"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KOZLOVSKIY, Mikhail Timofeyevich; PETROV, Vyacheslav Vasil'yevich; KHANIN, N.S., kand. tekhn. nauk, retsenzent; FEDOSEYEV, L.N., red.; DONSKAYA, G.D., tekhn. red.

[Fuel equipment of IaAZ2-204 and IaAZ-206 diesel engines; design, maintenance and repair] Toplivnaia apparatura dizel'nykh dvigate-IaAZ-204 i IaAZ-206; konstruktsiia, obsluzhivanie i remont. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1961. 214 p. (MIRA 15:1)
(Diesel engines)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, N.S.; CHISTOZVONOV, S.B.

Automobile rotary engines. Avt.prom. no.3:12-18 Mr '61.
(MIRA 14:3)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
(Automobiles—Engines)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, N.S., kand.tekhn.nauk; CHERNYSHEV, G.D., inzh.

Arrangement of turbocompressors for motor-vehicle and tractor-type diesel engines. Vest.mash. 42 no.3:33-38 Mr '62.
(MIRA 15:3)

(Diesel engines--Superchargers)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

S/145/62/000/005/004/008
D262/D308

AUTHOR: Khanin, N. S., Candidate of Technical Sciences

TITLE: Problems of turbo-piston automobile engines

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 5, 1962, 47-63

TEXT: The author discusses in detail the problems connected with the increase of the overall efficiency of automobile diesel engines. Various methods of improvement are reviewed, including reduction of friction losses, reduction of heat losses caused by the exhaust gases due to either the increase of their expansion rate or to conversion of their energy into mechanical work. In this connection, various types and designs of turbo-superchargers, methods of their application, advantages and disadvantages are analyzed in detail. The question of the application of free piston gas generators is also raised, and it is shown that the possible economical, constructional, performance, maintenance,

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, N.S., kand.tekhn.nauk; KISELEV, B.A., kand.tekhn.nauk

Investigating turbodriven supercharging of the IAM3-238N diesel engine. Avt.prom. 29 no.2:7-12 F '63. (MIRA 16:2)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
(Motor vehicles—Engines—Superchargers)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, N.S.; CHISTOZVONOV, S.B.; AGEYEV, I.K., kand. tekhn. nauk, retsenzent; YEGORKINA, L.I., inzh., red.; SALAZKOV, N.P., tekhn. red.

[Rotating piston engines for motor vehicles] Avtomobil'nye rotorno-porshnevye dvigateli. Moskva, Mashgiz, 1964. 183 p. (MIRA 17:4)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

CHISTOZVONOV, S.B.; KHANIN, N.S., kand.tekhn.nauk; YESIPOVICH, R.A., nauchnyy red.; VIGDOROVICH, M.B., red.; KOGAN, F.L., tekhn.red.

[Modern foreign motor-vehicle diesel engines; survey] Sovremennye zarubezhnye avtomobil'nye dizeli; obzor. Moskva, 1963. 171 p. (Moscow. TSentral'nyi institut nauchno-tekhnicheskoi informatsii po avtomatizatsii i mashinostroeniiu. Seriia III: Novye mashiny, oborudovanie i sredstva avtomatizatsii, no.66). (MIRA 16:12)

