to inquire into and report upon the availability of a new site for the national capital. According to the Federal Constitution the capital must be removed from Rio de Janeiro to a more healthy location in the interior province of La Goyaz, at a considerable altitude above sea level. The above-mentioned commission has published an elaborate report, finely illustrated with photographs and charts, in which the geology, hydrography, climatology, etc., of the new site receive consideration. The work is a very interesting one.

Owing to the unfavorable atmospheric conditions at Rio, where the cloudiness is very considerable, there has for some years been a plan to remove the Observatory to a new location near Petropolis, in the Organ mountains, at an altitude of over 2,700 feet. Petropolis is a place much sought by the wealthier classes of Rio during the summer months, when yellow fever is most prevalent in the capital. It is high enough to be above the yellow fever zone, and its cool evenings and nights are much more agreeable than the hot nights of Rio. Furthermore, it is above the fogs which commonly hang over Rio harbor at night, and is therefore a much more favorable location for an astronomical observatory. The necessary funds for the removal are, however, lacking, and there is at present no prospect that the location of the Observatory will be changed.

There is a very common belief that the *climate* of Rio is unhealthy. This is by no means the case. The climate itself is a fine one in many ways, the unhealthy character of the city being due simply to the lack of attention to the simplest sanitary measures. Rio harbor itself, beautiful as it is, is the most deadly feature about the whole place. The waters are so foul, as a result of the improper disposal of the city's sewerage, that they are a veritable storehouse of disease. When the city adopts proper sanitary regulations and builds sewers to empty its drainage into the open ocean, instead of into the harbor, then Rio will become as healthy as a city with its beautiful situation deserves to be.

This letter is mailed in the Falkland Islands. Although the meteorology of these islands is most interesting, regular observations are no longer made here. Those made here in the past have been discussed by Marriott (Quart. Jour. Roy. Met. Soc., London, 1880), and by von Dankelmann (Ann. d. Hydrog, Berlin, 1885). Mr. Davis, of the Argentine meteorological office, has sent two sets of instruments to the islands, but has not yet succeeded in securing regular observers. The climate of the islands is particularly interesting by reason of their far southerly position in the stormy prevailing westerlies of the southern hemisphere. Sunshine is so rare here in winter that, as an old resident of Port Stanley said to the writer to-day, "When we see the sun for an hour or two everyone says 'what fine weather we are having.'"

R. DEC. WARD.

PORT STANLEY, FALKLAND ISLANDS, July 29, 1897.

SCIENTIFIC LITERATURE.

Memoirs of the American Folk-Lore Society. Vol. V., 1897. Navaho Legends, Collected and Translated by WASHINGTON MATTHEWS, M.D., LL.D. With Introduction, Notes, Illustrations, Texts, Interlinear Translations, and Melodies. Boston and New York, Houghton, Mifflin and Company. Pp. 299.

A study of aboriginal life from the pen of Dr. Washington Matthews is always welcome, and this volume of Navaho Legends is no exception to the pleasant rule. Out of the abundant material collected by the author he has selected three legends for this publication: two incomplete rite-myths and the Navaho Origin Legend. The latter 'divides itself into four very distinct parts,' I. The Story of the Emergence; II. Early events in the Fifth World; III. The War Gods; and IV. The Growth of the Navaho Nation. The term rite-myth is defined as 'a myth which accounts for the work of a ceremony, for its origin, for its introduction among the Navahoes, or for all these things.'

The Navahoes, we are told, "celebrate long and costly ceremonies, many of which are of nine days' duration. Each ceremony has connected with it one or more myths, or legends which may not be altogether mythical." These rite-myths possess a degree of traditional value, and the last chapter of the Origin legend, our author says, 'is in part traditional or historical, and is even approximately correct in many of

its dates.' This group of legends, therefore, belongs to a class, the knowledge of which is indispensable to a reconstruction of the past life of a tribe, or to the understanding of existing conditions of the people, or to the tracing of the contact and interrelations of tribes prior to the historic period of this continent.

The introduction, and more particularly the volumious notes, in the preparation of which the author had in mind their 'interest to the ethnographer,' are replete with information. They explain, more or less in detail, customs mentioned incidentally in the legends, and cite the evidence by which localities referred to in the text have been identified. They also contain extracts from varients of the legends, and note other rites and myths in which figure the divinities of the narrative, and give numerous linguistic and other explanations of names, rites, customs, etc., which put the reader in possession of knowledge invaluable for the study of these Indians. The breadth of view of the subject treated is enlarged by abundant cross references, both to matter within the volume and to other writings of the author upon the Navahoes, a complete list of which is included in the Bibliographic Notes compiled by Mr. F. W. Hodge, forming a part of the book.

