

Mongols in all directions. The pressure caused by these invading waves on the tribes of Northern Siberia drove them still further to the north. Horde succeeding horde increased the pressure, until at last the Omoki, the Chelaki, the Onkilon, and other aboriginal tribes, were driven quite out of the country, and have long ago disappeared entirely, leaving only traditions of their existence and remains here and there of their *yourts* or dwellings.

Mr. Markham thinks that here we have probably the commencement of the exodus of the Greenland Esquimaux, which spread over a period of one or two centuries. He believes they must have made their way from Cape Chelagskoi to the Parry group, probably over a chain of islands. Still keeping northwards, by Banks Island, Melville Island, Bathurst Island, North Somerset and Devon, Jones' Sound, Carey Islands, on all which undoubted traces of Esquimaux have been found, but where the conditions are not favourable to permanent settlement, the Asiatic emigrants made their way to Smith Sound, which they crossed in parties during the fourteenth, fifteenth, and sixteenth centuries. Some established their hunting grounds between the Humboldt and Melville Bay glaciers, and became the ancestors of that very curious and interesting race of men the Arctic Highlanders. Here the vegetation, the constant open water, and other conditions rendered a permanent settlement possible. Mr. Markham believes that some of these immigrants proceeded southwards and peopled South Greenland; not only so, but that parties also wandered still further north than the Humboldt Glacier, and that it is not improbable that our new Expedition may find groups of Esquimaux up to the very Pole itself. *Nous verrons*. Meantime, we repeat, Mr. Markham's theory seems to us a plausible one, and to answer all the requirements of an immigration into Greenland of a people such as are the Esquimaux. Dr. Rink, however, in a paper on the Descent of the Esquimaux, is inclined to believe them the last wave of an aboriginal American population driven from the interior by the pressure of tribes behind them. This may have been so, and the people in the north-east of Siberia, so strongly resembling the Esquimaux in language, *physique*, and customs, may have been American emigrants; but the reverse hypothesis appears to us much more probable.

Another extremely interesting paper by Mr. Markham, on the Arctic Highlanders, contains many details concerning the country, the character, the manners, customs, language, &c., of this curious people. Mr. Markham remarks upon what has been noticed by several explorers, the wonderful talent of this people for topography, and reproduces a most careful and accurate chart of the Greenland Coast from Cape York to Smith Channel, drawn by the Greenlander Erasmus York. These two papers are well worthy the attention, not only of the explorers for whom they have been compiled, but of all interested in Greenland ethnography. Mr. Markham's other contributions are a sketch of the grammar of the Esquimaux language, with copious vocabularies, and a long list of the names of all places on the coast of Greenland from lat. 65° 15' N. on the eastern side, round Cape Farewell, to the entrance of Smith Sound. Along with this most laborious list is a chart of the south coast of Greenland from the Danish Admiralty Survey, with Mr. R. H. Major's adaptation of

the ancient sites in the East Bygd, of the old Greenland colony.

Dr. Rink's paper on the Descent of the Esquimaux we have already referred to, and we have space merely to allude to the admirable and interesting and almost exhaustive paper on the Western Esquimaux, by Dr. John Simpson, of H.M.S. *Plover*, reprinted from the Parliamentary Arctic Papers of 1855. The volume concludes with the Report of the Anthropological Institute, and an appendix containing ethnological questions for explorers, drawn up by various eminent members of that Society.

Altogether, from the brief glance we have been able to take at this "Selection," it will be seen that it contains much of really intrinsic value, for having put which into so accessible a form, all who take an interest in Arctic matters will be grateful to the Geographical Society. It will, we are sure, moreover, be a welcome addition to the equipment of the members of the Arctic Expedition; and if carefully studied, as no doubt it will be, it cannot but suggest many lines of inquiry that are likely to lead to very valuable results.

#### VOGEL'S "LIGHT AND PHOTOGRAPHY"

*The Chemistry of Light and Photography in its Application to Art, Science, and Industry.* By Dr. Hermann Vogel, Professor in the Royal Industrial Academy of Berlin. With 100 Illustrations. (London: Henry S. King and Co., 1875.)

TO one acquainted with the very small amount of scientific literature yearly produced by the professional and amateur devotees of photography the name of Dr. Hermann Vogel is one associated most intimately with the scientific progress of the art. Dr. Vogel has lately attracted somewhat wider notice by his researches on the effects of coloured media in modifying the action of monochromatic light on photographic films, and the research is likely to lead to important results in the department of spectrum photography.

It was therefore in anticipation of at last finding a scientific manual of photography that we took up the translation of Dr. Vogel's work at present under review, hoping that Messrs. King and Co. had been the means of bringing a good book before the English scientific and photographic world. Unfortunately the whole experiment has been spoiled by the simple device of placing the translation in the hands of a person who is totally unacquainted with either chemistry or photography, and who is also not given to expressing himself in clear English.

On p. 4 we are informed that argentic chloride can be prepared by "directing chloric gas upon metallic silver;" and on p. 19 that "by employing *iodide of bromium* . . . the process of exposure was made a matter of seconds." On p. 35, "Archer coated glass plates with collodion in which salts of iodide had been dissolved;" and the same page contains this typical specimen of English: "After 1853 paper pictures on collodion negatives came more and more into vogue, the demands for daguerreotypes fell off and soon vanished altogether, and were produced only here and there in America;" while on p. 36 we are told that there are in Berlin "ten photographic album manufactories, to satisfy the demand, from whence they are exported to all parts of the world."