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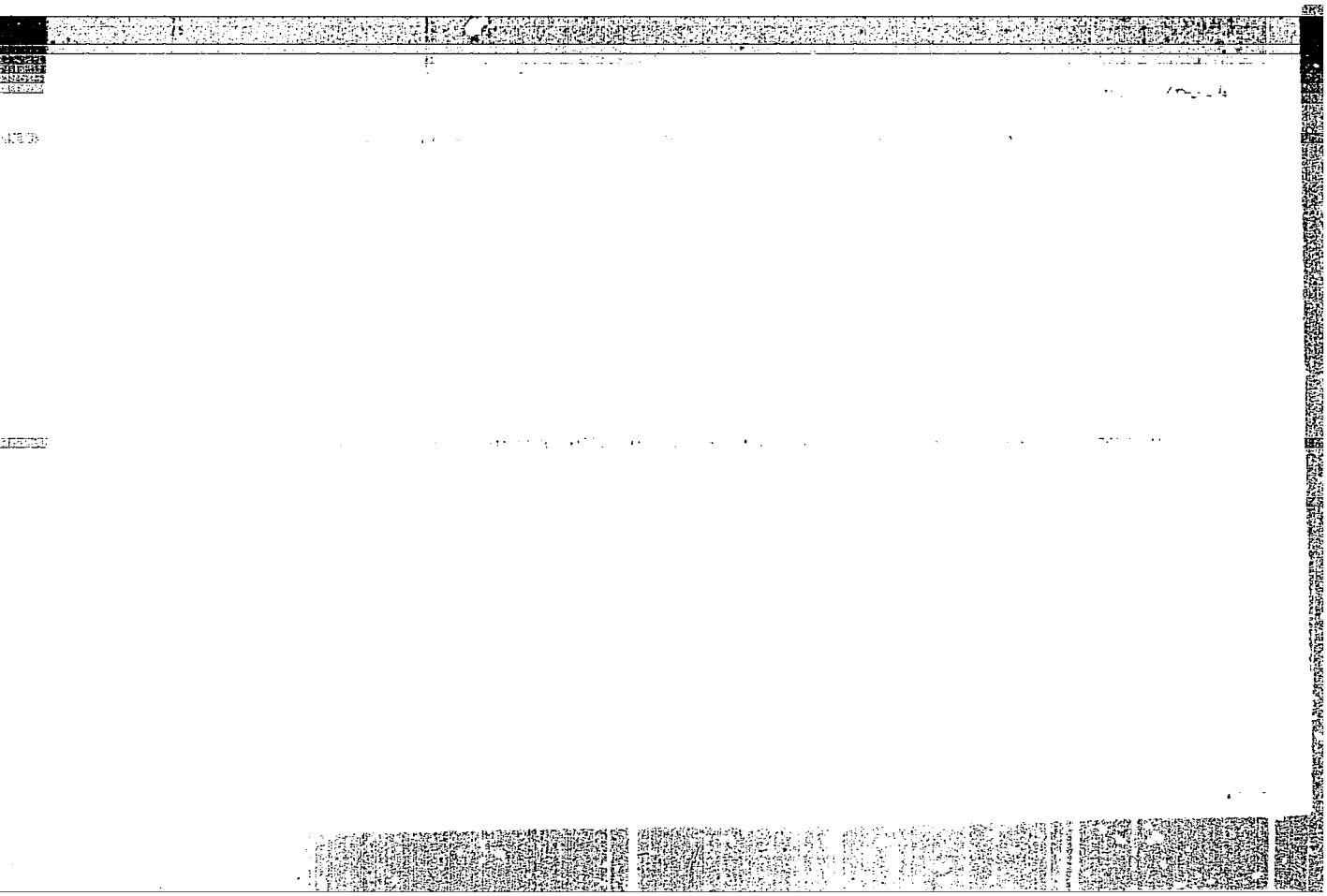

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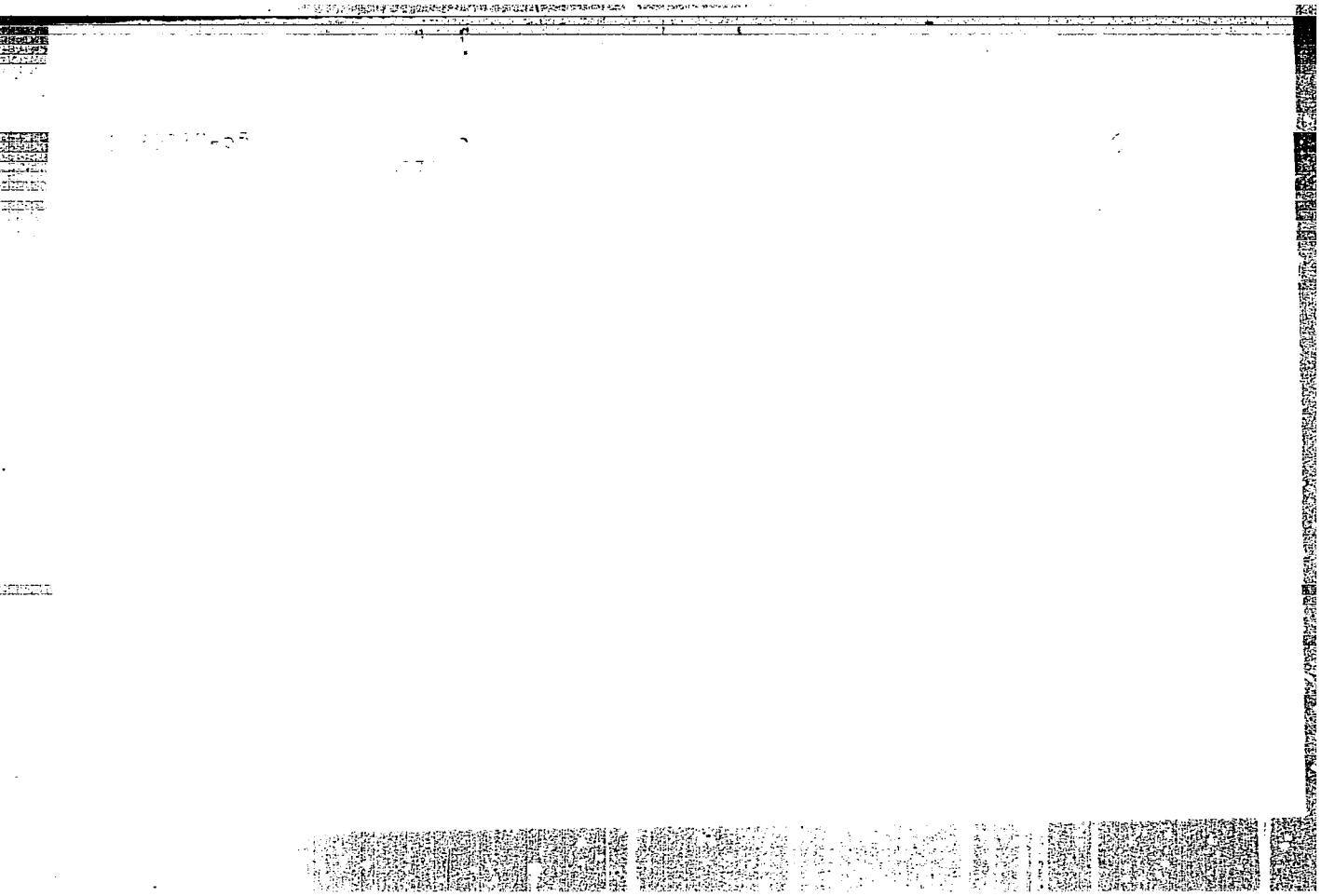

