DOBROSMYSLOV, P.A.

ANTSIFEROVA, T.A.; DOBROSMYSLOV, P.A.

A school agricultural exhibition. Biol. v shkole no.6:72 N-D '57.
(MIRA 10:12)

1. Chernozerskaya srednyaya shkola Golitsinskogo rayona Penzenskoy oblasti.

(Golitsino District--Agriculture--Study and teaching)

DOBROSMYSLOV, V. I. (Engineer)

"High Speed Printing Device for Computing Machine" a paper presented at the Confernce on Methods of Development of Soviet Mathematical Machine-Building and Instrument-Building, 12-17 March 1956.

Translation No. 596, 8 Oct 56

DOBROSMYSLOV, V.I.

RYAZANKIN, Vladimir Nikolayevich; YEVSTIGNEYEV, German Pavlovich; TRESBYATSKIY, Nikolay Nikolayevich [deceased]; DOBROGURSKIY, S.O., professor, doktor tekhnicheskikh nauk, redaktor; DOSTUPOV, B.G., kandidat tekhnicheskikh nauk, retsenzent; DOBROSMYSLOV, V.I. inzhener, retsenzent; POLYAKOV, G.F., redaktor izdatel'stva; SOKOLOVA, T.F., tekhnicheskiy redaktor

[Calculating machines] Vychislitel'nye mashiny. Pod red. S.O. Dobrogurskogo. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, Pt. 1. [Calculating machines with keys] Vychislitel'nye klavishnye mashiny. 1957. 251 p. (MLRA 10:5)
(Calculating machines)

D. BROMYSLOV, V. I.

DOBROMYSLOV, V. I., Cand Tech Sci -- "~~Some questions~~ Certain problems of the computation methods and ~~investigation methods in~~ studies of the output ~~working principles~~ parts of ~~calculating~~ computer machines." Mos, [TsBTI TsNIIKA], 1958. 10 pp. (Min Higher Ed USSR, Mos Order of Lenin and Order of Labor Red Banner Higher Tech[illegible] School im Bauman), 125 copies. (KL, 9-58, 117)

DOBROSMYSLOV, V.I.

The PR80-2 reproducing puncher. Biul.tekh.-ekon.inform. no.10: 37-38 '58. (MIRA 11:12)
(Punched cards systems)

DOBROSMYSLOV, V. I. and SYPCHUK, P. P.

"Algorithms and Machine Logic for Solving Problems connected with the Economical Analysis of the Activity of Manufacturing Plants.

report to be submitted for the Intl. Confeswence on Information Processing, Paris, 13-23 June, 1959.

DOBROSMYSLOV, V.I.

Questions concerning the increase of the speed of printing devices. Vop. rasch. i konstr. elektron. vych. mash. no.1:97-109 '60. (MIRA 14:1)
(Electronic calculating machines—Input-output equipment)

Dobrosmyslov.

DOBROMYSLOV, V. I. Cand Tech Sci -- "Study and methods of designing a printing [redacted] device." Mos, 1961 (Min of Higher and Secondary Specialized Education RSFSR. Mos Order of Lenin and Order of Labor Red Banner Higher Tech School im N. E. Bauman). (KL, 4-61, 196)

KHOMENKO, P.G., prof.; DOBROSMYSLOV, V.I., retsenzent; BARANOVA, Z.G., red. izd-va; UVAROVA, A.F., tekhn. red.

[Multiplication on calculating machines] Umnozhenie na schetnykh mashinakh. Moskva, Mashgiz, 1962. 43 p. (MIRA 15:4)
(Multiplications) (Calculating machines)

DOBROSSY, Lajos, dr.

Breast cancer statistics of a pathological research institute. Magy onkol. 8 no.2:71-72 Je'64.

1. Onkopathologiai Kutato Intezet.

NEMETH, L.; DOBROSSY, L.; GAL, F.; NEMETH, L., Jr.

Effect of vinblastine-sulphate (VR-8) on Vx-2 rabbit carcinoma. Neoplasma (Bratisl.) 12 no.4:357-363 '65.

1. Research Institute of Oncopathology, Budapest, Hungary.

POREJKO, Stanislaw; MAKARUK, Leszek; DOBROSZ, Krzysztof

Interphase polyaddition of carbon suboxide and benzidine.
Polimery tworz wielk 10 no.1:19-23 Ja '65.

1. Warsaw Technical University. Submitted February 27, 1964.

HEGYI, Kalman, okleveles mernok; DOBROSZLAV, Joszef, okleveles epiteszmernok, tervezo

Situation of the highway fuel stations in Hungary. Kozl tud sz 13 no.5:211-216 My '63.

1. Ut-, Vasuttervezo Vallalat osztalyvezetoje (for Hegyi).
2. Ut-, Vasuttervezo Vallalat (for Dobroszlav).

DOBROT, G.

USSR/Miscellaneous

Card 1/1

Author : Dobrot, G.

Title : The way of a Soviet woman

Periodical : Radio,3, 3 - 4, Mar, 1954

Abstract : A short biographical sketch is given of the scientific life of Antonina Alexandrovna Grigor'eva, a Soviet radio-engineer, Candidate in Technical Sciences and a laureate of the Lenin's order.

Institution : .....

Submitted : .....

DORNETZHUBER, V.; VAGAC, M.; DOBROTA, S.; BAJAN, A.; STOJANOVA, E.

Morphogenesis of the Kveim-Nickerson skin reaction in sarcoidosis. Bratisl. lek. listy 45 no.3:135-143 15 Ag '65.

1. Ustav tuberkulozy v Bratislave (riaditel MUDr. J. Markovic) Katedra ftizeologie Ustavu pre dalsie vzdelavanie lekarov a farmaceutov v Bratislave-Podunajskych Biskupiciach (veduci doc. MUDr. K. Virsik) a Krajska nemocnica tuberkulozy a chorob plucnych v Bratislave-Podunajskych Biskupiciach (riaditel doc. MUDr. K. Virsik), Oddelenie hrudnej chirurgie (veduci MUDr. S. Dobrota).

DOBROTA, S. DURATNY, K.; TEICHER, L.; DORNETZHUBER, Vl.; FINDOVA, V.

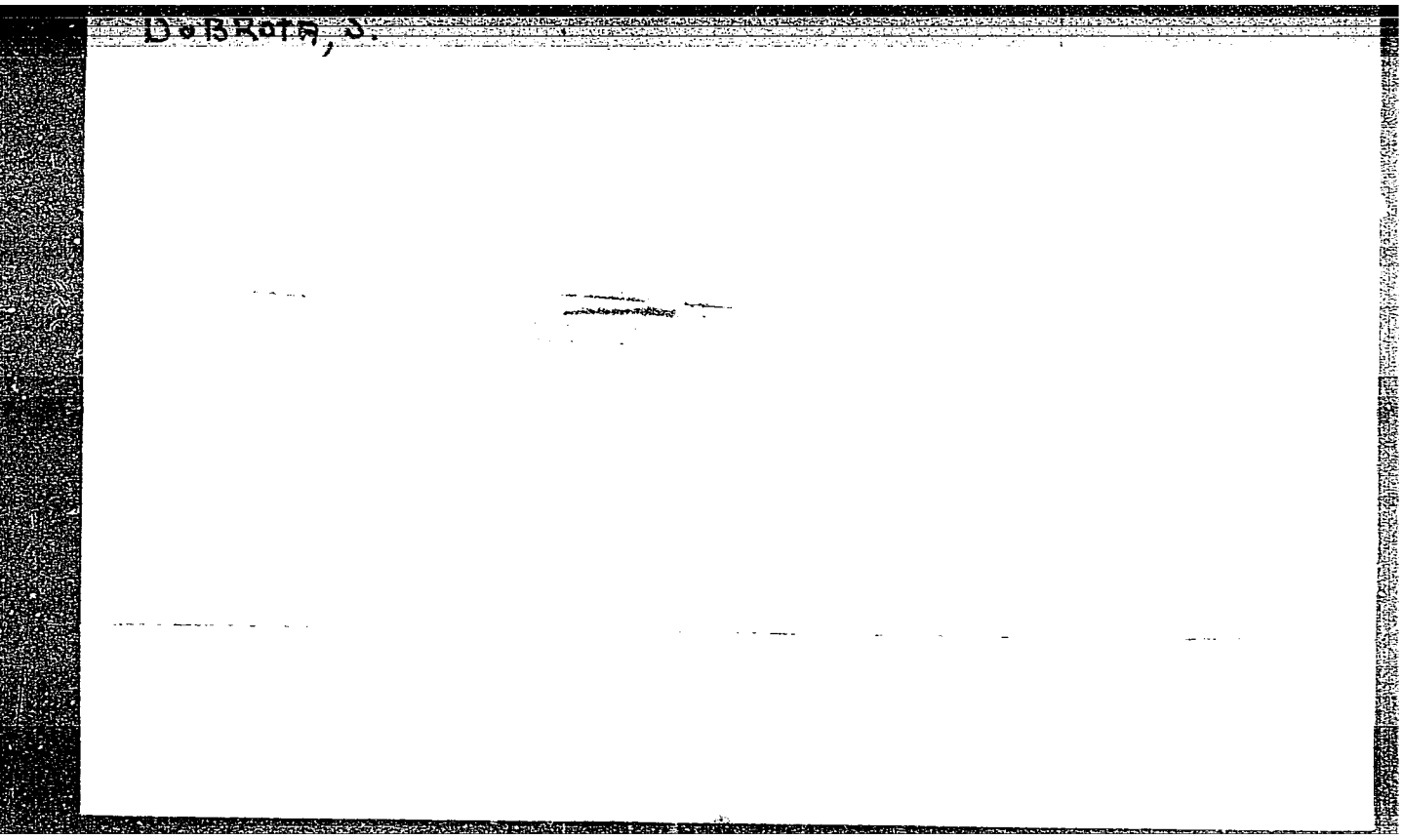
On surgical and some other problems of chemodectoma of the glomus caroticum. Bratisl. lek. listy 45 no.3:178-189 15 Ag '65.

1. Krajska nemocnica tuberkulozy a chorob plucnych v Bratislave-Podunajskych Biskupiciach (riaditel doc. MUDr. K. Virsik), Oddelenie hrudnej chirurgie (veduci MUDr. S. Dobrota) a Ustav tuberkulozy v Bratislave (riaditel MUDr. J. Markovic).

DOBROTA, S.; KOSTOLNY, I.

Experiences with bronchographic examinations. Bratisl. lek. listy 34 no.2:123-138 F '54.

1. Z II. chirurgickej kliniku LFSU v Bratislave, prednosta clen korespondent SAV k.Siska.
(BRONCHI, radiography,)



DOBROTA, S.; KUZELA, L.

Result of local therapy of pulmonary abscesses. Bratisl. lek. listy 35 no.10:611-618 1955.

1. Z II. chirurgickej kliniky LFUK v Bratislave, predn. clen koresp. SAV K. Siska.
(LUNGS, abscess, ther.)
(ABSCESS, lungs, ther.)

DOBROTA, S.; KRAJCOVIC, L.; PIVKOVA, A.; LICKO, T.

Experience with the diagnosis and therapy of mediastinal tumors. Bratisl. Lek. Listy 42 no.3:167-180 '62.

1. Z II. chirurgickej kliniky Lek. fak. Univ. Komenskeho v Bratislave, prednosta akad. K. Siska.
(MEDIASTINAL NEOPLASMS)

DOBROTA, S.; KAMENSKY, P.; LECHNEROVA, V.

Intrathoracic subpleural lipoma. Bratisl. lek. listy 43 Pt. 2 no.5:280-285 '63.

1. II chir. klinika Lek. fak. Univ. Komenskeho v Bratislave, prednosta akad. K. Siska, Mestska nemocnica s 2. poliklinikou, detske oddelenie v Bratislave, prednosta MUDr. P. Kamensky.
(THORACIC NEOPLASMS) (LIPOMA)
(PNEUMOPERITONEUM)

COUNTRY : Rumania H-28
CATEGORY :

ABS. JOUR. : RZKhim., No. 16 1959, No. 58976

AUTHOR : Dobrota, T.
INST. : Not given
TITLE : A New Process for the Drying and Roasting of Chicory in the Production of Coffee Substitutes

ORIG. PUB. : Rev Ind Aliment Prod Vegetale, No 7-8, 40-41 (1958)

ABSTRACT : The author recommends the combination of the drying and roasting of chicory (C) into one operation. The C is roasted after drying at 60-70° to a moisture content of 5-6%. The time required for a production cycle is reduced from 26-27 to 13-14 min. A diagram of the equipment for the drying and roasting of the C is given.

A. Marin

DOBROTA, Viktor, ing.

Regulating ventilation. Metalurgia constr mas 14 no.3:260-265 Mr '62.

DOBROTA, Victor, ing.

An installation produced by the Scientific Research Institute for Labor Protection (I.C.S.P.M.) for the dry collection of dust resulting from hole drilling. Rev min 13 no.4:160-167 Ap '62.

S/194/61/000/012/078/097
D273/D301

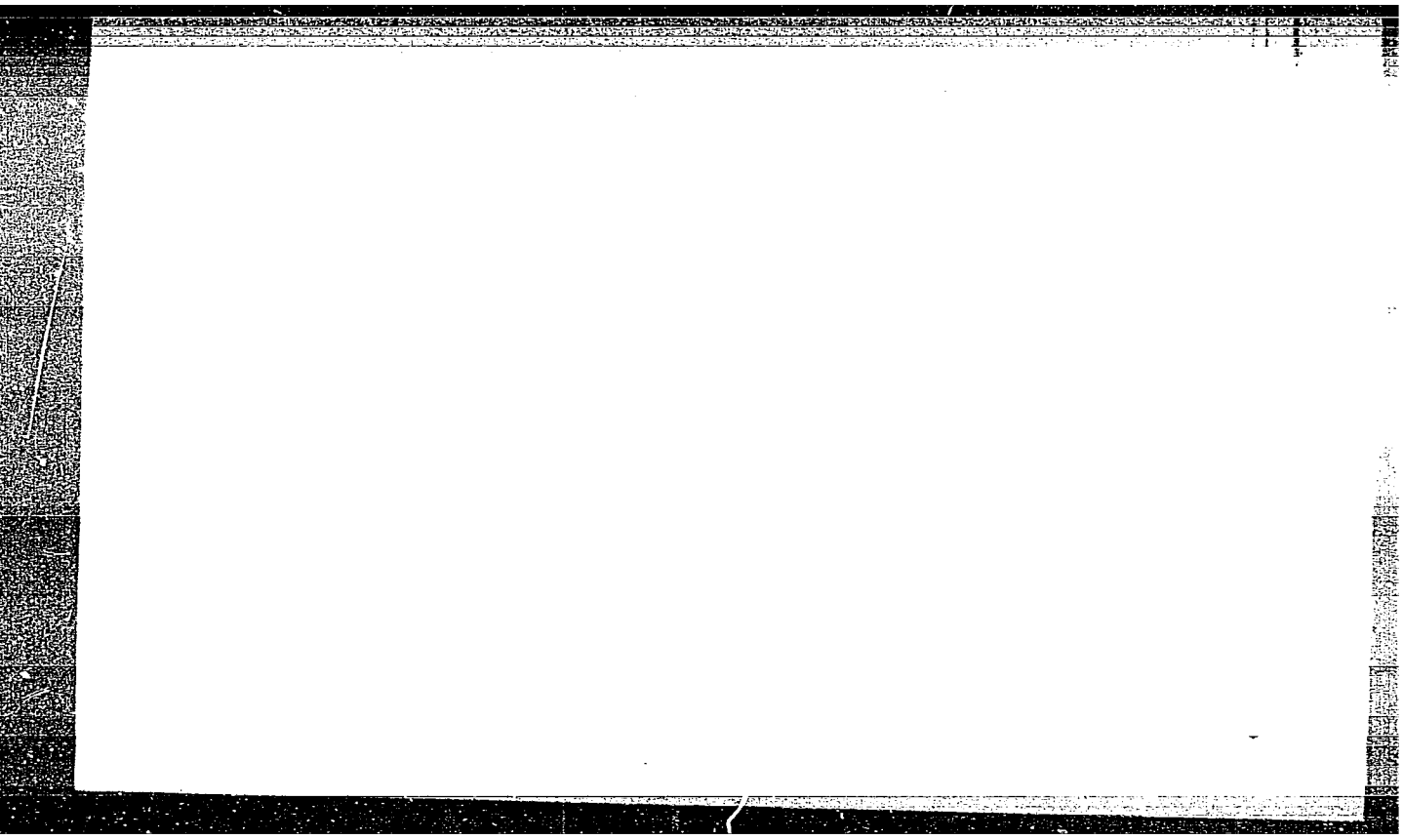
AUTHORS: Bogorodskiy, V. and Dobrotin, D.

TITLE: Ultrasonic pulse thickness gauge for component control

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 12, 1961, 22, abstract 12E119. ("Morsk. flot" 1961, no. 5, 29-31)

TEXT: A detailed description is given of a portable instrument УЗТИ-3 (UZTI-3) designed for determining the thickness of components with rough or corroded surfaces in the range of thicknesses from 5 to 60 mm. Schematic and principle diagrams of the instrument are presented and also a stress diagram at various points of the design. The instrument uses an ЭЛТ (ELT) [Abstractor's note: Electron-beam tube]. Pulses of 1.5 microsecond duration are used. At a distance between two consecutive reflected pulses, the thickness of the component is determined. The instrument is provided with a piezo-probe with a magnetic holder. The instrument worked success-

Card 1/2 Hydroacoustic Lab, Arctic & Antarctic Sci Res Inst.



APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000410620010-7"

DOBROTIN, D.A.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/2 PG - 659
AUTHOR DOBROTIN D.A.
TITLE The estimation of some non-linear differential equations in the region of asymptotic stability.
PERIODICAL Priklad.Mat.Mech. 20, 723-732 (1956)
reviewed 3/1957

Let the differential equation

(1) $$x^{(n)} + a_1 x^{(n-1)} + \dots + a_n x = f(x,t)$$

be given, where the function $f(x,t)$ shall satisfy the conditions

$$|f(x,t)| \leq A|x|^k \quad (k>1), \quad \left|\frac{\partial f(x,t)}{\partial x}\right| \leq B|x|^\gamma \quad (\gamma>0) \text{ for } |x| \leq L;$$

the numbers a_i are real constants, and all the roots of the equation

$$\lambda^n + a_1 \lambda^{n-1} + \dots + a_n = 0$$

possess negative real parts. Furthermore let α be the absolute value of the smallest real part. Then for every solution of the corresponding homogeneous differential equation

DOBROTIN, D.A., kand. fiziko-matem. nauk, dotsent

Steady-state processes in a cable line without leakage. Izv. LETI no.47:342-359 '62. (MIRA 16:12)

S/046/63/009/001/021/026
B104/B186

AUTHORS: Bogorodskiy, V. V., Dobrotin, D. D.

