

in body and mind and to remain free from disease. . . . Successful work on the part of many boys and girls is dependent upon this desire becoming strong enough to rule the body." So it is not surprising to read as an exercise to be set to pupils: "Notice what effects tobacco, alcohol, opium, etc., have upon those who use them." But another, "Observe whether tea and coffee affect the health and 'temper' of parents," makes one wonder whether tactless observation might not have even more effect than the stimulants!

Where it follows lines which are already becoming conventional in America the book is good; in the more novel parts it is even better.

A Geographical Bibliography of British Ornithology from the Earliest Times to the End of 1918. By W. H. Mullens, H. Kirke Swann, and Rev. F. C. R. Jourdain. Part 1. Pp. 96. (London: Witherby and Co., 1919.) Price 6s. net.

MESSRS. MULLENS AND SWANN have already made ornithologists their debtors by compiling a "Biographical Bibliography of British Ornithology" (completed in 1917). Of this the present work is a supplement or continuation, the books and articles being now arranged under counties. The Rev. F. C. R. Jourdain has shared the labour. The aim of the authors has been to give an account, as complete as possible, of the literature and records relating to the avifauna of each county. This will be of great value to local workers, and there is good sense in Gilbert White's remark, quoted on the title-page: "Men that undertake only one district are much more likely to advance natural knowledge than those that grasp at more than they can possibly be acquainted with; every kingdom, every province, should have its own *monographer*." The labour of making this bibliography must have been very great; it has extended over six years, and has meant the consultation and analysis of a huge mass of literature. There are to be six parts, and those which have appeared represent arduous and useful work well executed.

The Philosophy of Conflict: and Other Essays in War-Time. By Havelock Ellis. Second series. Pp. 299. (London: Constable and Co., Ltd., 1919.) Price 6s. 6d. net.

MR. ELLIS is likely to find readers for this collection of essays. His social studies turn on sex-problems, often shrewdly handled. His literary and anthropological studies are dominated by his sense of the picturesque. He is arrested by the picture-making metaphors of Conrad, and by the picturesque theories of Sollas in prehistoric anthropology. In his essays in this last group he reminds us of his own portrait of Jung, wandering "with random, untrained steps, throwing out brilliant suggestions here and there." But in the essay in which this portrait occurs he is on his own ground, and justifiably dwells on his part in introducing to English readers the picturesque psychology of Freud.

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Letters to the Editor.

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The Cost of Scientific Publications.

MAY I add a word to this most interesting discussion from the point of view of the society with which I am most concerned?

The London Mathematical Society was founded by De Morgan and others in 1865, and has steadily improved its position until it is admittedly the leading mathematical society in the country. It is a comparatively small society, and its activities are almost entirely concentrated on the publication of its Proceedings, to which purpose practically its whole income is devoted. It has no paid staff of any kind.

Before the war the society was able to publish annually about 500 pages of original research, at a cost of some 300*l.* to 350*l.* Now a volume of 400 pages only, costs some 600*l.*, and such slight increase of income as there has been is entirely insufficient to meet the new situation. Most of the members are life-compounders, and it is exceedingly difficult to raise the membership beyond a certain point; it was 290 in 1918, and is now about 340. A committee is considering what is possible in the way of economy or increase of charges, but every increase of charges makes it harder to secure new members, and the only substantial economy possible lies in a further limitation of output.

If the society is to maintain the position won by years of effort before the war, it must at all costs keep up both the quality and the size of its Proceedings. In particular it must continue to attract the best work of young mathematicians; and it cannot do this if it has to hamper them at every turn by incessant demands for condensation. A considerable part of the volumes must always be occupied by the work of men of established reputation, and if they are to be further curtailed it is the younger men who will in the first instance be likely to suffer.

The society has during the last year been able to obtain some aid from the fund under the control of the Royal Society, but it is plain that the demands on the fund are likely to multiply, and all possible pressure should be brought to bear on the proper authorities to augment it.

G. H. HARDY,

Hon. Sec. London Math. Soc.

New College, Oxford, May 15.

IN the leading article in NATURE of May 6 on the cost of scientific publications, reference is made to the critical financial position of those of our scientific societies which have no popular means of adding to their income. The position is serious. The scientific worker, upon whom, to a great extent, a scientific society depends for maintenance, is rarely in a position to add to his financial obligations, and the interested person from whom the society also receives considerable support is often in a similar position. If a society is to be efficient, the library must be kept up, the standard of publications be maintained, and its salaried staff receive at least a living wage. How is this to be done? Apart from external aid, there are only two ways—by exercise of rigid economy, and by increased contributions from the members. It is not economy to starve the library, and economy in publication must be employed with

great discretion. The dignified quarto which supplies a link with the early days of the society may be suspended, illustrations reduced to the absolute minimum, communications condensed or reduced, and every conceivable means adopted to avoid expense; but with a diminished sum available for printing, and printing costs trebled, it is obvious that the efficiency of the society as a means of publication must be seriously reduced.

