

KURNOSOVA, L.V.; KOLOBYANINA, T.N.; LOGACHEV, V.I.; RAZORENOV, L.A.; SIROTKIN,
I.A.; FRADKIN, M.I.

Detecting radiation anomalies above the southern part of the
Atlantic Ocean at altitudes from 310 to 340 km. Isk.sput.Zem.
no.8:90-93 '61. (MIRA 14:6)
(Artificial satellites) (Cosmic rays)

32285

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S/169/61/000/011/060/065
D228/D304

AUTHORS: Kurnosova, L.V., Logachev, V.I., Kolobyanina, T.N.,
Razorenov, L.A., Sirotkin, I.A., and Fradkin, M.I.

TITLE: Discovery of radiation anomalies over the Atlantic
Ocean's southern part at heights of 310 - 340 km

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 11, 1961, 11,
abstract 11G97 (V sb. Iskusstv. sputniki Zemli, no. 8,
M., AN SSSR, 1961, 90 - 93)

TEXT: By means of apparatus placed aboard the second satellite the
flow of particles exceeding the flow of cosmic rays was recorded.
Near the equator the mean flow equalled 1.2 particles $\text{cm}^{-2} \text{sec}^{-1}$,
being 3.3 particles $\text{cm}^{-2} \text{sec}^{-1}$ in high latitudes. Regions with an
anomalously high radiation intensity include the area of the Atlan-
tic Ocean's southern part (25° and 50°S , 0° and 55°W). A Southern
anomaly, situated between $50 - 65^{\circ}\text{S}$ and $30^{\circ}\text{W} - 40^{\circ}\text{E}$, was detected
at a height of 340 km. An increase in the intensity was recorded in
the northern hemisphere in the area $60 - 65^{\circ}\text{N}$ and $130 - 170^{\circ}\text{E}$. This
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Discovery of radiation anomalies ...

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anomaly was only observed on one orbit of the satellite's trajectory, is unstable in time and is possibly related to the outer radiation belt. In the authors' opinion the South Atlantic and Southern anomalies are connected with the existence of large negative magnetic-anomalies in the southern hemisphere, i.e. regions in which the magnetic field-strength is less than the normal intensity for the given geomagnetic latitude. [Abstractor's note: Complete Translation]. X

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D045/D114

AUTHORS: Dragun, G. S., Kurnosova, L. V., Logachev, V. I., Razorenov, L. A., Sirotkin, I. A., and Fradkin, M. I.

TITLE: Equipment for investigating the nuclear components of cosmic rays installed on space rockets and artificial earth satellites

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli, No. 9, Moscow, 1961, 86-110

TEXT: Equipment installed on the third Soviet artificial Earth satellite and on space rockets, for investigating the nuclear components of cosmic rays, is described. The results of the measurements carried out with the aid of the described devices have already been published in previous issues of the journal. All the devices consist of the following basic elements: a charged particle detector (integral Cherenkov counter); an electronic system for amplifying signals, for selecting the required ionizing events and for storing them; and elements for matching the photomultiplier output with the input of the electronic circuit and the output of this circuit with the radiotelemetric system. A block diagram of a unit for recording the nuclei

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Equipment for investigating the ...

of cosmic rays is given in fig. 1. The Cherenkov counter can be used for investigating temporary changes in the intensity of the nuclear component and the dependence of this intensity on distance from the Earth. The advantages of the counter are that the radiotechnical device used is relatively simple and that a sufficiently large number of particles can be registered per unit of time. The disadvantage of its use is that the quantity of light, divided in the detector, and the number of photoelectrons taken from the cathode of the photomultiplier is small, and consequently the value of the output pulse is small and large statistical fluctuations occur. A device for measuring the characteristics of Cherenkov counters and several aspects of calibration are described and illustrated. It is stated that the instruments for measuring the nuclear components of cosmic radiation installed on the first and second space rockets had an additional channel designed for registering radiation in an area of increased radiation intensity. A sharp increase in intensity was observed at distances of $27 \cdot 10^3$ km (first rocket) and $17 \cdot 10^3$ km (second rocket) in an area later called the inner radiation belt. A block diagram of one version of the electronic system is shown in fig. 17. As can be seen from the figure, information on the condition of

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the triggers of the accumulating system can be transmitted through the radiotelemetric system. The following parts of the radio system are described and illustrated: emitter follower; flip-flop-cells; and summation cells. The described parts were used in designing devices for measuring nuclei beyond the edge of the atmosphere; depending on the problems set and the actual conditions, a final selection of the parameters was made and essential changes in individual elements carried out. Two diagrams are included showing the arrangement of devices for registering nuclei with (1) $Z \geq 5$ and $Z \geq 15$, and (2) $Z \geq 2$. The authors thank radio technician V. Marevskiy, laboratory worker V. Razhin and designer G. Yegorov for their cooperation. There are 29 figures and 7 Soviet references.

SUBMITTED: April. 17, 1961

Card 3/73

KURNOSOVA, L.V.; LOGACHEV, V.I.; PLATONOV, G.F.; RAZORENOV, L.A.; SINITSINA,
V.G.; SUSLOV, A.A.; FRADKIN, M.I.

Preliminary results of studying the nuclear component of cosmic
rays with the aid of the artificial satellite "Elektron-2."
Izv. AN SSSR.Ser.fiz. 29 no.10:1853-1858 0 '65.

(MIRA 18:10)

1. Laboratoriya kosmicheskikh luchey Fizicheskogo instituta im.
P.N.Lebedeva AN SSSR.

3.2420(1482,2806,1049)

33305
S/560/61/000/010/003/016
D299/D302

17.2400

AUTHORS:

Ginzburg, V. L., Kurnosova, L. V., Logachev,
V. I., Razorenov, L. A., Sirotkin, I. A., and
Fradkin, M. I.

TITLE:

Study of charged-particle intensity during the
flight of the 2nd and 3rd Sputniks

SOURCE:

Akademiya nauk SSSR. Iskusstvennyye sputniki
Zemli. no. 10. Moscow, 1961, 22-33

TEXT: During the flight of the 2nd and 3rd Sputniks, the flow
of charged particles at altitudes between 187 and 339 km and
latitudes of -65° to $+65^{\circ}$ was recorded by means of a telescope
consisting of 2 rows of gas-discharge counters; the telescope was
part of measuring equipment for cosmic rays. As a result of the
measurements, the intensity of the charged particles and its
latitude dependence were determined. The counting rate N_c and

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Study of charged-particles...

the global intensity J_{gl} at various latitudes are listed in a table. It was found that at all latitudes the recorded intensity was several times higher than the intensity of cosmic rays recorded in the stratosphere and in free space beyond the earth's magnetic field. This difference is particularly noticeable in the region of the geomagnetic equator, where the measured intensity was six times that of cosmic rays. Several regional anomalies of intensity were observed, apparently related to the anomalies of the earth's magnetic field. For the entire track of the space-ships, detailed graphs were made of the time dependence of the intensity and hence of its dependence on geographical coordinates and altitude of the space-ship. From these graphs, maps were made of the intensity distribution on the earth's surface. It is noted that, with repeated passage of the space-ship above the same terrestrial point and almost same altitude, the recorded intensity differed sometimes from that on the first passage; in some cases, the intensity was almost double. This difference

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Study of charged-particles...

was particularly noticeable at high latitudes. As the orientation of the apparatus changes during the second passage, this difference in intensity may not be real. The obtained equi-intensity lines for the south-Atlantic and southern anomalies constitute a slight refinement to the earlier obtained data (in the references); the maximum number of counts in the southern anomaly was 60 per second, and in the south-Atlantic anomaly it was 70 per second. The anomalies are particularly great in the Southern Hemisphere. The intensity distributions in the anomaly regions, recorded at altitudes of 306 - 339 km and at altitudes of 187 - 265 km during the two flights, differ from each other. This difference is apparently due to the different flight-altitudes. The connection between the anomalous structure of the radiation belts and the anomalies of the earth's magnetic field is evident; it would be premature, however, to assume that the regional anomalies of the magnetic field on the earth's surface have a substantial influence on charged-particle flow up to altitudes of 200 - 300 km. The many anomalies in the South- and

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Study of charged-particles...

North-Pole regions, their disposition and variation, suggest that these anomalies are the edges of the outer radiation belt of the earth. The latitude dependence of the intensity is shown in a graph (for the Northern Hemisphere); it is noted that, at high latitudes, the increase in intensity ceases. The obtained data on the intensity distribution give evidence of the edge effects of the radiation belts at 200 - 300 km altitude and of certain peculiar features not observed previously. In particular, the great temporal anomalies are noted; thus, the "northern anomaly" recorded on August 20, 1960, at 7 hr. 40 min. (world time) and the south-polar anomaly recorded on December 1, 1960, at 14 hr. 22 min. These anomalies are apparently due to solar activity. The line of least intensity (the "radiation equator") is shown in a figure. With regard to the composition of the radiation, it is likely that the increase in the counting rate (as compared to that from primary cosmic rays) is due to protons with $E_p > 60$ Mev; although no definite conclusion is possible as yet, it

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Study of charged-particles...

is assumed (as a working model) that the inner radiation belt if formed by protons and that the number of electrons of energies higher than ~ 2 Mev is small. The above results confirm the existence of a high-intensity region down to 200 km altitude (from 1000 km). On the other hand, the radiation at 50 - 150 km is practically independent of altitude. The altitude dependence of the intensity (for 200 - 2000 km) is shown in a figure. Tentatively, the altitude h and the atmospheric density ρ can be expressed by the values:

$h, \text{ km}$	100	150	200	300	400	500
$\rho, \text{ gm} \cdot \text{ cm}^{-3}$	10^{-9}	10^{-11}	10^{-12}	10^{-13}	2×10^{-14}	2×10^{-15}
$h, \text{ km}$	600	700	800	900	1000	
$\rho, \text{ gm} \cdot \text{ cm}^{-3}$	6×10^{-16}	2×10^{-16}	6×10^{-17}	3×10^{-17}	10^{-17}	

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Study of charged-particles...