TITLE: Some results of an investigation into the physical and mechanical properties of the snow cover

PERIODICAL: Akusticheskiy zhurnal, v. 9, no. 1, 1963, 115 - 116

TEXT: The physical and mechanical properties of arctic snow were determined at the drifting polar station СП-10 (SP-10) during April - May 1962. Using an ultrasound pulse method, the velocities of longitudinal and transverse waves were determined from the snow cover and from samples of different densities. Measurements were carried out in horizontal and vertical directions both in the snow cover and in samples. Results: Young's modulus and the velocities of the waves determined from the samples increase monotonically with density and show no great difference whether the snow is investigated in horizontal or in vertical direction. The velocities determined in the snow cover in vertical direction are greater by a factor of 2 than those determined in horizontal direction. These results can be explained by the effects of recrystallization. There are 1 figure and 1 table.

Card 1/2

Some results of an investigation... S/046/63/009/001/021/026
B104/B186

ASSOCIATION: Arkticheskiy and antarkticheskiy n.-i. institut, Leningrad
(Arctic and Antarctic Scientific Research Institute, Leningrad)

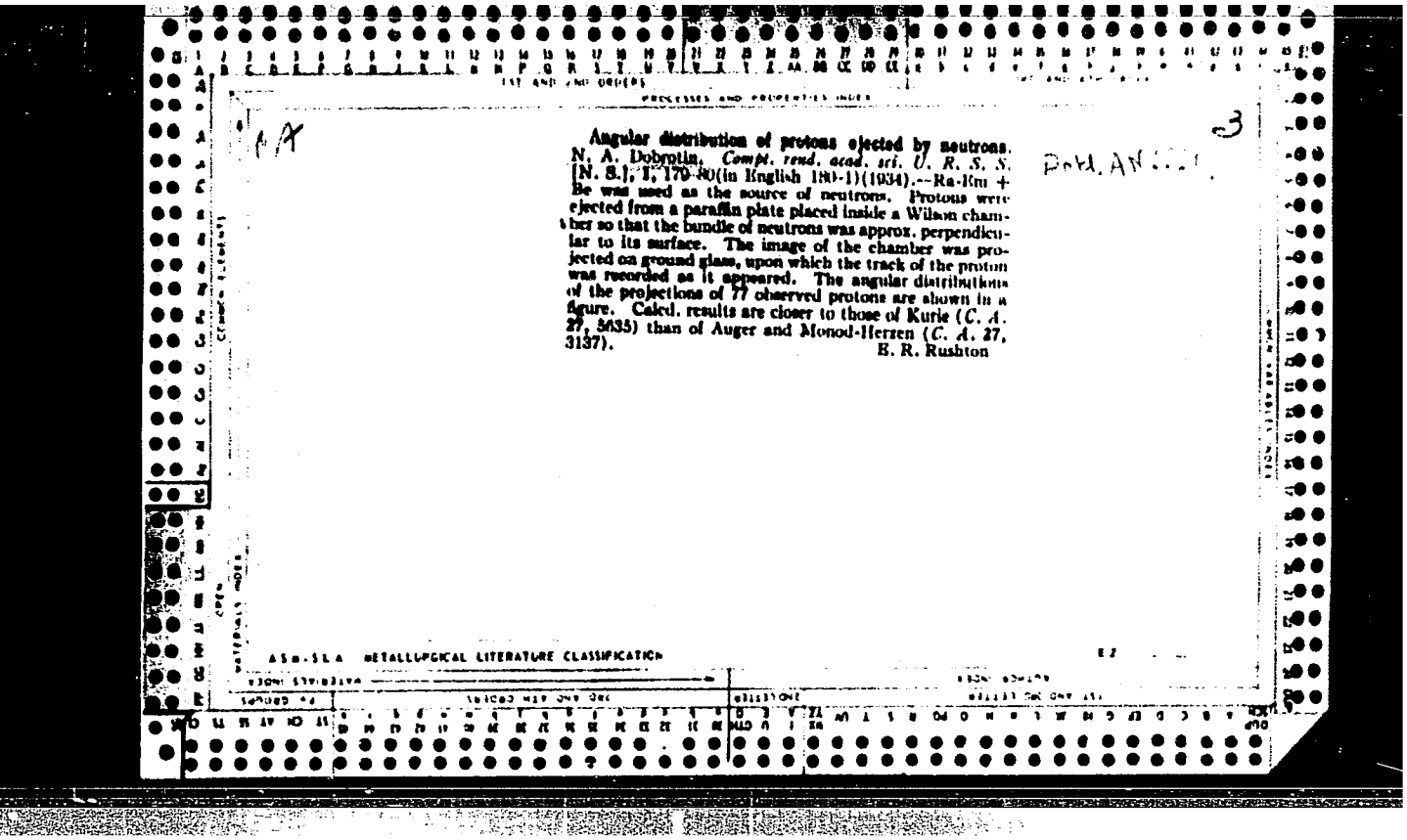
SUBMITTED: July 25, 1962

Card 2/2

BOGORODSKIY, V.V.; DOBROTIN, D.D.; KHOKHLOV, G.P.

Ultrasonic thickness gauge for controlling corroded surfaces.
Zav. lab. 29 no.10:1254-1258 '63. (MIRA 16:12)

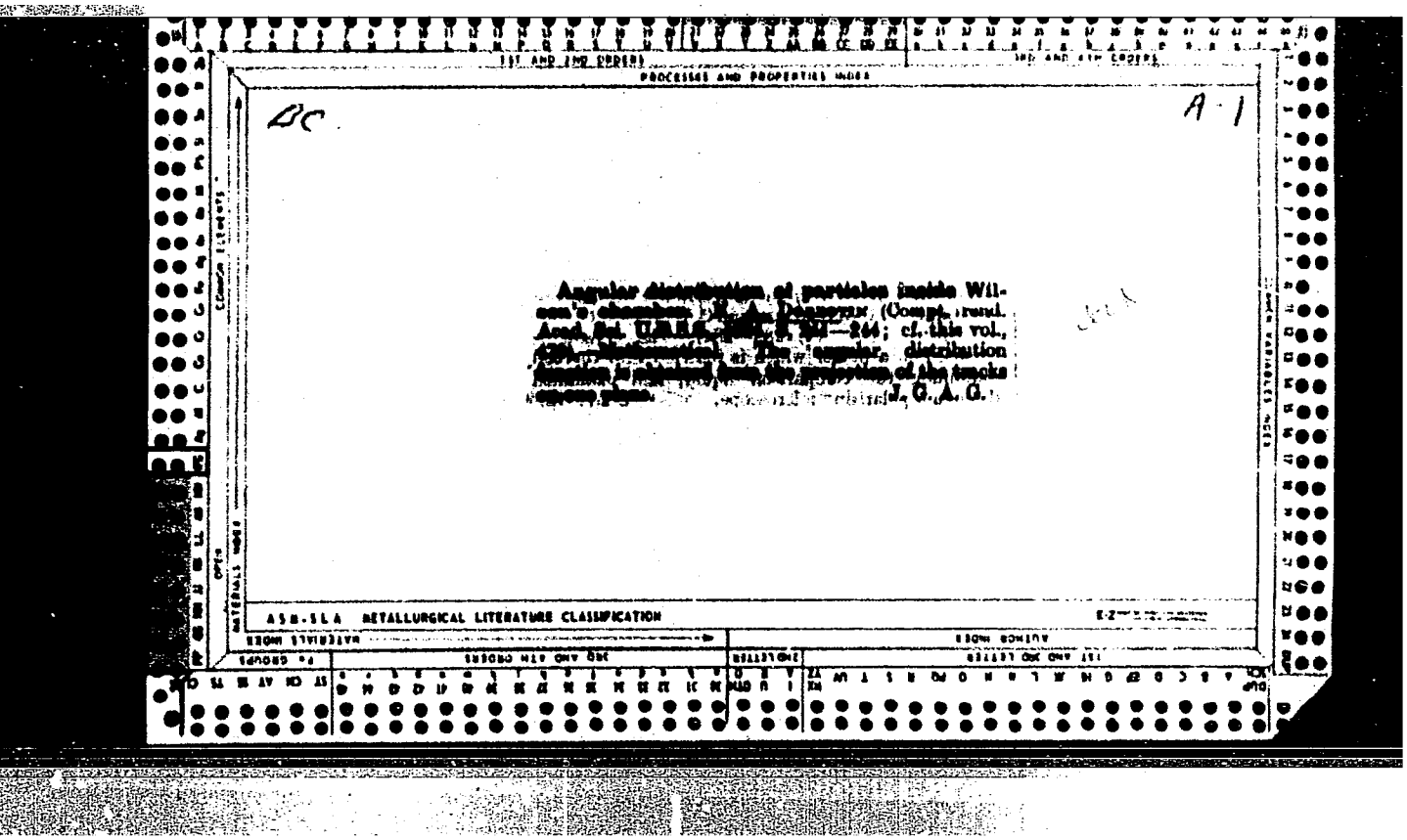
1. Arkticheskiy i antarkticheskiy nauchno-issledovatel'skiy institut Ministerstva morskogo flota.

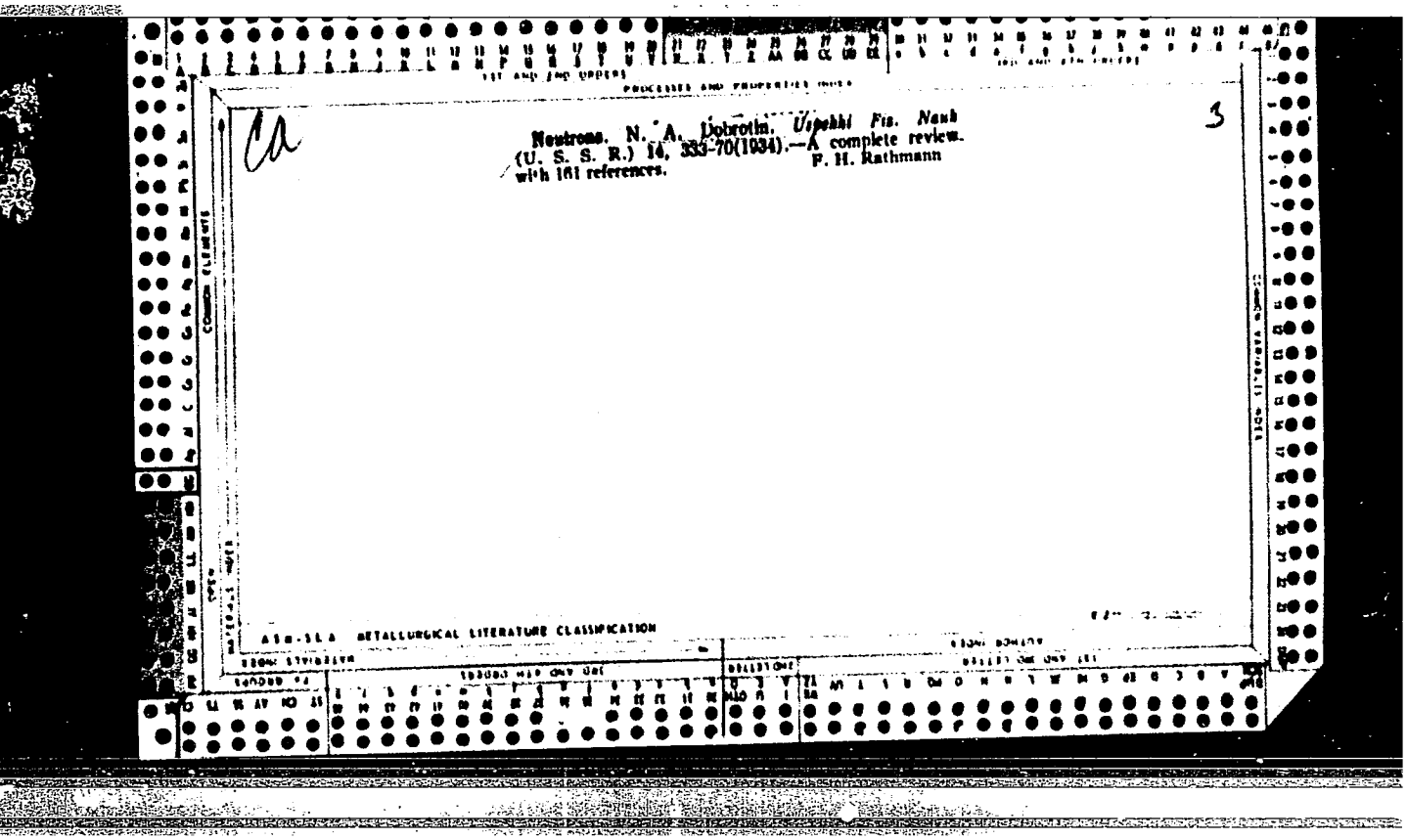


Angular distribution of protons ejected by neutrons. N. A. Dobrotin. *Compt. rend. acad. sci. U. R. S. S.* [N. S.], 1, 179-80(in English 180-1)(1934).--Ra-Em + Be was used as the source of neutrons. Protons were ejected from a paraffin plate placed inside a Wilson chamber so that the bundle of neutrons was approx. perpendicular to its surface. The image of the chamber was projected on ground glass, upon which the track of the proton was recorded as it appeared. The angular distributions of the projections of 77 observed protons are shown in a figure. Calcd. results are closer to those of Kurie (*C. A.* 27, 5635) than of Auger and Monod-Herzen (*C. A.* 27, 3137).

