Book Reviews

Organizing Peace in the Nuclear Age. Commission to Study the Organization of Peace. Arthur N. Holcombe, Chairman. New York University Press, New York, 1959. xvii + 245 pp. $3.75.

This volume is the 11th report of the research affiliate of the American Association for the United Nations and the third volume in a series dealing with the problem of strengthening the United Nations. Its special interest to readers of *Science* lies in one of its three supporting papers—"Atoms for peace; the International Atomic Energy Agency," by John G. Stoessinger.

In addition to Stoessinger's paper, the book also contains a short report by the Commission and two other supporting papers: Quincy Wright's careful study, "The role of law in the organization of peace," and Arthur M. Holcombe's rather original treatment of politics in international organizations—a treatment which follows lines familiar in studies of domestic partisan politics, but seldom applied in studies of foreign affairs.

Let us focus attention on Stoessinger's discussion of the International Atomic Energy Agency and on the recommendations in the Commission's report which deal with atomic energy. Much of Stoessinger's paper is devoted to a detailed and scholarly review of the history of that unhappy agency. The story starts with a dramatic gesture by President Eisenhower, committing us to providing fissionable materials to other countries, through an international agency, to help develop peaceful uses of the atom. It was a gesture which fitted well into the prevailing idealistic and unrealistic expectations about what atomic energy could do to aid in the development of underdeveloped nations.

The generosity and good will indicated by the American stand undoubtedly had some beneficial effects on foreign attitudes, but the problems which the proposal had failed to anticipate made themselves felt from the beginning of the negotiations. The nations involved were split several ways. The United States Government insisted on high standards of inspection and control to ensure that the material sold by the IAEA would not be diverted to military use; such diversion would bring to a head the nightmare of the *n*th country problem. The Soviet Union and the underdeveloped countries (the latter haunted by fears of colonialism) objected to the free movement of inspectors and to other similar safeguards. The safeguards being discussed were to be applied to the recipients of fissionable or source materials. Thus, they provided no protection except against abuses by the less-developed countries, that is, the countries with the least nuclear potential. Such provisions were clearly of limited efficacy and were discriminatory between countries. Other issues found the United States and the Soviet Union, as nuclear powers, aligned together against the nuclear have-nots. Later, when the organization was formed, the Board was subjected to all these political pressures and found itself frequently in conflict with the Secretariat, where the technicians' views tended to dominate.

These problems, as well as poor leadership (which Stoessinger chooses not to stress), have left the International Atomic Energy Agency with a relatively small record of accomplishment. Nations have preferred to buy and sell fissionable and source materials through bilateral and regional agreements. Incidentally, such purchases are cheaper, since the IAEA would normally obtain its materials at market prices and, thus, would need to resell at somewhat higher prices. Sales and purchases through the IAEA entail opening up such operations to international inspection, which could mean inspection by Soviet as well as Western inspectors. Since inspection is applied only to recipient countries, this means inspection by Soviet citizens abroad without a corresponding Soviet concession to other nations.

As a result of all these problems the IAEA, to date, has sold only 3 tons of natural uranium (to Japan) and is currently negotiating a sale of enriched uranium (to Finland). Most of the agency's activities have necessarily been channeled into other fields—for example, a fellowship program for training atomic scientists in underdeveloped countries, and working out proposed standard practices for health and safety. In short, the IAEA, started with much fanfare, now promises to become a useful though relatively minor agency with a strictly technical function for working out cooperation on administrative matters among those nations who see advantages in such cooperation.

Some lessons of this experience are implicit in Stoessinger's story. But Stoessinger does not underline these lessons, and in the Commission's report they are on the contrary substantially denied. The whole experience illustrates once more how little leverage there is in foreign policy proposals based solely on abstract notions of welfare without reference to national interests. It takes genius in statesmanship to mobilize powerful considerations of national interest behind desired goals of peaceful cooperation. Too often, instead, policies are adopted which place national interest on one side and considerations of broad principle on the other. When these desiderata are thus divorced, the gestures made to idealism and principle look very shallow indeed.

It is, as the authors point out, in the interest of both the Soviet Union and the United States to prevent the spread of the nuclear club except, perhaps, to a very small number of the closest allies of both nations. It is not inconceivable that hard bargaining on this point of common interest could lead to an agreement in the interest of both sides, with each making concessions on peripheral points. But it is very hard to see what motivation would lead either the United States or the Soviet Union to channel such support of atomic energy development as each gives to its trusted allies through a control scheme of the IAEA, except in return for a guarantee compelling

the other to do the same in all instances, military as well as civil. In short, by isolating the control of peaceful uses of atomic energy from the control of atomic energy for military purposes, attempts at the former goal have been rendered relatively sterile and futile. The strong motivations which exist for accepting military controls have been rendered irrelevant to the civil situation. This leaves no strong motive of national interest operating in favor of international control of the Atoms-for-Peace program.

