themselves so tied and hobbled as to be practically helpless.

It does not seem feasible, in fact, usefully to organise research on such lines. Research—and design, for that matter—speaking again of the little corner I knew, has been almost invariably the result of the strenuous effort of individuals, and not the fruit of the organisation in which these particular individuals happen to have been embedded at the time. It is not meant to imply that there should be no organisation in Government experimental establishments, but, speaking from experience, I feel most strongly that capable investigators and designers will not produce their best if compelled to work in an atmosphere of over-organisation.

What must surely be a matter for congratulation to the body of scientific workers in the country is the fact, which the article referred to brings out, that the Army (and presumably also the Navy and the Air Force) has learnt its lesson, and hastens to admit that there is something to be gained even in peace from the universities and other scientific and technical institutions. Yet here again one seems to detect—perhaps in pessimism—a touch of misunderstanding. The Government's policy (expressed in the following rather unfortunate words) is "to farm out to civil scientific institutions, such as the universities, the National Physical Laboratory, the Imperial College of Science, etc., all pure research that can be profitably farmed out." The universities will surely be only too willing to give the most sympathetic consideration to a co-operative scheme of this sort, provided that the subject-matter of the researches to be "farmed out" is sufficiently interesting and important.

Presumably the Department of Scientific and Industrial Research will be largely responsible for the allocation of these researches, but if at the same time the smallest step is taken towards "the detection of overlap [in research], where such exists, and its elimination," a feeling the reverse of sympathetic will be set up.

Investigations worthy of the name should surely be carried out in all freedom of both thought and action; even the suspicion of interference would be intolerable. The official interest now taken by the Army in scientific research is a great sign of regeneration—if, indeed, it is more than a surface interest, as we all hope. Let us pray that over-organisation of the Government experimental establishments and unsympathetic treatment of civil scientific institutions will not dwarf the growth of the new scheme.

R. WHIDDINGTON.

The University, Leeds, March 23.

THE leading article in NATURE of March 18 directs timely attention to the need for action by men of science if the lessons of the war are not to be forgotten in the Army of the future.

It was impossible in the war to scrap the old machine; years and experience are essential if a better new one is to be made. But no memorandum or paper policy, or even consultation with experts, will make a good machine unless the right material is used.

In peace-time the new Army should have technical education (in the broad sense) and scientific research as its two main functions; they are the only sound bases upon which an efficient fighting machine can be built. That appears to be accepted. But these functions can only be performed by an Army with an educated staff, led by scientific men who combine originality with administrative capacity. If the main body of the staff consists of men without the rudiments of a scientific education, who will "administer" the men of science and control the allocation of funds, then there will be a largely unnecessary sacrifice of the Army if a great emergency arises.

With regard to the co-ordination of research, it is true that a good deal of duplication must inevitably occur if the independence essential for great discoveries is to be maintained. But there is much unnecessary waste which can be avoided without real restriction of independence. The direct economy is, however, of minor importance; the greatest advantage comes from forming the habit of consulting the right department or the right expert; and this is as necessary for the man of science as for any other man. The late Lt.-Col. W. Watson, whose untimely death deprived the nation of an expert with an almost unrivalled knowledge of the applications of science in war, once related how a board of chemists spent half a day discussing a meteorological problem which could have been solved in half an hour by a single meteorological expert.

E. GOLD.

March 22.

ALL scientific workers whose research has brought them into contact with military authority during the war must appreciate the leading article on "Science and the New Army" in NATURE of March 18, especially the sentences in which it is urged that "science linked to the Army by fussy research co-ordinators acting under a nescient soldier will not solve the difficulty," and that "science will not occupy its rightful position in the new Army" until the General Staff includes a due proportion of officers who are endowed with a scientific spirit and have received a scientific training. Until then some of the outstanding defects manifested during the war will continue. These defects are:—

(1) *The unthinking application of scientific research.* A good instance of this occurred in the issue of the ridiculously excessive diet (based on research under active marching conditions) to our soldiers in Flanders who were unexercised in the trenches, whilst wholly inadequate rations were being supplied during the period of the soldiers' strenuous training in England.

(2) *The delay in seeking expert advice.* Too often G.H.Q. failed to realise how expert advice could help it, and did not trouble to seek it until too late.

(3) *The choice of expert.* The truly scientific worker rarely asserted himself spontaneously during the war; he waited until his advice was asked. The man who forced himself to the notice of the General Staff as an expert was usually unscientific. Thus G.H.Q. was "taken in," and came to rely too often on those whom the scientific world considered as being pretentious in greater or less degree. Their one source of strength was that they were usually "practical" men, whereas the men of science in some cases offered suggestions which could scarcely be carried out during service in the field. But in the long run the Army suffered.

CHARLES S. MYERS.

30 Montagu Square, W.1, March 29.

Knowledge and Power.

THE leading article "Knowledge and Power" in NATURE of March 25 strikes a resonant chord. I am a newcomer into the realms of officialdom, but my experience relates to a Department of State which is of new growth and not yet rooted in tradition. Aeronautics in Britain has had its foundations laid on a scientific basis, and technical staffs have been able to build on trustworthy data. In view of the fact that British aircraft obtained an absolute ascendancy over the craft of any other country, Allied or enemy, and that Britain was the only country with this scientific