite possible that the land forms initiated by the ancient deformation, and the river systems antecedent to or consequent upon these land forms, may have suffered extensive alteration; the lands may have been more than once uplifted, dissected and peneplained; they may have been drowned, buried, uplifted and stripped; and the rivers may have lost their initial courses by spontaneous adjustments to internal structures, by superposition, or by displacement through warping of the land surface. The problem is not simple enough to be decided merely by the direction of a stream with respect to the heaved side of a fault.

ORIGIN OF LAKE ZURICH.

THE discussion of this problem by Aeppli has been noticed in SCIENCE. Preller now dissents from some of the conclusions of the Swiss geologists, and maintains that he has identified deposits of 'Deckenschotter' (first glacial epoch) in the trough of the lake valley, and hence that the valley must have attained its present general form by fluviatile erosion before the earliest glacial invasion (Q. J. Geol. Soc. London, lii., 1896, 556–586). He attributes the lake basin to a deformation of the valley, here following Heim and Aeppli. In curious contrast to Geikie and Wallace, who place no value upon such deformation or upon unequal subsidence, Preller allows glacial erosion no share in excavating the lake basin, and does not even present arguments for the exclusion of this important agency. The main points of this essay, the occurrence of 'Deckenschotter' in the deep valley trough, and consequently the great abbreviation of the first interglacial epoch, will doubtless be discussed by Swiss observers on the ground.

DUST AND SAND STORMS.

DUST and sand storms in the western part of the United States are described by J. A. Udden, with special reference to the geological significance of these phenomena (Pop. Sci. Monthly, Sept., 1896). He estimates that the dust in a cubic mile of lower air during a dry storm weighs at least 225 tons; while in severe sand storms the solid contents in the same volume may reach 126,000 tons. At Yuma, Ariz., any high wind, without rain, generally blows clouds of dust. At Ontario, Cal., there are from twelve to forty dust storms in a year. The brief dust squalls in the Eastern States, preceding a thunder storm, are in the arid region replaced by dust storms lasting twenty or thirty hours. One observer gives local color to his phrase: "A strong wind was made thick and yellow by flying real estate."

The physiographic value of the wind in drifting sand is illustrated in an account of the Takla-makan desert, Central Asia, by Sven Hedin (London Geogr. Journ., viii, 1896, 264–278). He finds that shallow lakes occur at the western base of the desert mountains, while the eastern base and slopes of the ranges are encumbered with sand hills, carried by the prevailing northeast or east winds. The widespread sand hills of our western plains were abundantly described by early explorers; for example, Warren, in 1855, '56 and '57, but they are less heard of to-day, when the railroads carry travelers quickly across the plains to the more varied scenery and problems of the mountains.

PHYSICAL GEOGRAPHY OF NEW YORK STATE.

THE American Geographical Society turns attention to home study in an essay by R. S. Tarr under the above title (Bull. A. G. S., xxviii., 1896, 99–129), the first of a promised and welcome series. The State is divided into eight provinces, named Long Island, Gneissic Highland, Taconic, Catskill, New York-Pennsylvania Plateau, Lake Shore Plains, Mohawk Valley and Adirondack; each of these is briefly characterized. The drainage system is then described. The geological development of the state is concisely explained in eight pages, and the essay closes with four pages on climate.

GEOGRAPHY FROM NATURE.

IN the same Bulletin, R. E. Dodge urges the importance of studying 'Geography from Nature' (p. 146–156), and mentions a number of localities near New York city where such study can be undertaken to advantage. Tarr advocates the same method, emphasizing the value of a training in field geology, in an article on the 'Teacher's Outfit in Physical Geography' (School Review, iv., 1896, 161–172, 193–201). With similar intention, the undersigned has prepared

pamphlets on 'The State Map as an aid to the study of Geography in Grammar and High Schools,' published for distribution to all public school teachers by the Boards of Education of Connecticut and Rhode Island.

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CURRENT NOTES ON ANTHROPOLOGY.

ORIGIN OF THE ANCIENT INDIAN ALPHABETS.

In the 'Mélanges Charles de Harlez', Prof. Friedrich Müller has an instructive article on the origin of the alphabets of ancient India. These may be traced to two early forms, one known as the Brahmi, the other as the Kharosthi writing. The latter is limited in area to a portion of northwest India, while the former extended in remote times over a much larger territory.

The paper makes it clear that the Karosthi alphabet was introduced under the Achæmenides from Ariana, and hence is comparatively modern; while the Brahmi at some very remote age was derived from the southern Semitic alphabets, and adapted to the needs of the Aryan tongue by the addition of characters for the vowels.

These views are confirmed by the presentation of a comparative table of the Indian with two north Semitic and two south Semitic alphabets. The analogies are well marked, and render it probable that the route of extension was by way of southern Arabia. The early connection of the region with India is also proved by the close relationship of the arts in photo-historic times.

EXPLORATIONS IN YUCATAN.

In number 10 of the current volume of 'Globus,' the experienced traveler Theobert Maler describes briefly the explorations he has made this year in southern Yucatan and along the upper Usumacinta river. They have been unusually productive in bringing to light ruined cities hitherto unknown. He crossed the boundary of Guatemala at Chuntuki, and reached Lake Peten at San Andres. Thence he made an expedition to Tikal, near which he discovered an important site, Motul de San José. Near Saiyanche, he came upon a series of ruins with enormous carved pillars. After visiting several less conspicuous localities he passed a few days in 'Lorillard city,' where he made some interesting finds.

In going by land from there to Tenosique he reached a massive series of pyramids and walls hidden in the forest, known to the hunters as Piedras Negras, but wholly unvisited by Europeans. This site presents an 'acropolis' of stately proportions with many surrounding lesser structures. In front of the temple were seven beautifully carved steles in good preservation. They were carefully cleaned and photographed. The inscriptions were numerous, showing close analogies to those at Palenque. On some the colors were yet distinct. There is a marked difference between the architectural details of this and the ruins on the river above, probably indicating contrast of secondary culture centers. Maler expects to spend the present autumn and winter in continuing these researches.

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ASTRONOMICAL NOTES.

The report of Dr. David Gill, Director of the Cape of Good Hope Observatory, upon the Geodetic Survey of South Africa, has been presented to the Cape Parliament. The Survey was executed by Colonel Morris, under the general direction of Dr. Gill. The volume contains about 450 pages, folio, and it will be of the greatest interest to astronomers and geodesists. Especially noteworthy is the great amount of work which has been accomplished in a comparatively short time. Such a record of speed, com-