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On the basis of the incomplete data available, the internal radiation-belt in the equatorial region for altitudes above 400 - 600 km can be approximated by a very simple model, where only ionization losses are taken into account. At higher latitudes, the pattern is more complicated; it becomes necessary to render more precise the composition, spectrum and altitude-variation of the charged particles. At altitudes below 400 - 600 km, considerable deviations from the formula $J \sim p^{-1}$ occur. This is due to diffusion of the particles in a direction transverse to the magnetic field; this diffusion mechanism is related to collisions between particles. A second diffusion mechanism exists, related to the presence of electric fields E which cause particle-drift. The diffusion processes require further investigation. Finally, the radiation dose is estimated beneath a layer of matter of the order of 4 gm/cm^{-2} at an altitude of 200 - 300 km. Assuming recorded proton energies (in the equa-

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Study of charged-particles...

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torial region) of $E_p \geq 60$ Mev, the daily radiation dose constitutes approximately 30% of the permissible dose. In the region of the south-Atlantic anomaly at 300 km altitude, the radiation dose is by an order of magnitude higher than at the equator. There are 10 figures, 1 table and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc (including 2 translations). The reference to the English-language publication reads as follows: S. Yoshida, G. H. Ludwig, J. A. Van Allen, J. Geophys. Res., 65, 807, 1960.

SUBMITTED: May 15, 1961

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GINZBURG, V.L.; KURNOSOVA, L.V.; LOGACHEV, V.I.; RAZORENOV, L.A.; SIROTKIN,
I.A.; FRADKIN, M.I.

Investigating the intensity of charged particles during the flights
of the second and third artificial satellites. Isk.sput.Zem. no.10:
22-23 '61. (MIRA 14:11)
(Artificial satellites) (Radiation--Measurement)


30968

S/048/62/026/006/014/020
B125/B102

3 2420

AUTHORS: Ginzburg, V. L., Kurnosova, L. V., Logachev, V. I.,
Razorenov, L. A., and Fradkin, M. I.

TITLE: Temporary increases in the intensity of the nuclear cosmic-
ray component induced by solar activity and investigation of
the radiation intensity at altitudes from 200 to 300 km

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, 
no. 6, 1962, 782-798

TEXT: During the flight of the second Soviet space rocket more than
100 nuclei of $Z \geq 15$, more than 3000 of $Z \geq 5$ and more than 30,000 of
 $Z \geq 2$ were measured by means of two Cherenkov counters working independently.
On the second and third Soviet space ships a current of charged particles
was measured by a telescope consisting of gas-discharge counters at
altitudes between 187 and 339 km, in latitudes ranging from -65° to $+65^\circ$.
Variation in number of heavy nuclei with $Z > 15$ was considerable but that
of α -particles was smaller. At altitudes from 187 to 339 km the counting
rate of the telescope was several times greater than otherwise by reason

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Temporary increases in the ...

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of the solar activity. On the equator, at an altitude from 306 to 339 km, the global intensity is 1.36 and in higher latitudes 3.3 particles $\text{cm}^{-2} \text{sec}^{-1}$. The charged-particle flux intensity of the anomalies in the southern part of the Atlantic Ocean exceeds that in the corresponding geomagnetic latitudes by two orders of magnitude. In 330 km an area of smaller intensity separates the South Atlantic Anomaly (a "sleeve" of the inner radiation belt) from the Southern Anomaly connected with the outer radiation belt. The particles recorded in the equatorial area are protons of at least 60 Mev or electrons of at least 8 Mev. There are obviously very many particles of smaller energy in the anomalies. The line of the smallest radiation intensity lies in an altitude from 187 to 339 km and on the western hemisphere farther south than the geometrical equator. In higher latitudes, owing to solar activity, the intensity of particle currents is subject to considerable temporal variations. The actual mechanism of acceleration and ejection of heavy particles on the sun is not known hitherto. There are 12 figures and 2 tables.

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ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev of the Academy of
Sciences USSR)

Card 2/12

DRAGUN, G.S.; KURNOSOVA, L.V.; LOGACHEV, V.I.; RAZORENOV, L.A.; SIROTKIN,
I.A.; FRADKIN, M.I.

Equipment for investigating the nuclear component of cosmic rays
used on space rockets and artificial earth satellites. Isk.sput.-
Zem. no.9:86-110 '61. (MIRA 14:11)
(Artificial satellites--Radio observations) (Cosmic rays)

GINZHURG, V.L.; KURNOSOVA, L.V.; LOGACHEV, V.I.; RAZORENOV, L.A.; FRADKIN,
M.I.

Short increases in the intensity of the nuclear component of cosmic
rays, due to solar activity, and study of the radiation intensity
at altitudes of 200 to 300 km. Izv. AN SSSR. Ser. fiz. 26 no.6:
782-798 Je '62. (MIRA 15:6)

1. Fizicheskiy institut im. P.N.Lebedeva Akademii nauk SSSR.
(Cosmic rays) (Van Allen radiation belts)

KURNOSOVA, L. V., LOGACHEV, V. I., RAZORENOV, L. A. and FRADKIN, M. I.

"Observation of the Radiation Anomalies at the Altitudes of 200-300 km"

Report presented at the International Conference on Cosmic Rays
and Earth Storm, 4-15 Sep 61, Kyoto, Japan.

KURNOSOVA, L.V.; LOGACHEV, V.I.; RAZORENOV, L.A.; FRADKIN, M.I.

Energy spectra of different groups of cosmic ray nuclei measured
by Cherenkov counters on spaceships. Isk.sput.Zem. no.12:16-30
'62. (MIRA 15:8)
(Cosmic rays--Spectra) (Space vehicles--Electric equipment)

13982

S/560/62/000/012/002/014
I063/I263

9.6150

AUTHORS: Kurnosova, L.V., Logachev, V.I., Razorenov, L.A. and
Fradkin, M.I.

TITLE: Energetic spectra of different nuclear groups of the
cosmic radiation as measured by Cherenkov detectors
in ship-satellites

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli
no.12, 1962, Moscow, 16-30.

TEXT: The energetic spectra of different nuclear groups within
the range of $10^9 - 10^{10}$ eV/nucleon were investigated in the second
and third Soviet space ship-satellites. In the former three indepen-
dently functioning Cherenkov detectors were used: one of the integ-
ral type recorded nuclei with charges $Z \geq 5$, $Z \geq 15$, and $Z > 34$ and
two detectors of the differential type recorded the charge of nuclei

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I063/I263

Energetic spectra of different nuclear....

from helium up to oxygen. The directions of the nuclei were determined by a cosmic-ray telescope. Similar instruments in the third ship-satellite recorded nuclei with the following charges: $Z \geq 5$, $Z \geq 12 - 14$, $Z \geq 31 - 34$ and $Z > 34$. The intensity of each nuclear group was measured within the geographical latitude range of -65° to $+65^\circ$. Considering the low-energy limit of charged particles arriving vertically at each geomagnetic latitude the integral spectra of the nuclear groups were deduced from flux measurements at the different geomagnetic latitudes. Each spectrum represented an average of both identical plus and minus latitudes. The dependence of the flux of nuclei with $Z \geq 2$, $Z \geq 4 - 5$ and $Z \geq 12 - 14$ on the latitude as measured in the third ship-satellite was similar within the experimental error. An increase of the flux with latitude was observed for latitudes from 0° up to 45° , thereafter the flux remained practically constant...The integral energetic spectra of the different

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S/560/62/000/012/002/014
I063/I236

Energetic spectra of different nuclear... nuclear groups showed the same behavior. The low-energy cutoff of the particles was observed to occur at 45° latitude instead of 50°-55° (high-latitude cutoff). This is explained by the energy threshold of the detectors. (2.2 beV/nucleon). The integral spectra for energies higher than the threshold value were assumed to be represented by a power function. The power-index of each group was measured from the slope of the straight line obtained when the flux was plotted against the energy per nucleon in a double logarithmic scale. No significant difference was observed between the power-indices for nuclear groups having $Z \geq 2$, $Z \geq 4 - 5$, $Z \geq 12 - 14$ as measured in the third ship-satellite. The value of the power-index of nuclei with $Z \geq 15$ as measured in the second ship-satellite was somewhat higher than the values of the other nuclear groups, but, as there is not sufficient data for statistical analysis in this group, no conclusions can be made about its spectrum. There are 8 figures and 7 tables.

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ACCESSION NR: AT4049950

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B*

AUTHOR: Kurnosova, L.V.; Logachev, V.I.; Ragozaev, L.A.; Fredkin, M.I.

TITLE: Some results of cosmic ray studies made with Soviet satellites and rockets

SOURCE: AN SSSR. Fizicheskiy Institut Trudy*, v. 26, 1964. Kosmicheskiye luchy (Cosmic rays), 3-16

TOPIC TAGS: cosmic ray, solar burst, Cerenkov radiation, Cerenkov counter, radiation, southern anomaly, gas discharge counter

ABSTRACT: The study of the nuclear component of cosmic rays using integral and differential Cerenkov counters is discussed. Nuclei with charges $Q \geq 2$, $Z \geq 3$, $A \geq 15$ and $Z \geq 29$ were measured in free space. The differential counter had a geometric area $F = 2.5 \cdot 10^{-4} \text{ m}^2$ and aperture $\Delta \Omega = 0.01$ ster. The data show the flux of heavy nuclei to be very slight. The energy spectra and chemical composition of cosmic rays were analyzed, data being taken down into the atmosphere of the Earth at altitude $h = 100$ km. The latitude dependence of nuclei with $Z \geq 2$ and $Z \geq 3$ is plotted, as is the energy spectrum of nuclei with $Z \geq 2$. It is estimated that L comprises about 1.6 of the flux of group L nuclei. Evaluation in the range $Z = 7-8$ gave a flux ratio $L/S = 0.31 \pm 0.10$ (group $S = M + H$). A 17-minute variation in nuclear intensity was recorded on 12 Sep 59.