Yet the Commission in its report says, "We strongly urge the United States to make the International Atomic Energy Agency the focal point and major instrumentality of its activity in support in the development of the peaceful uses of atomic energy in other countries. In specific terms, the United States should give priority to the Agency rather than to bilateral or regional arrangements." I can see little force in the arguments educed for such a policy; this policy would lead every agreement with our friends into a maelstrom of quibbling in an agency where representatives of the Soviet Union and the neutralist countries also sit. It is hard to see why we should invite all the difficulties entailed in taking action under such unfavorable circumstances when there are opportunities for easy cooperation opened up by the effective unity within the Western alliance and similar groupings. The argument in favor of channeling activities through the IAEA amounts essentially to a demand that we set an example for the Soviet Union because it might then, also voluntarily, use the IAEA for the operation of the Soviet atomic cooperative programs. Example setting is, unfortunately, flimsy strategy in international affairs.

In closing, let me emphasize that the alternatives are not restricted to setting an example by actions that are contrary to national interest on one hand or by engaging in a suicidal, nuclear balance-of-power game on the other. Nuclear energy clearly requires international control. We will have to accept the imposition of such controls upon us as a price for imposing them upon others. The interest that nations have in survival is likely to produce whatever world-wide agreements are, in fact, reached. It is not at all clear that quarantining certain subordinate, though still important, areas of international relations from infection with the great issues of war, peace, and power conflict is possible, or even, if possible, likely to be constructive.

Nor is it clear that piecemeal reductions of tensions improves the chances for peace. It is not clear that piecemeal restrictions on atomic capabilities or even atomic weaponry, for example, reduce the likelihood of atomic catastrophe. It is most probable that such functions are nonlinear, nonmonotonic, and discontinuous, and if that is so, one cannot assume that a small sacrifice designed to promote a little progress toward international control of peaceful atomic energy activities will, at the same time, be a step toward preventing an atomic holocaust. The case must be established, if at all, by close reasoning about the particulars of the international bargaining situation.

While these issues are not faced in the present volume, the historical record is clearly and accurately stated. Scientists concerned with defense and atomic energy matters will find this case study both instructive and informative.

ITHIEL DE SOLA POOL
Center for International Studies, Massachusetts Institute of Technology

Bigger's Handbook of Bacteriology. For students and practitioners of medicine. Seventh edition by F. S. Stewart. Williams and Wilkins, Baltimore, Md., ed. 7, 1959. x + 611 pp. Illus. + plates. $8.

Since the last edition of this excellent *Handbook* (1949), the many advances made in several of the fields of bacteriology have necessitated revision of much of the original text. New sections have been added on virology and chemotherapy, as well as new chapters on disinfection, antigens and antibodies, hypersensitivity, bacterial classification, and streptococci and coliform bacteria.

A great deal of technical material included in the earlier editions, which was of value to the laboratory technician, has been deleted. The chapters on pathogenic fungi and protozoa have been omitted, because it was felt that these specialized subjects required specialized treatment.

While the text has been increased by approximately 100 pages, the *Handbook* was held to Bigger's objective (expressed in the preface to the first edition)—to present "all the more important facts relating to bacteria as far as they affect man" in a small volume.

While this text is primarily intended for students of medicine, it appears to offer a wealth of material for the student nurse.

The illustrations and plates are excellent.

A. EDWARD A. HUDSON
Goldsboro, North Carolina

Immunity and Virus Infection. A symposium. Victor A. Najjar, Ed. Wiley, New York; Chapman and Hall, London, 1959. viii + 262 pp. Illus. $10.50.

This book contains 20 papers presented in May 1958 at Vanderbilt University during a symposium planned by the department of microbiology as a tribute to the interests of a distinguished guest, Sir MacFarlane Burnet. Besides being devoted to the disciplines of immunology and virology, the volume has no formal organization, and it includes a variety of topics. It begins with a brilliant and provocative discussion of the clonal selection theory of antibody production by Burnet. Antibody production and the related problems of immunological tolerance and allergy are discussed by several participants. The other immunological topics included are separation and purification of antibodies, properdin, rheumatoid γ-globulins of high molecular weight, and genesis of fever in infection. The section on virology (also introduced by Burnet) begins with a highly speculative paper on trends in virus research. Luria, in the same vein, attempts a new definition of viruses, based on recent findings in genetics. Three papers deal respectively with the purification of viruses, the role of phage in the toxigenicity of *Corynebacterium diphtheriae,* and virus infection by "naked" ribonucleic acid. The three final papers are devoted to the problems associated with vaccination against poliomyelitis with inactivated or live attenuated virus, and to the effect of vaccination on the epidemiology of the infection.

The method of presentation varies considerably, too. A few authors discuss specific problems, but most summarize and discuss recent developments, while some thoroughly review old as well as new lines of investigation and provide