whether that group be agnatic, enatic, or cognatic. Such a group does not necessarily dissolve on the death of the ruler, for the next younger man who is the oldest of the group takes his place. The group, therefore, is comparatively permanent, and there is no inherent necessity for its dissolution. It may remain as long as there is a living man to act as ruler. Presbiarchy has widely prevailed: in fact, it seems to be primordial.

The patriarchy, with its *patria potestas*, as far as we now know, was confined to the Roman tribes: but the patriarchy without absolutism has been much more widely distributed, and it has probably been associated also to a greater or less extent with presbiarchy, real or fictitious; so that the latter has frequently been divided into patriarchies, they being subordinate groups.

Maine and the McLennan brothers seem not to recognize presbiarchy; and Maine, wherever he discovered evidences of it, and also where he discovered evidences of any other form of elder-rule, presented them as proof of the existence of the patriarchy. Had the McLennans recognized elder-rule, they could have made their criticism of Maine much more effective. As it is, they have successfully attacked Maine's theory by showing that *patria potestas* has not been widely spread; in fact, that there is no evidence of its existence, except among the Romans.

Maine also bases his theory of the primordial and universal patriarchy upon his theory of agnation; and, wherever he discovers a recognition of agnation, he holds that it is evidence of the patriarchy with *patria potestas*. The McLennans show that agnation is not the only kind of kinship recognized in tribal society, by arraying much evidence of the recognition of enation; but they themselves fall into the antipodal error of supposing that enation was the only kind of kinship recognized.

Altogether the patriarchal theory of Maine has been successfully overthrown in the work before us, by a re-examination of the very facts adduced in its support; and we owe a debt of gratitude to the authors for the thorough way in which they have accomplished their task. If, now, Sir Henry Maine will on his part as completely overthrow the McLennan theory of exogamy and endogamy, and its concomitant polyandry, the ground will be well cleared for the development of a sound system of sociology upon the inductive basis established by Morgan.

Connected with this theory of the patriarchy is Spencer's theory of ancestor-worship, by which he accounts for the genesis of theism, — a theory which ignores all the facts of savage philosophy, finds an origin for opinions midway in the history of culture, and accounts for later opinions as following in the course of normal development, and for early opinions as degeneracies. With the final overthrow of the patriarchal theory, the ancestral worship theory has its weak foundation entirely removed. A piece of good destructive criticism here would be opportune.

Spencer's ghost theory of the origin of a dual existence has long been overthrown by Tylor's grand induction denominated 'Animism.' A good piece of destructive criticism on this point also would be timely.

J. W. Powell.

LESQUEREUX'S CRETACEOUS AND TERTIARY FLORA.

This work is the third, and will undoubtedly be the last, of the series of final reports contributed by this author to the publications of the U. S. geological survey of the territories in charge of Dr. Hayden, and which together constitute a truly great and enduring monument to the fame of the now venerable paleobotanist. The first of these volumes appeared in 1874, and was devoted to the flora of the Dakota group, the only cretaceous flora then known in the west. The second, a larger work, came out in 1878, and was called the 'Tertiary flora;' but more than half of it was taken up with species of the Laramie group, by many regarded as cretaceous. The present volume is in the nature of a review of the whole field covered by the two preceding, bringing the matter down to date, and embraces some Pacific-slope miocene localities in addition.

The first hundred and twenty pages and eighteen plates are devoted to a revision of the flora of the Dakota group, and the description and illustration of thirty-five new species from that formation. At the close of this division of the work, the author introduces an exhaustive table of distribution, extending it to embrace the entire Cenomanian formation, to which he assigns the Dakota group, as well as the middle cretaceous of Greenland. He divides the Cenomanian of Europe into three groups of localities: viz., 1, Moletein, Quedlinburg; 2, Quadersandstone, Harz, Bohemia;

Contributions to the fossil flora of the western territories. Part iii. The cretaceous and tertiary floras. By Leo Lesquereux. Report of the U. S. geological survey of the territories. F. V. Hayden, U. S. geologist in charge. Vol. viii. Washington, *Government*, 1884. 12 +283 p., 59 pl. 4°.

