HUNGARY

NAGY, A. Tibor, Dr, PERTORINI, Rezso, Dr; Medical University of Debrecen, Neurological and Psychiatric Clinic (Debreceni Orvostudomanyi [illegible] Ideg- es Elmegyogyaszati Klinika) (Director: JUHASZ, Pal, Dr, professor Dr).

"The Clinical Use of Melipramin (Imipramin)."

[illegible], Ideggyogyaszati Szemle, Vol [illegible], No [illegible], Apr [illegible], pages [illegible].

Abstract: [Authors' German summary modified] The authors analyze the clinical data on [illegible] patients treated with Melipramin. They describe the doses, length of treatment, side effects, the use of any other somatic treatment simultaneously or psychotherapy provided during treatment. Good results were obtained in various depressive states. Epileptic convulsions tended to increase in frequency during the use of the drug. EEG, blood sugar tolerance tests showed no significant changes during the treatment. Based on experimental and clinical data, the possibility of a two-fold mechanism of action is suggested influencing the formatio reticularis of the brain stem as well as the affective mood states. 14 Western, 2 Hungarian references.

1/1

PERTOT, M.

Ship drives by nuclear reactors. II. p. 169.

ELEKTORTEHNISKI VESTNIK. ELECTROTECHNICAL REVIEW. Ljubliana, Yugoslavia.
Vol. 27, no. 5/6, 1959.

Monthly List of East European Accessions (EEAI) LC Vol. 9, no. 2, Feb. 1960.

Uncl.

PERTOT, Milan, dipl. inz. (Ljub[illegible]

Development and present state of the nuclear power stations in the U.S.A. Nova proizv 15 no.5:287-303 O '64.

[illegible], M.

Synthetic rubber in competition with natural rubber. p. 17[illegible].
NOVA PROIZVODNJA. (Zveza drustev inzenirjev in tehnikov LRS)
Ljubljana. Vol. 7, no. 2, Apr. 1956.

SOURCE: East European Accessions List, (EEAL), Library of Congress,
Vol. 5, no. 1[illegible], December 1956

PERTOT, M.

Studying the causes of the accident to the SL-1 reactor at Idaho Falls. Elektr vest 30 no.3/4:98-99 '62/'63.

PERTOT, M.

Atomic or the usual heat and hydroelectric-power plants? p. 25.
NOVA PROIZVODNJA. (Uprava za napredek v proizvodniji) Ljubljana.
Vol. 7, no. 1, March 1956

SOURCE: East Europe Accessions Lists (EEAL),
Library of Congress, Vol. 5, no. 11, Nov. 1956

PERTOT, Milan, inz.

Development and present stats of nuclear power stations. Nova
prcizv 14 no.5/6:359-368 O '63

PERTOT, V.

Some specific characteristics of the financing of electric industries in Yugslovia. p. 238.
(Elektroprivreda, Vol. 10, No. 5/6, May/June, 1957, Beograd, Yugslovia)

SO: Monthly List of East European Accessions (EEAL) Lc. Vol. 6, No. 8, Aug 1957, Uncl.

PERTOVSKI, IU.

On the border of the fantastic. Nauka i tekh mladezh no.6:3-5 Je '67.

KOVAL' V., PERTOVSKIY, V.

Glue

Consultation. Mias. ind. SSSR 23 no. 1, 1952.

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

2

HERTS, R.G.

Clinical importance of the state of the esophagus in deformities of the spine of tuberculous etiology. Vest. rent. i rad. 40 no.2:69-70 Mr-Ap '65. (MIRA 18:6)

1. Rentgenovskoye otdeleniye Leningradskogo nauchno-issledovatel'skogo instituta ekspertizy trudosposobnosti i organizatsii truda invalidov.

PERTS, R.G., mladshiy nauchnyy sotrudnik

Degenerative-dystrophic processes in the spine following tuberculous lesions developed in childhood. Trudy LIETIN no.16:332-342 '64. (MIRA 19:1)

1. Leningradskiy nauchno-issledovatel'skiy institut ekspertizy trudosposobnosti i organizatsii truda invalidov.

L 20861-66 EWT(m)/EWP(t) JD
ACC NR: AP5011092 SOURCE CODE: GE/0006/65/000/008/0287/0292

AUTHOR: Krahl, K.; Schleicher, E.; Pertsch, W.

ORG: KDT, Hermsdorf; VEB Ceramics Factory, Hermsdorf-Thur (VEB Keramische Werke)

TITLE: Microelectronics based on thin film technology [The paper was presented at the Section Meeting entitled "Problems of microelectronics" at the Scientific Congress held in Leipzig from 8 to 9 March 1965]

SOURCE: Nachrichtentechnik, no. 8, 1965, 287-292

TOPIC TAGS: microelectronics, microelectronic thin film, electronic circuit, microelectronic circuit, solid state device

ABSTRACT: The need for the reduction in size of the electronic equipment and the successes achieved in this direction in the Western world prodded the Ceramic Factory Hermsdorf to start in 1960 the development (in a manner similar to the RCA micromodule technology program) of miniaturized electronic circuits which could be gradually expanded in parallel with the growth of the technological means. The article reports on the advances in this direction at the factory during the 1960-65 period. The development was carried out in agreement with the modern views concerning the economical automatic production of complex circuit-building elements and it resulted in the creation of the so-called KME series of complex microelectronic elements. The description of the mastering of the thin film-hybrid technology, of the operational

Card 1/2 UDC: 621.3.049.7

L 20861-66

ACC NR: AP6011092

characteristics of the units already in production, and of the future plans aiming, e.g., at the production of elements incorporating solid state switching devices is intermixed with a survey of the achievements of international microelectronic technology. Orig. art. has: 13 figures and 4 tables. [JPRS]

SUB CODE: 09 / SUBM DATE: 10Apr65

Card 2/2

PERTSEL', V.M.; ROSTRIPENKO, I.A.; GOLUBEVA, A.D.

Experience in using sodium phosphate for improving the boiling and centrifuging of massecuites at the Petrovskoye Sugar Factory. Sakh.prom. 34 no.3:10-12 Mr '60. (MIRA 13:6)

1. 2-y Petrovskiy sakharnyy zavod (for Pertsel', Rostripenko).
2. TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti (for Golubeva).
(Petrovskoye (Kharkov Province)—Sugar manufacture)

PERTSEL', V.M.; GOROKH, V.N.

Experience in using hydraulic columns. Sakh.prom. 34 no.1: 22-28 Ja '60. (MIRA 13:5)

1. 2-y Petrovskiy sakharorafinadnyy zavod (for Pertsel').
2. TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti (for Gorokh).
(Petrovskoye (Kharkov Province)--Sugar manufacture)

VAYSMAN, M.L.; TROYNO, V.P.; PERTSEL', V.M.

Use of ultrasound in the control of scale formation in evaporators. Sakh.prom. 34 no.1:36-39 Ja '60. (MIRA 13:5)

1. TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti (for Vaysman, Troyno). 2. 2-y Petrovskiy sakharnyy zavod (for Pertsel').
(Sugar manufacture)
(Ultrasonic waves--Industrial applications)

SOV/110-59-6-4/24

AUTHORS: Grigor'yev, V.S., Engineer and Portsev, A.A., Engineer

TITLE: A Mercury-Vapour Pump for a High-Power High-Voltage Mercury-Arc Rectifier (Parortutnyy nasos dlya moshchnogo vysokovol'tnogo rtutnogo vypryamitelya)

PERIODICAL: Vestnik elektropromyshlennosti, 1959, Nr 6, pp 16-17 (USSR)

ABSTRACT: The mercury-vapour pump described in this article is used with the high-voltage rectifier type VR9. In operation the pump is at a high potential to earth and so must be cooled with transformer oil. A number of difficulties were experienced with the original type of pump, which has been described elsewhere. This article is principally concerned with the design changes which resulted in the modernised pump illustrated in Fig 1. The exhaust tube, which is wrapped helically round the pump body, serves to guide the flow of cooling oil. The exhaust tube is thus twice as long as in the previous construction and, although this halves its discharge rate, the pressure drop in it is not greater than 1.7% of the backing pressure. The vapour circuit was also reconstructed, particularly the nozzle of the diffusion

