to be desired from the standpoint of details, and details which are essential to a clear and comprehensive discussion of the localities in which gold is found and its associated minerals.

The book is well written, and while it contains much of interest it is doubtful whether it fills any great and pressing need which is not already occupied by other works. An important and valuable feature is the comparatively large number of references embodied in the text to which the reader may turn for verification of stated facts or to extend his information. Its chief value lies in the fact that the occurrence of gold is given for the whole world and not for some particular country. To those who enter upon the study of precious metals, a keen regret must be experienced in the perusal of such a work, that both of the precious metals, gold and silver, could not have been considered together, owing to their intimate association in ore deposits and their relations to commerce and industry in the world's community. In many respects this work is a valuable addition to the literature on the occurrence of gold, and will be welcomed by many.

Walter R. Crane

SCIENTIFIC JOURNALS AND ARTICLES

The June number (volume 15, number 1) of the *Bulletin of the American Mathematical Society* contains the following papers: Report of the April meeting of the society, by F. N. Cole; Report of the April meeting of the Chicago section, by H. E. Slaught; "A Set of Criteria for the Summability of Divergent Series," by W. B. Ford; "On Fredholm's Equation," by P. Saurel; "The Chicago Symposium on Mathematics for Engineering Students," review by H. W. Tyler; "Osgood's Calculus," review by C. N. Haskins; "Shorter Notices": Bachmann's Grundlehren der neueren Zahlentheorie, by J. W. Young; Whitehead's Axioms of Descriptive Geometry, by F. W. Owens; Jouguet's Lectures de Mécanique, and Andoyer's Cours d'Astronomie, by W. R. Longley; "Notes"; "New Publications."

The July number (concluding volume 15) of the *Bulletin* contains: "Tautochrones and Brachistochrones," by E. Kasner; "Degenerate Pencils of Quadrics connected with $\Gamma^{n+2}_{n+4,n}$ Configurations," by W. B. Carver; "On the Use of n-fold Riemann Spaces in Applied Mathematics," by J. McMahon; "Mathematical Appointments in Colleges and Universities," by E. J. Wilczynski; Picard's Algebraic Functions of Two Variables, review by J. I. Hutchinson; "Shorter Notices": Correspondance d'Hermite et de Stieltjes, by James Pierpont; Scott's Cartesian Plane Geometry, Part I., Analytical Conics, by E. G. Bill; Hilbert's Grundlagen der Geometrie, third edition, by A. R. Schweitzer; Klein-Schimmack, Vorträge über den mathematischen Unterricht an den höheren Schulen, Part I., by J. W. A. Young; "Notes"; "New Publications"; "Eighteenth Annual List of Papers read before the Society and Subsequently Published"; Index of Volume.

SPECIAL ARTICLES

DIPLODIA DISEASE OF MAIZE (SUSPECTED CAUSE OF PELLAGRA)

For about two years the writers have been studying the *Diplodia* disease of corn now serious in some parts of the country, with especial reference to its manner of infection. An examination of a bundle of maize plants sent from the west in 1907 indicated pretty clearly that the infection of the cobs was from within, *i. e.*, from the interior of the stem by way of the root system, and not simply a local attack as hitherto supposed. The mycelium was found in all the inner parts of many stems from roots to cobs and in the interior of the latter, and the kernels were moldy (white).

In February, 1908, pot experiments were started in one of the hothouses to verify this inference, the soil being inoculated with pure cultures of the fungus. On June 2 in one of the pots the *Diplodia* was found fruiting on the roots and at the base of the stem, and the mycelium of the fungus was found in the interior of the root, stem and cob in abun-

dance, but not anywhere on the *surface* of the plant except at its base. The mycelium extended upward inside this stem two thirds of its length. On another plant in this pot *Diplodia* was also found in fruit on the crown, and the mycelium was present in the interior of the stem but did not extend upward for any distance.

On the same day in another pot the mycelium was found in the parenchyma and bundles of the roots of one plant. Pieces of the roots were put into damp chamber and in five days the pycnidia of *Diplodia* appeared in great numbers.

The same day in a third pot the mycelium of *Diplodia* was found not only in the interior of the roots but also in the interior of the first two internodes of the stem, from which pure cultures of it were obtained. Here again it was not present on the surface.

The next day in a fourth pot *Diplodia* was found fruiting on the stem in the first four internodes as a result of the presence of internal mycelium. This mycelium was also demonstrated in the interior of the fifth internode, and pure cultures of it were obtained from the interior of this stem. Generally the pycnidia were most abundant at the nodes. They occurred also on the leaf sheaths.

The following summer (1908) the experiment was repeated in a plot out of doors by means of soil inoculation with pure cultures, but, owing to a late start and the fact that the plants had to be dug up early to make room for a new building, the experiment was a failure, except that there were indications of infection in the basal nodes and internodes of two plants. Experiments are under way again this summer.

There seems little doubt that the manner of infection indicated is the common one, *i. e.*, from the soil into the roots, from these to the interior of the stems, and thence upward to the cobs, and finally to the kernels, but it is not unlikely that certain soil conditions may favor or hinder the root infection. This remains to be worked out. Unquestionably the *Diplodia*, like the *Fusarium*, is a soil organism persisting from year to year in infected fields, which for this reason should be staked off and planted to other crops than corn.

It is also worthy of inquiry whether this fungus may not be the cause of the so-called "cornstalk" disease prevalent among cattle in the west. It is also possible that to *Diplodia* should be referred the great numbers of deaths of negroes in the south during the past three years from the so-called pellagra, following the consumption of moldy cornmeal and moldy hominy. This fungus (*Diplodia*) is also a cause of moldy corn in Italy. The only other fungi we have reason for suspecting in this connection are species of Aspergillus. The writers would be very glad to receive for study samples of hominy or corn meal suspected of being the cause of pellagra.

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July 23, 1909

SOCIETIES AND ACADEMIES

THE GEOLOGICAL SOCIETY OF WASHINGTON

AT the 218th meeting of the society, held at the Cosmos Club, on Wednesday evening, April 14, 1909, Mr. David White presented as an informal communication some notes on the "Kent Coal Basin of Southern England." Calling attention to Professor E. A. Newell Arber's paper in the February number of the *Journal of the Geological Society of London*, in which the fossil plants from the deep drillings near Dover, England, are described, he pointed out that the three workable coals, 1,881–2,377 feet deep in the Waldershare core, are paleobotanically either Mercer or Clarion in age, probably the former, though both ages may be represented. The boring about 6 miles farther south, on the coast, cuts 13 coals between 1,100 and 2,270 feet, in a more arenaceous series, also of older Pennsylvanian age. The drillings therefore indicate a considerable number of workable coals in the basin (Kent) passing beneath the Channel at Dover.

Regular Program

Débris Tracks on the Domes of the Yosemite Region: Mr. F. E. MATTHES.