

Fourier's series and other topics, including functions of the complex variable. There are numerous references to the author's "Differential Calculus" which is essential to the reading of the present work. Both treatises are based on the method of rates and both enjoy both the advantages and the disadvantages that attend adherence to that method. The work will serve, too, as a welcome auxiliary to Professor Johnson's well known and widely used "Differential Equations."

C. J. KEYSER

COLUMBIA UNIVERSITY

SCIENTIFIC JOURNALS AND ARTICLES

The American Naturalist for April is devoted to a symposium on "Aspects of the Species Question," being the papers presented at the January meeting of the Botanical Society of America, by Charles E. Bessey and others. The aspects are taxonomic, physiological and ecological and the views of the various authors are naturally more or less colored by the nature of their work. Many will thank C. L. Bristol for his quotation showing the origin of the "Otter Sheep," as information of this kind is most difficult to lay hands on. One may know the general facts and yet be unable to give a definite reference to them.

BIBLIOGRAPHIES are always welcome, and the "Index to Hull (England) Museum Publications, Nos. 1-47," will be of much service in facilitating reference to the many objects in the Hull Museum described during the past six years.

The Museums Journal of Great Britain has a description, by E. Howarth, of "The School Museum System of Sheffield" with details of the circulating collections, stereoscopic views and lantern slides for loan to public schools. The cost of the individual "cabinets" in these collections was stated to be from \$25 to \$75 each, which must be regarded as a pretty liberal sum.

THE *Reports relating to Alaskan Seal Fisheries*, recently issued by the Department of Commerce and Labor, contain much interesting information in regard to the seals of

the Pribilofs, and the Arctic fox. The seal herd has steadily decreased, owing to pelagic sealing and the total number in 1907 was only about 172,000 as against 400,000 in 1897. The greatest destruction is now wrought by the Japanese, who are not bound by any agreement, seal up to the three-mile limit (sometimes within it) and use shot-guns which cause great loss and waste. Owing to the adoption of certain restrictions proposed by the government agents the proportion of active young bulls has increased.

THE *First Biennial Report* of the Louisiana State Museum, covering the period December 10, 1906 to April 1, 1908, has just been issued. It gives a brief account of the origin of the museum and includes a general catalogue of the exhibits of the various departments. These include a fair representation of the fauna of the state, a considerable proportion of commercial products and some extremely valuable and interesting historical material. It is to be hoped that this museum may receive substantial support from the state.

SOCIETIES AND ACADEMIES

THE GEOLOGICAL SOCIETY OF WASHINGTON

At the 205th meeting of the society, on April 22, 1908, specimens of "coal bombs" from Walsenburg, Colo.; Las Cerillos, N. M., and the Pennsylvania anthracites were exhibited by David White, who remarked that these nodule-like masses from the midst of coal beds often show a combination of slickensiding and concentricity of structure suggesting tension in one plane rather than pressure in all directions. Such nodules or bombs, found in coals of varying age and kind, are probably more frequent than would be supposed from their rare mention in the literature.

Regular Program

Mineral Deposits of the Cerbat Range and Black Mountains, Mojave County, Arizona:
Mr. F. C. SCHRADER.

The Cerbat Range and Black Mountains are two desert ranges situated about twelve miles apart in the northwestern part of Arizona, southeast of the Big Bend of the Colo-

rado River and between the river and the Colorado Plateau. They represent the southward continuation of the Virgin and Muddy Mountains of the Great Basin on the north. The principal distributing point for the mining districts is Kingman, situated on the main line of the Atchison, Topeka and Santa Fe Railway.

The deposits, concerning which little has hitherto been known, occur principally in two regions: One in the Cerbat Mountains, where the deposits are distributed over an area that extends from about nine miles north of Kingman to twenty miles north, embraces the Chloride, Mineral Park, Stockton Hill and Cerbat districts. The other region is in the southern part of the Black Mountains, where it embraces the well-known Gold Road and Vivian districts, situated about twenty-four miles southwest of Kingman. Both regions contain numerous mines, many of which have produced from about \$1,000,000 to \$3,000,000 each; the production of the Gold Road mine being about \$1,000,000 in the two years 1905 and 1906.

The deposits are of two very distinct types. The first, which is confined chiefly to the Cerbat Range, consists of quartz fissure veins, usually in the pre-Cambrian complex of granitoid-gneiss-schist rocks. The veins usually are not deeply oxidized. They contain the sulphides, pyrite, galena, zinc blende and arseno-pyrite, which yield silver chiefly, but with minor amounts of gold.

The second group comprises the deposits of the Black Mountains. They differ markedly from those of the Cerbat Range, just described, in several important respects. First, they occur chiefly in Tertiary volcanic rocks, principally andesite, and are younger than the Cerbat veins. Second, the veins seem to have originally contained a calcite gangue, which is still present in many of them. In the most valuable deposits, however, a mineralogical change has taken place, by which the calcite has been replaced by quartz and adularia. Third, the values are almost exclusively gold. Fourth, the oxidation extends to the depth of 600 or 700 feet, and, as a rule, no sulphides or base metals are found.