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A Mercury-Vapour Pump for a High-Power High-Voltage Mercury-Arc Rectifier

stage. It was found that the pump maintained its performance when the heater power was reduced by a factor of 2.5 to 3 and the pumping speed actually increased. Because of this it was possible to reduce the minimum gap between the surfaces of the cones and the nozzle of the diffuser stage to 0.4 mm. This and other consequent changes improved the characteristics of the pump: the pumping speed was increased by some 20 or 30% and was between 10 and 12 litres/sec with an inlet pressure of 5×10^{-4} mm Hg; the maximum back-pressure was approximately doubled and was 20 mm Hg with a heater power of 900 W. The pumping speed and maximum back-pressure are plotted as functions of the heater power in Fig 2. The pumping speeds are similarly plotted for hydrogen and for air in Fig 3; it will be seen that at rated heater power, the speed with hydrogen is 36 litres/sec. However, it falls off much more rapidly than the speed for air as the heater power is reduced. A trap that was devised to prevent carry-over of mercury

A Mercury-Vapour Pump for a High-Power High-Voltage Mercury-Arc Rectifier

droplets is illustrated in Fig 4. This is installed at the end of the pump discharge tube. There are 4 figures and 2 Soviet references.

L 23770-66 EWA(h)/EWT(1)

ACC NR: AP6015276 SOURCE CODE: UR/0292/65/000/011/0022/0024

AUTHOR: Butayev, F. I. (Candidate of technical sciences); Klimov, N. S. (Candidate of technical sciences); Pertsev, A. A. (Engineer); Stepanov, N. P. (Candidate of technical sciences)

ORG: none

TITLE: Developments in high-voltage power rectifiers

SOURCE: Elektrotekhnika, no. 11, 1965, 22-24

TOPIC TAGS: direct current, electric power transmission, mercury rectifier

ABSTRACT: The Leningrad-Donbass transmission line is presently being put into operation. This will be the most powerful d-c transmission line in the world, sending 750 Mw of power at 800 kv over a distance of roughly 500 km. The transmission system uses a three-phase eight-bridge network with power rectifiers which operate at a maximum voltage of 130 kv and a maximum current of 900 amps. The eight-bridge system, proposed by the All-Union "Order of Lenin" Electrical Engineering Institute imeni V. I. Lenin, has the following advantages over the four-bridge circuit: 1) when individual bridges in the system fail, the transmitted power is maintained by current overload on the bridges remaining in operation; 2) the work load on the equipment is lighter in emergency conditions, and two rectifiers can be series-connected in each arm of the bridge to reduce the work load by increasing the number of rectifiers from

Card 1/2 UDC: 621.314.65.001.8

L 23770-66

ACC NR: AP6015276

72 to 96; 3) when separate rectifiers fail, the voltage applied to the elements remaining in operation does not exceed the nominal value, while in the four-bridge system the voltage is twice the rated value in this type of emergency. Various foreign high-voltage d-c transmission lines now in operation and being planned are mentioned and their parameters are given. Some of the advances made in high-voltage power rectifiers since 1940 are discussed. Work was begun on the rectifier being used in the Volgograd-Donbass system in 1952 at the All-Union Electrical Engineering Institute. The various problems involved in the development and construction of this device are discussed. This single-anode pool unit, called the VR-9 Excitron, is now being mass-produced at a specially built factory in Moscow. The overall dimensions of the rectifier are 1.9 x 1.2 x 3.4 m. A comparison of the VR-9 Excitron with the Swedish-made rectifiers used in the English Channel d-c Transmission line shows that the Soviet high-power mercury rectifier is up to modern requirements with respect to electrical characteristics and construction. Orig. art. has: 2 figures. [JPRS]

SUB CODE: 10, 09 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 002

Card 2/2

PERTSEV, A.A., inzh.

Distribution of the electrical strength of the discharge gaps of mercury rectifiers. Elektrichestvo no.10:76-79 O '65. (MIRA 18:10)

1. Vsesoyuznyy elektrotekhnicheskiy institut imeni V.I.Lenina.

BUTAYEV, F.I., kand.tekhn.nauk; KLIMOV, N.S., kand.tekhn.nauk; PERTSEV, A.A., inzh.; STEPANOV, N.P., kand.tekhn.nauk

Developments in the field of high-voltage power rectifiers.
Elektrotekhnika 36 no.11:22-24 N '65. (MIRA 18:11)

PERTSEV, A.I.

PHASE I BOOK EXPLOITATION SOV/6363

Zhetvin, Nikita Petrovich, Vladimir Pavlovich Tunkov, Mikhail Andreyevich Pertsev, Aleksey Ivanovich Paisov, and Lev Nikolayevich Podvoyskiy

Tekhnicheski chistoye zhelezo (Armco Iron) Moscow, Metallurgizdat, 1962. 191 p. Errata slip inserted. 2750 copies printed.

Ed.: L. Sh. Kazarnovskiy; Ed. of Publishing House: A. L. Ozeretskaya; Tech. Ed.: A. I. Karasev.

PURPOSE: The book is intended for engineering personnel at metallurgical and machine-building plants. It may also be used by students at schools of higher education and tekhnikums studying metallurgy, machine building, and electrical equipment.

COVERAGE: The book reviews methods of melting, rolling, and heat treating low-carbon electrical steel and pertinent problems of its physical metallurgy. The effect of various impurities and heat treatment on magnetic and

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technological properties of sheets and bars made from this steel is discussed. Suggestions are made on the selection of optimal conditions for heat treatment of low-carbon electrical-steel products and on the improvement of their quality. The assistance of P. Ya. Barzdayn, G. V. Sviridov, C. N. Sokolov, I. I. Fomin, B. N. Sukhotin, L. I. Krylova, Ye. P. Kapustina, Ya. L. Frid, B. M. Maksimov, Ye. M. Kontsevaya, A. D. Zaytseva, I. I. Yelin, I. M. Romanov, N. S. Safronov, A. R. Krylova, B. S. Brusilovskiy, K. N. Belousov, I. B. Tseytlin, and other engineers of the "Serp and Molot" Plant is acknowledged. There are 147 references, mostly Soviet.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

SUBJECT: Metals and Metallurgy

Card 7/7

DV/clb/os
6/28/63

S/179/60/000/03/005/039

AUTHORS: Kadashevich, Yu.I. and Pertsev, A.K. (Leningrad)

TITLE: The Loss of Stability of a Cylindrical Shell Under Dynamic Loading

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, Nr 3, pp 30-33 (USSR)

ABSTRACT: The problem considered is that of an infinitely long cylindrical shell reinforced by equally spaced transverse ribs so that loss of stability occurs only between the ribs. It is assumed that the number of waves round the circumference on loss of stability is large ($n > 5$). The deflection of the shell is expressed approximately by Eq (1), where L is the distance between the ribs and R is the radius of the shell. The kinetic energy of the shell K is given by (4) and the equations of motion by (6), using the dimensionless parameters (7), in which $q(\tau)$ is the transverse load and V is the sound velocity in the material of the shell. The coefficients in (6) are given by (8) using the notation (9) in which q^{*} is the external static critical load. Calculations were

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S/179/60/000/03/005/039

The Loss of Stability of a Cylindrical Shell Under Dynamic Loading

carried out on the electrical machine MN-7 and Fig 1 shows typical curves for the dynamic deflection of a shell for which $\pi^2 hR/L^2 = 1$ (h is presumably the shell thickness but this is not stated explicitly). The ordinates and abscissae of Fig 1 are defined in Eq (7). The values of the safe dynamic load are shown in Fig 2 for $q_n^N = 1$ (for example $\sigma_T = 4000$ kg/cm^2, $E = 2.10^6$ kg/cm^2, $R/h = 500$) and $\pi R/nL = 0.5$. Fig 3 shows the safe load for a range of n with $\zeta_1^o = 0.01$ and $R/h = 100$. Fig 4 shows the curves of J_o ($= \zeta_o(\tau)$), J_1 ($= \zeta_2(\varphi)$) and J_2 ($= \zeta_2(\tau)$), with ζ_o, ζ_1 and ζ_2 defined in Eq (7) plotted against τ. There are 4 figures and 6 Soviet references.