The following explanation of the reaction occurring during the immersion of the collodionised plate in the nitrate bath is given at p. 41: "The salts of iodine and of bromine that exist in the collodion film change their *properties* with nitrate of silver and give birth to iodide and bromide of silver and to *nitric acid salts*." The italics are our own. On p. 70 a footnote is added to explain that "1 gramme = the 1,000th part of a cubic metre, about nine solid feet of water at the ordinary average temperature."

Under the head of "Operation of Light on the Elements," which commences on p. 107, we find that chlorine is "a greenish strong-smelling gas developed from chloride of lime," that bromine "is an unpleasantly smelling substance of a fluid nature," and that iodine is "a black substance also of a fluid nature and used for friction." "Sulphur unites with oxygen and produces the pungent strong-smelling sulphuric acid;" "chloride and bromide gas show a peculiar relation to light even in their combinations;" and lastly, iodine again appears as a "solid body appearing in the form of shining black crystals, and emitting, when heated, a wonderful violet vapour."

Under the head of "Chemical Effects of Light on Salts of Silver," chloride of silver forms a "cheesy" precipitate; chloride, bromide, and iodide of silver are "very tenacious bodies;" when chloride of silver is exposed to light, the "chloride is liberated, and disappears as a greenish gas, which, from its abundance as well as its odour, can be perceived to be chloride of silver." "Green vitriol is greatly attracted by oxygen, and taking it up readily, passes into sulphate of iron."

On p. 118 we have the following lucid description of the toning process:—"The positive prints are subjected to a further treatment styled the colouring process. To this end it is plunged in a very diluted solution of gold. This solute (*sic*) contains chloride of gold. Metal silver has more affinity with chlorine than gold; hence it combines with the chlorine, forming chloride of silver, while the gold is precipitated. It becomes separated in the shape of a blue colour, adhering to the outlines of the picture, and this blue, mixed with the brown of the picture, gives a pleasant tone which does not change in the fixing-bath, that is, in hyposulphite of soda." The latter body is, by the way, alluded to indifferently as hyposulphite of soda, "fixing sodium," and "fixing natrium."

In photographic apparatus the translator is equally at sea. A dark slide is continually spoken of as a "cassette," and a printing frame as a "copper frame." The technical names of the processes are also as a rule incorrect.

We have no patience to devote more time to this wretched translation, which is only passable in portions of the part on the physics of some of the photographic processes.

While Dr. Vogel is held to blame for a prolixity and discursiveness which, together with the childish elementary character of much of the work, render it very dull, the editors of the "International Scientific Series" must be held responsible for still further reducing the value of the work by employing a translator ignorant of the subject.

R. J. F.

## OUR BOOK SHELF

*Ornithological Miscellany.* By George Dawson Rowley, M.A., F.Z.S., Member of the British Ornithologists' Union. Part I., No. 1. January 1875. (London: Triibner and Co.)

THE first number of Mr. Rowley's "Ornithological Miscellany" is devoted to the illustration of some of the rarer birds of New Zealand which have lately come into his collection. The most interesting of these is perhaps the large spotted Apteryx discovered by Mr. Potts in 1873, and named after Dr. Haast, of which, we believe, Mr. Rowley's specimens are the first that have reached this country. Figures of and remarks on the other known species of Kiwi are also given, so that we have altogether a nearly complete account of what has yet been ascertained respecting the external form and habits of these singular birds. Mr. Rowley passes on to discuss the structure of the feathers of the Struthious birds, of which he also gives us some admirable illustrations. A glance at these will serve to show how very far removed in many essential points is the genus *Apteryx* from the Cassowaries and others of the order *Struthiones*, with which it is commonly associated. Finally, Mr. Rowley gives us an account of a white variety of one of the Nestor parrots of New Zealand, which, as all birds are subject to the occasional influences that produce albinism, is not, perhaps, after all, of special interest; but Mr. Keuleman's well-drawn figure of this bird will be appreciated by all ornithologists.

Such are the contents of Mr. Rowley's first number. In regretting that he does not know when the next will appear, or what it will contain, we fully sympathise with the author. But if Mr. Rowley can produce from his cabinets a similar series of rarities to figure, and find an equally good artist to draw them, we are sure that his second and following numbers will meet with equal appreciation from every lover of natural history.

*On Numerals in American Indian Languages, and the Indian Mode of Counting.* By J. Hammond Trumbull, LL.D. (Hartford, Connecticut, 1875.)

FROM a careful examination of the numerals in various North American languages, Dr. Trumbull adds some interesting evidence to that already available as to the native development of arithmetic among uncultured races. The derivation of numeral-words from the names of the fingers habitually used in counting numbers is well shown in Hudson's Bay; Esquimaux *eerkithoka* = "little finger" being used as a numeral for 10, while *mikkeelukkamoot* = "fourth finger" signifies 9. Other materialistic sources of numeral-words are apparent in the Micmac language, where *tabu* = "equal" has become a numeral for 2 (like our own word "pair," from Latin *par*), while *tichicht*, which means 3, may have originally meant "more" or "again," and been used to distinguish the plural as beyond the mere dual (compare Latin *trans* and *tres*). As in the civilised Old World languages with which philologists especially occupy themselves, the numerals have for the most part lost the traces of their original significance, their development, a not unimportant part of the intellectual development of mankind, has to be learnt from investigations like the present into savage or barbarian tongues.

E. B. T.

## LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

British Rainfall, 1874

I AM much obliged by your favourable mention (NATURE, vol. xii. p. 76) of my annual volume, and am very glad to find that it concludes with a suggestion, because, to quote from p. 138 of