

little volume. We think the idea of making such a collection a happy one, not only for scholastic purposes, but also for the use of those who wish to be able at any time easily to refer to any of the passages in Latin authors in which our island is referred to. Mr. Cayzer gives also translations of some of the chief references in Greek writers. We should think, if teachers and examiners could be persuaded to break through custom, the introduction of such a book into schools would add interest to the reading of Latin, and furnish, besides, the little fellows with a stock of valuable information. Most of the cuts are appropriate, several being old friends.

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. The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

The Colour-Sense of the Greeks

MR. GLADSTONE has shown that the language of Homer is an inadequate vehicle for conveying precise and nicely distinguished ideas of colour. Whether the nation that was content to describe colours so imperfectly was also incapable of subtle perception of tones of colour is clearly another question. Language does not keep pace with perception unless a practical or æsthetic necessity arises for expressing what is perceived in words to other people.

Practical necessity gives names to pigments and bright objects, such as flowers and precious stones, rather than to tones of colour; the æsthetic necessity that lies upon the artist to utter what he has felt will naturally lead to imitative expression sooner than to an expression that is merely symbolical. In other words an early race will learn to use colour with nicety for decorative and pictorial purposes before it develops the distinctions of language requisite for accurate word-painting.

That this was actually the case among the Greeks appears, I think, very clearly in a passage of Ion which is preserved to us in Athenæus Deipnos., Lib. xiii. cap. 81 (p. 603 *seq.*). Ion, who was a contemporary of Sophocles, describes an evening which he spent with the great tragedian in Chios. Sophocles, admiring the blushing face of a little boy who served the wine, quoted, with high approval, a line of Phrynichus:—

“The light of love gleams on the purple cheek.”

On this a certain pedantic grammarian breaks in—“In sooth, Sophocles, thou art skilled in poetry; but yet Phrynichus spoke not well when he called the cheeks of a beautiful person purple. For if a portrait-painter were to colour the cheeks of this boy with purple pigment he would no longer appear beautiful. It is not fitting to compare what is beautiful with what is not so.” Sophocles laughs at the objection, and replies—“Neither, then, my friend, wilt thou be pleased with that line of Simonides which, to the Greeks, has appeared very well said:—

‘The maiden sending forth her voice from her purple mouth;’

nor with the poet, when he says, ‘golden-haired Apollo;’ for if the painter made the hair of the god golden and not black, his picture would be less excellent. Nor wilt thou be pleased with him [Homer] who said ‘rosy-fingered,’ for if one were to dip the fingers in rose-colour, one would produce the hands, not of a fair woman, but of a dyer of purple.” This retort produced a general laugh, and confounded the pedant not a little.

The Greeks, then, were perfectly aware of the insufficiency of the poetic vocabulary of colour; and accordingly they did not expect descriptive rendering of colour from the poet. This, it is plain, is a circumstance that must constantly be kept in view in any attempt to find in the poetry of the Greeks a measure of the development of their colour-sense.

Aberdeen, December 3 W. ROBERTSON SMITH

The Comparative Richness of Faunas and Floras Tested Numerically

In his letter in NATURE, vol. xvii. p. 9, Prof. Newton has strongly brought out the absurdity of comparing districts of *very*

different areas by the proportionate number of species to area in each. On this principle he shows that to be equally rich with the small island of Rodriguez, Madagascar ought to possess four times as many species of birds as exist throughout the whole world! It does not, however, by any means follow that the method thus exposed may not be of value in comparing regions of approximately equal area, as is the case with several of the primary regions, to determine the comparative richness of which Mr. Sclater first applied it. I have not Mr. Sclater's paper at hand, but it is my impression that he made no attempt to show—“that the proper mode of comparing the wealth or poverty of one fauna with another was to state the proportion which the number of species composing it bears to the area over which they range”—as Prof. Newton implies that he did, but that he merely adopted this method as the only one readily available for the comparison of his regions. Although I took the opportunity of making some corrections in the figures, I never committed myself to the principle; and I very soon afterwards found that it was not to be trusted. As, however, several later writers have made use of it without remark, it will be interesting to consider where the exact point of the fallacy lies, and with what modifications the method can be trusted to give useful and consistent results.

If we compare two islands of almost exactly equal areas, such as Ceylon and Tasmania, and find that the one has twice or three times as many species of mammals or birds as the other, it will be generally admitted that we express the fact correctly when we say that, as regards such a group of animals, the one is twice or thrice as rich as the other; and the same may be said of two countries or two continents of identical areas. For on the supposition that there is a general correspondence between the numbers of rare and common, of local and of wide-spread species in the two areas compared (and this seems probable), then the average number of distinct species to be met with on one spot, or to be seen during a journey of equal length, will be proportionate to the total number of species in the two areas. But now let us divide one of the two continents or islands which we are comparing into two or more parts. We know, as a matter of fact, that one-half the area will always contain much more than half the total number of species, while one-tenth of the area will contain immensely more than one-tenth of the species. To take an example: the county of Sussex is about one-eightieth part the area of the British Isles, yet it actually contains full two-thirds of the total number of flowering plants, both being estimated by the same flora (Babington's “Manual,” fifth edition, British Isles 1,536 species, Sussex 1,059 species). If we now compare either Britain or Sussex with an *equal area* on the continent of Europe or North America, we may obtain an instructive estimate of the comparative richness of their respective floras; but if we compare *unequal areas*, and then endeavour to equalise them by getting the proportions of species to area, we shall obtain erroneous results, which will become literally absurd when the areas compared are very unequal.

The problem remains, how to compare unequal areas of which we possess the zoological or botanical statistics. We can only do so by equalising them, and this may not be so difficult as at first sight appears. For example, let us take the Palearctic and North American regions, in which the species of birds are nearly equal in number, but the areas are as about seven to three. The number of the Palearctic species have, however, been proportionately increased of late years, and if we take the western half of the Palearctic region so as to include North Africa and Persia we shall have an area about equal to the Nearctic region, and a number of species perhaps one-sixth or one-eighth less, which will thus represent the comparative richness of these two areas. The eastern half of the region, including Japan and North China, is probably as rich as the western; while the intermediate portion is poorer in species. Combining these three portions, and taking the average, we should perhaps find the Palearctic region about four-fifths or five-sixths as rich as the Nearctic, instead of less than one-half, as shown by the method of proportionate areas.

Whenever we know how many *peculiar* species any district contains, we can deduct its area from the total area of the region to be compared, and this number of peculiar species, from the fauna of the region; and by this means we may reduce two unequal regions to comparative equality. Again, all detached portions or islands should be omitted in estimating the comparative richness of regions, because they affect these regions very unequally. By adding Britain to Europe you increase the area without adding to the fauna, and thus make the region seem poorer; while by adding Madagascar to Africa, or New Zealand