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ACCESSION NR: AT4049950

Time dependencies of flux intensities for various nucleus groups during this variation are plotted. All of the more noticeable increases in flux were accompanied by weak chromosphere bursts and by bursts of radiation at 208-410 km. The time dependence of the telescope count rate and rate of an Integral Compton counter recording spectra with $Z \geq 5$ are plotted in Fig. 1 of the English translation. The time dependence of the count rate of the Integral Compton counter recording spectra of radiation belts are also considered (see Table 1 of the English translation). Previous work by L. V. Kurnosova et al. and V. L. Ginzburg et al. is discussed. It is stated that the South-Atlantic anomaly is an "arm" of the inner radiation belt, reaching a height of 300 km. It is concluded that the shower produced within the material of instruments mounted near the telescope cannot be the cause of the high counts noted. It is suggested that the cosmic-ray albedo is also not the cause. It is therefore concluded that the question of the increased count at 200-300 km is still open and it is suggested that measurements in the 50-300 km interval with the same instrument might help to solve the problem. Orig. art. has: 3 tables and 7 figures.

ASSOCIATION: Fizicheskii Institut AN BSSR (Physics Institute, AN BSSR)

SUBMITTED: 00

ENCL: 02

SUB CODE: AA

NO REF SOV: 015

OTHER: 007

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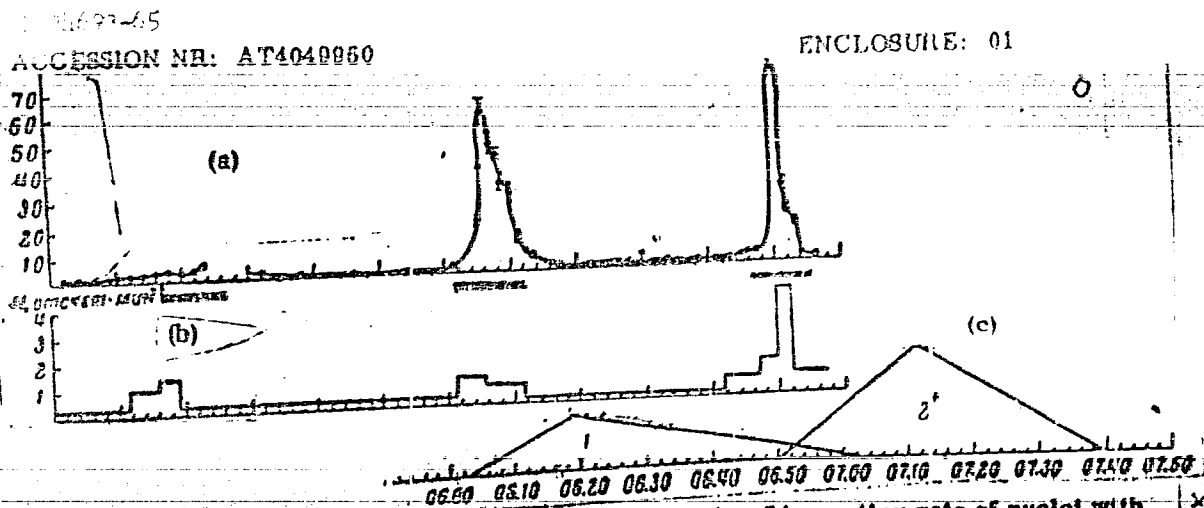


Fig. 1. Time dependence of (a) the telescope count rate, (b) counting rate of nuclei with $Z > 5$; the lower part of the figure (c) shows the chromospheric bursts (abscissa = world time). [the hatched areas indicate times of passage of the satellite through the polar regions.]

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ACCESSION NR: AT4049950

ENCLOSURE: 02 0

Geomagnetic latitude	Cosmic-ray flux J , particles $\text{cm}^{-2} \text{sec}^{-1} \times \text{ster}$	$I_{E1} = 2\pi J$, particles $\cdot \text{cm}^{-2} \times \text{sec}^{-1}$	Radiation intensity			
			2nd Space vehicle Count rate, imp $\cdot \text{sec}^{-1}$	3rd Space vehicle Count rate, imp $\cdot \text{sec}^{-1}$		
			global intensity, particles $\times \text{cm}^{-2} \cdot \text{sec}^{-1}$	global intensity, particles $\times \text{cm}^{-2} \cdot \text{sec}^{-1}$		
0°	310 ± 10	0.19 ± 0.01	0.83 ± 0.03	1.46 ± 0.03	0.72 ± 0.05	1.30 ± 0.06
10	250 ± 8	0.18 ± 0.01	0.63 ± 0.03	1.57 ± 0.06	0.75 ± 0.07	1.34 ± 0.07
20	310 ± 10	0.19 ± 0.01	1.0 ± 0.1	1.7 ± 0.1	0.76 ± 0.09	1.36 ± 0.07
30			1.3 ± 0.1	2.0 ± 0.1	1.1 ± 0.1	1.8 ± 0.1
40	730 ± 60	0.48 ± 0.04	1.9 ± 0.2	2.8 ± 0.2	1.6 ± 0.4	2.4 ± 0.4
50	1900 ± 200	1.13 ± 0.12	2.5 ± 0.2	3.2 ± 0.2	2.0 ± 0.2	2.7 ± 0.1
60	2500 ± 300	1.82 ± 0.16	2.9 ± 0.1	3.3 ± 0.1	2.2 ± 0.4	2.9 ± 0.1
70	2500 ± 60	1.57 ± 0.09	2.0	2.7	1.8 ± 0.1	2.6 ± 0.1

Table 1. Data from satellite studies.

REF ID: A65082104
48 11 28 12 2014 2014
ADDITIONAL NUMBER: A65082104
71/100 MS

AUTHOR: Ginzburg, V. L.; Kurnosova, L. V.; Logachev, V. I.; Kazorenov, L. A.; Fradkin, M. I.

TITLE: Investigation of primary cosmic rays /Report, All-Union Conference on the Physics of Cosmic Rays held in Moscow 4-10 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.12, 1964, 2039-2044

TOPIC TAGS: cosmic ray composition, cosmic radiation, solar radiation

ABSTRACT: The paper gives selected data on primary cosmic rays in the region of light nuclei, obtained during flights of Soviet space vehicles, and comparative data obtained by means of radiosondes. [Abstracter's note: The particular sputniks and dates are not given, but these may be specified in the references.] The comparative data were obtained by means of photographic emulsions and Gerdagkov counters. A table lists the values of the L/S ratio; another table gives the values of the percentages of Li, Be, B, C and N and heavier nuclei referred to the total flux with $Z \geq 3$. The satellite and balloon data on the L/S ratio are reasonably consistent; the agreement is somewhat poorer for the percentages. Figures give data on the fluxes of alpha particles, nuclei with $Z \geq 5$ and nuclei with $Z \geq 12$

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ACCESSION NR: AP5002104

for different energies; the flight trajectory corresponding to a brief flare-up in solar activity; and variations with time of the counting rates of the space vehicle gas-counter telescope and Cerenkov counter detecting nuclei with $Z > 5$. From brief analysis of the data it is inferred that there may be different cosmic ray production mechanisms operating on the Sun. One should produce cosmic radiation with approximately the chemical composition of the solar atmosphere; another may result in preferential acceleration of heavy nuclei. Further data are needed before one can draw definitive conclusions regarding the nature of the solar cosmic ray production mechanisms. Orig.art.has: 2 tables and 4 figures.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: AA

NR REF SOV: 011

OTHER: 006

2/2

L 1888-66 EWT(1)/EWT(m)/FCC/T/EWA(h) IJP(c) GS/GW

ACCESSION NR: AT5022822

UR/0000/65/000/000/0008/0022

36
35
34

AUTHOR: Ginzburg, V. L.; Kurnosova, L. V.; Logachev, V. I.; Razorenov, L. A.; Fradkin, M. I.

TITLE: Primary component¹⁹ of cosmic rays

SOURCE: Vsesoyuznoye soveshchaniye po kosmofizicheskomu napravleniyu issledovaniy kosmicheskikh luchey. 1st, Yakutsk, 1962, Kosmicheskiye luchy i problemy kosmofiziki (Cosmic rays and problems in cosmophysics); trudy soveshchaniya. Novosibirsk, Redizdat Sib. otd. AN SSSR, 1965, 8-22

TOPIC TAGS: primary cosmic ray, cosmic ray particle, cosmic ray measurement, cosmic radiation composition

ABSTRACT: The article is a survey of reported experimental data on the composition of cosmic rays. The following groups of nuclei (other than protons and alpha particles) with charge $Z \geq 3$ are considered: (1) light nuclei with charge $3 < Z \leq 5$ (group L); (2) nuclei of the middle group with $6 < Z \leq 9$; (3) heavy nuclei with $Z > 10$ (group H). The symbol S is also used and designates nuclei with $Z \geq 6$ ($S = M + H$). It is shown that fluxes of different nuclei (including protons) should be compared for a given value of their hardness. As a rough general rule, nuclei of elements with atomic number Z are 2 times more

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L 1888-66

ACCESSION NR: AT5022822

frequent in cosmic rays than in nature. Difficulties involved in measurements of fluxes of the different groups of nuclei are described. High-altitude experiments definitely indicate the presence of lithium, beryllium, and boron nuclei (20-30% of the quantity of heavier nuclei) in the primary component of cosmic rays in the vicinity of the earth. Findings concerning the electron-positron component of cosmic rays are discussed, and the chemical composition of solar cosmic rays is considered. Differential energy spectra of protons and nuclei and their hardness spectra are analyzed. On the basis of the body of data accumulated thus far it is now possible to state that not only protons, but also multiply-charged nuclei are accelerated on the sun; however, this mechanism of particle acceleration is still unknown, and several such mechanisms may exist. Orig. art. has: 14 figures and 3 tables.

