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INTERNATIONAL CONFERENCE ON COSMIC RAYS AND THE EARTH STORM Part II

II-1B-P5. Chairman's Summary*

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In the paper V. R. Hutton: Equatorial micropulsations it was mentioned that earth current pulsations at Legon, Ghana, within 3 degrees of the magnetic equator were recorded. The peak to peak values, usually less than 0.1 gammas in the geomagnetic field, could be easily observed, by the earth current techniques. Continuous regular pulsations often of pure sinusoidal form were observed most frequently in early evening hours, with period 20—30 seconds (*pc*), with secondary maxima in the diurnal variations at dawn and near noon, a finding not thus far noted at other stations. Large amplitude pulsations sometimes appeared simultaneously in College, Alaska and in Africa, and often at other stations as well. Some pulsations of period 5—15 seconds were found to appear most frequently at night, and some pulsations of period 30—120 second with a maxmum frequency near noon. It was remarked that the measured frequency of occurrence of pulsations at this station near the magnetic equator was greatest when *DS* and *Sq* currents show maximum departure, and that as for rapidly changing fields observed elsewhere at the magnetic equator there may be augmentation or signal.

V. A. Troitskaya in the paper: On the Geomagnetic Rapid Variations of Various Periods reported that in middle latitudes the amplitude of pulsations of period a few tens of seconds (*Pc*) was amplified by a factor of one-half to two times above the values measured on non-storm days. Storms facilitated the appearance of continuous pulsations (*Pc*) throghout low and middle latitudes; on occasion, pulsations of about 5 minute duration or so appeared, as in auroral regions. Trains of waves appearing during the development of bays showed a 27 day recurrence tendency, and sometimes reappeared after 54 and 72 days.

In the paper A. I. Ol: Pulsations during the Sudden Geomagnetic Storms at High Latitudes, pulsations of period 4—6 minute duration were observed in the Soviet Arctic Area. He found that their period increased, more slowly at first, with increasing geomagnetic latitude. As the maximum departure of the horizontal intensity in the main phase of a storm is approached the period of the pulsations approaches a smaller value, but this tendency is opposite inside the auroral one.

The paper N. F. Ness, T.L. Skillman, C.S. Scearce and J. P. Heppner: Magnetic Field Fluctuations on the Earth and in Space, discussed the response and sensitivity of the rubidium-vapor magnetometer, as a sensitive device for measuring micropulsations. From tests made it was concluded that it showed flexible and superior characteristics. Pulsations of amplitude 10 to 15 gammas and period two seconds or so was noted in space measurements. V. A. Troitskaya remarked that simultaneous pulsations (pearls) had been noted at ground level and when pulsations were noted in a Soviet Space craft.

Y. Kato, in the paper Geomagnetic Pulsations and Hydromagnetic Waves in the Earth's Exosphere, reported on extensive statistical and theoretical studies of continuous pulsations and pulsation trains noted on rapid-run magnetograms of the IGY. It was found that continuous pulsations of period 10—15 seconds were observed in the day hemisphere, with amplitude increasing rapidly with increasing latitude. For longer periods up to 150 seconds the effect was similar, a maximum amplitude being reached in the auroral zone. As the period increased from 150 to 600 seconds, similar increase to a maximum at the auroral zone was noted, but the pulsations were observed both by day and by night. A damped typed pulsation also increased in amplitude with latitude and attained a maximum in the auroral zone, but appeared only in the night hemisphere. He also showed, after deriving a model exosphere that hydromagnetic waves propagated downwards in equatorial regions, or perpendicular to lines of force of the geo-

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magnetic field will be reflected as a level depending upon the period of the wave; a part of their energy will be transported as transverse waves along a line of force into higher latitudes. He considered the source of hydromagnetic waves to be exospheric and in the range 1 to 300 seconds in period, as measured by Sonett in space measurements.

M. Davidson reported on a study of rapid run magnetograms at three stations in the United States which seemed to indicate, by a power spectrum analysis of some hours of storm, the possibility of inferring differences in the geology at each station.

In the paper J. Bouska: The Microstructure of *ISc* of Geomagnetic Storms, there was considered the data of 105 storms in order to define length of rise time (*ISc*) of the initial phase of storms in relation to the maximum amplitude in each storm attained for the initial phase. He found that the maximum amplitude attained increased linearly with increasing duration of rise time. Dr. Saito reported instance of opposite trend, in which the rise time was shorter if the maximum amplitude of the initial phase was great.