

system suggested for universal adoption it would seem to me that  $N$  and  $W$  would more satisfactorily meet the requirements, clearly indicating to the eye as they do the local character of the system of coordinates employed.

As a letter to designate the earth's magnetic potential, I believe none more fitting could be adopted than  $G$  after Gauss, the author of this function. Gauss himself used  $V$ , but this letter is not sufficiently characteristic; it is used to designate many other functions in mathematical physics; and there would, moreover, be a conflict in our system, since  $V$  seems the most logical letter to designate the vertical force.

L. A. BAUER.

LINDEN, MD., August 10, 1896.

#### SCIENTIFIC LITERATURE.

*Memoirs of Frederick A. P. Barnard, D. D., LL. D., L. H. D., D. C. L., Tenth President of Columbia College.* By JOHN FULTON. Columbia University Press. Macmillan & Co. 1896.

When a person has been for nearly sixty years deeply interested in the problems of education, and has himself contributed largely to their solution, his biography necessarily reads like the history of the progress of this science during that period. The life under review is no exception, and indeed his lively reminiscences of his own early school days carry the beginning of our period back to the time when our century was scarcely a baker's dozen years old.

Born May 5, 1809, at Sheffield, Mass., of old Puritan stock, Frederick Augustus Porter Bernard was a thorough New Englander. He has given a very vivid description of the isolation of the little village among the hills and its peculiar institutions, especially the 'meeting house' and all its associations. He says of this early period of his life, which he afterwards came to consider all important in the education of a child: "I believe that if there is anything good in me it must be owing to that loving maternal solicitude which gently swayed me toward the right, at a time when the bending of the twig sufficed to give its permanent inclination to the full grown tree." Soon after he

could walk he was sent to the village school, and at four attended a 'grammar school.' At six he commenced the humanities with the village parson and was an interested reader of Shakespeare's comedies; with his mother he made the acquaintance of Cowper, Goldsmith, Addison, Burke and others. At the same time his ingenuity produced kites, windmills, water-wheels and the like, which were the objects of the envious admiration of his playmates. At the age of nine he went away to the Saratoga Academy, where along with much classics he learned the printer's trade, an incident which undoubtedly was the beginning of that interest in journalism which resulted later in so much editorial work. When only twelve he was sent to the Stockbridge Academy to prepare for Yale, where he entered three years later (1824), the youngest member of his class. One will be amply repaid for reading his lively and often amusing accounts of his life at the preparatory school, and especially his description of contemporary life at Yale. Graduated second in his class in 1828, he was appointed teacher in the Hartford Grammar School. These two years of life in Hartford prior to his appointment at Yale were full of new experiences and ventures, especially as an author and an editor, and at this early date he evinced that liking and aptness for newspaper controversy that stood him in such good stead in his after life.

When Barnard was appointed to teach at Yale it had been the custom for each tutor to take his share of the entering class and teach them all the branches during their first three years. As an undergraduate he had seen the weakness of this method, and his first act at Yale was to persuade the faculty to permit the division for the first three classes by subjects instead of by numbers, thus starting a much needed change. After one year of service he was so troubled by increasing deafness that he resigned from Yale and threw himself heartily into the instruction of the deaf mutes at the Hartford Institution. Removing in 1832 to the similar institution in New York city, he labored zealously and happily until his call to the University of Alabama early in 1838.

During the sixteen years of his stay at Tuscaloosa, Barnard began the campaign for good

discipline and a correct curriculum, which only ceased when he resigned the Presidency of Columbia in 1888. He was specially occupied with the teaching of chemistry, natural philosophy, or mathematics, but made time for some outside scientific work, as, for example, the commission to establish the boundary between Alabama and Florida. His chief energies, however, were devoted to the old problems of discipline and curriculum and many letters, editorials and reports attest his activity as well as his great power in this field of discussion. Incidentally he frequently took occasion to inveigh against secession, and in vain endeavored to cultivate devotion to the Union, especially in his famous Tuscaloosa oration July 4, 1851.

In 1846 he was married to Margaret McMurray, a young woman of English parentage, who was ever to him a loving and devoted helpmate, and to her affectionate zeal is chiefly due this collection of memories. After his death, April 27, 1889, she made arrangements to publish his life, but when only two chapters had been written she suddenly died, leaving the editor uninstructed in details and unprovided with many important letters.

In 1854 Barnard was called to the chair of mathematics and natural philosophy in the University of Mississippi, at Oxford. During his first year he also gave full courses in chemistry, astronomy and civil engineering. He was soon after elected Chancellor (President) of the University, in which office he labored still more zealously and effectively for good discipline and for the true university. This period is especially noteworthy as witnessing his change of views with reference to the relative importance of 'mental discipline' studies like the classics and of the 'useful' studies like science.

While chancellor he was on one occasion charged with 'unsoundness' on the slave question, a charge of which he was acquitted by unanimous vote of the trustees. Even though we must give full weight to the trying conditions amidst which he was placed, still we must admit that in this instance he lacked that supreme element of courage which would have boldly proclaimed the abhorrence of that institu-

tion which his earlier and later utterances show that he must have felt. Instead of this he allowed appearances to exculpate him, without any open declaration that would contravene his secret convictions. This weakness was emphasized by the publication, after his return to Washington, of a most rabid attack upon slavery in his 'Letter of a Refugee.'

