

and physics is brought out. The pupil who is fortunate enough to receive instruction on these lines will be placed in the receptive intellectual attitude which should be the aim of all scientific education.

*Natural and Artificial Methods of Ventilation.* Pp. 66 + xvi. (London: Robert Boyle and Son, Ltd., 1899.)

THERE is a considerable difference of opinion among experts as to the most satisfactory system of ventilation. The system by which fresh, warm air is forced into rooms at the top while foul air escapes at the bottom has been introduced into a number of buildings; but the compilers of the present volume give extracts and diagrams from papers and reports to show that this method is wrong in principle, and inefficient in practice. It is held that the heating of a building should always be separate and distinct from that of the air supply, and that the only satisfactory means of ventilation is obtained by extracting the vitiated air near the ceilings of rooms, and admitting the fresh air at lower levels. This "natural" system has been successfully introduced by Messrs. Boyle into several public buildings.

*Man, the Microcosm.* Part I. The Nature of Man. By Leonard Hall, M.A. Pp. 82. (London: Williams and Norgate, 1899.)

DEFINING a monad as any living organism which consists of only one cell, the author's thesis is that man is a community of monads, each of which is a conscious being, and that "human consciousness must consist of the combined and co-ordinated consciousness of the individual monads." The theory is used to explain many facts concerning the nature of man as an individual and as a member of a social community.

*The Reliquary and Illustrated Archaeologist.* Edited by J. Romilly Allen. New Series. Vol. v. Pp. 288. (London: Bemrose and Sons, Ltd., 1899.)

MANY articles and notes of interest to all students of archaeology are contained in this new volume, comprising the four quarterly numbers issued during the present year. The numerous illustrations of places and objects of archaeological significance add to the attractiveness of a volume which appeals to every one interested in antiquities.

#### 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 intended for this or any other part of NATURE. No notice is taken of anonymous communications.]*

#### Botany and the Indian Forest Department.

IN the issue of NATURE of this date I find the second part of Sir G. King's presidential address of Section K, Botany, delivered at the Dover meeting of the British Association. At the end of that address Sir G. King has made a strong attack on the Indian Forest Department, and on the teaching of botany at Coopers Hill College. He maintains that the forest officers trained in this country go out to India with an insufficient knowledge of systematic botany, and that they, on arrival in India, are not encouraged to familiarise themselves with the contents of the forests under their charge.

These assertions are in some respects not in accordance with the facts of the case, and in others they show that Sir G. King, in spite of his long Indian experience, has failed to grasp the real issues. I trust you will permit me to substantiate these two points.

To begin with, Sir G. King puts the cart before the horse. If, as he maintains, the ordinary forest officer educated in England now arrives in India without sufficient knowledge to enable him to recognise from their botanical characters the most well-marked Indian trees, it is chiefly due to the fact that it is

nowadays almost impossible to secure a botanical teacher in this country who can impart the necessary knowledge to the students. Sir G. King feels this himself, hence his lamentations, at the end of his address, over the decay of the study of systematic botany in Britain. I feel sure that Sir W. Thiselton-Dyer will bear me out when I state that no botanical teacher has been appointed to Coopers Hill College except with his, and latterly also with Dr. D. H. Scott's, advice. They have been good enough to recommend to us the gentlemen whom they considered most suitable for our requirements, but, alas! not one of them, though all were excellent and even famous botanists in other respects, was a systematic botanist in the sense demanded by Sir G. King. Hence I must turn round upon him and say: "Provide well-equipped systematic botanists, and we shall be only too glad to have one of them." In other words, the main difficulty lies with the botanists of the present age, and not with the Forest Department.

On the other hand, we are not free from blame. Until the year 1890 botany was a compulsory subject in our entrance examination, but in that year it was, against my advice, made an optional subject. This, I believe, was due to the influence of the headmasters of our great public schools, who desired to pass their pupils straight into the service, without being obliged to teach special subjects, such as botany. I do not desire to discuss the general question here involved, but I do wish to state that the action in the direction just indicated was decidedly injurious to our special requirements. I am happy to say that during the last year botany has once more been placed amongst those subjects which every candidate for entrance into the forest branch of Coopers Hill College will have to take up.

As for myself, I may state that, ever since I started the forest branch of this College in 1885, I have constantly urged our botanical teachers to extend the study of systematic botany at the expense of other branches, such as physiology. But what with young men trained on the ordinary lines of our public schools, and with teachers with a decided leaning to branches of botany other than systematic, it has been a hard struggle. The otherwise excellent teachers of botany, whom we have had so far, did their best to take up systematic botany on the lines required by us; but that is a branch not learned in a day, and the first two of our botanists left us, for better appointments than we could offer, when they had fallen in with our requirement.

And yet I think Sir G. King goes too far when he states that the ordinary forest officer educated in England is unable to recognise from their botanical characters the most well-marked Indian trees. Cases like this do, no doubt, occur; but I am sure that Sir G. King's assertion does not hold good in the case of many of the men who have been sent to India. Indeed, several of them have developed a decided leaning towards systematic botany. At the same time, the task is, in a great part of India, far more difficult than would appear from Sir G. King's words. I should like to know what he understands by "the most well-marked Indian trees." There are some 4000 different species of trees and woody shrubs in Burma, and about half that number in Bengal-Assam. If Sir G. King expects our forest officers on arrival in the country to recognise even a moderate fraction of these species, then he aims at impossibilities, and his enthusiasm for systematic botany has carried him far beyond reasonable limits. To do what he requires demands a thoroughly trained botanical specialist; and even such a one would require many years to become acquainted with the trees, shrubs and herbs (as demanded by Sir G. King) of an Indian jungle in Burma, Bengal and many other parts of India. For such things the ordinary Indian forest officer has no time.

The statement made by Sir G. King, that the young forest officer on arrival in India is not encouraged to familiarise himself with the contents of the forests under his charge, is not in accordance with the facts of the case. On the contrary, it is made the first duty of the young officer, apart from the study of the language of the people. Sir G. King himself enumerates fourteen forest officers who, during the last thirty years, have done good botanical work. Of these, five have made important contributions to the systematic botany of India. Of the other nine, one was trained at Coopers Hill. Considering that all the men sent out from Coopers Hill are as yet young, and that to my certain knowledge several of them are likely to become botanists, I think Sir G. King's strictures are not justified. Unfortunately,