sidered a part of our science. Paleobotany has legitimate troubles enough of its own without being taxed with this. It is difficult to understand how the publication committee of the Ohio State Academy of Science could have admitted this paper, at least in its present form.

F. H. Knowlton.

GEOLOGICAL EXCURSIONS IN THE PITTSBURGH COAL REGION.

The Pittsburgh meeting of the Geological Society of America and of Section E of the A. A. A. S. was rendered memorable to many geologists by the opportunity afforded them to study the stratigraphy of the bituminous coal fields of Pennsylvania and West Virginia, under such an experienced and enthusiastic guide as Professor I. C. White. About twenty geologists and students assembled at the Pennsylvania station on Tuesday morning, June 24, for the 6.15 train. The first objective point was Garver's Ferry, opposite Freeport, on the Allegheny River. This is the type locality for the Upper and Lower Freeport coals, and these with their accompanying shales, fire-clays and sandy beds were studied. An interesting feature was the occurrence of limestone beds in this coal series, which in some cases lay directly beneath the coal, and in others were associated with the fire-clay. Frequently both fire-clay and limestones were replaced by the sandstones of the series.

The Freeport sandstone underlying the coal series was seen in the river bed. The lowest member of the Conemaugh or Lower Barren series in this region is the Mahoning sandstone group, which often includes a thin seam of coal (Mahoning) and sometimes calcareous beds. The overlying Masontown coal and the red beds higher up, nearly to the horizon of the Crinoidal limestone, were studied in a walk of several miles and a climb up the steep rocky cliffs. This brought before the party the entire lower half of the Conemaugh, up to the horizon of the rocks exposed at Pittsburgh. The upper portion of the Allegheny or Lower Productive series (Freeport coal group) was also included. At Kittanning, further up the river, the study of the Allegheny series was taken up again, and this time nearly the entire series was seen from the Clarion Coal, twenty-five feet above the Pottsville, to the Upper Freeport coal, and also the overlying Mahoning sandstones of the Conemaugh series. Special attention was called to the Ferriferous limestone and the Kittanning coals in this section. Still farther up the river at the mouth of the Mahoning, the greater portion of the Pottsville series as brought up by the Kellersburg anticlinal, was studied. The lower or Connoquenessing sandstone with its included Quakertown coal, and the upper or Homewood sandstone with the intermediate Mercer coal groups, were pointed out.

On the return journey a stop was made at Crag Dell and a short walk along the railroad tracks enabled Dr. White to point out many of the interesting detailed characteristics of the Upper Freeport coal and its associated rocks.

On Wednesday the party visited the interesting region about the junction of the Connoquenessing with the Beaver, and here the Homewood and Upper and Lower Connoquenessing sandstones were studied at their type localities. Some of the lower members of the overlying Allegheny series were also studied, especially the Ferriferous limestone. Later in the day, near Beaver, the Brookville and Clarion coals with the intervening Eagle limestone were seen, thus completing the base of the Allegheny series.

The interesting glacial phenomena along the Beaver, below the terminal moraine, were given special attention, and the evidence of the former impounding of the waters in the preglacial river valleys of the Ohio and its tributaries by the front of the ice sheet, as pointed out by Dr. White, was pronounced very conclusive. Attention was also given to the character of the preglacial valleys, and the high-level terraces on either side of the Ohio and the Beaver, and their gradual descent northwestward, forcibly suggested the former northwest drainage into the Lake Erie Valley of the river systems of this region, as pointed out by White, Hice and others.

These terraces were again seen along all the larger streams of this region, which were visited during the week, and the evidence of the impounding of the waters in all of these valleys, up to the level of 1050 A. T., was found to be very striking and conclusive. (The details concerning these high gravels have been given by Dr. White in several papers.) Thursday morning was devoted to a study of the stratigraphy of Pittsburgh city, where the whole upper portion of the Conemaugh series from the Crinoidal limestone—which is finely exposed in many portions of the city—to the Pittsburgh coal, the basal member of the Monongahela or Upper productive measures, is exposed.

The Pittsburgh coal is mined along the summits of the hills in Pittsburgh and has become the chief source of the city's natural wealth. The high level terraces and gravels were again pointed out.

In the afternoon the novel experience of witnessing the shooting of an oil well was enjoyed by the party. For this experience the party is indebted to the McDonald Oil Company. Later the Jumbo coal mine in the neighborhood was visited, where, under the guidance of Dr. White and mine foreman Campbell, the mining of the Pittsburgh coal was inspected.

On Friday several additional outcrops of the Pittsburgh coal bed in the vicinity of the city were visited, and then a trolley ride to McKeesport enabled the party to visit the old high-level oxbow of the Youghiogheny. The high-level terraces and their gravel deposits were again the chief subject of study, and in the afternoon a visit to Monument Hill, in Allegheny, an isolated remnant of the ancient river bottom, furnished additional opportunity for the study of these features.

