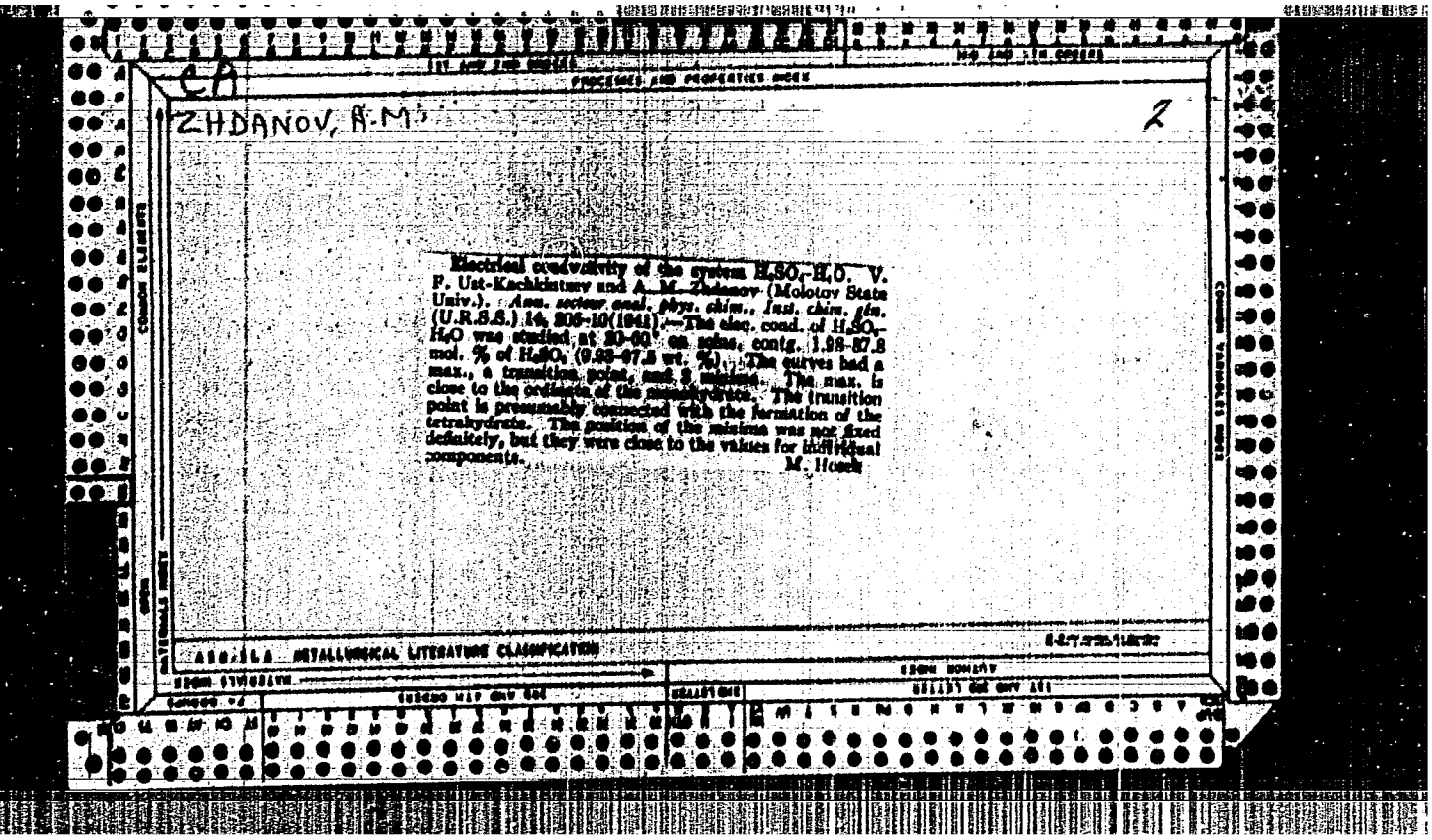

ZHDANOV, A.M.

2

Electrical conductivity of the system H_2SO_4-H_2O. V. P. Ust-Kachkintsev and A. M. Zhdanov (Molotov State Univ.). *Ann. sector anal. phys. chim., Inst. chim. gén. (U.R.S.S.)* 14, 205-10(1941).—The elec. cond. of H_2SO_4-H_2O was studied at 20-60° on mixts. contg. 1.98-87.8 mol. % of H_2SO_4 (9.93-97.8 wt. %). The curves had a max., a transition point, and a minimum. The max. is close to the ordinate of the monohydrate. The transition point is presumably connected with the formation of the tetrahydrate. The position of the minima was not fixed definitely, but they were close to the values for individual components.

M. Hosek

5(2)

SOV/32-25-9-4/53

AUTHORS: Zhdanov, A. K., Khadeyev, V. A., Shamakhmudova, T. B.

TITLE: Amperometric Titration of Microgram Quantities of Copper

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 9, pp 1036-1039 (USSR)

ABSTRACT: In the present case, experiments of a titration of micro-quantities of copper with rubeanic acid (R) were carried out in a common apparatus with rotating platinum microelectrodes, the application of solid microelectrodes in amperometric titration being more advantageous as compared to the Hg-drop-electrodes. Alcoholic (R)-solutions, and in some cases, aqueous, or solutions of (R) in acetic acid anhydride were used. Sodium acetate served as the polarographic background. The experiments showed that the alcoholic and aqueous solutions of (R) change the titre when settling, so that the titre must be controled periodically. The solutions of (R), in acetic acid anhydride, are more stable, they may not, however, be used for the titration of small quantities of copper. Titrations of various quantities of copper in 0.15 m sodium acetate solutions were carried out to test the reproducibility and accuracy of the

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Amperometric Titration of Microgram Quantities of Copper

method. The results show that (Table 1) a considerable increase in sensitivity was attained by the exchange of the Hg-drop-electrode with a rotating platinum electrode. The cations of the following elements did not disturb the titration: Mg, Ca, Sr, Ba, Zn, Mn, Al, Pb, nor did the following anions: SO_4^{2-}, NO_3^-, Cl^-, CH_3COO^-. Instead of sodium acetate a biphthalate solution with sodium fluoride (Ref 5) must be used in the presence of larger quantities of nickel, cobalt, chromium, or iron (Table 2). The method described was tested on samples of duralumin 69a and steel (rapid-cutting-tool-steel 197); in the latter, copper was separated electrolytically (Ref 7). The separated copper was dissolved in nitric acid and titrated according to the present method (Table 3). There are 3 tables and 7 references, 6 of which are Soviet.

ASSOCIATION: Sredneaziatskiy gosudarstvennyy universitet im. V. I. Lenina ((Soviet) Central Asia State University imeni V. I. Lenin)

BAZDYREV,N.I., inzhener; ZHDANOV,A.M., inzhener

Groins used as a means of stabilizing the seashore and protecting earthen railroad beds. Tekh.zhel.dor.6 no.10:7-10 0'47.
(Shore protection) (MLRA 8:12)

USSR/Geophysics - Oceanology Mar/Apr 51

"Determination of Flow Power in Shore Deposits by Direct Observations," A. M. Zhdanov, Inst of Oceanol, Acad Sci USSR

"Iz Ak Nauk, Ser Geog i Geofiz" No 2, pp 81-90

Outlines method of computation that uses observations of deposit shifts and fluctuations. Submitted by Acad P. P. Shirshov.

[redacted] 18OT69

ZHDANOV, A. M.

USSR/Geophysics - Power, Utilization of Jan/Feb 51

"Determination of Power Equivalent of Wave Motion on Seashore," A. M. Zhdanov, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geog i Geofiz" Vol XV, No 1, pp 51-56

Describes method of detn of equiv force of wave motion, based on principle of computation of energies of all sep undulations.

176T46

ZHDANOV, A. M.

"Protection of the Seashore With The Aid of Transverse Structures Holding Debris." Cand Tech Sci, Moscow Construction Engineering Inst, Moscow, 1953. Dissertation (Referativnyy Zhurnal--Mekhanika Moscow, Feb 54)

SO: SUM 186, 19 Aug 1954

ZHDANOV, A.M.

Designing and calculation of shore protections on the basis of regularities of shore dynamics. Trudy Inst.okean. 10:25-34 '54. (MLRA 7:11)

1. Gidrologicheskaya stantsiya Ministerstva putey soobshcheniya. (Shore protection)

ZHDANOV, A.M., kandidat tekhnicheskikh nauk.

Protecting the coastline from wave destruction. Transp.strei. 5 no.8:16-19 O '55. (MLRA 9:1)
(Sea walls)

ZHDANOV, A.M.

Strengthening shingle seashores with full profile jetties. Trudy Okean.kom.1:18-36 '56. (MLRA 10:2)

1. Chernomorskaya gidrologicheskaya stantsiya Vsesoyuznogo nauchno-issledovatel'skogo instituta transportnogo stroitel'stva Ministerstva transportnogo stroitel'stva SSSR.
(Jetties)

ZHDANOV, A.M., kand.tekhn.nauk

Effect of wave action on shore protection installations. Transp. stroi. 7 no.6:21-23 Je '57. (MIRA 10:11)
(Shore protection) (Waves)

ZHDANOV, A.M.

Wearing of beach gravel by waves. Biul. Okean. kom. no.1:81-88 '58.
(MIRA 11:9)

1.Chernomorskaya laboratoriya morskikh sooruzheniy Vsesoyuznogo nauchno-issledovatel'skogo instituta transportnogo stroitel'stva.
(Waves) (Seashore) (Gravel)

ZHDANOV, A.M., kand.tekhn.nauk.

Building shore protection features using precast construction elements. Transp. stroi. 8 no.2:1-5 F '58. (MIRA 11:2)
(Shore protection)
(Precast concrete construction)

ZHDANOV, A.M., kand. tekhn. nauk

Conference on problems in dynamics of seashores and reservoir banks.
Transp. stroi. 9 no.11:55-56 N '59 (MIRA 13:3)
(Shore protection) (Reservoirs)

ZHDANOV, A.M., kand.tekhn.nauk

Precast shore-protecting structures. Trudy TSNIIS no.40:4-21 '60.
(MIRA 13:10)

(Shore protection)
(Precast concrete construction)

ZHDANOV, A.M., kand.tekhn.nauk

Reconstructing protective beach lines in stabilizing sea shores.
Trudy TSNIIS no.40:22-57 '60. (MIRA 13:10)
(Shore protection)

ZENKOVICH, V.P., prof.; ZHDANOV, A.M.

Why are the Black Sea beaches disappearing? Priroda 49 no.10:51-54 O '60. (MIRA 13:10)

1. Okeanograficheskaya komissiya AN SSSr, Moskva.
(Black Sea--Beaches)

ZHDANOV, A.M.

Methods for seashore reinforcement and their recent development.
Trudy Okean kom. 10 no.3:113-122 '62. (MIRA 15:3)
(Shore protection)

ZHDANOV, A.M., kand.tekhn.nauk

Comparison of variants for stabilizing the sea shore with jetties or breakwaters. Transp. stroi. 12 no.3:45-46 Mr '62. (MIRA 16:11)

ZHDANOV, A.M., kand. tekhn. nauk

Basic problems of the Black Sea shore protection against the destructive effect of waves. Trudy TSNIIS no.50:5-31 '63.
(MIRA 17:9)

ZHDANOV, A.M., kand. tekhn. nauk; FREYKMAN, A.I., inzh.

Using full shaped sea groins and breakwaters for the formation of a protective beach strip on the Black Sea coasts of the Caucasus. Trudy TSNIIS no.50:32-64 '63. (MIRA 17:9)

ACC NR: AT7011649

SOURCE CODE: UR/0000/66/000/000/0001/0009

AUTHOR: Akulinichev, I. T.; Zhdanov, A. M.; Popov, I. I.

ORG: none

TITLE: Problems of biotelemetry during prolonged spaceflights

SOURCE: International Astronautical Congress. 17th, Madrid, 1966. Doklady. no. 11. 1966. Problemy biotelemetrii v dlitel'nykh kosmicheskikh poletakh, 1-9

TOPIC TAGS: biotelemetry, manned space flight, human physiology, space medicine, bioinstrumentation

ABSTRACT:

The selection of physiological, hygienic, and psychomotor parameters necessary for solving applied and research problems is one of the biggest problems confronting the manned spaceflight effort. Two contradictory situations render this problem more difficult: 1) High demand for medical information; 2) limited capacity of on-board radiotelemetric systems.

The problem of operational medical control of the condition of cosmonauts has been solved on the basis of

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dynamic analysis of a comparatively small number of preselected parameters. A more detailed analysis of health and working capacity can be realized through results of periodically programmed examinations of cosmonauts according to a program shown in this article and summarized as follows:

1) Operational medical control system results operating at a low continuous interrogation frequency and analyzed on board. Parameters include pulse rate, respiratory rate, body temperature, and cabin or space-suit pressure. 2) Periodic medical monitoring system operating at a high (A) or low (B) periodic; interrogation frequency with analysis taking place during communication periods. Parameters include cardiac bioelectricity (A), respiratory kinetograms (A), seismocardiograms (A), electro-oculography (A), cabin temperature (B), humidity (B), O_2 content (B), CO_2 content (B). 3) Working capacity tests conducted at a high (A) or low (B) periodic interrogation frequency with analysis taking place during communication periods. Parameters include coordination of movements (A), muscular strength (B), respiratory kinetogram (A), cardiac bioelectricity (A), electro-oculography (A), brain bioelectricity (A),

skin galvanic reactions (A). 4) Psychophysiological tests conducted at high (A) or low (B) periodic interrogation frequency with analysis taking place during communication periods. Parameters include the monitoring of test stimulus duration (B), test stimulus intensity (A), test completion accuracy (A), reaction tendency (A), and skin galvanic reactions (A). 5) Circulatory system tests conducted at a high (A) and low (B) periodic interrogation frequency. Parameters include cuff pressure (B), arterial oscillations (A), Korotkov tones (A), electroplethysmograms (A), cardiac bioelectricity (A), respiratory kinetograms (A , and seismocardiograms (A). 6) Respiratory-function tests conducted at a high (A) and low (B) periodic interrogation frequency. Parameters include respiratory kinetograms (B), volumetric flow (B), rate of volumetric flow (B), cardiac bioelectricity (B), cabin O_2 content (B), cabin CO_2 content (B), cabin humidity (B), cabin pressure (B), and cabin temperature (B). 7) Vestibular tests conducted at a high (A) and low (B) interrogation frequency. Parameters monitored include stimulus duration (B), stimulus intensity (A), skin galvanic reactions (A), cardiac bioelectricity (A), electro-oculography (A), and brain bioelectricity (A).

Block diagrams of the above systems are given in the following figures.

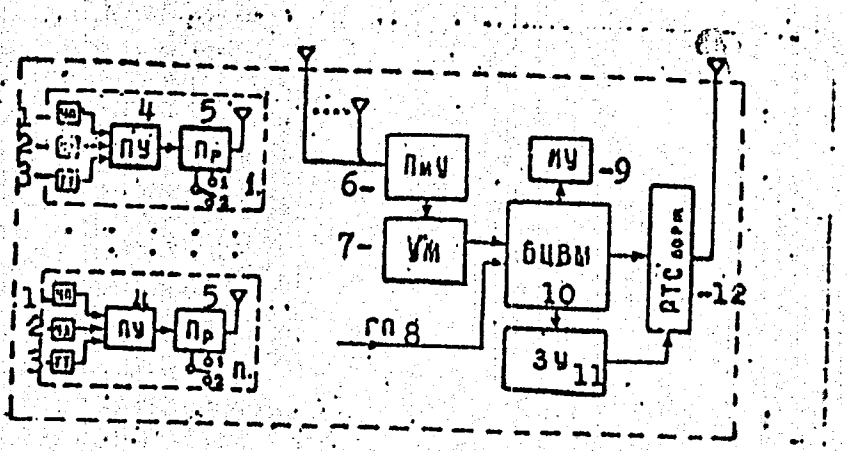

Figure 1. Functional diagram of an operational medical control system.
1. pulse rate; 2. respiration rate; 3. body temperature; 4. transducer-amplifier; 5. transmitter; 6. receiver; 7. power amplifier; 8. hygienic parameters; 9. readout gage;

10. on-board digital computer; 11. data storage; 12. on-board component of the telemetry system.

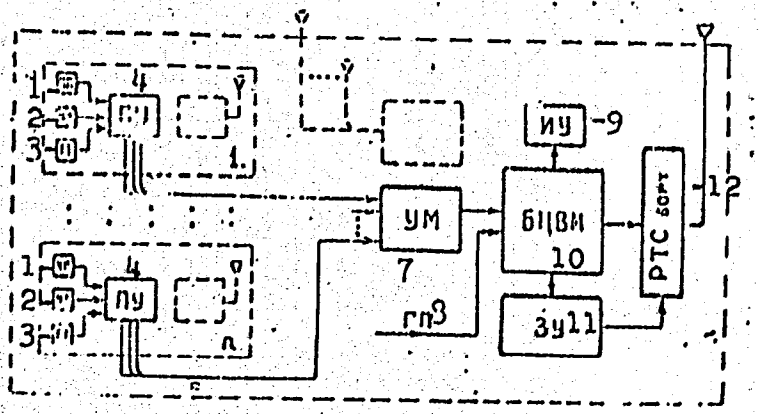

Figure 2. Functional diagram of an operational medical control system using a wired communication link between the cosmonaut and the on-board system.
1. pulse rate; 2. respiration rate; 3. body

temperature; 4. transducer-amplifier; 5. transmitter; 6. receiver; 7. power amplifier; 8. hygienic parameters; 9. readout gage; 10. on-board digital computer; 11. data storage; 12. on-board component of the telemetry system

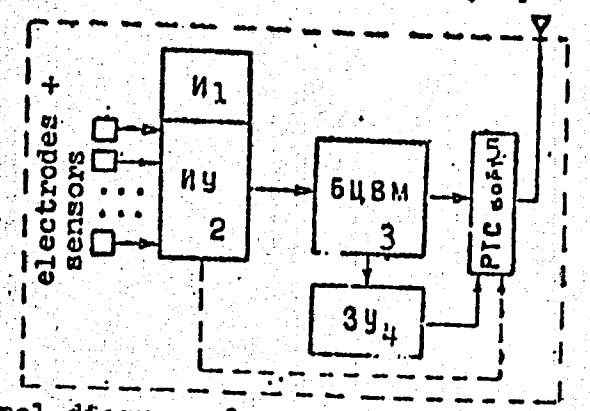

Figure 3. Functional diagram of a periodic medical examination and research system. 1. channel function readout; 2. measuring device; 3. on-board digital computer; 4. data storage; 5. on-board component of the telemetry system

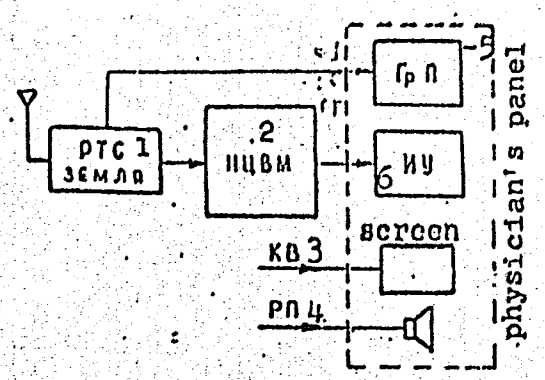

Figure 4. Earthside components of a medical control system.
1. earthside telemetry system; 2. earthside digital computer; 3. space TV system; 4. radiocommunications (voice); 5. graph plotter; 6. readout gage

Future telemetry systems will have to consider extravehicular activity by cosmonauts during future prolonged spaceflights. Small-scale (on-board and near-vehicular) telemetry systems present many prob-

lems. The theoretical and experimental foundations for the construction of such systems have not yet been worked out. Therefore, further experimental and theoretical research is necessary to determine radio-wave propagation characteristics in closed spaces (cabins) and to construct radio-channel equipment which will reliably transmit biotelemetric information. The first stage of the solution of this problem was the Voskhod-2 flight. Uncomplicated hardware was used to transmit Leonov's pulse and respiration data to Belyayev.

The miniaturization and microminiaturization of biotelemetric hardware has also not been fully solved. In view of its dimensions, equipment used thus far must be taken as a compromise. The first stage of microminiaturization was micromodule construction. The bio-amplifier system developed as a first step in microminiaturization was used on Voskhod-1 as the basic circuit of the research device used by B. B. Yegorov.

Present-day electrodes and sensors are insufficient for prolonged spaceflights and those which can be incorporated into cosmonaut clothing are needed. In general,

ACC NR: AT7011649

a multitude of problems confront space biometrics and telemetry. The author has mentioned only a few, the solution of which will have a pronounced effect in accelerating the progress of cosmonautics and in increasing the safety of prolonged manned spaceflights. Orig. art. has: 4 figures and 1 table. [ATD PRESS: 5098-F]

SUB CODE: 06 / SUBM DATE: none

Card 9/9

ZHDANOV, A. M.

"Telemetering Part I Intensity Systems," Moscow-Leningrad, 1952

Review B-86191, 5 Jul 55

137-58-6-11707

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 70 (USSR)

AUTHOR: Zhdanov, A.M.