The deposits of both types are believed to owe their origin to the circulation of mineralized, aqueous solutions probably at high temperatures through the fissures in which the values are now found.

Recent Work on the Illinois Coal Field: Mr. FRANK W. DE WOLF.

The Illinois Coal Field covers an area exceeding 36,000 square miles and supports over four hundred commercial mines scattered through fifty counties. The preliminary estimates place the production for 1907 in excess of forty-nine million tons, and thus indicate an increase during the year of over twenty per cent.

While the general features of the stratigraphy and structure have been presented in earlier reports, the problem remains to divide the stratigraphic column into appropriate formations and to carry the correlation of the sixteen or more coals through the state. This work is going forward by cooperative investigations of the State and U. S. Geological Surveys.

Certain chemical problems have been investigated, also; one refers to variations in the quality of coal seams from place to place; another, to the relation between analyses of mine samples and commercial samples, with especial regard to the deterioration of coal during storage. Another consideration of vital importance refers to the selection of some "pure coal" unit which may serve as a basis for comparing samples of varying composition.

Detailed reports are finished for parts of Saline, Gallatin and Williamson Counties. The explored rocks include some fifteen hundred feet of carboniferous sediments, and these include two widely persistent coals of approximately five feet in thickness and of excellent quality, besides numerous local beds. The dip of the rocks is essentially northward toward the center of the basin, but is interrupted locally by dome-like features which suggest block-faulting on a small scale. The structural relief, as shown, is four hundred and twenty-five feet. In some cases the coals are cut by igneous dikes which produce nat-

ural coke along the contacts and which contain occasional crystals of sphalerite, thus suggesting relationship to near-by counties which produce lead and zinc.

Panama Stratigraphy: Mr. ERNEST HOWE.

Following andesitic breccias that are supposed to be of early Eocene age, sedimentary rocks belonging to three epochs have been recognized in the section exposed on the Isthmus of Panama. The oldest, the Bohio formation, has conglomerates associated with volcanic breccias near the base, but consists for the most part of fine calcareous sandstones and shales. An abundant fauna contains species characteristic of the Claiborne Eocene and some common to the Upper Tejon. Separated from this by an unconformity are the Peña Blanca marls rich in foraminifera that, from the characteristic species *Orbitoides fortisi*, Dr. Dall considers of Lower Oligocene age corresponding to the Vicksburg. The youngest sedimentary rocks are those of the Monkey Hill formation consisting of fine calcareous and argillaceous sandstones and marls. From abundant fossils contained in these beds they are regarded as equivalent to the Chipola Oligocene. Of these three formations the oldest only, represented by the Culebra beds, has been observed on the Pacific side of the isthmus.

Eruptions of rhyolitic rocks, both massive and fragmental, occurred at some time between the close of the Bohio epoch and the beginning of the Monkey Hill, while all the rocks in the central and southern portions of the isthmus were invaded in the Miocene by pyroxene-andesites and basalt.

RALPH ARNOLD,
Secretary

DISCUSSION AND CORRESPONDENCE

THE CHAIR OF PHILOSOPHY AT THE UNIVERSITY OF CINCINNATI

TO THE EDITOR OF SCIENCE: I beg permission to make a statement relative to my deposition from the University of Cincinnati.

First, I should like to say that the three reasons assigned for declaring my chair vacant are either inadequate grounds for such

action or are false in fact. Furthermore they are not the reasons stated in private by the president.

The three grounds assigned were (1) The suppression of the real reasons for my leaving Vassar when I applied for the position at Cincinnati. I agree with the president on this point that this was not fair to him and so informed him before his request for my resignation. But is this an adequate basis for deposing an officer whose work is admittedly satisfactory?

The second ground was that I held views destructive of society which affected my teaching and my life. The testimony of my students both here and at Vassar College refutes the charge that my views on certain ethical topics had entered the classroom. The testimony of my wife and of those who know me must intimately is sufficient reply to the charge of baneful effects of my alleged sinful views upon my life and character. The objection that now, at least, I have taught my views by their publication in the newspapers is certainly met by replying that a man has a right to state his views on any subject in this age and country as long as he does it in a dignified and decent way. And since I was asked to resign on account of my views (which fact is significantly omitted from the formal statement issued by the president) I maintain that I had a right to vindicate myself before the public by stating the views for which I was to be ejected. If it be objected that I did not choose the proper place and manner of publicity in stating my views, it is replied that the only statements authorized by me were given to the Cincinnati *Times-Star* with the understanding that they were to be printed just as I wrote them or not at all. They were so printed in that paper. Additions and embellishments by reporters unhappily have been taken as expressing my views, instead of my own carefully prepared statement of them.

The third ground assigned by the president for my dismissal, that I threatened him, did not exist.

I made this stand here at Cincinnati in the hope that I might be dealt with on the