

sentations or the networks of compass lines which make the originals often both indistinct and confusing. Thus Dr. Nansen does not invite criticism of his interpretation of documents except from the very few who have made a special study of one or other of the many lines of literary or cartographic investigation with which he deals. Our knowledge of Dr. Nansen's character and of the fact that he went into the enormous labour of this work without prejudice or prepossession gives us confidence in the soundness of his conclusions.

The early history of the north, apart from vague poetical allusions, rests upon only a few definite authorities. The first is Pytheas, the Phocæan colonist in Massalia, who first ventured northwards in the Atlantic, about 330 B.C., circumnavigated the British Isles, and reached Thule; he was also the first navigator to fix positions by astronomical determinations of latitude by means of a gnomon or by ascertaining the length of the longest day. Dr. Nansen goes fully into the question of the position of Thule, and satisfies himself that it was not Shetland or Faroe or Iceland but Norway. The next definite information was the description given to King Alfred about 890 A.D. (by the Norwegian walrus-hunter Ottar) of the rounding of the North Cape, the entry into the White Sea, and the phenomenon of the midnight sun. This was obviously a truthful narrative of personal experience. Then came Adam of Bremen about 1070, who collected a great deal of authentic information regarding Scandinavia, and mentions Iceland, Greenland, and Wineland, the two last-named for the first time in literature; but there is also much of the fabulous in his writings derived from classical legends. Contemporaneously with the chroniclers, and in the centuries between them, there were two vague currents of northern exploration regarding which such knowledge as has emerged is of the mistiest. They were those of the Irish monks, who founded a chain of settlements from the Hebrides to Iceland and carried with them legends of Hy Breasail—the Isle of the Blessed or the Fortunate Isles of the Greeks—of which many adventurous souls went in search; the finding of which was often rumoured but never confirmed. The second current was that of the Norsemen, who sailed westward to Iceland, where they found Irish monks residing, and whence, pushing westward still, they reached and colonised southern Greenland.

The old Icelandic sagas speak, as is well known, of a voyage of Leif Ericsson, when he missed Greenland and sailed westward until he met a coast, parts of which were named Helluland, Markland, and Wineland the Good, where self-sown wheat and wild vines were found, and various remarkable encounters took place. Hitherto the sagas have been accepted as faithful tradition enshrining facts of observation, but the outcome of a prolonged examination of all possible data is to convince Dr. Nansen that the wheat, the vines, and many other features were mere products of expectation on the part of the saga-tellers. He allows that Norsemen did reach the American coast (though we must say that his iconoclastic logic, if carried further, seems to us capable of throwing doubt on the authenticity of this part of the narrative too), but he believes that they thought they had reached the Fortunate Isles spoken of by the Irish monks and the Roman legends, and so attributed all that the Fortunate Isles were supposed to be to the lands of their discovery.

The idea that Wineland, though reached from Greenland, lay so far along the rim of the world-disc that it was close to Africa brings it in line with the Mediterranean legend, and presented no difficulty to

the mediæval geographers before the revival of the spherical form of the earth and the invention of portable instruments for the astronomical determination of latitude. The growth of knowledge of cosmography and of precision in cartography is traced down to the time of the Cabots and the Corte-Reals, and the period of commercial whaling on the small scale which led the northern seafarers to the edge of the arctic ice is touched upon; and then, when the globe had been swept clear of myth and the Fortunate Isles had gone to Davy Jones with the Sunken Land of Busse, Dr. Nansen leaves us with the stage free for modern exploration. What he said of the explorers of that sixteenth-century stage we may say of those of our twentieth-century stage, when the passages have been found and the pole itself reached—

"To riches men have seldom attained, to the Fortunate Isles never; but through all we have won knowledge."  
H. R. M.

## MICROSCOPE STANDS.<sup>1</sup>

### II.

#### THE CHANGES NOW GOING ON.

IN discussing the relative merits of Continental *versus* English pattern microscopes, the ground is at once cleared if we discard the labels Continental and English, and seek a more accurate definition for each type than merely the place of origin.

As a matter of fact, the old labels will soon cease to have any real meaning, for the Continental makers are adding to their patterns new instruments, rivalling in complexity of adjustments the so-called English type, and English makers are in many instances producing almost exact replicas of the Continental type. That the foot still remains of a more or less horse-shoe form, with inclination axis below the stage, in the one, and is generally of the tripod form with inclination axis above the stage in the other, is a detail which does not affect the real difference between the two types, viz. relative complexity, although it renders the former more suitable for use in the vertical, and the latter more comfortable for use in an inclined position.

The English type of microscope, owing to the fostering care of a small body of dilettanti, came into general notice, when the need of a microscope was felt by the professions, already a complex instrument; from this simpler type have been slowly evolved, too slowly unfortunately for the demand, which has in consequence swung over to the Continental type, which, having no past to speak of, was able to adapt itself the more readily to the wants of those who did not care so much how they saw, so long as they could see.

The two types, starting from opposite poles, have lately reached common ground as regards the majority of the instruments produced, and there is little to choose between them for mere demonstration of known structure; but to get the finest results out of any optical system centration along the axis, and in the case of a microscopical system interchangeability of parts not only above but below the stage is essential, and few Continental microscopes possess the means of doing this, while every English stand of the first class is so provided.

