studying Russia experiences in the most exaggerated form the basic problem of values in the social sciences and the humanities. If such an American does not want to be either a morally arrogant missionary or a morally flaccid anthropologist, the only alternative seems to be the disdainful recluse, and that has been choice of most. By a missionary I mean a scholar whose underlying purpose is to prove the superiority of our culture over theirs (or, in rare cases of inversion, of their culture over ours). By an anthropologist I mean a scholar who strives to avoid moral judgment, to establish the social function of such cultural variables as concentration camps or saturation bombing. By a disdainful recluse I mean a social scientist or humanist who turns his back on modern horrors altogether.

It is touching to discover that such a romantic stance has been struck by most American students of Russia, specifying old Russia, when Pushkin "raised himself a monument not made by hands," above the masonry of the state. Nabokov would approve; Solzhenitsyn would not. Byrnes unwittingly takes Nabokov's side, when he confesses the philosophic assumption that guides his path in Russian studies. "We should distinguish between the temporary political condition and the eternal human condition" (p. 82). My own assumption is that the two are inseparable, which makes it impossible to avoid either the missionary, who claims to know eternal values, or the anthropologist, who knows only temporary conditions. Endless tension between irreconcilable commitments cannot be avoided.

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References and Notes

1. See *Commentary*, February, June, September, and November 1976, for Theodore Draper demanding an investigation and imputing bad faith or worse to the officials who rose to defend their labors.
2. And frequently amusing. Years ago, when I was starting my study of the Lysenko affair, an amiable young Machiavelli in the State Department encouraged me to apply for the cultural exchange, so that, when "they" vetoed me, "we" could veto a Soviet applicant who wanted to penetrate a militarily sensitive research program at the University of Illinois. The vetoes were duly exchanged, and I went to Russia on a tourist visa. Many years later "they" topped "our" joke, by giving me another tourist visa (my fifth), letting me get as far as Helsinki, and then phoning to say that the visa was revoked.
3. Philip Hanson, of the University of Birmingham, was quite persuasive on this point, against a passionate rebuttal by Michael Boretsky, of the Commerce Department, at a recent conference on Soviet science and technology, sponsored by the National Science Foundation and George Washington University. The proceedings of this conference are to be published by the George Washington University Program for Policy Studies in Science and Technology.

Advances with Lasers

Lasers in Physical Chemistry and Biophysics. Proceedings of a meeting, Thiais, France, June 1975. J. JOUSSOT-DUBIEN, Ed. Elsevier, New York, 1975. xvi, 522 pp., illus. $51.95.

In the past five years single-frequency and tunable lasers have played a crucial role in many of the advances made in understanding chemical and biological systems. In recognition of these advances the Societé de Chimie Physique devoted its 27th international meeting to "Lasers in Physical Chemistry and Biophysics." This collection of articles is the proceedings of that meeting. It was published rapidly, and the investigations reported do reflect current developments in the fields covered.

The 43 papers, which range in length from about 2 to about 15 pages, deal with a wide variety of topics. The subjects covered can broadly be classified into laser developments, dynamics of molecular processes, and molecular structure. Although these categories broadly delineate the uses chemists and biophysicists have made of lasers, there are a few laser applications that do not readily fit into them, and these are also dealt with in the volume. An example is provided by Michael Berns's elegant description of his recent studies of alterations in cell function produced by laser microirradiation.

In general the topics covered are appropriate to the goals implied in the title, and the reader is given a good appreciation of the areas in which significant progress is being made. For example, there is an excellent report on developments in vacuum ultraviolet lasers by D. J. Bradley, with a good set of references. Other articles present recent developments in dye lasers, and there are a couple of papers on organic and inorganic lasing materials.

One group of the "laser community" is particularly well represented in the book—those engaged in applying picosecond lasers to chemical and biological systems. The papers in this area cover a wide range of topics, including a report of a subpicosecond investigation and a good summary of the recent contributions made by picosecond spectroscopy to the understanding of the primary events of bacterial photosynthesis. There are also a few papers describing experiments with longer pulses in the nanosecond domain, including a good communication by Goldschmidt on the interpretation of laser flash photolysis in which many of the artifacts that are often obtained are pointed out.

Finally, there are reports relevant to laser isotope separation and several articles describing various applications of lasers in structural investigations. These investigations cover a variety of phenomena, biological and nonbiological. Particularly impressive is an account of the use of linear dichroism by photoselection to obtain the symmetry, orientation, and rotational mobility of cytochrome c oxidase in the inner membrane of mitochondria.

Many of the articles in the book have up-to-date references, some as late as 1976, but some of the bibliographies are quite inadequate. Questions posed by the participants and the authors' responses are included in most of the papers. The questions often bring out interesting and important aspects of the papers and in a few cases even indicate flaws in the arguments made in them.

Like most symposium volumes this one suffers from a heterogeneity in the material covered and in the quality of the papers included, and its usefulness is seriously limited by the lack of an index. It is, however, recommended as a rather complete account of the current applications of lasers to chemical and biological problems.

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Extragalactic Astronomy

Galaxies and the Universe. ALLAN SANDAGE, MARY SANDAGE, and JEROME KRISTIAN, Eds. Index prepared by Gustav A. Tammann. University of Chicago Press, Chicago, 1976. xxii, 818 pp., illus. $45. Stars and Stellar Systems, vol. 9.

This long-awaited volume is the most important collection of review articles ever published in extragalactic astronomy, and it will serve as a standard reference for years to come. Yet it is a disappointing book in some ways, because parts of it are out of date. The quality is excellent. Each chapter was written by a recognized leader in its area, and many of the chapters are outstanding summaries as of the date of submission. (The dates of submission of individual chapters range from 1965 to 1974, with a median date of 1971.) Unfortunately, however, the book has taken so long to appear that the currency of most chapters has suffered, and some of them are now seriously behind present knowledge.