SUBMITTED: January 20, 1960

Card 2/2

Pertsev, N. A.

BOROVSKIY, P. V.

PHASE I BOOK EXPLOITATION SOV/6206 75

Konferentsiya po teorii plastin i obolochek. Kazan', 1960.

Trudy Konferentsii po teorii plastin i obolochek, 24-29 oktyabrya 1960. (Transactions of the Conference on the Theory of Plates and Shells Held in Kazan', 24 to 29 October 1960). Kazan', [Izd-vo Kazanskogo gosudarstvennogo universiteta] 1961. 426 p. 1000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Kazanskiy filial. Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina.

Editorial Board: Kh. M. Mushtari, Editor; F. S. Isanbayeva, Secretary; N. A. Alumyae, V. V. Bolotin, A. S. Vol'mir, N. S. Ganiyev, A. L. Gol'denveyzer, N. A. Kil'chevskiy, M. S. Kornishin, A. I. Lur'ye, G. N. Savin, A. V. Sachenkov, I. V. Svirskiy, R. G. Surkin, and A. P. Filippov. Ed.: V. I. Aleksagin; Tech. Ed.: Yu. P. Semenov.

PURPOSE: The collection of articles is intended for scientists and engineers who are interested in the analysis of strength and stability of shells.

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Transactions of the Conference (Cont.) SOV/6206

COVERAGE: The book is a collection of articles delivered at the Conference on Plates and Shells held in Kazan' from 24 to 29 October 1960. The articles deal with the mathematical theory of plates and shells and its application to the solution, in both linear and nonlinear formulations, of problems of bending, static and dynamic stability, and vibration of regular and sandwich plates and shells of various shapes under various loadings in the elastic and plastic regions. Analysis is made of the behavior of plates and shells in fluids, and the effect of creep of the material is considered. A number of papers discuss problems associated with the development of effective mathematical methods for solving problems in the theory of shells. Some of the reports propose algorithms for the solution of problems with the aid of electronic computers. A total of one hundred reports and notes were presented and discussed during the conference. The reports are arranged alphabetically (Russian) by the author's name.

Card 2/14

42741

S/124/62/000/011/006/017
D234/D308

10 4160

AUTHORS: Pertsev, A. K. and Kadashevich, Yu. I.

TITLE: Stability of cylindrical shells submerged in a liquid with short-period dynamic loads

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 11, 1962, 23, abstract 11B150 (Tr. Konferentsii po teorii plastin i obolochek, 1960, Kazan', 1961, 271-277)

TEXT: The authors discuss the formulation of the problem of stability of thin elastic cylindrical shells subject to transverse dynamic load based on non-linear equations of shallow shells in Lagrange's form. The initial sag and the sag during loss of stability are represented in the form

$$w_i = w_i^* \cos(\pi x/l) \cos n\varphi$$

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$$w = w_0 + w_1 \cos(\pi x/l) \cos n\varphi + w_2 \cos^2(\pi x/l)$$

where w_1, w_0, w_1, w_2 are constant, x, φ are cylindrical coordinates, l is the length of the shell, n is the number of transverse waves. It is assumed that the shell is situated in an infinite liquid medium described by linear relations. The total pressure on the shell is in this case equal to the pressure on an absolutely rigid cylinder, added to the pressure due to interaction of the shell with the liquid, i.e. to deformation of the shell (radiation pressure). The latter is calculated in the paper of Yu. V. Goryainov, Yu. I. Kudashevich, I. L. Mironov (Trudy Konferentsii po teorii plastin i obolochek, 1960. Kazan', 1961, 137-141). The authors give a qualitative analysis of the results of the solution of the equations of analog computers, when the pressure impulse varies in time from the initial value according to a linear law. [Abstracter's note: Complete translation.]

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L 63108-65 EWT(1)/EPF(c)—IJP(c)—nn/GG

ACCESSION NR: AR5019104 UR/0272/65/000/007/0160/0160 22 B

389:535.891.089.6

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika. Otdel'nyy vypusk, Abs. 7.32.1128

AUTHOR: Pertsov, A. N.; Pisarevskiy, A. N.; Reznikov, I. V.; Cherenkevich, S. N.

TITLE: A simple method of calibrating a "reduced" light source in the ultraviolet area of the spectrum 21

CITED SOURCE: Zh. prikl. spektroskopii, v. 1, no. 1, 1964, 83-85

TOPIC TAGS: ultraviolet spectroscopy, radiation energy distribution, measurement procedure, photomultiplier

TRANSLATION: The article describes methodology for measuring the distribution of radiation energy from a spectrum of a standard source in UV spectroscopy, using as the radiation pickup an FEU-1S unit characterized by a Poisson distribution of noise pulses. A scintillator from a mixture of polystyrene-terphenyl-ROROR, in optical contact with the photomultiplier (FEU) window, was used as a radiation converter with a constant quantum light yield. Signals at the photomultiplier output were amplified, then subjected to amplitude discrimination and counted. Formulas

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ACCESSION NR: AR5019164

are given for defining the distribution of energy at monochromator output from the measured signal and noise pulse count rate. Accuracy of relative measurements utilising the methodology described was 1%, that of absolute measurements about 5%.

SUB CODE: OP ENCL: 00

Card 2/2

PERTSEV, A.N.; PISAREVSKIY, A.N.; SOSHIN, L.D.

Use of photoelectric multipliers in a single-electron system in recording weak light fluxes. Zhur. prikl. spektr. 2 no.5:396-401 My '65. (MIRA 18:7)

PERTSEV, A.N.; PISAREVSKIY, A.N.; SOSHIN, L.D.

Measurement of the absolute yield of alkali halide crystals in gamma luminescence. Opt. i spektr. 18 no.4:644-647 Ap '65. (MIRA 18:8)

PERTSEV, A.N.; PISAREVSKIY, A.N.; SOSHIN, L.D.

Study of single-electron noises in photomultipliers. Prib. i tekh. dksp. 8 no.5:173-176 S-O '63. (MIRA 16:12)

1. Belorusskiy gosudarstvennyy universitet.

L 18826-65 EWT(1)/EEC(b)-2/EWA(h) Peb
ACCESSION NR: AP4041034 S/0120/64/000/003/0132/0135

AUTHOR: Pertsev, A. N.; Pisarevskiy, A. N.; Soshin, L. D.

TITLE: Studying the statistics of single-electron pulses in a multiplier phototube by a coincidence method

25

SOURCE: Pribory* i tekhnika eksperimenta, no. 3, 1964, 132-135

TOPIC TAGS: multiplier phototube, FEU-42 phototube, FEU-36 phototube, FEU-13 phototube

ABSTRACT: The amplitude distribution of phototube pulses corresponding to the photocathode emission of single electrons was studied by means of a coincidence circuit (see Enclosure 1). A grid-controlled 1-cm-screen ELO-1B electron-beam tube was used as a luminous source producing 1-microsec light pulses (tube screen de-excitation time was 0.3 microsec). A low-noise FEU-42 multiplier phototube was used to check the fact that single-electron pulses corresponded to

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ACCESSION NR: AP4041034

the light flashes. It was found that: (1) the amplitude distribution measured by this method coincides with that obtained by other methods; (2) the amplitude distribution of single-electron pulses for FEU-13 and FEU-36 tubes can be described by the Poisson law with a low K; (3) in measuring weak luminous signals (particularly at the single-electron pulse level), the FEU-42 tube yields a better statistical reliability than do FEU-13 and FEU-36 tubes. Orig. art. has: 4 figures, 2 formulas.

