tronomy, E. E. Barnard, University of Chicago; Physics, Frank P. Whitman, Adelbert College, Cleveland; Chemistry, Edgar F. Smith, University of Pennsylvania; Mechanical Science and Engineering, M. E. Cooley, University of Michigan; Geology and Geography, H. L. Fairchild, Rochester University; Zoology, A. S. Packard, Brown University, Providence, R. I.; Botany, W. F. Farlow, Harvard University; Anthropology, J. McKeen Cattell, Columbia University; Economic Science and Statistics, Archibald Blue, Director of Bureau of Mines, Toronto, Canada.

Secretaries of the Sections—Mathematics and Astronomy, Alexander Ziwet, University of Michigan; Physics, E. B. Ross, Wesleyan University; Chemistry, Charles Baskerville, University of North Carolina; Mechanical Science and Engineering, Wm. S. Aldrich, University of West Virginia; Geology and Geography, Warren Upham, St. Paul, Minn; Zoology, C. W. Stiles, Department of Agriculture, Washington, D. C.; Botany, Erwin F. Smith, Department of Agriculture, Washington, D. C.; Anthropology, M. H. Saville, American Museum of Natural History, New York City; Economic Science and Statistics, Marcus Benjamin, U. S. National Museum, Washington, D. C.

On Friday evening there was a general session at which the usual complimentary resolutions were passed, after which the 46th meeting of the Association was declared adjourned. As has been said, this was an unusually good meeting. The scientific papers were above the average, and the sections were well attended by citizens of Detroit as well as by members. A number of the distinguished foreign guests gave papers and took part in the discussions.

During the Association week meetings were held by the American Chemistry Society, the Society for the Promotion of Agricultural Science, the Society of Economic Entomologists and the Michigan Academy of Sciences. Some of these meetings were held jointly with sections of the American Association. It is believed that by offering proper courtesies to the affiliated societies more of these joint meetings can be held, to the great advantage of the Association and of the societies themselves.

ASAPH HALL, JR.,
General Secretary.

CURRENT NOTES ON PHYSIOGRAPHY.

THE ATHABASCA REGION.

TYRRELL'S report on the country between Athabasca lake and Churchill river (Geol. Surv. Canada, Ann. Rep., VIII., for 1895–1897) divides the region into Archæan and Cambrian areas. The first is occupied by low rocky hills and ridges from fifty to a hundred and fifty feet in local relief, separated by drift-covered depressions, wooded or interrupted by small irregular lakes. The second is a monotonous district of horizontal sandstones, forming a sterile plain, thinly wooded, with few lakes. The absence of deep valleys and the occurrence of lakes and rapids shows that the drainage is very new. It is suggested that Athabaska lake occupies a pre-glacial valley, excavated along the northern boundary of the sandstone area, when the land thereabouts stood higher or sloped more to the west. Till is scanty on the Archæan area, but more plentiful on the sandstone plain. Rugged moraines are found further southwest, like Duck and Riding mountains, in Manitoba. The most interesting drift hills of the region are steep, narrow ridges, half a mile or more in length, averaging 120 feet in height, standing parallel to the line of glacial motion and rounding down gently at both ends. Unlike drumlins, they consist of unassorted rock flour mixed with boulders, and they all lie on the floors of large post-glacial lakes, now drained. They are explained as deposits in quiet water occupying ice gorges, and Tyrell calls them

'ispatinows,' the Cree work for a conspicuous hill. They seem to be similar to the 'paha' described by McGee in Iowa. The prefix 'Hyper' is used with the name of existing lakes, to indicate their glacial expansion to greater height and area.

SENECA COUNTY, N. Y.

THE Annual Report of the State Geologist of New York for 1894 (lately received) contains an account of Seneca county by D. F. Lincoln. The northern part of the county includes a part of the Ontario plain, varied chiefly by long narrow drumlins. Southward from the plain a gradual ascent is made to the upland, here dissected by the deep sub-parallel troughs of Cayuga and Seneca lakes. Near the southern border, great flat hills rise several hundred feet above the upland, these being outliers of Portage strata from the higher Allegheny plateau further south. The slope from the upland into the lake troughs is notably smooth, being furrowed only by post-glacial ravines in which cliffs and falls are picturesquely developed; but in pre-glacial time the slopes must have been more furrowed, inasmuch as several side valleys now appear to be obliterated by drift filling.

DRAINAGE MAP OF RHODE ISLAND.

THE 18th Annual Report of the Rhode Island Board of Health contains a contour map of the drainage areas on a scale of four miles to an inch, based on the topographical State map and prepared by D. W. Hoyt. The terminal moraine near the south coast forms a divide by which the Pawcatuck and its tributaries from among the hills are turned westward, instead of flowing directly to the ocean. It is noted that Moshassuck valley, west of Providence, was probably the pre-glacial course of the Blackstone, which now flows east of the city into the head of Narragansett bay. The present course of the river is interrupted by ledges, furnishing water power that is actively employed at Valley Falls and Pawtucket; the inferred pre-glacial course is obstructed by drift, in which driven wells are supplied with water from a 'subterranean Blackstone.'