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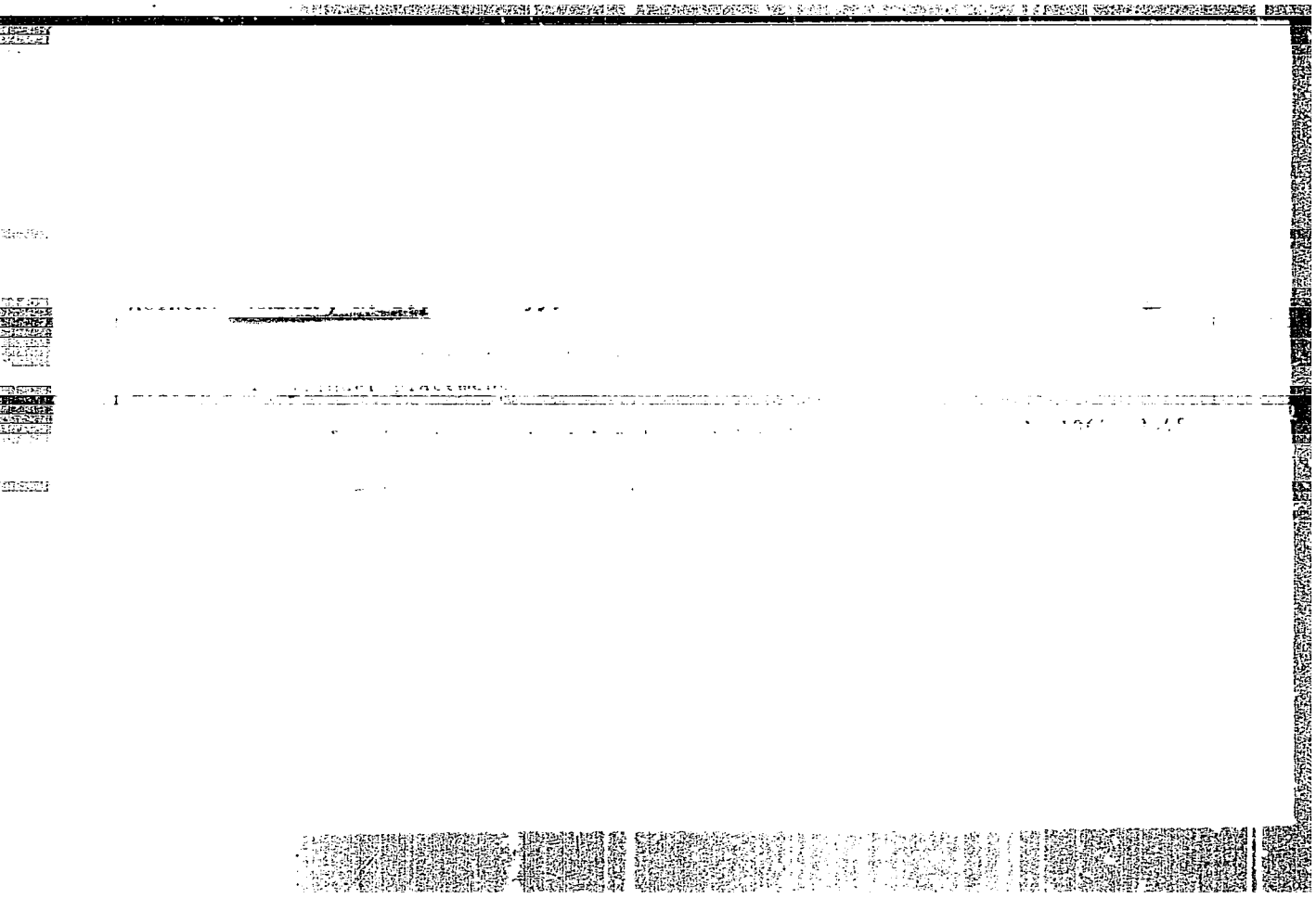

