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Editorial Comment

Space Medicine

At the recent meeting of the Aero Medical Association in Chicago, steps were taken to establish a section on space medicine within the framework of the parent association. The formation of this affiliate is certainly in keeping with the best American tradition of never neglecting an opportunity to organize a new society. The founding will have to survive the smiles of some and the criticism of others, but it seems foreordained to be successful. Its initial membership comprises many of the leaders in aviation medicine plus a hard core of first-rate investigators. Because of the spectacular nature of its interests, it should receive a "good press."

In order that space medicine will have the same meaning for all people, the term must be defined and the field of interest delimited. The word "space" to most people probably implies that "boundless void" beyond the earth's atmosphere. Actually, space can be variously defined; it is as difficult to pin down as the word "fatigue" and is at about the same level of abstraction. The following definition is gratuitously offered with the full

realization that it may not be acceptable to all: *Space medicine is concerned with the medical problems involved in modes of travel which are potentially capable at least of transporting us beyond the earth's gravitational field; and it is also concerned with special hazards encountered in the upper part of our atmosphere and beyond.*

To escape the earth's gravitational field, a single-stage rocket must attain an initial speed of 25,000 miles an hour. It is inconceivable that such a rocket could be manned, even if it could be built. However, the greater the reduction in initial velocity, the greater the power requirement, and, for this reason, the technical design of the first space ships will probably represent a compromise between engineer and biologist; the magnitude of the medical problems involved here requires no emphasis.

Travel in the upper reaches of our atmosphere and beyond is fraught with dangers over and above those associated with rocket propulsion *per se*. Elsewhere in this issue, Schaefer points out that the intensity of cosmic

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radiation increases with increasing altitude to reach a maximum at 70,000 feet; at this level, the tolerance dose for man is approached. Above this level, heavy nuclei rays are encountered which consist of atomic nuclei stripped of all their orbital electrons. Their kinetic energy is in the billion e-volt range, and they can penetrate to a depth of 10 cm. to 25 in living tissue. At sea level, the protection afforded by the atmosphere is equivalent to a lead shield more than a yard thick; the equivalent of at least 1 cm. of lead will be needed about 70,000 feet. The atmosphere also shields us from strong ultraviolet radiation, solar x-rays and the myriads of meteorites encountered aloft.

At great distances from the earth,

the gravitational attraction of this body becomes negligible, and one enters a zero or near-zero gravity environment. It is difficult to imagine all of the physio-pathological changes which will take place as the traveller's weightless space ship rides the gravitational waves.

The aims of the new society will be to formulate and encourage a research program which will parallel in its development the technical advances in rocket flight. It will also serve as a clearing house for information and for the dissemination of this knowledge in this field. A big step forward was taken in 1949 when General H. G. Armstrong established the first Department of Space Medicine at Randolph Field.

Board of Aviation Medicine Progress Report

Important progress has been made by the Interim Board of Aviation Medicine since its highly successful first meeting in Chicago during the twenty-first annual session of the Aero Medical Association. At this meeting, which was attended by the entire membership of the Board, under the chairmanship of Brigadier General Otis O. Benson, Jr., USAF (MC), it was decided to investigate the possibility of an affiliation with an existing specialty board in a field not too remotely removed from the general aspects of aviation medicine. Likewise, informal conferences were arranged with officials of the American Medical Association in Chicago in order to ascertain, in general, the attitude of

that organization to such a proposal, especially that of its Council on Medical Education and Hospitals.

At the annual meeting of the American Medical Association in San Francisco in June, various members of the Interim Board in attendance conferred with officials of established specialty boards relative to the alternatives of either establishing an independent American Board of Aviation Medicine or seeking affiliation with an existing board. All reports indicate that the latter course of action is the more feasible. Under such an arrangement, it is contemplated, candidates qualified for examination in aviation medicine would be certified only in that specialty and would not be held accountable for

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either the training, knowledge or practice required by the affiliate board.

A request will be prepared for the recognition of aviation medicine as a specialty or "well-defined field of medicine," and addressed to the Advisory Board on Medical Specialties. This body governs the recognition and approval of the various specialty boards in the United States. Members of the Interim Board are in possession of a syllabus of proposed documents, each of which is necessary for the organization of a permanent board, and which have been prepared for their study and

guidance in petitioning the Advisory Board.

Meanwhile, interest in this milestone in the progress of aviation medicine continues to mount, and the project is gaining important support. At a recent meeting of the Executive Council of the Aero Medical Association the following resolution was unanimously passed and sent to General Benson:

"The Interim Board in the Specialty of Aviation Medicine is a continuing and highly desirable project, and is hereby requested and authorized either to proceed to organize an independent board or to affiliate as a co-member with another specialty board."

German Aviation Medicine in World War II

Elsewhere in this issue of *THE JOURNAL*, mention is made of a significant contribution to aviation medical literature in the form of a handsome two-volume work entitled, "German Aviation Medicine, World War II," which was prepared under the auspices of the Surgeon General of the Air Force and published by the government printing office.

Though fifty-six top flight German scientists, many of whom were former *Luftwaffe* flight surgeons, authored the work at the Aero Medical Center in Heidelberg in 1946-47, under U. S. Air Force direction, the enormous task of editing, translating and re-editing the many manuscripts was accomplished in the United States at the Air Force School of Aviation Medicine. As evidence of the painstaking effort

to achieve scientific accuracy, the editors transmitted copies of the final drafts of all manuscripts to the original authors in Germany for their study and concurrence prior to publication.

This valuable work represents the labor of many individuals, but maximum credit for its appearance should be given Major General Malcolm C. Grow, USAF (Ret.), the first Surgeon General of the Air Force, who conceived the idea of inviting recognized German aeromedical scientists to participate in a project of summarizing their wartime accomplishments for publication in the United States. Aviation medical literature has been enriched by these volumes since the information they contain might otherwise not have been preserved.