TITLE: Heating Open-hearth Furnaces by Cold Gas With Elevated Heat Value (Otopleniye martenovskikh pechey kholodnym vysokokaloriynym gazom)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1957, Vol 18, pp 340-347

ABSTRACT: The use of cold high-calorie gas (G) to heat open-hearth furnaces makes it possible to overcome the shortcomings observed in furnaces heated with mixed G and enjoys the following points of superiority: The space used for the gas uptakes may be cut down in favor of the furnace hearth and bath. The volume of port brickwork and the size of the water-cooled jackets may be reduced. Gas regenerators and flues are eliminated. There are no G losses during reversals. To maintain the output velocity of the G, which may be in the range of 150-450 m/sec and to increase the sp. gr. of the G, blast furnace G is added to the high-calorie gas. To make the jet flame flatter and more luminous, heavy oil is fed above the gas stream,

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137-58-6-11707

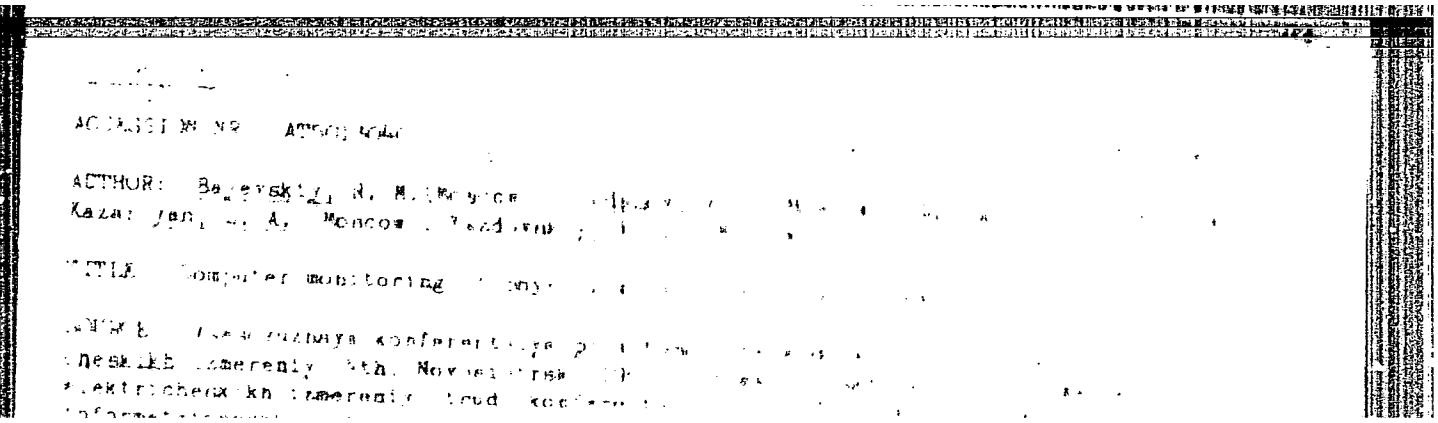
Heating Open-hearth Furnaces by Cold Gas With Elevated Heat Value

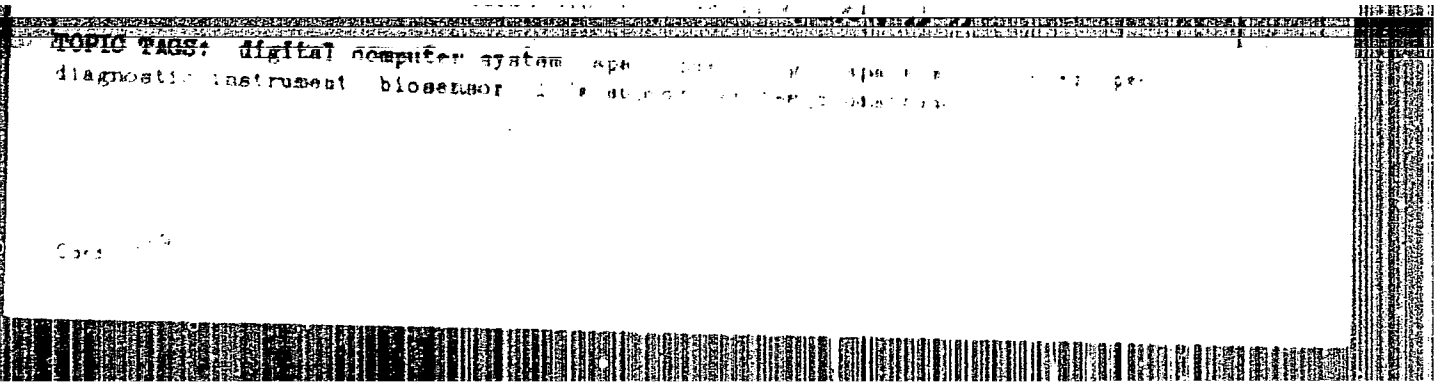
usually in quantities providing up to 35% of the total heat input (on the average). A brief characterization is presented of foreign practice in the utilization of cold high-calorie G.

G.G.

1. Open hearth furnaces--Heating 2. Open hearth furnaces--Design
3. Fuels--Applications 4. Gases--Effectiveness 5. Fuel oil--Applications

Card 2/2





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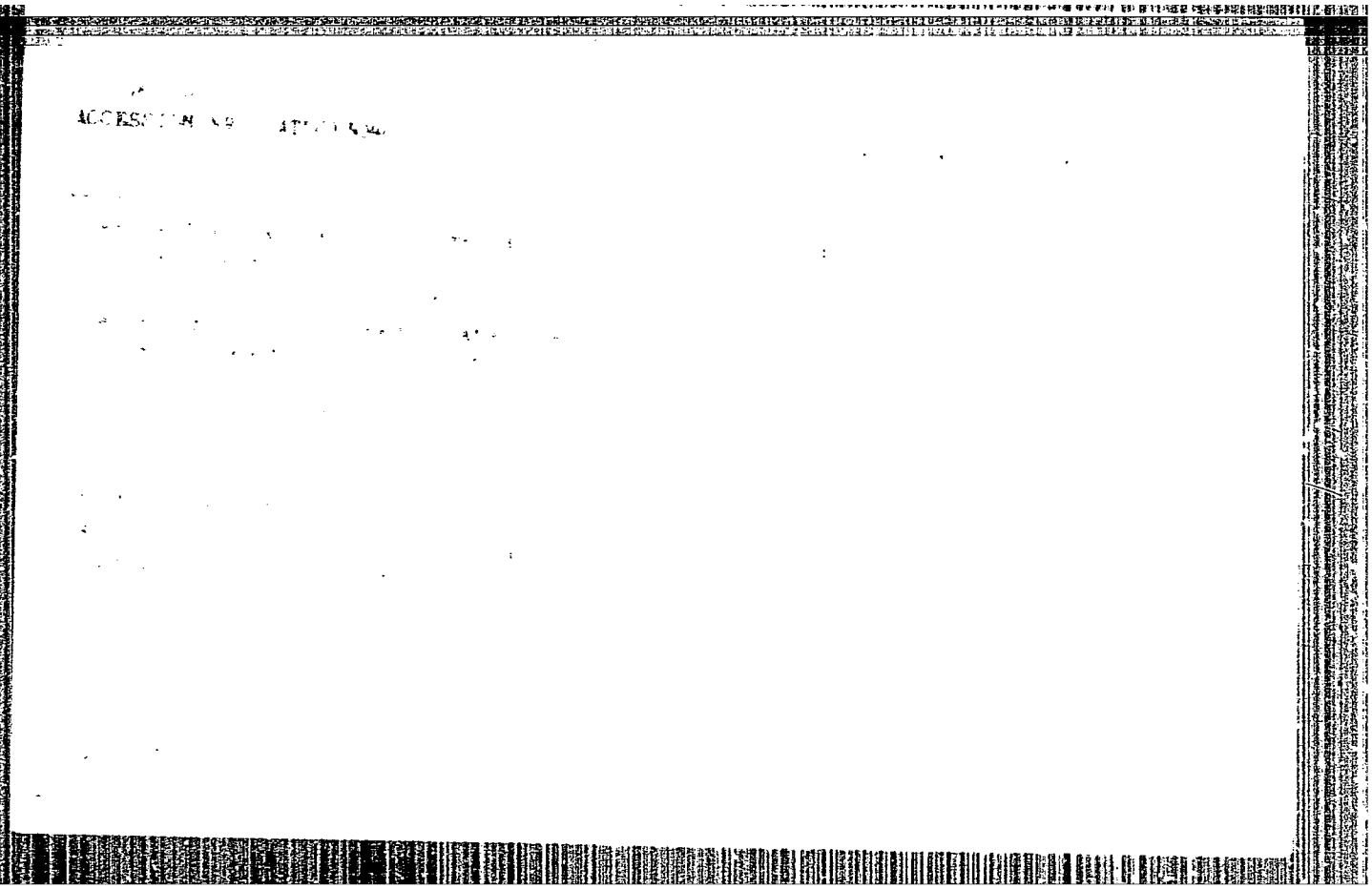
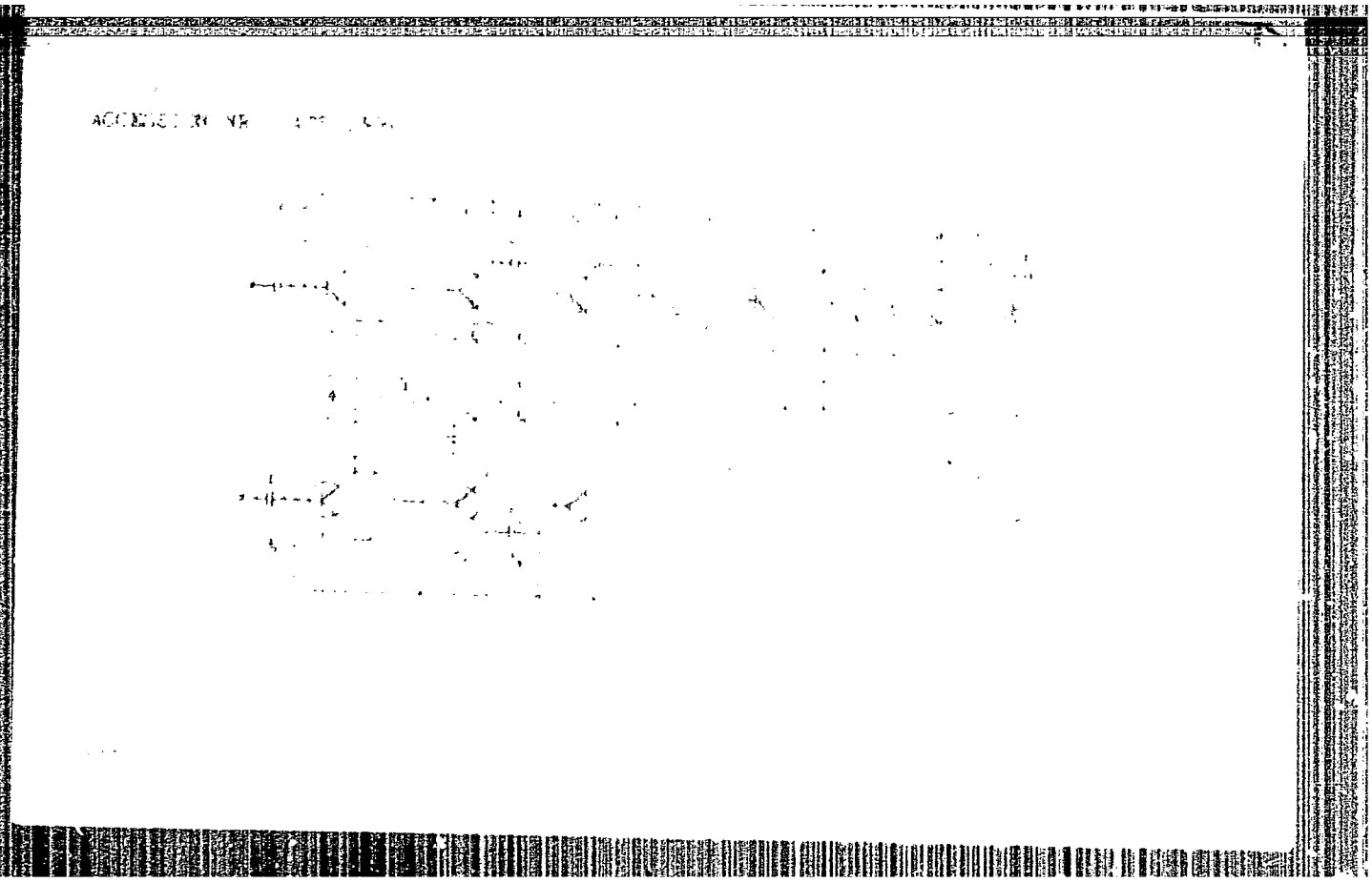
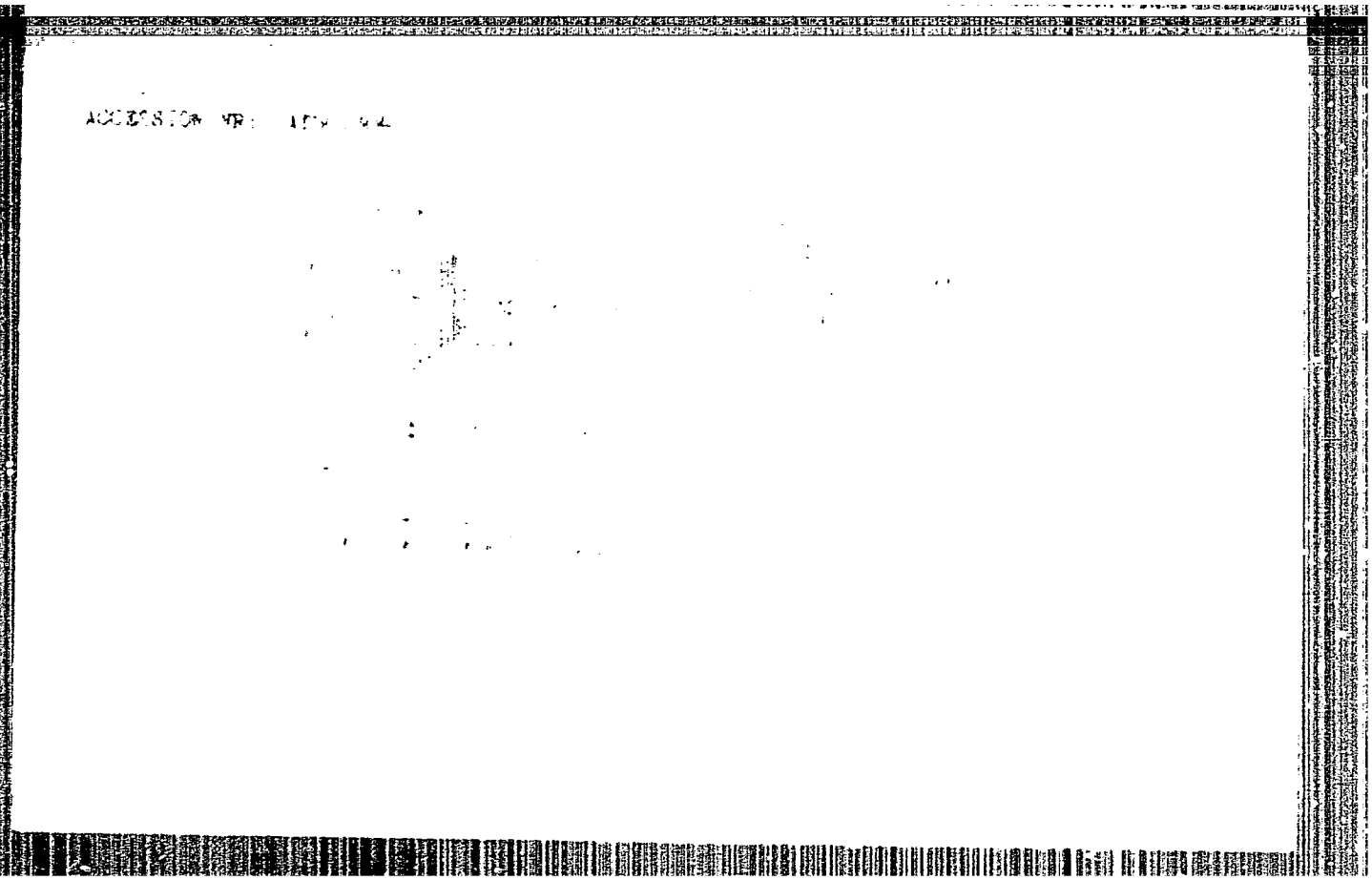
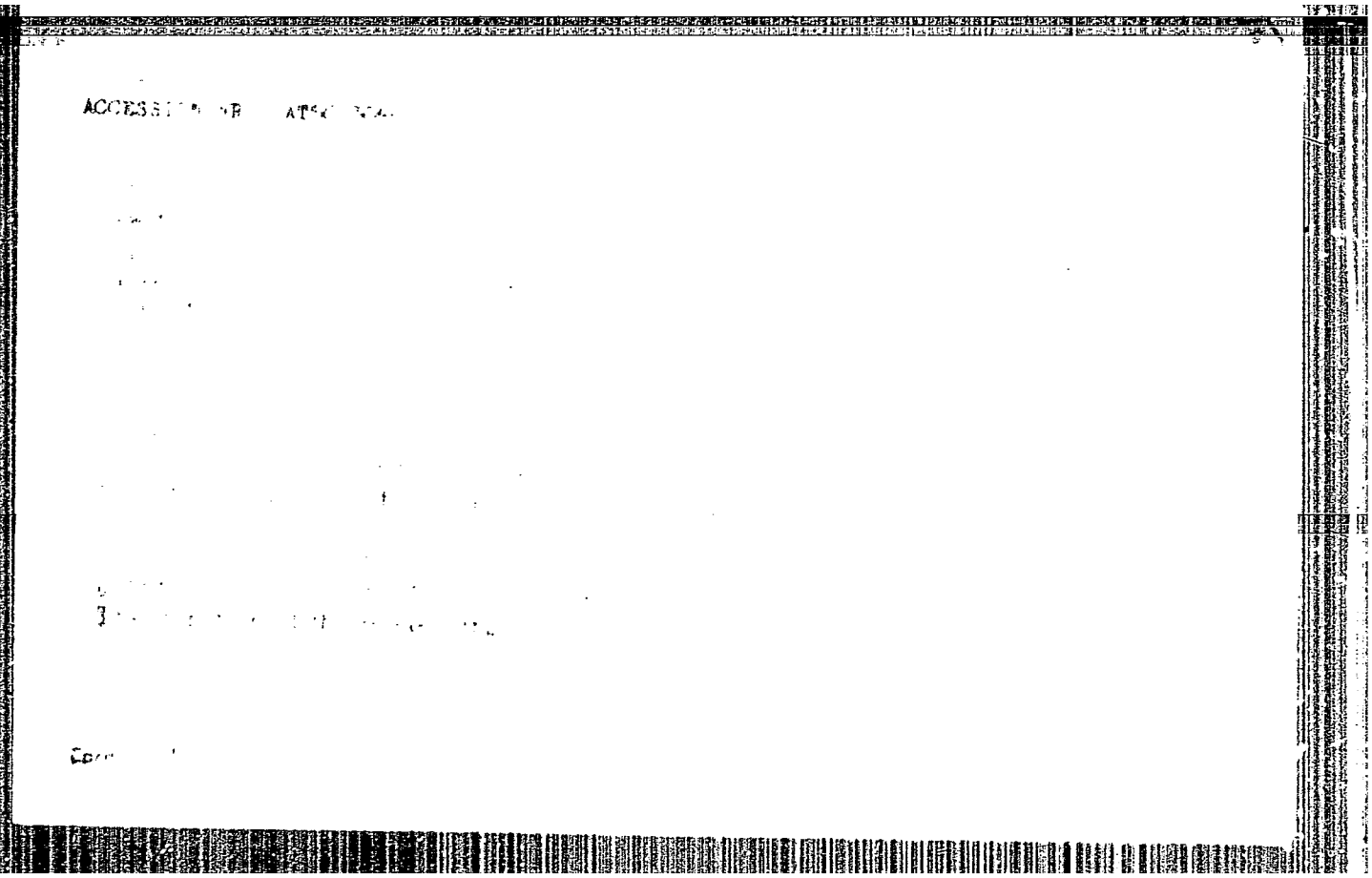
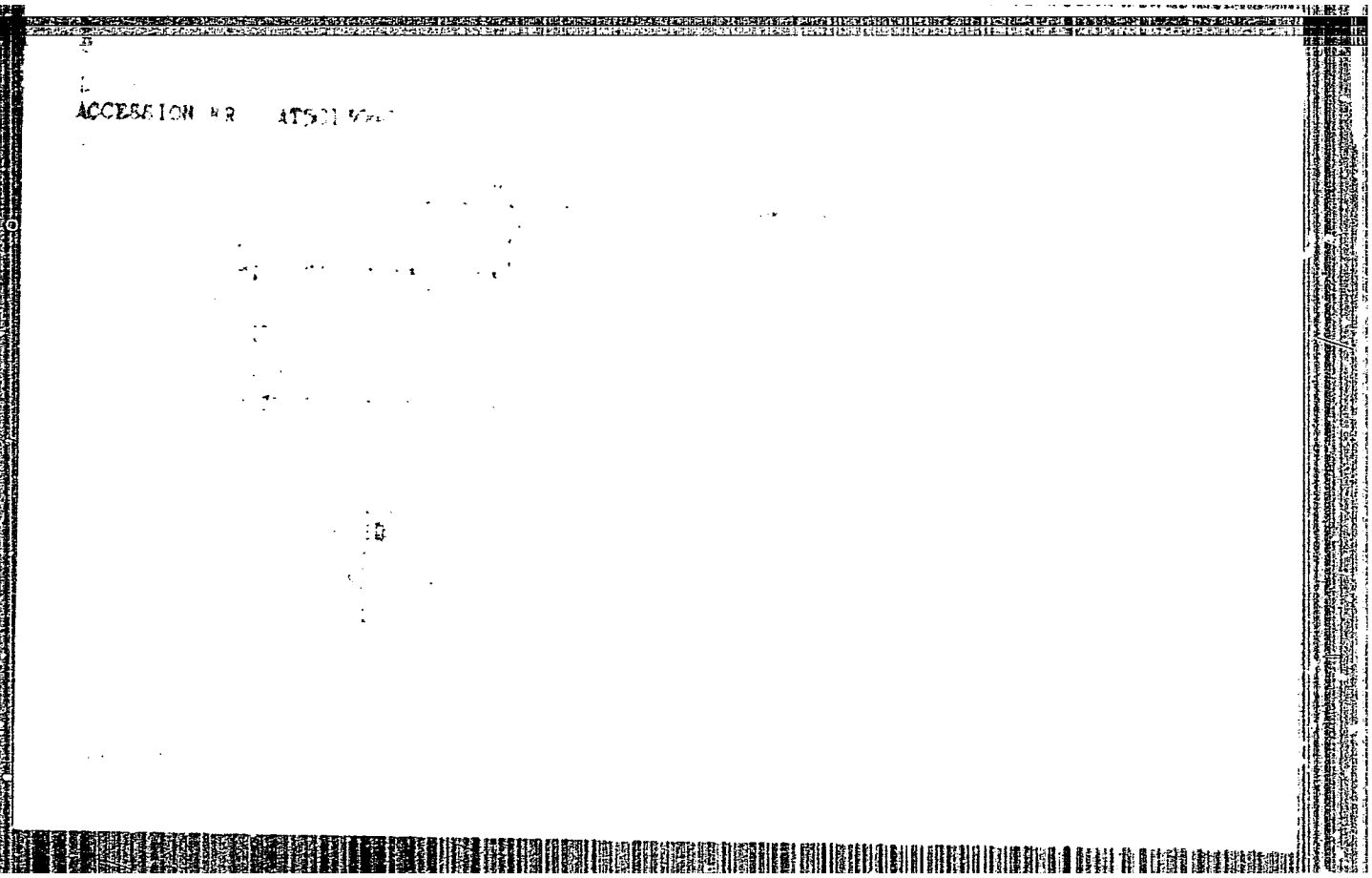
ABSTRACT