ASSOCIATION: Fizicheskiy institut im. N. P. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 29Oct64

ENCL: 00

SUB CODE: AA, NP

NO REF SOV: 014

OTHER: 020

mlr
272

L 1538-66 EWT(1)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023627

UR/0000/65/000/000/0501/0502

AUTHOR: Kurnosova, L. V.; Razorenov, L. A.; Logachev, V. I.; Fradkin, M. I. 37
44.55 44.55 44.55 44.55 38

TITLE: Experimental investigations of the composition of primary cosmic rays 101

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 501-502

TOPIC TAGS: ^{gm} cosmic ray, cosmic ray measurement, cosmic ray intensity, satellite, satellite mission analysis, nucleus, proton, heavy nucleus, nucleon

ABSTRACT: Results of work conducted with the help of satellites and rockets in 1958-63 for the purpose of studying the nuclear component of cosmic rays are presented. The intensities of various nuclei group streams are given, and the upper limit of the ratio of nuclear streams with $Z \geq 30-40$ to that with $Z \geq 15$ is found to be 0.01-0.03%. The ratio of a light nuclear (group L) stream to the stream of nuclei of group $S = M + H$ was found to be $31.0 \pm 9.6\%$. The short-period intensification of nuclear streams is considered in relation to solar chromospheric flares. This intensification proves the existence of solar processes producing the acceleration of nuclei to kinetic energies exceeding $0.5 \cdot 10^9$ ev/nucleon. It is proposed

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ACCESSION NR: AT5023627

that two mechanisms are active in the ^{12.65}sun-one leads to the acceleration of protons
and the other to the acceleration of heavy nuclei. [04]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: AA, BV

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4098

Card 2/2

L 2991466 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TF/GS/GW
ACCESSION NR: AT5023633 UR/0000/65/000/000/0514/0528

AUTHOR: Blokh, Ya. L.; Dorman, L. I.; Kurnosova, L. V.; Logachev, V. I.; Platonov,
G. F.; Razorenkov, L. A.; Sinitsina, V. G.; Suslov, A. A.; Fradkin, M. I. 76
B+1

TITLE: Some results of the study of cosmic ray nucleons by the Elektron-2 satellite

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow,
1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii.
Moscow, Izd-vo Nauka, 1965, 514-528

TOPIC TAGS: satellite, radiation, cosmic ray, cosmic radiation, nuclear particle,
nucleon/Elektron 2 satellite

ABSTRACT: Included in the instrumentation of the Elektron-2 satellite (launched,
Jan 1964; apogee, 68,000 km) was a combination of internal and external counters
designed to register nuclear components of primary cosmic radiation. The design and
calibration of this apparatus is described, and some results of partially-reduced
data are discussed. One counter mounted on the external surface of the satellite
was a combination of the Cerenkov and scintillation types which responded to nuc-
leons in the atomic number range of $2 > Z > 30$. The internal counter was a Cerenkov

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L 2991-66

ACCESSION NR: AT5023633

type, registering at the discrete levels of $Z \geq 2$, $Z \geq 5$, and $Z \geq 15$. All counters were shielded and were designed to register only particles with energies ≥ 600 Mev/nucl. Fig. 1 of the Enclosure gives the basic schematic of the external counter combination. The authors detail the method used to calibrate the photomultiplier outputs in terms of the Z-range of input excitation; for example, for the type FEU-35 external counter, the anode output characteristic corresponded to the range from $Z = 4$ to $Z = 21$, and the output of the 7th dynode, to the range $Z = 6$ to $Z = 28$. The calibration technique was to excite a SiC electroluminescent diode with a high-voltage, short-duration (4-30 nsec) thyratron pulse, providing the phototube with a light input similar to a counter input. Early results from these primary particle counters, obtained during the IQSY, have been a useful supplement to analogous satellite data from the 1959-1962 period, during which solar activity was undergoing the transition from maximum to minimum. Comparative results are seen in Fig. 2, which shows an almost twofold increase in nuclear particles recorded near the solar activity minimum. Table 1 compares data from one orbit of Elektron-2 to that of the 1959 and 1960 satellites and the 1962 Mars-1 probe. To date only data for the $Z \geq 15$ particles have been reduced enough for statistical analysis. A large increase in incidence of this size particle was noted during solar eruptions observed in the course of the Elektron-2 flight. Orig. art. has: 18 figures, 1 table, and 1 formula. [SH]

ASSOCIATION: none

Card 2/6

L 2991-66

ACCESSION NR: AT5023633

SUBMITTED: 02Sep65

ENCL: 03

SUB CODE: AA, NP

NO REF SOV: 003

OTHER: 000

ATD PRESS; 4/09

Card 3/6

L 2991-66

ACCESSION NR: AT5023633

ENCLOSURE: 01

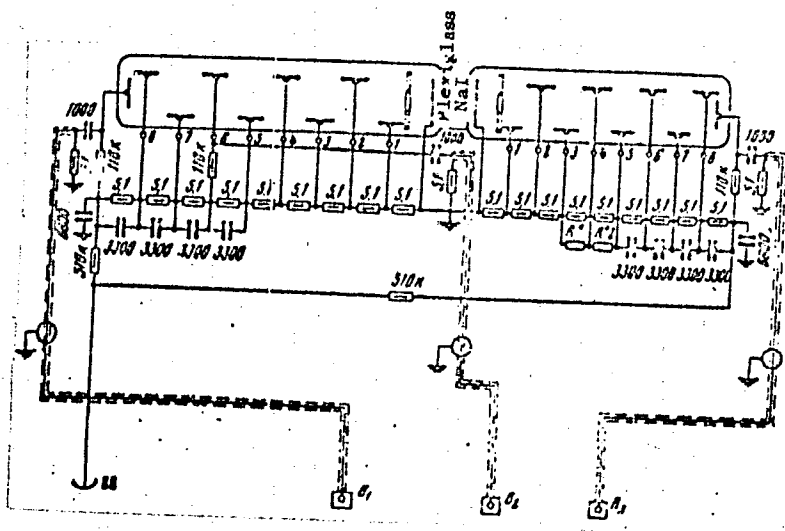


Fig. 1. External counter

B₁, B₂ - Phototube output from Cerenkov counter;
B₃ - from scintillation counter.

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L 2991-66

ACCESSION NR: AT5023633

ENCLOSURE: 02

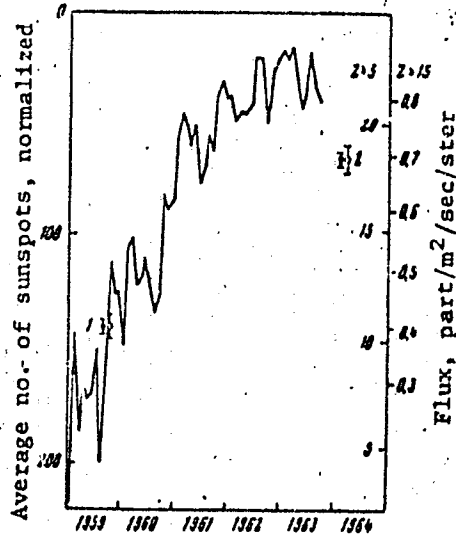


Fig. 2. Sunspot activity vs nuclear flux

Solid circles - $Z > 5$; open circles - $Z > 15$; 1 - Lunik-2;
2 - Elektron-2.

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L 2991-66

ACCESSION NR: AT5023633

ENCLOSURE: 03

Vehicles	Nuclear flux, particles/m ² /sec/ster		
	Z > 2	Z > 5	Z > 15
Elektron-2	343,4 ± 1,4	18,3 ± 0,3	0,60 ± 0,06
Lunik-2	150,6 ± 1,3	10,6 ± 0,3	0,4 ± 0,05
Korabl' -3	120,2 ± 12,9	9,8 ± 0,7	—
Mars-1	333 ± 21	—	—

Card 6/6 *md*

. G. ZEBURG, L. V. KURNOSOVA, V. I. LOGACHEV, L. A. RAZORNEV, M. ...

Primary cosmic radiation investigation.

Report submitted for the 8th Intl. Conf. on Cosmic Rays (IURAP), Jaipur ...
2-18 Dec 1963

L 4089-66 EWI(1)/FCC/EMA(h) CW

ACCESSION NR: AP5026227

UR/0048/35/029/010/1853/1858

AUTHOR: Kurnosova, L.V.; Logachev, V.I.; Platonov, G.F.; Razorenov, L.A.; Sinit-
sina, V.G.; Suslov, A.A.; Pradkin, M.I. ⁶⁹ ₆₈ C

TITLE: Investigation of low-energy charged particles with the Cosmos 12, Cosmos 10, and Electron 2 satellites /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 10, 1965, 1853-1858

TOPIC TAGS: primary cosmic ray, heavy particle, artificial earth satellite, Cerenkov counter, scintillation counter, solar activity

ABSTRACT: Equipment carried by Electron 2 to measure the nuclear component of cosmic rays during the International Year of the Quiet Sun is described briefly and a few preliminary results are reported. The equipment consisted of a Cerenkov counter mounted within the satellite behind 1.5 g/cm² of matter and a telescope composed of a Cerenkov counter and a scintillation counter, mounted outside the satellite behind 0.6 g/cm² of aluminum. All the counters could record cosmic ray particles with energies exceeding 600 Mev/nucleon. The external telescope recorded nu-