POPOCATAPETL AND IXTACCIHUATL.

A SERIES of interesting and well illustrated observations on the two great Mexican mountains, by O. C. Farrington, forms publication 18 of the Field Columbian Museum, of Chicago (Geol. Series, Vol. I., No. 2). The upper cone of Popocatapetl, clothed with sand and snow, has a nearly uniform slope; the middle portion is carved by numerous channels; "the lower portion is involved in the tortuous folds which make up the Sierra." The summit crater is a pit, 2,000 feet in greater diameter, 1,300 feet in lesser diameter, and from 800 to 1,500 feet deep, from whose walls of discordant lava beds and breccia rocks continually fall to the bottom. The cumulus clouds that frequently envelop the mountain flank in the afternoon are (erroneously?) ascribed to cooling caused by snow. Ixtaccihuatl is described as of more massive and uniform structure, and without distinct crater, as if the product of fissure erruption; but as mention is made of lava beds on its flanks, weathered to deep soil near the base and dissected into ragged spurs on the slopes, it seems possible that long continued erosion may be the chief cause of its unlikeness to volcanoes of more ordinary form. The snow reservoirs near the summits suggest the same conclusion.

WADIS OF TRIPOLI.

FURTHER notes on the Tripoli hill range, by H. S. Cowper (London Geogr. Journ., IX., 1897, 620–638), contain, among other items, a number of illustrations and brief descriptions of the wadis that descend toward the Mediterranean coast. They dissect the hill country, emerging by gate-

like outlets in its north-facing escarpment, and then traverse a sloping plain that descends to a barren sandy strip before reaching the sea. They form the natural paths of travel by which the hill tribesmen always go to and from the coast.

W. M. DAVIS.

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CURRENT NOTES ON ANTHROPOLOGY.

STUDIES IN MAYAN HIEROGLYPHS.

IT is as agreeable as it is rare to find a sane student of the Mayan hieroglyphs. For that reason among others it is pleasurable to mention several articles which have appeared lately from the pen of Mr. Lewis W. Gunckel, of Dayton, Ohio.

Two of these are in the *American Antiquarian* for the present year. They are entitled, 'The numeral signs in the Palenque tablets,' and 'An Analysis of the day-signs in the Palenquen inscriptions.' A third is in the *American Anthropologist* for May on, 'The direction in which Mayan inscriptions should be read.' All of these indicate thorough investigation and calm judgment, as well as a good acquaintance with what his predecessors in the field have accomplished. The method pursued is scientific and the presentation of the results temperate.

Of course, some of such results may have to be modified by future research, and they may not be good in all cases, that is, in other parts of the field; but the plan which Mr. Gunckel has adopted of approaching these intricate problems is one sure to be productive of additions to our positive knowledge concerning them.

PRIMITIVE DECORATIVE ART.

FOR the analysis of primitive art-motives no paper has appeared for a long while more instructive than that by Dr. Franz Boas in the Bulletin of the American Museum of Natural History, Vol. IX., entitled 'The decorative art of the Indians of the North Pacific Coast.' The tribes whom he has in view are celebrated for the abundance of their painting and sculpture, their totem poles, colored dishes and carved pipes, and all are somewhat familiar with their strange and perplexing designs. These are analyzed in the article referred to with masterly skill, and the text is furnished with ample and accurate illustrations, which enable the reader to follow the demonstration step by step.

Certain general principles furnish the key to these primitive art-motives. It was the aim of the artist to bring into prominence the most specific feature of the animal he drew, and yet to show as much of the whole of it as he could. As he knew nothing of perspective, he resorted to the most curious devices to accomplish his aim. He represented his subject in sections and distortions, and sometimes by its specific feature reduced to a mere symbol, as a beaver by its incisor teeth only. Many of these devices belong to primitive art generally, and hence this paper will efficiently aid the student in other fields than the Northwest Coast.

D. G. BRINTON.

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SCIENTIFIC NOTES AND NEWS.

WE publish elsewhere a full report, by the General Secretary, of the Detroit meeting of the American Association for the Advancement of Science. Although the attendance was small, the scientific programs were in many sections unusually strong and promise well for the future of the Association. A notable meeting on the occasion of the fiftieth anniversary of the Association next year at Boston, with Professor Putnam as President and Mr. Howard as Permanent Secretary, is assured.

WE are glad to be able to publish in this issue the address of the President of the British Association, given on Wednesday of this week. The addresses of the Presidents of the Sections