

NATURE

No. 4087 SATURDAY, FEBRUARY 28, 1948 Vol. 161

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INTERNATIONAL CONTROL OF ATOMIC ENERGY

THE sober, and somewhat sombre, review of the proposals for the international control of atomic energy, and the appraisal of the present position, which Dr. J. R. Oppenheimer, chairman of the Advisory Committee of the Atomic Energy Commission of the United States, contributes to the current issue of *Foreign Affairs*, appeared appropriately just when President Truman's Air Policy Commission had warned the United States that within five years foreign countries would almost certainly possess atomic weapons in quantity and would probably also have in mass production effective long-range guided missiles. Dr. Oppenheimer's review should receive close study, not merely by those directly interested, but also by scientific workers generally, on its own intrinsic merits. Apart from Dr. Oppenheimer's authority, it is a most valuable indication of the trend of opinion which has led to the specific recommendations of the Air Policy Commission, and as such assists materially in appraising their significance.

Dr. Oppenheimer attempts to present, briefly but objectively, some of the sources of United States policy, and the formulation of that policy in the context of contemporary events. His article is also useful in assisting those outside the United States to estimate not merely the sound and durable elements in that policy, but also the reasons for its present lack of success. He does not enter deeply into political considerations, though they are not ignored; but the scientific and technical aspects are presented in balance with the political aspects in a way that should facilitate realistic discussion.

Early in this article, Dr. Oppenheimer makes the important point that the advantages which could come from the exploitation of atomic energy do not appear to be of such a character that they are likely to make a short-term contribution to the economic or technical well-being of mankind. It was clear two years ago that, although the generation of useful power from atomic sources was possible and that decisive progress in favourable circumstances was probable within a decade, the question of the utility of this power, the scale on which it could be made available, and the costs and general economic values would take a long time to answer. Intensive development and exploration are required; no evaluation, in Dr. Oppenheimer's view, could justify regarding atomic power as likely to provide immediate economic aid on a world-wide scale, or give its development the urgency of the control of atomic armaments. Similarly, he reminds us that the other form of application, involving the use of tracer materials, radioactive species, and radiations for science, the practical arts, technology and medicine, depends in the first instance upon the skilful development of chemical, physical and biological techniques—a development which under the best conditions is a gradual and continuing one.

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MACMILLAN & CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.2.

Telephone Number: Whitehall 8831

Telegrams: Phusis Lesquare London

Advertisements should be addressed to

T. G. Scott & Son, Ltd., Talbot House, 9 Arundel Street, London, W.C.2

Telephone: Temple Bar 1942

The annual subscription rate is £4 10 0, payable in advance, Inland or Abroad

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It follows from this that the development of atomic energy for such peaceful purposes cannot present a direct appeal to the weary, hungry, almost desperate peoples of a war-ravaged world. Despite its challenge to the interests of technical men, and also to the vision of the statesmen concerned with long-term projects for human welfare, honesty compels us to regard such development as falling within the category of long-term projects, the development and exploration of which may have to be deferred until immediate needs have been met. That view lends some support to proposals which have already been advanced elsewhere, for example, by Mr. Lewis Mumford in "Programme for Survival", that we should forgo the use of atomic power until the world is better prepared for it.

Even if it is clear that mankind would lose little in the next few decades by such renunciation, it still remains to be seen whether it is practicable, even if it is wise, to postpone consideration of the control of large-scale power production. Here it should be noted, as Dr. Oppenheimer reminds us, that the development of atomic power cannot be separated from the technological development essential and largely sufficient for the manufacture of atomic weapons; and again, neither the development of power nor the effective and widespread use of the new tools of research and technology can prosper fully without a degree of freedom in regard to the technical realities difficult to reconcile with the traditional requirements of military security about the development of weapons of war.