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L 4089-66

ACCESSION NR: AP5026227

clei with charge numbers of 2 or greater, and the external Cerenkov counter, which was part of the telescope, also recorded very heavy nuclei with charge numbers near 30. Nuclei with charge numbers not less than 2, 5, or 15 were recorded in separate channels by the internal Cerenkov counter. The counters were tested and calibrated in the laboratory with the aid of cosmic ray particles; the associated photomultipliers were calibrated with flashes from a SiC diode. Preliminary results are compared with analogous data recorded with the Second Soviet Cosmic Rocket, the Third Soviet Satellite Vehicle, and the Mars 1. A strong negative correlation is indicated between solar activity and the intensity of the nuclear component of the cosmic radiation. The intensity of the nuclear component nearly doubled between the flights of the Second Cosmic Rocket in 1959 and the Electron 2 in 1964. It is anticipated that when the data recorded with the Electron 2 are processed they will provide information concerning the dependence of the nuclear component on solar activity. A number of solar flares occurred in February and March during the flight of the Electron 2. Analysis of the data recorded during these flares is awaited with great interest. Orig. art. has: 1 formula, 6 figures, and 1 table. [15]

ASSOCIATION: Laboratoriya kosmicheskikh luchey Fizicheskogo instituta im. P.N. Lebedeva Akademii nauk BSSR (Cosmic Ray Laboratory, Physics Institute, Academy of Sciences, BSR)

Card 2/3

L 4089-66

ACCESSION NR: AP5026227

0

SUBMITTED: 00

ENCL: 00

SUB CODE: NP,ES

NO REF SOVI: 001

OTHER: 000

ATD PRESS: 4127

BVK.
Card 3/3

FOKHEI, S.F.; VOLPYANSKIY, A.Ye.; MAITSEV, V.M.; LOGACHEV, V.S.;
BELFZNEV, V.A.

Sapphire light conductor for measurement of energy radiated
from the flame torch zone toward the burning surface of a powder
charge. Zhur. fiz. khim. 39 no.5:1281-1282 My '65.

(MIRA 18:8)

1. Institut khimicheskoy fiziki AN SSSR.

E 16028-65 EPA/EWT(1)/EPA(s)-2/EWT(m)/EPP(c)/EPR Faa-4/Pr-1/Ps-1/Pt-10 ADM-2/
 SSD/AFWL/AEDC(b)/AS(m)-2/AFMDC/AFETR/AFTC(p) WW/CW/JWD
 ACCESSION NR: AP4049608 S/0076/64/338/011/2666/2668

AUTHOR: Mal'tsev, V. M.; Legachev, V. S.; Seleznev, V. A.

TITLE: Allowing for some optical properties of ballistic powder flames in temperature measurements

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 11, 1964, 2666-2668

TOPIC TAGS: explosive, combustion, flame temperature, temperature measurement, optical temperature measurement

ABSTRACT: The optical temperature measurement of the flame of ballistic powder has been studied in a constant pressure bomb by determining the emission spectrum (3800—7000 Å), the brightness temperature, and the reflection and absorption capacities of the flame. Sharply delineated spectral lines were observed at a pressure of 5 atm, but with increasing pressure (up to 80 atm) the spectrum tended to become continuous. The occurrence of a continuous spectrum at elevated pressures is explained by changes in the Boltzman energy distribution, the interaction of atoms and molecules causing a widening of energy bands, and the presence of soot particles. The experiments showed

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D-16028-35

ACCESSION NR: AP4049608

that the absorption decreased with increasing wavelength and increased with increasing pressure. The reflection increased by about 7-10% with increasing pressure. The true temperature of the flame at 40 atm was calculated as 2350C from the brightness temperature and the absorption and reflection capacities. Temperatures close to this value were also obtained by using different spectral regions. It is concluded that optical methods may be used for temperature measurements of powder flames at elevated pressure. Orig. art. has: 1 figure and 2 formulas.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AN SSSR)

SUBMITTED: 20Jun63

ENCL: 00

SUB CODE: WA, OP

NO REF SOV: 002

OTHER: 000

ATD PRESS: 3141

Card 2/2

LOGACHEV, YE. D.

Logachev, Ye. D. "On the problem of the reaction of the cell elements of the connective tissues in a surviving organ", Trudy Gmskogo red. in-ta in. Kalinina, No. 12, 1948, p. 155-59, - Bibliog: 8 iters.

SC: U-3042, 11 March 53, (Letopis 'zhurnal 'nykh Statey No. 7, 1949)

LOGACHEV E. D.

Author: Logachev, E.D.

Title: On the nature of the tissue and physiological significance of the sub-cuticle cells in tapeworms.

Journal: Doklady Akademii Nauk SSSR, 1951, Vol.77, No.1, p. 161

Subject: Helminthology

From° D.S.I.R. Oct 51

LOGACHEV, YE. D.

Cestoda

Special type of amitosis of subcuticular cells in cestoda, Dokl. Ak. SSSR 92,
No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, May 1952., Unclassified.

LOGACHEV, YE., D.

Spermatogenesis in Animals

Development of the seminal vesicles and role of the living substance in the processes of spermatogenesis in cestoda. Dokl. AN SSSR 85, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

LOGACHEV, YE. D.

Corpus Luteum

Development of corpus luteum and formation of luteal globules in tapeworms.
Dokl. AN SSSR 85, No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

1. LOGACHEV, E.D.
2. USSR (600)
4. Cestoda
7. Origin and tissue nature of cuticular formations in cestodes, Dokl. AN SSSR 89 no. 5, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

LOGACHEV, E. D.

3

Chem Abs 448
1-25-54
Zoology

1/ Location of thymonucleic acid in the parenchyma of cestodes in connection with the process of cell formation. E. D. Logachev. *Doklady Akad. Nauk S.S.S.R.* 91, 843-5 (1953); cf. Kirushenov, *Priroda*, 1952, 10.—In cestodes there were found in the parenchyma layer some sharply defined strongly basophilic grains, located freely among the fibrous elements. These were shown by color tests to be rich in thymonucleic acid. Their distribution in the parenchyma indicates the free formation of cellular nuclei from the freely dispersed material of noncellular type. Thus the grains of thymonucleic acid may form in the subcuticular layer as a result of assimilation of cleavage products of nucleoproteins derived from the host. These grains then fuse into the essentially spherical aggregates noted above, around which there proceeds the gradual accumulation of cytoplasmic matter (cf. Yoking, *Arch. Zellforsch.* 6, 1(1911)).
G. M. Kosolapoff

LOGACHIN, Ye. D.

Structure and development of growing portions of Cestodes. Doklady
Akad. nauk SSSR. 93 no.2:381-383 11 Nov. 1953. (CML 25:4)

1. Presented by Academician K. I. Skryabin 7 August 1953.

LOGACHEV, E. D.
USSR/Parasitology

Card 1/1

Author : Logachev, E. D.
Title : Development of dorso-ventral contracting fibers of tape helminths.
Periodical : Dokl. AN SSSR, 95, 6, 1363 - 1366, 21 Apr 1954
Abstract : The article deals with the development of cestodes (tapeworms).
For the study, two kinds of the mentioned parasites were taken,
namely: Bothriocephalus punctatus Rud. and Taeniarhynchus
saginatae Goese. Picture - diagrams show successive stages of the
transformation of myoblast into T. saginatae.
Institution :
Submitted : 9 Feb 1954

LOGACHEV, E. D.

USSR/Medicine - Parasitology

Card 1/1 Pub. 22 - 47/47

Authors : Logachev, E. D.

Title : Structure and histogenesis of glands of a pseudophyllidea

Periodical : Dok. AN SSSR 99/1, 181-184, Nov 1, 1954

Abstract : Data on the structure and histogenesis of glands of a pseudophyllidea (parasitic worm), are presented. Nine references: 5-USSR; 4-German (1864-1953). Drawings.

Institution : State Medical Institute, Omsk

Presented by : Academician K. I. Skryabin, July 21, 1954

LOGACHEV, Ye.D.

Development and formation of male sex cells in tapeworms; preliminary communication. Zhur.obshch.biol.16 no.4:291-297 J1-Ag '55.
(MLRA 8:11)

1. Kafedra obshchey biologii Omskogo meditsinskogo instituta im. M.I.Kalinina.

(TAPEWORMS,
form. & develop. of male sex cells)

LOGACHEV, Ye.D., dotsent (Omsk)

A valuable handbook for schools of medical laboratory technicians
("Histology technics." Reviewed by E.D.Logachev). Fel'd.i akush.
no.5:61-62 My '55. (MLRA 8:7)
(HISTOLOGY-- TEXTBOOKS, MANUALS, ETC.)

LOGACHEV, E.D.

Fine structure of the tegumental cuticle in trematodes and cestodes.
Dokl.AN SSSR 103 no.5:941-943 Ag '55. (MLRA 9:1)

L.Omskiy gosudarstvennyy meditsinskiy institut imeni M.I.Kalinina.
Predstavleno akademikom K.I.Skryabinym.

(TREMATODA,
cuticular layer)

(TAPENWORMS,
cuticular layer in cestodes)

LOGACHEV, Ye.D.; FEDYUSHINA, N.A.

The ability of connective tissues to form epidermal tissues in tapeworms under pathological conditions. Dokl.AN SSSR 103 no.6: 1131-1133 Ag '55. (MIRA 9:1)

1.Omskiy sel'skokhozyastvennyy institut. Predstavleno akademikom K.I.Skryabinya.

(Tapeworms)

LOHACHEV, Ye. D.