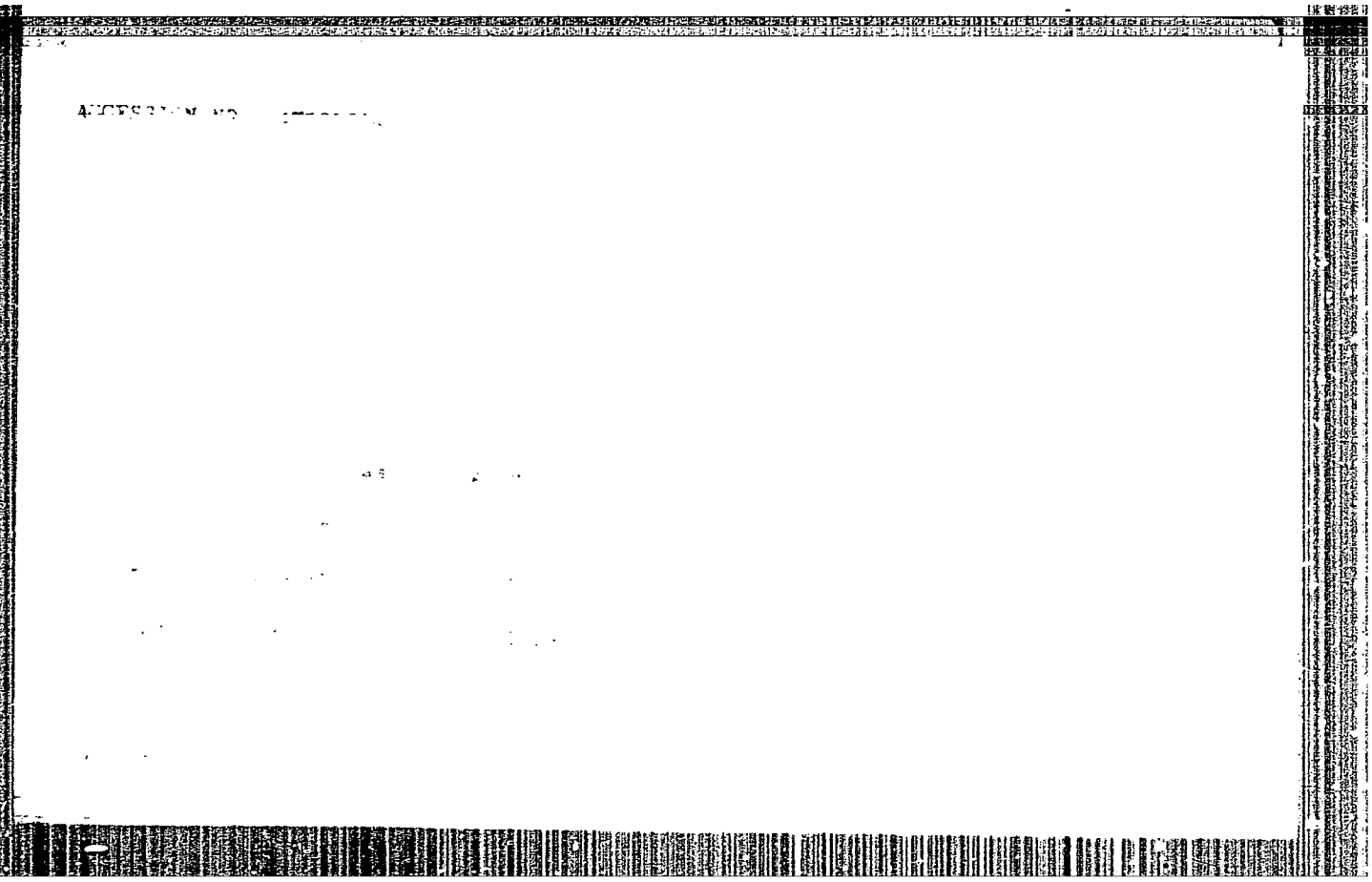












KARPUKHIN, Nikita Sergeyevich, dotsent, kandidat tekhnicheskikh nauk; ZHDANOV, A.P., dotsent, kandidat tekhnicheskikh nauk, retsenzent; MURASHEV, V.I., professor, redaktor; TRUPENKOV, N.I., dotsent, kandidat tekhnicheskikh nauk, nauchnyy redaktor; KOTIK, B.A., redaktor izdatel'stva; GUSEVA, S.S., tekhnicheskiy redaktor

[Reinforced concrete structures] Zhelezobetonnye konstruktsii. Izd. 2-oe, perer. Pod red. V.I.Murasheva. Moskva, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 442 p. (MIRA 10:10)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury (for Murashev)
(Reinforced concrete construction)

ZHDANOV, A.P. (Assistant, Bashkir Agri. Inst)

Zhdanov, A.P. and Gayfutninova, G.M. (Interne, Bashkir Agri. Inst)

"Metacercarial Alariasis of Badgers in Bashkir ASSR,"

SO: Veterinariya, Vol 31, No 4, pp 23-27, 1954.

ZHDANOV, A. P.

Luchshie sorta polevykh kul'tur v Stavropol'skom krae [Best varieties of field crops in the Stavropol' territory]. Stavropol', Stavropol'skoe knizhnoe izd., 1953. 120 p.

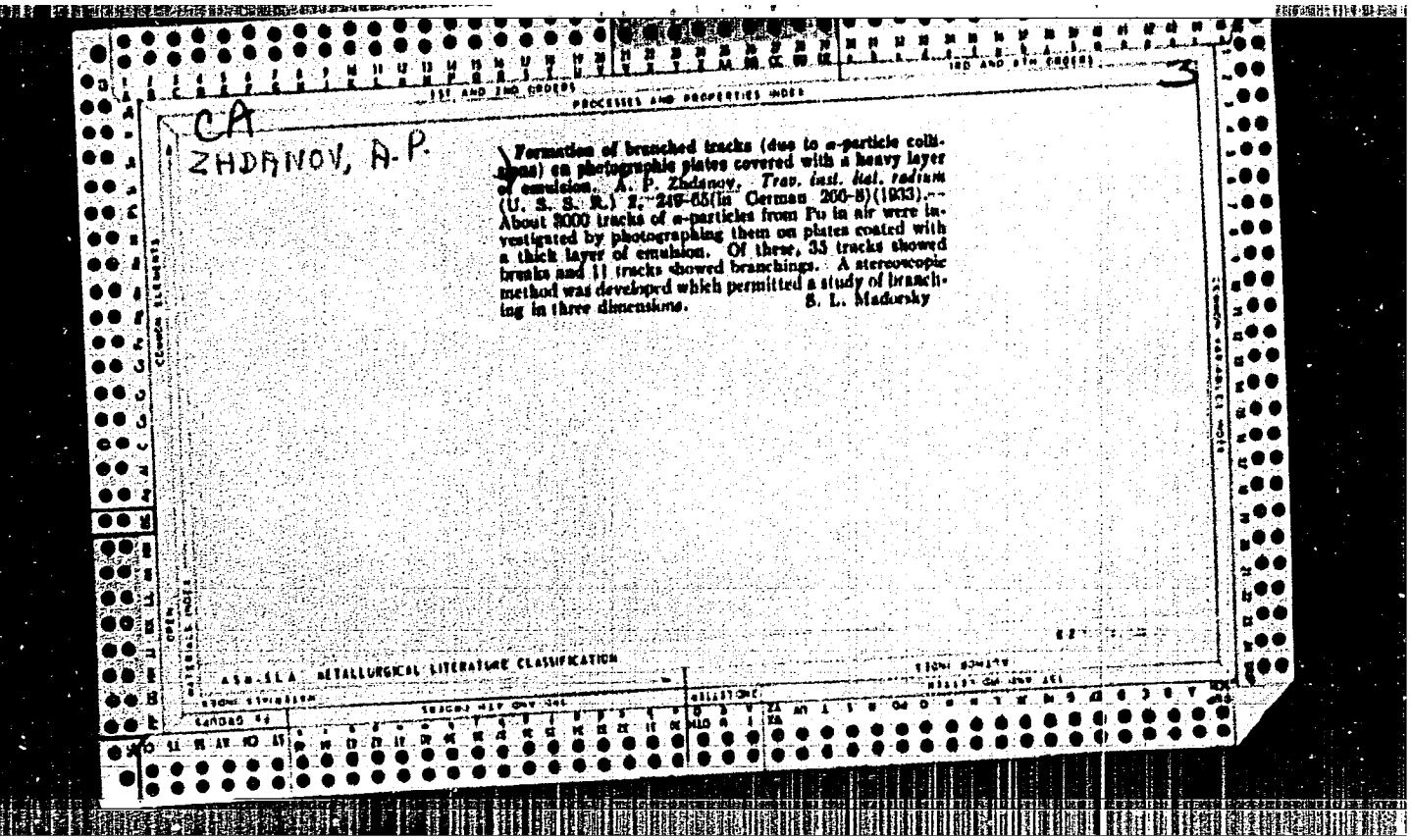
SO: Monthly List of Russian Accessions, Vol. 7 No. 1 April 1954.

ZHDANOV, A. P.

Peat Industry

For high productivity of cutting durms. Torf. prom. 30, No. 4, 1953.

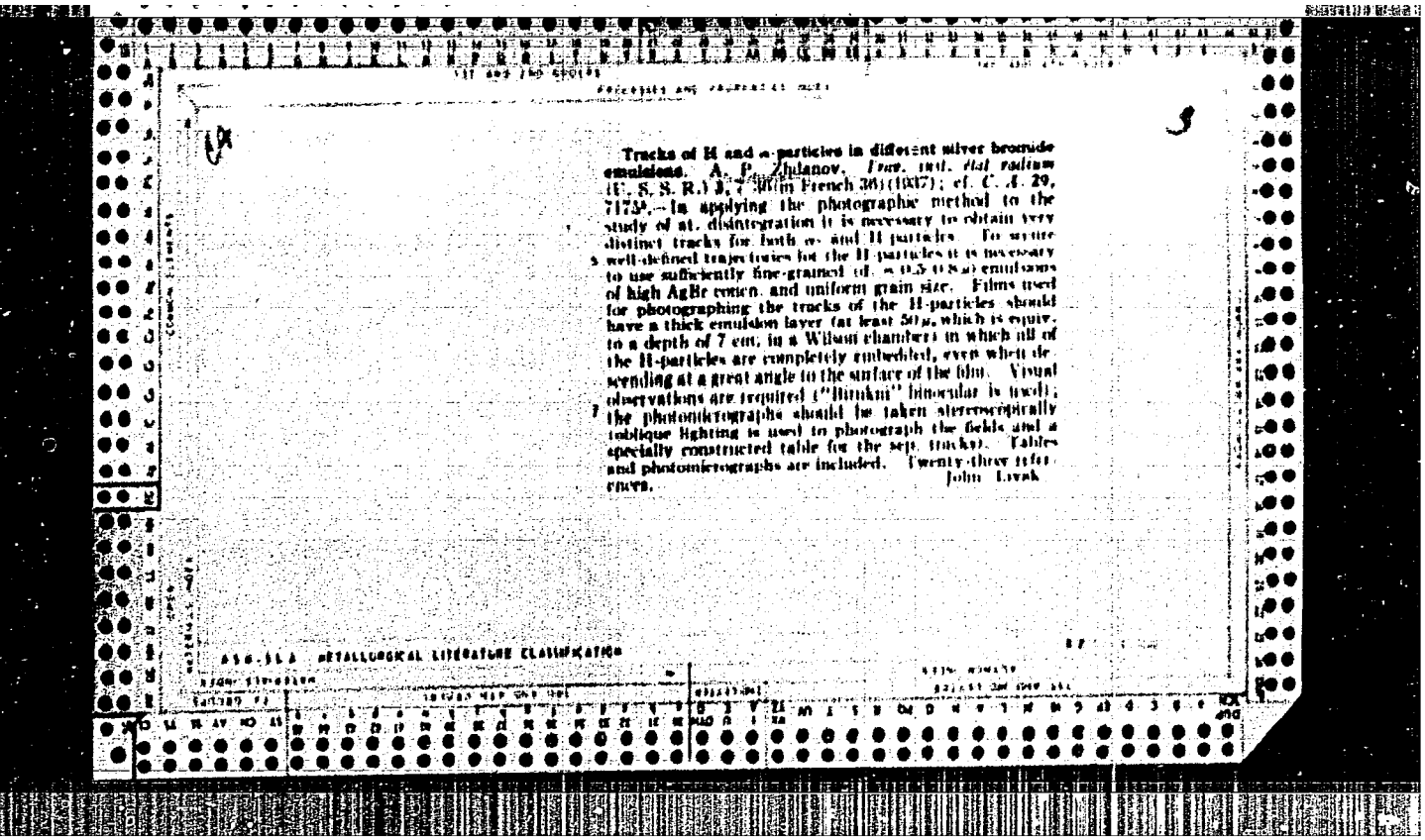
SO: Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.



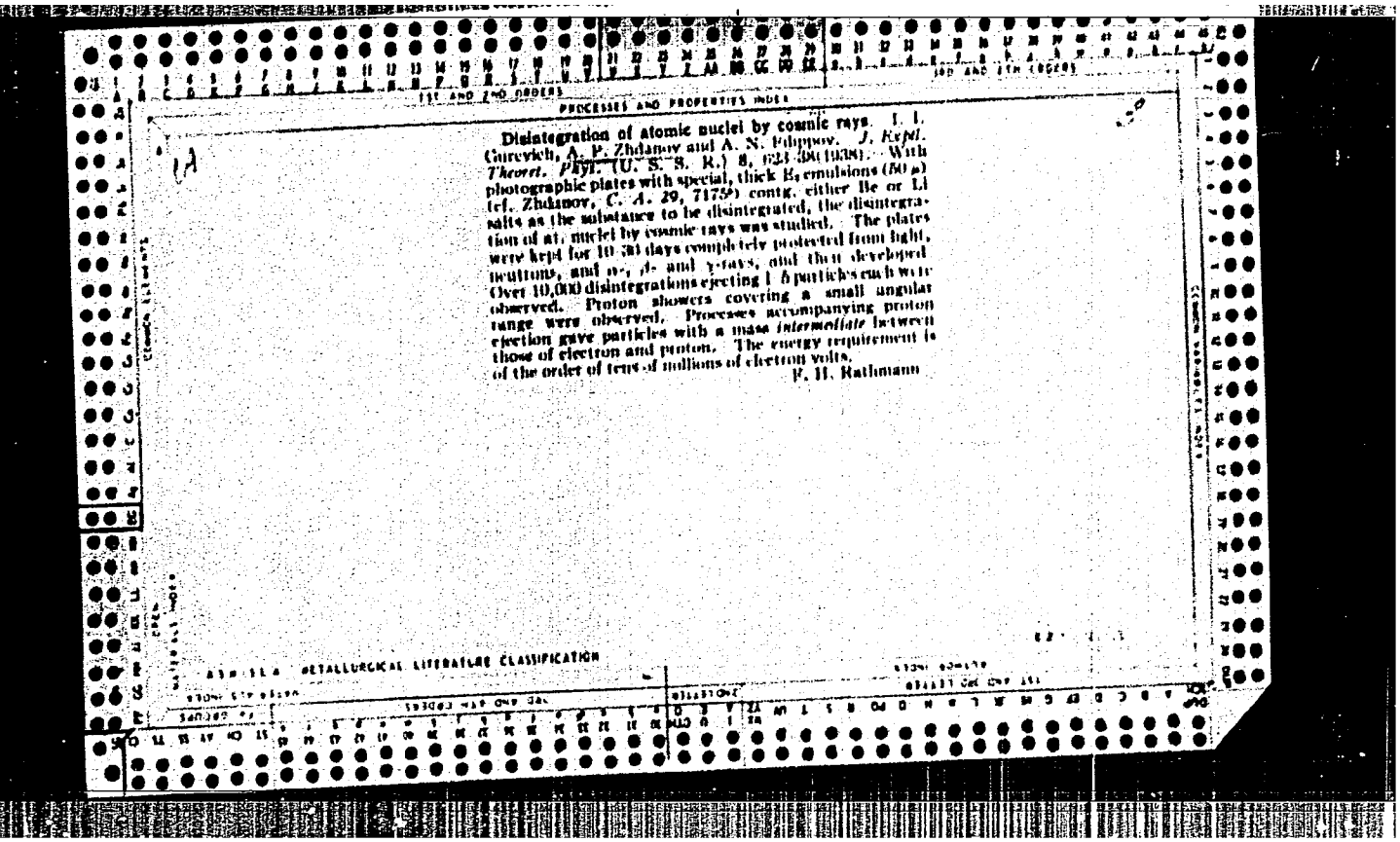
CA

ZHDANOV, A. P.

Formation of branched tracks (due to α-particle collisions) on photographic plates covered with a heavy layer of emulsion. A. P. Zhdanov. *Trav. inst. fiol. radium* (U. S. S. R.) 2, 249-55(in German 260-8)(1933).--About 3000 tracks of α-particles from Pu in air were investigated by photographing them on plates coated with a thick layer of emulsion. Of these, 33 tracks showed breaks and 11 tracks showed branchings. A stereoscopic method was developed which permitted a study of branching in three dimensions. S. L. Madorsky



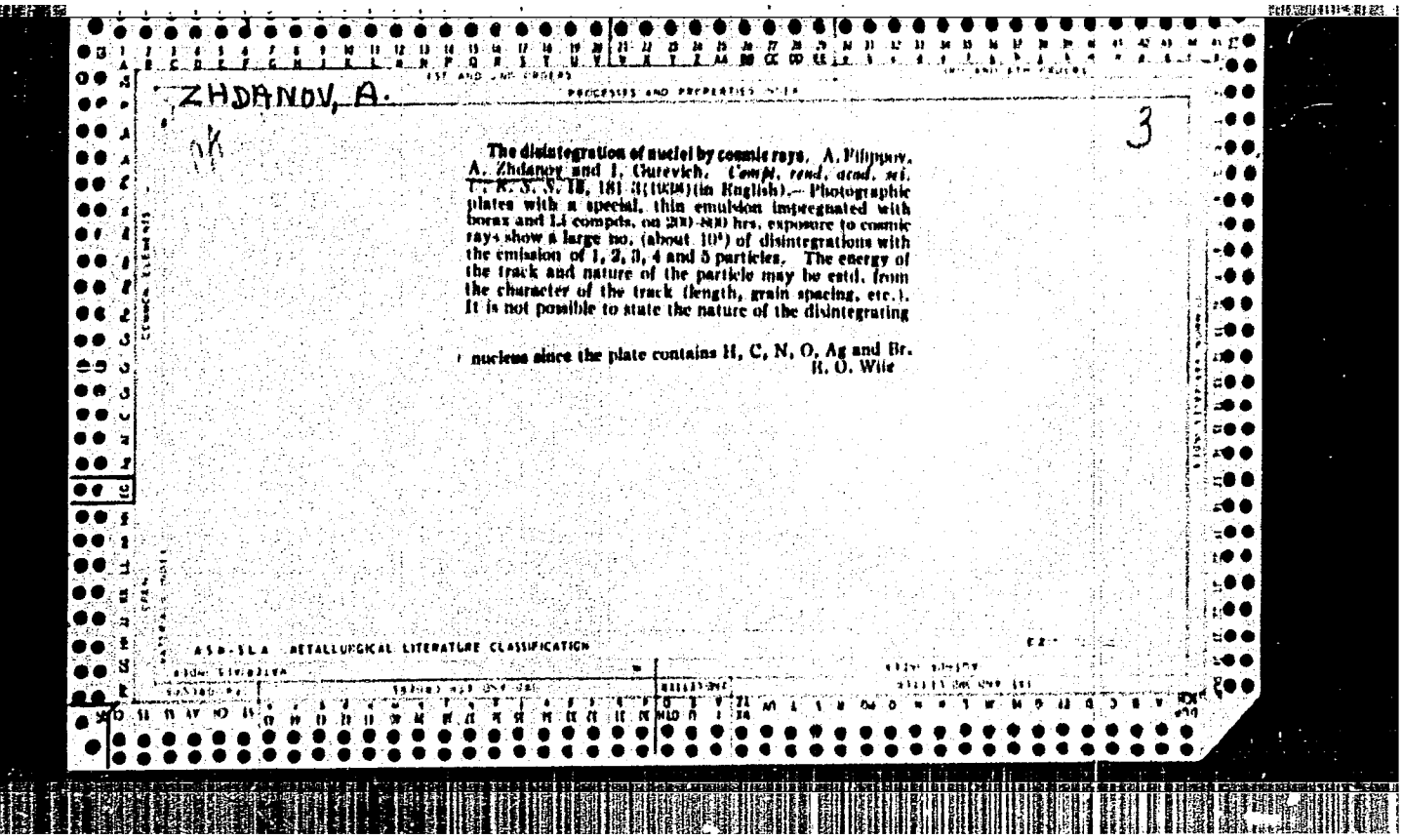
Tracks of H and α-particles in different silver bromide emulsions. A. P. Zhdanov. *Trav. inst. état radium* (U. S. S. R.) 3, [illegible] (Fr. French 36) (1937); cf. C. A. 29, 7175.—In applying the photographic method to the study of at. disintegration it is necessary to obtain very distinct tracks for both α- and H particles. To secure well-defined trajectories for the H-particles it is necessary to use sufficiently fine-grained (d. = 0.5–0.8 μ) emulsions of high AgBr concn. and uniform grain size. Films used for photographing the tracks of the H-particles should have a thick emulsion layer (at least 50 μ, which is equiv. to a depth of 7 cm. in a Wilson chamber) in which all of the H-particles are completely embedded, even when descending at a great angle to the surface of the film. Visual observations are required ("Binokni" binocular is used); the photomicrographs should be taken stereoscopically (oblique lighting is used to photograph the fields and a specially constructed table for the sept. tracks). Tables and photomicrographs are included. Twenty-three refer-ences. John Livak