Therefore the conclusion of any unbiassed observer must be that the English type is the better in the hands of the expert, who wishes not merely to demonstrate the known, but to reach out maybe into the unknown; but what is best for the master of his instrument and subject is not always good for the average man, and

<sup>1</sup> The first article appeared in NATURE of December 21, 1911.

there are minor details, such as the method of fixing the mirror, &c., in the Continental pattern which make them easier of use by those who merely look on the microscope as a tool; and this, combined with the greater handiness in the vertical position when wet preparations are under examination, makes the Continental type more acceptable to the laboratory worker.

Such, in the writer's opinion, are the differences between the two types considered from a general point of view. We can now draw nearer, as it were, and examine each type in detail; and, curiously enough, although the conclusion drawn above was that, for the laboratory worker at any rate, the Continental is the better type, on account of greater simplicity, &c., yet the Continentals, in their more costly instruments, are greater offenders as regards redundancies than the English, the differences in the two types being not so much that one is practically perfect, while the other is not, but that the errors and superfluities in the Continental type are passive—that is to say, they are there, but need not be used, and if used unknowingly make very little difference; while the defects in the English type, if fewer, are more vital, in that the efficient working of the instrument is interfered with if they are not mastered.

Taking first the Continental type, most of the better instruments are fitted with a circular rotating and centring stage, the use of which for anything but petrology it is difficult to guess; the iris diaphragm, below the Abbe condenser, is also fitted with an excentric rotating movement, which will, of course, give oblique light in any azimuth, but as oblique light is altogether discredited, except for certain experimental and lens-testing purposes, it can scarcely be considered a useful adjunct to the average microscope. So much for redundancies. The instruments with this type of substage usually possess a mirror which is fixed as to its centre, but which can be inclined in any position about that centre. This is as it should be, as when mounted in this way it is easier for the average worker to illuminate properly; but such mirrors are usually fixed, not on the tailpiece, but on the part that slides in the tailpiece groove, thus altering the position of the mirror when focussing the condenser, which, when using a small source of illumination, such as a lamp, is a disadvantage, but a very minor one, compared with the swing tailpiece on which the mirror is mounted in most of the cheaper forms of the Continental type, and practically all patterns of the English type. The one advantage of the swing tailpiece is, of course, that oblique light can be obtained by its aid, a very doubtful advantage, as indicated above, and far too dearly bought by adding an adjustment that invariably puzzles the average man, and leads to more bad microscopy than all the other faults of either type put together.

In the writer's opinion, it is the combination of the altogether undesirable swing tailpiece with the desirable (if understood) centring substage, that has caused the prejudice (for such it amounts to) in certain quarters against the English type.

The first should be done away with entirely; the second, except for instruments used for amateurs, with almost as many condensers as objectives, should also be conspicuous by its absence, the centring nose-piece, or objective changer, such as made by Zeiss or Leitz, being a much more practical method of centring for the laboratory worker, who almost invariably uses only one condenser.

NO. 2202, VOL. 88]

#### A BIRD-BOOK FOR YOUNG PEOPLE.<sup>1</sup>

WITH the assistance of Mr. A. R. Horwood, of the Leicester Museum, who has written the first seventy-eight pages dealing with bird photography, collecting eggs and skins, mounting the latter, and nature-study generally, Mr. Westell has succeeded in producing a very readable little volume. It is also rendered more attractive by the photographic illustrations, many of which appear to be from nature, although others are obviously "faked." The author treats his subject from the point of view of environment, discussing in turn the birds of the garden, the lane, the field and meadow, the air, the woodland, the heath, moor and mountain, the riverside, and the coast. That such an arrangement has a certain advantage from the point of view of the collector is sufficiently obvious, and in the opinion of the author it does not apparently outweigh difficulties that arise from the systematic point of view.

As regards systematics, the author, with the aid of Mr. A. R. Thompson, gives, in the form of an appendix, a list of British birds brought, so far as



Wheatear and Nesting-hole under Rock. From "The Young Ornithologist."

possible, up to date, with their scientific names. This is based on one recently compiled by Mr. Ogilvie Grant, but with some modifications in the sequence of the orders, which, in our opinion, are no improvement, since, whatever may be popular views on the subject, British orders of birds ought undoubtedly to commence with the passerines and end with the gamebirds. In the matter of generic and specific names it is satisfactory to find that the author takes a conservative course.

It has, however, to be mentioned that the systematic list does not in all cases tally with the text. For instance, we find on p. 165 of the latter reference to one species of coal-tit, whereas two, the British and the Continental, are mentioned in the former, and it is accordingly a difficult matter for the young collector to identify which is described. That they are not really two species is immaterial. It may also be mentioned that no mention is made in either place of the Irish coal-tit, recently described by Mr. Grant. A word must also be said in regard to the index.

<sup>1</sup> "The Young Ornithologist: a Guide to the Haunts, Homes, and Habits of British Birds." By W. P. Westell. Pp. xv+311. (London: Methuen and Co., Ltd., 1911.) Price 5s.