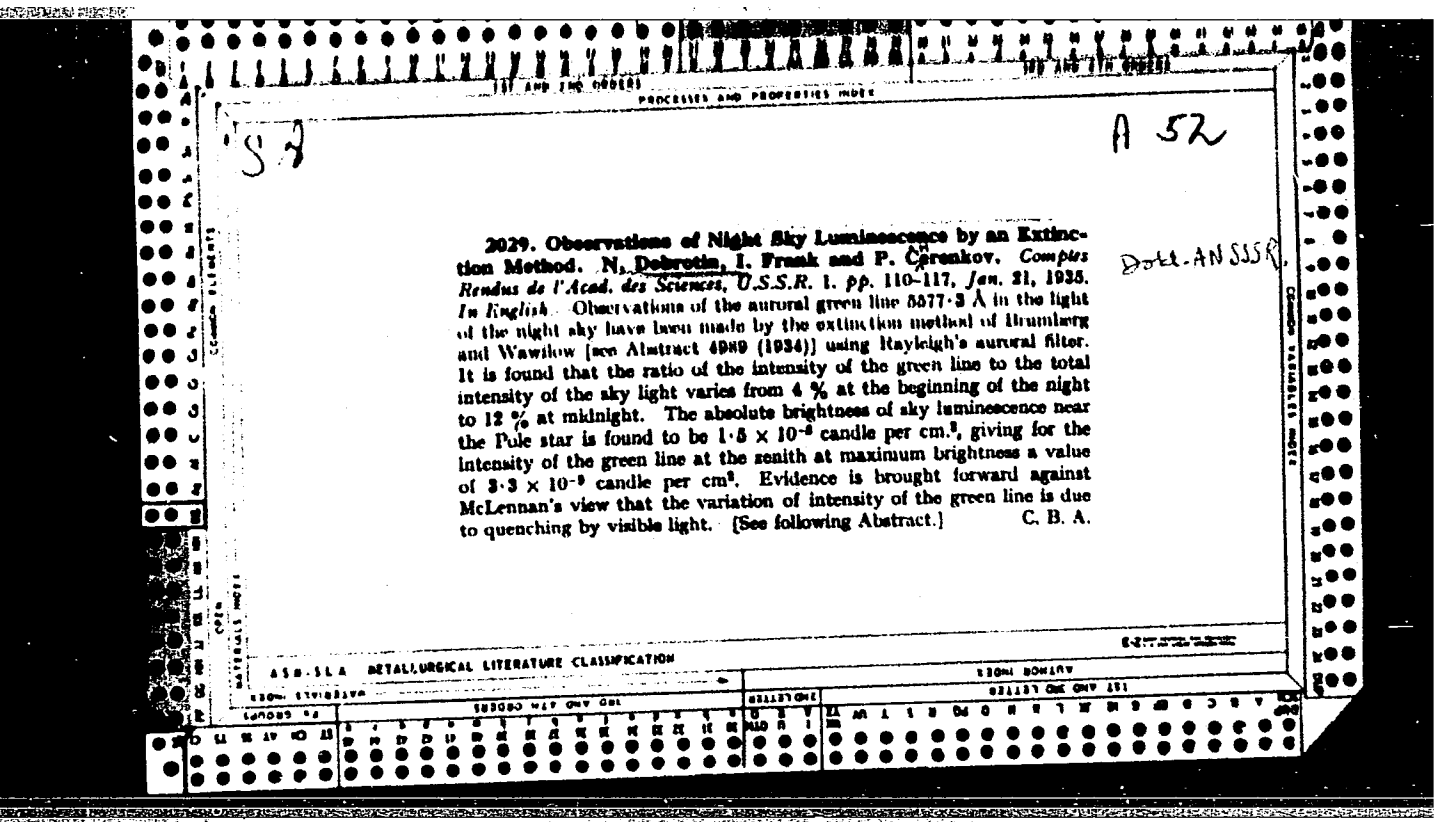
E. R. Rushton

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION





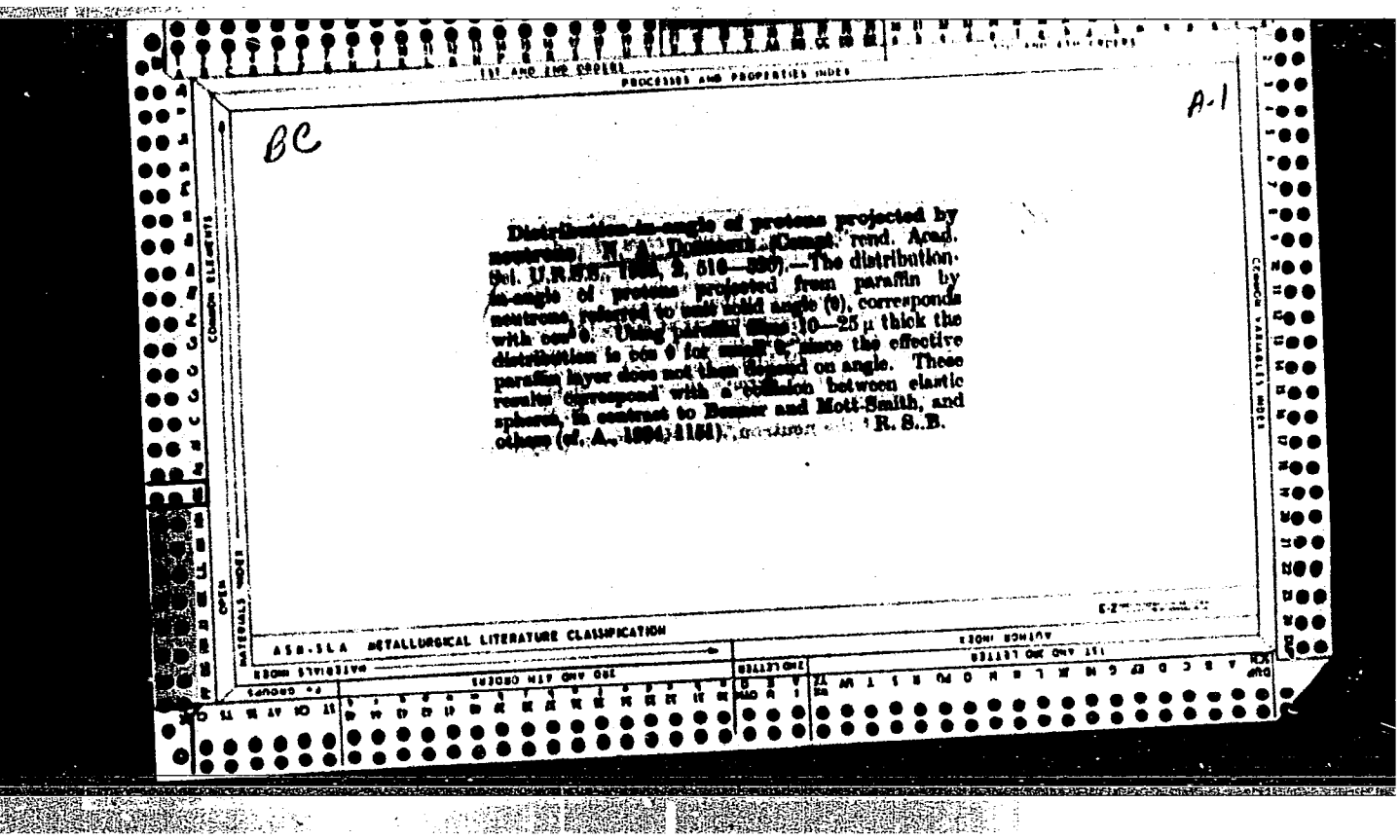
Neutrons. N. A. Dobrotin. *Uspekhi Fiz. Nauk* (U. S. S. R.) 14, 333-70(1934).—A complete review with 161 references. F. H. Rathmann



A 52

Acad. AN SSSR

2029. Observations of Night Sky Luminescence by an Extinction Method. N. Dobrotin, I. Frank and P. Čerenkov. *Comptes Rendus de l'Acad. des Sciences, U.S.S.R.* 1. pp. 110–117, *Jan.* 21, 1935. *In English.* Observations of the auroral green line 5577·3 Å in the light of the night sky have been made by the extinction method of Brumberg and Wawilow [see Abstract 4989 (1934)] using Rayleigh's auroral filter. It is found that the ratio of the intensity of the green line to the total intensity of the sky light varies from 4 % at the beginning of the night to 12 % at midnight. The absolute brightness of sky luminescence near the Pole star is found to be $1{\cdot}5 \times 10^{-9}$ candle per cm.^{2}, giving for the intensity of the green line at the zenith at maximum brightness a value of $3{\cdot}3 \times 10^{-9}$ candle per cm^2. Evidence is brought forward against McLennan's view that the variation of intensity of the green line is due to quenching by visible light. [See following Abstract.] C. B. A.

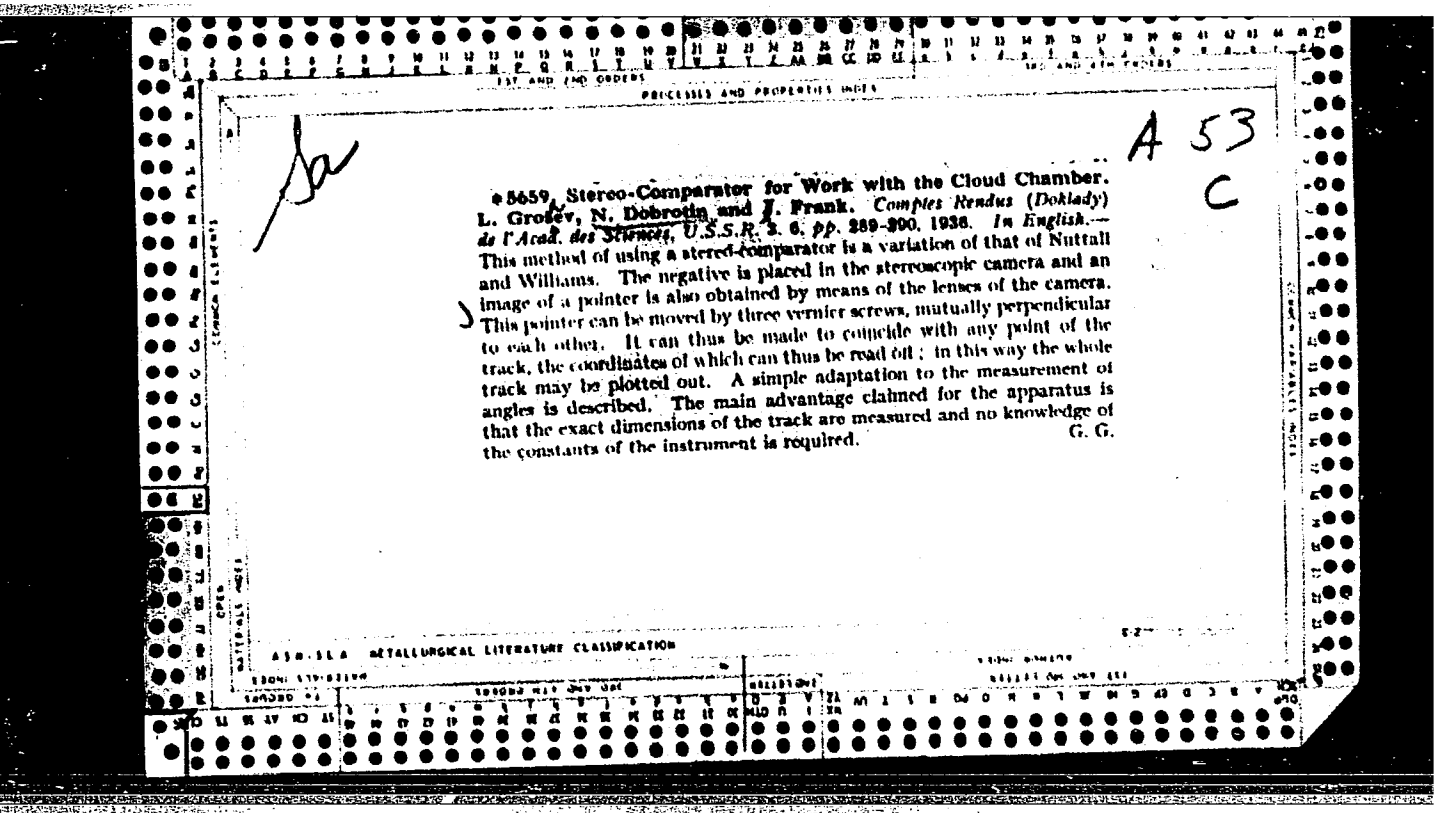


BC

A-1

Distribution in angle of protons projected by neutrons. N. A. Timofeev. (Compt. rend. Acad. Sci. U.R.S.S., 1946, 2, 510—520).—The distribution in angle of protons projected from paraffin by neutrons, reflected to unit solid angle (θ), corresponds with $\cos^2\theta$. Using layers thicker than 10—25 μ thick the distribution is too θ for small θ, since the effective paraffin layer does not then depend on angle. These results correspond with a collision between elastic spheres, in contrast to Bonner and Mott-Smith, and others (cf. A., 1954, 1161). R. S. B.

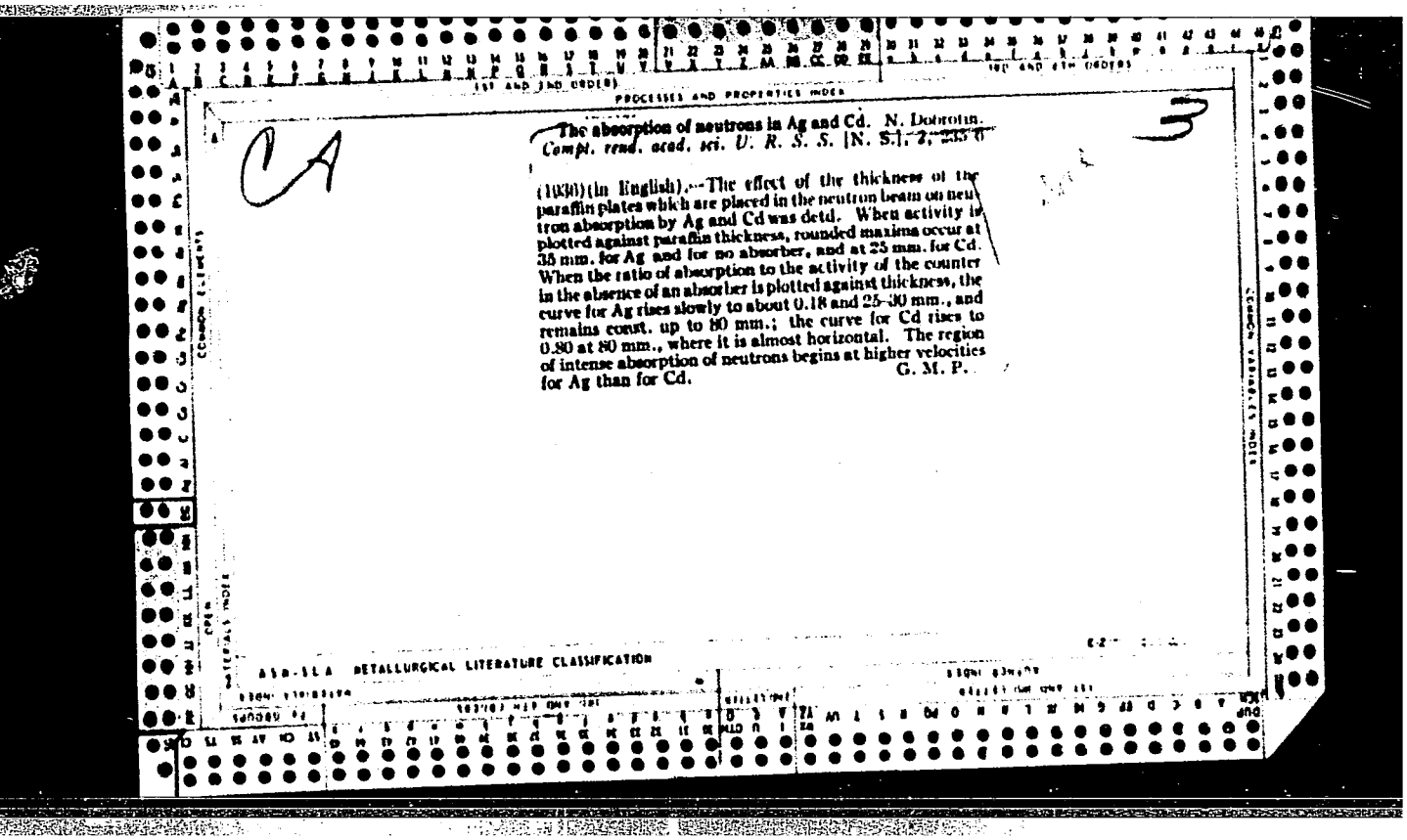
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



A 53
C

* 5659. **Stereo-Comparator for Work with the Cloud Chamber.** L. Grosev, N. Dobrotin and I. Frank. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.*, 3, 6, *pp.* 289-300, 1936. *In English.*—This method of using a stereo-comparator is a variation of that of Nuttall and Williams. The negative is placed in the stereoscopic camera and an image of a pointer is also obtained by means of the lenses of the camera. This pointer can be moved by three vernier screws, mutually perpendicular to each other. It can thus be made to coincide with any point of the track, the coordinates of which can thus be read off; in this way the whole track may be plotted out. A simple adaptation to the measurement of angles is described. The main advantage claimed for the apparatus is that the exact dimensions of the track are measured and no knowledge of the constants of the instrument is required. G. G.

A 53 B-1 A METALLURGICAL LITERATURE CLASSIFICATION

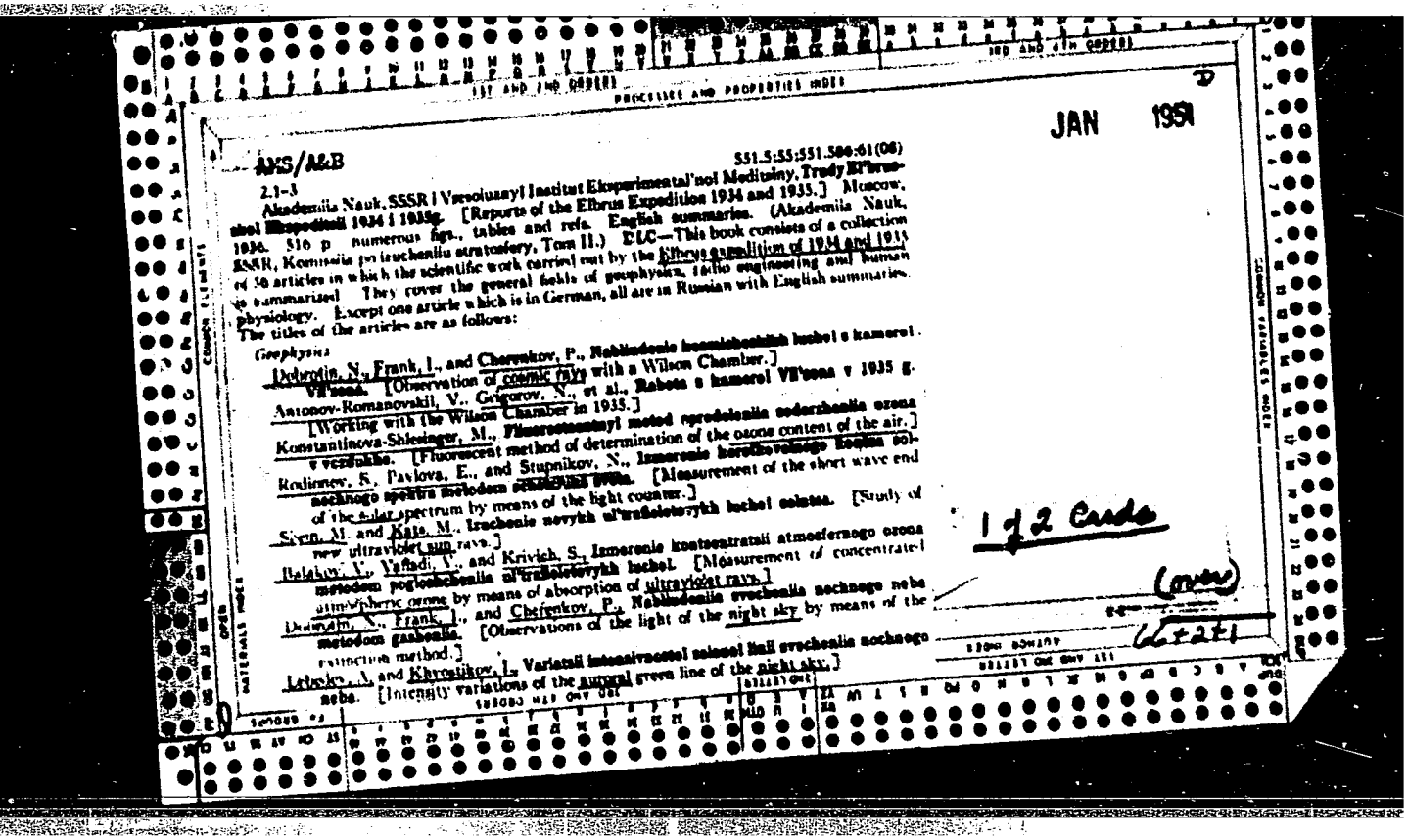


PROCESSES AND PROPERTIES INDEX

CA

The absorption of neutrons in Ag and Cd. N. Dobrotin. *Compt. rend. acad. sci. U. R. S. S.* [N. S.], 2, 235-6 (1936)(in English).—The effect of the thickness of the paraffin plates which are placed in the neutron beam on neutron absorption by Ag and Cd was detd. When activity is plotted against paraffin thickness, rounded maxima occur at 35 mm. for Ag and for no absorber, and at 25 mm. for Cd. When the ratio of absorption to the activity of the counter in the absence of an absorber is plotted against thickness, the curve for Ag rises slowly to about 0.18 and 25–30 mm., and remains const. up to 80 mm.; the curve for Cd rises to 0.80 at 80 mm., where it is almost horizontal. The region of intense absorption of neutrons begins at higher velocities for Ag than for Cd. G. M. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



JAN 1951

AMS/M&B

551.5:55:551.586:01(06)

2.1-3

Akademiia Nauk, SSSR i Vsesoiuznyi Institut Eksperimental'noi Meditsiny. Trudy El'brusskoi Ekspeditsii 1934 i 1935g. [Reports of the Elbrus Expedition 1934 and 1935.] Moscow, 1936. 516 p. numerous figs., tables and refs. English summaries. (Akademiia Nauk, SSSR, Komissiia po izucheniiu stratosfery, Tom II.) EAC—This book consists of a collection of 50 articles in which the scientific work carried out by the Elbrus expedition of 1934 and 1935 is summarized. They cover the general fields of geophysics, radio engineering and human physiology. Except one article which is in German, all are in Russian with English summaries. The titles of the articles are as follows:

Geophysics

Dobrotin, N., Frank, I., and Cherenkov, P., Nablíudenie kosmicheskikh luchei s kamerei Vil'sona. [Observation of cosmic rays with a Wilson Chamber.]

