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doubtable Brown Bull, when from the summit of sliabh Bregh he once more sees the hills of Cualgne and rushes on to his tragic death.

The popular presentment from their literary side alone of the tales which make up the Saga of Cuchullin is an element of undoubted significance and value in the rediscovery and rehabilitation of Irish literature. That these old stories have not only interest, but beauties of their own as literature, is fully apparent from the tales in the present book, like, for instance, "The Wooing of Emir," by Kuno Meyer, which are really translations and not versions of their originals. The Sagas of Ireland, the author says, must be placed in their natural place beside the sagas of the North and the epics of mediæval Europe, and her book will no doubt play its part to bring about this result. It is to be hoped, however, that, now that we have been given an idea of what the stories of this cycle are like, somebody may give us a knowledge of what they really are.

Irish literature, furthermore, apart from mere literary interest, has a value, underestimated except by the few, as a link in the chain of the literary development of Europe which it is impossible longer to disregard. The introduction calls attention to the pertinent question of the relation of the literature of Ireland to that of the rest of Europe, and to the undoubted element of action and reaction involved. This is one of the most interesting phases of the study of Irish, and one of the most valuable. No one, for instance, to touch but a single side of the matter, can read these stories without noticing not only their generic, but their specific likeness to the saga literature of Iceland; and the large problem of Irish influence not alone upon the prose of the North, but upon its poetry, upon the Sagas and the Edda, as well, is one of the most interesting in modern criticism. To the popular recognition of all these things the present book should contribute.

The Cuchullin Saga is volume viii. of the Grimm Library. Like its predecessors, it is admirably printed. There is a map at the beginning to illustrate the Saga, and at the end are notes, appendices, and an index.

An Introduction to the Theory of Analytic Functions. By J. Harkness and F. Morley. Macmillan. 1898. 8vo, pp. 336.

As a book to put into the hands of those students whose turn of mind enables them profitably to relish a spoonful or two of the odorous bouillabaisse that has been stewing on the mathematical range during all the generation last past, but who do not intend to become professional mathematicians, no other has yet appeared, or is likely for a good while to appear, we believe, half as good as this; unquestionably not, if we limit the comparison to works on the theory of functions, which has served as *pièce de résistance* during that period and longer. This is distinguished from other available elementary treatises by being in the main Weierstrassian—which means (as well as we know how to describe it in general terms) that it flies straight at the algebraic throats of fundamental problems, disdaining geometrical circumventions, and with a degree of logical precision which (whether it is of the essence of the method or only a natural concomitant of it) is certainly much superior to the previous habit of modern, or even of ancient, mathematics. This method offers special advantages over those of Cauchy and Riemann when the aim of the study is mental training, as it is with those students for whom this book is most adapted.

Such a book must aid in that disintegration of the traditional English idea of mathematics which has been going on of late years. For some reason the English have followed Euclid, Apollonius, and Archimedes more closely than have the Continental mathematicians. They have shared the Greek scrupulosity of logic, and, like the Greeks, seem to look upon all mathematicians with the eyes of geometers. They, more than others, for example, have been disposed to look upon a quarter-turn as an *interpretation* of algebraic imaginaries. It better accords with the Weierstrassian spirit, as well as that of the Lagrangian analysts, to regard the algebraic expression as an elucidation of the Euclidean geometry of the plane, as quaternions is of 4-dimensional geometry.

But Professors Harkness and Morley are by no means entirely given over to Weierstrass. The methods by which the theory of functions was originally rendered comprehensible are sufficiently illustrated in the book to make the student appreciate the large measures of beauty, strength, and truth that are in them. The authors are rather on their pilgrimage to Weierstrass, and perhaps already regret that they did not treat some problems in their recent larger treatise more after his example. They are not yet altogether incapable of lapsing into obsolescent modes of thought. Thus, they adhere to that opinion which calls the point at infinity in the plane of imaginary quantity an "artificial point." Wherever this phrase originated, it involves a logical slip with both feet. For first, it confuses a pure mathematical hypothesis with a matter of fact, and, second, it assumes that we are better acquainted with the infinitely distant parts of space than we are. For no matter what the shape of real space is, which is a question of physics, not of pure mathematics, it is undeniable that we may *suppose* a space which shall have but a single point at infinity. In such a space, a circular filament, or fibre, could be stretched into an unlimited and infinite straight line (as by a continuous bilinear transformation), although in the space of projective geometry, where there is a plane (or conic) at infinity, the filament could be continuously deformed only into two straight fibres (and that only by welding two particles of it together), which, however, may coincide. We can never ascertain how the infinitely distant parts of our objectively valid space are really shaped, except by inference from the parts near us; and since the hypothetical plane of the theory of functions and that of Euclidean projective geometry are precisely alike except at infinity, it would seem to follow that we never can decide that the former is not the shape of a real plane, unless the proper motions of the stars should prove that space is non-Euclidean, in which case the plane of the theory of functions would be everywhere unlike a real plane. It may be objected, however, that we cannot, from any observation of space about us, infer that the part at infinity has an essential singularity; and that which could never be inferred cannot be true. Whether or not there is a sound answer to this, it is hard to say. But this is not at all the idea embodied in the term "artificial point."

The book has most of the distinguished merits of its authors' larger work. It also shares the chief fault of that volume, that of being here and there not so perspicuous as it might easily have been made; a greater inconvenience in the more elementary treatise. We do not quite comprehend why the book need have been so very small, only 326 pages of large and open print, exclusive of the glossarial index. True, it had to be short enough for a college course; but a little amplification in some places might have abbreviated the time required to read it. An initial short chapter discusses the number-system. If that was worth doing at all (as we certainly think it was), it was worth carrying to logical perfection; for that is the sole *raison d'être* of such a chapter. But the reasoning is so abridged that it can hardly be said that this has been done. The number system is one thing, and the system of discrete multitude is an entirely different thing. The former is an affair of pure mathematics, the latter is rather a question of logic, but of the logic of mathematics; and the work would have gained in value, especially for the class of students for whom it is adapted, if the chapter on the number system (expanded by a few pages) had been followed by another developing the distinctions of enumerable, denumeral, and the grades of higher discrete multitude, together with the true conception of continuity.

In Afric's Forest and Jungle; or Six Years among the Yorubans. By the Rev. R. H. Stone. F. H. Revell Co. Illustrated. Pp. 282, 8vo.

A missionary's life among the Yorubans of the Slave Coast thirty years ago was full of hardship and peril, but not because of their savagery or opposition to Christianity, for they were among the most intelligent, peaceable, and industrious of the negroes of West Africa. Mr. Stone enumerates fifteen trades carried on by the men, while the "women are even more industrious," weaving, dyeing, making soap, oils, and earthenware, and "spinning by the light of their little bowl-lamps until late at night and before day in the morning." The comparative wealth which they thus accumulated, however, made them a constant prey to their savage neighbors, and the Dahomians at this time made annual raids into their country. The town in which he was first stationed, a place of a hundred thousand inhabitants, after a year's siege was taken and destroyed so utterly that its site "is a feeding-ground for wild elephants." He escaped to Abeokuta, which, during the two years of his residence, was threatened with the same fate. One of the principal defences of this city was an almost impenetrable forest, which the Dahomians entered in single file at many places and cut their way through step by step. During the month which it took them to reach the open, "they were not allowed to make any noise which would distinguish them from the wild denizens of an African forest. If any one forgot himself and spoke in an audible voice, he was instantly slain. Even orders were given in grunts or barks like those of monkeys." A suburb was captured, and of the ten thousand inhabitants, "excepting a few hundred spared to be offered in sacrifice, everybody but one man perished." Satisfied with this