ASSOCIATION: Belorusskiy gosudarstvenny*y universitet (Belorussian State University)

SUBMITTED: 17Jun63 ENCL: 01

SUB CODE: EC NO REF SOV: 005 OTHER: 004

L 13826-65
ACCESSION NR: AP4041034

ENCLOSURE: 01

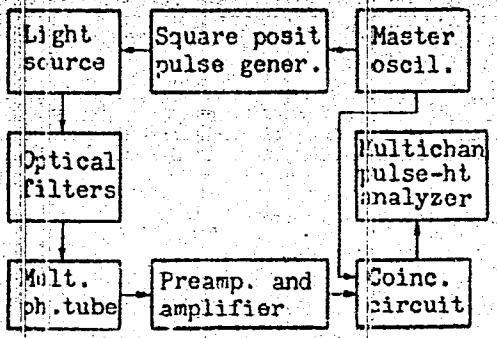

Fig. 1— Block diagram of a coincidence circuit used for studying the statistics of single-electron pulses in multiplier phototubes

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L 46319-65 EWT(1)/EWT(m)/EEC(b)-2/EWA(h) Peb DIAAP

ACCESSION NR: AP5011886 UR/0120/65/000/002/0146/0149 19 18 B

AUTHOR: Pertsev, A. N.; Pisarevskiy, A. N.; Soshin, L. D. 14

TITLE: Effect of Co^{60} gamma rays on the parameters of a multiplier phototube 25

SOURCE: Pribory i tekhnika eksperimenta, no. 2, 1965, 146-149

TOPIC TAGS: multiplier phototube, gamma rays

ABSTRACT: Multiplier phototubes were irradiated with 1 and 130 r/sec gamma rays: FEU-13 tubes were irradiated twice and one FEU-1S tube, three times. Multichannel AI-100 and AMA-4S pulse-height analyzers were used for measurements. It was observed that the phototube gain increased 1.5—4.2 times, the number of spurious pulses greatly increased (10—162 times), and the photocathode efficiency decreased (1.5—9.5 times). Both above-mentioned tubes restored their gain and cathode efficiency within 24 hrs after the first irradiation. However, after the second irradiation, the characteristics were not fully

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L 46319-65
ACCESSION NR: AP5011886

restored. These conclusions are reported: Upon irradiation of the FEU-13 and FEU-1S with 50000 r, these phenomena take place: (a) sensitivity of the photocathode to the NaI(Tl)-fluorescence spectrum drops to 1/4 of its original value; (b) gain increases 3.5 times; (c) the secondary-emission coefficient k of the first dynode increases; (d) noise increases by more than one order of magnitude. The gain and photocathode sensitivity return to their original values in 24 hrs. Orig. art. has: 2 figures and 1 table. [03]

ASSOCIATION: Belorusskiy gosudarstvennyy universitet (Belorussian State University)

SUBMITTED: 02Dec63 ENCL: 00 SUB CODE: EC, NP

NO REF SOV: 004 OTHER: 002 ATD PRESS: 4002

Card 2/2

L 54783-65 EWT(l)/EEC(b)-2/EWA(h) Peb
ACCESSION NR: AP5015041 UR/0368/65/002/005/0396/0401
621.387.2:535.37

AUTHOR: Pertsov, A. N.; Pisarevskiy, A. N.; Soshin, L. D.

TITLE: Use of single-electron pulse photomultipliers for recording weak light fluxes

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 5, 1965, 396-401

TOPIC TAGS: photomultiplier, quantum counter, Poisson distribution, secondary multiplication, thermoelectronic noise, dark current

ABSTRACT: The possibility of using a photomultiplier to count individual quanta of light was examined by investigating noise in the photomultiplier itself and the statistical laws of secondary multiplication. The amplitude of thermoelectronic noise follows a Poisson distribution; it was shown graphically that the amplitude distribution of single-electron pulses for the FEU-1S photomultiplier has this form. Graphs were also presented to describe the counting rate of one 13-cascade photomultiplier model and the amplitude distribution of its noise

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L 54783-65

ACCESSION NR: AP5016041

pulses. It was shown that some Soviet-made photomultipliers are sufficiently sensitive to measure luminous fluxes of 30—300 quanta per second at room temperature. Orig. art. has: 3 figures. [YK]

ASSOCIATION: none

SUBMITTED: 05Jun64 ENCL: 00 SUB CODE: EM,OP

NO REF SOV: 012 OTHER: 018 ATD PRESS: 4029

Card 2/2

L 83624-65 EWT(l)/EWT(m) Pi-4/Peb ZYAAP/IJP(c)
ACCESSION NR: AP5015778 UR/0250/65/009/005/0299/0300

AUTHORS: Pertsev, A. N.; Pisarevskiy, A. N.; Voshin, L. D.

TITLE: Measurement of the absolute yield of NaI (Tl) during gamma luminescence

SOURCE: AN BSSR. Doklady, v. 9, no. 5, 1965, 299-300

TOPIC TAGS: sodium iodide scintillator, gamma luminescence, thallium activator, light yield

ABSTRACT: The absolute light yield of NaI (Tl) was determined by comparing the scintillation amplitude with with the amplitude of a "single-electron" pulse at the output of a photoelectric amplifier, corresponding to the escape of a single electron from the photocathode. The number of light quanta arising in the crystal upon absorption of a γ quantum is given by

$$N = \frac{1}{c}\,\frac{1}{\mu}\,\varepsilon\eta\,\frac{A_p}{A_e}$$

where A_p is the mean amplitude of the photopeak along the energy axis; A_e is the mean amplitude of the "single-electron" distribution; ε is the quantum yield of the photocathode averaged over the spectral sensitivity of the photocathode and over the luminescence spectrum; η is the coefficient of collection of photoelec-

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L 63624-65

ACCESSION NR: AP5015778

trons at the first dynode; μ is the coefficient of optical attenuation in the glass of the container and in the vaseline layer, and c is the collection of light allowing for reflection losses. Then the absolute energy yield of the crystal is given by

$$\chi = \frac{\bar{E}N}{E_\gamma},$$

where E_γ is the absorbed energy of the γ quantum and $\bar{E}$ is the average energy of photons in the luminescence spectrum. In the authors' measurements, A_p/A_e = (1764 ± 3)% photoelectrons, ε_1 = (8.2 ±0.08)%, μ = (96.4 ± 1)%, and c = (70 ± 2)%, so that for Cs^{137}, which was used as the source of γ rays, N = 31,900 ± 7% quanta, N/E = (5.0 ± 0.4)% quanta/eV, and χ = (15.3 ± 1.0)%. Orig. art. has: 2 formulas.

ASSOCIATION: Belorusskiy gosudarstvennyy universitet im. V. I. Lenina (Belorussian State University)

SUBMITTED: 31Mar64 ENCL: 00 SUB CODE: SS, OP

NO REF SOV: 008 OTHER: 004

Card 2/2

L 49430-65 EWT(l)/EPA(l)-2/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) Pi-4/Pt-7/Peb
DIAAP/IJP(c) JD/JG
ACCESSION NR: AP5011110 UR/0051/65/018/004/0644/0647

AUTHOR: Pertsev, A. N.; Pisarevskiy, A. N.; Sostin, L. D.

TITLE: Measurement of the absolute yield of alkali-halide crystals under Gamma luminescence

SOURCE: Optika i spektroskopiya, v. 18, no. 4, 1965, 644-647

TOPIC TAGS: alkali halide crystal, Gamma luminescence, light yield, energy yield, scintillation counter

ABSTRACT: In view of the scanty data on the light yields of alkali-halide scintillators, and in view of the large differences in the available data, the authors determined the absolute light yields of the crystals NaI(Tl), CsI(Tl), and KI(Tl) by comparing the amplitudes of the scintillation with the amplitude of a "single-electron" pulse at the output of a photomultiplier. The measurements were made at room temperature, using excitation with γ rays from Cs^{137}, on large batches of various crystals of different sizes with different reflectors, and with different Tl contents. The number of quanta produced in NaI(Tl) by absorption of one γ quantum from Cs^{137} was found to be 31,900, the light yield was 5.0% (quanta/ev), and

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ACCESSION NR: AP5011118

the absolute energy yield was 15.3 ± 1%. For CsI(Tl) and KI(Tl) the energy yield was found to be 6.0 ± 0.4% and 3.1 ± 0.3%. For the crystals containing 2, 1, 0.5, and 10^{-6}% the values of the energy yield were 11.5 ± 0.9, 13.7 ± 1.0, 9.0 ± 0.6, and 2.7 ± 0.2%. The results are compared with those obtained by others. Orig. art. has: 2 figures and 6 formulas. [09]

ASSOCIATION: None

SUBMITTED: 06Apr64 ENCL: 00 SUB CODE: SS, OP

NO REF SOV: 008 OTHER: 007 ATD PRESS: 4003

Card 2/2

PERTSEV, A.N.; [illegible], A.[illegible]; SOSHIN, L.D.