Antonov-Romanovskii, V., Grigorov, N., et al., Raboty s kameroi Vil'sona v 1935 g. [Working with the Wilson Chamber in 1935.]

Konstantinova-Shlesinger, M., Fluorestsentnyi metod opredeleniia soderzhaniia ozona v vozdukhe. [Fluorescent method of determination of the ozone content of the air.]

Rodionov, S., Pavlova, E., and Stupnikov, N., Izmerenie korotkovolnogo kraia solnechnogo spektra metodom schetchika fotonov. [Measurement of the short wave end of the solar spectrum by means of the light counter.]

Sivin, M. and Kats, M., Issledovanie novykh ul'trafioletovykh luchei solntsa. [Study of new ultraviolet sun rays.]

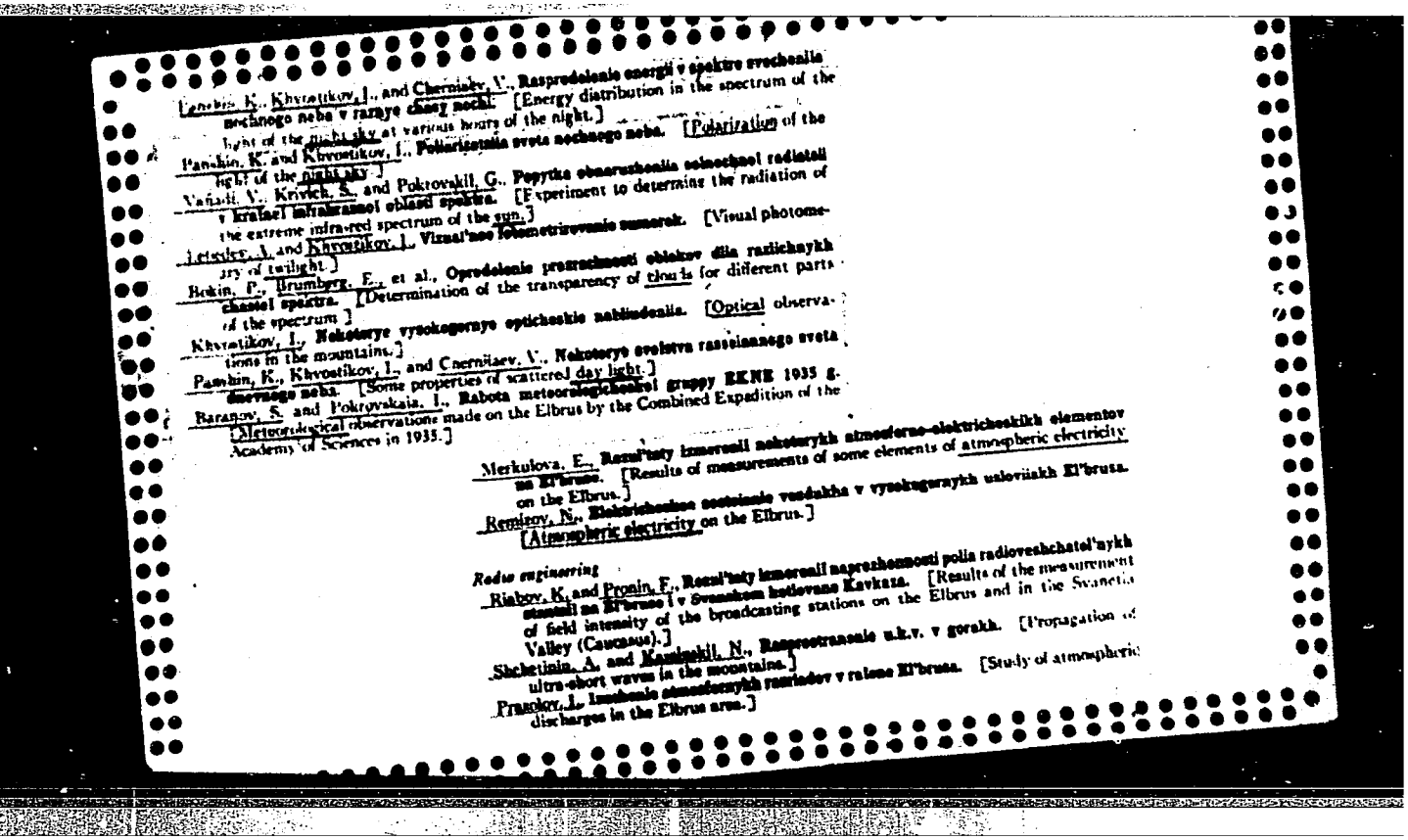
Belskii, I., Vafiadi, T., and Krivich, S., Izmerenie kontsentratsii atmosfernogo ozona metodom pogloshcheniia ul'trafioletovykh luchei. [Measurement of concentration of atmospheric ozone by means of absorption of ultraviolet rays.]

Dobrotin, N., Frank, I., and Cherenkov, P., Nablíudenie svecheniia nochnogo neba metodom ganbeniia. [Observations of the light of the night sky by means of the reflection method.]

Lebedev, A. and Khvostikov, I., Variatsii intensivnosti zelenoi linii svecheniia nochnogo neba. [Intensity variations of the auroral green line of the night sky.]

1 f 2 Cards

(over)



Lanskiy, K., Khvostikov, I., and Chernishev, V., Raspredelenie energii v spektre svecheniia nochnogo neba v raznye chasy nochi. [Energy distribution in the spectrum of the light of the night sky at various hours of the night.]

Panshin, K. and Khvostikov, I., Polarizatsiia sveta nochnogo neba. [Polarization of the light of the night sky.]

Vafiadi, V., Krivich, S., and Pokrovskii, G., Popytka obnaruzheniia solnechnoi radiatsii v kratkoi infrakrasnoi oblasti spektra. [Experiment to determine the radiation of the extreme infra-red spectrum of the sun.]

Letnikov, I. and Khvostikov, I., Vizual'noe fotometrirovanie sumerek. [Visual photometry of twilight.]

Bekin, P., Brumberg, E., et al., Opredelenie prozrachnosti oblakov dlia razlichnykh chastei spektra. [Determination of the transparency of clouds for different parts of the spectrum.]

Khvostikov, I., Nekotorye vysokogornye opticheskie nabliudeniia. [Optical observations in the mountains.]

Panshin, K., Khvostikov, I., and Chernyaev, V., Nekotorye svoistva rasseiannogo sveta dnevnogo neba. [Some properties of scattered day light.]

Baranov, S. and Pokrovskaia, I., Rabota meteorologicheskoi gruppy EKNE 1935 g. [Meteorological observations made on the Elbrus by the Combined Expedition of the Academy of Sciences in 1935.]

Merkulova, E., Rezul'taty izmerenii nekotorykh atmosferno-elektricheskikh elementov na El'brusе. [Results of measurements of some elements of atmospheric electricity on the Elbrus.]

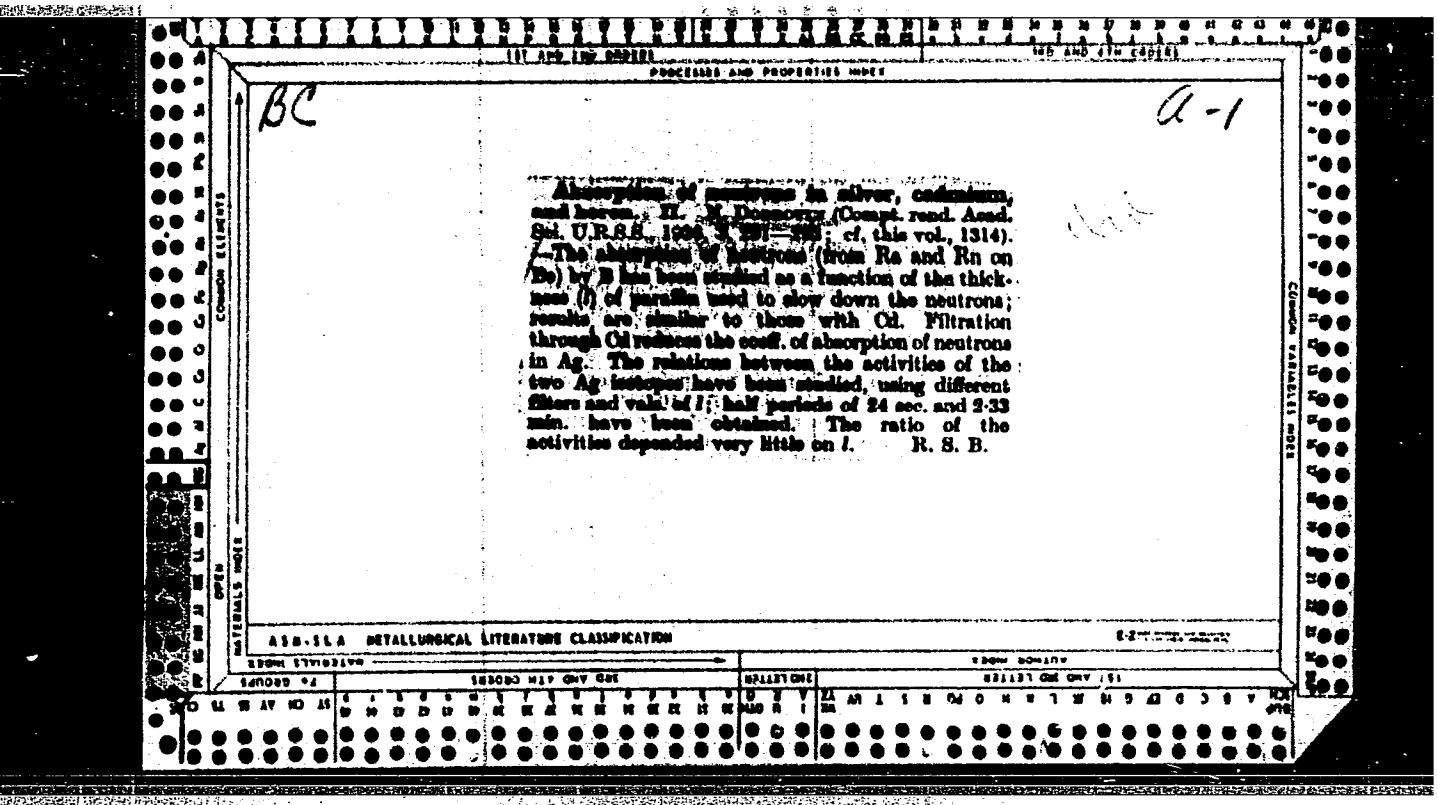
Remizov, N., Elektricheskoe sostoianie vozdukha v vysokogornykh usloviiakh El'brusa. [Atmospheric electricity on the Elbrus.]

Radio engineering

Riabov, K. and Pronin, F., Rezul'taty izmerenii napriazhennosti polia radioveshchatel'nykh stantsii na El'brusе i v Sverdlovom hotlovane Kavkaza. [Results of the measurement of field intensity of the broadcasting stations on the Elbrus and in the Svanetia Valley (Caucasus).]

Shchetinin, A. and Kaminskii, N., Rasprostranenie u.k.v. v gorakh. [Propagation of ultra-short waves in the mountains.]

Priankov, I., Issledovanie atmosfernykh razriadov v raione El'brusa. [Study of atmospheric discharges in the Elbrus area.]

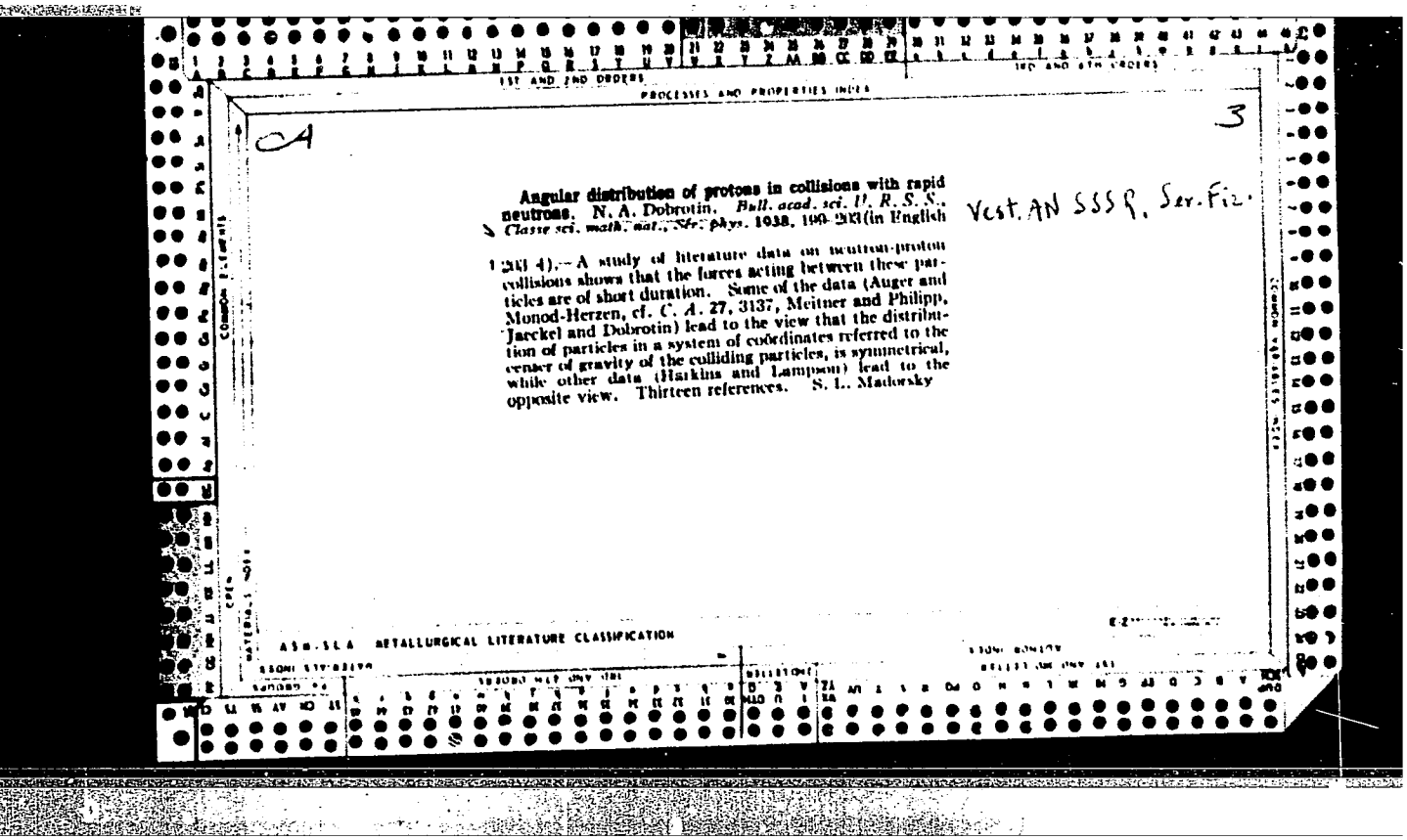


BC

a-1

Absorption of neutrons in silver, cadmium, and boron. H. V. Donnecorz (Compt. rend. Acad. Sci. U.R.S.S., 1936, 3, 291—293; cf. this vol., 1314). —The absorption of neutrons (from Ra and Rn on Be) by B has been studied as a function of the thickness (l) of paraffin used to slow down the neutrons; results are similar to those with Cd. Filtration through Cd reduces the coeff. of absorption of neutrons in Ag. The relations between the activities of the two Ag isotopes have been studied, using different filters and vals. of l; half periods of 24 sec. and 2·33 min. have been obtained. The ratio of the activities depended very little on l. R. S. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

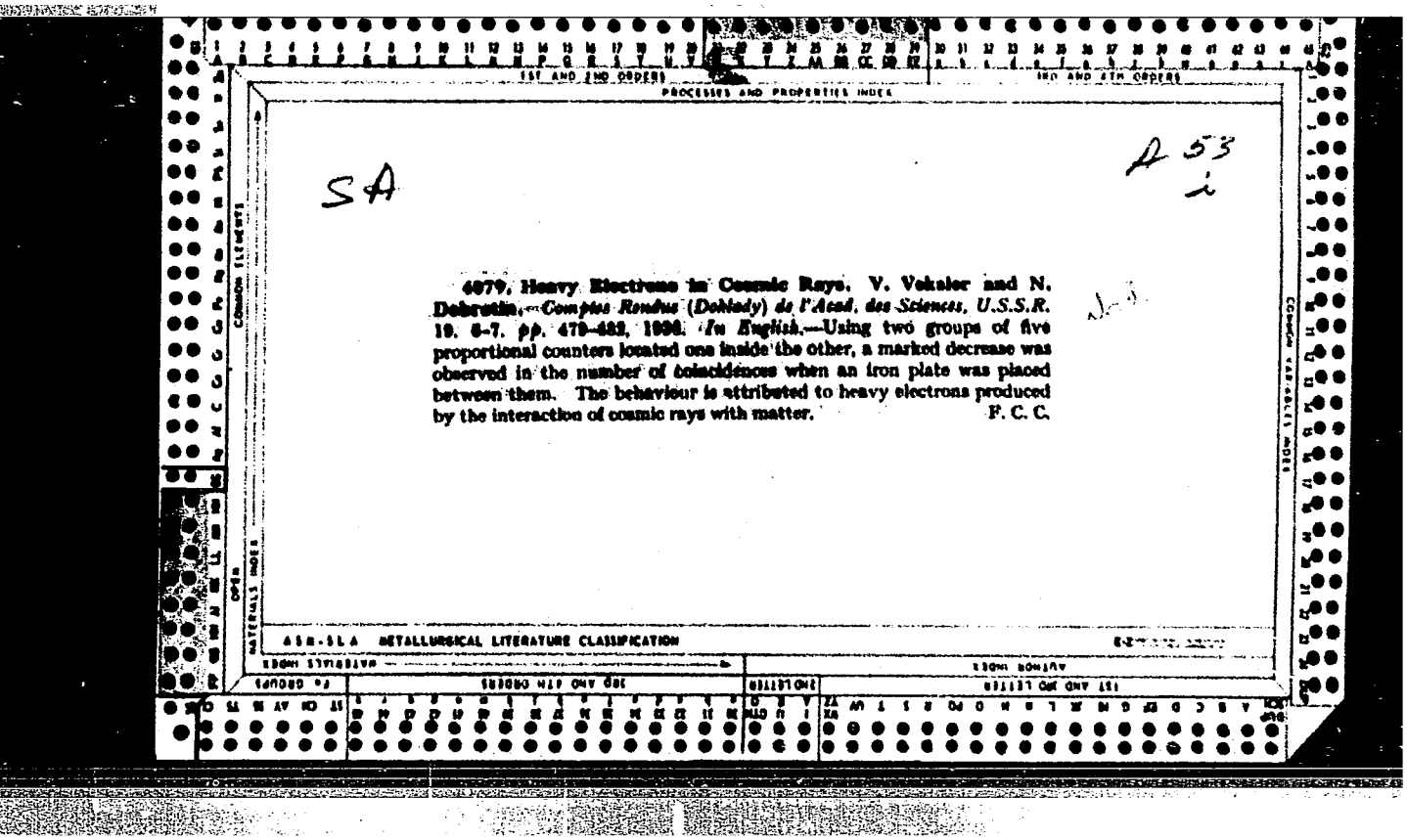
3

Angular distribution of protons in collisions with rapid neutrons. N. A. Dobrotin. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Sér. phys.* 1938, 199–203 (in English

Vest. AN SSSR, Ser. Fiz.

