NATURE

No. 3842 SATURDAY, JUNE 19, 1943 Vol. 151

CONTENTS

	Page
Aspects of International Collaboration	679
High Polymers. By Prof. H. W. Melville, F.R.S.	682
Venereal Disease in Great Britain	683
Protection of Electric Power Systems. By Dr. L. E. C. Hughes	683
Mental Attitudes in War-time	684
Physics, Materialism, and Free Will. By Prof. L. Susan Stebbing	686
Breast and Bottle Feeding	687
India's Mineral Resources. By Sir Lewis Fermor, O.B.E., F.R.S.	689
The Search for New Insecticides. By Dr. J. R. Busvine	690
Production of Magnesium. By Prof. F. C. Thompson	692
News and Views	693
Letters to the Editors:	
A Quantitative Theory of the Precipitin Reaction.—Prof. Torsten Teorell	696
A Variant of Maxwell's Experiment on the Movement of Magnets about a Straight Conductor.—H. E. Park	697
Production of Ion Clusters by X-Rays.—U. Fano	698
Relation of Hypopituitarism and Starvation.—Dr. Erwin P. Vollmer	698
Studia Moritura.—Alan S. C. Ross	699
Illustration by Analogy.—W. R. Dunlop	700
Radio Fade-Out in Sweden.—Dr. O. E. H. Rydbeck	700
Research Items	701
Vitamins of the B-Group Required by Insects. By Dr. G. Fraenkel and M. Blewett	703
Physical Fitness of School Children in South Africa. By Prof. D. Burns	704
Walnut Trees. By Alexander L. Howard	705

Editorial and Publishing Offices
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
All rights reserved. Registered as a Newspaper at the General Post Office

ASPECTS OF INTERNATIONAL COLLABORATION

IN an important passage in his broadcast some weeks ago, the Prime Minister expressed the hope that we would not lightly cast aside all the immense work which was accomplished by the League of Nations, and said that we must take as our foundation in restoring the true greatness of Europe the lofty conception of freedom, law and morality which was the spirit of the League. In this he was following up remarks by Mr. Eden and Mr. Herbert Morrison, who in earlier speeches had urged the necessity of making full use of existing machinery for international co-operation, both that established to further the war effort, such as the Combined Raw Materials Board, and those institutions such as the League of Nations and the International Labour Organisation, which had already proved their worth in certain technical and non-political fields before the War. The importance of collaboration between various nations is emphasized further by the draft plan just issued by the Government of the United States, after discussions with the Governments of Great Britain, the Dominions, the U.S.S.R. and China, for the organization of a United Nations Relief and Rehabilitation Administration, for the delivery of food, clothing, and medical supplies to the peoples of Axis-occupied countries as they are liberated.

In an article in *Agenda* of February, Sir John Fischer Williams discusses a reconstruction of the League of Nations. Sir John is clearly right in stressing the value of the successful treatment of questions of international trade and general economics, disarmament, emigration, intellectual co-operation, public health, the development of international legislation, the protection of minorities, and the system of mandates, in creating better psychological conditions as the foundation of the international society of the future. The proposals he advances are inspired by four main ideas suggested by the experience of the past twenty-five years. First, the League should be made not an organization for the suppression of war by war, but a force making for the recognition—to use the language of Christianity or of Stoic philosophy—of the brotherhood of man and the fatherhood of God. Secondly, military measures to suppress the crime of aggressive war should be left to the action of States grouped in freely concluded alliances and federal organizations; all special measures against the Axis Powers would thus form part of the peace treaties which will end the present War and would not be the business of the League. Thirdly, the causes of international differences should be dealt with by peaceable discussion before they become critical; and fourthly, action should be limited to what is possible at the present stage of human development.

Much that Sir John Williams proposes is common ground with other writers in this field. Some of his main ideas were also urged in the broadsheet on "European Order and World Order" issued by Political and Economic Planning in November 1939.

© 1943 Nature Publishing Group

His view that the question of League reform requires long and expert consideration and should not be undertaken until the passions aroused by the War have had time to cool is not likely to be seriously challenged. Furthermore, the Government is clearly committed in the speeches to which we have already referred to making full use of the institutions or organizations already available, and the first report of the Combined Raw Materials Board also looks forward to constructive work after the War.