At the final outbreak of the war he resigned the Chancellorship and left Oxford in 1862, eventually reaching Washington, where he was occupied with several pieces of scientific work until his appointment, in 1864, as President of Columbia College, in the City of New York.

The twenty-four years of his Presidency of Columbia were years of hard work, with many discouragements, but much success, and closing with the college in a position from which it could and did suddenly rise to the rank of a University of the first class. During this time he labored for the true university and argued as forcibly for an optional course, and for the advantages of the exact sciences, as he had previously insisted upon an inflexible devotion to the classics at Tuscaloosa. He seems actually to have changed his opinions upon this subject, but was not willing to admit it, striving to ascribe the needed change of course entirely to changed conditions. Indeed his love of science is well proved by his generous bequest to Columbia of a library fund of \$50,000, from the income of which the Barnard medal (\$200) is given every five years, and a \$10,000 science fellowship fund.

Latterly, he urged the admission of women to the privileges of the college and university, and Barnard College is at once the result and the reward of his activity in this field.

Although a little prolix in places, and the introduction of quotations sometimes results in repetition, still these memoirs may be read with pleasure and profit by all who are interested in the progress of this country during the last three-quarters of a century. A brief but interesting history of Columbia College is introduced, taken largely from Dean Van Amringe's more elaborate sketch.

Barnard appears to have been a man of considerable power, rather dogmatic and somewhat dictatorial, but usually supported by good

reasons. In fact it seems doubtful whether his strength lay so much in the inherent correctness of his ideas, as in the uniform clearness and force with which he propounded and defended them. He was a born advocate, and if he had been able to follow his chosen profession of law he would undoubtedly have become famous.

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*The Legend of Perseus; A Study of Tradition in Story, Custom and Belief.* By EDWARD SIDNEY HARTLAND, F.S.A. Vol. I. The Supernatural Birth. London, David Nutt.

Mr. Hartland believes that the classical myth of Perseus belongs to a group of folk tales ranking among the foremost in interest for the student of the evolution of human thought and human institutions. The first three chapters are devoted to an account of the story as given by the poets and historians of antiquity, and in modern folk-lore; the remaining chapters trace the supernatural birth in Märchen, Sagas and practical superstitions. The legend consists of three leading trains of incident, viz.:

1. The Birth, including the prophecy, etc.
2. The Quest of the Gorgon's Head, including the jealousy of Polydectes, etc.
3. The Rescue of Andromeda, including the fight with the monster, etc.

It is considered that the modern tales have come down from classical antiquity in the countries in which they are now found, but they are subject to variations. After the Danæ type we have a type in which the wife of a poor fisherman eats the head of a fish—the king of the fishes—and becomes the mother of three boys. In this group the plot consists of four incidents, distinguishable as:

1. The supernatural Birth,
2. The Life-token,
3. The Dragon-slaying, and
4. The Medusa-witch.

After this group there still remain a large number of variants, wherein one or more of the incidents are wanting or may be represented by a mere relic. Some of these the author recognizes as probably derived by degradation from one or other of the earlier versions; of some he is constrained to say that they are in a state of

decay; and in some the reader can hardly see any resemblance at all to the legend of Perseus. Yet the connection may be said to be made out, through the tracing of the gradations of change.

The stories of supernatural birth are very numerous, and may be said to have a currency as wide as the world. The usual agency is, that a woman eats some part of a mysterious fish; but in India it is fruit that she eats, an apple or an orange, or two grains of wheat, or soma seeds; or she swallows a potent drug. Conception in other cases has been by the wind or by the rays of the sun. The author has been very industrious in collecting stories and very discriminating in their classification; he gives more than twenty pages of authorities whom he has consulted; and as a student of folklore, working on approved lines, he has performed his task well.

The question, however, occurs, whether this laborious hunting up of stories is a very profitable business? Many of the modern folk-tales may be interesting stories for the nursery; and it is as well, once for all, to know their relations or resemblance to the legend of Perseus; but what was the meaning of the Perseus legend itself? We are not persuaded of the 'anthropological' explanation, according to which 'the original belief is intimately bound up with the savage theory of the universe.' The Greeks had ceased to be savages when they came to believe in Zeus, and framed the story of Perseus. The Greek mythology had an astronomical basis, and not an anthropological; Perseus and Andromeda are still constellations in the heavens; and Zeus is there too, though unrecognized. Besides, it hardly seems consistent to trace the folk tales of savages to the Greek myths and then seek the origin of the myths in the irrational fancies of savages. The study of folk tales, in their multiplication, variation and decay, is analogous to the study of Scripture MSS. with their hundreds of various readings. The revisers of the Bible found that the three oldest manuscripts were of more value than all the hundreds of later copies; and the student of the legend of Perseus will find the parallel Babylonian legend of Gilgames more to his purpose than a bushel of modern folk-lore.

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