1:3[1] 4).—A study of literature data on neutron-proton collisions shows that the forces acting between these particles are of short duration. Some of the data (Auger and Monod-Herzen, cf. *C. A.* 27, 3137, Meitner and Philipp, Jaeckel and Dobrotin) lead to the view that the distribution of particles in a system of coördinates referred to the center of gravity of the colliding particles, is symmetrical, while other data (Harkins and Lampson) lead to the opposite view. Thirteen references. S. L. Madowsky

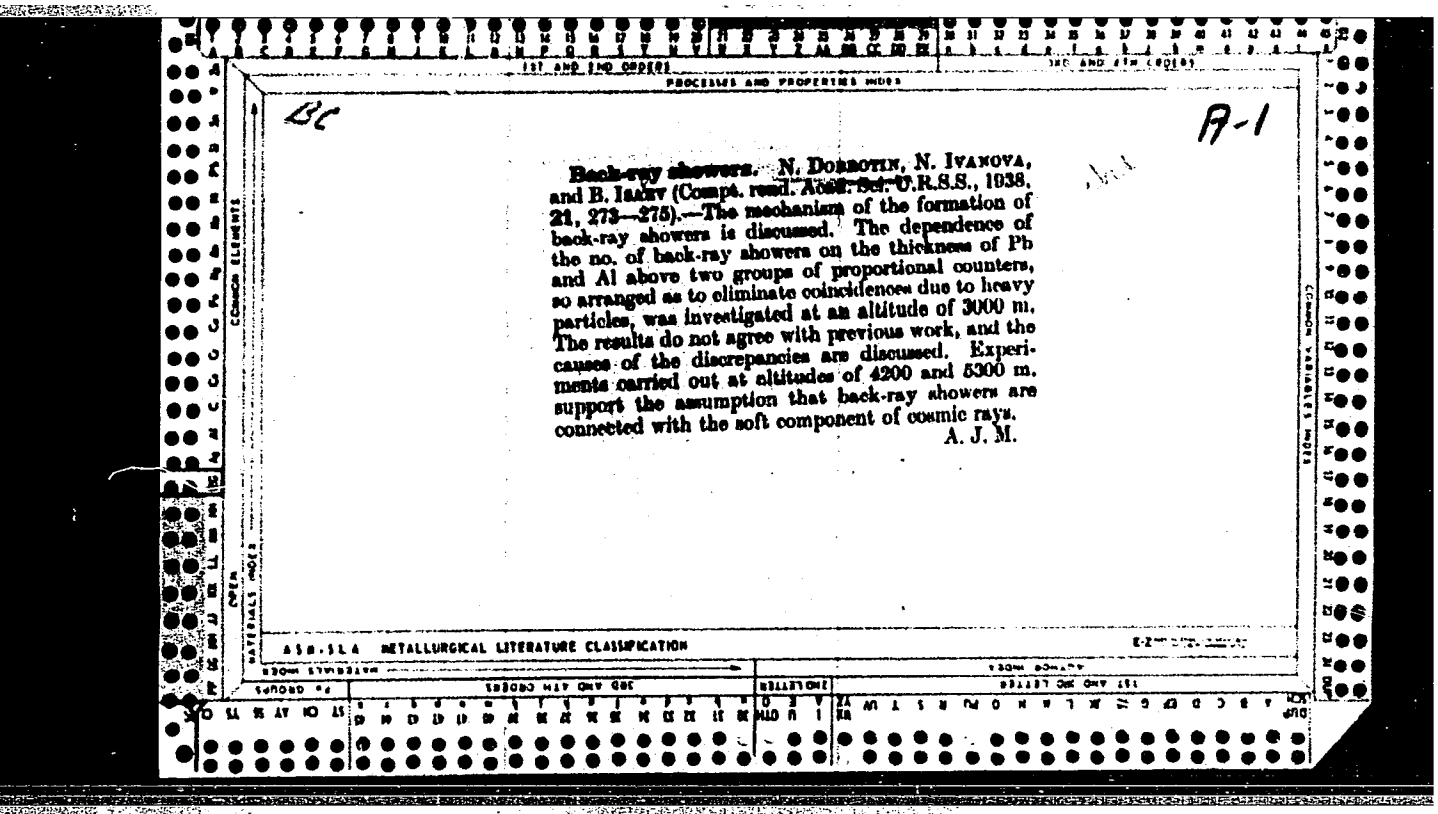
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



SA

A 53
i

4979. **Heavy Electrons in Cosmic Rays.** V. Veksler and N. Dobrotin.—*Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 19, 6-7, pp. 479-482, 1938. *In English.*—Using two groups of five proportional counters located one inside the other, a marked decrease was observed in the number of coincidences when an iron plate was placed between them. The behaviour is attributed to heavy electrons produced by the interaction of cosmic rays with matter. F. C. C.

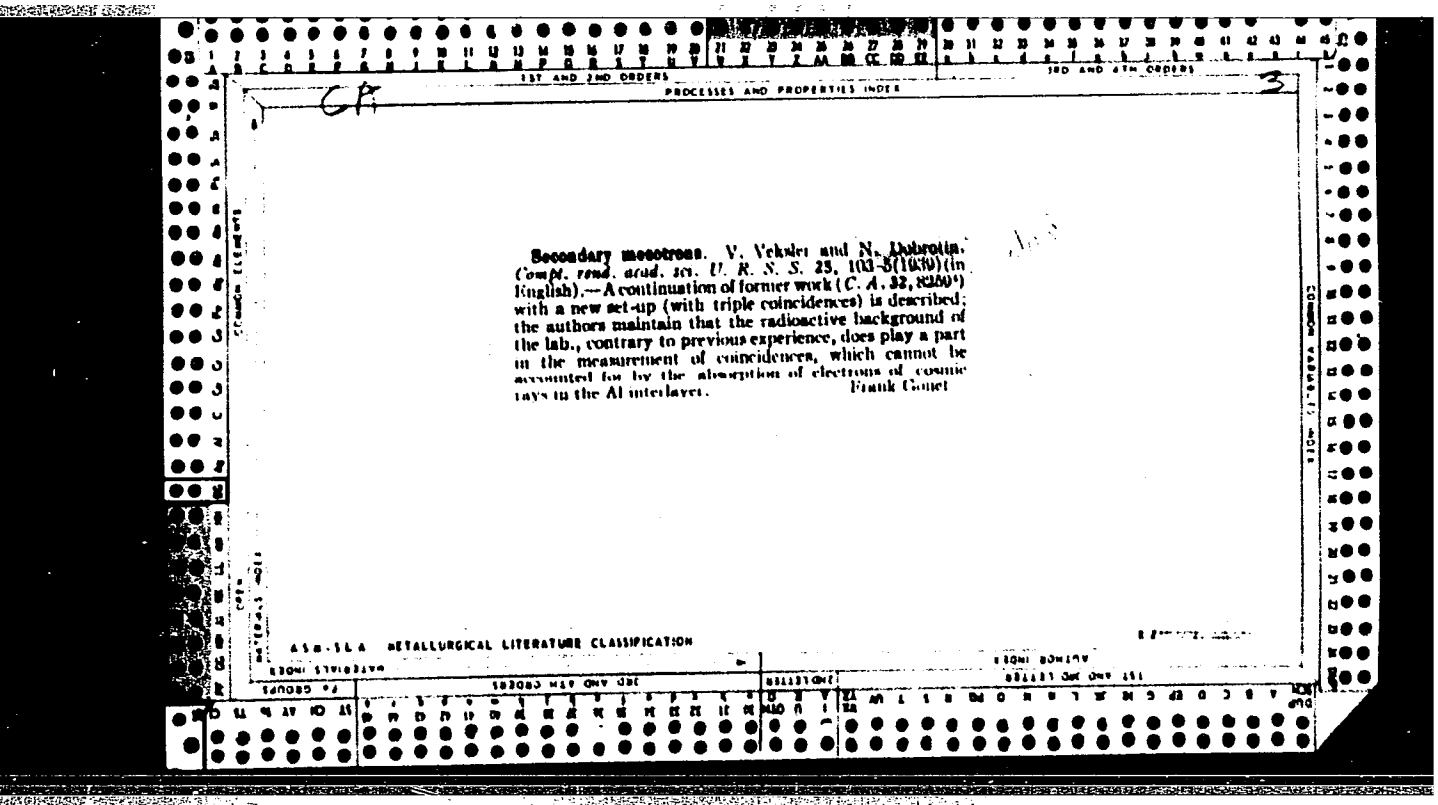


Bc

A-1

Back-ray showers. N. Dobrotin, N. Ivanova, and B. Isaev (Compt. rend. Acad. Sci. U.R.S.S., 1938, 21, 273—275).—The mechanism of the formation of back-ray showers is discussed. The dependence of the no. of back-ray showers on the thickness of Pb and Al above two groups of proportional counters, so arranged as to eliminate coincidences due to heavy particles, was investigated at an altitude of 3000 m. The results do not agree with previous work, and the causes of the discrepancies are discussed. Experiments carried out at altitudes of 4200 and 5300 m. support the assumption that back-ray showers are connected with the soft component of cosmic rays.

A. J. M.



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

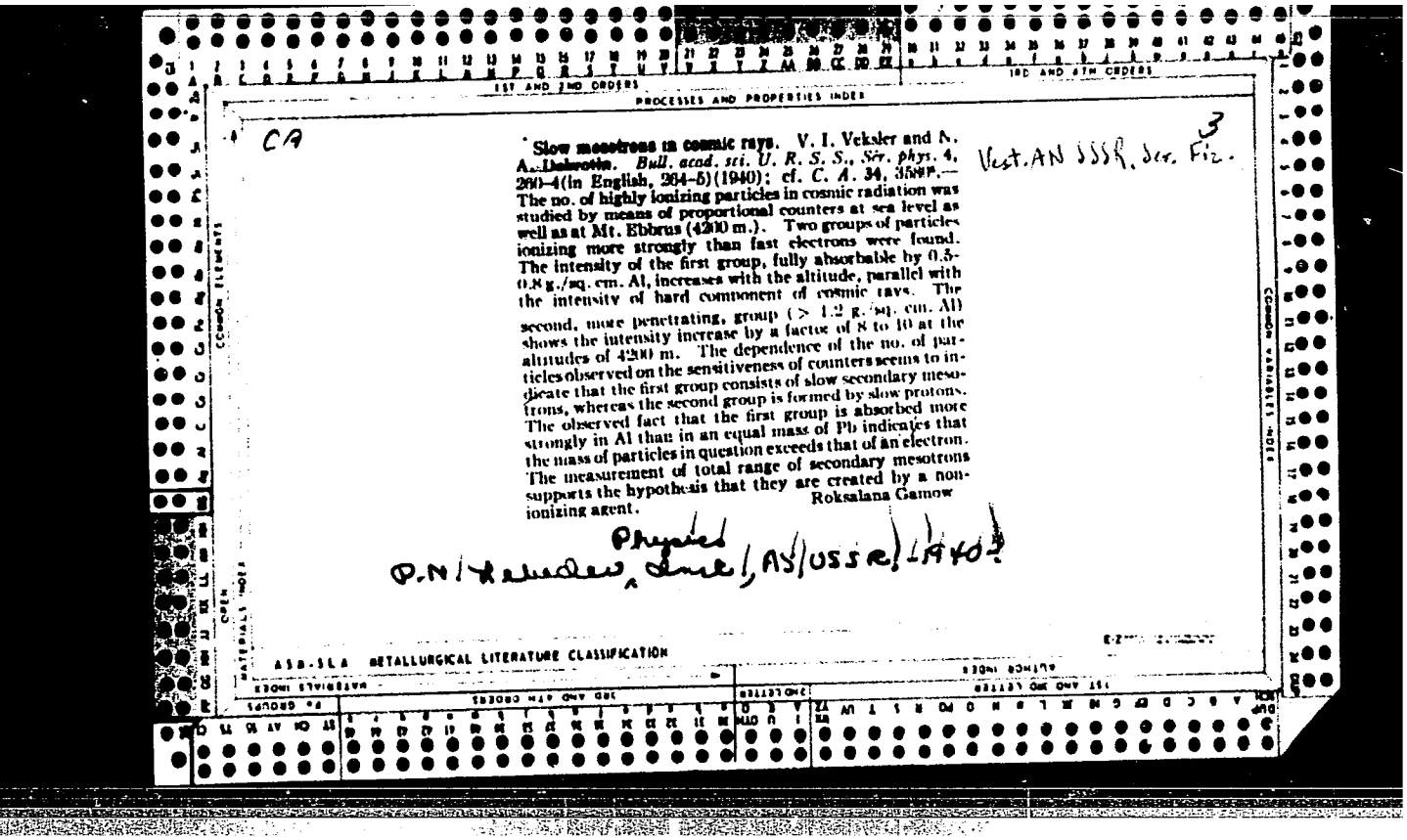
Secondary mesotrons. V. Veksler and N. Dobrotin. (*Compt. rend. acad. sci. U. R. S. S.* 25, 103-5(1939))(in English).—A continuation of former work (*C. A.* 32, 8250[4]) with a new set-up (with triple coincidences) is described; the authors maintain that the radioactive background of the lab., contrary to previous experience, does play a part in the measurement of coincidences, which cannot be accounted for by the absorption of electrons of cosmic rays in the Al interlayer. Frank Comet

A.S.T.M. METALLURGICAL LITERATURE CLASSIFICATION

DOBROTIN, N., Veksler, V. I. and Groshev, L.

"Experimental Methods in Nuclear Physics," Moscow-Leningrad, 1940

Bol'shaya Sovetskaya Entsiklopediya, Vol. VII, 2nd ed., Moscow, 1949



PROCESSES AND PROPERTIES INDEX

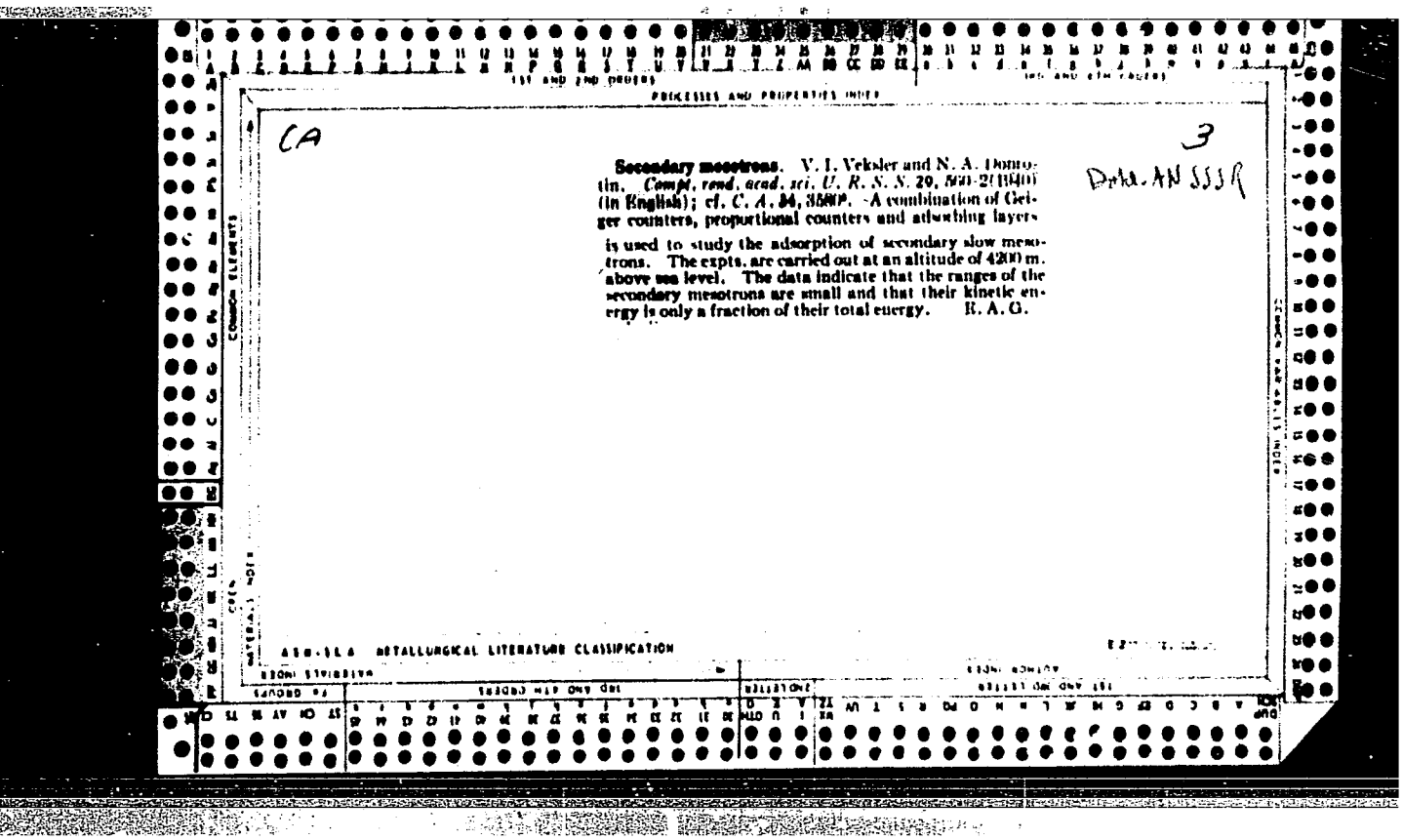
CA

Slow mesotrons in cosmic rays. V. I. Veksler and N. A. Dobrotin. *Bull. acad. sci. U. R. S. S., Sér. phys.* 4, 260–4(in English, 264–5)(1940); cf. *C. A.* 34, 3500⁸.—The no. of highly ionizing particles in cosmic radiation was studied by means of proportional counters at sea level as well as at Mt. Elbrus (4200 m.). Two groups of particles ionizing more strongly than fast electrons were found. The intensity of the first group, fully absorbable by 0.5–0.8 g./sq. cm. Al, increases with the altitude, parallel with the intensity of hard component of cosmic rays. The second, more penetrating, group (> 1.2 g./sq. cm. Al) shows the intensity increase by a factor of 8 to 10 at the altitudes of 4200 m. The dependence of the no. of particles observed on the sensitiveness of counters seems to indicate that the first group consists of slow secondary mesotrons, whereas the second group is formed by slow protons. The observed fact that the first group is absorbed more strongly in Al than in an equal mass of Pb indicates that the mass of particles in question exceeds that of an electron. The measurement of total range of secondary mesotrons supports the hypothesis that they are created by a non-ionizing agent.
Roksalana Gamow