Measurement of the absolute yield of NaI(Tl) [illegible].
Dokl. AN SSSR [illegible]. 5:299-300 My '65 (MIRA [illegible])

1. Belorusskiy gosudarstvennyy universitet imeni [illegible].
Submitted March [illegible], 1964.

PERT[illegible], [illegible] N.; [illegible]REVSKIY, A.N.; SOSHIN, L.D.

[illegible] efficient method for H^3 counting. Dokl. AN BSSR 9 no.8:509-510 [illegible] '65. (MIRA 18:10)

1. Belorusskiy gosudarstvennyy universitet imeni V.I.Lenina.

PERTSOV, A. V.; PERTSOV, N. V. and SHCHUKIN, Ye. D.

"About the Spontaneous Inner Dispersion of Metals Subjected to the Action of Metal Fusions Considerable Lowering Surface Tension."

report presented at the 3rd Conference of Higher Educational Institutes on Strength and Plasticity of Metals, Petrozavodsk State University, 24-29 June 1963

[illegible]E[illegible]TSEV, A. V.

Functioning of mining [illegible]. Khar'kov, [illegible] nauch.-tekhn. izd-vo [illegible], [illegible].
61 p. ([illegible])

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240120017-3"

PERTSEV, B.I.; PARIYSKIY, N.N.; KRAMER, M.V.

Comparing different methods of harmonic analysis of tidal deformations of the earth. Izv. AN SSSR. Ser.geofiz. no.2:242-243 F '59. (MIRA 12:2)

1. AN SSSR Institut fiziki Zemli.
(Tides)

Pertsev, B.N.

PERTSEV, B.N., doktor istoricheskikh nauk, akademik; TARASENKO, B.P.; PETROV, L.K.; KONOPEL'KO, I.A.; POBOL', L.D.

Book about ancient Russian glass. ("Glassmaking in ancient Russia" by M.A. Bezborodov. Reviewed by V.N. Pertsev and others). Stek. i ker. 14 no.9:31-32 S '57. (MIRA 10:10)

1.AN BSSR (for Pertsev).
(Glass manufacture--History)
(Bezborodov, M.A.)

PERTSEV, B.P.

Concerning the solution of Stokes' problem with a relative error of the order of the square of the earth's compression. Trudy TSNIIGAIK no.12:9-12 '56
(MIRA 13:3)

(Earth--Figure) (Gravity)

22403
S/035/61/000/005/038/042
A001/A101

3,1800

AUTHORS: Dobrokhotov, Yu.S., Belikov, B.D., Kramer, M.V., Pertsev, B.P.

TITLE: Observations of tidal variations of gravity acceleration at Pulkovo in 1958

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 5, 1961, 33, abstract 5G214 (V sb. "Gravimetr. issledovaniya", no. 1, Moscow, AN SSSR, 1960, 7 - 14, Engl. summary)

TEXT: Observations of gravity tidal variations were conducted at Pulkovo in the basement of the seismic station from April to October, 1958. Two gravimeters of GC-11 type were employed. The tides were recorded first by means of photoelectrical recorders of the firm Bruno Lange and then by means of photorecorders developed in the Institut fiziki Zemli (Institute of Physics of the Earth). Altogether 8 monthly series of continuous observations were made during this period. The harmonic analysis of observations was performed on an electronic computer. The analysis yielded the following mean values of quantities $\delta = 1 - 3/2k + h$ and phase shifts of main waves of the lunar-solar tide:

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22401

S/035/61/000/005/038/042
A001/A101

Observations of tidal variations ...

Wave	Phase shift		
K_1	1.194 ± 0.012	+ 2.6 ± 0.6	
O_1	1.180 ± 0.008	+ 1.8	1.1
M_2	1.238	0.017 + 2.1	0.7
S_2	1.217	0.042 + 1.6	2.1
N_2	1.222	0.076 + 6.0	4.0

Positive phase shifts correspond to lag of observed tides relative to theoretical ones.

B. Pertsev

[Abstracter's note: Complete translation]

Card 2/2

22402

S/035/61/000/005/039/042
A001/A101

3,1800

AUTHORS: Pariyskiy, N.N., Dobrokhotov, Yu.S., Pertsev, B.P., Kramer, M.V., Belikov, B.D., Barsenkov, S.N.

TITLE: Observations of tidal gravity variations at Krasnaya Pakhra

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1961, 33, abstract 5G215 (V sb. "Gravimetr. issledovaniya", no. 1, Moscow, AN SSSR, 1960, 21 - 26, Engl. summary)

TEXT: Observations were conducted in a special basement near Moscow in 4 km from Krasnaya Pakhra. Six monthly series of observations with four GS-11 gravimeters were made at various times from December 1957 to February 1959. The gravimeters were calibrated in the vertical gravimetric polygon at the MGU building. The harmonic analysis of tidal variations was performed on an electronic computer. The following mean values of quantities being determined $\delta = 1-3/2k + h$ and phase shifts $\Delta\varphi$ were obtained:

for diurnal waves $\delta = 1.163 \pm 0.016$; $\Delta\varphi = 1^{\circ}.5 \pm 0^{\circ}.7$

for semidiurnal waves $\delta = 1.180 \pm 0.018$; $\Delta\varphi = 4^{\circ}.1 \pm 1^{\circ}.0$

[Abstracter's note: Complete translation]

B. Pertsev

Card 1/1

S/035/61/000/004/0[illegible]/[illegible]
A001/A101

AUTHORS: Pariyskiy, N.N., Pertsev, B.P., Gridnev, D.G., Kramer, M.V., Barsenkov, S.N.,

TITLE: Gravity tidal variations at Alma-Ata

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 4, 1961, 30, abstract 4G229 (V sb. "Gravimetr. issledovaniya", no. 1, Moscow, AN SSSR, 1960, 27 - 33, Engl. summary)

TEXT: Observations of gravity tidal variations were conducted at the Astrophysical Institute, 6 km from Alma-Ata. Two GS-11 gravimeters were used in observations which continued from October 1958 to May 1959. Harmonic analysis of the first five monthly series of observations yielded the following values of the quantities sought for $\delta = 1-3/2k+h$ and phase shifts $\Delta\varphi$: from diurnal waves - δ = = 1.131±0.006, $\Delta\varphi$ = 0.6±0.4; from semidiurnal waves - δ = 1.160±0.008, $\Delta\varphi$ = +0.1± ±0.3.

B. Pertsev

[Abstracter's note: Complete translation]

Card 1/1

[redacted]

A001/A101

AUTHOR: Pertsev, B.P.

TITLE: An experience in determination of scale coefficients of records in observations of gravity tidal variations

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 4, 1961, 3[illegible]-3[illegible], abstract 4G228 (V sb. "Gravimetr. issledovaniya", no. 1, Moscow, AN SSSR, 1960, 34 - 38, Engl. summary)

TEXT: The author developed 2 procedures for determining scale coefficients of records in observations of gravity tidal variations. Both procedures are based on the assumption that "zero drift" of the gravimeter is of small curvature and does not change its properties at shifts of the instrument elastic system. To explain and estimate the accuracy of the procedures proposed, the author presents an example of processing the theoretical tidal curve of gravity variation. However, a marked straggling of coefficients determined was obtained in processing of observations performed with a GS-11 gravimeter, which in the author's opinion is mainly explained by imperfection of the device.

[Abstracter's note: Complete translation]

B. Pertsev

Card 1/1

DOBROKHOTOV, Yu.S.; OSTROVSKIY, A.Ye.; PERTSEV, B.P.; BULANZHE, Yu.D., doktor fiziko-matem. nauk, otv. red.; ZHITNIKOVA, S.A., red.; UL'YANOVA, G.G., tekhn. red.

