possibly be contested. It is true that there is in both forms a long shaft constriction. But in *Barosaurus* the ischiatic contact is not short, but long or rather deep, and concave as in *Apatosaurus*. The type is in this feature composite. In fact if a form uniting features of the greater sauropods, including the *Camarasaurus*, were sought, so far as public features go, *Barosaurus* might well be named.

Regarding a proximal femur fragment which is found to far exceed the proportions in *Diplodocus*, I may say that in no case is the femoral size absolutely determinate as large. The group of fragments from a Piedmont village "rock pile" or "fossil heap" purported to come from the *Barosaurus* quarry site. But only seven miles northerly there was an exposure of a fast disappearing Dinosaur bone bed several acres in extent. Being all outside the frost line, the material present in variety was much checked and broken. So fragments of limb bones could have been taken from this point to the "rock pile" at Piedmont, mainly, if not exclusively from the real *Barosaurus* outcrop. Or again, if the record fails, it is to be recalled that a second (though actually smaller) dinosaurian was recognized by Marsh in the material from the outer edge of the quarry, as confirmed by Lull. The point is that if a second form could so occur on the erosion or quarry front, then there might also be a third. A waterway, stream, or trend of some kind is indicated.

It is worthy of addition that in the *Barosaurus* quarry well inside the frost line, there were various fragments of charred or carbonized wood passing into silicified structure. Such material from the Morrison has not been studied. Also, various pebbles of a singular smoothness were noted at only one point close to the main group of dorsals. As the specimen was incomplete the reasonable explanation that these were stomach stones, or as later called, dinosaurian gastroliths, did not then occur to me, their true character being first recognized in examples from the Big Horn mountains.

Obviously *Barosaurus lentus* is a remarkable dinosaur from several points of view. It comes from far to the north and east of the Wyoming localities, and shows the great extent of the Como beds, as Marsh called them. The parallel with the African types adds great interest to *Barosaurus*. As a specimen it promised little of determinate value after two months quarry work, and then suddenly turned out to be, "except for the lack of limbs, one of the finest of all Yale specimens." The type remains somewhat isolated because collecting along the inner edge of the Black Hills "Rim," though never hopeless, is always much limited by the long talus slopes hiding the Morrison. This formation encloses the Hills and the Bear Lodge horseshoe-like, with the open heel on the southeast from north of Buffalo Gap to near Minnekahta. On the west side of the Hills the maximum thickness of 200 feet is reached. There, as further west in the Big Horn Rim and in the Freeze Outs, is found the association of the smaller silicified cycads with the sauropod Dinosaurs. And both in the Morrison, and in the overlying Lakota, from the lowermost strata of which comes the fine cycadeoid *Nilssonia nigracollensis*, a long contemporary cycadophytan and dicotyl record of the Comanchean is yet to be brought to light. Reconnaissance in this important field is but begun.

G. R. Wieland

Yale University

LOUIS VALENTINE PIRSSON

Professor of physical geology in the Sheffield Scientific School of Yale University for twenty-one years, after rapid promotion from the position of instructor in geology and lithology, to which he was appointed in 1892; Professor Pirsson also occupied a position of commanding importance in the administrative work of the Scientific School, as member of the governing board, and as assistant to the director, Professor Chittenden, in matters of discipline and general policy. An assistant in analytical chemistry for six years after graduation from the Scientific School, he

taught for a year in the Brooklyn Polytechnic Institute, and then became interested in geology and petrography as an assistant field-worker for the U. S. Geological Survey in the Yellowstone National Park; carrying on studies in mineralogy and petrography in Professor Penfield's laboratory, and afterwards with Rosenbusch in Heidelberg and with Lacroix in Paris. For nine years he was an assistant and special expert on the U. S. Geological Survey, and since 1904 a geologist in this service.

Although a successful teacher of physical geology to undergraduate students, his special interests were in petrology, which he taught to graduate students, and to which he devoted more than half of his time and most of his thought, as may be seen in his publications. His research work was almost wholly petrological. Beginning with his observations of igneous rocks in the Yellowstone Park, he studied independently, and in conjunction with W. H. Weed, the districts of Castle Mountain, Judith river basin, the Highwood and Little Belt Mountains, and other localities in Montana; and he contributed numerous papers on the petrography of New Hampshire in the region of Squam Lake. He was joint author with Cross, Iddings and Washington of a Quantitative System of Classification of Igneous Rocks.

Professor Pirsson was especially successful in the preparation of text-books. His elementary work on "Rocks and Rock Minerals," written for a course of instruction without the use of microscopical methods of diagnosis, has been in general use for the past twelve years. Later he prepared a text-book for his undergraduate class in physical geology which is highly esteemed and widely used; the historical part of the volume having been written by Professor Schuchert. A more elementary form of the work was under consideration shortly before his death. He had begun an elementary petrography which was left unfinished, greatly to the regret of teachers of the subject.