On the fine structure of the muscle fibers of trematodes and cestodes. Dokl. AN SSSR 105 no.2:390-392 '55. (MLRA 9:3)

1. Gel'mintologicheskaya laboratoriya Akademii nauk SSSR.
Predstavleno akademikom K.I. Skryabinym.
(TREMATODA) (CESTODA)

LOGACHEV, Ye.D. (Omsk)

Replacing oil of cloves in the extraction of celloidin from
specimens. Arkh. pat. 18 no.1:121-122 '56. (MLRA 9:6)

1. Iz kafedry obshchey biologii (zav.-prof. A.P. Skabichevskiy)
Omskogo meditsinskogo instituta imeni M.I. Kalinina.

(OIL,

of cloves, extraction of cellulose from histol. specimens
(Rus))

(HISTOLOGY,

histol. specimens, extraction of cellulose with oil
of cloves (Rus))

(CELLULOSE,

extraction with oil of cloves from histol. specimens (Rus))

LOGACHEV, Ye.D. (Omsk)

Simplified method for combined paraffin embedding of histological preparations. Arkh.pat. 18 no.5:101 '56. (MLRA 9:12)

1. Iz kafedry obshchey biologii (sav. - prof. A.P.Skabichevskiy)
Omskogo meditsinskogo instituta imeni M.I.Kalinina.
(HISTOLOGY,
embedding in paraffin (Rus))

LOGACHEV, Ye. D.

The formation of small amoebocytes (cell-strains) in *Turbellaria*
Serocelis guttata under experimental conditions. Dokl. AN SSSR 108
no. 2:357-358 My '56. (MIRA 9:9)

1. Gel'mintologicheskaya laboratoriya Akademii nauk SSSR. Predstavlena
akademikom K. I. Skryabinym.
(*Turbellaria*)

LOGACHEV, E.D.

Relation between the nucleus and cytoplasm in growing
egg cells in flatworms. E. D. Logachev, *Ann. N.Y. Acad. Sci.*
1964, 117, 1-10.

LOGACHEV, Ye. D. Doc Biol Sci. -- ((diss) "~~The~~ Micromorphology
and Evolution of the Tissues of Flatworms (Plathelminthes)."
Moscow-Omsk, 1957. 31 pp 20 cm. (All-Union Inst of Helminthology,
in Academician K. I. Skryabin), 100 copies (KL, 18-57, 95)

- 17 -

17(1)

SOV/20-123-2-49/50

AUTHOR:

Logachev, Ye. D.

TITLE:

On the Structure and Function of Excretory Canals in Tapeworms
(O stroynii i funktsii vydelytel'nykh kanalov u lentochnykh
gel'mintov)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 2, pp 381-383
(USSR)

ABSTRACT:

The nature of the system mentioned in the title is marked by a phylogenetical primitivity and consists of a pair of longitudinal straps, which start at the rear end of the strobila and are turned backwards in the scolex. These returning straps pass back through the whole strobila opening at the last proglottids (Ref 1). As a rule one of the canals is situated dorsally and another ventrally to the strobila. These canals are connected by a lateral branch forming a kind of rope ladder. The number of longitudinal straps can amount up to twenty. In spite of the fact that the number of the straps and the location of the canals is well-known their histological structure remains unexplored. Therefore the author studied the tender structure of these canals in the case of *Thysaniezia ovilla* (Rivolta, 1878).

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SOV/20-123-2-49/50

On the Structure and Function of Excretory Canals in Tapeworms

At a cross section of pubescent proglottids 2 canals can be seen: a) A broader one at the side, and b) A canal situated closer to the axis of the body. The latter is considerably contracted in some segments. Since the diameter of the inner width of these canals is not dependent upon the age it must be assumed that this canal is able to contract actively in a sort of peristaltic wavelike manner. The walls of both canals are considerably different in structure. The structure of the canal situated at the side is very primitive; it consists only of a thin cuticula. This canal is only a longitudinal split in the parenchyma bordered only by a thin film of the basic substance of the latter (canal of parenchyma type according to the author's terminology, Figs 1 a,b). The wall of the canal situated more medially (b) consists of three coats. This property is responsible for the contractibility. The 3 coats are: 1) A homogeneous cuticula almost twice as thick as that of the canal situated at the side, 2) A middle coating consisting of circularly arranged spindle-shaped cells of contractile type, which form a continuous layer of muscles, 3) The outer coat bordering the surrounding connective tissue and consisting of

Card 2/4

SOV/20-123-2-49/50

On the Structure and Function of Excretory Canals in Tapeworms

longitudinal contractile fibers of the cable type (as described by the author in reference 2 for flatworms - Trematoda). The canal is of vessel type according to the author. The lateral connections of the canals belong to the parenchymatous type (Fig 2). On sections tender little tubes become visible, which open into the parenchymatous canals. They, too, are only cuticularly coated. The little tubes convey the excrements from the protonephridial cells to the main collector. The canal situated at the side, the walls of which are not contractile, serves as such. The author succeeded in finding connections (anastomoses) between the canal situated at the side and that situated more medially. The latter has an effect like a pump serving for the conveyance of excrements through the whole strobila. Thus, the transport of the excrements is an active process, which is rendered possible by the contractibility of the median canal vessel type. There are 2 figures and 2 Soviet references.

ASSOCIATION: Kemerovskiy gosudarstvennyy meditsinskiy institut (Kemerovo
Card 3/4 State Medical Institute)

LOGACHEV, E. D.

"On the Formation of New Calls in Helminths."

Tenth Conference on Parasitological Problems and Diseases with Natural Reservoirs, 22-29 October 1959, Vol. II, Publishing House of Academy of Sciences, USSR, Moscow-Leningrad, 1959.

The Kemerovo Medical Institute

SOV/20-125-6-60/6:

17(15)
AUTHOR:

Logachev, Ye. D.

TITLE:

On the Structure and Tissue Character of the Cuticular Integuments of Cysticerci (O stroynii i tkanevoy prirode kutikulyarnykh pokrovov tsistitserkov)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6, pp 1390-1392 (USSR)

ABSTRACT:

In an earlier paper (Refs 1-5) the author had established a doctrine according to which the limiting or integument tissue (cuticula) of the tapeworms is a derivative of the inner tissues. He looks upon the subcuticular cell layer (termed "deeper" epithelium by other authors) of the Cestoda as a particular form of the connective tissue developed divergently due to special parasitic existential conditions. It has now assumed a new function, viz. a limiting function. As a consequence of this function, a new form of the integument tissue, a connective tissue cuticula, has emerged (Ref 5). In this connexion a comparative study of the structures and development of the integument tissues of the tapeworm larvae forms is of interest. It is well-known that cenogenetic organs and provisional

Card 1/2

SOV/20-125-6-60/61

On the Structure and Tissue Character of the Cuticular Integuments of
Cysticerci

tissues may develop from the same rudiments as the tissues of the mature organism, and may perform analogous functions (Ref 6). The author observed the morphology and the development of the cuticula, as well as those of the subcuticular layer, in *Cysticercus cellulosae* - the bladderworm of the pork tapeworm. Detailed descriptions and illustrations thereof are given (Figs 1-5). From his observations the author concludes that the cover cuticula in *Cysticercus cellulosae* constitutes a derivative of the inner tissue, a specialized structure formed as a consequence of an ectoplasmatic activity of the desmoplastic elements. This tissue is a cenogenetic one. It functions as an absorbing organ for trophic products. It develops from the same rudiments (inner tissue) as the cover cuticula of the mature forms (Ref 5). There are 3 figures and 8 references, 6 of which are Soviet.

ASSOCIATION: Kemerovskiy gosudarstvennyy meditsinskiy institut (Kemerovo State Medical Institute)

PRESENTED: January 21, 1959, by K. I. Skryabin, Academician

SUBMITTED: December 20, 1958
Card 2/2

SOV/20-126-2-63/64

17(4)

AUTHORS: Logachev, Ye. D., Bruskin, B. R.TITLE: On the Tissue Interrelations in the Parasite-host System in the Ontogeny of *Opisthorchis Felineus* (O tkanevykh vzaimo-otnosheniyakh v sisteme parazit-khozyain v ontogeneze sibirskoy dvuustki)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 2, pp 454-455 (USSR)

ABSTRACT: The trematoda ontogeny consists of a series of unequal elements. One may refer to these as phases of the life cycle. Thus several trematoda in the parasite phase in a mol'usk may pass over from the stage of the mother sporocyst into the stage of the daughter sporocyst, then into the Redia stage, and finally into the Cercaria stage. The trematode which is in a certain ontogeny stage can pass over from one phase (from a parasite phase into a nonparasite one) into another one (Ref 1). Sporocysts, Redia, and Cercaria form biological stimuli in the organism of the intermediate host and cause a certain response reaction above all in the inner tissues of the place where the parasite is. The trematode mentioned in the title lives for one year in the mollusk *Bithynia leachi*. It is character-

Card 1/3

SOV/20-126-2-63/64

On the Tissue Interrelations in the Parasite-host System in the Ontogeny of *Opisthorchis Felineus*

istic of the tissue reaction of the mollusk that it is bound to be a protective reaction and useful for the mollusk themselves; the survival of the parasite larvae is, however, to a certain extent secured. Otherwise this species would not exist any more. The smallest most recent sporocysts were striking among the numerous stages of the parasite found by the authors. They were surrounded by a layer of basophilic amoebocytes. The latter are little differentiated elements of the connective tissue of the mollusk (Ref 3). In earlier development stages they are fused to a coenocytic symplast which expresses the defensive function of the internal tissue of the mollusk (Ref 3). Young sporocysts can simply divide into 2 or more parts (Fig 1; 1) and form a complex. Around this complex a common connective tissue capsule is formed. The symplast expands with the growth of the sporocysts. Its protoplasm becomes thin, and the cores lie in one layer. New basophilic amoebocytes settle at such places. The symplast cores are capable of amitotic separation. The protoplasm mass is gradually reduced and decomposes into fibers. Individual fibers then contain the cores (Figs 1, 2). The mentioned capsule

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On the Tissue Interrelations in the Parasite-host System in the Ontogeny of *Opisthorchis Felineus*

forms a defensive reaction of the interior of the mollusk against the introduction of the stimulus. The thin loose-fibrous capsule does, however, not inhibit the penetration of the trophic products into the parasite larvae. Figure 2 shows a capsule. Then there follow vast lacunae filled with tissue fluid. A solid envelope is formed only when the parasite perishes. This specific defensive reaction was worked out in the course of the evolution. A solid envelope would have killed the parasite and extinguished the species and furthermore blocked the exit of the Cercaria. There are 2 figures and 3 Soviet references.