PROCESSES AND PROPERTIES INDEX

Disintegration of atomic nuclei by cosmic rays. I. I. Gurevich, A. P. Zhdanov and A. N. Filippov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 623-30 (1938). With photographic plates with special, thick B_1 emulsions (50 μ) (cf. Zhdanov, *C. A.* 29, 7175²) contg. either Be or Li salts as the substance to be disintegrated, the disintegration of at. nuclei by cosmic rays was studied. The plates were kept for 10-31 days completely protected from light. Over 10,000 disintegrations ejecting 1 α particles each were observed. Proton showers covering a small angular range were observed. Processes accompanying proton ejection gave particles with a mass *intermediate* between those of electron and proton. The energy requirement is of the order of tens of millions of electron volts.
P. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

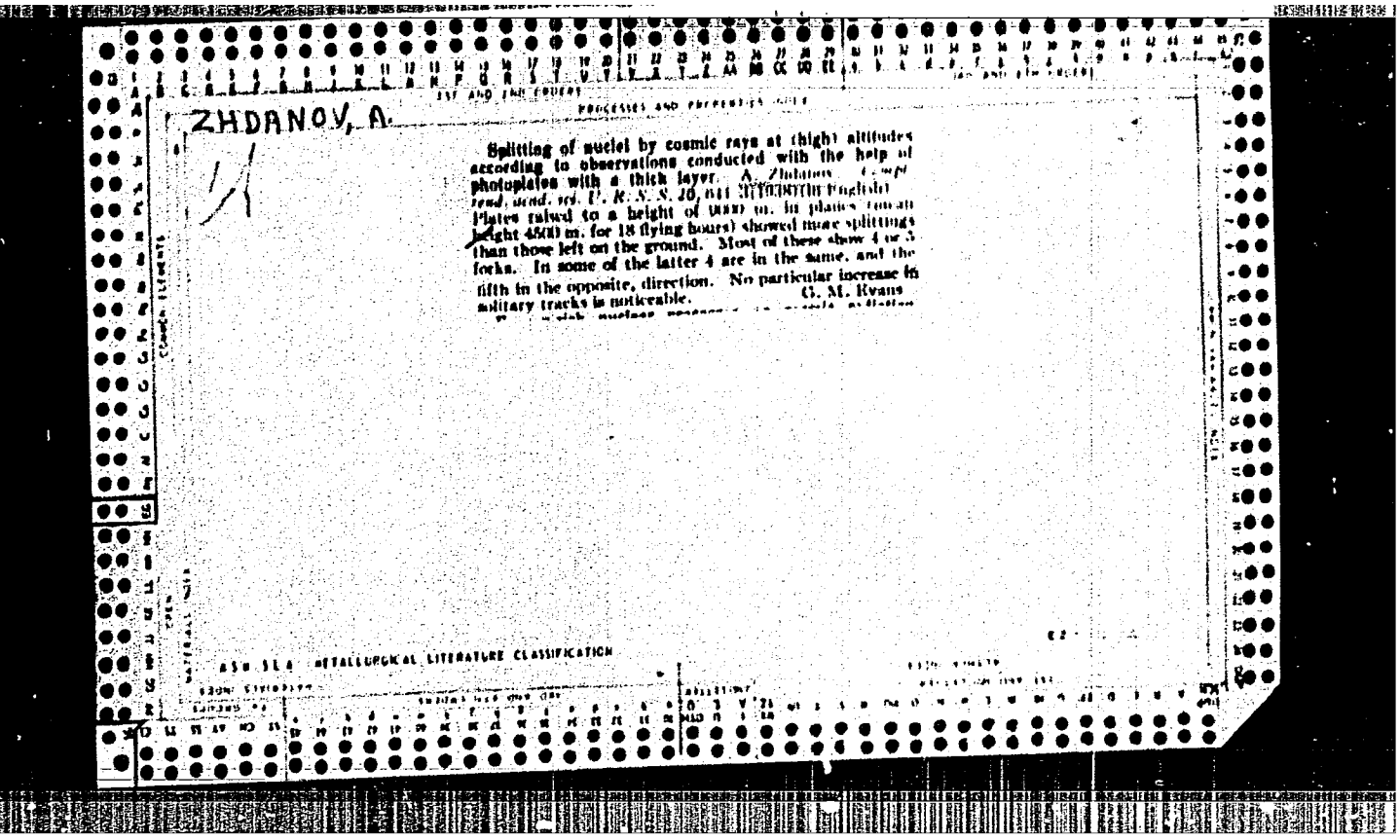


ZHDANOV, A.

3

The disintegration of nuclei by cosmic rays. A. Filippov, A. Zhdanov and I. Gurevich. *Compt. rend. acad. sci. U. R. S. S.* II, 181 3(1936)(in English).—Photographic plates with a special, thin emulsion impregnated with borax and Li compds. on 200–800 hrs. exposure to cosmic rays show a large no. (about 10^3) of disintegrations with the emission of 1, 2, 3, 4 and 5 particles. The energy of the track and nature of the particle may be estd. from the character of the track (length, grain spacing, etc.). It is not possible to state the nature of the disintegrating nucleus since the plate contains H, C, N, O, Ag and Br.
R. O. Wile

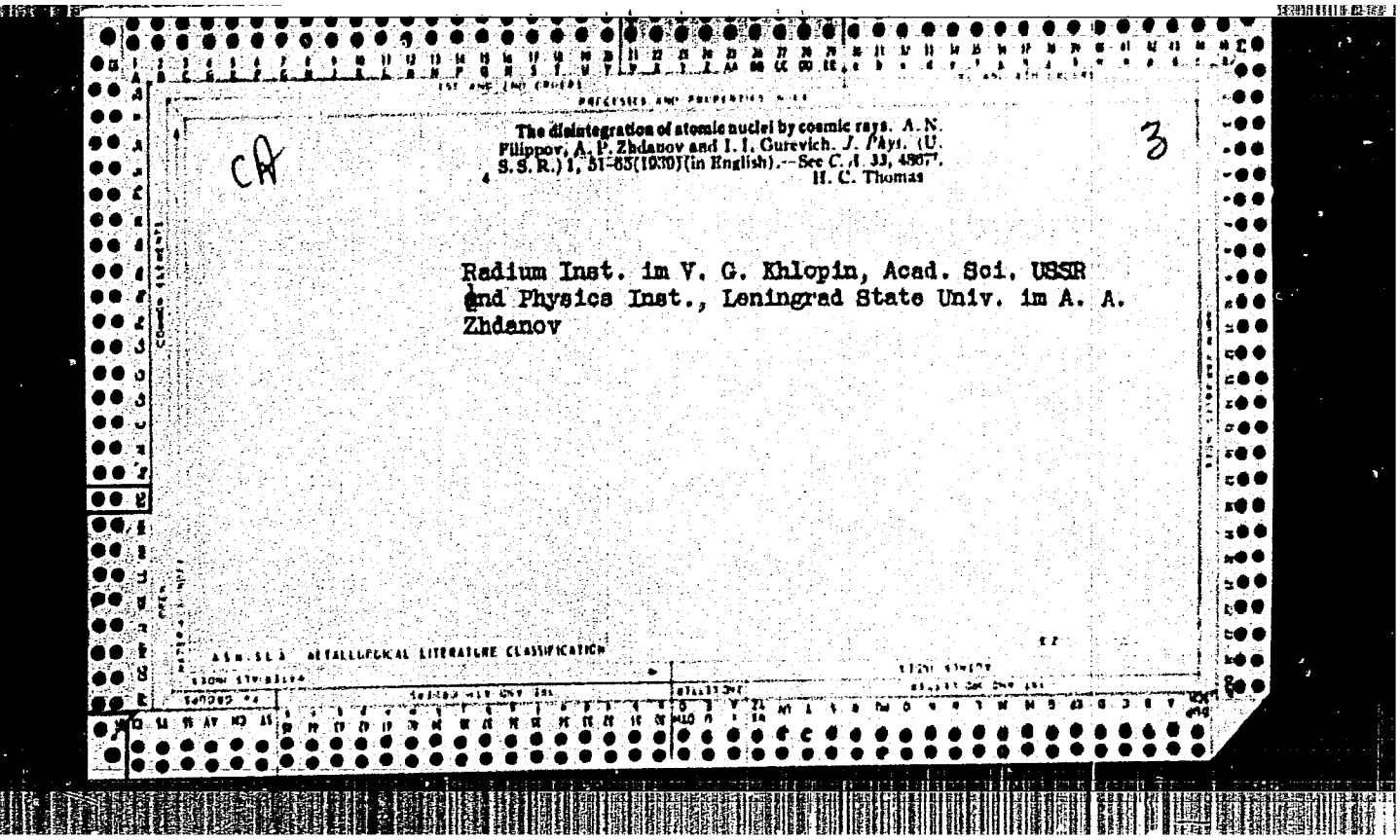
ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION



ZHDANOV, A.

Splitting of nuclei by cosmic rays at (high) altitudes according to observations conducted with the help of photoplates with a thick layer. A. Zhdanov (Leningrad) Compt. rend. acad. sci. U. R. S. S. 28, 611 (1940) (English text) Plates raised to a height of 9000 m. in planes (mean height 4500 m. for 18 flying hours) showed more splittings than those left on the ground. Most of these show 4 or 5 forks. In some of the latter 4 are in the same, and the fifth in the opposite, direction. No particular increase in military tracks is noticeable. G. M. Evans

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



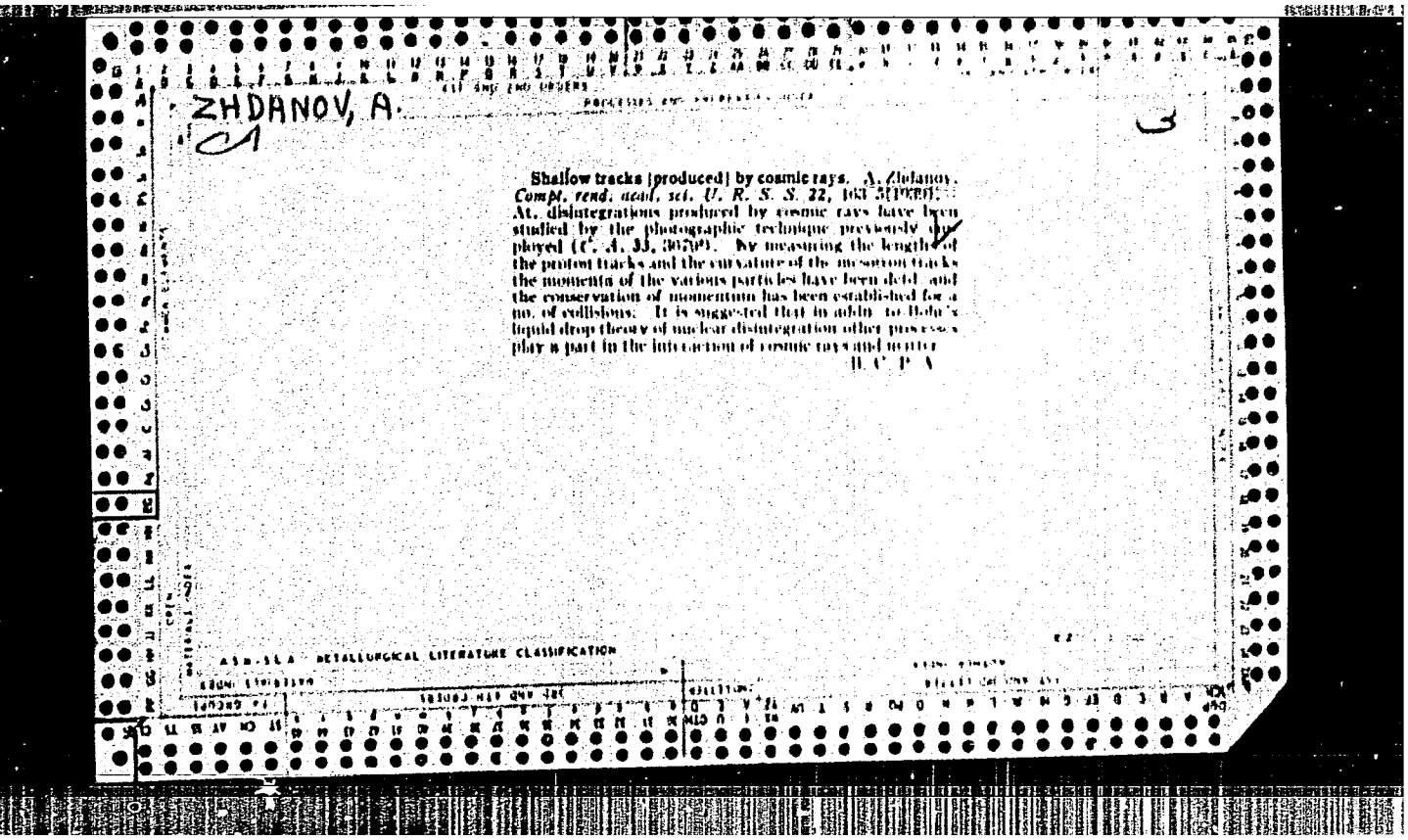
CA

3

The disintegration of atomic nuclei by cosmic rays. A. N. Filippov, A. P. Zhdanov and I. I. Gurevich. *J. Phys.* (U. S. S. R.) 1, 51-65(1939)(in English).--See *C. A.* 33, 4967⁷. H. C. Thomas

Radium Inst. im V. G. Khlopin, Acad. Sci. USSR and Physics Inst., Leningrad State Univ. im A. A. Zhdanov

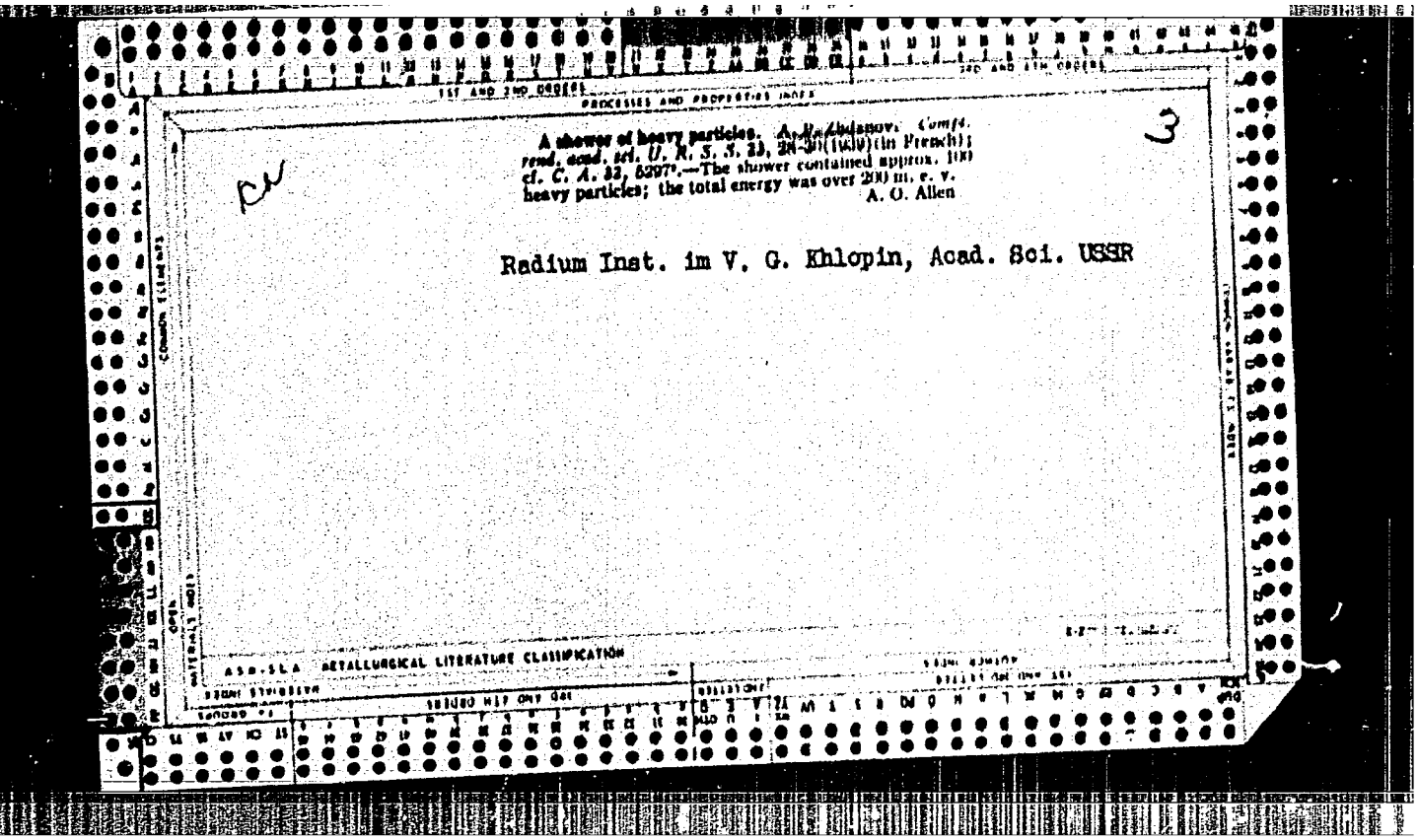
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



ZHDANOV, A.

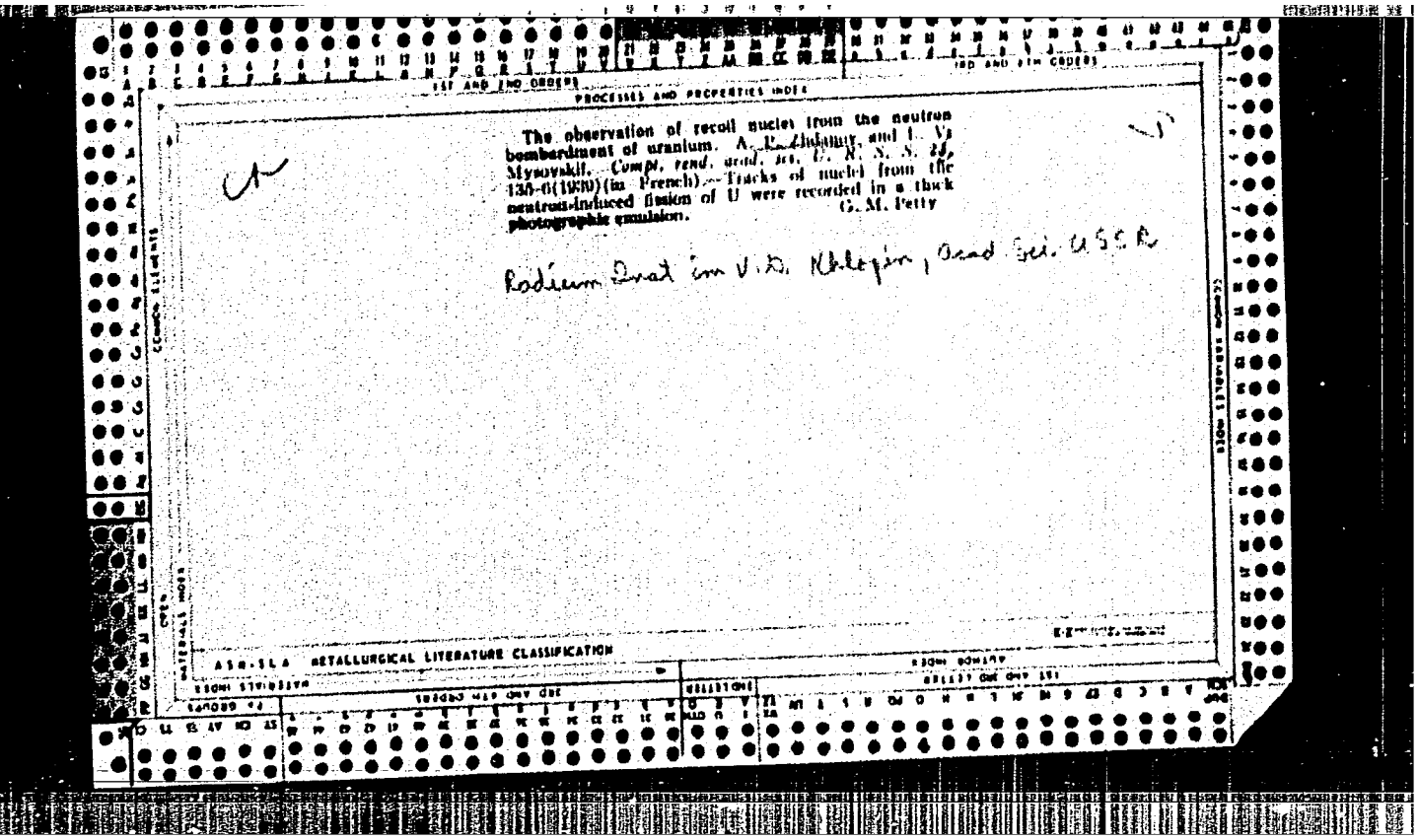
Shallow tracks [produced] by cosmic rays. A. Zhdanov. *Compt. rend. acad. sci. U. R. S. S.* 22, 163-5(1939). At. disintegrations produced by cosmic rays have been studied by the photographic technique previously employed (*C. A.* 33, 3070⁹). By measuring the length of the proton tracks and the curvature of the meson tracks the momenta of the various particles have been detd. and the conservation of momentum has been established for a no. of collisions. It is suggested that in addn. to Bohr's liquid drop theory of nuclear disintegration other processes play a part in the interaction of cosmic rays and matter.

