in the foreign policy of the United States and in that of the Soviet Union suggest that the relative nuclear and conventional power position of states is not necessarily related to their pursuit of an ambitious foreign policy of expansion or of a modest policy of maintaining the *status quo*.

Perhaps the most interesting feature of the book is its detailed discussion of the emergence of checks and balances in political structures and the conflicts of opinion and policy in the United States among the President, the Congress, the Atomic Energy Commission (supposedly an independent agency but sometimes bowing to the President, sometimes to the Congress), and the Joint Congressional Atomic Energy Committee, with varying policies according to the fluctuation of party majorities and the efficiency of the President in resolving his conflict with Congress. Also, of great interest, is the conflict in opinion and policy between the members of NATO which was exhibited in the British opposition to a forward United States policy in Indo-China in 1953, in the opposition of the United States to the forward Anglo-French policy at Suez in 1956, in the aloofness of the United States and the United Kingdom from French policy in Algeria during the hostilities after 1955, and in the French and British insistence on independent nuclear deterrents against the United States effort to develop a joint NATO deterrent after 1961.

Finally, Nieburg calls attention to the checks and balances that have developed within the world community as a whole—the United Nations policy of collective security which embraces disarmament, a United Nations force, the International Atomic Energy Agency, the test-ban treaty, and general agreements for international trade and development; the policies of collective defense alliances, especially the NATO and the Warsaw countries, which fluctuate between the attainment of positions of superior strength, stable nuclear deterrence, and local deterrents with conventional forces; and the national policies of independent nuclear capability, bilateral atoms-for-peace agreements, nonrecognition of ideologically opposed governments, and national commercial policies of freer trade, embargo, discrimination, and exclusive customs unions.

The emergence of these checks and balances at all levels of government, as war and revolution receded into the background, tended to frustrate the success of any clear-cut policy seeking rational adaptation to changing conditions, whether that policy was universal, regional, or national. But perhaps these same checks and balances made for static or even dynamic stability. Such stability is generally a function of great complexity of the equilibrium of forces in any situation, mechanical, biological, social, or political, but it is always vulnerable to extreme changes in conditions.

The book deserves study as an illustration of the complexity of the world —of the conflicting opinions and policies of men, nations, and international organizations in a period of transition and of the details of debate and action by which history has been made in the nuclear age. The book is for the specialist rather than the casual reader, and would have profited by a more elaborate index of the subject matter. Footnotes indicate the extensive sources utilized by the author, which do not, however, include currently classified material. The author says in his preface that he declined to apply for security clearance, which was suggested by an official of the defense department, because he "wished to be free of any official restraint in drawing and publishing" his conclusions, and because he "believed that the open record would reveal the politics and purposes of security policy without access to the secrets themselves" (p. vi).

Pharmaceutical Sciences

Medical Pharmacology. Principles and concepts. Andres Goth. Mosby, St. Louis, Mo., ed. 2, 1964. 585 pp. Illus. $11.75.

In a few more than 500 pages Andres Goth surveys the various drug groups and their principal members. His book is simply written, in an informal, chatty style—a pleasant contrast to the devious, labored writing where one forbidding paragraph after another discourages further reading.

The volume is arranged in about a dozen sections, which have general headings like psychopharmacology, anesthetics, metabolic and endocrine agents, and chemotherapy. These systematically cover their respective fields in a traditional manner. In chapters within the sections the subject is usually introduced with a page of general discussion, followed by consideration of the drugs individually. The usual mode of presentation is as follows: An interesting note on history; the chemical relationships; very brief consideration of the mode of action; more on metabolic course and toxicity; and then a touch on therapy. The discussions are as up-to-date as possible considering the meteoric rise and fall characteristic of the paths of individual drugs today.

All told, the second edition of *Medical Pharmacology* should be useful to students and practitioners. No particular faults call for criticism; perhaps the diagrams are at times enough more complicated than the text to invite the selection of simpler illustrations in future editions.

WINDSOR CUTTING
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Alfred Russel Wallace

Biologist Philosopher. A study of the life and writings of Alfred Russel Wallace. Wilma George. Abelard-Schuman, New York, 1964. xiv + 320 pp. Illus. $6.

Even among biologists, few now know more about Alfred Russel Wallace than that he formulated a theory of natural selection independently of Darwin. In fact, as Wilma George (Mrs. G. M. J. Crowther) makes clear, Wallace made important early studies of several branches of evolutionary biology. His work on zoogeography was most voluminous and has best stood the test of time. Some of his papers on animal coloration and patterns were, however, more original or, at least, less directly Darwinian.

Wallace was right in his own judgment that most of his scientific work was an expansion or a gloss on Darwin's. (The same could be said, without depreciation, of numerous studies of evolution at the present time.) Although he had no delusions in this field, he had an ample number in others. He wrote and worked ardently in favor of land nationalization, socialism, and spiritualism and in opposition to vaccination. Whatever one may think of these causes, Wallace's support

of them was neither scientific nor practical. Indeed they not only detracted from his reputation but also finally vitiated some of his theoretical views in science, notably on the evolution of man.