These views have been overshadowed in most discussions by preoccupation with the control of atomic energy to the extent required to prevent its use for destructive purposes, and more especially with those considerations which derive from the nature of atomic armament. The main concern of the latter part of Dr. Oppenheimer's paper is to redress the balance, and to give to those arguments derived from the political climate of the post-war world the preponderance in determining policy which he considers they should have. Indeed, he contends that our excessive concern with the arguments based on the nature of atomic armament are the main cause of estrangement and misunderstanding with the U.S.S.R., and that relegation of problems of atomic energy to discussions with the United Nations has prejudiced the chances of any genuine international intellectual co-operation.

Dr. Oppenheimer recognizes fairly enough that during the Second World War the fabric of civilized life was worn so thin in Europe that there is the gravest danger that it will not hold. He admits, too, that the question of the future of atomic energy presents itself in one main constructive context: What can be done with this development to make it an instrument for the preservation of peace and for bringing about those altered relations between the sovereign nations, on the basis of which there is some reason to hope that peace can be preserved? He argues, however, that although this may have been the question in principle, a far more concrete and

immediate problem faces the world, namely, whether the co-operative control and development of atomic energy might not play a unique and decisive part in establishing co-operation between the U.S.S.R. and the United States.

For all its frustrations and disappointments, the Atomic Energy Commission of the United Nations, notwithstanding the limitations under which it has worked, has proved the vitality of the basic idea of security through international co-operation. Dr. Oppenheimer does not examine the question whether the United States, Great Britain, Canada, and those other nations that are prepared to accept the necessary sacrifice of national sovereignty involved in a control system with its essential international inspectorate, should go ahead and demonstrate in a limited field the feasibility of such a scheme. He rightly observes that collaboration in the field of atomic energy cannot be entirely separated from collaboration in other fields; and although he does not suggest that it would necessarily have succeeded, he argues that an attempt should have been made to influence the U.S.S.R. at a higher level and to make the heads of the Soviet Union, in part at least, party to the effort at control.

That effort has not been made, and only the historian can pronounce upon the probability of its success. Meanwhile, we have to face the fact that the most unexceptional formulation of principles set forth in the report "International Control of Atomic Energy: Growth of a Policy" (Washington: Department of State Publications, 2702; 1947) confronts the evasion of the very bases for co-operation between the United States and the Soviet Union. Episode after episode in the last two years has emphasized their deep conflicts of interest, the apparently mutual repugnance of their ways of life, the non-co-operativeness of the Soviet Union and its apparent conviction of the inevitability both of the decay of American democracy and of conflict.

In such an atmosphere there can be little hope that measures of international control less radical than those already proposed by the United States will be either adequate or acceptable. Even in a situation less tense, there would have been considerable difficulties in reconciling particular national security, custom and advantage with an overall international scheme for security. In the present juncture, formal renunciation of atomic armament and some concession with regard to access to atomic facilities on the part of international inspectors is no more likely to commend itself as adequate to Great Britain and other nations than to the United States or Canada. Dr. Oppenheimer himself sees little hope except in a profound change in the whole orientation of Soviet policy, and a corresponding reorientation of American policy, even in matters far from atomic energy; though he urges that those who work for the establishment of peace and who wish to see atomic energy contribute whatever is possible to that end should maintain all that is sound in the early hopes and work for their eventual realization.

One road to peace may be through a limited scheme of control applying to the Western democracies. This may give time for the creation by writers, artists, scientific workers, teachers, and travellers of a widening field in which there is a common human bond and understanding between the diverse peoples of the world.