H. C. P. V.



A shower of heavy particles. A. P. Zhdanov. *Compt. rend. acad. sci. U. R. S. S.* 33, 28-31(1941)(in French); cf. *C. A.* 32, 8297⁹.—The shower contained approx. 100 heavy particles; the total energy was over 200 m. e. v.
A. O. Allen

Radium Inst. im V. G. Khlopin, Acad. Sci. USSR

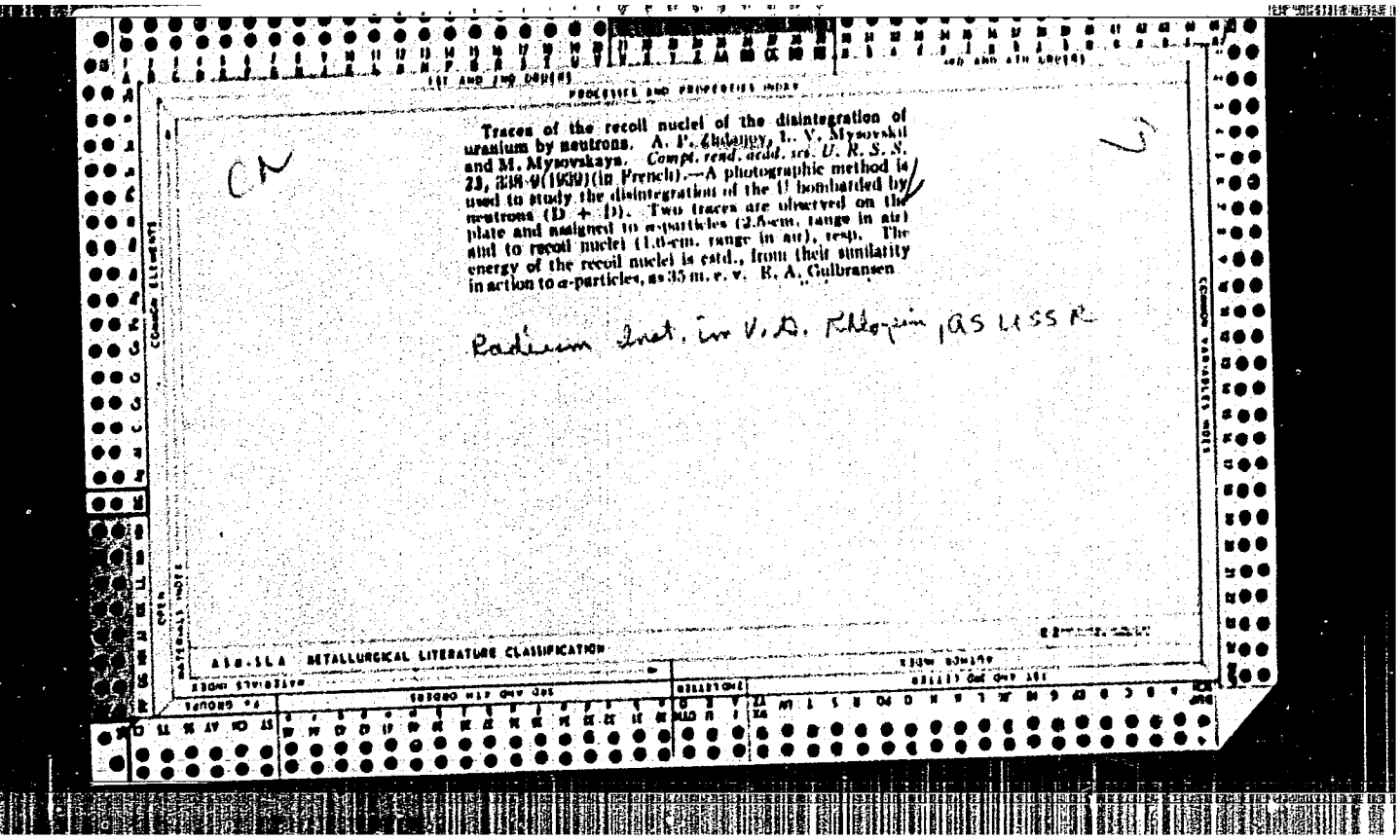


PROCESSES AND PROPERTIES INDEX

The observation of recoil nuclei from the neutron bombardment of uranium. A. P. Zhdanov, and I. V. Mysovskii. *Compt. rend. acad. sci. U. R. S. S.* 28, 138-9(1950)(in French).—Tracks of nuclei from the neutron-induced fission of U were recorded in a thick photographic emulsion. G. M. Petty

Rodium Dust Em V.D. Nikolajev, Acad Sci. U.S.S.R.

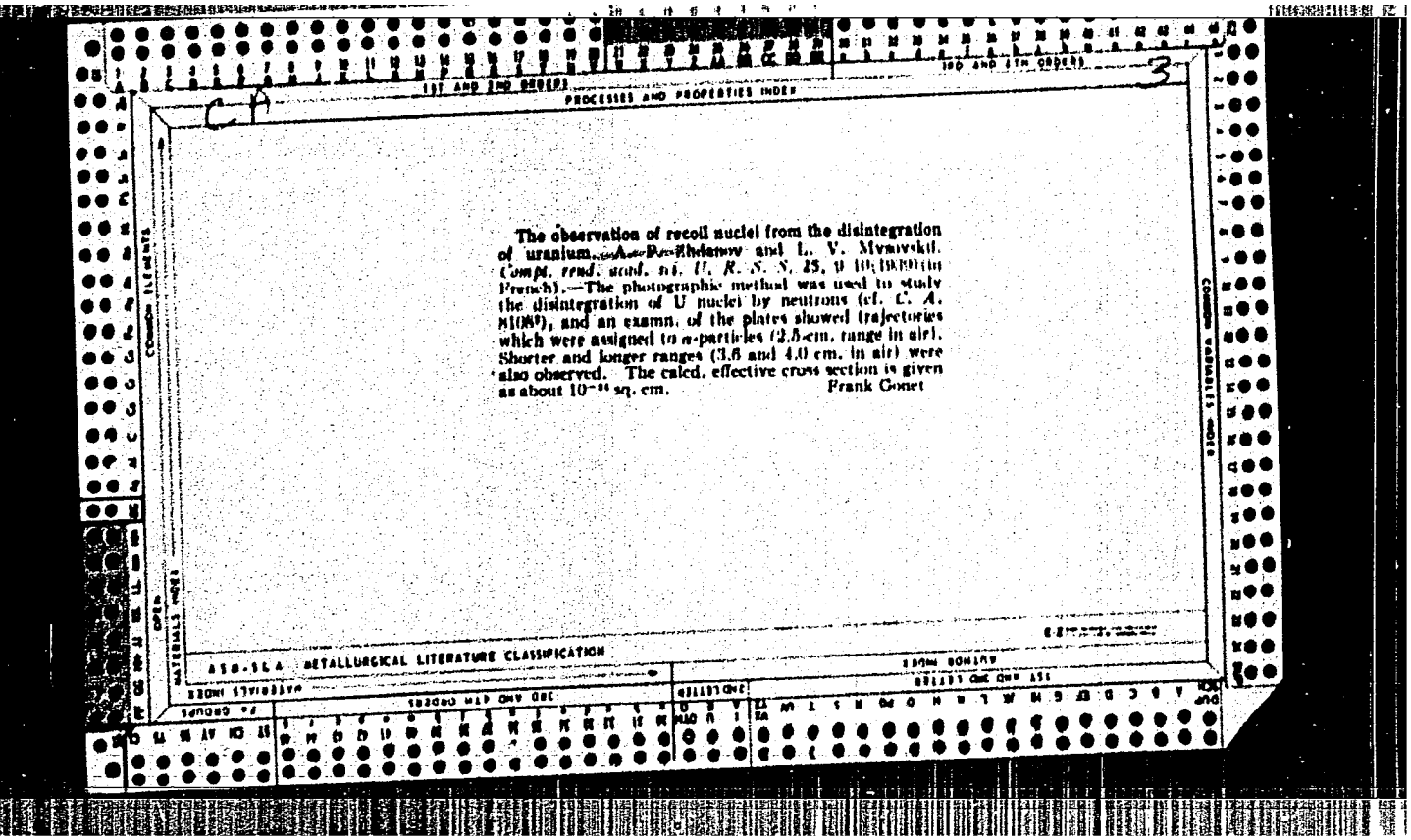
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



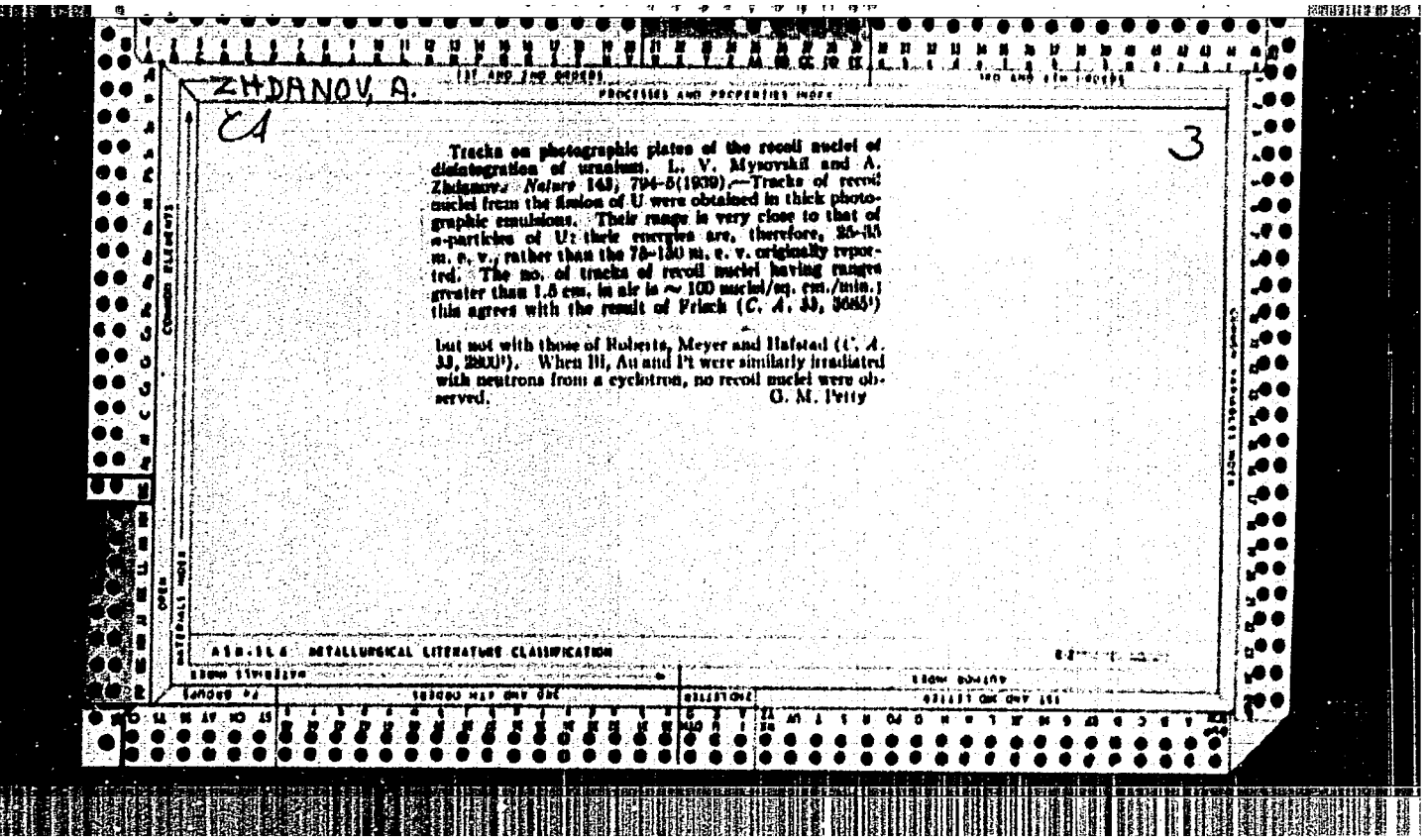
Traces of the recoil nuclei of the disintegration of uranium by neutrons. A. P. Zhdanov, L. V. Mysovskii and M. Mysovskaya. *Compt. rend. acad. sci. U. R. S. S.* 23, 338-9(1939)(in French).—A photographic method is used to study the disintegration of the U bombarded by neutrons (D + D). Two traces are observed on the plate and assigned to α-particles (2.6-cm. range in air) and to recoil nuclei (1.0-cm. range in air), resp. The energy of the recoil nuclei is calcd., from their similarity in action to α-particles, as 35 m. e. v. B. A. Gulbransen

Radium Inst. im V. G. Khlopin, AS USSR

A 10-SLA METALLURGICAL LITERATURE CLASSIFICATION



The observation of recoil nuclei from the disintegration of uranium. A. P. Zhdanov and L. V. Mysovskii. *Compt. rend. acad. sci. U. R. S. S.* 25, 9 10; 1939 (in French).—The photographic method was used to study the disintegration of U nuclei by neutrons (cf. *C. A.* **31**, 8086), and an examn. of the plates showed trajectories which were assigned to α-particles (2.8-cm. range in air). Shorter and longer ranges (3.6 and 4.0 cm. in air) were also observed. The calcd. effective cross section is given as about 10^{-26} sq. cm. Frank Gonet



ZHDANOV, A.

CA

3

Tracks on photographic plates of the recoil nuclei of disintegration of uranium. L. V. Mysovskii and A. Zhdanov. *Nature* 143, 794-5(1939).—Tracks of recoil nuclei from the fission of U were obtained in thick photographic emulsions. Their range is very close to that of α-particles of U; their energies are, therefore, 25-35 m. e. v., rather than the 75–150 m. e. v. originally reported. The no. of tracks of recoil nuclei having ranges greater than 1.5 cm. in air is ~ 100 nuclei/sq. cm./min.; this agrees with the result of Frisch (*C. A.* 33, 3685[1]) but not with those of Roberts, Meyer and Halstead (*C. A.* 33, 2800[1]). When Bi, Au and Pt were similarly irradiated with neutrons from a cyclotron, no recoil nuclei were observed.

G. M. Petty

ZHDANOV, A. P.

A peculiarity of splitting of nuclei by cosmic rays. A. P. Zhdanov. *Bull. acad. sci. U. R. S. S., Sér. phys.* 4, 261–72(in English, 272)(1940).—The method of thick Agfa emulsions was used to study the splitting of nuclei by cosmic rays. The nuclear bursts are represented by as many as 27 tracks radiating at random from the common center. Most of tracks are due to protons, but there are also present some tracks of α-particles and even of heavier particles resembling the U-fission products. Beside these symmetrical bursts, easily understandable on the basis of Bohr's drop-model, there were also found several previously described cases (cf. *C. r.* 1, 34, 2008) where all particles are emitted within a small solid angle. The no. of particles (protons and mesotrons) in such directed bursts can be as high as 100. The upper limit of the rate of nuclear bursts is 8×10^{-4} splitting per hour per sq. cm. of plate at sea level, corresponding to the effective cross section of 10^{-28} sq. cm. per ionizing cosmic particle per emulsion nucleus. At the altitude of 7000 m. the rate of splitting is 50 times larger. Roksalana Gamow

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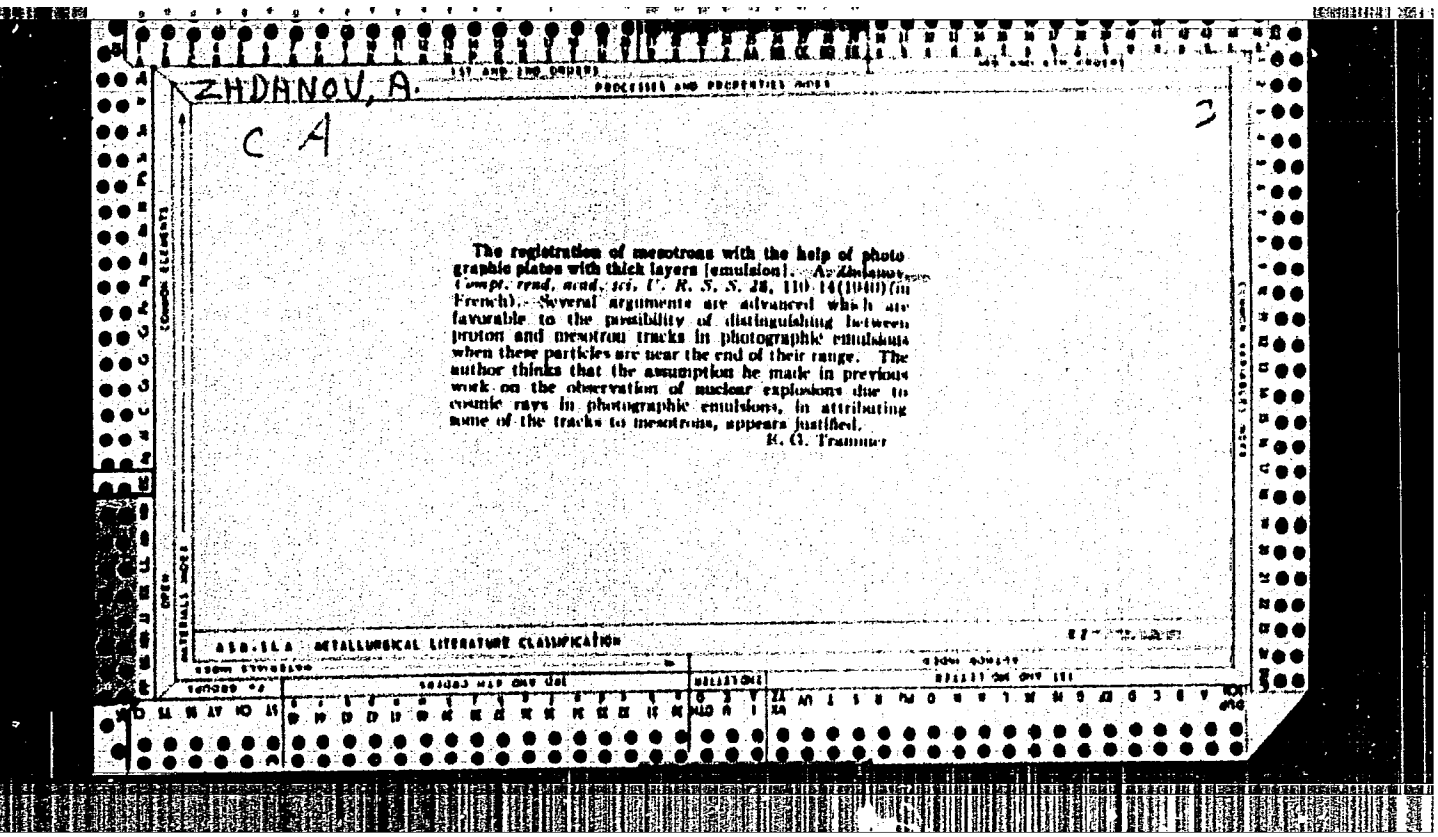
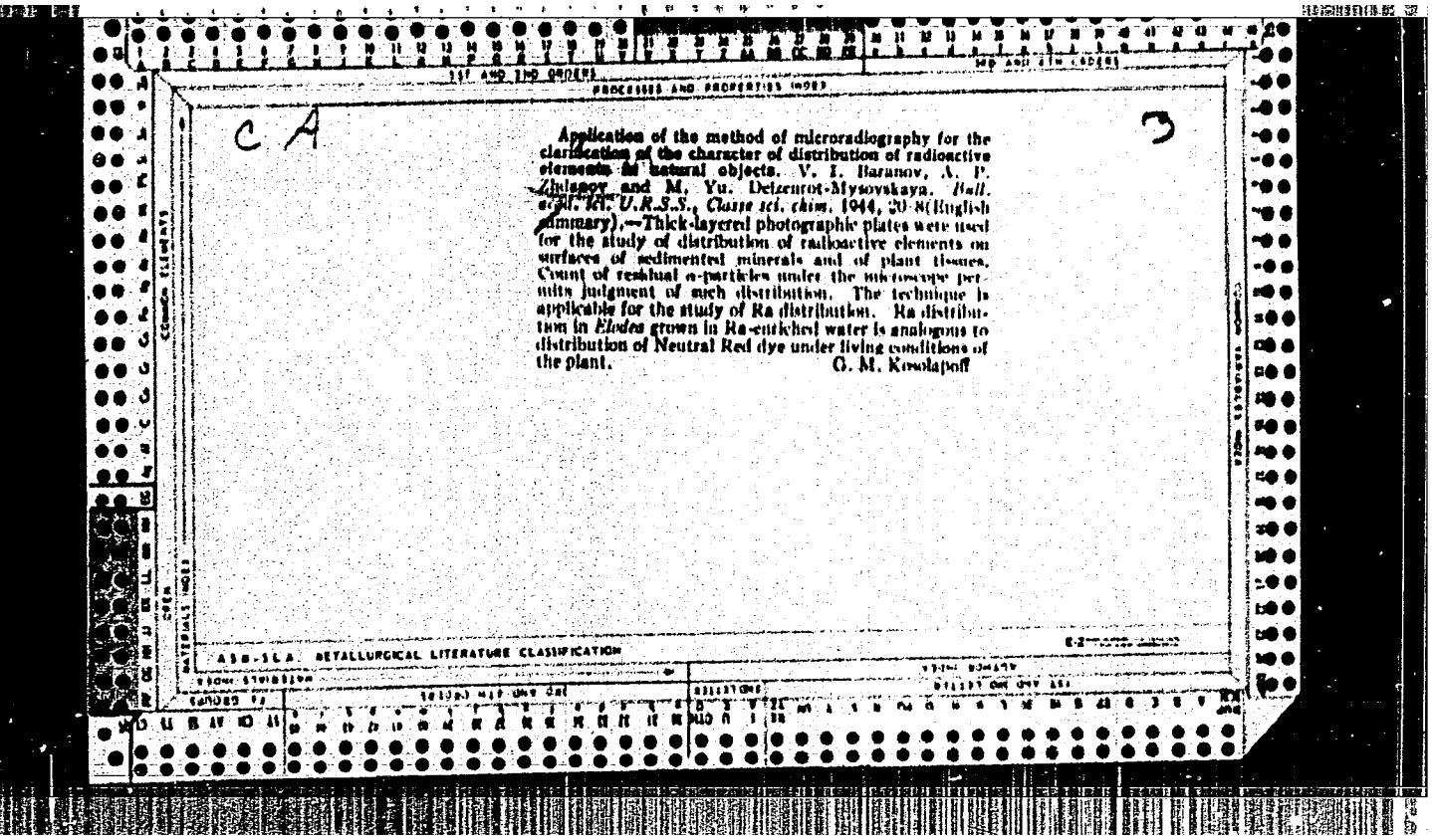


ZHDANOV, A.

