a min. (2.27 m.p.h.), which is about the inhibiting force. When wind is of interfering velocity, shelter is chosen wherever possible, but, other things being equal, areas of brightest illumination are preferred. Swarms are therefore found (1) over patches of lighter ground colour and reflecting areas (for example, sheets of water), and (2) behind barriers which give shelter or over raised objects which set up eddy currents counteracting the main wind force.

The sexes are equally abundant, but, as is usual with swarming chironomids, males predominate to some 93 per cent in the established swarm. When, however, a swarm is freshly induced in the laboratory, the proportion of females is at first high, but since the males return to the swarm after mating, whereas the females do not, the customary sex proportion (93 per cent males) is soon attained. Single females or single males will dance freely with the same characteristic motions.

Swarming does not appear to condition the reproductive organs of the males for copulation, and no change is found in the distribution of sperm after dancing. The purpose of the swarm appears to be to bring the sexes of a species together, since the various species of swarming Diptera form dances characteristic in height and pattern, and probably also to stimulate the insects to the necessary pitch of excitement for successful copulation.

N. H. E. GIBSON.

Department of Zoology,
University,
Leeds. Aug. 1.

¹ Hackett, L. W., *Trans. Roy. Soc. Trop. Med. Hyg.*, **28**, 109 (1934).

² Lloyd, L., Graham, J. F., and Reynoldson, T. B., *Ann. Appl. Biol.*, **27**, 122 (1940).

Cambridge Scientific Workers and the War

IN an article under the above heading¹, the following passage occurs in reference to research topics suggested or approved by the Advisory Research Council of the Chemical Society: "It was stated that the majority of these problems are long-term problems related to the improvement of the post-war prospects of the chemical industry. . . ."

No such statement has been made, by me as chairman of the A.R.C.C.S., or in any authorized pronouncement of this body. The topics adopted cover a very wide range and many are directly related to the war effort or to conditions arising from the War; a considerable number have a chemotherapeutic or medical interest. In a number of cases the investigator has been put into direct touch with a Government department and an extra-mural research of that department has been started as a result. On the other hand, it is true that we have accepted suggestions made by the chemical industry, and we have done this in the belief that stagnation must result unless development is continuous.

The organic chemical industry, like the human body, has certain permanent elements, but it also includes much that needs rejuvenation and constant improvement. It must be emphasized that all the work of this kind, sponsored by the Council, has been suggested by industry itself; we have initiated none of it.

It is true that studies of industrial interest have been made, with great success, at Cambridge, and an explanation on the above lines has probably been given. But it is an argument from the particular to

the general to conclude that all, or most of, the work recommended by the A.R.C.C.S. is of this character.

Just as Mr. Churchill declared that the popular demand for a second front was a healthy sign, so we must all sympathize with the agitation for the better use of scientific workers in the War without necessarily agreeing that all the panaceas put forward are feasible. The subject bristles with difficulties and it is often forgotten that a considerable scientific manpower is already available to the Ministries in their research establishments and existing extra-mural contacts with university and industrial laboratories. Obviously it is only a residuum of worth-while *ad hoc* problems that cannot be tackled. During a war we have to find men for jobs, not jobs for men.

It is equally clear that the directors of official research and their assistants and consultants have no monopoly of originality, initiative, foresight, or knowledge; no one of them would claim that he must have thought of everything. Therefore, the pressing need is not for the farming out of specific tasks but rather for the elaboration of a mechanism of contact so that fresh minds and new ideas may be brought to bear on our problems.

Failing such opportunities for present service, need anyone be ashamed of pursuing what is strangely called 'academic' research? Students must be trained in technical subjects and consequently must have teachers. If the latter can find war work to do in addition, it is all to the good; if not, they are still useful and necessary members of the community and it is their duty to keep themselves intellectually alive by making contributions to knowledge. Experience shows that the enthusiasm of undergraduates is fully evoked only by direct contact with teachers inspired by the spirit of active investigation.

A speaker at the conference, of which the article referred to is a summary, defined 'war research' as work which will *very probably* give results applicable to *this* war. Earlier it is stated that junior members of university laboratories should be provided with more of the right sort of problems to solve. The combination of these views implies a serious criticism of the scientific activities of the Ministries which would be hard to justify. Is it suggested that there exists a mass of clearly useful short-term projects which has been neglected? If it is so, the remedy should be the strengthening of the official technical establishments (possibly extra-murally) because, once a short-term desideratum has been recognized, it must be attacked energetically and cannot be left to unconnected volunteers. Therefore we must envisage an expansion of extra-mural contracts with the universities, and teachers outside these arrangements should make independent efforts to get inside them. Failing this, real research by teachers is real national service.

R. ROBINSON.

Dyson Perrins Laboratory,
Oxford.
August 9.

¹ NATURE, **150**, 186 (1942).

WE are glad to publish Sir Robert Robinson's communication since, as he points out, individual men of science and, indeed, scientific bodies, in their enthusiasm, seem to forget that much is already being done both within and outside the various Ministries. We feel, however, that during a war we should find not only men for jobs but also jobs for men. The Central Register is now extending its activities to cover the latter.—EDITORS.