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N. B. Here are the general conclusions relative to the measurements of the magnetic field near V E N U S, as presented in the COSPAR (Tokyo 1967) review paper*. There are some differences as compared to the more recent conclusions presented in the above preprint 1968.

NEAR PLANETARY SPACE. Measurements of the magnetic field in the vicinity of Venus resulted in the following conclusions (Fig.attached). A regular field with 18 to 14γ intensity was observed in the near-planetary portion of trajectory $6R_♀ - 4R_♀$ ($R_♀$ being the radius of Venus. At $4R_♀$ the field rose sharply to 25γ and became noticeably fluctuating. At $3,7R_♀$ the field reached 32γ, decreased to 20γ at $2.6R_♀$, rose somewhat again at $2,3\ R_♀$ and finally constituted 18γ at 200 km from the surface. Bursts of field intensity correspond to bursts of positive ion intensities of charged particle traps.

Thus, the data obtained lead to the conclusion about the absence near Venus of a noticeable magnetic field.

Material obtained is analyzed from two points of view:

a) the reality of existence of a certain cavity linked with a very weak proper magnetic field of Venus deformed by solar wind;

b) the existence of a shock front with Mach number M = 4 - 7, appearing as solar wind flows past Venus.

Attempts have been made to detect radiation belts near Venus as VENERA-4 approached its surface. It was found that the intensity of possible trapped radiation near Venus may be at least one million times weaker than near the Earth. Thus the conclusion about the absence of radiation belts near Venus, already arrived at during flight of Mariner-2, was once more corroborated.

As the station approached planet ENUS, the counting rate of the detectors registering primary cosmic radiation began to drop as of 2.5 $R_♀$ on account of shielding by Venus of part of space. Had Venus been abso bing cosmic rays, the counting rate at the boundary of its atmosphere would have dropped exactly by a factor of 2, for in this case half of the space would have shielded, barring the arrival of cosmic rays. The real intensity variation was less, which allowed us to estimate the albedo of Venus' atmosphere for cosmic rays. It was found that it is close to that of the Moon, also devoid of proper field.

Charged particle traps, designed to measure solar and thermal plasma fluxes near Venus were also installed on VENERA-4. Substantial increase in solar plasma fluxes were registered at distances from 19000 km to about 12 - 13 thousand km from Venus' surface. Apparently the probe met with the shock wave front formed as solar wind with frozen-in magnetic wind was flowing past the planet as a hard obstacle. Comparison with trajectory data allowed us to conclude that the assumption of shock wave front encounter was fully justified.

Contrary some assumptions, experiment allowed also the estimate of charged particle concentration in Venus' ionosphere, which was found to be extremely low.

The upper estimate is of the order of 1000 cm^{-3}. The fact that such low concentrations were obtained is apparently due to measurements carried out on the night sude of Venus

The observations of scattered ultraviolet radiation, begun on spacecrafts ZOND-1, VENERA-2 and VENERA-3, were pursued on VENERA-4. To that effect a two-channel photometer was used, which was sensitive in two spectral intervals: 1050 - 1340 A and 1225 - 1340 A. Photon counters with lithium fluoride window filled with NO were used as receivers. In front of one of them an additional filter made of calcium fluoride was installed. The counters were placed in an orbital compartment on the shadow side, so that their optical axes constituted an angle of 107° with the direction to the Sun, when solar batteries were Sun-oriented. In this case the device's readings were registered under two conditions: with 4-hour interval and registration in a memory device, and with 7 to 27 sec intervals in direct transmission conditions.

Analysis of the obtained data led to the following results:

- the presence in Venus of a hydrogen corona with density proportional to $R^{-4.5}$;

- it is shown that the density of atomic oxygen in the 300 - 350 km altitude range above the night (morning) side of the planet does not exceed $2 \cdot 10^3$ atoms/cm^3;

- it is also shown that Venus is devoid of radiation belts with charged particle fluxes exceeding 0.07 $cm^{-2} \cdot sec^{-1} \cdot ster^{-1}$ for $E_e > 7$ Mev and $E_p > 50$ Mev;

- the intensity is measured of L_α-emission of Milky Way, equal to 200 rayleighs, and also that in the region 1225 - 1340 A, equal to 4 rayleighs;

- the constancy of flux in the L_α-line, proceeding from the Sun, is confirmed within the 30% limits.

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Translated by ANDRE L. BRICHANT
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N. B. This note is to be attached to ST-LPS-PMF-10730 as an addendum

Magnetic Field Measurements