C A

The registration of mesotrons with the help of photographic plates with thick layers [emulsion]. *Ac Zhdanov, Compt. rend. acad. sci. U. R. S. S.* 28, 110-14(1940)(in French).—Several arguments are advanced which are favorable to the possibility of distinguishing between proton and mesotron tracks in photographic emulsions when these particles are near the end of their range. The author thinks that the assumption he made in previous work on the observation of nuclear explosions due to cosmic rays in photographic emulsions, in attributing some of the tracks to mesotrons, appears justified.
R. G. Trammer

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



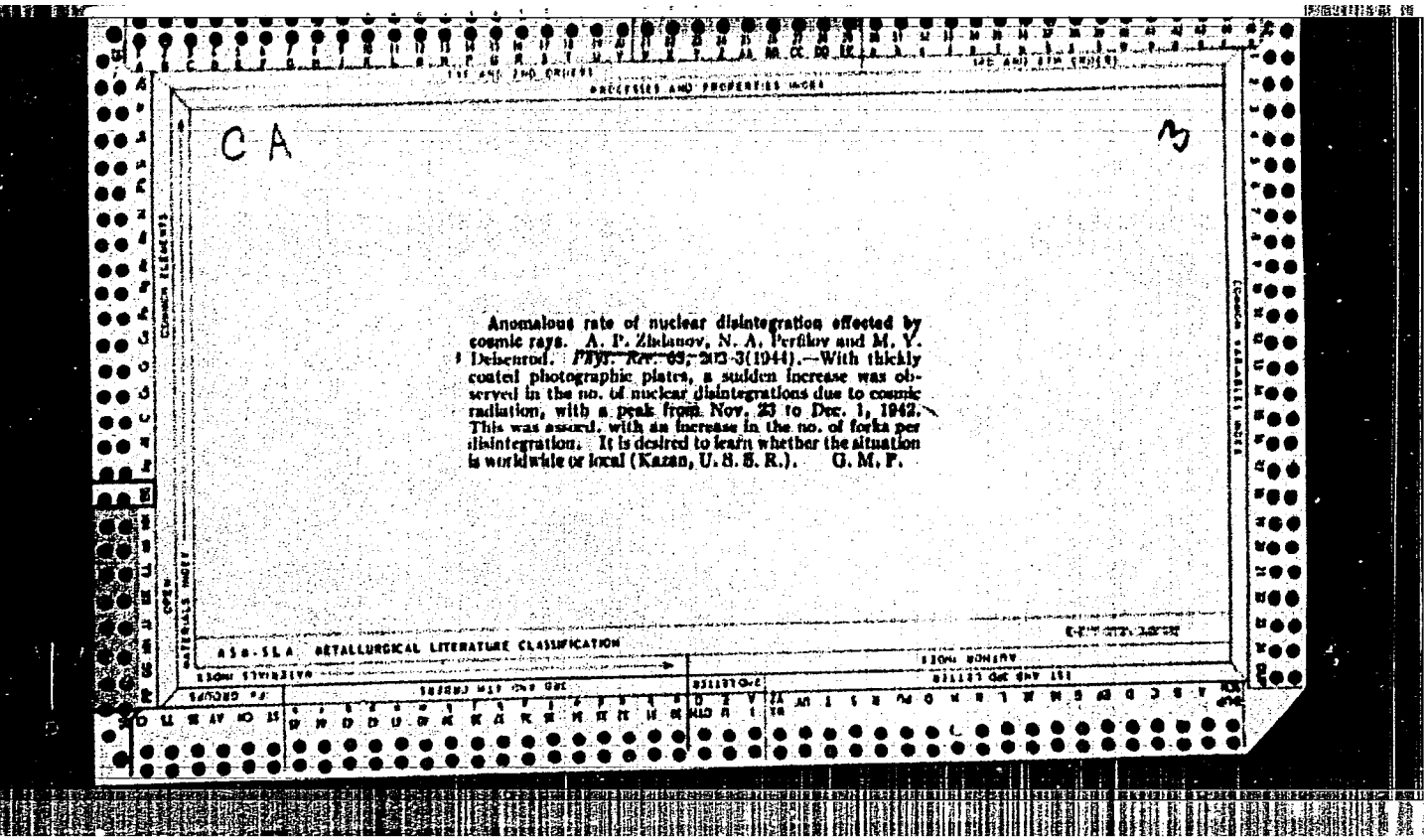
C A

3

Application of the method of microradiography for the clarification of the character of distribution of radioactive elements in natural objects. V. I. Baranov, A. P. Zhdanov and M. Yu. Detzenrot-Mysovskaya. *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1944, 30-8(English summary).—Thick-layered photographic plates were used for the study of distribution of radioactive elements on surfaces of sedimentel minerals and of plant tissues. Count of residual α-particles under the microscope permits judgment of such distribution. The technique is applicable for the study of Ra distribution. Ra distribution in *Elodea* grown in Ra-enriched water is analogous to distribution of Neutral Red dye under living conditions of the plant.

G. M. Kosolapoff

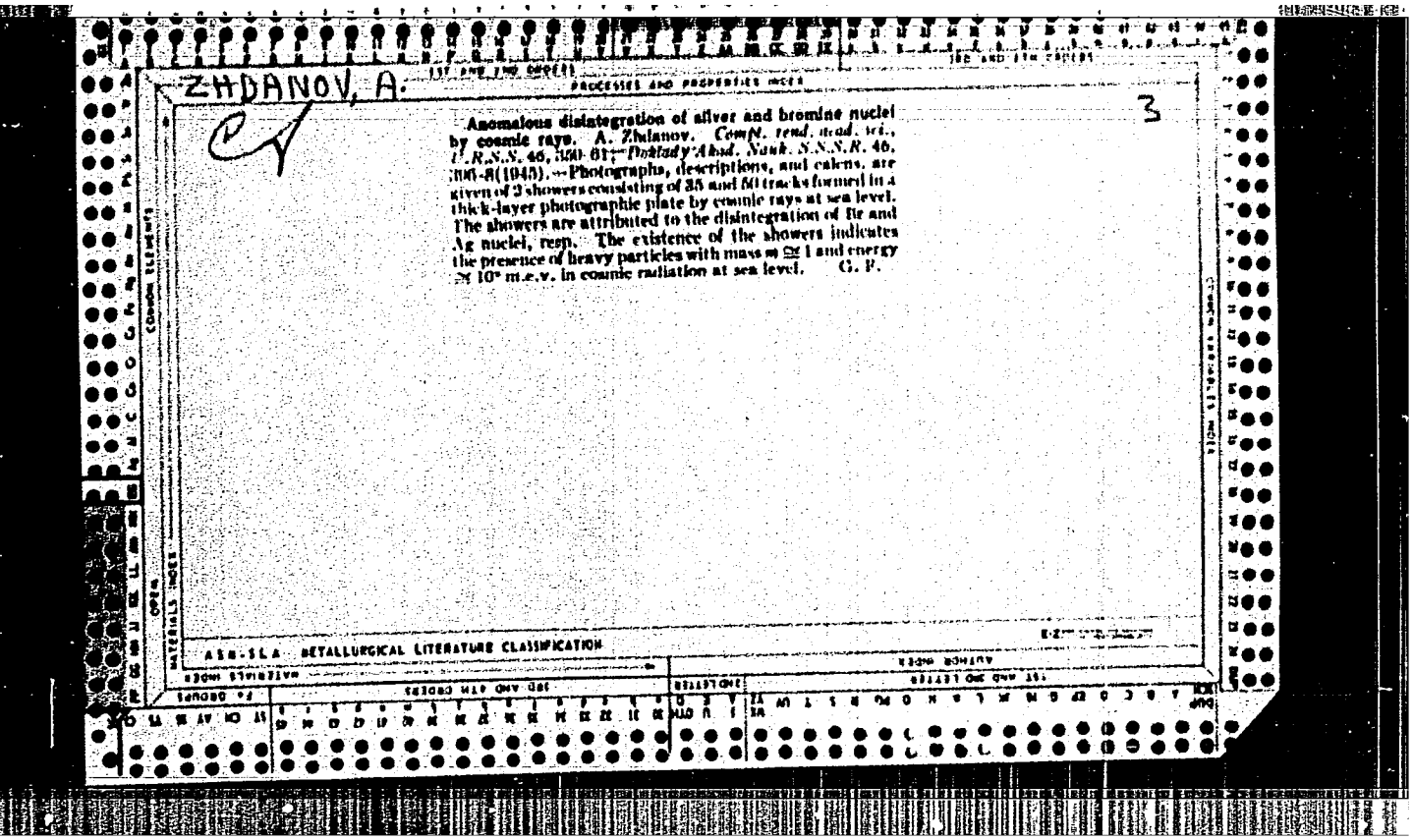
A58-SLA METALLURGICAL LITERATURE CLASSIFICATION



C A

Anomalous rate of nuclear disintegration effected by cosmic rays. A. P. Zhdanov, N. A. Perfilov and M. Y. Dobrotvol. *Phys. Rev.* 69, 202-3(1944).—With thickly coated photographic plates, a sudden increase was observed in the no. of nuclear disintegrations due to cosmic radiation, with a peak from Nov. 23 to Dec. 1, 1942. This was assocd. with an increase in the no. of forks per disintegration. It is desired to learn whether the situation is worldwide or local (Kazan, U. S. S. R.). G. M. P.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

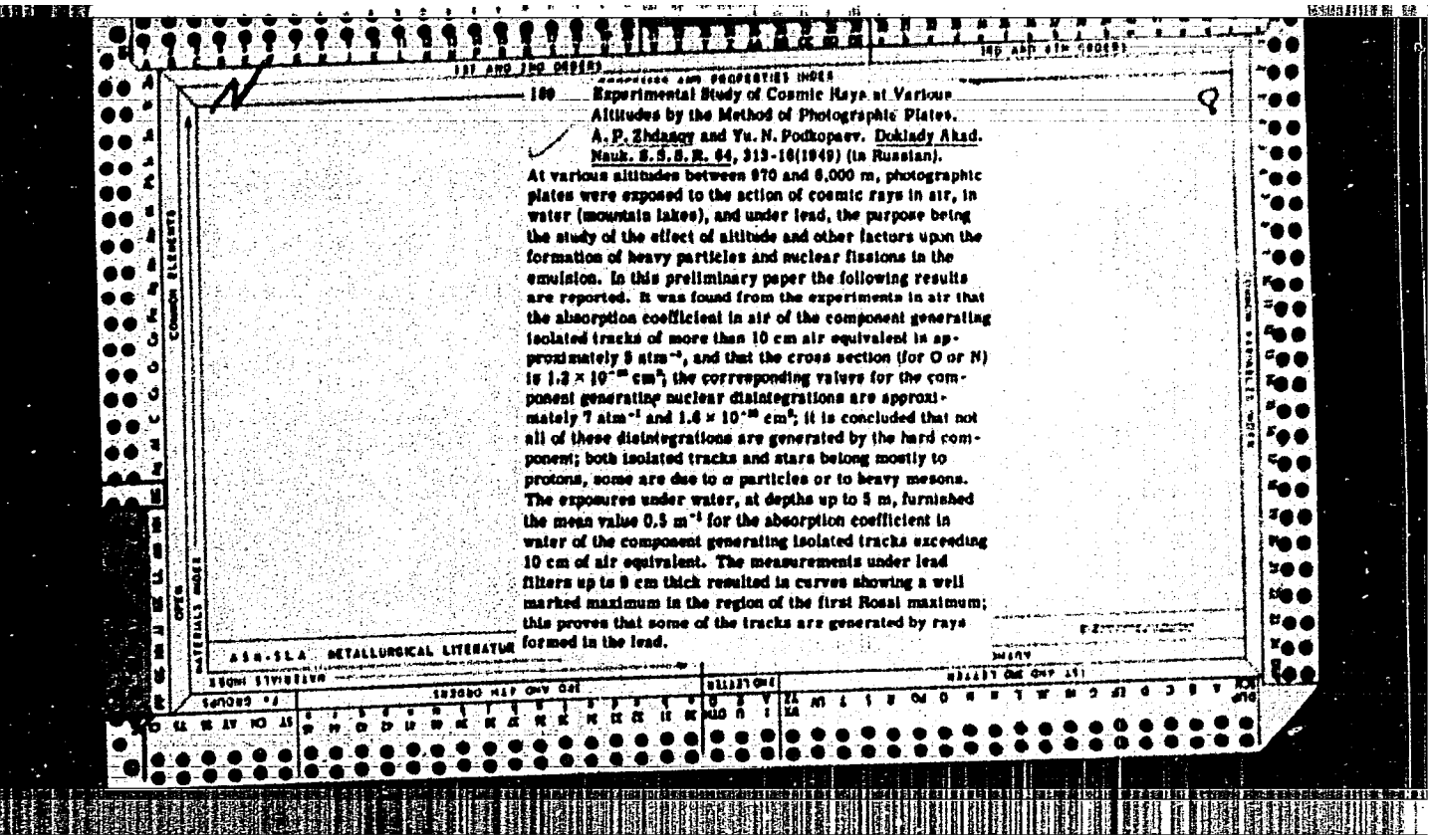


ZHDANOV, A.

3

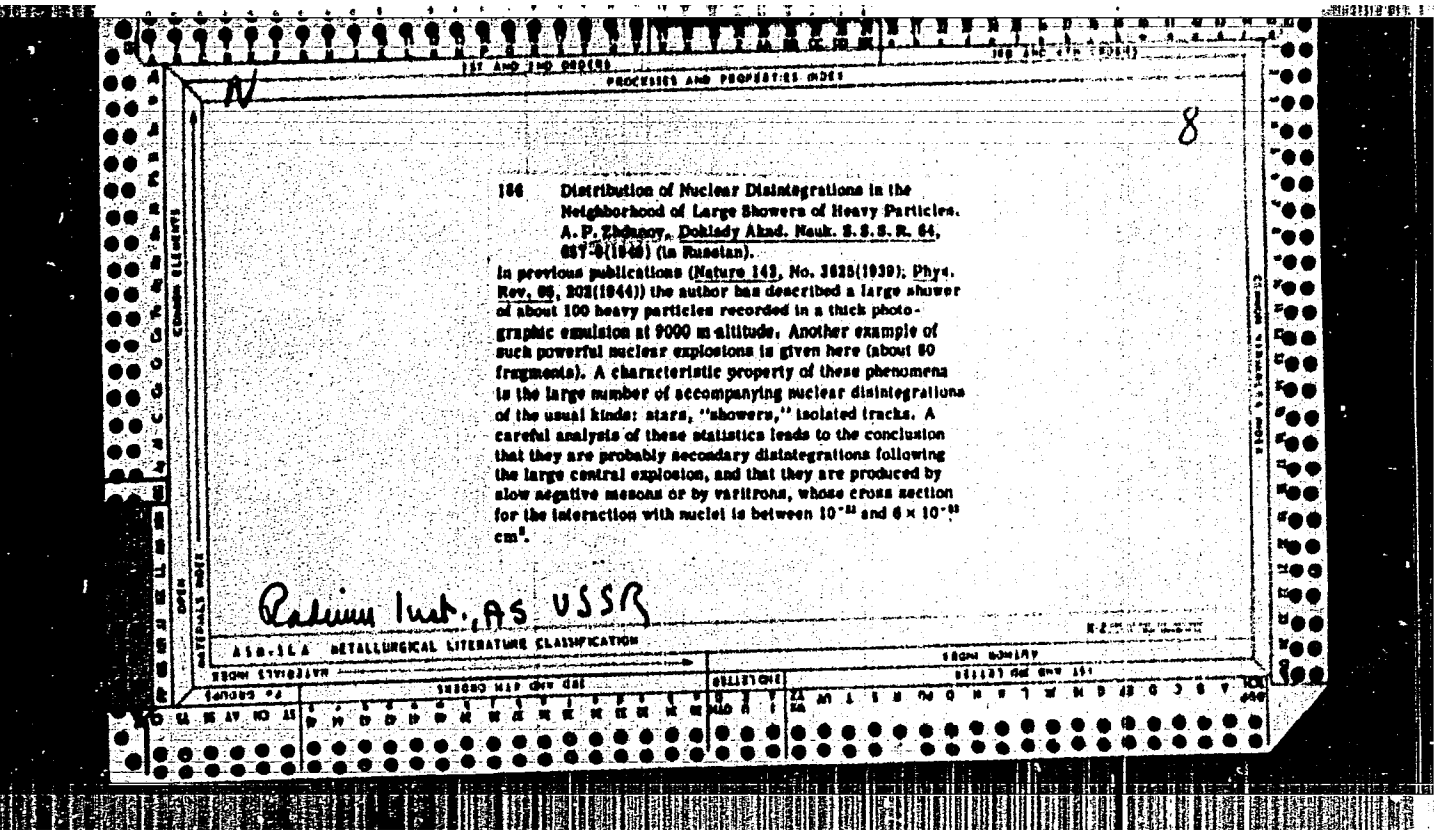
Anomalous disintegration of silver and bromine nuclei by cosmic rays. A. Zhdanov. *Compt. rend. acad. sci., U.R.S.S.* 46, 350-61; *Doklady Akad. Nauk S.S.S.R.* 46, 350-8(1945).—Photographs, descriptions, and calcns. are given of 2 showers consisting of 35 and 50 tracks formed in a thick-layer photographic plate by cosmic rays at sea level. The showers are attributed to the disintegration of Br and Ag nuclei, resp. The existence of the showers indicates the presence of heavy particles with mass $m \geq 1$ and energy $\geq 10^9$ m.e.v. in cosmic radiation at sea level. G. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



160 Experimental Study of Cosmic Rays at Various Altitudes by the Method of Photographic Plates. A. P. Zhdanov and Yu. N. Podkopaev. Doklady Akad. Nauk. S.S.S.R. 64, 313-16(1949) (in Russian).

At various altitudes between 970 and 6,000 m, photographic plates were exposed to the action of cosmic rays in air, in water (mountain lakes), and under lead, the purpose being the study of the effect of altitude and other factors upon the formation of heavy particles and nuclear fissions in the emulsion. In this preliminary paper the following results are reported. It was found from the experiments in air that the absorption coefficient in air of the component generating isolated tracks of more than 10 cm air equivalent is approximately 5 atm^{-1}, and that the cross section (for O or N) is 1.2×10^{-25} cm^2; the corresponding values for the component generating nuclear disintegrations are approximately 7 atm^{-1} and 1.6×10^{-25} cm^2; it is concluded that not all of these disintegrations are generated by the hard component; both isolated tracks and stars belong mostly to protons, some are due to α particles or to heavy mesons. The exposures under water, at depths up to 5 m, furnished the mean value 0.5 m^{-1} for the absorption coefficient in water of the component generating isolated tracks exceeding 10 cm of air equivalent. The measurements under lead filters up to 9 cm thick resulted in curves showing a well marked maximum in the region of the first Rossi maximum; this proves that some of the tracks are generated by rays formed in the lead.



186 Distribution of Nuclear Disintegrations in the Neighborhood of Large Showers of Heavy Particles. A. P. Zhdanov. Doklady Akad. Nauk. S.S.S.R. 64, 657-9(1948) (In Russian).

In previous publications (Nature 143, No. 3625(1939); Phys. Rev. 66, 203(1944)) the author has described a large shower of about 100 heavy particles recorded in a thick photographic emulsion at 9000 m altitude. Another example of such powerful nuclear explosions is given here (about 80 fragments). A characteristic property of these phenomena is the large number of accompanying nuclear disintegrations of the usual kinds: stars, "showers," isolated tracks. A careful analysis of these statistics leads to the conclusion that they are probably secondary disintegrations following the large central explosion, and that they are produced by slow negative mesons or by varitrons, whose cross section for the interaction with nuclei is between 10^{-24} and 6×10^{-25} cm^2.

