From these facts the author draws the logical conclusion, that beriberi is a parasitic disease, and that the parasites attack particularly the blood, muscles, and medulla. In seeking the origin of the parasite, it was found that similar organisms were found at times in rice-grains. The characteristics of the grains of rice attacked by the parasite are given; and the hypothesis is advanced, that rice is often the vehicle of the microphyte by which it enters the human system, which appears to be in accord with the fact that rice is a principal article of food in the regions subject to the disease.

Contaminated grains of rice, subjected to the same cultivation as the blood of beriberi patients, produced organisms entirely identical in appearance. Injections of the liquid of the rice-culture in guinea-pigs produced death in thirteen, seventeen, and twenty days, with paralytic phenomena, and death by asphyxia; and the microscopic examination of the spinal medulla and muscles showed the presence of the same organisms found in animals inoculated with the blood-culture of beriberi. The author proposes to continue his investigation of the suspected relation between a rice diet and beriberi.

BIOLOGICAL THEORIES OF AN ARTIST.

Morphology. Estimates of intelligence. Vital chemistry. By FRANK B. SCOTT, artist. Buffalo, *Bigelow pr.*, 1883. 16 p. 8°.

THE author says in his preface, "If we fail in proving the truth of what we advance, our labor will not be lost: we may lead the way to further discoveries. Columbus was mistaken in his seeking another way to India, but his mistake led to the discovery of a new continent." In science great continents of knowledge never have been discovered by ignorant adventurers: we therefore do not believe that Mr. Scott will achieve the important success he dreams of, although he is mistaken in perhaps half his statements. We are acquainted with no other publication, purporting to be scientific, which contains so many amusing errors and entertaining hypotheses in so few pages. We need only give the following extracts in our justification. "Without oxygen, hydrogen, nitrogen, and carbon, we have no knowledge of life. . . . There are other elements subordinate to these. There is also some other element not subordinate. . . . Perhaps this fifth element was the *quint*-essence of the ancients. Huxley, in his 'Biology,' calls it electricity." Will the author kindly refer us to authority on the quintessence of life of the ancients; also to the page of Huxley? He further states that the blood at one moment is red with oxygen; the next, black with carbon. We have no doubt that sufficient carbon might blacken the blood, but we are surprised to learn that the mixture occurs regularly during life. The whole pamphlet resembles these samples.

THE ILLINOIS GEOLOGICAL REPORT.

Geological survey of Illinois. A. H. WORTHEN, director. Vol. vii., Geology and paleontology. Springfield, *State*, 1883. 4+373 p., 31 pl. 8°.

THE first two volumes of this series of reports appeared in 1866; and the others have followed at intervals since then, the seventh having appeared during the past year. The leading feature of these reports is paleontology, in connection with which the names of some of the ablest American paleontologists appear.

In his preface to the present volume, Mr. Worthen says, that to complete the paleontology of the state upon the plan originally contemplated will require two volumes more, with from forty to fifty plates of illustrations each, but that this cannot be done until authorized by special legislative act. It is not improbable, therefore, that the present volume will be the last of the series.

Mr. Worthen's chapter, of fifty-one pages, on economic geology, treats mainly of local sections in different parts of the state, principally of coal-measure strata. He announces the discovery of 'coal-oil' in the town of Litchfield, — a dense lubricating-oil, mingled with salt water, which he thinks comes from the base of the coal-measure conglomerate, or one of the upper Chester sandstones.

Four borings have reached the oil at a depth of nearly seven hundred feet, each boring yielding about two barrels of crude oil per day. He also reports the discovery of brine in Perry county. Six borings have been made, each flowing sixteen gallons a minute, from which an aggregate of thirty-five hundred barrels of salt is made annually.