In addition to being a careful observer and a painstaking and industrious student, he was methodical and systematic in his work, and thorough in his treatment of a subject. Moreover, he recognized the importance of emphasizing fundamental principles. He was an associate editor of the *American Journal of Science* from 1897 to the time of his death. There was a definiteness in his conceptions and in his statements that rendered his teaching effective and commanded the respect of his students. Confident in his own judgment, and tenacious of his convictions, he was at the same time considerate of the opinions of others and conscientious in his dealings with them.

By temperament cautious, he was reserved in his intercourse with strangers, but genial and outspoken in the company of friends. A man of great patience and of simple tastes, he enjoyed a quiet life in the study of nature, being especially fond of watching birds and wild animals, and of the sport of fishing; and having a photographic memory for details and a fine sense of humor, he was an entertaining story-teller, and occasionally contributed his experiences to *Forest and Stream*.

In recognition of his scientific attainments he was made a member of the National Academy of Sciences, American Philosophical Society, Geological Society of America, of which he was vice-president in 1915; fellow of the American Academy of Arts and Sciences, Connecticut Academy of Arts and Sciences, Washington Academy of Sciences, Geological Society of Washington, and an honorary member of the Geological Society of Stockholm.

Louis Pirsson was born in New York City, November 3, 1860, was prepared for college at a private school, graduated from the Sheffield Scientific School of Yale with the degree of Ph.B., in 1882, and was given the degree of A.M. by Yale University in 1902. He studied petrography in Heidelberg and Paris in 1892. In 1902 he married Eliza Trumbull Brush, of New Haven, daughter of Professor George J. Brush. His death, after prolonged illness from rheumatism, is a severe blow to the science of petrology, of which he was the foremost teacher in this country, and a sad

bereavement to his colleagues with whom he maintained the friendliest relations.

J. P. Iddings

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE FOURTH ANNUAL MEETING OF THE PACIFIC DIVISION

The fourth annual meeting of the Pacific Division, of the American Association for the Advancement of Science will be held at Seattle in quarters provided by the University of Washington on June 17–19, 1920.

The 1919 meeting held at Pasadena was a pronounced success, exceeding in point of interest and attendance any previous meeting, and fully justifying the wisdom of the national council in providing for a geographic division of the American Association to accommodate the large and active membership residing west of the Rocky Mountains.

Notwithstanding the long distance between centers of population on the Pacific coast, or perhaps rather on account of them, the executive committee has pursued the plan of holding the annual meetings alternately in different and widely separated sections of the Pacific Coast area, believing that although the largest attendance is not to be realized in this way, it best subserves the purposes of the organization in stimulating an active interest in science throughout the district and in promoting that cooperation among scientific men which must be effective in meeting local problems.

The Exploration of the North Pacific Ocean was discussed at the Pasadena meeting in a symposium which outlined in a general way the urgent need of launching this project and the great practical benefits which must accrue. Some of the many scientific problems involved in the undertaking were also presented by prominent specialists who took part in the symposium. Credit should be given to Dr. William E. Ritter, of the Scripps Institution for Biological Research, who fathered this symposium and whose vision of the great economic and scientific advantages to be gained by international cooperation in this enterprise now seems in process of realization. At least the attention of the National Research Council is directed to the matter and a committee has been appointed which will report on ways and means. This committee has already held one meeting and will meet again in Honolulu in August of this year. This great enterprise is felt to be of peculiar significance to the Pacific coast, and a second symposium on "The Animal and Plant Resources of the North Pacific Ocean" will be presented at the Seattle meeting. Naturally the fisheries, as constituting the most considerable present resource of the ocean, will receive major consideration in this symposium, and Seattle as the center of the fishery industry, seems the logical place in which to develop this phase of the subject. Quoting from the preliminary announcement of the Seattle meeting:

> The thorough presentation of the fisheries problems as they confront the industry to-day should prove to be a direct contribution to a better understanding of what this great project means. International in its scope, involving the vital interests of all peoples bordering on the Pacific, it perhaps offers the only solution that will meet the needs of the teeming populations of the Orient, and thus remove by peaceful, scientific means the menace of future conflict. The resources of the Pacific—by what shall they be gauged? A comparatively unknown field awaits our conquest.

Following is the arrangement of the symposium which will be held on Thursday afternoon June 17:

THE ANIMAL AND PLANT RESOURCES OF THE NORTH PACIFIC OCEAN

Marine biology in relation to the North Pacific fisheries: Dr. C. McLean Fraser, director, Biological Station, Nanaimo, British Columbia.

Relation of scientific investigations to the fisheries: Mr. W. F. Thompson, fisheries investigator, California Fish and Game Commission.

Present condition and needs of the Alaska salmon fisheries: Dr. Hugh M. Smith, commissioner, Bureau of Fisheries, Washington, D. C.