In presenting these legends to the public the author has "not confined himself to a close literal translation. Such translation would often be difficult to understand, and, more often still, be uninteresting reading. * * * The tales were told in fluent Navaho, easy of comprehension, and of such literary perfection as to hold the hearer's attention. They should be translated into English of a similar character, even if words have to be added to make the sense clear. * * * If he has erred in rendering the spirit of the savage authors, it has been by diminishing rather than by exaggerating. * * * In order that the reader may judge how closely the liberal translation here offered follows the original, the Navaho text of the opening passages—ten paragraphs—of the Origin legend, with interlinear translations, are given in the notes."

Fifteen pages or more of these interlinear translations afford an opportunity to observe the construction of the language and its use in narrative, ritual and song.

The examples of Navaho songs are interesting, not only in relation to the legends and the use of the language with poetic intent, but because they show that the same device obtains among the Navahoes which is common with the Indians of the Siouan linguistic group, a device to produce the effect of rhyme by means of certain 'meaningless vocables' at the close of each sentence. In his introduction, Dr. Matthews calls attention to the use of archaic words in the songs, to which 'the priests assign traditional meanings;' and also to the 'numerous meaningless vocables in all songs,' which 'must be recited with a care at least equal to that bestowed on the rest of the composition.' The same precision is required in the repetition of the vocables in the songs of the Siouan group. The writer having discovered that the emotional prompting of the song decides the choice of these vocables, it is especially interesting to note that, making allowance for the wide difference of language, the vocables given in the Navaho songs seem to follow the same rule that appears to govern their use among the northern tribes.

The short essay by Professor John Comfort Fillmore, upon the music—included in the notes—is of peculiar interest. His extended experience with Indian songs, added to his scholarly attainments in music, makes whatever he has to say upon this subject worthy the careful consideration of those interested in this phase of ethnological research. To quote from Professor Fillmore, Note 272, speaking of the songs transcribed from the phonographic records taken by Dr. Matthews, "they have very great scientific interest and value, inasmuch as they throw much light on the problem of the form spontaneously assumed by natural folk songs. Primitive man, expressing his emotions—especially strongly excited feeling—in song, without any rules or theories, must, of course, move spontaneously along the line of least resistance. This is the law under which folk-melodies must necessarily be shaped. The farther back we can get toward absolutely primitive expression of emotion in song, the more valuable is our material for scientific

purposes; because we can be certain that it is both spontaneous and original, unaffected by contact with civilized music and by any and all theories. In such music we may study the operation of natural psychical laws correlated with physical laws, working freely and coming to spontaneous expression through the vocal apparatus.

"These Navaho songs are especially valuable because they carry us well back toward the beginnings of music making. One only needs to hear them sung, or listen to them in the admirable phonographic records of Dr. Matthews, to be convinced of this from the very quality of tone in which they are sung. In all of them the sounds resemble howling more than singing, yet they are unmistakably musical in two very important particulars: (1) In their strongly marked rhythm. (2) In the unquestionably harmonic relations of the successive tones."

The limits of this article forbid following Professor Fillmore in his treatment of these two particular points, Rhythm and Harmonic melody, or to recount the evidence leading to his conclusion 'that the harmonic sense is the shaping, formative principle in folk melody.'

Of the many interesting points brought forward in this volume, only one or two can be indicated, and these are selected not so much to give the scope of the volume as to illustrate its wealth of suggestion.

In accounting for the limited number of arts practiced by the Navahoes, the author says: "In developing their blanket making to the highest point of Indian art, the women of this tribe have neglected other labors. The much ruder but allied Apaches, who know nothing of weaving woolen fabrics, make more baskets than the Navahoes, and make them in much greater variety of form, color and quality. The Navahoes buy most of their baskets and wicker water jars from other tribes. They would possibly lose the art of basketry altogether if they did not require certain kinds to be used in the rites, and only women of the tribe understand the special requirements of the rites." It would seem that special proficiency in the manufacture of some one article, while it may limit the development along other lines, leads to trade and the peaceful intercourse between different peoples.

In introducing the subject of poetry and music the author calls attention to the fact that for many years the most trusted account of the Navaho Indians was to be found in a letter published in the Smithsonian Report for 1855. The writer had lived three years in the heart of the Navaho country, and was aided in preparing this letter by an officer in the United States Army who had long commanded a post in the vicinity, both being men of unusual ability. From this letter the following statement is taken: "Of their religion little or nothing is known, as, indeed, all inquiries tend to show that they have none. 'The lack of tradition is a source of surprise. They have no knowledge of their origin or of the history of the tribe.' 'They have frequent gatherings for dancings.' 'Their singing is but a succession of grunts, and is anything but agreeable.' In spite of the evidence of these gentlemen, fifteen years ago when the author first found himself among the Navahoes he was not influenced in the least by the authority of this letter. He had not been many weeks with these Indians when he discovered that the dances referred to were religious ceremonials, vying 'in allegory, symbolism, and intricacy of ritual with the ceremonies of any people, ancient or modern.' The 'succession of grunts' reveal 'that besides improvised songs, in which the Navahoes are adepts, they have knowledge of thousands of significant songs—poems, as they might be called—which have been composed with care and handed down, for centuries perhaps, from teacher to pupil, from father to son, as a precious heritage, through the wide Navaho nation.'"