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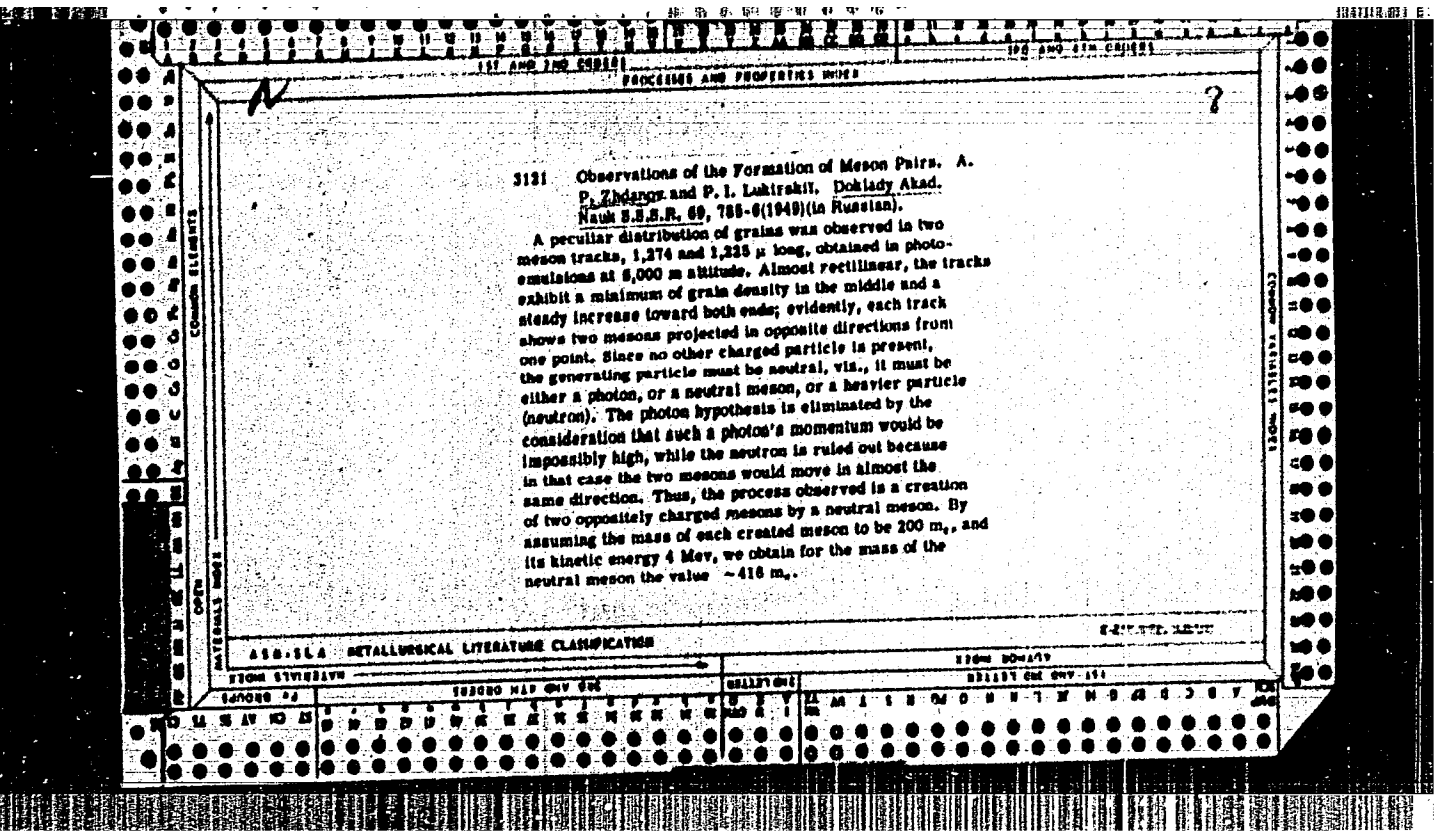
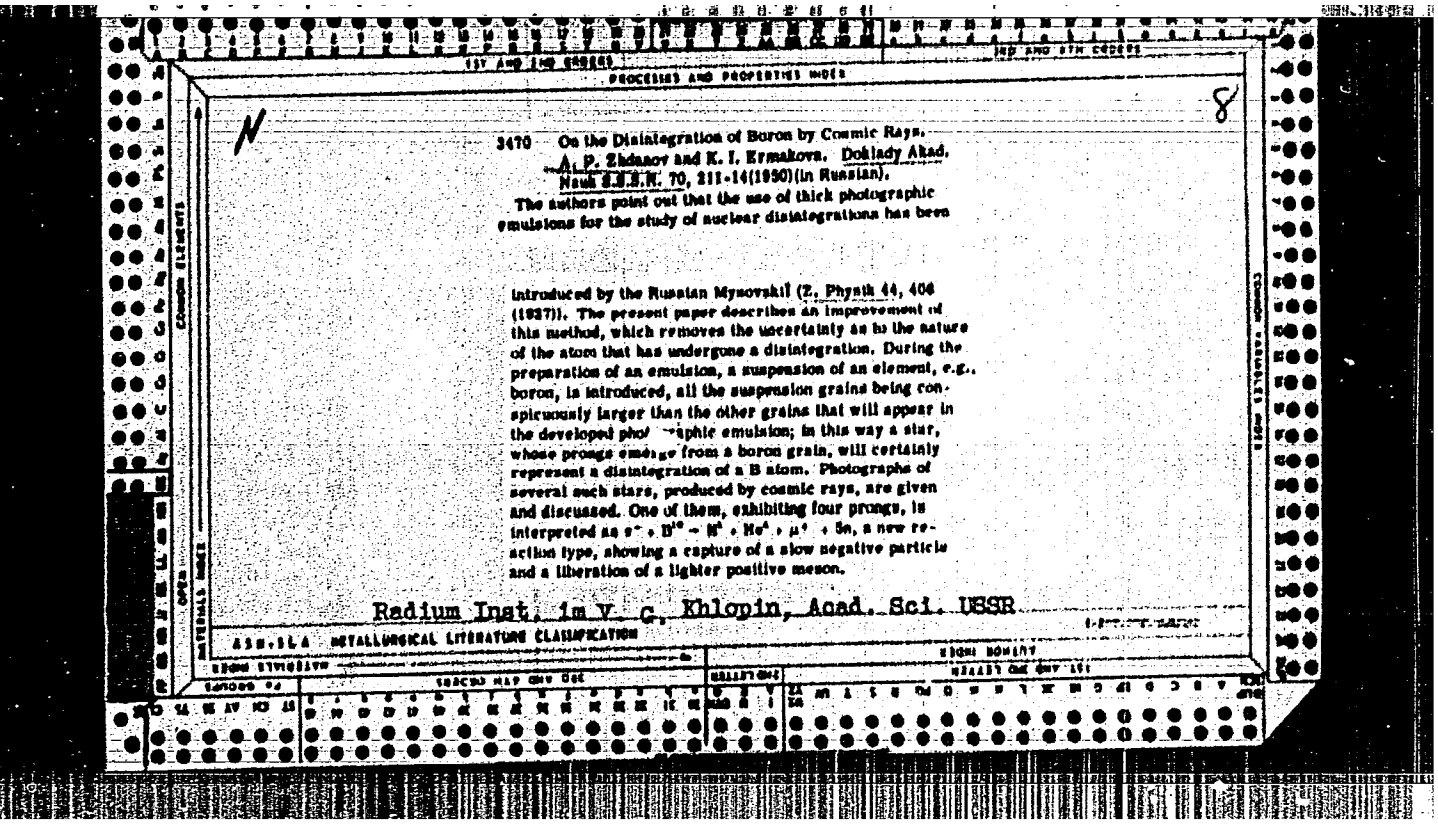


3131 Observations of the Formation of Meson Pairs. A. P. Zhdanov and P. I. Lukirskii. Doklady Akad. Nauk S.S.S.R. 69, 785-6(1949)(in Russian).

A peculiar distribution of grains was observed in two meson tracks, 1,274 and 1,235 μ long, obtained in photo-emulsions at 5,000 m altitude. Almost rectilinear, the tracks exhibit a minimum of grain density in the middle and a steady increase toward both ends; evidently, each track shows two mesons projected in opposite directions from one point. Since no other charged particle is present, the generating particle must be neutral, viz., it must be either a photon, or a neutral meson, or a heavier particle (*neutron*). The photon hypothesis is eliminated by the consideration that such a photon's momentum would be impossibly high, while the neutron is ruled out because in that case the two mesons would move in almost the same direction. Thus, the process observed is a creation of two oppositely charged mesons by a neutral meson. By assuming the mass of each created meson to be 200 m_e, and its kinetic energy 4 Mev, we obtain for the mass of the neutral meson the value ~416 m_e.



3470 On the Disintegration of Boron by Cosmic Rays.
A. P. Zhdanov and K. I. Ermakova. Doklady Akad. Nauk S.S.S.R. 70, 211-14(1950)(In Russian).
The authors point out that the use of thick photographic emulsions for the study of nuclear disintegrations has been introduced by the Russian Mysovskil (Z. Physik 44, 404 (1927)). The present paper describes an improvement of this method, which removes the uncertainty as to the nature of the atom that has undergone a disintegration. During the preparation of an emulsion, a suspension of an element, e.g., boron, is introduced, all the suspension grains being conspicuously larger than the other grains that will appear in the developed photographic emulsion; in this way a star, whose prongs emerge from a boron grain, will certainly represent a disintegration of a B atom. Photographs of several such stars, produced by cosmic rays, are given and discussed. One of them, exhibiting four prongs, is interpreted as $\pi^- + B^{10} \rightarrow Be^8 + He^4 + \mu^+ + 5n$, a new reaction type, showing a capture of a slow negative particle and a liberation of a lighter positive meson.

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KOROLEV, A.I.; BLINOV, S.T.; LUBENETS, I.A.; KOBURNEYEV, I.M.; TURUBINER, A.L.; VASIL'YEV, S.V.; CHERNENKO, M.A.; BELOV, I.V.; TELESOV, S.A.; MAZOV, V.P.; MEDVEDEV, V.A.; MAL'KOV, V.G.; BUL'SKIY, M.T.; TRUBETSKOV, K.M.; SHNEYEROV, Ya.A.; SLADKOSHTEYEV, V.T.; PALANT, V.I.; KUROCHKIN, B.N.; ZHDANOV, A.M.; BELIKOV, K.N.; SABIYEV, M.P.; GARBUZ, G.A.; PODGORETSKIY, A.A.; ALFEROV, K.S.; NOVOLODSKIY, P.I.; MOROZOV, A.N.; VASIL'YEV, A.N.; MARAKHOVSKIY, I.S.; MALAKH, A.V.; VERKHOVTSEV, N.V.; AGAPOV, V.F.; VECHER, N.A.; PASTUKHOV, A.I.; BORODULIN, A.I.; VAYNSHTEYN, O.Ya.; ZHIGULIN, V.I.; DIKSHTEYN, Ye.I.; KLIMASENKO, L.S.; KOTIN, A.S.; MOLOTKOV, N.A.; SIVERSKIY, M.V.; ZHIDETSKIY, D.P.; MIKHAYLETS, N.S.; SLEPKANEV, P.N.; ZAVODCHIKOV, N.G.; GUDEMCHUK, V.A.; NAZAROV, P.M.; SAVOS'KIN, M.Ye.; NIKOLAYEV, A.S.

Reports (brief annotations). Biul. TSNIICHM no.18/19:36-39 '57. (MIRA 11:4)

1. Magnitogorskiy metallurgicheskiy kombinat (for Korolev, Belikov, Agapov, Dikshteyn). 2. Kuznetskiy metallurgicheskiy kombinat (for Blinov, Vasil'yev, A.N., Borodulin, Klimasenko). 3. Chelyabinskiy metallurgicheskiy zavod (for Lubenets, Vaynshteyn). 4. Zavod im. Dzherzhinskogo (for Koburneyev). 5. Zavod "Zaporozhstal'" (for Turubiner, Mazov, Podgoretskiy, Marakhovskiy, Savos'kin). 6. Makeyevskiy metallurgicheskiy zavod (for Vasil'yev, S.V., Mal'kov, Zhidetskiy, Al'ferov). 7. Stal'proyekt (for Chernenko, Zhdanov, Zavodchikov). 8. VNIIT (for Belov). 9. Stalinskiy metallurgicheskiy zavod (for Telesov, Malakh).

(Continued on next card)

KUROCHKIN, A.I.---(continued) Card 2.

10. Nizhne-Tagil'skiy metallurgicheskiy kombinat (for Medvedev, Novolodskiy, Vecher). 11. Zavod "Azovstal'" (for Bul'skiy, Slepkanev). 12. TSentral'nyy nauchno-issledovatel'skiy institit chernoy metallurgii (for Trubetskov). 13. Ukrainskiy institut metallov (for Shneyerov, Sladkoshteyev, Kotin). 14. Zavod "Krasnyy Oktyabr'" (for Palant). 15. Vsesoyuznyy nauchno-issledovatel'skiy institut metallurgicheskoy teplotekhniki (for Kurochkin). 16. Zavod im. Voroshilova (for Sabiyev). 17. Chelyabinskiy politekhnicheskiy institut (for Morozov). 18. Giprostal' (for Garbuz). 19. Ural'skiy institut chernykh metallov (for Pastukhov). 20. Zavod im. Petrovskogo (for Zhigulin). 21. Ministerstvo chernoy metallurgii USSR (for Molotkov, Siverskiy). 22. Glavspetsstal' Ministerstva chernoy metallurgii SSSR (for Nikolayev).

(Open-hearth process)

L 4213-66 EWT(m) DIAAP
ACCESSION NR: AP5023979

UR/0077/66/010/005/0330/0343
539.1.073.7

AUTHOR: Zhdanov, A.P.; Skirda, N.V.

TITLE: Stopping power of nuclear track emulsions produced in the USSR

SOURCE: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, v.10, no.5, 1965, 330 - 343

TOPIC TAGS: emulsion, nuclear track emulsion, photoemulsion, nuclear research emulsion, nuclear track emulsion uniformity, emulsion stopping power, simple emulsion evaluation method, emulsion composition variance, nuclear particle range straggling, nuclear track emulsion bibliography

ABSTRACT: This is a study of braking power or stopping power of nuclear track emulsions. It is concerned with the uniformity of emulsion stopping power, batch-to-batch, individually, and locally, and motivated by the present use of emulsions as measuring devices for particle energies. The elementary emulsion stopping power is the ratio, dE/dR, of particle energy loss, dE, over an element of range, dR, to the element of track of range dR, in the emulsion. The total range, R, is

$$R = \int_E^0 (dE/dR)^{-1} dE. \qquad (1)$$

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L 4213-66

ACCESSION NR: AP5023979

The ionization theory of heavy particle braking process within the emulsion leads to the stopping power equation:

$$-dE/dR = 2\pi mz^2e^4(\ln(2m\beta^2c^2E'_m/I^2(Z)(1-\beta^2) - U(\beta) - \delta(\beta))/m\beta^2c^2, \quad (2)$$

This shows that, at given magnitudes of particle "β" and charge (ze), the stopping power depends only upon the chemical composition of the emulsion, which also determines $I(Z)$, - the average ionization potential of the braking environment, the electron volume density ($n = NZ$), and E'_m, the maximum energy transferable from the particle to an encountered electron. $U(\beta)$ and (δ) are (small) corrections for the polarization effect (the last expression) and exchange energy. Therefore, conclusions about stopping power uniformity can be made from an evaluation of chemical composition variations, in addition to the experimental evaluation of track range statistics, or independently The report uses two variants of the first method. It is found that proportion coefficients of compounds forming the standardized NIKFI-BR emulsion have a standard deviation comparable with that of the extensively studied Ilford G-5 emulsion. A simple and adequate method of stopping power evaluation is proposed, requiring determination of only three quantities the silver halides content, emulsion density, and emulsion relative humidity. It

Card 2/3

L 4213-66

ACCESSION NR: AP5023979

is found that several other nuclear emulsions produced in the USSR in 1961, 1962 and in 1963 (designations: NIKFI - P; -BM; BK; Ya-2; T-2; T-3; D; P-9_o; P-9_{ch}; PR; PR-2) - have insufficient stopping power uniformity, requiring often batch and individual emulsion calibrations. In this connection, a method for a fast determination of particle range vs energy for emulsion calibration is proposed, based upon the interpolation formula

$$E = kR^a. \qquad (3)$$

It is shown that the determination of two values for each constant, two pairs - (k_1,a_1 and (k_2,a_2), are sufficient for approximating the R - E curve over a range of 7 - 900 Mev. The first pair of constants (k_1,a_1) can be obtained from range measurments of 1) monoenergetic neutrons of the $t(d,n)He^4_2$ nuclear reaction, E_n=14.1 Mev and 2) μ^- mesons due to the decay of π^+ mesons with E = 4.12 Mev. =.27. The second pair determination requires irradiations by an accelerator. Original article has 9 formulas and 6 tables. [18]

ASSOCIATION: Radiyevyy institut im. V.G. Khlopina pri GKAE, Leningrad (Radium Institute, GKAE)

SUBMITTED: 25Jun64 ENCL: 00 SUB CODE: NP

NO REF SOV: 021 OTHER: 009 ATD PRESS: 4121

Card 3/3

USSR/Nuclear Physics - Mesons, Beryllium 11 Oct 51

"Concerning the Fission of Beryllium by Mesons," A. P.
Zhdanov, Acad P. I. Lukirskiy, Z. S. Sokolova, Radium
Inst imeni V. G. Khlopin, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXX, No 5, pp 729, 730

Dicusses certain cases of the fission of beryllium
which has been reduced to the form of a suspension.
Previous discussions have been on certain fissions
of boron nuclei under the action of cosmic rays
(Zhdanov and K. I. Yermakova," Dok Ak Nauk SSSR," Vol
LXX, 211, 1950), in the unusual case where the boron
is introduced into a thick-layered emulsion in the

221T80

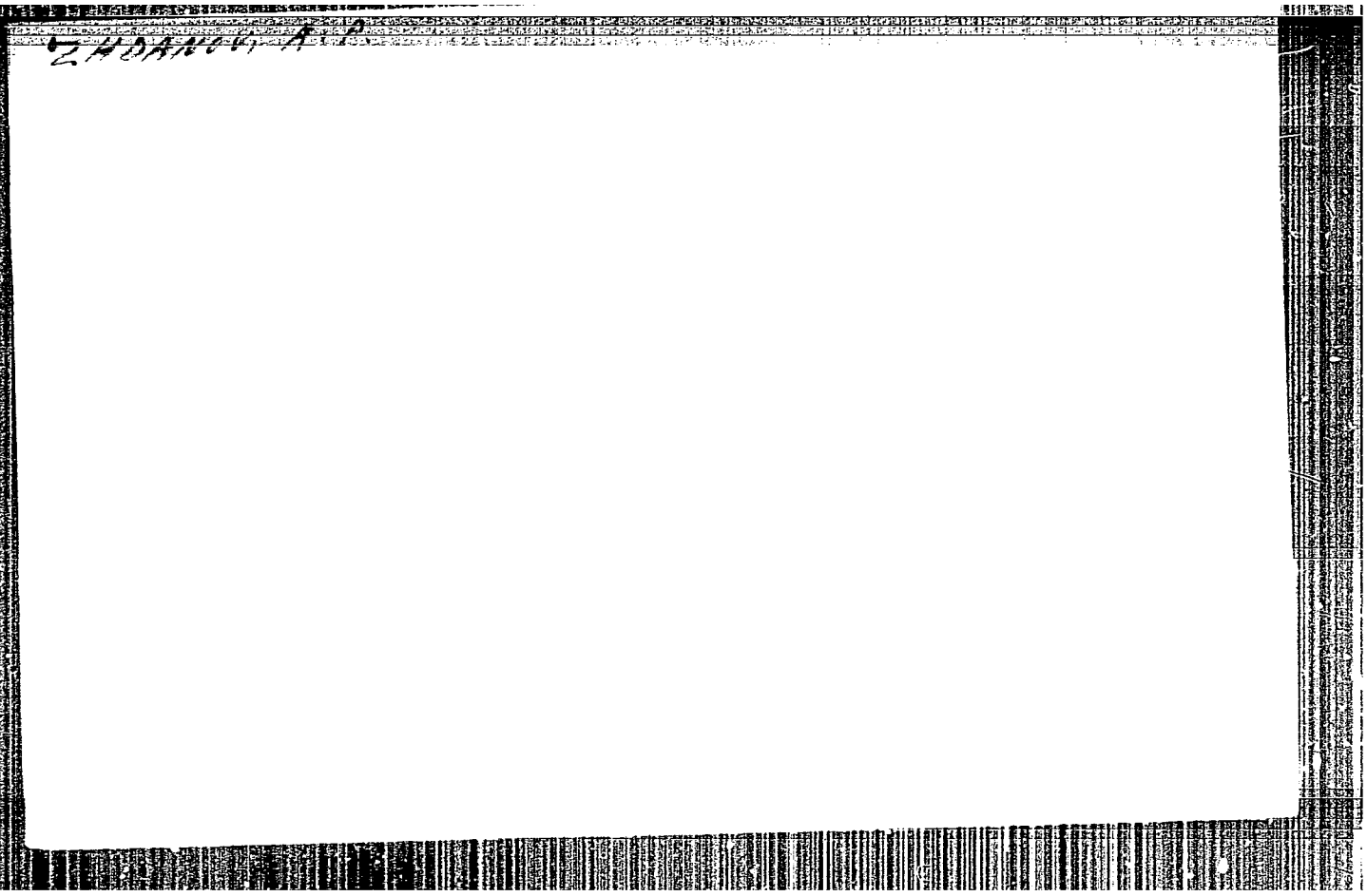
form of a granular suspension. The suspension method
proved successful also in the case of beryllium in
establishing without doubt the nature of beryllium
fission. Gives photographs of 3 examples where beryl-
lium suffered fission under the action of mesons,
showing the outward flight of just one strongly ioniz-
ing particle. Gives the reaction eqs showing fission
products Li^6_3 and n^1_0 and energy (140 mev). Cf. Aamodt,
Hadley and Panofsky, Phys Rev, 80, 282, 1950. Sub-
mitted 18 Jun 51.