In this connexion the discussions now proceeding on an international declaration on human rights may be of significance. The British delegation, for example, is in favour of a covenant containing legally enforceable obligations, and in the Foreign Office draft Bill of Human Rights the obligations deemed acceptable are limited to those guaranteeing the existing common law rights of Englishmen. The accompanying memorandum argues that the right of all persons to work, to education, to social security and similar social and economic rights cannot "by their nature" be defined in the form of legal obligations for States. It is, however, precisely these obligations which the Slav bloc might conceivably accept as in its view the indispensable guarantees of true political freedom. Without suggesting that the cause of peace will be furthered by any slackening of the effort to spread Western ideals of political freedom, it may well be, as Mr. Bryan King suggests in *The Economist*, that an international treaty is not the right medium for their propagation; such an instrument should afford rather the opportunity to establish or affirm common aims which will help to dispel mistrust and open the way to better understanding. Whatever views may be held as to the practicability or value of an international affirmation of faith in fundamental human rights and in the dignity and value of the human person, there can be no question as to the importance of not allowing either an idealistic or a legalistic point of view to accentuate differences and place fresh obstacles in the way of international understanding.

In this context it may be recalled that the Atomic Scientists' Association, although limiting its full membership to scientific workers with specialist knowledge of atomic energy, seeks to enrol the support of a large body of associate members, both scientific and lay, to broaden the activities and to increase the effectiveness of the Association. Such support is clearly invaluable and indeed essential for the expansion of the publicity activities of the Association. It should also counteract any tendency to approach the problems of atomic energy from too narrow an angle, and help to bring those intimately concerned with atomic physics into closer touch with other men of science, and the ordinary citizens alive to the larger issues at stake.

The report of the Air Policy Commission of President Truman provides a first-rate example of how much depends on the existence of an informed body of responsible opinion. The specific recommendations of the report are indeed less important than the affirmation by this body of distinguished private citizens of their belief that "the United States will be secure in an absolute sense only if the institution of war itself is abolished under a regime of law. World peace and the security of the United States

are now the same thing." Even the most optimistic view of the record of the United Nations affords no assurance that that Organisation will develop in time the necessary authority to prevent another war.

It will be noted that this blunt report and the hardening of opinion which it tokens has something in common with Dr. Oppenheimer's conclusions and with the trend of thought elsewhere. There can now be little to hope from another examination of the current Russian proposals, and the Atomic Energy Commission has held only one ineffective meeting since its second report was made to the Security Council in September. The question of atomic energy and its control and development is now merging into the larger issues of which it forms a part; and when the Air Policy Commission expresses its belief that a strong America will be a force for peace, it is giving expression to views which are widely held and responsibly endorsed among the Western democracies. But the nations joining in any limited scheme of collective security, including the control of atomic energy as one essential element, must make clear what they regard as essential interests and make known resolutely and unambiguously where they will make a stand; and at the same time, they must use every means available to promote understanding and good will, and to demonstrate afresh the inherent greatness and resilience of Western civilization and its tradition and heritage of human individuality and freedom. Demonstration of the moral, spiritual and economic strength of Western Europe may in due course prepare the way for the adherence of the U.S.S.R. to a system of collective security the practicability and soundness of which has been made evident.

CONTROLLING THE STAFF OF LIFE

Modern Cereal Chemistry

By Dr. D. W. Kent-Jones and Dr. A. J. Amos. Fourth edition. Pp. vii + 651. (Liverpool: Northern Publishing Co., Ltd., 1947.) 50s. net.

IT were a work of sheer supererogation to recommend "Kent-Jones and Amos" to cereal chemists or to any of those concerned with the technical side of the milling and baking industries. They will all have this new (fourth) edition, if not on their shelves then certainly on order—or on loan! Indeed, there is much to be said for the definition of cereal chemist as "a graduate in chemistry whose work makes it essential for him to possess Kent-Jones and Amos and to consult it at least once a day!" To avoid gilding the lily or piling Pelion on Ossa or whatever may be the appropriate metaphor, I propose as a non-cereal chemist to consider in this review how far "Modern Cereal Chemistry" may be of value as a permanent companion of chemists practising in other branches of the food and allied industries. To do this it will be simplest to take a look at each chapter or group of chapters separately.

We begin, then, by considering the "Composition of Wheat and Products of Milling", which contains