The most significant move in this field is undoubtedly Mr. Eden's recent visit to the United States. Mr. Wallace's blunt assertion that unless the Western democracies and the U.S.S.R. come to a satisfactory understanding before the War ends another world war is inevitable, is a reminder that the principal condition of a lasting peace is an adequate political system within the framework of which co-ordinated economic and social policies can thrive. The essential task of organizing military and economic power for the fulfilment of common purposes and for the benefit of all cannot be entirely postponed until the final peace settlement and the determination of some permanent organization of world order. It is a condition of the re-establishment of order itself, of facilitating passage from war and chaos to order, and it is imperative that due thought should now be given to the conditions, the ways and means upon which the essential Anglo-American and Russian co-operation can be achieved.

The future peace will most assuredly depend largely upon what is done and what is left undone during the War. The essential means of political and economic co-operation will be developed most naturally out of the organizations, already in action or being established, to control and direct the common effort in war and in the immediate work of relief and rehabilitation in the occupied countries as they are liberated. Planning cannot well go beyond this point, but the experience of the organizations already in being, like those discussions in which Mr. Eden has been concerned on the needs of peace as well as those of the War, have a further contribution to offer in fostering the mutual confidence and tolerance which are as essential in peace as in war.

Independently of Mr. Eden's visit, American opinion was increasingly recognizing the necessity of effective and continuous international co-operation, military, political and economic, not only to win the War but also to safeguard the peace after the War. The American Senate has already given clear evidence of a realistic approach to the post-war world and of constructive rather than isolationist thinking about international relations.

That process must continue and be fostered by exchange of visits and by the mutual study of the common problems in a spirit of good will and understanding of the difficulties peculiar to each great democracy. What is somewhat disconcerting is to find that in the specific instance of the International Labour Organisation, in spite of the tributes paid to it by Sir William Jowitt and Mr. Eden last December, scarcely anything has been done to strengthen it and develop it into the main instrument giving effect to Article 5 of the Atlantic Charter. Plans for enlisting the services of the International Labour Organisation scarcely exist, and in spite of these public tributes there has been a lamentable failure on the part of the Allied Governments chiefly concerned—Great Britain and the United States—to strengthen the Organisation and fit it to perform the tasks which are to be entrusted to it.

The contrast between the tributes paid on all sides to the work of the International Labour Organisation and this comparative neglect or inactivity is emphasized when we recall that, at the great conference in New York in October 1941, it was declared that the International Labour Organisation is peculiarly fitted to help in such tasks as the feeding of peoples in need, the reconstruction of devastated countries, the restoration of industry, the resettlement of populations and the raising of standards of living. The Organisation received a social mandate, and in April 1942 the emergency committee of the governing body met to carry a stage further the work begun in New York. Twelve months later, however, it appears that the international committee which, by the decision of the London meeting, was to be charged with the study of how to apply Article 5, has still to be constituted.

There would be less anxiety at this slow pace if there were substantial evidence that the Allied Governments were active in their planning on other lines. There is something to be said for an approach by committees within the United Nations rather than within the framework of an organization which includes non-belligerents and neutrals. The existence of certain technical difficulties, however, has to be set against the overwhelming advantage of the International Labour Organisation in the association of organized employers and workers on equal terms with Governments. Mr. Eden's statement on his visit to the United States did little to meet this basic charge, but he at least quoted with approval Mr. Sumner Welles: "We cannot afford to permit basic issues by which the destiny of mankind will be determined to be resolved, without prior agreement, by a group of harassed statesmen working against time".

More positive encouragement may perhaps be drawn from the White Paper "Proposals for an International Clearing Union" which was issued by the Government for discussion by the United Nations. The main proposals refer to the establishment of a Currency Union based on international bank-money, called bancor, fixed (but not unalterably) in terms of gold and accepted as the equivalent of gold by the members of the Union for the purpose of settling international balances. The proposals are formed to cover one of the main lines of approach to the post-war transition from relief and urgent reconstruction into the normal world, but the White Paper recognizes that the Clearing Union might become the instrument and support of international policies besides those with which it is primarily concerned. It might become the pivot of the future economic government of the world. It might, for example, set

© 1943 Nature Publishing Group

up a clearing account in favour of international bodies charged with post-war relief, rehabilitation and reconstruction, and supplement this by granting preliminary overdraft facilities in favour of these bodies. The Union similarly might set up an account in favour of any supernational policing body which may be charged with the duty of preserving the peace and maintaining international order. It might set up an account in favour of international bodies charged with the management of a commodity control, and finance stocks of commodities held by such bodies. It is all to the good that almost simultaneously there should be announced in the United States a second plan for debate, namely, a World Stabilisation Fund.