The author's rich gleaning in a field pronounced barren can be repeated elsewhere in the land, but, to achieve results like his, similar equipment is necessary. It is not enough, as the incident just quoted shows, 'to live in the vicinity' of a people; to report accurately upon them, one must have come so near to them and in such manner as to draw from willing lips their tribal lore.

It would be unjust to Dr. Matthews's work, and to the lesson it contains for us, not to call attention to the characteristic which is an important factor in making him a trustworthy authority in any field where he has studied,

his hearty recognition of the claims of a common humanity. This recognition makes him appreciate the seriousness of interpreting the men of one race to men of another race, and begets a fairness of presentation that lifts his work to a high standard of truthfulness. His manly conscientiousness is evident throughout the book in the choice of words, in the turn of a sentence, in the "testimony in favor of the Shamans, and the incidents related of Tall Chanter, Torlino and others; it is also noticeable in the illustrations of the book, particularly in the portraits, which, while characteristic, are without the brutal exaggerations of feature so painfully common in Indian pictures. While this may be regarded as the personal equation of the author, it nevertheless indicates certain qualities, the presence or absence of which in a field investigator helps or mars his work."

The contributions to ethnology offered in this volume are particularly timely, for the questions, "How have the tribes of North America been built up?" and "what have been the directive influences in determining their arts, cults and organization?" are of increasing importance, as the study of our native peoples passes beyond the initial stage. The student is under great obligations to the author for the perspicuous presentation of his material, due to his grasp of the subject, power of classification and concise statement, and his ability to rigorously exclude extraneous matter.

The excellent workmanship of the book—the type and illustrations, three being in colors—is worthy of the publishers, and reflects credit upon the Folk-Lore Society.

ALICE C. FLETCHER.

BOTANY OF THE AZORES.*

SINCE the publication of Hewett C. Watson's chapters on botany in Godman's Natural History of the Azores, published nearly thirty years ago, no important contributions have been made to the botany of this group of oceanic islands. The present paper, based on two summers spent in the islands, is a catalogue of all of the plants, cryptogamic as well as phanerogamic, heretofore recorded as Azorean, with a reasonable attempt at the exclusion of synonyms, especially in the higher groups. While in the phanerogams comparatively few species have been added to those previously recorded, the distribution by islands is indicated much more fully than ever before, and the list of Thallophytes very considerably increased. It is stated that, although the list of flowering plants and ferns is believed to be nearly complete, and perhaps relatively few additions to the lichens will be made, the fungi are still practically unstudied, and the algal flora, especially that of the wet sphagnum with which the highlands are usually covered, is likely to be very greatly increased by careful study. In the catalogue a reference is given, under each species, to places in which it has previously been mentioned as Azorean, and an adequate description and plate are cited. Where the latter has not been practicable, the species has been figured. In connection with this paper should also be noted Cardot's recent paper on the mosses of the Azores and of Madeira, previously mentioned in these columns.

* Botanical Observations on the Azores. By William Trelease. From the Eighth Annual Report of the Missouri Botanical Garden, St. Louis, Mo. Issued September 9, 1897. 8vo, pp. 144, frontispiece and 55 plates.

NEW BOOKS.

The Dawn of Astronomy. J. NORMAN LOCKYER. New York and London, The Macmillan Company. 1897. Pp. xvi. + 432. $3.00.

The History of Mankind. FRIEDRICH RATZEL; translated by A. J. BUTLER. London and New York, The Macmillan Company. 1897. Vol. II. Pp. xiv. + 562. $4.00.

Traite elémentaire de mécanique chimique. P. DUHEN. Paris, A. Hermann. 1898. Vol. II. Pp. 378.

Wild Neighbors. ERNEST INGERSOLL. New York and London, The Macmillan Company. 1897. Pp. xii. + 301. $1.50.

Deductive Physics. FREDERICK J. ROGERS. Ithaca, N. Y., Andrus & Church. 1897. Pp. vi. + 260.

Missouri Botanical Garden. EIGHTH ANNUAL REPORT. St. Louis, The Trustees. 1897. Pp. 236.