is exerted on the *supports* of the currents, and not on the currents themselves. But, however we may explain the experiment, it follows that a magnetic field in the stationary state develops an electromotive force which tends to move electricity in the direction of the electro-magnetic action; that is, to the left of an observer placed in the current, and who is looking in the direction of the magnetic force." Perhaps one cannot do more than make the above statement in the present state of our knowledge; but the fact that the phenomenon in question is different in different metals shows the influence of the *supports*. In general, we like the arrangements of the topics treated better than that of Maxwell; and we hope that this book marks the revival of a period of graceful and lucid treatises on mathematical physics which we have a right to expect from Frenchmen.

The English translation of this work by Dr. Atkinson is well executed, and is revised by the authors, who have added certain portions to it which are not contained in the French treatise. We have noticed here and there faults in punctuation which add to the difficulty of comprehending certain relations.

LARISON'S TENTING-SCHOOL.

The tenting-school: a description of the tours taken and the field-work done by the class in geography, in the Academy of science and art at Ringos, N.J., during the year 1882. By C. W. LARISON, M.D., principal of the academy, etc. Ringos, N.J., *Larison*, 1883. 292 p. 12°.

THIS is an amazingly queer little book, — so full, indeed, of oddities, that one is at a loss where to begin an account of them. In the first place, the author is evidently one of our orthoepomaniacs. Nearly all the vowels, and many of the consonants, are decorated with diacritical points. The result is, that the pages have a singularly bristling and formidable aspect. But we advise the reader to discipline his eye to this painful amelioration of the written speech, for a reward awaits him. Behind this printed '*chevaux-de-frise*' there is a lot of things worth reading. The first effort of the author is to tell just how he managed for the conveyance and camping of a party of students, boys and girls. Every little detail for the construction and equipment of a wagon and camp for eighteen persons is carefully set forth. The most trifling articles are figured in rude woodcuts. All this, though in its way useful, would be tedious but for the *naïve* though often cumbrous language in which it is given, and the strangely complicated ways of meeting simple needs. When, for instance, he comes to the making of the camp-fire, which the untutored campaigner accomplishes as best he may, our author tells his very ingenious way. The plan is so altogether good, that we give it in full, unhappily omitting the diacritical accents, which are beyond the resources of an ordinary press.

"To kindle fire, we use a kind of strong iron cup, fastened to an iron handle about three feet long. This cup is very wide at the top and will hold about a quart. In this cup, we place a handful or more of resin, a gill or more of kerosene, and about a tablespoonful of a mixture, consisting of one part of ether and four parts of alcohol. At first thought, this may seem to be a very incompatible mixture; but, of its practical value, we have much evidence. To start a fire in wet wood, during a rainy day, under ordinary circumstances, is not easy; but with the arrangement, and the fuel above named, it is readily effected.

"To ignite resin, in the open air, with an ordinary match, is almost impossible. To ignite kerosene in the open air with a match, is not easy; and to fire alcohol in an open pan, with a match, is not done at every trial. Each of these substances require (*sic*) to be heated up to a certain point, — the kindling point, before they will ignite. To raise the temperature of either of these to the kindling point, requires more heat than is developed by the burning of a match; but, ether is so volatile, that when poured out, its vapor instantly rises. This vapor fires at so low a temperature, that when a burning match is brought in contact with it, it ignites with explosive violence, and continues to burn with vigor until consumed. While burning, the heat generated, evaporates the alcohol, raises the temperature of the alcoholic vapor to the burning point, and ignites it. By the burning of the alcohol, the kerosene vapor is raised to the kindling point, and is ignited. The burning of the kerosene soon develops heat enough to liquify (*sic*) the resin, evaporates it and ignites it. At this juncture, a part of the kerosene and resin begins to be converted into a gas that makes a hotter blaze than that made by burning either kerosene or resin alone; besides, attending this fire is much less smoke than is made by the burning of resin alone.

"The cup of burning kerosene and resin, when placed under a heap of wood that is not too wet, soon raises the fuel to the kindling point, ignites it and gives to the fire such impetuosity that it makes water boil quickly, and butter to fry and sputter furiously.

"With the cup alone, charged as above directed, I have boiled a two gallon tea kettle of water in eight minutes. But, this could not have been done in a windy day.