Vest. AN SSSR, Ser. Fiz. 3

Physical Inst., AS USSR, Leningrad

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

3

Phila. AN SSSR

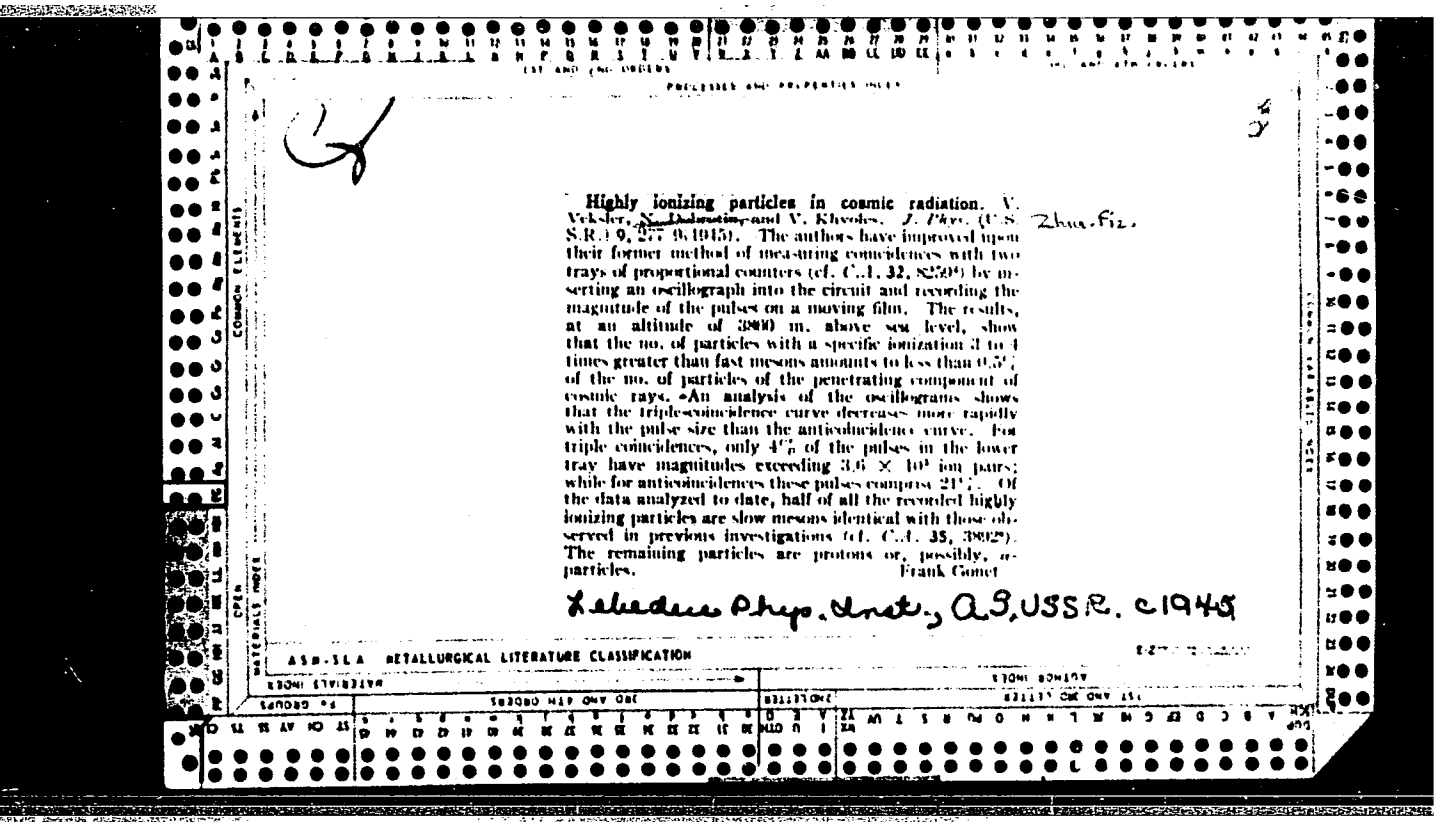
Secondary mesotrons. V. I. Veksler and N. A. Dobrotin. *Compt. rend. acad. sci. U. R. S. S.* 20, 651-2 (1940) (in English); cf. *C. A.* 34, 3580⁸. A combination of Geiger counters, proportional counters and absorbing layers is used to study the adsorption of secondary slow mesotrons. The expts. are carried out at an altitude of 4200 m. above sea level. The data indicate that the ranges of the secondary mesotrons are small and that their kinetic energy is only a fraction of their total energy. R. A. G.

Miscellaneous

1147. Radiation Received with Reduced Sensitivity to the Position of the Source in connection with a Method of determining the Difference in Thickness of Metallic Tube Walls from the Absorption of Gamma Rays. Dobrotin & Frank. (*Comptes Rendus (Doklady) de l'Ac. des Sci. de l'URSS*, 20th April 1944. Vol. 43, No. 1, pp. 21–23 in English.)

For instance "radioactive sources of gamma rays frequently differ from one another considerably in form, and this is found to affect the results of measurements, because their distance from the ionisation chamber cannot be made so large as to be incomparable with their dimensions."

P.N. Lebedev Phys. Inst.; Acad. Sci., c1943-,



Highly ionizing particles in cosmic radiation. V. Veksler, ~~N. Dobrotin~~, and V. Khesdes. *J. Phys.* (U.S.S.R.) 9, 277-9 (1945). The authors have improved upon their former method of measuring coincidences with two trays of proportional counters (cf. C.A. 32, 8529) by inserting an oscillograph into the circuit and recording the magnitude of the pulses on a moving film. The results, at an altitude of 3800 m. above sea level, show that the no. of particles with a specific ionization 3 to 4 times greater than fast mesons amounts to less than 0.5% of the no. of particles of the penetrating component of cosmic rays. An analysis of the oscillograms shows that the triple-coincidence curve decreases more rapidly with the pulse size than the anticoincidence curve. For triple coincidences, only 4% of the pulses in the lower tray have magnitudes exceeding 3.6×10^5 ion pairs; while for anticoincidences these pulses compose 21%. Of the data analyzed to date, half of all the recorded highly ionizing particles are slow mesons identical with those observed in previous investigations (cf. C.A. 35, 3902). The remaining particles are protons or, possibly, α-particles. Frank Gonet

Zhur. Fiz.

Lebedev Phys. Inst., A.S. USSR. c1945

USSR/Nuclear Physics - Mesons Aug 1946
Nuclear Physics - Particles

"Mesons," N. A. Dobrotin, 8½ pp

"Priroda" No 8

For the past 10 - 15 years a great deal of interest has been shown in cosmic rays. High in the atmosphere these rays are split into various particles of which some are mesons, i.e., electrons and positrons with very great energy. These mesons have a whole series of new nuclear processes. They are interesting at the present time because they form what are known as neutral particles which as yet are very little known. Article discusses experiments which

ID 36R71

USSR/Nuclear Physics - Mesons (Cont'd) Aug 1946

led to the discovery and identification of these new particles, mesons, and gives a short description of known characteristics.

DOBROTIN, N.

USSR/Nuclear Physics - Cosmic Radiation Nov/Dec 46
Nuclear Physics - Equipment

"The Measurements of the Intensity of the Cosmic Radiation by the Telescope Method," S. Azimov, V. Veksler, N. Dobrotin, G. Zhdanov, A. Lubimov, Lebedev Phys Inst, Acad Sci USSR, 7 pp

"Journal of Physics USSR" Vol X, No 6

Demonstrates two factors, scattering in counter walls and side showers, which influence measurements of soft components; in hard and soft components intensity measurements by different "telescopes." Formulates requirements for correct measurements in use of telescope method. Received 26 Apr 1946.

PA 54T74

CA

2A

Ionizing power of particles of the hard and soft components of cosmic radiation. N. A. Dobrotin. *J. Phys.* (U.S.S.R.) 10, 207–10(1946).—An arrangement of flat counters for the investigation of the ionizing power of the hard and soft components of cosmic radiation is described. Ionization-pulse no. distribution curves are given for the components. B. A.

Zhur. Fiz.

Lebedev Physical Institute, AS, USSR, c1946

DOBROTIN, N.

72. Highly Ionizing Particles in the Cosmic Radiation, by V. Veksler, N. Dobrotin, and V. Khovles. Zhurnal Eksperimental'noi I Teoreticheskoi Fiziki 16, No. 7, August 1946. 3 p. (In Russian). Results of measurements of the number of highly ionizing particles in cosmic rays at an altitude of 3,860 meters are reported. They show that the number of particles, the ionization of which exceeds 3-4 times the ionization of fast mesotrons, is less than 0.5% of the number of the penetrating particles of cosmic rays.

Physics Inst., im. P. N. Lebedev, AS USSR, Moscow.
-1946-

DOBROTIN, NA.

"Cosmic Rays," Nauka i Zhizn., No. 11, 1947. Dr. Phys. Math. Sci.

AZIMOV, S.A.; VEKSLER, V.I.; DOBROTIN, N.A.; ZHDANOV, G.B.; LYUBIMOV, A.L.

On the measurements of the intensity of the cosmic radiation by the telescope method. Zhur.eksp.i teor.fiz. 17 no.1:79-91 '47. (MLRA 6:7)

1. Fizicheskiy institut im.P.N.Lebedeva Akademii Nauk SSSR.
(Cosmic rays)

DOBROTIN, N.

PA 58T86

USSR/Nuclear Physics - Cosmic Rays Aug 1947
Nuclear Physics - Particles

"Genetically Connected Impulses Induced by Cosmic Rays," N. Dobrotin, V. Tsyrlin, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 3½ pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 5

Describes series of experiments designed to study quantitative correlation between impulses; and discusses characteristics and effect of nonionized particles. Submitted by Academician S. I. Vavilov, 14 May 1947.

58T86

CA

3A

Genetically related impulses produced by cosmic rays. N. A. Dobrotin and V. Yu. Tsvrlin. *Zhur. Eksptl. Teoret. Fiz.* 18, 353-74(1948); cf. *C.A.* 43, 2850*i*; 45, 2331*a*.—At 3860 m. above sea level 2 superposed groups of proportional counters each contg. 3 counters in parallel supplied impulses whose amplitudes were registered. In case I, 5 Trost counters in parallel and an Al filter were placed between the groups; in case II, 3 Trost counters were placed on both sides, with a max. distance of 2.5 m. between the extreme axes. Curves for the no. of impulses of magnitude A vs. A for each proportional counter group were drawn; the no. of small impulses is much larger in case I. These are attributed to secondary particles from the Al or counter walls. The main part of the generating particles is able to traverse 12 cm. Pb. F. H. Murray

USSR/Nuclear Physics - Counters, Electronic Jul 48
Nuclear Physics - Cosmic Radiation

"Use of the Proportional Counter Method for Studying the Genetic Relationship of Impacts Caused by Cosmic Rays," N. Dobrotin, S. Nikol'skiy, V. Tsyrlin, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 24 pp

"Dok Ak Nauk SSSR" Vol LXI, No 2

Continuation of previous paper (see 58T86). Experiments were performed in summer of 1947, 3,860 meters above sea level. Results confirm previous conclusion, that many of the coincidences in

11/49T85

USSR/Nuclear Physics - Counters, Jul 48
Electronic (Contd)

proportional counters, whether placed side by side or above each other, are caused by genetically connected fissions. Submitted 13 May 48.

11/49T85

DOBROTIN, N.

Pt 11/49T85

Heavy particles in the composition of

of 4·5 and with paths much greater than that of
α-particle from a radioactive material, comprise 0·5
the particles of the penetrating component. These par
are shown to be below secondary mesons. The particles
which generate the secondary strongly ionized particles h
a comparatively large penetrating
part of the soft component of cosmic radiation. A relation
has been established between nuclear splitting and narrow
showers.

J. Rossi Lewis

DOBROTIY, N. A.

26930. BIRGER, N. G., VEKSLER, B. I., DOBROTIY, N. A.-Elektoronno-vaderyye livni kosmicheskikh luchey I vaderno-kaskadnyy protsess.-Avt: N. G. BIRGER, B. I. VEKSLER, N.A. DOBROTIY (1 dr.) Zhurnal eksperim. i teoret. Fiziki, 1949, Vyp. 9. c. 826-50---Bibliogr: s. 850

SO: Letopis' Zhurnal'nykh Statey, Vol. 36, 1949.

DOBROTIN, N. A.

"Electron Nuclear Showers in Cosmic Rays and the Nuclear Cascade Process," N.G. Birger, V.I.Veksler, N.A. Dobrotin, G.I.Zatsepin, L.V.Kurnasova, A.L.Lyubimov, I.L.Rozental, and L.Kh. Eydus. Zhur. Eksp. Teor. Fiz. Phys.,USSR, 19, 826-50, Sep 1949.
mixed

Summarizes experimental work on showers (called here "electronuclear showers", c.n.s.) performed 1945-48. Showers were recorded in 3 counters under 10 cm Pb; they increase more rapidly at altitude than the hard component. Contributions of knock-on showers were determined from measured frequencies to give c.n.s. Range in air of C.N.S. primaries - 120 g/cm^2 from observations up to 20 km. in Pb - 500 g/cm^2, and in C - 450 g/cm^2. E.n.s. were shown by hodoscopes to be of wide angle and high density, hence non-cascade. Cloud-chambers at 3660 m. show that showers under 20 cm Pb contain electrons, penetrating particles and nuclear fragments. Momentum spectra are reported using cloud-chamber in field of 12,000 gauss. E.n.s. are closely connected with extensive showers; about 25% of penetrating particles of extensive showers generate further e.n.s. Nuclear cascade processes are discussed in relation to e.n.s. and extensive showers. E.P.George

Inst. Physics im P.N. Lebedev, AS USSR

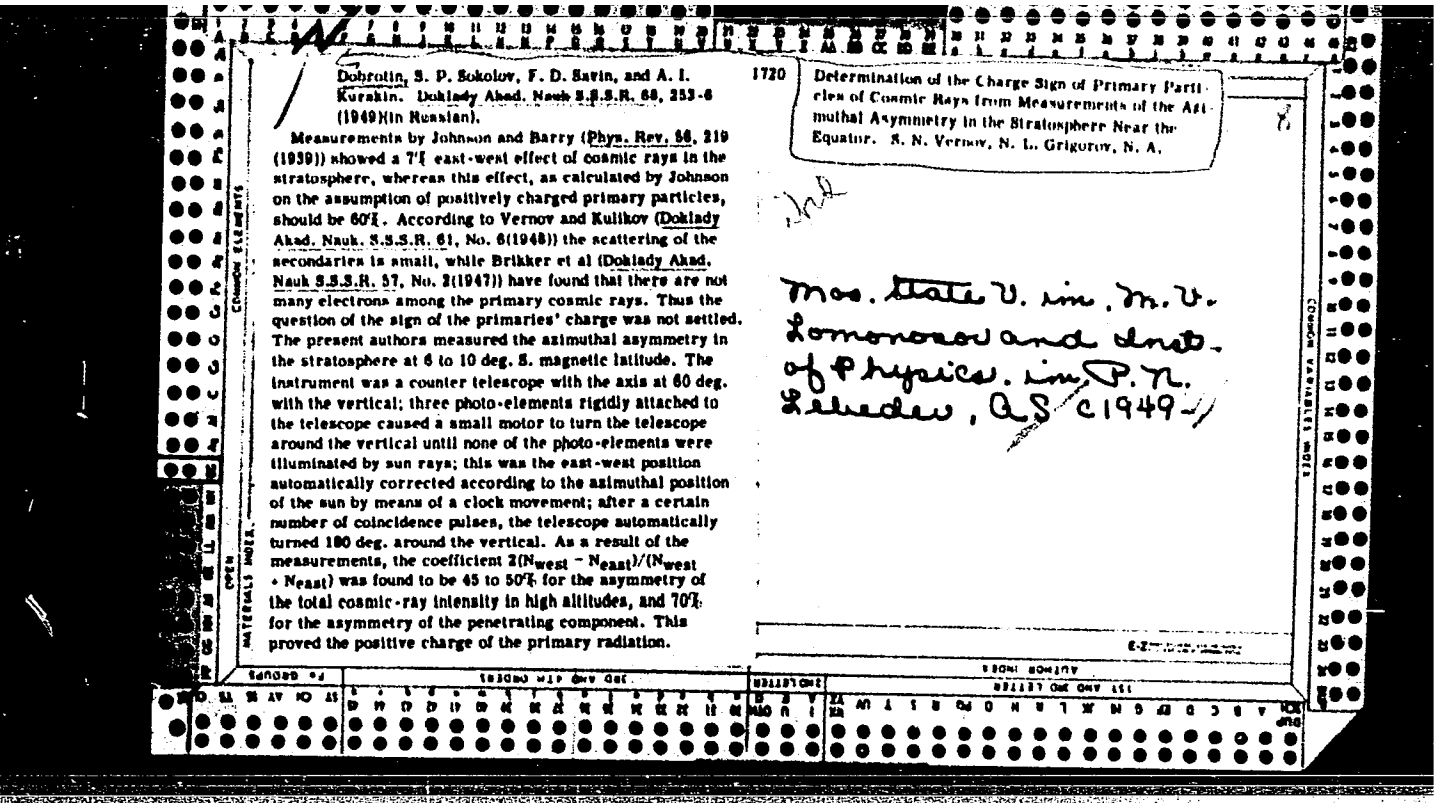
USSR/Nuclear Physics - Counters, Electronic Apr 49
Nuclear Physics - Particles, Elementary

"Study of Genetically Connected Pulses With the Aid of Proportional Counters," N. A. Dobrotin, G. M. Stashkov, V. Yu. Tsyrlin, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXV, No 4

Experimentally showed that coincidences in two groups of proportional counters placed one beneath the other may be divided into two categories. First category includes coincidences accompanied by a small number of charged particles. Correlation of the number of pulses is lacking for these coincidences. Consequently, they are caused by strongly ionizing particles. Small absorption by filters placed between counters shows that particles causing them cannot be strongly ionizing particles from the usual nuclear fissions. This confirms conclusion on genetically connected pulses -- simultaneous pulses which cannot be explained either by the traverse of the usual showers from a large number of charged particles or by the traverse of slow, strongly ionizing particles from the usual nuclear fissions. Second category includes coincidences connected with showers of relativistic particles. Submitted by Acad D. V. Skobel'tsyn, 1 Feb 49.