The White Paper, in fact, brings us back to the critical examination of the very foundations of British foreign policy to which attention was directed in a recent broadsheet of Political and Economic Planning. The basic pre-suppositions of our foreign relations in the nineteenth century which permitted a remarkable stability and continuity of policy can no longer be accepted as valid. The very fundamentals of our policy have to be re-thought and new pre-suppositions hammered out which will permit a similar continuity of policy in the coming years. This means, as the broadsheet reminds us, thinking in terms, not merely of this year and next, but of decades and even half-centuries, as well as of the whole range of relations—political, economic, social and cultural.

The main elements which have affected foreign policy in this way are, first, the high degree of integration and interdependence in human affairs which technical advance has brought about, with the consequence that many of the shibboleths of nineteenth century ideology have become meaningless. Secondly, the functions of the State are no longer restricted to the maintenance of internal order, external security and the conduct of diplomatic relations. The breakdown of much of the old distinction between the political and economic spheres has vital consequences for foreign policy. The closer interdependence of domestic and foreign policy involves a corresponding change and development in the machinery as well as in the personnel for handling these relations.

Besides the formidable combination of material and human resources which a nation must possess to qualify for the onerous role of world power, the broadsheet insists on the importance of capacity for leadership and the moral element in power. If there is any validity in the idea of the twentieth century as the century of the common man, this moral element must become increasingly fundamental to the whole concept of power and its exercise in the modern world. Not the least important task awaiting the framers of our foreign policy is the exercise of imaginative leadership which will ensure the effort required to remedy some of our more intangible weaknesses in this field.

As we must acknowledge the impact of changing conditions on our geographical position, so we must learn to think of ourselves as more than ever a European Power with new and heavy responsibilities in Europe, and the obligation to work out a new and enduring relationship with the peoples of Europe. Further, we must recognize that the conditions of the twentieth century call for a new type of relationship between the advanced and the less-advanced peoples. We have a particular responsibility for working out that relation; we must set out to do so without delay and to apply the results, in co-operation with the other World Powers.

No reader of the considerable volume of literature dealing with international reconstruction can fail to be impressed with the extent to which the consensus of opinion appears to be settling on exactly these principles. Broadly speaking, they are to be found more or less explicitly in Harold Butler's "The Lost Peace" and in Viscount Cecil's "A Great Experiment". They are largely common ground with the argument of Sir Rowland Hill's more recent "Prelude to Peace". There is, in fact, already a great measure of agreement with the view advanced by Political and Economic Planning that common policy and mechanism must invariably satisfy two tests: it must be designed to meet some real and basic need which is common to ordinary men and women everywhere; and it must also be capable of giving concrete results commensurate with men's expectations.

Sir Rowland Hill in his argument goes further than Sir John Williams and faces the problem of neutrality and of the smaller nations which Prof. Carr puts so clearly in "Conditions of Peace". His proposal for a Council of the United Nations is essentially that of building the framework of the new world order out of the institutions set up to win the War itself. That is his first solution to the problem of ensuring that adequate force, on which Mr. Herbert Morrison insisted in his Guildhall speech in February, is behind the institutions of order, though like P E P he relegates to the distant future any idea of formal federation. The essential co-operation between Great Britain and the United States and the U.S.S.R. must be less formal but based on full and an enduring understanding.

This co-operation for world order to ensure freedom from fear must, however, be complemented by the emergence of common purposes and positive, creative policies which will supply the dynamic of the new system. Moreover, national schemes and policies of social security must be framed with the full knowledge of the methods and experience of other countries, and on lines which will help and not hinder similar developments elsewhere. This is one reason why the wider development of the International Labour Organisation is so urgent. It is another reason for obtaining a clear and positive picture of the role we are best fitted to take in the new world balance—the recognition, as P E P points out, that we are now first and foremost a processing and servicing country, earning our living by adding brains and skill to the raw products of the earth; and that our special advantage lies in our exceptionally high level of technical skill, ability for organization and quality of workmanship.

The vital problem now is to educate the country as to what is involved in any policy that can

© 1943 Nature Publishing Group

adequately serve the needs of Britain and her partners in the task of rebuilding the world when the War is won. That task of education should be shared by every citizen who realizes the tremendous issues involved. The Government's part is to strengthen the instruments, such as the International Labour Office or other organs established during the War, by which collaboration can be pursued. Lord Cranborne's statement in the House of Lords on April 15, though in general terms, clearly committed the Government to explore every possibility of strengthening existing organizations and developing new instruments designed to ensure that the new international system based on free co-operation has behind it the overwhelming forces required to maintain the peace.

