mœvus conveyed a very imperfect impression of its actual form and proportions. Several serious errors were committed by the restorer, the most important of which was the implanting of two of the cervical vertebræ in the tail. The author, therefore, considered it advisable to completely remount the animal, and this has been done by Mr. Adam Herman and Mr. Martin, of the American Museum, at an expenditure of five months' time.

The animal is placed as nearly as possible in a natural position. It shows that the feet were not plantigrade, or soled upon the ground, but digitigrade, as in the Tapir. The body is characterized by the great convexity of the back, characteristic of the carnivore and of all early ungulates. A further carnivorous feature is the great development of the hind quarters and of the tail. The disproportion between the hind and the forequarters is heightened by the extremely small size of the head, containing a brain which was about the size of that of the opossum, which has been fully described by Cope.

(24) *Homologies and Nomenclature of the Elements of the Molar Teeth.* By Professor Henry F. Osborn, Columbia University, New York.

After a brief review of the tritubercular theory of Cope, the writer spoke of his hypothesis advanced at the American Association meeting in 1891, that the multitubercular teeth of the Multituberculata and Monotremata were also of tritubercular origin. This hypothesis seems now to be confirmed by the teeth of Gomphodontia, especially of the genus *Diadermodon*, by Professor Seeley in the Narvo Beds of South Africa, of Permian age.

The various Gomphodonts in these beds present molar teeth of more or less regular tritubercular pattern. Related to them in skull structure is Tritylodon—a typical multituberculate. This indicates that from the trituberculate Gomphodonts Tritylodon and other multituberculates may have taken their origin. The paper was discussed by Professor Minot and Dr. Gill.

(25) *Modification and Variation and the Limits of Organic Selection.* By Professor Henry F. Osborn, Columbia University, New York, and Professor Edward B. Poulton, Oxford University, England.

[An account of these papers will be published in a subsequent issue of Science.]

(26) *Geographical Distribution of the Golden Warblers.* By Harry G. Oberholser, Biological Survey, United States Department of Agriculture, Washington, D. C.

The so-called Golden Warblers form a group of some twenty-five species and subspecies in the genus Dendroica, and are distributed over almost all the Nearctic region, together with the Antillian, Colombian and Central American subregions of the Neotropical. The greatest differentiation of forms occurs in the West Indies, where the distribution of many of the species is somewhat anomalous.

(27) *Modern and Older Theories of Mimicry Illustrated by Butterflies of the Genus Hypolininas.* By Professor Edward B. Poulton, Oxford University, England. [To be published in Science in abstract.]

Wm. H. Ashmead,
Press Secretary.

FIELD WORK OF THE UNITED STATES COAST AND GEODETIC SURVEY.

Most of the reports from the field parties of the United States Coast and Geodetic Survey are now in, and it is possible to summarize the work for the fiscal year ending June 30, 1897.

The operations have been, as usual, widely distributed, and cover localities on the Atlantic, Gulf and Pacific coasts, including Alaska. Much work has also been

done in the interior. Thirty land and ten parties operating on the sea were on duty during the year. The results of the labors of the land parties were as follows:

The new topographical survey of the shores of Buzzard's Bay, Massachusetts, finished.

San Francisco Harbor and Bay, nearly finished.

The Los Angeles base line in California, connected with the existing triangulation and a scheme developed by means of which a grand scheme of trigonometrical figures may be carried northward. This base, although measured years ago, had never been adequately transferred to the triangulation.

The chronometric determination of the longitude of Unalaska and Kadiak Islands, on the Aleutian Peninsula, Alaska.

The determination of the magnetic elements (declination, dip, and horizontal intensity) in nine Western States, principally in California, Montana, North and South Dakota and Nebraska.

Precise levelling in Kansas and Mississippi.

Trigonometrical work in Maryland and Delaware, completing the last direct triangulation on the Transcontinental Arc from Cape May to San Francisco.

Measure of a base at Salt Lake City with the new Duplex base apparatus.

Topography on Long Island.

Base measures in Kansas.

Triangulation at the mouth of Chesapeake Bay.

Topography and triangulation at the mouth of the Patapsco River, and on the Chester River, Maryland.

Reconnoissance in Nebraska.

Telegraphic longitude in Massachusetts, New York, Washington and Canada.

Hydrography, topography and triangulation of Lake Pontchartrain, Louisiana.

Traverse line across the Peninsula of Florida from Fernandina to Cedar Keys to connect the Gulf and Atlantic Coast triangulation.

Continuation and completion of the oblique arc along the Appalachian Chain from Maine to Mobile.

New survey of the Pribilof Islands, Bering Sea.

Connection of longitude station at Montreal with primary triangulation in New England.