[Gravimetric and inclinometric stations for the observation of earth tides] Gravimetricheskie i naklonomernye stantsii dlia nabliudenii zemnykh prilivov. Otv. red. IU.D.Bulanzho. Moskva, Izd-vo Akad. nauk SSSR, 1961. 24 p. (MIRA 14:11)
(Tides) (Geophysical observatories)

S/169/62/000/001/012/063
D228/D302

AUTHOR: Pertsev, B. P.

TITLE: Harmonic analysis of 50-day series of observations of tidal changes in the force of gravity

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 1, 1962, 23, abstract 1A183 (V sb. Izuch. zemn. prilivov, no. 2, M., AN SSSR, 1961, 20-30)

TEXT: The scheme of harmonic analysis is based on the method of numerical filters and depends on determining the five main waves of tidal variations in the force of gravity: M_2, S_2, N_2, K_1 and O_1. Instrumental zero drift is eliminated on the assumption that it can be represented by a straight line for any four-hour recording interval or by a parabola for a 48-hour interval. Increasing the recording interval covered by the scheme to 50 days permits elimination of a large number of minor tide waves and raising the accuracy of the amplitude and phase determination of the sought waves. The three stages of the determination of the sought waves

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are described. Since the waves entering into one group have very close frequencies, their division is made on the assumption that a) the ratio of the amplitudes of the observed waves entering into one group is the same as in a theoretical tide, and that b) all the waves of one group have identical phase displacements. Formulas for calculating the theoretical values of the amplitudes and phases of the sought waves are given in the work for determining the displacements of the phases and correlations of the Love numbers $\delta = 1 + h - 3/2\ k$. [Abstractor's note: Complete translation.]

Card 2/2

PERTSEV, B. P.

Cand Phys-Math Sci, Diss -- "Harmonic analysis of /the effect of/ tidal variations /on the force/ of gravity". Moscow, 1961. 9 pp, 20 cm (Moscow State U imeni M. V. Lomonosov. State Astron Inst imeni P. K. Shternberg. Inst of the Physics of the Earth imeni O. Yu. Shmidt, Acad of Sci USSR), 150 copies, Not for sale, list of works by the author at end of text (KL, No 9, 1961, p 176, No 24262). /61-54123/

ACCESSION NR: AR4033597 B/0169/64/000/002/G028/G028

SOURCE: Ref. zh. Geofiz., Abs. 2G185

AUTHOR: Portsev, B. P.

TITLE: Determination of delta and the phase shift of semidiurnal waves from two-day observations of earth tides

CITED SOURCE: Sb. Issled. semm. prilivov. No. 3., AN SSSR, 1963, 83-87

TOPIC TAGS: gravimetry, earth tide, semidiurnal earth tide wave, null point displacement

TRANSLATION: Since there is every basis to assume that the values $\delta = 1 / h - 3/2k$, $\gamma = 1 / k - h$ and the phase shifts $\Delta\varphi$ for all semidiurnal waves are identical, in those cases when the records of observations do not make it possible to analyze a monthly series it is possible to obtain quite reliable results from considerably shorter series of observations. The proposed analytical program involves the separation of waves of the semidiurnal type from the tide as a whole by means of linear combinations of ordinates extending over a 46-hour period; it also involves a comparison of the derived values and similar values computed from the theoretical

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ACCESSION NR: AR4033587

tide. The linear transformations exclude drift of the instrument null point and quite thoroughly attenuate the 3-day, diurnal and long-period tidal waves. The program was checked by processing 8 two-day series of earth tide observations and comparison with the results of harmonic analysis using a 29-day program. Analysis using both programs gave close results. B. Pertsev

DATE ACQ: 31Mar64 SUB CODE: AS ENCL: 00

Card 2/2

ACCESSION NR: AR4038599 S/0169/64/000/002/D028/D028

SOURCE: Ref. sh. Geofiz., Abs. 2D187

AUTHOR: Fertsev, B. P.

TITLE: Separation of the diurnal tidal waves K_1 and P_1

CITED SOURCE: Sb. Issled. zemn. prilivov. No. 3. M., AN SSSR, 1963, 88-91

TOPIC TAGS: gravimetry, earth tide, diurnal tidal wave

TRANSLATION: As shown by theoretical investigations, if the earth's core is liquid the ratios of the amplitudes of the different waves of the diurnal tide should differ from the ratios of the amplitudes indicated by the static theory. It is of great interest to determine the values δ for the diurnal waves K_1 and P_1 which are close in frequency. Since the amplitude of the diurnal S_1 wave is very small, the separation of the K_1 and P_1 waves can be done by combining the results of the harmonic analysis made for two series of observations separated by a 90-day interval. The article gives the coefficients needed for computations when harmonic analysis is carried out for the author's 29- and 30-day programs. Also included is an example of the separation of the K_1 and P_1 waves in accordance with observations made at

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ACC NR: AP6035595 SOURCE CODE: UR/0387/66/000/010/0025/00..

AUTHOR: Pertsev, B. P.

ORG: Institute of Physics of the Earth, Academy of Sciences SSSR (Institut fiziki Zemli, Akademiya nauk SSSR)

TITLE: The effect of marine tides on tidal variations in gravity

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 10, 1966, 25-29

TOPIC TAGS: ocean tide, earth gravity, diurnal variation

ABSTRACT: The effect of diurnal marine tides on the tidal variation in gravity at points far from the ocean was investigated. Co-tidal maps for lunar waves of M_2 were used for the oceans and seas surrounding Eurasia. The earth's surface was divided into 410 equal-area trapeziums, bounded by meridians and parallels. Tidal characteristics were obtained for 272 of these (the others are chiefly on land). The indirect effect of the tides was then determined by trigonometric functions for each trapezium. Computations were made on an electronic computer. Consideration was given both to variable attraction of tidal masses of water in the oceans and to changes in the gravity field through deformation of the earth by the marine tides. Corrections were determined by harmonic analysis of the indirect effect of the M_2 wave as computed for seven terrestrial stations in eastern Europe and Central Asia: Pulkovo, Krasnaya Pakhra, Kiev, Talgar, Tashkent, Frunze, and Lanchow. Corrections in δ for European

UDC: 525.6

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ACC NR: AP6035595

stations ranged up to 6--7% of the previous accepted value. Corrections for Central Asia were about half that (up to 3%). Corrections for Δg indicate that the accepted values are too high in Europe and too low in Central Asia, but the actual corrections are uncertain because of the use of different gravimeters in the work. Results are preliminary, but the author concludes that the effect of distant zones may be appreciable. In conclusion, the author takes this opportunity to thank N. N. Pariyskiy and M. S. Molodenskiy for their valuable counsel and M. V. Ivanova, S. N. Barsenkov, and M. V. Kramer for help in setting up the program and in making the computations. Orig. art. has: 1 table and 9 formulas.

SUB CODE: 08/ SUBM DATE: 25Feb66/ ORIG REF: 004/ OTH REF: 004

Card 2/2

PERTSEV, M.A.

Successful fulfillment of the final year of the seven-year plan. Stal' 25 no.4:289-292 Ap '65. (MIRA 18:11)

1. Predsedatel' TSentral'nogo pravleniya Nauchno-tekhnicheskogo obshcheatva chernoy metallurgii.

GRINSHPUN, L.Ya.; PYLAYKIN, P.A.; KHIRDZHIYEV, S.G.; PERTSOVSKAYA, Ye.V.

Tanks or powerful horizontal hydraulic presses for the extrusion of aluminum alloys. Kuz.-shtam.proizv. 6 no.1:21-24 Ja '64. (MIRA 17:3)

PERVOV, G.G.

Choosing the diameters of clarifier models with a layer of suspended sediment. Trudy VODGEO no.3:53-69 '63. (MIRA 17:2)

PETER, Karoly

Characteristics of Austrian traffic rules and their differences from the Hungarian. Auto motor 17 no. 9:23-25 6 My '64.

S/ 69/61/000/005/001/049
A005/A130

AUTHOR: Pertsev, B.P.

