merely explained to the pupils as the pagan philosophies are explained.

SCIENTIFIC BOOKS

The Friendly Arctic. V. STEFANSSON. The Story of Five Years in Polar Regions, with a foreword by Gilbert Grosvenor, president of the National Geographic Society, and an introduction by Sir Robert Borden, Prime Minister of Canada. New York (Macmillan) 1921. Pp. xxxi + 784.

IT is the habit of scientific men to say that there is no guide for the well-ordered conduct of the every-day business of living which approaches in validity and all-round usefulness that which is called the scientific method. But while this is strictly orthodox and extremely common preaching, the thoughtful observer of human folkways can not but be impressed with the fact that the correlation between this trite preaching and the actual practice of his friends in the conduct of their own lives, is not of as high an order as it would be expected to be if the preaching were taken at its face value. It is, therefore, an event of great human interest as well as of no mean scientific importance to have forthcoming a well-nigh complete and perfect example of what happens when scientific methods of thought are translated into action, with something approaching 100 per cent. completeness, to the end of living happily, usefully and continuously in a naturally harsh environment. Such an event is afforded in this recent book by Stefansson.

It is from this point of view that, in my opinion, the book has its greatest significance. It contains a wealth of records of achievements in the field of geography in the narrower sense of the word—discoveries and descriptions of new lands, exploration of the bottom of the polar sea by soundings, much exact mapping of coast lines, and the like—which I suppose to be of major importance in those fields of science, but being in no wise a specialist in either geography or polar exploration, I am not qualified to express any expert opinion on these matters. But I have a strong conviction, after carefully reading the book twice, that the importance which the history of science is going to attach to Stefansson's work in the polar regions will rest primarily upon quite another thing than his contributions to geography in the strict and limited sense, significant as I have no doubt these contributions are.

In temperate, sub-tropical and sub-arctic portions of the earth's surface certainly, the zone of freedom in human behavior is, from the viewpoint of evolution, rather wide. Men in such regions are, and must always have been, widely free to develop any sort of habits of life and folkways in general, so far as the eliminative action of the purely physical environment was concerned. For example, it makes no difference in terms of survival value so far as one knows, whether ladies dress in the entertaining and colorful manner of the Rumanian peasant, or in the quite different if not less exciting manner of the Fifth Avenue society woman. But the case is biologically quite different in the polar regions. There the zone of freedom in respect of the mode of conducting life is extremely narrow. The environment imposes strict and narrow limitations on habits and biological folkways generally. One conforms or is eliminated. There is no wider range of choice.

Now presumably the Eskimo's knowledge of how to live happily, comfortably and reasonably long in the Arctic has been very slowly and somewhat painfully wrought into his racial and individual consciousness mainly by the operation of natural selection. Those who did not dress, house themselves, find food, etc., within the limits of the zone of freedom of individual action rigidly set by the environment are no longer either present or represented in the Eskimo population. The consequence is that the Eskimo is now, as Stefansson has demonstrated with a wealth of detail in this and his earlier book, "My Life with the Eskimo," a creature extraordinarily well adapted to his particular environment, and therefore happy in it.

Prior to Stefansson's work the whites who have adventured into the Arctic as explorers, and the list is a nobly impressive one, have uniformly depended upon what is, in its philosophical essence, one and the same scheme to

avoid the consequences of the stark evolutionary processes there operative. This scheme has been essentially to provide sufficiently adequate transport facilities, by sea and by land, so that the physiologically obligate elements of the environmental complex, food, heat, shelter and clothing, could be in whole or in part taken from the temperate zone into the Arctic and act as a buffer between the exotic white man and the indigenous environment. In short what the Arctic explorer has always endeavored to do is to project, like a pseudopodium, a piece of the temperate environment into the Arctic environment, and move in and out of the country along the center of the pseudopod.

Stefansson's plan is philosophically quite different. It is based biologically upon the considerations: first, that the physiologically obligate essentials of life must be generally if not universally present in the Arctic, else there could and would be no Eskimos there; and second, given that these essentials are there, a sufficiently acute, penetrating and optimistically sympathetic application of the reasoning faculties of the scientifically trained mind should enable one man to avail himself of them and hence *live,* as well as another. It is quite easy, given a sufficient lack of knowledge of the facts, on the one hand, and of imagination, on the other hand, to prove conclusively by *a priori* logic that this theory of Stefansson's is all wrong. In point of fact a considerable number of the members of his expedition logically excogitated the matter and came to the conclusion that in holding such views Stefansson was not merely silly but probably also insane, and in consequence felt justified in (a) disobeying his orders as Commander of the Expedition, (b) in refusing to render him any aid (cf. pp. 114-115 regarding chronometers), and (c) in actively hindering his preparations and subsequent operations.

The best possible refutation of a purely logical proof that Stefansson's theory was all wrong was, of course, to carry through, over a long period of time and a wide range of area, travels in the polar regions, living entirely off the country as the native Eskimos do. Precisely this is what Stefansson did for a period of nearly five years, with brilliantly successful results, viewed from any standpoint. "The Friendly Arctic" is the record of how it was done and of what happened. With two or three companions, a few generally poor sledges (because the good ones were either left on the Karluk or retained by the logical but unimaginative southern party), some dogs, a rifle apiece with a modicum of ammunition, a little scientific apparatus for observing, *et præterea nihil,* Stefansson moved about over the polar ice and lands freely at will, and added richly to the world's knowledge of the regions.

Every one who is interested in the philosophy of evolution, general biology and human psychology, as well as those interested in geography and Arctic exploration, should read this fascinating book. It records an extraordinary intellectual achievement.

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SPECIAL ARTICLES

ACOUSTIC TOPOGRAPHY IN A ROOM[1]

1. *Introductory.*—A plan of the room is given in figure 1, where *W, W'* denote the unbroken walls, *I* the interferometer and U-gauge, *L* the electric lantern, *A* other apparatus. The coordinates along which the surveys are to be made are *x, y, z, y* being between walls, *x* toward the open door and *z* above the table *T*. For more refined work, *I. L, A,* etc., should have been removed to another room; but for my present purposes this is unnecessary.

The pin hole probe described in this journal (SCIENCE, May 27, 1921) has since been found useful for the location of nodes in pipes and other vessels, both telephone and windblown. These experiments are omitted as without interest here, except in so far as they indicated the exceptional sensitivity of the probe to nodes. It is relatively quite unresponsive to ventral segments or to wave trains. The pressure variations in question are converted into static pressures through the intervention of the

[1] Advance note, from a Report to the Carnegie Institution of Washington, D. C.