3, Niederschoena, Saxony, Hungary. Some of these districts are exceedingly vague; 'Quadersandstone,' for example. Niederschoena is in Saxony; and Quedlinburg is in the Harz district, at the same horizon as Blankenburg, which is not Cenomanian at all, but Senonian. From all these sources he enumerates 442 species, — a number which is still too small. The Dakota group alone furnishes 195 species.

The second division of the work relates to the Laramie group, but does not review its flora. Some dozen additions to it, made by Mr. Lakes at Golden, Col., are described, six of which are new species. Mr. Lesquereux here discusses again the geological position of this group, and, while still insisting upon its eocene character, admits that its flora resembles that of the travertines of Sézanne in the Paris basin, but which are known to lie considerably lower than the coarse limestone and lignites that prevail in that district. In his table of distribution he only enumerates 207 species; but the reason for this paucity is his failure to recognize as Laramie the plants described from the Fort-Union group, — the upper Missouri and lower Yellowstone region, and the Bad lands of Dakota.

The third division of the work consists of an exhaustive survey of the flora of the Green-River group; and, as this had not previously been done, it forms altogether the most valuable part of the treatise. Since the appearance of the 'Tertiary flora,' a large amount of material from this formation had accumulated in the author's hands, out of which he obtained no less than ninety new species. The most fertile source of this material was the small locality in South Park, Col., known as Florissant, from which, in a light volcanic ash, also containing insect-remains, an immense number of beautifully preserved specimens of fossil plants have been derived. The other principal localities grouped under the general designation of 'Green-River group,' are those of Green-River Station and Alkali-Stage Station, Wyoming; Elko Station, Nev.; and a place reported as in 'Randolph county.' As to this last, as there appears to be no Randolph county in any western territory, it is probable that Randolph courthouse, Rich county, Utah, is meant, which is the same as is otherwise known as Bell's Fish-Cliff, where fine specimens of palm-leaves and other fossil plants are found. The locality called Barrel's Springs is also here referred to the Green-River group, although it appears in the preceding table as belonging to the Laramie group. This is confusing, to say the least.

We have not space to show how the floras of these several localities are correlated by the author; but the occurrence of identical and wholly characteristic species in several of them seems to establish their geological synchrony with considerable certainty. This formation is now commonly regarded as eocene; but Mr. Lesquereux, led, as in the case of the Laramie, by the affinities of the flora with that of Europe, insists upon placing it somewhat higher, and calls it 'oligocene.'

The remainder of the work is devoted to what is called the 'miocene flora.' So far as the localities on the Pacific slope (Chalk Bluffs and Corral Hollow, Cal.; John Day valley, Ore.; and Alaska) are concerned, this reference is doubtless correct; but the large collections from the 'Bad lands of Dakota' belong almost without question to the Fort-Union group, and should have been referred to the Laramie, with which the invertebrate fauna forces us to correlate that group. It is true that this flora has a marked miocene aspect when compared with those of European strata, and that several species seem to have persisted from that period to the present (e.g., Corylus Americana, Onoclea sensibilis); but the entire Laramie flora is also strongly miocene, and at least one species (Ginkgo biloba, L.) of the living flora has come down to us seemingly unchanged from the typical Laramie of Point of Rocks, Wyoming.

Geological considerations aside, this volume is one of the most important that have lately appeared upon the paleontology of western America, and, should it prove his last work, would fittingly crown the long and faithful labors of its justly celebrated author.

ANTHONY AND BRACKETT'S PHYSICS.

FOR many years the English have borrowed or stolen their text-books of elementary physics from the French, and Americans have borrowed or stolen from the English. About a year ago, Daniell produced a distinctly English, or rather distinctly Scotch, book of this order. Now Professors Anthony and Brackett have undertaken to remove America's reproach. Their book is to consist of two parts, of which part i., 'Mechanics and heat,' has already appeared. It is a small volume, and in other respects shows a disregard of old traditions. It has numerous diagrams, but hardly a *picture*.

Elementary text-book of physics. Part i. Mechanics and heat. By Prof. W. A. ANTHONY and Prof. C. F. BRACKETT. New York, *Wiley*, 1884. 9 + 246 p. 12°.