adopted is that each word shall differ by at least two letters from every other word in the code, and no word of more than ten letters shall be included. The words are taken from all languages, many of them from the Spanish, and the difficulty that seems to have suggested to Prof. Holden the desirability of a change has come from the common use of the telephone in the transmission of telegraphic messages to the observatory.

The words of the despatch have to be spelled out over the telephone, and in many cases the code words are entirely meaningless to the ordinary operator. Prof. Holden suggests a condensation of the code by which the forty thousand words, occupying two hundred pages, may be covered by two octavo pages, the first consisting of five hundred prefixes, and the second of ninety-nine affixes; the prefixes each of three letters, and the ninety-nine affixes each of five letters; so that by these two tables any number of five figures less than fifty thousand can be made up of a cipher word always of eight letters. It produces, of course, pure jargon, but this is no worse than most of the words in the old code.

The idea of control words to insure the accuracy of the telegraphic transmission of important data, due to Ritchie and Chandler, is, of course, retained in the suggested modification of the code published by Prof. Holden, as well as the list of phrases of the original code.

Prof. Holden publishes as an appendix to his code the circular of the Central Bureau of astronomical telegrams of Europe, from Prof. Kreutz, of the Kiel Observatory, which has not apparently been published hitherto in America.

CURRENT NOTES ON PHYSIOGRAPHY.

ICE WORK, PAST AND PRESENT.

PROF. T. G. BONNEY, of the University College, London, contributes a work of the above title to the International Scientific Series (Appleton, 1896). Its three parts discuss existing evidence of ice work from Alpine, Arctic and Antarctic glaciers, traces of the glacial epoch, and theoretical questions. The two first parts are not clearly separated, for the ancient moraines of Switzerland are described under both. Although containing much interesting material, the work is rather disappointing in its deficiency of thoroughly scientific quality. No one could learn from the associated accounts on the Deckenschotter of the Uetliberg and the Zurich moraine that an enormous erosion interval separated the forma- of the two deposits, and that the former is only a remnant of a widespread sheet of drift. After the habit of the English school, the geological structure of till is largely dwelt upon, with too brief explanation of its geographical effects. A disproportionate amount of space is given to the Parallel Roads of Glen Roy; and too much authenticity is allowed to Lake Ohio by the reproduction of Claypole's hypothetical map, without reference to the very grave doubts that have been expressed as to its verity. Some once-controverted but now-settled questions are treated in a still doubting manner that hardly represents the present status of glacial geology.

DISSECTED BASALT PLATEAUS OF NORTH-WESTERN EUROPE.

SIR A. GEIKIE, for many years a student of the ancient volcanic rocks of Scotland and neighboring countries, now presents an outline of his results. (Quart. Journ. Geol. Soc., LII., 1896, 331–405.) These are largely concerned with structural features—the lava flows, the vents, the sills and dikes, the gabbro and granophyre intrusions—but they also include matters of physiographic interest—the rivers of the volcanic period, the effects of denudation, and particularly the parallel drawn with modern volcanic

action in Iceland, as illustrative of the Tertiary condition of western Scotland. Not from central vents, like Vesuvius and Etna, but from fissures, have the Icelandic lavas been chiefly poured forth; the volcanic cones there are generally low, and yet from these little monticules great floods of lava have issued, forming wide volcanic plains. Plateaus are thus built up, suffering more or less dissection as they grow, sometimes assuming the form of vast domes with gentle slopes to all sides. Great volcanic plateaus of similar structure once existed where dissected remnants now form Skye, Mull and other island outliers west of Scotland or further north in the Faroes. Correlations of this kind between regions of similar structure, but in different stages of geographical development, are particularly instructive to the study of physiography.

THE GEOGRAPHY OF SILESIA.

Prof. Joseph Partsch, of the University of Breslau, has lately prepared a volume on Silesia (Schlesien: eine Landeskunde für das deutsche Volk auf wissenschaftliche Grundlage; Breslau, Hirt, 1896. 420 p.) to which the special student of European geography may refer with much advantage. It treats, among other topics, of geological structure, evolution of the land surface, drainage, climate, plants, animals, population, and Silesia as a seat of war. The plan of the more strictly geographical chapters is similar to that followed in the same author's work on Greece jointly with Naumann; that is, each subdivision is directly described for itself, rather than in its systematic relation to other geographical areas of similar structure, but perhaps in different stages of geographical development. The chapter on the evolution of the land surface is essentially a geological history of the region; not limited to the evolution of the existing surface forms, but beginning with the fundamental gneiss. The importance of northern drift as a factor in determining surface form even so far south as to the Beskiden (Carpathians) in latitude 50° is for some reason more surprising than it should be to us, who have plentiful glacial drift in latitude 40°.

NOTES.

Boule's work on the glaciation of Auvergne, noted in Science, April 17, 1896, from his brief report in the *Comptes rendus*, is now more fully described in the *Annales de Géographie*, v., 1896, 277–296, with excellent illustrations and several maps. This article would lead the scientific tourist to many points of interest in the neighborhood of the great volcanic slopes of the Cantal.

W. F. Ganong describes a delta at the outlet of Lake Utopia, New Brunswick, formed when its outflow of clear water is reversed to inflow of muddy water at time of flood in the neighboring Magaguadavic river (Occasional papers, No. 2,* New Brunswick Nat. Hist. Soc.).

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CURRENT NOTES ON ANTHROPOLOGY.

A STUDY OF THE BASQUES.

One of the memoirs published last year by the Anthropological Society of Paris was by Dr. Collignon, on the Basques. The thorough manner in which that investigator does his work is well known to all students of the ethnography of France, and the present memoir is a good example of it. He begins by referring to the obscurity which has reigned concerning both the physical type of the Basques and the affinities of their tongue. His own personal ob-

* Protest should be entered against the publication by the Council of the above-named Society of such stray leaves as this 'Occasional paper, No. 2.' There are to-day plenty of regularly established mediums of publication in which two-page essays may be issued, thus avoiding the serious difficulty of preserving and protecting loose sheets.