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

of it, forming a large swamp; further on it obstructs a valley on the south, forming Lake Merrill, and finally Kalama river falls over the end of the flow. Many large springs emerge from beneath the lava flows.

MAARE OF THE EIFEL.

HALBFASS presents the results of soundings and temperature observations in the eight Eifel maare (Petermann's Mitt., XLIII., 1897, 149–153; with more detail in Verh. Naturh. Vereins, Bonn, 1897). A ninth maar (Wanzenboden) is only two or three m. deep, and in part thickly occupied with reeds; the Hinkelsmaar and many other basins are now converted into dry meadows. Those which still hold water deepen from margin to center; at first gradually, then more rapidly with slopes of 20–30°, and again gently near the center. Only the Laacher See is large enough to have a well defined flat central floor. The Pulver maar is the deepest (74 m.) of all German lakes outside of the Alps. The shore lines approach a circular outline, but the Meerfelder maar is like a half moon, occupying only half of its circular basin. Much statistical statement of fact with arithmetical comparison of the different maare is given. The life-history of the lakes is not directly considered.

THE EASTERN ARCTIC SEA.

SUPAN gives a review of Nansen's polar expedition, from which the following notes on the eastern Arctic sea (the northern part of the 'eastern hemisphere') are taken (Petermann's Mitt., VII., 1897, 158–163). Sheets of ice occupy much of the surface, continually drifted by currents and winds; now torn apart and opening water channels, now pressed together and forming walls and ridges. The latter reach heights of nine m., and offer the greatest obstacles to sled travelling. The remnants of former ridges drift about in berg-like masses with steep walls. The drift ice here is contrasted with the much thicker pack ice west of Greenland. The winter snow began melting in June, and the firm drift ice was not revealed till the end of summer. Its color is then a dirty brown, caused chiefly by mineral dust. Fresh water pools are formed on the ice surface, surprisingly rich in microscopic organisms. The ice increased in thickness slowly through the winter to June, varied until August, and decreased to early winter. Thickening in summer is ascribed to freezing underneath of fresh water supplied by melting snow above. In early spring the ice was coldest, from —16° to —30°C. In summer it approached the melting point, and then became plastic, so that crushing took place without sound; bending frequently replaced breaking.

The discovery of the great depth of the Arctic, 3000–3900 met., where traversed by the Fram, is regarded as the most important geographical result of the expedition. Polar lands are, therefore, not to be expected. A sample of serial temperature soundings gives a surface layer 200 m. deep at —1°C.; a second layer, 660 m. thick, with mean temperature of +0°.22 C., and about 3000 m. of deep water with mean temperature of —0°.57 C. The surface layer has least salt, and the intermediate layer most. The latter is supplied from the North Atlantic, dipping beneath the Arctic surface layer because its density is determined by salinity rather than by temperature.

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CURRENT NOTES ON ANTHROPOLOGY.

ARREST OF DEVELOPMENT IN HUMAN GROUPS.

ON this subject Professor Schrader has a curious article in the *Revue Mensuelle* of the Paris School of Anthropology. His conclusion is that the failure to advance or the actual retrogression of peoples and societies is a question of lack of adaptation to environment. This is not new; indeed, it is