On Saturday the party left Pittsburgh for a two days' excursion. The first stop was made at Connellsville, where the coking of the Pittsburgh (Connellsville) coal is carried on extensively. Various coke ovens were visited under the guidance of the officials. The entire Conemaugh, Allegheny and Pottsville series were here passed over in a short space, owing to their elevation in the anticlinals flanking the Connellsville basin. The Mauch Chunk, Greenbrier and Pocono formations were also seen and the outcrops of the upper Devonian were pointed out. At Uniontown the higher members of the Monongahela, and the lower members of the Dunkard up to the Washington coal were passed through in the deep mine of the H. C. Frick Company, where the Pittsburgh coal is mined at great depth. Many of the strata above the Pittsburgh coal were also observed in the various outcrops. Sunday was spent in Morgantown, W. Va., and a drive to Cheat River canyon enabled the party to study the continuation of the high-level rock terraces and their washed gravels, which clearly indicated the extent of the great ice-dammed lake which Dr. White has traced out in these valleys. The revived topography of the region and the Cheat canyon across the Chestnut ridge anticlinal gave opportunity for discussion, and as the rain interfered to some extent with the field work, the members of the party were treated to a careful description of the structure and topography of the region by Dr. White, whose intimate familiarity with the region enabled him to speak with authority on the subject.

Through the exertions of Dr. White the trip to Morgantown and return was made complimentary by Superintendent Haas, of the Baltimore and Ohio Railroad at Pittsburgh. On Saturday the party was entertained in the most liberal manner by the Frick Coke and Coal Company through its manager, Mr. O. W. Kennedy. Everything was done to make the excursion interesting and profitable. At Morgantown all the members of the party were the guests of Dr. White, to whom they were already so deeply indebted for his constant readiness and eagerness to explain the phenomena encountered, and his untiring effort to make the week, what it certainly has been, one of unparalleled success and enjoyment. The week's work was most pleasantly wound up by a reception given by Dr. and Mrs. White and the other members of their hospitable family at their beautiful home, 'Cherryhurst.' Here the geologists had the opportunity of meeting many of the promi-

nent citizens of Morgantown and a number of the officers of the University of West Virginia.

The following is the list of persons who attended one or more of the excursions:

I. C. White, Morgantown, W. Va., leader; J. R. Macfarlane, Pittsburgh, Pa., assistant leader; H. L. Fairchild, University of Rochester; B. K. Emerson, Amherst College; C. R. Eastman, Mus. Comp. Zool., Cambridge; J. B. Hatcher, Carnegie Museum, Pittsburgh; F. B. Peck, Lafayette College; C. S. Prosser, Ohio State University; A. E. Turner, President Waynesburg College; A. R. Crook, Northwestern University; U. S. Grant, Northwestern University; Florence Bascom, Bryn Mawr College; G. C. Martin, Johns Hopkins University; A. E. Ortmann, Princeton University; A. W. Grabau, Columbia University; H. W. Shimer, Columbia University; Miss Ida H. Ogilvie, Columbia University; R. R. Hice, Beaver, Pa.; J. C. Williams, Ridgeway, Pa.; Miss L. K. Miller, Groton, Mass.; F. H. Oliphant, Oil City, Pa.; D. E. Crane, Sewickley, Pa.; A. S. Coggeshall, Carnegie Museum; L. S. Coggeshall, Carnegie Museum; Sidney Prentice, Carnegie Museum; Claude McD. Hamilton, of the *Pittsburgh Despatch*, Pittsburgh.

Amadeus W. Grabau.

Columbia University.

SCIENTIFIC NOTES AND NEWS.

M. Bouvier has been elected a member of the Paris Academy of Sciences in the section of anatomy and zoology in the room of the late M. Filhol.

Professor Angelo Heilprin sailed on the 12th instant for the West Indies to complete his observations on the volcanoes of Martinique and St. Vincent.

Gen. A. W. Greely, chief of the U. S. Signal Service, has returned from Alaska, where he had been inspecting the work on the Government telegraph line from Valdez to Eagle City.

The daily papers report that President David Starr Jordan has been successful in securing a valuable collection of fishes in the Bay of Apia, Samoa, some four hundred and fifty species, many of them new, having been collected.

A party, under the direction of Professor Birksland, has left Copenhagen for Nova Zembla to study the aurora borealis during the summer.

Professor W. E. Ritter, of the University of California, has secured funds for the erection of a marine laboratory at San Pedro, which will be used as a center for the biological study of the Pacific coast.

Lieutenant W. E. Safford, U. S. Navy, has resigned his commission in order to take the position of assistant curator in the Bureau of Plant Industry of the Agricultural Department. His specialty will be tropical botany. Mr. Safford has been engaged for many years in collecting material and information relating to useful plants of the countries visited by him in cruising.

Robert L. Randolph, M.D., associate professor of ophthalmology and otology in the Johns Hopkins Medical School, has recently received the Boylston prize for a paper entitled 'The Rôle of the Toxins in Inflammations of the Eye.'

The Paris Society of Geography has conferred its Ducros-Aubert prize on Dr. Huot, a physician in the French colonies.

Dr. Martin Ficker, custodian of the Museum of Hygiene of the University of Berlin, has been appointed director of the Hygienic Institute.

The Advisory Committee of Public Hygien of France has elected as members MM. Ed. Bonjean, Thierry, Binot, Brouardel, Boulloche and Courtois-Suffit.

We learn from the *American Geologist* that a bust of the late Dr. Edward W. Claypole has been placed in the assembly hall of the Throope Polytechnic Institute. The presentation address was made by President W. H. Knight, of the Los Angeles Academy of Sciences, and it was accepted by Dr. Norman Bridge for the board of trustees.

Dr. William S. Bradshear, president of the Iowa State College at Ames, died on August 4, at the age of fifty-two years.

The deaths are also announced of Dr. W. Iveson Macadam, lecturer on chemistry in the School of Medicine of the Royal Colleges of