41/49T94



Dobrotin, S. P. Sokolov, F. D. Savin, and A. I. Kurakin. Doklady Akad. Nauk S.S.S.R. 68, 253-6 (1949)(In Russian).

Measurements by Johnson and Barry (Phys. Rev. 56, 219 (1939)) showed a 7% east-west effect of cosmic rays in the stratosphere, whereas this effect, as calculated by Johnson on the assumption of positively charged primary particles, should be 60%. According to Vernov and Kulikov (Doklady Akad. Nauk. S.S.S.R. 61, No. 6(1948)) the scattering of the secondaries is small, while Brikker et al (Doklady Akad. Nauk S.S.S.R. 57, No. 2(1947)) have found that there are not many electrons among the primary cosmic rays. Thus the question of the sign of the primaries' charge was not settled. The present authors measured the azimuthal asymmetry in the stratosphere at 6 to 10 deg. S. magnetic latitude. The instrument was a counter telescope with the axis at 60 deg. with the vertical; three photo-elements rigidly attached to the telescope caused a small motor to turn the telescope around the vertical until none of the photo-elements were illuminated by sun rays; this was the east-west position automatically corrected according to the azimuthal position of the sun by means of a clock movement; after a certain number of coincidence pulses, the telescope automatically turned 180 deg. around the vertical. As a result of the measurements, the coefficient $2(N_{west} - N_{east})/(N_{west} + N_{east})$ was found to be 45 to 50% for the asymmetry of the total cosmic-ray intensity in high altitudes, and 70% for the asymmetry of the penetrating component. This proved the positive charge of the primary radiation.

1720 Determination of the Charge Sign of Primary Particles of Cosmic Rays from Measurements of the Azimuthal Asymmetry in the Stratosphere Near the Equator. S. N. Vernov, N. L. Grigorov, N. A.

Mos. State U. im. M. V. Lomonosov and Inst. of Physics. im. P. N. Lebedev, AS C1949

DOBROTIN, N. A.

539.18 : 537.591.1

6772. On the existence of the "varitrons." S. N. VERNOV, N. A. DOBROTIN AND G. T. ZATSEPIN. *Zh. Eksper. i Teor. Fiz.*, 21, 1045-61 (No. 9, 1951) *In Russian.*

Criticizes the experimental results obtained by Alikhanyan and Alikhanov in their work on cosmic rays, and more particularly their conclusions about the existance of many kinds of fundamental particles which they called "varitrons" (preceding abstract). In the opinion of the authors, the "showers" and spurious trajectories, and also the electrons resulting from the ionization and from the nuclear disintegration in the absorbing screens, which, in particular, can be caused by the π-mesons, have not been adequately eliminated, not only in the first series of the experiments, whose results, in a considerable proportion, were not borne out by the later experiments with the aid of an improved mass spectrometer, but also in the latter set, in spite of the improvements in the apparatus. Furthermore, it is their opinion that after the proper elimination of these obscuring factors, the apparent maxima in the mass spectroscopic curve, which were interpreted as the records of the varitrons, will not go beyond the limits of statistical distribution of deviations and errors, so that in reality they should not be interpreted as a proof of the presence of particles of corresponding masses. N. S. JAPOLSKY

539.18 : 537.591.1

6773. On the article by S. Vernov, N. Dobrotin and G. Zatsepin. A. I. ALIKHANYAN. *Zh. Eksper. Teor. Fiz.*, 21, 1062-7 (*No.* 9, 1951) *In Russian.*

A detailed answer to the criticism of the experimental work by the author and Alikhanov on "varitrons" (preceding abstracts). The author, in his counter-argument, points out that some of the criticized results obtained by himself and his associate in 1946 were later, independently confirmed by quite different methods (photographic emulsion) by Powell, who detected exactly the same particles as they did and gave them the name of the "π-mesons," while the improved experimental methods, which they used in 1950, has also been followed on similar lines, by the team of physicists headed by Blackett. Furthermore, the author argues that his critics quite arbitrarily eliminated some of the experimental results, and that this led to wrong conclusions. While the improved method of observations showed the necessity of revising some of the initial results, as had been readily admitted in the criticized papers, the essence of the conclusions about the nature of the varitrons has been borne out. Many of the new results, however, still remain unexplained and require further investigation. N. S. JAPOLSKY

DOBROTIN, NA.

Dr. of Physicomathematical sciences
Detection and Investigation of electron-nuclear showers and the nuclear-cascaded process on cosmic rays.

N: Komsomol'skaya Pravda, No. 66 Moskva, 21 March 1951

DOBROTIN, N.A.

USSR/Physics - Cosmic Rays 1 Apr 51

"Spectrum of Ionizations of Particles in the Soft and Hard Components of Cosmic Rays," N. A. Dobrotin, Ya. I. Grayevskaya, N. L. Grigorov, S. I. Nikol'skiy, I. D. Rappoport, Phys Inst imeni Lebedev, Acad Sci USSR, Moscow State U imeni Lomonosov, Sci Res Inst of Terrestrial Magnetism

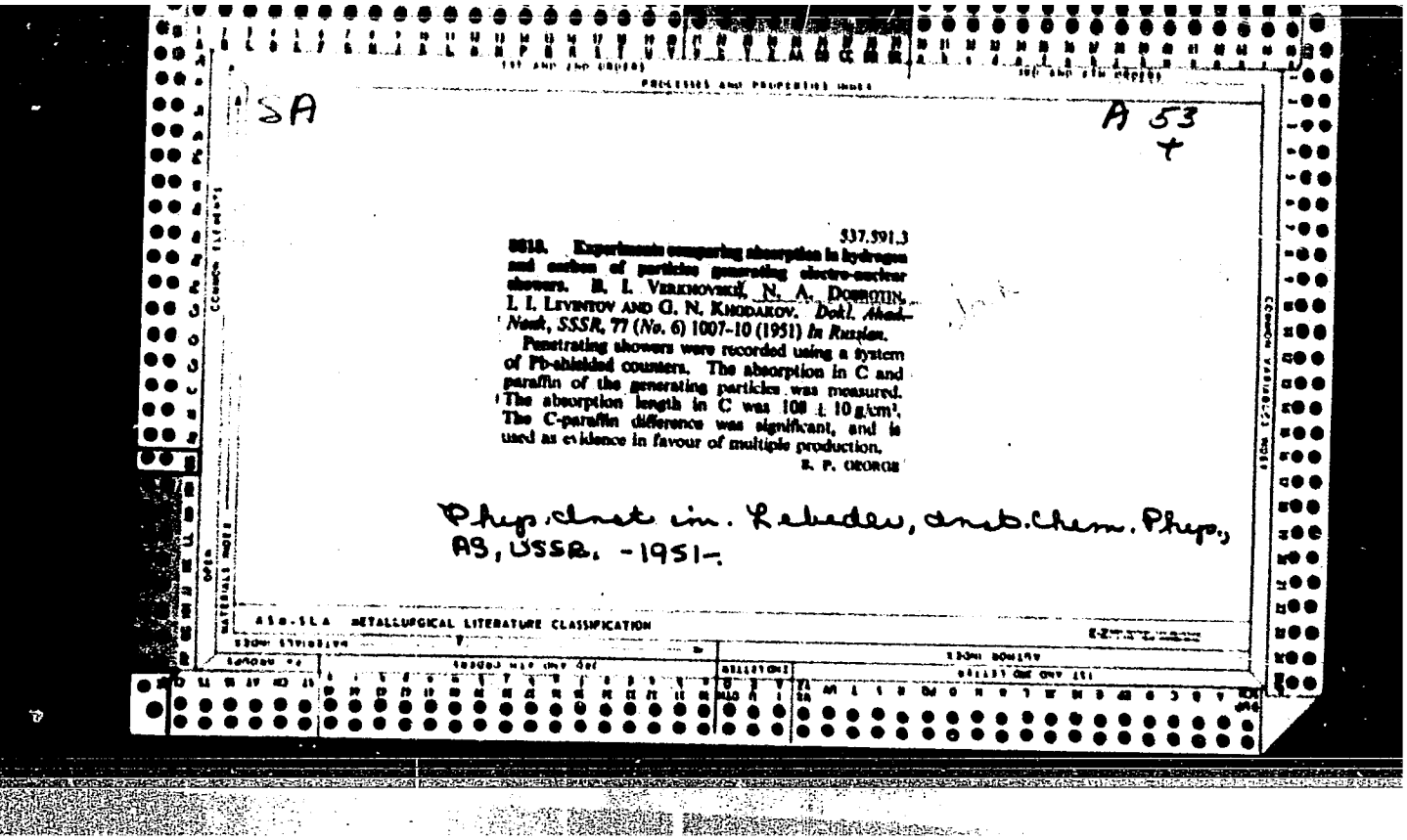
"Dok Ak Nauk SSSR" Vol LXXVII, No 4, pp 599-602

Discusses results obtained in the Pamir expedition. Studies variation in intensity of subject components with height. Acknowledges assistance

179T102

USSR/Physics - Cosmic Rays (Contd) 1 Apr 51

of Acad D. V. Skobel'tsyn, V. I. Veksler, Corr Mem, Acad Sci USSR, and Prof S. N. Vernov. Submitted 1 Feb 51 by Acad D. V. Skobel'tsyn.



SA

A 53
+

537.591.3

8818. Experiments comparing absorption in hydrogen and carbon of particles generating electro-nuclear showers. B. I. VRZHOSOVSKIĬ, N. A. DOBROTIN, I. I. LEVINTOV AND G. N. KHODAKOV. *Dokl. Akad. Nauk, SSSR*, 77 (*No.* 6) 1007–10 (1951) *In Russian.*

Penetrating showers were recorded using a system of Pb-shielded counters. The absorption in C and paraffin of the generating particles was measured. The absorption length in C was 108 ± 10 g/cm². The C-paraffin difference was significant, and is used as evidence in favour of multiple production.

S. P. OEORGE

Phys. Inst im. Lebedev, Inst. Chem. Phys., AS, USSR. -1951-.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

DOBROTIN, N.

USSR/Nuclear Physics - Cosmic Rays

21 May 51

"Masses of Cosmic-Ray Particles," S. Azimov, N. Birger, N. Dobrotin, G. Zhdanov, Yu. Korkurin, S. Slavatinskiy, Phys inst imeni Lebedev, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXVIII, No 3, pp 447-450

Authors' data shows that μ- and π-measons are not predominant. Particles of mass intermediate between π-meson and proton and with lifetime over 10^{-8} sec occur at 3-4 km altitudes; they do not exceed 10% of observed protons. These results differ from those of Alikhanyan and Alikhanov. Authors were assisted by advice of Acad D. V. Skobeltsyn, V. I. Veksler, Corr Mem, Acad Sci USSR, Prof S. N. Vernov, Prof E. L. Feynberg, and G. T. Zatsepin. App used was built with assistance of A. G. Novikov, A. A. Malinkin, V. N. Polynov, and G. I. Sergeyev. Submitted by D. V. Skobeltsyn.

186T98

VERNOV, S.; DOBROTIN, N. ; ZATSEPIN, G.

Alikhanian, A. I.

Again on the existence of varitrons (concerning A. I. Alikhanyan's reply to our article on varitrons). Zhur.eksper. i teor. fiz. 22 No. 4, 1952.

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

AZIMOV, S.A.; DOBROTIN, N.A.; LYUBIMOV, A.L.; MYZHKOVA, K.P.

On the absorption and interaction of atomic nuclei and particles generating electron-nuclear showers. Izv.AN SSSR.Ser.fiz. 17 no.1:80-87 Ja-F '53. (MLRA 6:7)

1. Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR. 2. Fiziko-tekhnicheskiy institut Akademii nauk Uzbekskoy SSSR.
(Cosmic rays) (Collisions (Nuclear physics))

DOBROTIN, N. A.

"Wide Atmospheric Showers of Cosmic Rays," by N. A. Dobrotin, G. T. Zatsepin, I. L. Rozental, L. I. Sarycheva, G. B. Khristianson, L. Kh. Eydus, Usp. Fiz. Nauk, Vol 49, No 2, pp 185-242, Feb 53.

First showers were observed by D. V. Skobeltsyn in 1929 (Z.F.Fizik, 54, 1929) and later in 1949 he detected gigantic showers in Mt. Pamir (3860m) (DAN 67, 1949). G. T. Zatsepin developed the new theory of wide showers (DAN 67, 1949) followed by foreign scientists. 78 references, mostly American (18) appended. Indebted to Acad Skobeltsyn, Ye. L. Feynberg, S. Z. Belenkiy, M. I. Pogoretskiy.

251T57

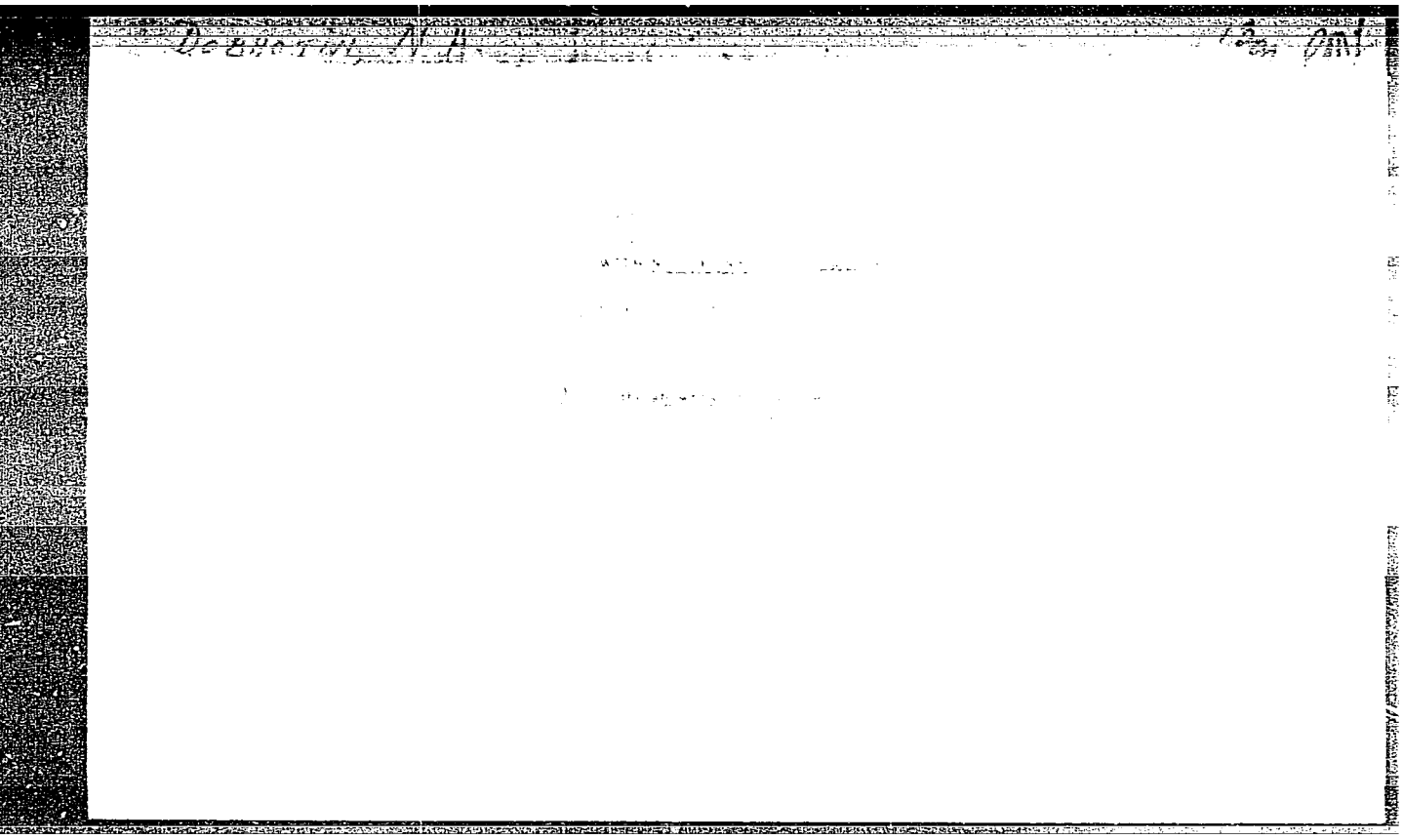
DOBROTIN, N.A.; LESHKOVTSEV, V.A., redaktor; AKHLAMOV, S.N., tekhnicheskiy redaktor.

[Cosmic rays] Kosmicheskie luchi. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1954. 320 p. (MLRA 8:1)
(Cosmic rays)

DOBROTIN, N.A.; ZATSEPIN, G.T.; NIKOL'SKIY, S.I.; SARYCHEVA, L.I.; KHRISTIANSEN, G.B.

Investigation of the interaction of high-and superhigh-energy particles with nucleons and atomic nuclei. Izv.AN SSSR Ser.fiz.19 no.6:666-676 N-D '55. (MLRA 9:4)

1.Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR i Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Cosmic rays) (Nuclear physics)



DOBROTIN, N.A.

21(1) PHASE I BOOK EXPLOITATION HUN/1911

International Conference on Cosmic Radiation. Budapest, 1956.

International Conference on Cosmic Radiation Organized by the Hungarian Academy of Sciences. Budapest, 1957. 187 p. 200 copies printed.