TITLE: Attempt to determine scale factors for recordings during observations of tidal variations of gravity

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 21, abstract 5 A 183. (V sb.: Gravimetr. issledovaniya. No. 1, Moscow, AN SSSR, 1960, 34-38 (English summary))

TEXT: The author worked out two systems for determining scale factors for recordings. Both systems are based on the assumption that the "zero creep" of a gravimeter has small curvature and does not vary in character with shifts of the elastic system of the device. In order to elucidate and estimate the accuracy of the system proposed the author gives an example of processing a theoretical curve for the tidal variation of gravity. However, on processing observations recorded by means of a

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SOV/49-59-4-5/20

AUTHOR: Pertsev, B. P.

TITLE: On the Determination of Zero Point Shifting in Observations of Elastic Tides (Ob uchete spolzaniya nulya pri nablyudeniiakh uprugikh prilivov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 4, pp 547-548 (USSR)

ABSTRACT: The method of determination of zero point shift, elaborated by Doodson and Warburg for the observation of any type of 1/6th-day waves can be considerably simplified as follows: The readings are taken for t_o :

$t_o \pm 2^h$; $t_o \pm 3^h$; $t_o \pm 5^h$; $t_o \pm 8^h$; $t_o \pm 10^h$; $t_o \pm 13^h$; $t_o \pm 15^h$

during 15 hours, where t_o is the time at which the position of zero point is determined. Then the total of the readings Y_t is found from the formula:

$$Y_t = \sum_n A_n \cos(\sigma_n t - \delta_n) + \Phi(t) ,$$

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On the Determination of Zero Point Shifting in Observations of Elastic Tides

where $\Phi(t)$ - term subjected to the shifting of zero point. The formula (1) can be derived for a unit of time which can be written as:

$$\frac{1}{15}\sum_{t}\Phi(t) = \Phi(t_o) + 0.0804\,\Phi''(t_o) + \ldots ,$$

if $\Phi(t)$ is defined as:

$$\Phi(t_o + h) = \Phi(t_o) + h\Phi'(t_o) + \frac{h^2}{2}\Phi''(t_o) + \ldots ,$$

the value

$$\frac{1}{15}\quad\frac{\sin 12\sigma_n \times \sin 12.5\sigma_n}{\sin 4\sigma_n \times \sin 2.5\sigma_n}$$

for the characteristic waves is given in the table on p 548. In the cases when the shifting of zero point has a greater curve, the term $\Phi''(t_o)$ should be considered (Ref 1). If

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On the Determination of Zero Point Shifting in Observations of Elastic Tides

if is small, then $\ddot{\zeta}(t_o)$ will be equal to $\frac{1}{15}\sum_t Y_t$.

The second derivative can be found for the moment t_o as Eq (2). There are no figures, 1 table and 3 references. 2 of which are English and 1

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli (Academy of Sciences, USSR, Institute of Physics of the Earth)

SUBMITTED: August 15, 1957.

Card 3/3

PERTSEV, B.P.

"Tidal Tilts of the Earth [illegible] Observations in 1958 in Lodara (near Stalingrad)" [illegible] A. E. Ostrovskiy, A. B. Lakhrushin, and L. I. M[illegible] ([illegible] English)

"Tidal Tilts of the Earth [illegible] Observations in Ashkhabad in 1957 and 1958" by the [illegible] A. E. Ostrovskiy, D. F. [illegible], and S. M. Pandyushin ([illegible] English)

"Results of Observations [illegible] Earth's Surface by Means of a Photoelectric Tilt[illegible] 1957" by Soviet scientists, A. Ostrovskiy, A. [illegible], and [illegible] Mironova (7 pp. English)

"Observations of the Tidal [illegible] Earth by Means of [illegible] Tiltmeter in Poltava, [illegible] scientists, A. Ostrovskiy, P. Matveyev, and [illegible] ([illegible] English)

"Tidal Variations [illegible] scientists, [illegible] Pariyskiy, B. P. P[illegible], D. [illegible], and [illegible] (10 pp. English)

"Observations of [illegible] P[illegible] (near Moscow)" by [illegible] P. P[illegible], M. [illegible] Kramer, B. D. Delikov, and [illegible] English)

Papers Presented at First Meeting of Permanent Commission on Earth Tides, Trieste, Italy, [illegible] July 1959, under the sponsorship of the Intl Union of Geodesy and Geophysics (IUGG)

SOV/49-58-8-2/17

AUTHOR: Pertsev, B.P.

TITLE: Harmonic Analysis of Elastic Tides (Garmonicheskiy analiz uprugikh prilivov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 8, pp 946 - 958 (USSR)

ABSTRACT: One of the basic methods of determining the Love numbers characterising the elastic properties of the Earth is by finding the change in gravity and inclination of the Earth crust due to the tides induced by the moon and sun. Theoretical considerations based on a rigid Earth give relationships between the Love numbers h and k. However, these relations between observed amplitudes and their theoretical values can vary for different wave components of the tide and, also, there is a possibility of phase changes of the real waves as compared with the theoretical. Thus, a harmonic analysis of the total tide should give more detailed knowledge of the interior structure of the Earth.
To discover all the basic waves of the lunar-solar tides, a continuous record must be obtained for at least 1-3 months.

Card1/8

Harmonic Analysis of Elastic Tides SOV/40-58-6-2/17

It is assumed that waves close to each other in frequency have the same phase displacement relative to the theoretical tide and the ratios of the amplitudes are the same as for the theoretical tide
The different methods of harmonic analysis are distinguished basically by the number of waves considered. The waves are divided by applying linear operators to the data in a table of values taken every hour (Refs 1, 2). Ref 3, which is used in analysing oceanic tides, differs slightly in principle. The accuracy of the latter method is low, however, so the author has adapted the method of Ref 1 in his analysis. This, too, was originally designed for use on oceanic tides - the author wishes to simplify the scheme and to obtain, with greater accuracy than hitherto, the five basic waves: M_2, S_2, N_2, K_1 and O_1. For this purpose, 25 of the largest waves of the lunar-solar tide are taken from the analysis of the appropriate potential carried out by Doodson (Ref 4). In applying the scheme, 29-day tables of continuous observations are required with calculations of the a_{tk} (t - hour of day,

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Harmonic Analysis of Elastic Tides

k - day of observ[illegible] for each hour of mean time. For simplification, the values are given in the form of magnitudes Y_{lk} defined in the article. Next, four quantities, A_m^k for each day of observation, k, are defined as in Eq.(2) (the values of the coefficients C_{im} are given in Table 1 and are $\pm$ 1). A quantity X_{ml} is now defined (Eq.(3)) from A_m^k and the coefficient d_{kl} in Table 2 (only 25 of the possible combinations are used). The author goes on to explain the basis of the operation. He writes down the tide as a sum of component waves (Eq.(3)). Here σ_n is the phase change of the n-th wave in one hour, ρ_n is the phase change of the n-th wave in one day ($\rho_n = 24\,\sigma_n$); φ_n is the phase of the n-th wave at the initial moment. Next, it is shown that the operation (1) leads to a division of the 24-hour and 12-hour waves: the former having a value of $\sigma \sim 15^\circ$ and the latter $\sim 30^\circ$.

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Thus, taking X_1^k, the operation separates out the 24-hour waves, since the 12-hour waves, in this case, are small ($6\sigma \approx 0$).
In the same way, the second operation - Eq.(2) - is divisible into sine and cosine waves with $\rho = 2\pi p$ (S_2 and K_1), $2\pi p - 25^0$ (M_2 and O_1) and $2\pi p - 36^0$ (N_2).
The author gives as an example X_{10}.
Thus, from operations (1) and (2), quantities X_{ml} are obtained in the form of summations $\sum_n a_n R_n \cos \delta_n$ and $\sum_n b_n E_n \sin \delta_n$. According to the indices, m and l, one wave has a very large coefficient and the others are relatively small (Table on p 949, e.g.). This procedure does not exclude all waves besides that sought, so further calculation is necessary. The next stage consists of forming certain linear combinations of $\sum X_{ml} \zeta_{mln}$ with the aim of eliminating some of the largest disturbing terms. The

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coefficients $l_{m l n}$ are given in Table 3 . This summation is represented as a combination of three terms - the first giving the basic n-th wave and having a large coefficient G , the second giving the waves whose frequencies are close to those of the basic wave (hence, the coefficients are still large) and the last giving all the remaining waves which have small coefficients and can thus be neglected. Table 4 gives the coefficients G_n, A_i and a_j for different n.