ASSOCIATION: Kemerovskiy gosudarstvennyy meditsinskiy institut
(Kemerovo State Medical Institute)

PRESENTED: February 18, 1959, by K. I. Skryabin, Academician

SUBMITTED: February 18, 1959

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LOGACHEV, Ye.D., doktor biologicheskikh nauk (Kemerovo)

"Principles of general histology and histological technic". Edited
by Professor V.G.Eliseev. Reviewed by E.D.Logachev. Fel'd. i akush.
25 no.4:61 Ap '60. (MIRA 14:5)
(HISTOLOGY) (ELISEEV, V.G.)

LOGACHEV, Ya. D.

Tissular nature of submerged epithelium in cestodes. Trudy
Inst.zool.AN Kazakh.SSR 12:137-139 '60. (MIRA 13:7)
(Cestoda) (Worms--Anatomy)

LOGACHEV, Ya.D.

Structure and development of supporting elements in tissues of the
internal medium of trematodes. Dokl.AN SSSR 133 no.5:1262-1263
Ag '60. (MIRA 13:8)

1. Kemerovskiy gosudarstvennyy meditsinskiy institut. Predstavleno
akad. K.I. Skryabinym.
(Trematoda) (Worms--Anatomy)

LOGACHEV, Ye.D.

"Laboratory manual on general biology," edited by [prof.] V.V.Makhovko.
Reviewed by E.D.Logachev. Nauch. dokl. vys. shkoly; biol. nauki
no.2:238-239 '61. (MIRA 14:5)
(BIOLOGY--STUDY AND TEACHING) (MAKHOVKO, V.V.)

LOGACHEV, Ye.D.

Development of the uterus in the cestode *Moniezia expansa* (Rud.,
1810). Dokl. AN SSSR 139 no.4:1023-1024 Ag '61. (MIRA 14:7)

1. Kemerovskiy gosudarstvennyy meditsinskiy institut. Predstavleno
akademikom K.I. Skryabinym.
(CESTODA) (UTERUS)

LOGACHEV, Ye.D., prof, otv. red.; PERVUSHIN, V.Yu., dots., red.;
KAGANOV, A.L., dots., red.

[Fifth Scientific Conference of the Kemerovo State Medical
Institute. Piataia nauchnaia konferentsiia Kemerovskogo
gosudarstvennogo meditsinskogo instituta. Kemerovo, 1963.
27 p. (MIRA 17:4)

1. Kemerovo. Gosudarstvennyy meditsinskiy institut.
2. Zaveduyushchiy kafedroy normal'noy anatomii Kemerovskogo gosudarstvennogo meditsinskogo instituta (for Pervushin).
3. Zaveduyushchiy kafedroy obshchey biologii i meditsinskoy parazitologii Kemerovskogo gosudarstvennogo meditsinskogo instituta (for Logachev).
4. Zaveduyushchiy kafedroy propevticheskoy terapii Kemerovskogo gosudarstvennogo meditsinskogo instituta (for Kaganov).

LOGACHEV, Ye.D.

"Helminths of ungulates of Kazakhstan" by S.N. Boev, V. IA.
Panin. Reviewed by E.D. Logachev. Zool. zhur. 42 no.4:632-633
'63. (MIRA 16:7)

(Kazakhstan--Parasites--Ungulata)
(Kazakhstan--Worms, Intestinal and parasitic)
(Boev, S.N.) (Panin, V. IA.)

LOGACHEV, Yh.D.

Fine structure of the sheep tapeworm larva *Coccidius skrjabini*.
Dokl. AN SSSR 164 no.1:238-240 b '66. (MIRA 18:9)

1. Kemerovskiy gosudarstvennyy meditsinskiy institut.
Submitted November 18, 1964.

109-6-7/17

LOGACHEV, YE. G.

AUTHOR
TITLE

LOGACHEV, Ye. G.

Study of Random Signals Passing through a Detector with Consideration of Shifting and Limiting Effects.
(Prokhozhdeniye fluktuatsionnykh signalov cherez detektor s ucheto: vliyaniya smeshcheniya i ogranicheniya - Russian)
Radiotekhnika i Elektronika, 1957, Vol 2, Nr 6, pp735-750, (U.S.S.R.)

PERIODICAL
ABSTRACT

The analysis is carried out according to the method of correlation functions. The general expression for the correlation function of the current at the detector output is deduced and then the function $F(j\omega)$ - a function independent of the detector characteristics - is determined for the general case of detecting with a characteristic of the $\sqrt{\nu}$ - degree with displacement and limitation is determined. The correlation function of the current at the detector output with a characteristic of the ν - degree with displacement and limitation is investigated and the corresponding formula is deduced. The characteristics of the function, which regards the influence of the displacement, is investigated. Some special cases of detecting with limitation and one without limitation and displacement are then investigated. By means of the equations for the correlation function of the static at the detector output the energetic frequency spectrum of the static at the detector output is determined. On the other hand those terms of a sum are taken out of the same formula for the correlation function of the current at the detector output, which refer to all frequencies from zero to infinity, that essentially belong to the low-frequency range, and

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Study of Random Signals Passing through a Detector with consideration of Shifting and Limiting Effects.

a formula is deduced which is similar to that obtained by V.I. Bunimovich according to another method. (Sovetskoye radio, 1951, p 265). The author then shows that although these results are supposed to be for an investigation of the internal static they can also be used for the investigation of the passage of external fluctuation signals through the detector in the presence of internal static if the signals according to their structure are identical with those of internal static. (With 3 illustrations and 7 Slavic references).

ASSOCIATION Not given
PRESENTED BY
SUBMITTED 17.6.1957
AVAILABLE Library of Congress
Card 2/2

ACC NR: AF7005316

SOURCE CODE: UR/0181/67/009/001/0010/0012

AUTHOR: Logachev, Yu. A.; Abarenkov, I. V.

ORG: Leningrad State University im. A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: Calculation of the binding energy of ionic crystals by the model-potential method

SOURCE: Fizika tverdogo tela, v. 9, no. 1, 1967, 10-12

TOPIC TAGS: ionic crystal, binding energy, potential well, wave function

ABSTRACT: The authors show how the method of the model potential can be used to calculate the binding energy of ionic crystals. The method consists of using a density matrix which takes into account the overlap of all the functions of the nearest neighboring ions. A concrete example is presented using the NaCl crystal with values obtained for the parameters of the model potential of the free Na⁺ ions. The binding energy as a function of the distance between ions, the equilibrium ion distance, and the compressibility are all calculated and listed. The results are in good agreement with experiment. Advantages claimed for the method of the model potential is that it is relatively simple and does not call for the calculation of each individual term separately. Orig. art. has: 11 formulas and 2 tables.

SUB CODE: 20/ SUBM DATE: .02Apr66/ OTH REF: 004

Card 1/1

LOGACHEV, Yu. I.
Category : USSR/Nuclear Physics - Cosmic rays

C-7

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 639

Author : Logachev, Yu. I., Shafer, Yu. G.
Inst : MOSCOW State Univ.; Yakutsk Branch, Acad. of Sciences USSR
Title : Variations of Intensity of Cosmic Radiation at High Altitudes.

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 1, 55-60

Abstract : A counter telescope without absorber was used to measure the intensity of cosmic rays at an altitude corresponding to a pressure of 300 mb. Twenty-two flights were made near Moscow. The error of each measurement was 0.3%. The observed deviations from average amounted to approximately 1% (a maximum deviation less than approximately 2%). The results were compared with the global intensity of the hard component of cosmic radiation at sea level. The correlation coefficients obtained were 0.43 ± 0.2 for Moscow and 0.73 ± 0.1 for Yakutsk is due to a more accurate allowance for meteorological corrections in that station and to the world-wide character of the observed variations. Inasmuch as the measurements were carried out at a solar-activity minimum, the variations observed were considerably less than those observed prior to 1949 (the amplitude of which was 5 -- 10%).

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LOGACHEV, YU. I.

53-2-10/28

AUTHOR
TITLE
PERIODICAL
ABSTRACT

VERNOV, S.N., LOGACHEV, Yu.I., CHUDAKOV, A.B., SHAFER, Yu.G.
The Investigation of the Variations of Cosmic Radiation
(Issledovaniye variatsiy kosmicheskogo izlucheniya, Russian)
Uspekhi Fiz. Nauk, 1957, Vol 63, Nr 1b, pp 149 - 162 (U.S.S.R.)

The present paper reports on the problem of the use of an artificial satellite for the study of the variations of cosmic radiation. By means of a comparatively simple apparatus consisting of a counter and ionization chamber the following phenomena can be studied: a) the variations of the primary cosmic radiation. b) the variations of the multiply charged component of the primary cosmic radiation which consists of helium nuclei and heavier atoms. c) the geomagnetic field at great distances from the earth. d) the albedo of the earth for cosmic radiation. e) the structure of currents emitted by the sun.

I. Possibilities offered by the artificial earth satellites for the investigation of the variations. The variations of the secondary cosmic radiation differ essentially from the variations of the primary radiation.
It is just for that reason that the study of the variations of the primary radiation is desirable. The variations recorded at sea level are usually much smaller than the variations of primary radiation. The measurements obtained by means of rockets are very inaccurate because of the short stay of the rockets in high altitudes, but artificial earth

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The Investigation of the Variations of Cosmic Radiation
satellites offer great possibilities in this respect. Simultaneous measurements by counters and ionization chambers make a comparison of the variation of intensity of the primary protons with the variation of the intensity of the heavier primary nuclei possible. The variations have to be determined in the various regions of the energy spectrum of cosmic radiation. This is only possible on satellites with suitably selected orbits. The measurements of the intensity above the polar regions are of special interest.