HIGH POLYMERS

Natural and Synthetic High Polymers

A Text-book and Reference Book for Chemists and Biologists. By Prof. Kurt H. Meyer. Translated by Dr. L. E. R. Picken. (High Polymers, Vol. 4.) Pp. xviii+690. (New York: Interscience Publishers, Inc.; London: Imperia Book Co., Ltd., 1942.) 11 dollars.

SOME twelve years have elapsed since the appearance of Mark and Meyer's book on "Der Aufbau der hochpolymeren organischen Naturstoffe". The subject has since expanded to a very large extent, and the present volume in this series of monographs claims to survey "the entire field of natural and synthetic, inorganic and organic high polymers". In point of fact this is, of course, strictly the object of the whole series of volumes on high polymers, of which this is the fourth volume. The survey must, therefore, be severely restricted in many directions, but none the less, like all the books in the series, it is complete in itself. In a way this attempt at giving a complete treatment tends to some considerable repetition from volume to volume, thus using up valuable space which might otherwise be occupied.

As one might expect, a volume from the pen of K. H. Meyer is mostly devoted to the chemistry of the natural high polymers. The chemistry of these substances is the main and most valuable feature of the book, which is concerned with the structure and reactions of high polymers and not with their synthesis. The opening chapters deal with the principles of the methods of investigating high polymers by X-ray analysis and by the behaviour of their solutions. Similar topics have been discussed in detail in volume 2 of the series, where the reader must go in order to get an account of the techniques involved. This particular part of the volume might, therefore, have been transferred to volume 2. Inorganic polymers are given an appropriate section wherein existing knowledge is summarized. One result of the recognition of the essential polymeric nature of substances, like certain varieties of sulphur and of phosphorus, has brought to an end long-standing controversies by inorganic chemists regarding the size of the molecular aggregates comprising these solids. This result is unambiguously arrived at solely by X-ray analysis of the structure of the solid. Some space is also devoted to the silicates, more with the object of showing how in inorganic chemistry there is a complete set of polymers analogous to organic materials obtained synthetically and existing naturally. It is a controversial point whether silicates should find a place in a book of this character. No mention is made of that interesting class of polymers lying, in a way, intermediate between organic and inorganic chemistry, namely, the products obtained by the hydrolysis of the methyl silicon chlorides.

More than 130 pages are devoted to high polymers, excluding cellulose and the proteins, a large part of which is already adequately treated in volume 3 of the series. But in this discussion there is much that has not appeared elsewhere. For example, the structure and reactions of natural and synthetic rubber are discussed in some detail, as is the thermodynamic theory of the high elasticity of such polymers. While all this discussion is relevant, the reviewer would suggest that in the near future a volume might well be devoted to the scientific, rather than the technological, treatment of this important branch of polymer chemistry. Considerable compression has been necessary to get a description of polyesters, phenol and formaldehyde resins and the products of polycondensation reactions in a matter of twenty pages, which is too condensed to be useful.

All this material none the less forms a useful introduction to the real purpose of the book, namely, a most thorough and illuminating survey of the chemistry of cellulose and its derivatives and of proteins. In so far as cellulose is concerned, the author is at once confronted with the difficulty that science and technology are intimately bound up with each other. Another volume is promised on cellulose, presumably on the technological side, and consequently Prof. Meyer has confined himself strictly to the chemistry of cellulose and the derivatives obtained by chemical and also mechanical treatment. This discussion naturally paves the way for an examination of that enormous variety of substances related to cellulose but not hitherto subjected to the same detailed scrutiny. Starch, chitin, hemicellulose, pectin, lignin and gums come within this category. It is here that close collaboration between chemist and biologist is most likely to clear up many of the ill-defined points of view held about the structure of such materials.

In the section on the proteins a very broad treatment is given. There is only brief mention of the methods of determining molecular weight, which in any event has been dealt with adequately in a number of publications. The structure and reactions of fibrillar and globular proteins is discussed at some length, with due emphasis on the high polymer point of view. The electrochemistry of protein solutions—once a part of classical colloid chemistry—automatically finds its place in this section of the book. Of more interest to the biologist are the sections on conjugated proteins, proteins with enzymatic properties and the various virus proteins. There is a break in the arrangement of the book at this stage, and the sequel to the natural high polymer section is found in the last chapter on the molecular structure of animal and plant tissues, or rather the submicroscopic morphology of such tissues. For want of information, the chapter is necessarily short; but it is the point at which the biologist will be able to start using the data and ideas presented in the remainder of the book in order to make his contribution to the solution of these structural problems.

The interlude mentioned above should have been transferred to the beginning of the volume, since it

© 1943 Nature Publishing Group