Miss George is not particularly concerned with Wallace's strange personality or with details of biography in the ordinary sense. For example, she notes in passing that Wallace married an 18-year-old girl when he was middle aged, but his wife and family life are never mentioned again. As she says at the outset, Miss George is primarily concerned with the history of Wallace's scientific ideas and their present status. She has diligently examined recent technical literature on subjects treated by Wallace. This endeavor is highly interesting and is successful on the whole, although Miss George is not always quite clear on modern evolutionary theory and sometimes remains muddled on points that were inevitably obscure to Wallace. Her writing is usually clear but lacks distinction.

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Paleobotany

Tretichnyye Flory Zapadnoy Sibiri [Tertiary Floras of Western Siberia]. P. I. Dorofeyev. Komarov Botanical Institute, Academy of Sciences of the U.S.S.R., Moscow, 1963. 346 pp. Illus.

The fossil floras described in this monograph occur at 20 localities in the West Siberian Lowland, most of the sites lying between 55° and 60° latitude along the rivers Tavda, Irtysh, and Ob'. The continental Tertiary deposits here, as in other parts of Soviet Asia, have been studied intensively during the past decade. P. I. Dorofeyev (or Dorofeev, as he prefers to transliterate it) of the Komarov Botanical Institute has been the principal investigator of fossil fruits and seeds. This volume, which summarizes, revises, and adds to his earlier reports, is a most welcome contribution.

The material is arranged in such a way that even those who are unfamiliar with the Russian language can obtain useful information. A map with the localities is provided on the first page of the brief introduction. A discussion of stratigraphy follows (the fossils were taken from both Oligocene and Miocene horizons); then each site is described individually and its fossils listed. This portion of the book concludes with a discussion of phytogeographic affinities and ancient Siberian climatic conditions and with a tabular list of 182 fossil species and their distribution in the Tertiary deposits of western Siberia. The remainder of the work presents formal descriptions of the species, many of them new, along with synonyms, nomenclatural changes, and comparisons with modern forms. Fifty plates, a bibliography, and a two-page English summary complete the volume. Unfortunately, the English summary does not list the 20 localities in the same numerical order as the introductory map; readers who ignore the Russian legend to the map will be confused.

Dorofeyev believes that the plant remains are derived from a single flora (American writers might say geoflora) that flourished in western Siberia with little change from the beginning of the Oligocene epoch until the end of the Miocene. The 129 genera in 72 families that have been identified indicate a warm temperate climate. The diversity of the fossil flora and the abundance of deciduous forms are in marked contrast to modern forests of the region, in which pine, larch, and fir predominate and in which species of broadleaf trees are few. Many genera of the ancient Siberian flora now occur only in eastern Asia, eastern North America, or both. Among these are *Taxodium, Glyptostrobus, Nyssa, Halesia, Fortunearia, Liriodendron, Leitneria*, and *Magnolia*. Although fruits and seeds of the Siberian deposits are fairly similar to those found in central European brown coals of the same age, the higher latitude of the former was not without effect: some of the more tropical elements of European brown coals—for example, Symplocaceae and Mastixioideae—are absent.

A paleobotanist must deal with floras consisting of dozens of families, and, obviously, he cannot be a specialist in all of them. Nevertheless, I am bewildered by some of Dorofeyev's statements with respect to modern *Nyssa* (familiar to Americans as tupelo or black gum), with which some of his most interesting fossils are allied. The endocarps (stones) of *Nyssa sylvatica* Marsh. are said to attain a length of 19 millimeters: actually, the maximum length is about 12 millimeters. The fossil fruit *N. macrocarpa* Dorof. is said to resemble the fruits of both *N. biflora* Walt. and *N. uniflora* Wangenh. (= *N. aquatica* L.), a puzzling statement, since fruits of these two modern species are very dissimilar. Most remarkable is the author's assertion that endocarps of these species contain two, three, or four seed cavities. In fact, fruits of both modern species have a single seed cavity, and in making this error, Dorofeyev missed an interesting point: his multilocular *Nyssa* fossils are structurally more primitive than unilocular fruits of modern *Nyssa*. Even granting the difficulty of obtaining modern material for comparison, these mistakes are inexcusable, for accurate descriptions of *Nyssa* fruits are to be found in the literature that Dorofeyev consulted in preparing his treatment.

Although this work is not as magnificently done as *The London Clay Flora* of Reid and Chandler or Kirchheimer's *Die Laubgewächse der Braunkohlenzeit*, it must share a place with those volumes on the shelves of the few who specialize in Tertiary fruits and seeds. The many botanists who are interested in the phylogeny and distribution of modern seed plants should acquaint themselves with the book, and anyone who thinks that the fossil record of angiosperms consists only of leaf impressions should at least examine the plates.

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Mathematics

Foundations of General Topology. Ákos Császár. Translated by K. Császár. Pergamon, London; Macmillan, New York, 1963. xx + 380 pp. Illus. $15.

The present work is an expansion of the first edition—*Fondements de la Topologie Générale* (Akadémiai Kiadó, Budapest, 1960). The author's goal is to treat uniform, proximity, and topological structures from a common viewpoint. He accomplishes this by developing a very general theory of "syntopogenous" structures in which the above emerge as special cases. The idea is simple and interesting. A syn-