"It would be criminal to make the above statement, respecting the iron cup and the fuel to be used with it, without informing the tiro that it is very dangerous. Should any one attempt to use it, he cannot be too careful. The act of touching it off with a match, unless circumspectly done, may prove very disastrous. The results of using this mixture without sufficient circumspection we have seen. Suffice it to say, they were terrible."

Unhappily, our author does not give a picture showing the effects of these occasional catastrophes on the camp of innocents; but

at least he might have told us how to apply the circumspection.

Like many another victualler of youth, he has very dark views about the hungry camper, or, as he sadly calls him, the 'stomach-man.' He thus exhorts him by picturing the perfect primal man: —

"In reference to this subject, this fact should be kept in view. The type man, the formative man, was symmetrical. Neither his intellectual, nor his sensual, faculties predominated. Temperate in all things, he appreciated and enjoyed the beautiful, the euphonic, the fragrant, the relishful and the eupathic. He suffered, — but to him his task was not onerous; he enjoyed, — but his fruition did not engender ecstasy. Virtuous, — he met what was before him with fortitude. Brave, — he triumphed in every struggle for right. From birth till death, all was satisfactory, all was enjoyable."

The most of the book is filled with accounts of short excursions in New Jersey. They are commonplace enough in their matter, and are only interesting from the indescribably queer tone that pervades them. There are many singular criticisms on the manners and customs of the folk at the summer resorts on the Jersey coast: they are vulgar enough, but the pervading queerness of the text makes them interesting.

This essentially worthless little book meets a growing interest in the free life that the camp alone can give the summerer. Our country with its abundant wildernesses, with the tolerance of its country folk for what would in other lands be called trespasses, lends itself to this charming method of travel. It is much to be desired that some master of the fine art of decent living in rough conditions should give us a manual for the guidance of beginners in its mysteries.

ETHNOLOGICAL PSYCHOLOGY.

Zur naturwissenschaftlichen behandlungsweise der psychologie durch und für die völkerkunde. Von A. Bastian. Berlin, 1883. 234 p. 8°.

The idea pervading all of the more recent publications of Adolf Bastian is to establish a science of psychology of nations upon the data of modern ethnography. The all-pervading influence of nature forms and shapes peoples, nationalities, and their customs and habits; and therefore ethnology must become a natural science, — the physical science of the mind as manifested in the development of each nation in particular, and all the nations taken as a whole. The withdrawing of ethnology from metaphysical influences, under which it has labored since it was made a scientific study, is possible only when a sufficiently large material has been collected among the nations of the globe and the records of history to establish on it incontrovertibly general principles, which will be found to rest on natural science, and not on philosophic speculation. Some parts of the vast field of ethnology are still obscure as to their real significance, because the material to judge from is too scattering and scanty. Bastian's most recent work contains a series of seven articles, mainly on Polynesian subjects, which uphold and illustrate his ideas concerning ethnology, as stated above, with a full array of the most erudite comparisons. The author's extensive travels have furnished him with a stock of ethnographic facts which none has equalled in our century, and which he readily compares on almost every page with notices derived from the classic writers. Concerning the progress traceable on the social development of man, the writer shows, that, considered as an individual, the single man is of very small account in the primitive horde. The first stage is the tribe, based on consanguinity with exogamic marriage. This stage passes into that of *civitas*, or citizenship, whenever the country becomes agricultural. Social connection is no longer determined by family ties, but by the extent of the district, country, or commonwealth to which the individual belongs. When tribal organization becomes loose, then blood-revenge, and similar primeval customs, also disappear. The concise style of Bastian is not always what we should desire: at times it becomes rambling, a heavy phraseology obscures its lucidity, and the pressure of thoughts cannot find words enough to give vent to their rapid flow. Such defects as these are more prejudicial to the literary success of Bastian's numerous publications than the typographic errors which the proof-reader has allowed to disfigure their texts, especially the classic quotations.

STOKES'S SCIENTIFIC PAPERS.

Mathematical and physical papers. By George Gabriel Stokes, M. A., D. C. L., L L. D., F. R. S., professor of mathematics in the University of Cambridge. Reprinted from the original journals and transactions, with additional notes by the author. Vol. ii. Cambridge, *University press*, 1883. 366 p. 8°.

Vol. i. (328 pages) appeared in 1880, and contains the papers, arranged in chronological order, which were published by the author between April, 1842, and December, 1847. The earliest date in vol. ii. is March, 1848, and