tions. The admissibility of the expansion theory is based on the assumption that the earth magma *may* expand on solidifying as water does. The recent work of Barnes, however, with which our author was probably not familiar at the time he wrote, so invalidates this assumption that it is no longer worthy of serious consideration.

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Mesozoic Plants From Kōsuke, Kii, Awa and Tosa. By METAJIRO YOKOYOMA, Professor in the Imperial University of Japan.

In this paper, illustrated by nine plates of good figures, and published as part III., Vol. VII., of the *Journal of the College of Science*, Imperial University of Japan, Professor Yokoyoma has given us a valuable addition to our knowledge of the lower Cretaceous flora. The plants of this age, known for a long time mostly in their Wealden types, and from a few localities in England and on the continent of Europe, have, by recent discoveries, been greatly increased in number and variety. The extent of the territory known to have been occupied by them has of late been still more notably enlarged. We now know lower Cretaceous plants from such widely separated series of strata as the Potomac of the Atlantic States; the Comanche series of Texas, the coal group of Great Falls, Montana; the Kootanie series of British Columbia; the Shasta group of California; the lower strata of Newton's Dakota group in Dakota and Wyoming. Professor Yokoyoma's investigations add still another region on the Asiatic side of the Pacific, and make it probable that the lower Cretaceous flora was in Asia no less important than it was in North America. These additions are especially gratifying, as the flora of this time was the last one in which angiosperms did not predominate. It is the flora of an era when predominating Mesozoic elements were about to disappear forever. If we are ever to learn what changes caused a flora consisting only of Equiseta, Cycads, Ferns and Conifers to give way to one in which angiosperms overwhelmingly predominate, and in which all these groups, except the conifers, play an insignificant part, we shall most probably find the solution of this as yet unsolved problem from the examination of lower Cretaceous plants.

In 1890 Prof. Nathorst, of Stockholm, examined a number of fossil plants from Shikoku, Japan, and determined their age to be either upper Jurassic or Wealden. Professor Yokoyoma states that he was induced to carry the investigation of this flora farther than the Swedish paleontologist had done, with the hope of fixing more definitely its age. In consequence of this he collected not only from the localities of Nathorst, but from several others showing a similar flora. He succeeded in adding a number of species not seen by Nathorst, and in procuring, in some cases, better specimens of those previously obtained. In this way the total number of species was brought up to 26, with 2 varieties. It is noteworthy that, while the flora is without doubt lower Cretaceous in age, as Professor Yokoyoma determines it to be, it contains no angiosperms. He identifies several of the species with certain ones found in the lower Potomac strata of the eastern United States. He states his conclusion as to the age of the plants in the following words: "I go a step farther than Professor Nathorst and say that the plant-bearing beds of Kozuki, Kii and Shikoku represent the whole Neocomian series, corresponding to the Potomac of America." This statement, so far as the Potomac is concerned, would be more correct if it made the Japanese beds correspond to the *lower* Potomac. American geologists now include in the Potomac the Tuscaloosa group and the South Amboy series of beds, both of which contain few, if

any, of the characteristic plants found in the lower strata of the Potomac of Virginia, while angiosperms overwhelmingly predominate in each. Until the Japanese beds show angiosperms they cannot be considered as young as the uppermost portion of the lower Potomac, which, in the Brooke locality, Virginia, and at Baltimore, Maryland, show many angiosperms.

Prof. Yokoyoma has followed Prof. Nathorst in changing from Dioonites to Zamiophyllum, the name of a cycad that, so far, is confined to the lower Cretaceous. This is the species known as *Dioonites Buchianus*. This change does not seem to be called for. The reason assigned by Prof. Nathorst does not seem weighty enough to remove a name so well fixed as this, and, if a change be made, the name Zamiophyllum seems open to more objections than Dioonites. The leaflets of Zamia are articulated at their junction with the rachis and deciduous, characters which are decidedly not found in Dioonites Buchianus. These features seem to be of more importance than the obliquity of the leaflets and their narrowing towards the base, which characters in Dioonites Buchianus Professor Nathorst presents as objections to regarding this plant as a Dioonites.

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Repetitorium der Chemie. By Dr. Carl Arnold. Sixth Revised and Enlarged Edition. Hamburg and Leipzig, Leopold Voss. 1894. 8°. Pp. x+613. Paper. Price, 6 marks.

This book has been written for medical students and is intended to be used by them as a convenient reference book in connection with lectures upon inorganic and organic chemistry and in preparing for examinations. That there is a demand for such a book is shown by the fact that since it first appeared, in 1884, six editions have been called for.

The work is divided into three sections. In the first one of fifty pages the general principles of the science are considered. Such topics as the laws of stoichiometry, the atomic and molecular theory, the determination of molecular and atomic weights, theory of valence, constitutional formulas and the periodic classification of the elements are here discussed. The treatment of these subjects is necessarily very brief and is not intended to be exhaustive. As far as it goes, however, it is clear and concise, and, on the whole, the views of the author represent fairly well the present position of the science. To a few statements, such as those on pages 6 and 31 that heat, light, electricity and chemical affinity are known to be different forms of motion (*bekanntlich nur verschiedene Bewegungsformen darstellen*), one is inclined to take exception.

The second section of 216 pages deals with descriptive inorganic chemistry. The elements are arranged under two heads, first the non-metals, then the metals. The more important facts as to the occurrence, preparation and properties of each element and its chief compounds are here systematically and concisely presented. Newly discovered facts in this field of chemistry have not been overlooked. Thus, for example, we find here described the preparation of azoimide, HN_3, from inorganic substances; the electrolytic preparation of aluminium and magnesium; the statement that red phosphorus is crystalline, etc.

The last section of 295 pages gives a summary of the more important facts of organic chemistry. After some preliminary paragraphs upon the analysis of carbon compounds, molecular weight determination, constitutional formulas and stereochemistry, the organic compounds are taken up in the usual way. In connection with each class of compounds the general behavior and chemical characteristics of the class are discussed. In this section of the book,