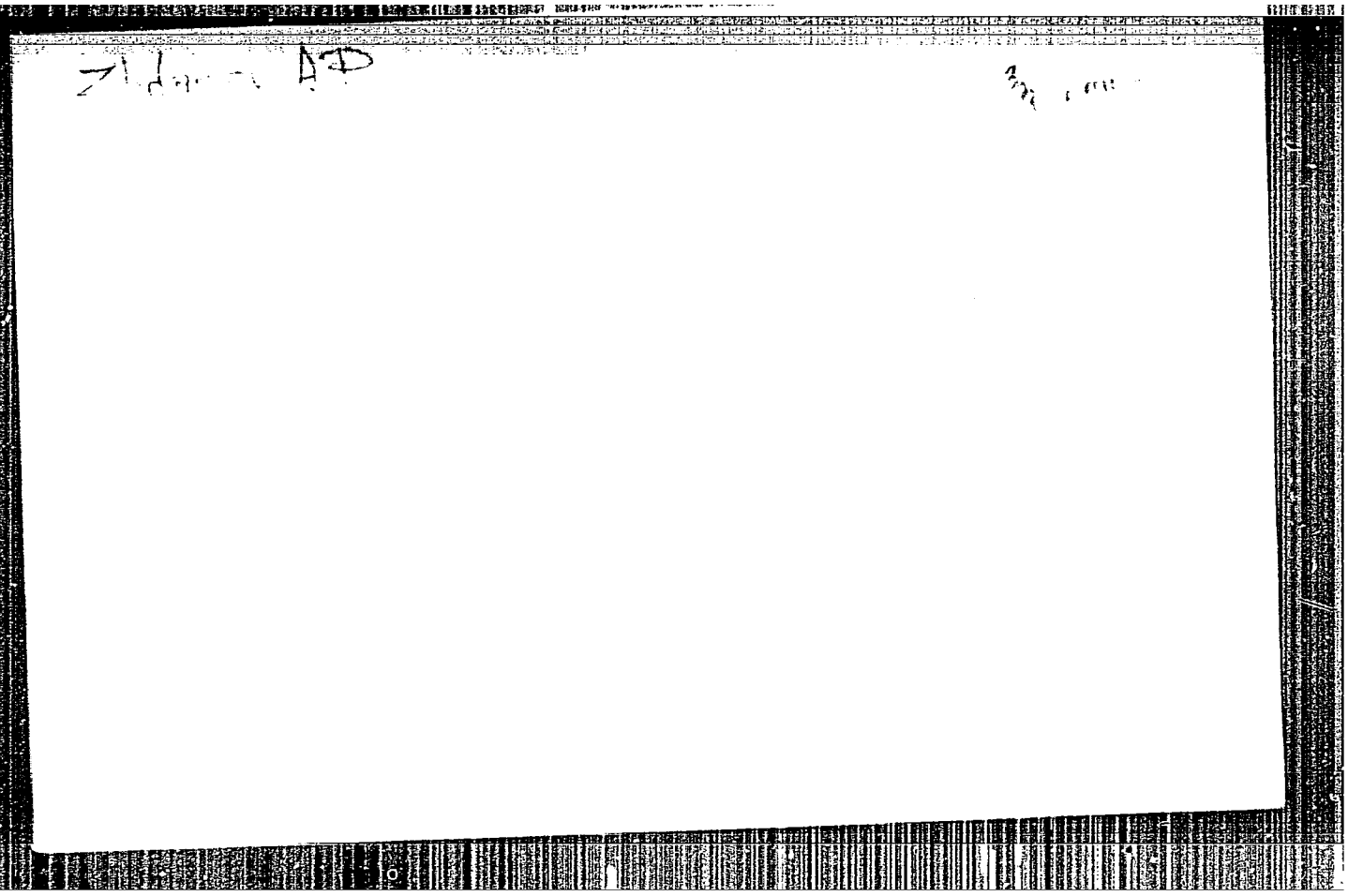
221T80

ZHDANOV, A. P.

IOFFE, A.F.; LEBEDEV, A.A.; FOK, V.A.; STARIK, I.Ye.; KONSTANTINOV, B.P.; DZHELEPOV, B.S.; PERFILOV, N.A.; DOBRETSOV, L.N.; STARODUBTSEV, A.V; NEMILOV, Yu.A.; ZHDANOV, A.P.; MURIN, A.N.; AGLINTSEV, K.K.; TSARE-VA, T.V.; SHUL'MAN, A.N.; YEREMEYEV, M.A.

P.I.Lukirskii; obituary. Vest.AN SSSR 24 no.12:62 D '54.(MIRA 8:1)
(Lukirskii, Petr Ivanovich, 1894-1954)





ZHDANOV, A.P.

USSR/Physics - Cosmic particles

Card 1/1 : Pub. 22 - 13/60

Authors : Zhdanov, A. P., and Fedotov, P. I.

Title : The transient effect and the angular distribution of singular cosmic particles

Periodical : Dok. AN SSSR 100/4, 659-660, Feb 1, 1955

Abstract : Experiments with the so-called "transient effect" of components generating stars and heavy particles are described and analyzed. The free path and the absorption cross-section of this component in lead was [illegible] Tables; graphs.

Institution : Acad. of Sci., USSR, The V. G. Khlopin Radiation Institute

Presented by : Academician P. I. Lukirskiy, October 9, 1954

ZHDANOV, A.P.

120-4-7/35

AUTHORS: Zhdanov, A.P. and Shur, L.I.

TITLE: A Determination of the Sensitivity of Photographic Emulsions to Charged Particles. (Opredeleniye chuvstvitel'nosti fotograficheskikh emul'siy k zaryazhennym chastitsam)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.4, pp. 29 - 31 (USSR)

ABSTRACT: The existing methods of estimation of the sensitivity of photographic emulsions to charged particles do not give an absolute characteristic of the sensitivity. A method is described whereby the sensitivity of a photo-emulsion is determined in terms of the energy loss which is necessary for a development of a grain, expressed in electron volts or ergs, or, for simplicity, in terms of the number of silver atoms. Using this method, emulsions having different sensitivity are compared. A quantitative approach to the problem of activation also becomes possible. Zhdanov's formula (Refs. 5 and 6) for the number of developed grains is used. This is of the form:

$$n = k\lambda M(\bar{d}_e/\bar{d})^2/\bar{d} \qquad (1)$$

where k is the coefficient depending on the density of AgBr,

Card 1/2

120-4-7/35

A Determination of the Sensitivity of Photographic Emulsions to Charged Particles.

M is the concentration of AgBr in the emulsion in g/cm^3, λ is the length of path of the particle in the emulsion, $\bar{d}$ is the mean diameter of an undeveloped grain, $\bar{d}_e$ is the effective diameter of a grain for the given particle. There are 3 tables and 11 references, 10 of which are Slavic.

ASSOCIATION: Khlopin Radiation Institute of the Ac.Sc. USSR (Radiyevyy institut im. V.G.Khlopina AN SSR)

SUBMITTED: February 27, 1957.

AVAILABLE: Library of Congress

Card 2/2

ZHDANOV, A.P.

120-4-8/35

AUTHORS: Zhdanov, A.P., Berkovich, I.B., Lepekhin, F.G., Skirda, N.V. and Khokhlova, Z.S.

TITLE: Measurement of Small Angles in Nuclear Photoemulsions (Izmereniye malykh uglov v yadernykh fotoemul'siyakh)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.4, p.32 (USSR).

ABSTRACT: The problem of accurate measurement of angles between the primary and secondary tracks is associated with nuclear interactions of high-energy particles with nucleons and nuclei in nuclear photoemulsions. These angles are of importance in the comparison of experimental data with theoretical predictions and in the study of multiple production of particles. The coordinate method allows such a measurement to be carried out with sufficient accuracy in different cases.
In general, when the beginning of the shower is outside the emulsion, the angular distribution can only be given relative to the axis of the shower which is taken to be coincident with the direction of motion of the primary particle. The angle θ between the i-th particle and the axis of the shower is in this case determined by the formula:

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Measurement of Small Angles in Nuclear Photoemulsions.

$$\operatorname{ctg}\theta_i = \frac{\bar{\ell}^2 + \ell_i^2 - (R_i - r_i)^2}{\sqrt{4\bar{\ell}^2\ell_i^2 - \left[\bar{\ell}^2 + \ell_i^2 - (R_i - r_i)^2\right]^2}},$$

where:

$$\bar{\ell}^2 = x^2 + (\bar{y}'' - \bar{y}')^2 + (\bar{z}'' - \bar{z}' + z_0)^2,$$

$$\ell_i^2 = x^2 + (y_i'' - y_i')^2 + (z_i'' - z_i' + z_0)^2,$$

$$R_i = \sqrt{(y_i'' - \bar{y}'')^2 + (z_i'' - \bar{z}'')^2},$$

$$r_i = \sqrt{(y_i' - \bar{y}')^2 + (z_i' - \bar{z}')^2},$$

$$\bar{y}' = \sum y_i'/n; \quad \bar{y}'' = \sum y_i''/n;$$

$$\bar{z}' = \sum z_i'/n; \quad \bar{z}'' = \sum z_i''/n \qquad (1)$$

Card2/4 In the special case where the beginning of the shower lies in

Measurement of Small Angles in Nuclear Photoemulsions.

the emulsion, formula (1) has the following form:

$$\operatorname{ctg}\theta_i = \frac{x^2 + \bar{y}y_i + (\bar{z} + z_o)(z_i + z_o)}{\sqrt{x^2\left[(y_i - \bar{y})^2 + (z_i - \bar{z})^2\right] + \left[\bar{y}(z_i + z_o) - y_i(\bar{z} + z_o)\right]^2}} \quad (2).$$

However, if the beginning of the shower does not lie in that layer of the emulsion in which y_i and z_i are measured, then it is necessary to take into account the difference in depth between the layers in measuring x and z_o. If the primary track is recorded, then Eq.(2) takes on a simpler form, since in that case, $\bar{y} = \bar{z} = 0$. The above method of calculation of the angles θ_i from the measured co-ordinates in the plane of the section perpendicular to the plane of the emulsion gives results with an accuracy not greater than 10%. For angles less than 1^o the magnitude of the error is greater

than 10%. If the disintegration is caused by a neutral particle, then the accuracy of the results depends on the angle of inclination of the jet to the plane of the emulsion and decreases as this angle increases. The described method may be of interest in the experimental investigation of multiple production of particles. Fig.1 legend: Calculation of θ_i. The track 00' lies in the plane XOZ. It can be any track lying near the middle of the shower. The plane XOY is parallel to the surface of emulsion. Measurements of the co-ordinates y'_i, y''_i, z''_i, z'_i are carried out in planes perpendicular to the axis OX relative to the track 00'; x- length of the projection of 00', z_o - height of one end of 00' above the other. The axis of the shower need not coincide with any of the tracks of the shower.
There is 1 figure.

ASSOCIATION: Khlopin Radiation Institute of the Ac.Sc. USSR.
(Radiyevyy institut im. V.G. Khlopina AN SSSR)

SUBMITTED: February 13, 1957.
AVAILABLE: Library of Congress
Card 4/4

ZHDANOV, A.P.

20-6-11/48

AUTHORS: Zhdanov, A.P., Berkovich, I.B., Yermakova, K.I., Lepekhin, F.C., Skirda, N.V., Khokhlova, Z. S.

TITLE: An Interaction of High Energy Particles with Nuclei (O vzaimodeystvii chastits vysokoy energii s yadrami)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 115, Nr 6, pp. 1093 - 1096 (USSR)

ABSTRACT: The present paper describes the provisional results of the analysis of seven rays with relatively great number of shower particles, which were produced in the interaction with emulsion nuclei. When inspecting one particle of the staple of Ilford G-5 emulsions (Il'ford G-5), which was irradiated for seven hours in a height of about 30 km, the authors chose that irradiation which was produced by neutral and charged particles. When analysing these cases rather reliable data were obtained only on the number of shower particles and on the angular distribution of which. The angles between the direction of motion of the primary partilce and the traces of the secondary particle were measured by the coordinate-method by the aid of the microscope MBI-8. The characteristics of these distributions are compared in a table. The authors graphically represented

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An Interaction of High Energy Particles with Nuclei

the dependence $(1/N)\int_0^\Theta N(\Theta)d\Theta$ on Θ. All rays were subdivided into three types. The rays of the first type, which are characterized by a narrow cone, have a symmetrical integral distribution. The rays with a considerably larger cone and a higher number of charged particles belong to the second type. A further diagram illustrates the angular distribution for such ray in which not even within the range of small angles a symmetry can be ascertained. Each theoretical investigation of the mechanism of producing elementary particles starts from the symmetrical flying off of the developed particles in the center-of-gravity system. This corresponds to a certain symmetry of the angular distribution in the laboratory system. This symmetry is actually observed in the element. The most essential statements of the theory of Fermi-Landau can be applied to these cases. There are 4 figures, 2 tables and 8 references, 3 of which are Slavic.

Card 2/3

ZHDANOV, A. P., KARTUYANSKIY, A. L., KUZ'MIN, V. N., RYZHKOVA, I. V., FEDOTOV, P. I., and SHUR, L. I., (Moscow, USSR)

"Preparation Des Emulsions Nucleaires et Mecanisme De Leur Sensibilisation Par La Triethanolamine."

paper presented at Program of the Second International Colloquium on Corpuscular Photography. Montreal, 21 Aug - 7 Sep 1958.

Encl: B-3,114,647.

SOV-120-58-1-8/43

AUTHORS: Zhdanov, A.P., Kolpakov, M.I., Kuz'min, V.N., Raguzin, R.M., Fedotov, P.I.

TITLE: An Instrument for Measuring the Gap Lengths in the Tracks for Particles in Photo-Emulsions (Pribor dlya izmereniya prosvetov v trekakh chastits v fotoemul'siyakh)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 1, pp 46-47 (USSR)

ABSTRACT: The instrument is in the form of an eye-piece in whose field of view one sees a scale, a pair of parallel lines and the usual crosswire. The cross wire is set parallel to the track and the gap defined by the two parallel wires is moved along the track. This motion is achieved by means of the two micrometers shown in Fig.2. The motion of the two micrometers is independent of each other. There are 2 diagrams, no tables and 3 references, one of which is English

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SOV-120-58-1-8/43

An Instrument for Measuring the Gap Lengths in the Tracks for Particles in Photo-Emulsions.

and 2 Soviet.

ASSOCIATION: Radiyevyy institut AN SSSR (Radium Institute of the Academy of Sciences, USSR)

SUBMITTED: June 22, 1957.

1. Particles--Photographic analysis 2. Particles--Penetration
3. Measurement 4. Optical instruments--Applications

Card 2/2

ZHDANOV, A.P.; KARTUZHANSKIY, A.L.; RYZHKOVA, I.V.; SHUR, L.I.

Effect of triethanolamine on photographic emulsions sensitive to particles of a minimal ionizing capacity. Zhur. nauch. i prikl. fot. i kin. 3 no.1:53-54 Ja-F '58. (MIRA 11:2)

1.Radiyevyy institut imeni V.G. Khlopina AN SSSR.
(Photographic emulsions)
(Ethanol)

ZHDANOV, A.P.; KARTUZHANSKIY, A.L.; SHUR, L.I.

Interpretation of experiments on increasing the sensitivity of nuclear photographic emulsions by means of triethanolamine. Zhur. nauch. i prikl. fot. i kin. 3 no.2:139-140 Mr-Ap '58. (MIRA 11:5)

1.Radiyevyy institut im. V.G. Khlopina AN SSSR.
(Photographic emulsions)

Sov 77-3-4-9/23

AUTHORS: Zhdanov, A.P.; Kartuzhanskiy, A.L.; Ryzhkova, I.V.; Shur, L.I.

TITLE: The Mechanism of the Sensitizing Action of Triethanolamine on Photographic Emulsions (O mekhanizme sensibiliziruyushchego deystviya trietanolamina na fotograficheskiye emul'sii)

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1958, Vol 3, Nr 4, pp 281-282 (USSR)

ABSTRACT: The author carried out experiments to determine the nature of the sensitizing effect of triethanolamine on photographic emulsions. He found that it was effective only up to the time of exposure and is therefore not connected with the development process. Triethanolamine has only a very insignificant, if any, function as an acceptor of haloid atoms during exposure. The experiments contradicted the assumption of the silver nature of the centers of sensitivity but bears out Mitchell and Mott's hypothesis as to their nature. The triethanolamine's alkalinity is essential to its action. In a reaction of AgHal with it or with an alkali, AgOH is formed but the further reaction - $AgOH \rightarrow Ag_2O \rightarrow Ag$ - takes place without their participation. The author finally concludes that the end result of the action of triethanolamine on the emulsion crystals is the formation of subcenters of development sited

Card 1/2

The Mechanism of the Sensitizing Action of Triethanolamine on Photographic Emulsions

primarily on the centers of sensitivity. There are 9 references, 6 of which are Soviet, 2 English and 1 American.

ASSOCIATION: Radiyevyy institut im. V.G. Khlopina Akademii nauk SSSR (The Radium Institute imeni V.G. Khlopin, Academy of Sciences, USSR)

SUBMITTED: March 1, 1958

1. Triethanolamine--Photochemical reactions 2. Photographic emulsions --Materials 3. Photographic emulsions--Sensitivity

AUTHORS: Zhdanov, A. P., Kuz'min, V. N. 57-28-5-34/36

TITLE: Preparation of Suspensions With Spherical Particles (Polucheniye suspenziy s chastitsami sharovoy formy)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 5, pp. 1118-1120 (USSR)

ABSTRACT: In order to obtain a solution with spherical particles, the authors employed the electric spark method. The discharge took place between two electrodes of pure beryllium in ethyl alcohol (96% alcohol). From experimental data (Reference 6) it is known, that: 1) At a single discharge a spherical cavity is produced in both electrodes. 2) The removal of metal from both electrodes is proportional to the energy stored in the condenser. 3) The removal of metal from the anode and the cathode becomes comparable at a certain voltage and capacity. For this reason it is to be hoped to obtain particles of a certain size. The authors investigated the distribution of the beryllium particles according to their size (at various capacities of the condenser and at various volta-

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ges) and their shape. The following experimental data were ascertained: 1) At each single discharge a spherical cavity was formed in each electrode. 2) The majority of particles had a spherical shape (80%). 3) A number of particles formed at each discharge ($n \gg 1$). A series of experiments was conducted in parallel with identical C and U. All experiments yielded the same distribution of the particles as to their size. Supplementary experiments with other dielectrics (vaseline oil, transformer oil) show, that in a more viscous medium the proportion of spherical particles increases. The experiments conducted permit to draw the following conclusions. 1) At a single discharge a great number of particles is formed. 2) The distribution with respect to size is apparently independent of the microstructure of the electrode surface, but is determined by the electric parameters. 3) The viscosity of the medium influences the shape of the produced particles. The great proportion of spherical particles apparently indicates a concentrated heat emission, which leads to a melting of the metal and to its spottering. It was not the object of this

Preparation of Suspensions With Spherical Particles 57-28-5-34/36

paper, to investigate this process in detail. The experiments show, however, that such an investigation will permit to clear the mechanism of such a discharge.
There are 2 figures and 6 references, 3 of which are Soviet.

ASSOCIATION: Radiyevyy institut AN SSSR im. V. G. Khlopina
(Radium Institute AS USSR imeni V. G. Khlopin)

SUBMITTED: May 6, 1957

1. Metals--Processing 2. Particles--Excitation 3. Spheres --Properties

Card 3/3

AUTHORS: Zhdanov, A. P., Kartuzhanskiy, A. L., Ryzhkova, I. V., Shur, L. I. 20-118-4-33/61

TITLE: The Action of Triethanolamine on Photographic Emulsions (Deystviye trietanolamina na fotograficheskiye emul'sii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 4, pp. 744-746 (USSR)

ABSTRACT: The authors investigated the influence of triethanolamine on the photosensitivity of an emulsion on various illumination conditions and used the so obtained results for the explanation of the mechanism of the sensitizing effect of triethanolamine in analogy with the other types of sensitisation. Besides, the action of ionizing particles upon the same emulsions was investigated. The authors examined the behaviour of 7 different emulsions. The exposure was made by an impulse-like source (duration of the flash $1,2.10^{-6}$ sec) and by a low-voltage bulb (duration of exposure 5 to 45 seconds) through a neutral-grey stepped absorption wedge with the constant 0,17. The exposure with α- and β-rays was made by Po^{210} and by a

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β-radioactive sensitometer. Besides, an exposure with recoil-protons of a Ra-Be - neutron source was made. The development was performed under the usual conditions and the densities were measured by the photoelectric microphotometer MF - 2. A diagram illustrates the dependence of the sensitivity on the concentration of the triethanolamine for all the investigated emulsions. All emulsions become more sensitive the lower the photosensitivity of the original emulsion is; in the case of a few emulsions with low sensitivity this increase amounts to 1,5 orders of magnitude. The action of the triethanolamine always is somewhat stronger for the initial domain (i.e. for the bigger emulsion crystals). The optimum concentration for the sensitivity increase is 1-2 %. A further increase of the concentration does not increase the sensitivity, but the blurring. A bathing in triethanolamine does not give any increase of the sensitivity and therefore the action of triethanolamine is not connected with the process of development. The dependence of the sensitivity of one of these nuclear emulsions on the concentration of triethanolamine for the various sorts of radiation is illustrated in

The Action of Triethanolamine on Photographic Emulsions 20-118-4-33/61

a diagram. The increase of the sensitivity is in case of long-lasting exposure always greater than in case of a short light impulse. The action of triethanolamine is restricted to the formation of highly effective centers for the fixing of the conduction electrons which form in the emulsion crystals under the action of radiation. 4 more rules governing this action are given.
There are 2 figures, and 5 references, 4 of which are Soviet.

PRESENTED: July 13, 1957, by A. P. Vinogradov, Member, Academy of Sciences USSR

SUBMITTED: July 11, 1957

AVAILABLE: Library of Congress

Card 3/3

5(4), 23(5) SOV/20-123-5-29/50

AUTHORS: Zhdanov, A. P., Kartuzhanskiy, A. L., Ryzhkova, I. V., Shur, L.I.

TITLE: The Conservability of a Latent Image and of Sensitivity in Nuclear Photoemulsions Sensitized by Triethanolamine (Sokhranyayemost' skrytogo izobrazheniya i chuvstvitel'nosti v yadernykh fotoemul'siyakh, sensibilizirovannykh trietanolaminom)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 874-877 (USSR)

ABSTRACT: The treatment of nuclear photoemulsions with triethanolamine increases their sensitivity for any kind of particles (also for relativistic particles). Subcenters are formed in the reactions of triethylamine with AgHal in the emulsion crystals on the sensitivity centers. The conversion of these subcenters into centers of development proceeds with a markedly higher efficiency than the formation of such centers in the absence of subcenters. The present paper gives the corresponding experimental results together with the results of experiments which were carried out in order to explain

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