Other unimportant operations were also carried on, the above being a general summary of the greater divisions of the work.

The work of the parties operating from vessels was:

Hydrographic work on the New England coast and on the Chesapeake Bay.

Special surveys on the outer bar at Brunswick, Georgia, and Long Island Sound.

Examination of Savannah River Entrance and the mouth of Elizabeth River.

Survey of Lake Pontchartrain, Louisiana, and Brazos River, Texas.

General Hydrographic work in Alaska and in San Francisco Bay.

Special work has also been done in laying out speed trial courses for testing the battleships and torpedo boats of the navy; soundings for new positions of light vessels, current observations, etc., etc.

As will be seen, the greatest activity in the land parties has been displayed in the fields of Topography, Triangulation and Magnetism. The original scheme of primary telegraphic longitudes has now been completed and the definitive values of the standard longitudes of the United States have been deduced.

The principal work of the sea parties has been on the coast of New England, in Alaska and in San Francisco Bay.

The operations during the fiscal year just closed have been productive of important results from both commercial and strategic standpoints. The completion of the survey of Buzzard's Bay, the beginning of the work near Baltimore and the rapid progress made at San Francisco are all in the interest of national defense, while the accurate determination of the longitude of Unalaska and Kadiak Islands furnishes a check to the reckoning of all vessels bound from Sitka to the mouth of the Yukon. The new speed trial courses are valuable auxiliaries to the navy, and examinations for new positions of light vessels are necessary alike to the naval and merchant marine.

The aid given to the Seal Fishery Commissioners in the way of transportation, etc., to the Guadaloupe Islands, and the cooperation with the engineer department of the army on the Brazos River, Texas, must be reckoned as not the least important incidents of the work from a commercial and

practical point of view. The progress made in all branches of the work, although comparing favorably with the operations of previous years, has not been as apparent as usual on account of many pieces of patch work made necessary by the rapid strides in the past. The work across the peninsula of Florida from Fernandina to Cedar Keys was broken off at the beginning of the Civil War and remained untouched until last winter. It will be completed during the coming season. The Transcontinental Arc begun in 1871 has just been completed by the direct chain of triangulation from Washington to Cape May, thus cutting off the older and less reliable work by way of Delaware Bay. This work, of the highest importance in international geodesy, together with the completion of the oblique arc from Maine to Mobile, already mentioned, marks an era in American geodesy and contributes new and valuable information as to the size and shape of the earth.

P.

CURRENT NOTES ON PHYSIOGRAPHY.

THREE DRIFT SHEETS OF IOWA.

The work of Calvin on Iowan drift is continued by Bain (Iowa Geol. Survey, VI., 1896, 429–476), whose report is of much geographical interest. The Kansan drift forms the surface of rather more than the southern half of the State; it is deeply weathered, the granite boulders being badly rotted and the limestone leached out; the surface is well carved by streams and holds no lakes. The Iowan drift occupies somewhat less than the northern half of the State; it is also well dissected, but less completely than the Kansan, and sloughs remain here and there on its surface. No moraine is found along its margin; but extensive loess deposits are spread forward from it over the dissected surface of the Kansan sheet. The Wisconsin drift is well developed in a strong lobe that invades the State to a little south of its center, and thus overlaps both the older sheets. Its surface is much less dissected by valleys, and many lakes remain upon it. Its border is marked by a strong moraine, from which extensive gravel trains are prolonged down the outer valleys. The diversity of the glacial period and the considerable value of inter-glacial epochs thus find much support from the Iowan geologists.

A special discussion of erosion curves accompanies the account of the Kansan drift topography; and it is pointed out that many of the rivers of to-day, although occupying valleys carved in the drift, nevertheless follow preglacial or interglacial courses, and are therefore to be called resurrected, following McGee's use of this term.

MOUNT ST. HELENS.

Lieut. C. P. Elliott, U. S. A., gives an interesting account of Mount St. Helens (Nat. Geogr. Mag., VIII., 1897, 226–230), from which many items appropriate to its class may be gathered. The mountain stands west of the Cascade range divide, its truncated cone reaching a height of 8,608 feet. Its scopes have been dissected by ravine streams and repaired by lava streams, the latter often interfering with the escape of the former and producing lakes and swamps. The ravines have the radial course usual on dissected volcanoes. The flows of lava and volcanic sand descend from near the mountain summit, running around hills as a river passes islands, and 'filling up the country' in their course. Spirit lake, five miles northeast of the summit, occupies a valley dammed by sand, ashes and pumice, which are there very plentiful. A flow that descends five miles to the southwest of the summit first nearly fills in the depression toward Green buttes; then passing around the buttes, the lava unites and fills in between Goat mountain and a ridge northeast