The work on the fossil fishes by Orestes St. John and Mr. Worthen is a very important one, embracing two hundred and eight pages and twenty-six plates. It treats of those characteristic carboniferous families, the Cochliodontidae and Psammodontidae, and also of Ichthyodorulites. The important works on similar fossil fishes, which were published in previous volumes, are well known; and yet the material now published is unexpectedly comprehensive as regards the variety of forms

embraced in the two families just named. The authors describe and figure fifty-six new species of the Cochliodontidae, together with eight species previously published. They embrace, in all, fourteen genera, six of which are new; namely, Vaticinodus, Stenopterodus, Chitonodus, Deltodopsis, Orthopleurodus, and Taenodus. The last is a hitherto unpublished name, proposed by de Koninck. Of the Psammodontidae, thirteen species (eleven new) are described and figured; eleven of them being referred to Psammodus, and two to Copodus. Eleven genera are recognized among the Ichthyodorulites, one of which, Eunemacanthus, they propose as new. Of these genera, they describe and figure twenty-two species, only two of which have before been published. The specific and generic descriptions are full and clear, and Mr. St. John has made good use of his large experience in their discussion.

Pages 269–322 and four plates are devoted to descriptions and figures of fifty-five species of crinoids, together with a few carboniferous shells. Descriptions of all these except one of the shells were published by Mr. Worthen, without illustrations, in 1882, in Bulletin No. 1 of the Illinois state museum of natural history.

On pp. 323–326 he describes eight species of carboniferous mollusca without illustrations.

Pages 327–338 and one plate are occupied by Worthen and S. A. Miller's descriptions and illustrations of nine forms of echinoderms. Their material for this study was imperfect, and yet they have proposed five new genera; namely, Compsaster, Cholaster, Tremaster, Hybochinus, and Echinodiscus. The latter they refer to the Agelacrinidae, together with Archaeocidaris.

Pages 341–357 are occupied by Mr. Charles A. Wachsmuth. He figures and redescribes, in this volume, two echinoderms which he had previously described in the bulletin of the Illinois state museum of natural history. Following this, he gives an important discussion of certain blastoids, with a description of a new genus, namely, Heteroschisma.

The text of the volume closes with descriptions of three new species of blastoids by Prof. W. H. Barris. They are, however, without illustrations, except one woodcut. Professor Barris refers one of these species to Pentremites Say, and the other two to Elaeacrinus Roemer. He rejects the generic name Nucleocrinus Conrad, because of the erroneous description which Conrad gave of it. Nucleocrinus is, without doubt, identical with Elaeacrinus; but unfortunately Conrad's type specimen, which is still extant, shows plainly that he mistook its base for its summit. Diagnoses are seldom perfect, and it is difficult to determine how much of error we ought to overlook in the retention of imperfectly defined genera.

The letterpress and binding of this book are creditable; but the illustrations are not up to that standard of excellence which was attained in the previous volumes, and which the present state of art demands. Still, they serve well for the identification of the objects which they are intended to illustrate. The make-up of the book has one inexcusable deficiency, which was, no doubt, due to an oversight, since the other volumes are free from this defect. We refer to the absence of any table of contents, or any reference in the index to the different authors, or the titles of their subjects. This does not detract from the merit of the work, however, which is, as a whole, very great; and the people of Illinois may well be proud of what has been accomplished by their geological survey, even if it should now be suspended.

INTELLIGENCE FROM AMERICAN SCIENTIFIC STATIONS.

GOVERNMENT ORGANIZATIONS.

Geological survey.

Work in the District of Columbia. — It is intended to map about three hundred square miles of the region about Washington, including the District of Columbia and adjacent country on the north, east, and west, extending to a distance of about ten miles from the district boundaries in those directions. This map will be used for the delineation of the geological features of the district and adjacent country, the investigation of which has been carried on for some time by Mr. W. H. McGee. The topographic work done so far consists mainly of the compilation and transferrence of material furnished by the Coast and geodetic survey in the form of original unpublished sheets upon a scale of 1-15,000, with contours twenty feet apart vertically, and covering the greater part of the area required for the immediate use of the geologist. Mr. S. H. Bodfish has been assigned to the topographic work, and will utilize all work previously done in the area above indicated by the coast-survey and the commissioners of the district.

Springs of Florida. — Prof. L. C. Johnson, while working in Florida during January, gave some attention to the springs and wells in the vicinity of