use to some of your readers. I, therefore, give exact reference.

At the session in 'Thermidor, an 11 de la Republique' (1803), 'E. Geoffroy' [Saint Hillaire] presented an 'Extrait des observations anatomiques de M. Home, sur l'echidné,' which was published in the *Bulletin des Sciences de la Société Philomathique* (Tome III., p. 225–227—misprinted 125–127—pl. 14–16). In this communication Geoffroy remarks that '*Ornithorhincus*' (*Ornithorhynchus*) and *Echidna,* though closely related, are generically distinct, but should be united in the same order ('*ordre*'). He reasons as follows:

"Mais, cependant, comme il est démontré, par la dissertation de M. Home, que ces deux genres s'appartiennent par un assez grand nombre de rapports, je les réunis dans le même ordre, sous le nom MONOTRÉMES, avec le caractère indicateur suivant: *Doigts onguiculés; point de véritables dents; un cloaque commun, versant à l'extérieur par une seule issue.*"

In this article was also published the name *Echidna setosa,* as is well known.

Rafinesque, in 1815, in the 'Analyse de la Nature' (p. 57), gave the Latin form Monotremia to the word, adopting it for his '16 famille' of mammals. THEO. GILL.

COSMOS CLUB.

CURRENT NOTES ON PHYSIOGRAPHY.

OVERTHRUST MOUNTAINS OF NORTHERN MONTANA.

THE physiographic features that are associated with various stages of dissection of uplifted, folded or faulted structures are coming to be fairly well known; but the features resulting from the dissection of overthrust masses have as yet hardly gained recognition in systematic physiography. Hence the importance that attaches to certain passages in an account by Willis of the 'Stratigraphy and Structure, Lewis and Livingston ranges, Montana' (*Bull. Geol. Soc. Amer.,* XIII., 1902, 305–352), where a great overthrust has carried a heavy and resistant series of nearly horizontal Algonkian strata more than seven miles eastward over the previously warped Cretaceous strata of the plains. The overthrust mass is now greatly denuded; castellated outliers and promontories stand forward between large embayments, and the embayments are drained eastward over the plains as if the original drainage of the overthrust mass (presumably westward) had been destroyed by the retrogression of the overthrust escarpment. Before the overthrust took place, the relatively weak strata of the plains had been worn down to a peneplain; and it is believed that the Algonkian strata further west had at the same time been reduced to moderate relief. The general uplift associated with the overthrust exposed the plains to dissection, but remnants of their peneplain phase are still well preserved. The more active uplift of the overthrust raised the Algonkian strata to mountain height and allowed their deep dissection, but back of the Front ranges the subdued forms of the earlier cycle are still more or less preserved in the mountainous uplands at heights of 7,500 feet, where the general profile is independent of structure. In the front ranges, where the mountains rise to heights of 9,000 and 10,000 feet, revived erosion, by both water and ice, has caused so great a dissection that no trace is to be seen of whatever subdued forms may have existed before uplift. Here the very general association of the higher summits with anticlinal belts, and of the intermediate longitudinal valley with a shallow synclinal belt, suggests corrugation at as late a date as that of the overthrust by which the general uplift was produced. Strong erosion by heavy valley glaciers is inferred in the Front ranges, where high-cliffed amphitheatres holding lake basins are characteristic features. One of the most notable peculiarities of the district is the location of the continental divide at the eastern base of the mountains, where a branch of Flathead river (Columbia system) rises at the very margin of the plains in the pass that is followed by the Great Northern Railroad.

THE OASES OF SOUF AND M'ZAB.

THE dual character of geography is seldom better represented than in a study by Brunhes on 'Les oasis du Souf et du M'zab comme types d'établissements humains' (*La Géogr.,* V., 1902, 5–20, 175–195); that is, the physiographic environment and the organic response

both receive adequate attention. The oases of Souf are in a region of dunes, the 'erg' of the Algerian Sahara, separated from other settlements by several days' journey; everything here depends on removing the sand until the surface is lowered near enough the groundwater to enable date palms to grow; the heaped-up sand-ridges are as high as the tree tops, and as the wind blows the sand freely, continual labor is necessary to keep the gardens free from drifts. Yet under these highly adverse conditions, the oases contained in 1899 an industrious population of 22,620 souls, owning 6,979 camels, 24,510 sheep, 27,864 goats, and 192,152 palm trees. The Soafas have become expert trailers, for nothing can cross the sands without leaving a track. Theft is, therefore, less common here than elsewhere in the desert, for the thief can be so easily followed and discovered that thieving does not pay.

The oases of M'zab are in the stony desert or 'hammada' of a calcareous plateau. Here wells are dug in the valleys, and water is raised day and night for irrigation; rain is stored in reservoirs and led about in canals. The gardens have a luxurious vegetation; dates, figs and other fruits are produced. The population of seven M'zab towns in 1896 was 25,254 souls, owning 490 camels, 5,732 sheep, 3,837 goats, and 166,261 palms; besides these there are 5,795 semi-nomads with a much larger property in live stock. A fine palm is worth $100 or more; many of the Mozabites are rich. From both of these crowded populations emigrants go out northward to less arid lands. For both groups of oases Brunhes emphasizes an important fact: the people are not savages supplying their simple wants in a rudimentary manner; they are in an advanced stage of culture, their arts are highly elaborated, and are wonderfully adapted to making the best use of unfavorable surroundings, and their caravans maintain an active trade across the desert.

THE OTHER HALF OF GEOGRAPHY.

IF geography be concerned with the relation of the earth and its inhabitants, and if physiography be taken as the study of the physical environment of life, or the inorganic half of the total subject, it is apparent that there is no convenient name for the other half, in which the response of the inhabitants to their environment is considered. It is also true that there is to-day no well-organized and systematic treatment of the other half, although partial treatments abound, especially of the human elements of the subject, as in the works of Ratzel. There is good reason for thinking that the progress of geography in the century now opening will remedy these deficiencies; that the organic responses appropriate to many kinds of environments will be carefully collected and classified; that the attention of the geographical observer will be equally directed to both halves of his subject; and that geography will be greatly benefited thereby.

The preceding note gives a good example of a curious response to a desert environment, reaching even the moral sense. The rapid development of the study of physiography in our national surveys of the western semi-arid region, where the relation of structure and form is laid bare, exhibits a response of an intellectual kind to a climatic environment. Lugéon has suggested that it is not —as some have thought—an inherent spirit of independence in the Swiss that prompts them to maintain separate organizations in the minute village communities of the Alpine valleys, but that the physiographic opportunity for village settlements requires the development of many small communities instead of a few larger ones, and thus aids in the development of the spirit of independence. Fewkes has given an admirable example of the response of religion to environment in the 'Tusuyan ritual' (*Smithsonian Rep.*, 1895, 683–700). The systematic exploration and analysis of this phase of geography deserves much more attention than it has yet received. A fuller consideration of this aspect of the subject is given in two essays by the undersigned: 'Systematic Geography' (*Proc. Amer. Phil. Soc.*, XLI., 1902, 235–257) and 'The Progress of Geography in the Schools' (*Nat. Soc. Sci. Study Education*, I., Pt. II., 1902, 7–49). W. M. DAVIS.