This result bears heavily on overseas members. The member within reach of town has all the advantages of the society; he can attend the meetings, consult the library, and meet his colleagues at the society's rooms; the country member is less favourably situated, but he has at least the privilege of borrowing from the library. The only material advantage received by the overseas member is the scientific publications of the society. The overseas members are an important part of the society, which, though "of London" in style, is world-wide in interest and membership. Our colleagues overseas, though in many cases supporting their own local society, consider it an honour to belong to the mother society at home, and the aim of the mother society is to strengthen the bond and to show the worker overseas that he is both welcome and necessary. Any step, therefore, which tends to lessen the advantages reaped by the overseas member must be avoided.

Apart from external aid there remains only the increased contribution from the individual member. An increase in the subscription will fall hard on many members; but the claims of a society which represents one's work or the scientific interest of one's leisure will not easily be set aside. A man or woman does not join a scientific society in a commercial spirit, but because a congenial atmosphere is there found, or, in the highest motive, because it is an obligation and an honour to help forward the society which represents one's own branch of science. If each member will consider seriously the position of his society, the claim for external aid, amply justified by the value to the community of the scientific work of the society, will come with increased power.

A. B. RENDLE.

THE leading article in NATURE of May 6 has so admirably stated the case for assistance towards the publications of scientific societies that it is almost needless to add further arguments. Nevertheless, there is one point which seems to require attention, namely, that during the last two years, when the pressure of enhanced prices in the printing trade has made itself felt, there has been an attempt on the part of societies subject to this burden to palliate it by means which threaten to change the character of the meetings. To avoid the heavy cost of papers embodying recent research, there has developed a marked tendency to arrange for lectures and demonstrations of a kind which do not require publication in detail, to the disadvantage of original memoirs which demand illustration and extensive text. Should this procedure continue, it is plain that research will suffer, investigators will not be ready to produce the results of their work in the meetings, and the value of the societies' issues will be diminished.

If assistance of the kind advocated can be secured, former methods can be resumed; if that assistance is denied, it is to be feared that, in spite of stringent economy or increased subscriptions on the part of the societies, the publications will suffer; for the maintenance charges must first be met before the balance of income is available for printing memoirs.

B. DAYDON JACKSON.

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I do not suppose that there is a single editor of a scientific journal who will not read with sympathy and gratitude of your effort to obtain financial support for such publications in view of the enormously increased cost of paper and printing. In the case of the *British Journal of Psychology*, with which I am specially connected, the subscription is being raised for the second time since the war, whilst no class has suffered more as regards income than that from which the subscribers to scientific journals are drawn.

CHARLES S. MYERS.

30 Montagu Square, W.1, May 10.

The Indian Chemical Service.

SIR P. C. RAY's objections to the proposal to form an Indian Chemical Service are based upon the fact that the Education Department of India has failed to realise the importance of research in connection with university teaching. However, I feel sure that he would not advocate the abolition of that Department, much less would he wish to see the Indian Education Service a mere adjunct to some other branch of the public services, without even provincial directors to look after the interests of himself and his colleagues. Every member of a Service knows that, in the event of a difference arising between himself and a member of another Service, he will have the support of a senior member of his own Service at each stage until the matter is perhaps settled by the Viceroy himself. Even directors-general and members of council are human, and inclined to support members of their own Department against the world.

Prof. Thorpe does not dwell at any length on the personal aspect of the problem, but I gather from his letter that he appreciates the importance of it. I do not doubt that he has grasped the fact that, while the members of such units as the Geological Survey of India or the Indian Medical Service are contented with the conditions of their service, grave discontent prevails amongst the numerous scientific men attached to, but not members of, organised Services. The fact that many men holding such positions have thrown up their appointments and come home disgusted has added considerably to the difficulty in recruiting scientific men, and particularly chemists, for service in India. There is no alternative to the bureaucratic system of government for India, and the proposed scheme provides for its inherent defects.

It is, of course, essential that the director-general and the directors of provincial institutes should be chemists who have proved their capacity for research. The Geological, Botanical, and Zoological Surveys of India seem to get on fairly well under directors-general who are scientific experts, and I do not see the necessity for assuming that the head and sub-heads of the Chemical Service will be any less competent than those who have done distinguished service for India in other branches of science.

Knowing something of India, I believe that the proposed scheme is sound, and I wish it every success.

M. W. TRAVERS.

Beacon Hall, Priory Gardens, Highgate,
May 15.

A New Method for Approximate Evaluation of Definite Integrals between Finite Limits.

1. If $f(x) = a + bx + cx^2 + dx^3 + gx^4 + hx^5 + jx^6 + kx^7 + lx^8 + mx^9$, the value of $\frac{1}{10} [f(\frac{1}{10}) + f(\frac{2}{10}) + f(\frac{3}{10}) + f(\frac{4}{10}) + f(\frac{5}{10}) + f(\frac{6}{10}) + f(\frac{7}{10}) + f(\frac{8}{10}) + f(\frac{9}{10}) + f(1)]$ is $a + 0.5000b + 0.3350c + 0.2525d + 0.2028e + 0.1696f + 0.1455g + 0.1270h + 0.1120i + 0.0994j$ which is approximately identical with