Sponsoring Agency: Magyar Tudomanyos Akademia

Eds.: E. Fenyves, and A. Somogyi

PURPOSE: This report is intended for geophysicists concerned with cosmic radiation.

COVERAGE: This report contains the papers read at the six plenary sessions of the conference. Some of the problems dealt with include nuclear emulsions, extensive air showers and the program of cosmic ray measurements planned for the International Geophysical Year. Most of the reports are followed by references. Soviet scientists in the field of cosmic radiation who attended the conference are: E.L. Andronikashvili, N.A. Dobrotin, I.I. Gurevich, S.I. Nikolskiy and S.N. Vernov. The articles are written in English, German and Russian without parallel translations.

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DOBROTIN, N.A.

AUTHOR DOBROTIN, N.A., Dr. phys.-math. sc. 30-7-3/36

TITLE Important Research Works of Topical Interest. On the Importance of the Investigation of Cosmic Radiation
(Vazhnyye i aktual'nyye issledovaniya. O znachenii rabot po kosmicheskim luchem. Russian)

PERIODICAL Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 7, pp 15 - 17 (U.S.S.R.)

ABSTRACT In the postwar years the investigation of cosmic radiation became more and more important. The discovery of the so-called elementary particles, the observation of their decay and their mutual transformation exercised a great influence on the conception of matter. The author thinks that the problem of elementary particles belongs to the most important of today's physics. In spite of that some scientists recently advocated the opinion that the great importance of cosmic radiation was already part of the past. The author believes that this opinion is false, since elementary particles exist in the cosmic radiation which possess gigantic energies (up to 10^{18} eV and more). The Union Institte of Nuclear Research in Dubno near Moscow put a synchrophasotron into operation; the normal energies of elementary particles exceed this most efficient accelerator million-fold. It is known that now and then a sudden, short increase in the intensity of cosmic radiation takes place (the last one was

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Important Research Works of Topical Interest. On the Importance of the Investigation of Cosmic Radiation 30-7-3/36

observed on Feb. 23, 1956). In the course of the geophysical year unthought-of achievements will be attained. It is clear that the investigation of cosmic radiation has to be further intensified in the U.S.S.R. The experimental work has to be closely connected with the theoretical one. Only by successful development of theory it will be possible to find a way from the interactions to the nature of the colliding particles.

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DOBROTIN, N. A.

A STUDY OF THE INTERACTION OF NUCLEONS WITH ENERGY (I - 5) x 10^{11} ev WITH LIGHT ATOMIC NUCLEI

N.L. GRIGOREV, V.V. GUSEVA, N.A. DOBROTIN, K.A. KOTELNIKOV, V.B. MURZIN, S.V. RYABIKOV, S.A. SLAVATINSKIY

1. The interaction of cosmic-ray nucleons with atomic nuclei has been investigated at 3860 m above sea level (Pamire Station of the Physics Institute, Academy of Sciences, U.S.S.R.) with the aid of an arrangement that permits of a comprehensive study of an individual act of nucear interaction.
2. The arrangement consisted of two cloud chambers with a target of a light substance (LiH in the main series of experiments) interposed between them. In this target the interactions under study were generated. The bottom cloud chamber was placed in a 6500-oersted magnetic field, which enabled us to measure directly the pulses of secondary particles. Under the chambers was a special device ("ionization calorimeter") made up of 120 ionization chambers arranged in 8 trays with filters between them. This device made it possible (from the total amount of energy generated) to determine the energy of the particle that produced the interaction being studied.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

AUTHOR: Dobrotin, N.A., Professor SOV/26-59-1-20/34

TITLE: Investigations of Cosmic Rays By Means of Artificial Earth Satellites (Issledovaniya kosmicheskikh luchey pri pomoshchi iskusstvennykh sputnikov zemli)

PERIODICAL: Priroda, 1959, Nr 1, pp 57 - 64 (USSR)

ABSTRACT: The author recapitulates the principal stages of international cosmic-radiation research. He mentions S.N. Vernov's sounding balloons of the thirties which reached altitudes of 30 to 35 km, S.N. Vernov's and A.Ye. Chudakov's investigations of cosmic rays by means of rockets and, along with N.L. Grigorov and Yu.I. Logachev, later investigations using artificial earth satellites. The results of these latter investigations have largely been placed at the disposal of the joint committee of the IGY and comprise summary radiation phenomena as well as those of individual cosmic ray particles. Special research was devoted to the study of the heaviest multi-charged nuclei in the primary cosmic radiation using the Cherenkov counter. A.I. Lebedinskiy and S.N. Vernov in-

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Investigations of Cosmic Rays By Means of Artificial Earth Satellites

vestigated secondary, comparatively slow charged particles and their paths in the magnetic field of the earth. The two researchers were also concerned with numbers, energy output and possible origin of diverse cosmic radiation particles and their distribution at different altitudes. Also these findings were given to the evaluation committee of the IGY. There are 5 graphs and 2 Soviet references.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva AN SSSR /Moskva (The Physical Institute imeni P.N. Lebedev of the AS USSR /Moscow)

DOBROTIN, Nikolay A., SLAVATINSKIY, S. A.,

"Study of Nucleon-Nucleon Interactions at Hundreds of Bev"

paper presented at the Intl Conference on High Energy Physics, Rochester, N. Y. and/or Berkly California, 25 Aug - 16 Sep 1960.

Lebedev Institute of Physics, Moscow, USSR

DOBROTIN, N. A.

"Investigation of Nucleon-Nucleon Interactions at 10 - 10 EV."

report submitted for the 10th Intl. Conf. on High Energy Physics, Rochester, N. Y. 25 Aug - 1 Sep 60

Physics Inst. im P. N. Lebedev, Moscow, USSR

S/058/61/000/010/017/100
A001/A101

3.2410

AUTHORS: Grigorov, N.L., Guseva, V.V., Dobrotin, N.A., Lebedev, A.M., Kotel'nikov, K.A., Murzin, V.S., Rappoport, P.D., Ryabikov, S.V., Slavatinskiy, S.A.

TITLE: Studying nucleon-nucleon interactions at $\sim 2 \times 10^{11}$ ev energies

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 96, abstract 10B501 ("Tr. Mezhdumar. konferentsii po kosmich. lucham, 1959, v. 1", Moscow, AN SSSR, 1960, 140 - 153)

TEXT: The authors present the results of an investigation, by means of the "calorimetric" method, of nucleon-nucleon interactions at energies of $\sim 2 \times 10^{11}$ ev, conducted at Pamir (3,860 m above sea level). They describe the equipment for determining the energy of primary particles, energy distribution of secondary particles, inelasticity coefficient, and present data on correlated pairs, angular distributions of particles in individual interactions, and consider in detail symmetric and non-symmetric showers.

L. Dorman

[Abstracter's note: Complete translation]

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B016/B058

24.6900

AUTHOR: Dobrotin, N. A., Doctor of Physical and Mathematical Sciences

TITLE: An Important Problem of the Physics of High-energy Particles (Study of Elementary Events of Nucleon-nucleon Interactions in Cosmic Rays)

PERIODICAL: Vestnik Akademii nauk SSSR, 1960, No. 7, pp. 21-25

TEXT: The authors report on investigations of the inner field of the nucleon, according to which it can be subdivided into a central and a peripheral region. Accelerators and cosmic rays are mentioned as sources of high-energy nucleons. The accelerator of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research) at Dubna enables a proton acceleration to 10 Bev. The Pamirskaya stantsiya Fizicheskogo instituta im. P. N. Lebedeva Akademii nauk SSSR (Pamir Station of the Institute of Physics imeni P. N. Lebedev of the Academy of Sciences USSR) has obtained new data on nucleon-nucleon interactions. Since it is rather difficult to determine the energy of the primary particles by the photoemulsion method, a new method was developed,

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An Important Problem of the Physics of High-energy Particles (Study of Elementary Events of Nucleon-nucleon Interactions in Cosmic Rays)

which is based on the measurement of the total ionization. Such an "ionization calorimeter" was designed at the Pamir Station with the cooperation of N. L. Grigorov and S. A. Slavatinskiy, scientists of Moskovskiy universitet (Moscow University), the author, and other coworkers. It consists of a Wilson cloud chamber (volume of 70 l) which is placed in a 6000-oe magnetic field. Lithium hydride serves as target. There are eight rows (120 pieces) of ionization chambers, serving as "calorimeters", below the Wilson cloud chamber. The energy of the primary particles could be measured with an accuracy of about 30%. A new apparatus with a greater number of ionization chambers is to improve accuracy. The showers investigated so far can be subdivided into three groups: 1) the inelasticity coefficients K of both nucleons are approximately equal and very small ($K \sim 0.2$). The angular distribution of the secondary mesons is symmetrical in the center-of-gravity system of the colliding nucleons. It is a case of "peripheral" collisions of the π -mesons virtually existing in the surface of the nucleons ($\pi - \pi$ interaction). 2) Both K are different, the secondary mesons are asymmetrically distributed (π-N interaction). 3) Both K are great ($K > 0.5$), the showers are

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An Important Problem of the Physics of High-energy Particles (Study of Elementary Events of Nucleon-nucleon Interactions in Cosmic Rays)

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approximately symmetrical and can be conceived as a result of the interaction between the central particle regions (N-N interaction). The author mentions Academician D. V. Skobel'tsyn.

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S/053/60/072/001/005/005
B013/B060

AUTHORS: Dobrotin, N. A., Grigorov, N. L., Zatsepin, G. T., Ivanenko, I. P., Charakhch'yan, A. N., Chudakov, A. Ye.

TITLE: Sergey Nikolayevich Vernov (On His 50th Birthday)

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol. 72, No. 1, pp. 153 - 155

TEXT: Sergey Nikolayevich Vernov celebrated his 50th birthday on July 10, 1960. The beginning of his scientific activity coincided with the beginning of an intensive research on cosmic rays (1931-1932). By his first studies he built the foundation for the present-day methods of investigating cosmic rays inside and outside of the stratosphere by means of radio signals emitted by automatic devices. From the start, Vernov worked in close contact with Academician D. V. Skobel'tsyn. In 1939, he completed a series of studies on cosmic rays in the stratosphere, measured at various latitudes. Stratospheric measurements made by Vernov from 1946 to 1949 yielded particularly detailed information on the nature of primary radiation. Basing on rules found by experiments

to govern the absorption of the primary components in the atmosphere, Vernov reached an important conclusion concerning a strong interaction of the primary particles of cosmic radiation with matter. In 1949, S. N. Vernov headed an expedition of Soviet physicists to the equatorial latitudes in the Indian Ocean. Stratospheric investigations made in the course of that expedition yielded convincing evidence of the existence of the disputed, so-called east-west asymmetry and of the positive charge of particles of cosmic radiation. For his research of cosmic radiation in the stratosphere, Vernov was distinguished with the Stalin Prize of 1st Class in 1949. From 1947 to 1949, Vernov organized comprehensive studies of the interaction of high-energy protons with matter in the stratosphere. Collisions of protons with atomic nuclei were found to give rise to an electron-photon component of cosmic radiation. This allowed the assumption that rapidly decaying mesons giving rise to the formation of photons and electrons are produced in the course of such processes. This hypothesis was confirmed by the discovery of π^0-mesons. In 1949 and 1951, Vernov and collaborators obtained experimental data confirming the presence of nuclear cascade processes in 10^{10}-ev primary cosmic particles. Vernov supervised comprehensive research work on the

interaction of cosmic rays with matter and obtained an insight into the mechanism of the formation of secondary cosmic rays in the atmosphere. It became thus possible to describe this process quantitatively. On Vernov's initiative, elementary processes of the interaction of 10^{11} - 10^{13} ev particles with atomic nuclei are being studied from a stratoplane. Under his supervision, a first-class laboratory was established at Moskovskiy gosudarstvennyy universitet (Moscow State University) to serve for research work on interaction of ultrahigh-energy particles (10^{14} - 10^{16} ev) with matter. The USSR network of stations for the permanent recording of cosmic rays was established with his participation, and is now operating under the IGY program. In acknowledgment of his scientific achievements, Vernov was elected Corresponding Member of the Akademiya nauk SSSR (Academy of Sciences USSR) in 1953. He was awarded the Lenin Prize in 1960 for his discovery and research of the outer radiation belt of the earth. S. N. Vernov is the head of the NIIYaF MGU (Scientific Research Institute of Nuclear Physics of Moscow State University), and runs the special section of the fizicheskiy fakul'tet MGU (Department of Physics at the MGU). There are 1 figure and 37 Soviet references.

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DOBROTIN, N.A., GUSEVA, V.V., ZELEVINSKAYA, N.G., KOTELNIKOV, K.A., LEBEDEV, A.M., and SLAVATINSKY, S.A.

"Experimental Data on Nucleon-Nucleon-Interaction at the Energy of Hundreds of GeV and Their Interpretation,"

report presented at the Intl. Conference on Cosmic Rays and Earth Storms, Kyoto, Japan, 4-15 Sept 1961.

24.6700

S/048/62/026/005/001/022
B102/B104

AUTHORS: Guseva, V. V., Dobrotin, N. A., Zelevinskaya, N. G., Kotel'nikov, K. A., Lebedev, A. M., and Slavatinskiy, S. A.

TITLE: Experimental data on nucleon-nucleon interactions at ~100 Bev and their interpretation

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 5, 1962, 549 - 557

TEXT: Experimental data on NN-interactions, obtained by a team of the Laboratory of Cosmic Rays of the Physics Institute AS USSR at its Pamir station (3860 m), are discussed. Photographs of such interactions revealed the presence of showers with asymmetric particle emission in the c.m.s. Of 48 showers, 18 showed marked asymmetry. The data obtained with the arrangement shown in Fig. 1 were evaluated by conventional statistical methods and also by the Monte-Carlo method. It is shown that the probability of asymmetric showers being caused by fluctuations in the meson angular distribution does not exceed some per cent. The fact that the shower symmetry depends on the inelasticity ratio of the interacting nucleons

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Experimental data on...

allows NN-interactions to be divided into three classes: (1) symmetric showers with small and approximately equal coefficients of inelasticity K_{lab} and K_{mirror}; (2) asymmetric showers with very different coefficients; and (3) symmetric showers with both coefficients being large ($K > 0.4$). It is explicitely shown that the experimental results can be interpreted with the aid of a simple structural model of interactions for the above classes: (1) peripheral-- peripheral interactions; (2) peripheral - central interactions; and (3) central - central interactions. In collisions of class (2), for example, the periphery of one nucleon is assumed to interact with the center of the other. The data obtained also show that an excited meson cloud appears in ~100 Bev NN-collisions, which does not contain the colliding nucleons. In general, this cloud moves slowly relative to the c.m.s., and decomposes isotropically when its temperature reaches a value $T \sim \mu_\pi$. The "spectrum" of the radiation or energy distribution of the mesons is comparable with that of an absolutely black body. There are 12 figures.

ASSOCIATION: Laboratoriya kosmicheskikh luchey Fizicheskogo instituta im. P. N. Lebedeva Akademii nauk SSSR (Laboratory of Cosmic Rays of the Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR)

Experimental data on...

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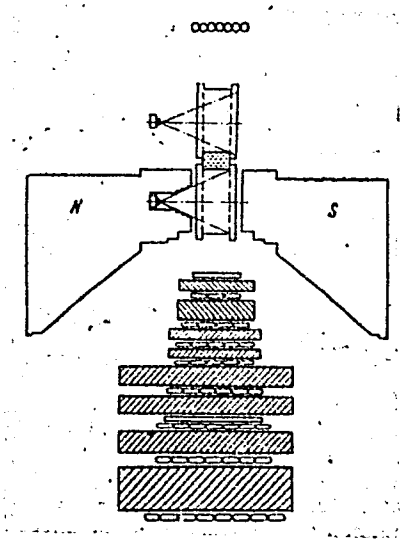

Fig. 1

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DOBROTIN, Nikolay Alekseyevich; MATSONASHVILI, B.N., red.izd-va; ZUDINA, V.I., tekhn. red.; TIKHOMIROVA, S.G., tekhn.red.

[Cosmic rays] Kosmicheskie luchi. Moskva, Izd-vo AN SSSR, 1963. 125 p. (MIRA 16:11)
(Cosmic rays)

L 16013-65 EWT(m) DIAAP/SSD/AEDC(a)/AFWL/ESD(gs)/ESD(t)
ACCESSION NR: AP4049586 S/0048/64/028/011/1741/1750

AUTHOR: Grigorov, N.L.; Dobrotin, N.A.; Zhdanov, G.B.; Takibayev, [illegible]

TITLE: Experimental investigation of nuclear interactions at [illegible]
[illegible] by Soviet Association Conference on the Physics of [illegible]
8 to 10 Oct 1963/

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v.28, no.11, 1964, 1741-1750

TOPIC TAGS: cosmic rays, high energy interaction, nuclear physics, nuclear reaction

ABSTRACT. The paper is primarily a general review of recent [illegible]
[illegible] Soviet scientists, on nuclear processes occurring at [illegible]
[illegible] in the 10^{11} to 10^{13} eV range. It [illegible]
processes in this energy range are characterized by very [illegible]
[illegible] mass spectra, etc., with energy [illegible]
[illegible] interval in order to discuss [illegible]
[illegible] theoretical evaluations as well as [illegible]
[illegible] means of pellicle stacks, [illegible]
counter and chamber arrays, and spark chambers (the merits of the [illegible]

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aimed at determining gamma-ray spectra, particle distribution, [illegible] tra, etc. The fire-ball model is discussed in connection with [illegible] describes experimental results and theoretical hypotheses [illegible] or general data are given. Among the experimental problems [illegible] are measurement of the [illegible] nucleon-nucleon [illegible] at [illegible] nucleon-nucleus interact[illegible] the fire-ball mechanism in nucleon-nucleus and [illegible] and comparison of neutral and charged pion products [illegible] the results [illegible] of central collision, [illegible] of the fraction [illegible] particle energies. It is [illegible] the new [illegible] in the [illegible] magnetic field and [illegible] the [illegible] of this type [illegible] of elevation of 2200 meters, this [illegible]

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ACCESSION NR: AP5049586

sci. chambers and a 1000 ton electromagnet. Orig. art. has [illegible] figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy [illegible]
[illegible] universiteta im. M. V. Lomonosova (Scientific [illegible]
[illegible] Moscow State University); [illegible]
[illegible] Physics Institute, Academy of Sciences, [illegible]
[illegible] (Institute of Nuclear [illegible]
[illegible]SSR

SUBMITTED: 00 [illegible]

SUB CODE: AA, NP NO REF SOV: 021 [illegible]

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