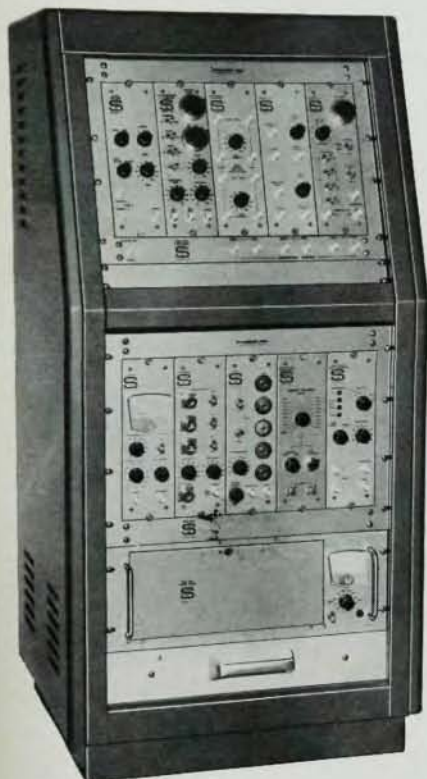


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Tamm, and Trubnikov without any mention of non-Russian physicists. Also the only thermonuclear machine he discusses by name is the Tokamak installation. Since Arzimovich is as knowledgeable about fusion work in the United States and in England as he is about the Russian work, one can only assume that this concentration on Russian developments comes from the original form of the manuscript which must have been written for domestic Russian use. It is too bad that the author did not modify his manuscript for translation so that it would not have this parochial flavor in its examples.

Since physics is physics independent of the country of origin, this is not a serious drawback to the book, but for use in American universities some other source book will probably be suggested as well, so that contact will be made with some of the large fusion machines in this country and in England. A few items of historical inaccuracy have crept into the book. Arzimovich states that the word plasma was introduced by Langmuir in 1923 when, in fact, it was introduced in 1929. A few questionable statements of Russian priority will be recognized only by the plasma physicists who were involved in the developments of the Sherwood Project.

In summary I can recommend the book for the general reader and will suggest it myself to those who are somewhat knowledgeable about physics but who want to find out with what plasma physicists are concerned.

The Quest. By Tom Allen. 323 pp. Chilton Books, Philadelphia and New York, 1965. Cloth \$4.95.

Reviewed by J. Allen Hynek, Lindheimer Astronomical Research Center, Northwestern University.

The Quest is a captivating, popularly written, optimistic book for the layman on the present state of scientific thought about life elsewhere in the universe. Optimistic, because the author, formerly a feature writer on the New York *Daily News*, although ostensibly reporting the facts, is clearly sitting on the sidelines cheering for the extraterrestrial-life team. Nonetheless, his approach is honest, exhibits an excellent, if not profound,



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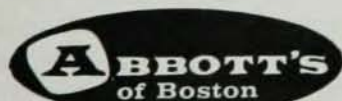
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acquaintance with the literature and the workers in exobiology and, beyond a definite bias for the hopeful side of experiments and observations, appears not to have consciously distorted the facts.

The author takes as a leitmotif a segment of a report of the National Academy of Sciences and the National Research Council (A Review of Space Research, 1962) which states: "The search for extraterrestrial life has an obvious and compelling fascination for peoples of all nations. In a few short years this topic—at one time merely science fiction—has been lifted from the category of escape reading and whimsical speculation and now stands as a serious objective of the international space race. . . . On solid scientific grounds . . . exobiology's goal of finding and exploring extraterrestrial life should be acclaimed as the top-priority scientific goal of our space program." And this is indeed the spirit in which the book is written.

The author states that his book is "an attempt to bring together the facts and speculations that form the kind of answer we are capable of producing here on earth today" to answer the question, "Does extraterrestrial life exist?" He seems personally convinced that it must. He deals with the pseudomathematical speculations on the likelihood of life, and of advanced civilization elsewhere in the universe, with the Project Ozma problem, with evidences of life found in meteorites, with the projected NASA space-probe experiments to detect life elsewhere, and with the problems of communication with extraterrestrial life.

But perhaps the most noteworthy and persuasive chapter deals not with extraterrestrial life but with the many exotic forms of terrestrial life that exist or survive under extreme conditions of temperature and pressure. The chapter, "The Liveliness of Life," is well worth reading by the layman even out of context. It is a brief but excellent review of the pervasiveness and irrepressibility of life here on earth in the face of seemingly insuperable obstacles: bacteria that thrive in carbolic acid solutions and those that survive in near-vacuum; an

insect that "burns up" because it cannot tolerate the warmth of a human palm, bacteria that can live only in the absence of oxygen; and the Tardigrades, and others, that can survive years of desiccation. In context, the thesis is obviously: if, on this tiny planet, almost without doubt only one among billions, life appeared in truly multitudinous forms (350 000 kinds of plants and 1 200 000 species of animals extant that have been scientifically classified, and somewhere between 50 million and four billion different kinds of living things that have lived on this planet), and not only appeared but can persist in nooks and crannies in temperatures as low as -313°F and as high as 219°F , and pressures from nearly zero to more than 16 000 lb/sq in, and can survive prolonged desiccation, then it virtually follows that it must be present on countless distant planets. And if life, then evolution, and then intelligence of perhaps even higher order than ours. But the non-biologist reader will be impressed by the rich spectrum of life here on earth, even if he does not accept the thesis.

It is striking, and perhaps commendable, in view of the crackpot aura surrounding the subject of unidentified flying objects, that in his discussion of the problem of communication with, and search for, intelligent extraterrestrial life, the author leaves out any mention of the possibility of our having been visited, even though he spends much time on the problem of our visiting elsewhere in space. Despite its unsavory aura, the UFO phenomenon should have been mentioned for completeness. The author does remark, however, that "there has never been an adequate, unbiased scientific search for evidence of extraterrestrial visitation."

The book can be recommended for a light but readable account of facts and speculation about this increasingly timely topic. However, the reader may find disturbing the newspaper style; the author has been too long a newspaper feature writer to abandon the spritely, newsy mode that many find jarring in dealing with a serious subject.