definition, chosen for its brevity. Dewar and Finn[1] say that they are "those characters which differ with the sex, but are not directly connected with the act of reproduction." Darwin[2] defines them very similarly, but then adds:[3]

> There are, however, many animals in which the sexes resemble each other, both being furnished with the same ornaments, which analogy would lead us to attribute to the agency of sexual selection. . . . It is probable that the ornaments common to both sexes were acquired by one sex, generally the male, and then transmitted to the offspring of both sexes.[4]

As far as I can understand, however, he is talking merely of structures, not of those combinations of a structure with the instinct for displaying that structure which constitute the real secondary sexual *characters*.

The grebe is, so far as I know, unique in this—that structures which are only used in courtship (*i. e.*, which must *in origin* be due to sexual and not to natural selection) are now not only the common property of both sexes, *but are actually used in display, and used in exactly the same way by both sexes.*

The question of nomenclature remains; what are we to call characters like these, that have arisen through sexual selection, but exist equally in both sexes? The term "secondary sexual," as we have seen, will not do. A word does exist, however, which is perfectly applicable, and that is the word *epigamic*.[5] It would indeed be more satisfactory if we were always to use the term *epigamic* of all characters that owed their origin to sexual selection, whether they are found in one or both sexes, and keep the term *secondary sexual* in the wider sense that it often has now, to include *all characters peculiar to one sex except the primary sexual characters* (of gametes and gonads) *and the accessory sexual characters* (of genital ducts, copulatory apparatus, etc.). This would cover such epigamic characters (the great majority) that are confined to one sex, as well as many other characters, such as the mammæ of female mammals or the wingless condition of various female moths, which are not epigamic, nor accessory in the strict sense of directly helping the union of the gametes, but have been evolved through natural selection to perform some special function of their own.

[1] "The Making of Species," 1909, p. 298.

[2] "Descent of Man," 1871, p. 253.

[3] *Ibid.*, p. 277.

[4] There is no necessity to multiply quotations; I will merely refer the reader to some apposite passages, *e. g.*, Poulton, "Essays on Evolution," 1908, pp. 379, 380; Archdall Reid, "Laws of Heredity," 1910, p. 145; Weismann, in "Darwin and Modern Science," 1909, pp. 43, 48; in "The Evolution Theory," 1904, Vol. I., pp. 232, 233.

[5] Poulton, *loc. cit.*

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Balliol College, Oxford,
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## Volcanic Action in the Black Hills of South Dakota[1]

In recent work on geology of the northern Black Hills I have found a sheet of obsidian and associated agglomerates which doubtless are the products of surface extrusion. The locality is 1¼ miles northwest of Roubaix or 6 miles south by east of Deadwood in the midst of a large area of pre-Cambrian schists. The many large masses of igneous rocks in this region are well known from descriptions by Newton, Crosby, Jaggar and others, but so far as recorded they are of intrusive nature and of early Tertiary age. The White River deposits (Oligocene) in and about the Black Hills contain large amounts of fragments of these igneous rocks, the products of erosion, and also much volcanic ash of contemporaneous origin. The source of this ejected material has always been a problem, and while the effusive rocks near Roubaix can not be precisely correlated with White River deposits they appear to indicate that there was volcanic action in this region in mid-Tertiary time.

The obsidian is a sheet about 15 feet thick and of small extent. Its smooth lower surface lies on a one-foot layer of impure volcanic ash which is underlain by a thick mass of agglomerate or flow breccia of apparent rhyolite

[1] Published by permission of the Director of the U. S. Geological Survey.

fragments. This breccia is in masses surrounded by a deposit of finer-grained agglomerate which is nearly a square mile in extent. Other smaller masses of similar agglomerates were found five miles southeast of Roubaix. These occurrences are remnants of larger masses, for they have been subject to extensive erosion. The original vents are not preserved but their stocks are now represented by some of the dikes which occur at many places in the schists or overlying Paleozoic rocks.

These facts suggest that the Black Hills may have been the source of part if not all of the large amount of the volcanic ash which occurs intermixed and interbedded in the deposits of Oligocene age as well as in later formations in various parts of South Dakota and Nebraska.

N. H. DARTON

U. S. GEOLOGICAL SURVEY

## *INTERNATIONAL CONGRESS OF PREHISTORIC ANTHROPOLOGY AND ARCHEOLOGY*

THE fourteenth International Congress of Prehistoric Anthropology and Archeology was held in the aula of the university, Geneva, September 9–14, 1912. On the evening of the 8th, Professor Eugene Pittard, president of the congress, and Professor Edouard Naville, honorary president, received the members informally at the Atheneum. The attendance was good throughout the week, 149 delegates being present from 112 institutions representing at least 20 nations, 12 of which sent government delegates. A. Hrdlička, George Grant MacCurdy and Charles Peabody represented the United States government. The total enrollment was nearly 600.

It had been over six years since the last congress (Monaco) was held. In view of the immense progress made in the domain of the prehistoric during this time, the program was exceptionally long and interesting. As no provision had been made for a division of the program into sections each treating a related group of subjects, it was necessary not only to limit each speaker to ten minutes, but also to abridge the discussion far beyond a desirable limit. Fortunately, however, many of the papers were supplemented by generous exhibits of original specimens, casts, drawings, plans, photographs, etc., for which the university furnished suitable cases and ample wall space conveniently located. The large collection of original specimens from Spain including remains of *Elephas antiquus* associated with a Chellean and perhaps pre-Chellean industry, and the Celti-iberian sepultures, exhibited by the Marquis of Cerralbo deserve special mention. Other exhibitors, to all of whom the thanks of the members present are due will be indicated in the program that is to follow.

The following amendments to the constitution recommended at the Congress of Monaco, were adopted at the first seance of the Geneva Congress and went immediately into effect:

> The official language of the congress is French; it is used for the publication of the proceedings and the correspondence of the commission of organization and of the committee. However, the members of the congress may, in their letters, communications or readings, make use of German, English or Italian. Communications in these three languages shall be accompanied by a résumé in French, and the discussions before the congress shall continue to be made in French.
>
> The maximum number of communications which any author may enter on the program is limited to four.

At the same seance an anthropometric commission consisting of the following members was appointed to continue the work of unification of anthropometric measurements begun at the Congress of Monaco[1] and to report at the close of the session:

MM. Chantre (France), Czekanowski (Russia), Duckworth (Great Britain), Frassetto (Italy), Giuffrida-Ruggeri (Italy), Godin (France), Hillebrand (Hungary), Hoyos Sainz (Spain), Hrdlička (United States), Loth (Russian Poland), von Luschan (Germany), MacCurdy (United States), Manouv-

[1] Compte Rendu, Congr. intern. d'anthr. et d'archéol. préhs., 13e session, Monaco, 1906, tome II., pp. 377–394.