Putting:

$$R_n \cos\delta_n + \sum_I \alpha_i R_i \cos\delta_i \equiv \bar{R}_n \cos\bar{\delta}_n$$

and using the relationship shown for $\bar{R}$ and $\bar{\delta}$, the values of these two quantities can be obtained. It should be noted that R is not strictly constant with time but changes very slowly - it can be represented by R = fH , where H depends only on the latitude and f on the time. Expressions for f and n (defined as shown) and the components h, s, p, N (mentioned later) are given in

Table 7.
The author next considers the elimination of waves close to the basic one. It is assumed that a linear combination of these has been obtained and that all waves have the same phase change, k . (Eq.(a)). It is also assumed that the amplitude relation H is the same as for the theoretical tide (Eq.(6)). The linear combination is written out in terms of (a) and (6) , terms in cos δ_1 and sin δ_1 are equated and R_1 and δ_1 thus obtained. In this way, the S_2, N_2 and K_1 waves can be separated. M_2 and O_1 do not have neighbouring waves differing little in frequency and so can be calculated immediately. The amplitudes and the phases of the waves M_2, S_2, N_2, K_1 are obtained with an error $\sim$1-2%, whilst O_1 is a little less accurate. Since this inaccuracy is due to waves with small coefficients in the expressions for R cos δ and R sin λ , it can be reduced by going to the second approximation. Table 4 shows how much the different waves distort the values of R cos δ and R sin δ .

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Values of δ and R for the perturbing waves, calculated from Eqs.(a) and (6) and also the corrections are given in Table 5 (the phases and amplitudes of the separate waves are based on the analysis of the potential carried out by Doodson (Ref 47)). Iteration of R and δ now gives results of greater accuracy.
The author next tries to evaluate roughly the effect of the remaining waves which were left out of consideration. He shows that only the 12-hour waves have an effect on M_2, S_2 and N_2 whilst only the 24-hour ones have an effect on K_1 and O_1. Also, only waves with frequencies close to σ need be considered and they can be found easily. It is found that the M_2 has three waves of neighbouring frequency, N_2 - three and O_1 - four. Formulae for calculating the amplitude, phase and corrections are given in Table 6. Formulae for calculating the essential, astronomical data are given in Table 7. A worked-out example is given in the appendix at the end of which

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comparison is made between the theoretical and calculated values of the amplitudes and phases. This shows that it is essential to use the second approximation for the O_1 and N_2 waves.

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There are 6 tables and 4 references, 2 of which are English, 1 French and 1 Soviet.

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Card 8/8 1. Tides--Mathematical analysis

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AUTHORS: Pertsev, B. P., Pariyskiy, N. N., Kramer, M. V.

TITLE: Comparison Between Various Methods of Harmonic Analysis of the Tidal Deformation of the Earth (Sravneniye razlichnykh metodov garmonicheskogo analiza prilivnykh deformatsiy zemli)

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ABSTRACT: In order to define the accuracy of the harmonic analysis of the elastic tides of the Earth, a comparison was made of the methods described by A. T. Doodson, G. W. Lennon, R. Lecolazet and B. P. Pertsev (Refs 1-4). The theoretical tide was calculated for V_2, taking account of the components of the Moon and Sun for every hour during 30 days, starting from midnight on January 1, 1955, for $\varphi = 45^{\circ}$ and $\lambda = 0^{c}$. To simplify the work, the value of:

$$G = -\frac{3}{4}\,\frac{M}{E}\,\frac{ga^{2}\rho}{C^{2}}$$

was taken as unity. In addition, the potential for 19, 21 and

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of a similar frequency (R_2, π_1 : ψ_1 . Φ_1 and OO_1) are considered. As an example, the inclusion of these waves in the Doodson and Pertsev methods gives improved results for the waves S_2 and K_1 . There is 1 table; there are 4 references, of which 1 is Soviet, 1 French and 2 English.

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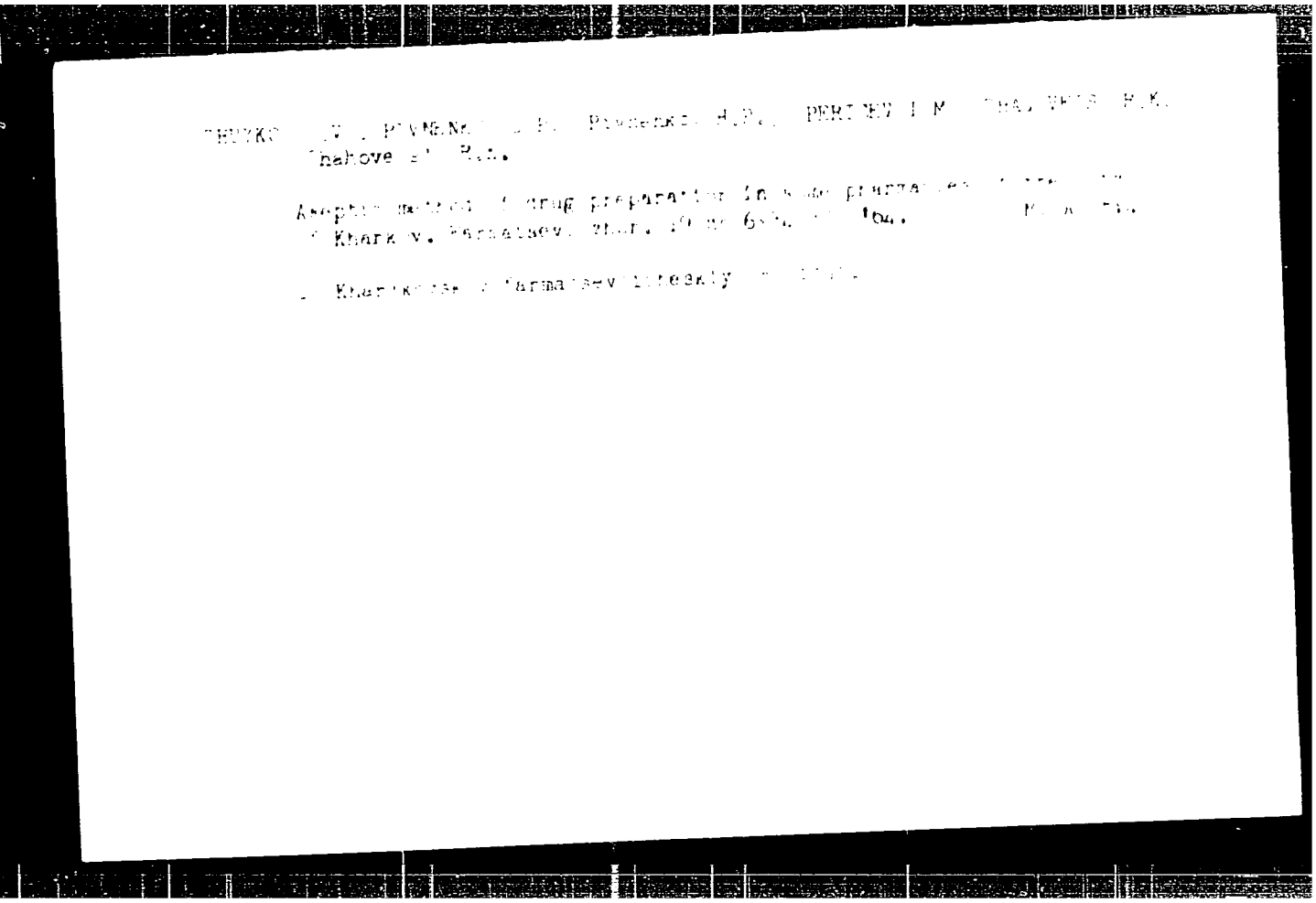

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