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FIFTH WORKING GROUP CONFERENCE (SPACE BIOLOGY) AT THE XXI PLENARY SESSION OF COSPAR, 28 MAY - 10 JUN 1978 AT INNSBRUCK

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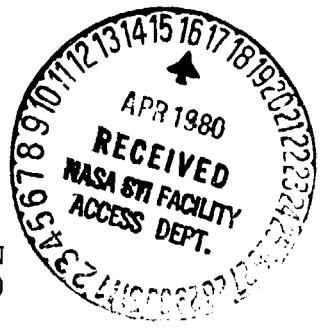
Translation of "Informatsiya o konferentsii 5-y rabochey gruppy (kosmicheskaya biologiya) na XXI plenarnoy sessii COSPAR (Mezhdunarodnogo Komiteta po Kosmicheskim Issledovaniyam), 28 maya - 10 iunya 1978 g., Insbruk, Avstriya," Radiobiologiya, Vol. 19, No. 5, May 1979, p 796



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The program of the XXI Session of COSPAR, in which scientists from 34 countries/796* participated, included six symposia and conferences of eight working groups. In the fifth working group (space biology) there was a presentation of materials in these areas: research on the Viking craft (biology of Mars), planetary biology and quarantine, space radiobiology and gravitational biology. In radiation biology (presiding were Prof. Kh. Byuker, West Germany, and Prof. Ye. Ye. Kovalev, Soviet Union) the first three reports were devoted to the dosimetry of heavy charged particles (HCP). The report of Ye. Ye. Kovalev viewed the distribution of HCPs in respect to their energy and linear energy loss (LEL) as a function of the flight altitude of spacecraft (SS). The report of V. Heinrich and A. Spiel (West Germany) showed, that effectiveness of the spacecraft's geomagnetic shield (GMS) of the EPAS (Experimental Flight of the Apollo Soyuz) against space HCPs (e.g. Fe nuclei) depended in large part on orbital parameters. Spacecraft orbiting at the equator showed showed maximal GMS against HCPs from the E threshold of 5-7 bev/neuclon. It was found, that with an increase in the angle of orbital inclination there was a decrease in the HCPs that impinged on the spacecraft. In the second report V. Heinrich presented data on the study of fragment production in nuclear collision of C, Ne and Ag ions with E=250-900 mev/neuclon with LEL in the region of the Breff peak. Differences were noted in dosage curves of HCPs absorbed by the target between experimental and estimated values. The conclusion is, that the production of light fragments ought to increase with the mass number of bombarded nuclei.

EPAS results were presented in three reports. I. G. Akoyev et al. (Soviet Union) looked at the kinetics of the formation of the macro- and ultrastructure of the fungus Actinomyces levoris during the flight and postflight periods. The phenomenon noted in flight was desynchronization of sporiferous ring formation and inhibition of their growth during the first 2-3 days of flight and the authors associate this with orbital absence of the usual influence of terrestrial biorhythm indicators.

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*Numbers in the margin indicate pagination in the foreign text.

In their report S. S. Yurov et al. (Soviet Union) nalayzed the genetic effects of HCPs on T4Br+ bacteriophages. The bacteriophages of flight specimens showed an increase of mutagenic rate that was 18-19 times that of the control. S. Chornek et al. (West Germany) used the Bacillus subtilis to show clear damage done by HCPs. The authors are of the opinion, that for the spore direct HCP impingement is a lethal event, yet they do not deny the possibility of the effect of beta radiation in the path of the HCPs.

I. D. Anikeyeva et al. (Soviet Union) showed, that the physical factors of space flight in a case where Crepis capillaris and Arabidopsis thallana acted upon seeds that had been previously treated with gamma radiation induced intensive damage in meristematic embryonic cells with attendant increase in radiosensitivity of the bioobjects studied.

In two joint reports of Soviet and French researchers an examination is made of radiobiological experiments carried out on the Kosmos-936 and the orbital station Salyut-6. In the first report Yu. Gaubin et al. (France, Soviet Union) it was shown that on the Kosmos-936 123 out of 1165 lettuce seeds showed traces of HCP impingement. Specifically these seeds evidenced a significant increase in multiple chromosome aberrations with a considerable attendant increase of individual chromosome aberrations. In these same experiments one noted some differences in development of artemia eggs which the authors link with the effect of weightlessness or the dynamic factors of space flight. In respect to the second experiment on the orbital station Salyut-6, Ch. Planel et al. (France, Soviet Union) showed in the "Cytos" experiment a shortening of paramesium generation time in flight by 0.8 times. The authors attribute the stimulation effect to the action of space radiation in weightlessness.

In the evaluation of the reports there was a desire expressed for standardization of terms used in space radiobiology. A resolution was passed to include in the announcement of the day for the meeting of the Fifth Working Group (space biology) of the next COSPAR session the following areas: radiobiological effects in space, biological study of planets, organic molecules in space, early biological evolution, gravitational biology, roundtable discussion of radiation standards. The COSPAR standing committee decided that the XXII session will be held in Bangalore, India, 29 May - 9 Jun 1979.