II. The various phenomena which can be studied by an apparatus fixed in the satellite. The authors here consider the case that the satellite flies over the poles and is half of the time in the earth's shadow. Further, the measurement data can be transmitted during the entire time of the satellite's existence. The experimental material thus obtained on one single day by far surpasses the hitherto existing material in this field. By a comparison of the material obtained from various revolutions and on various days the variations of intensity of the cosmic radiation can be concluded. If the data for the intensity and for the ionization power of cosmic radiation over the entire surface of the globe is available, interesting conclusions concerning the following phenomena may be drawn:

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The Investigation of the Variations of Cosmic Radiation

- 1.) the alteration of intensity in time (great irregularities of intensity in connection with eruptions of the solar chromosphere, reduction of intensity during magnetic storms, the variation (one and a half hour variation)) connected with the revolution of the satellite round the earth, the variations of intensity of the heavy nuclei of primary cosmic radiation, the long-time periodic variations, the experimental verification of the connection between primary and secondary variations.
- 2.) the earthmagnetic field and the interplanetary magnetic field.
- 3.) the alteration of the earth's albedo for cosmic radiation.
- 4.) the search for electrons and photon in the primary cosmic radiation.

III. The apparatus for the study of the variations of cosmic radiation outside the earth's atmosphere can determine these variations by measuring the variations of the ionization or the variations of particles passing through a counter. The influence of a possible revolution of the satellite is pointed out, but this variation can at least partially be compensated by fixing two counters to the satellite. For the radio-technical equipment semiconductor triodes and tiratrones with a cold cathode are used. The following elements of the apparatus are discussed more in details: a) the counters of the charged particles, and b) the

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PHASE I BOOK EXPLOITATION

SOV/1658

Akademiya nauk SSSR

Iskusstvennyye sputniki zemli, vyp. 1: Rezul'taty nauchnykh issledovaniy, provedennykh po programe MGG pri pomoshchi pervogo i vtorogo iskusstvennykh sputnikov zemli (Artificial Earth Satellites, Nr 1: Results of Scientific Studies Carried Out in Accordance With the IGY Program by Means of the First and Second Artificial Earth Satellites) Moscow, Izd-vo AN SSSR, 1958. 95 p. 3,500 copies printed. [Microfilm and Zerox Copy]

Resp. Ed.: L.V. Kurnosova; Ed. of Publishing House: D.M. Alekseyev; Tech. Ed.: T.V. Folyakova.

PURPOSE: This collection of articles is the first in a series to be published regularly and is intended to disseminate to the scientific community data collected in investigations performed by means of artificial earth satellites.

COVERAGE: This collection includes papers covering scientific data obtained from the first and second Soviet artificial earth satellites. Among the areas reported on are measurements of cosmic radiation, atmospheric density, electron

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Artificial Earth Satellites (Cont.)

concentration in the ionosphere, and biological studies of an animal occupant of a satellite. Papers on the motions and perturbations of satellite orbits and optical and Doppler methods of satellite tracking are also included. Coverage of the individual articles is given in the Table of Contents.

TABLE OF CONTENTS:

Preface [L.V. Kurnosova]

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Vernov, S.N., N.L. Grigorov, Yu.I. Logachev, and A.Ye. Chudakov.
Measurements of Cosmic Radiation by Means of an Artificial Earth Satellite.
This paper was first published in Doklady Akademii Nauk USSR Vol. 120, Nr 6, 1958, pp. 1231-1233. The paper presents preliminary results of measurements of cosmic-ray intensity obtained with instruments installed in Sputnik II. The close agreement of data from two separate instruments indicates the validity of these results. A brief description of the instruments and their operational characteristic are given. Since the ascending and descending segment of the orbit occurred at considerably different altitudes, it was possible to determine the relative

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Artificial Earth Satellites (Cont.)

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variation of cosmic-ray intensity as a function of altitude for the same geographic points. The intensity was found to increase considerably between 225 and 700 km, the highest altitude achieved by the satellite. This variation is attributed to three causes: a) decreased screening by the earth, b) reduction in the magnetic field of the earth permitting penetration of lower-energy particles, and c) change in the albedo of cosmic radiation. There are 3 references, 1 of which is Soviet, 1 English, 1 a translation from English.

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Lidov, M.L. Determination of the Density of the Atmosphere From the Observed Decelerations of the First Artificial Satellites

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This paper presents equations relating the elements of a satellite orbit to atmospheric density. The analytical procedures used in reducing observed data on the evolution of the satellite orbit are given including an evaluation of the approximations used in obtaining solutions to the equations involved. It was assumed that in the range of altitudes considered (228-368 km) the variation of density with altitude could be approximated by the exponential function

$$\rho = \rho_{\pi} e^{-\frac{z - z_{\pi}}{H}}$$

where ρ is the density at altitude z , ρ_{π} is the density at the perigee altitude z_{π} , and H is the altitude of the homogeneous

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VERNOV, S.N.; VAKULOV, P.V.; GORCHAKOV, Ye.V.; LOGACHEV, Yu.I.;
CHUDAKOV, A.Ye.

Studying the soft component of cosmic rays beyond the atmosphere
limit. Isk.sput.Zem. no.2:61-69 '58. (MIRA 12:5)
(Cosmic rays) (Artificial satellites)

AUTHORS: Vernov, S. N., Corresponding Member, SOV/20-120-6-18/59
Academy of Sciences, USSR, Grigorov, N. L., Logachev, Yu. I.
Chudakov, A. Ye.

TITLE: Measurement of Cosmic Radiation by the Sputnik (Izmereniye kos-
micheskogo izlucheniya na iskusstvennom sputnike zemli)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6,
pp 1231 - 1233 (USSR)

ABSTRACT: The results discussed in this paper were obtained by
equipment incorporated in the second earth satellite. In
order to be able to record the variations of the intensity of
the cosmic radiation in a reliable manner two similar counters
for charged particles (with a length of 100 mm and a diameter
of 18 mm) was mounted in the sputnik. Both devices contained
counters operating on the basis of semi-conductor triodes. The
power consumption of the whole apparatus was 0,15 Watts. The
batteries permitted continuous operation for 200 hours. The
relative increase of the intensity with altitude was com-
puted from the ratio of the intensity of cosmic radiation on the
"inverse loops" (passage from the North to the South, at an
altitude of 350 - 700 km) and the intensity on the "direct loops"

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Measurement of Cosmic Radiation by the Sputnik

SOV/20-120-6-18/59

(passage from the South to the North at an altitude of 225 - 240 km) measured at the same geographical points. This variation can be caused by at least three effects: 1) An increase of intensity due to a reduction of the shielding by the earth. 2) A reduction of the intensity by the weakening of the earth's magnetic field 3) By a variation in the albedo of the cosmic radiation. The dependence of the intensity upon the altitude can be explained by the first two effects. From the data obtained by the measurements of many loops the lines of equal intensity of cosmic radiation (isocosmic lines) are obtained. Such isocosmic lines are presented for three different counting rates. The experimental points above all fit upon the geographical parallels. The line of the minimum intensity of cosmic radiation (the "cosmic equator") does not coincide with the geomagnetic equator. According to the evidence obtained the intensity of the cosmic radiation sometimes increased considerably. During this the intensity fluctuated very much. There are 4 figures and 3 references, 1 of which is Soviet.

SUBMITTED: May 4, 1958
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SOV/20-125-2-16/64

24(7), 24(8)
AUTHORS:

Vernov, S.N., Corresponding Member, AS USSR,
Chudakov, A.Ye., Vakulov, P.V., Logachev, Yu.I.

TITLE:

Investigation of Terrestrial Corpuscular Radiation and of
Cosmic Rays During the Flight of a Cosmic Rocket (Izucheniye
zemnogo korpuskulyarnogo izlucheniya i kosmicheskikh luchey pri
polete kosmicheskoy rakety)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 2, pp 304 - 307 (USSR)

ABSTRACT:

The rocket launched on January 2, 1959 in the direction of the moon had apparatus for recording cosmic- and terrestrial corpuscular radiation on board. By the latter the authors mean the fluxes of fast charged particles in great altitudes, for which the terrestrial magnetic field is a so-called "magnetic trap". The particles were recorded by 2 Geiger-counters and 2 scintillation-counters. The first apparatus, with scintillation counter, was a constructive further-development of the device which the authors had built into the third Soviet Sputnik. A cylindrical sodium-iodide crystal served as a detector. The authors, above all, described the results obtained by the preliminary evaluation of the data ascertained in altitudes of from 8000 to 150000 km (from the center of the earth). A schematical drawing shows the trajectory of the rocket with

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Investigation of Terrestrial Corpuscular SOV/20-125-2-16/64
Radiation and of Cosmic Rays During the Flight of a Cosmic Rocket

respect to the terrestrial magnetic field. The intensity maximum is ~26000 km from the center of the earth. At a distance of 55000 km the intensity of terrestrial corpuscular radiation becomes practically equal to zero, and the remaining ionization in this distance is entirely due to cosmic radiation. According to the authors' opinion the particles oscillate along the lines of force symmetrically to the equatorial plane. The increase of intensity along a given line of force in the transition from low to high altitudes serves as an experimental proof for this assumption. The particle flux is directed not only towards one side, and, in any case, the predominant part of the particles undergoes complete reflection when approaching the earth, and is therefore subjected to oscillations from one hemisphere to the other. The trajectory of the rocket nowhere intersects the so-called internal zone. . . Actually, the apparatus built into the cosmic rocket in no range of their trajectory record particles of high energy which are characteristic of the inner zone. On the other hand, the composition of radiation is very similar to that observed by means of the third Sputnik in polar regions. Next, the composition of radiation in the outer zone with

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