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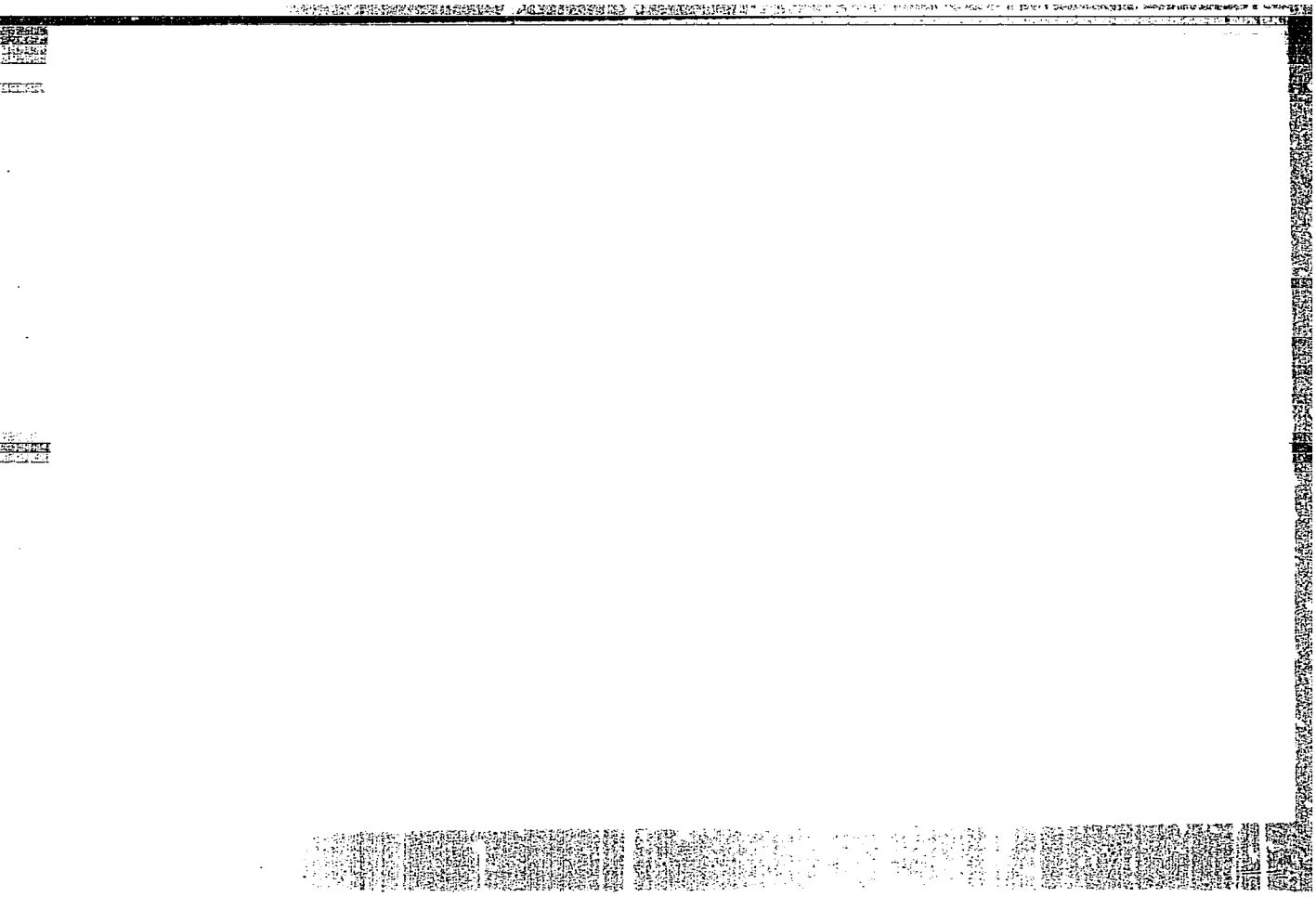

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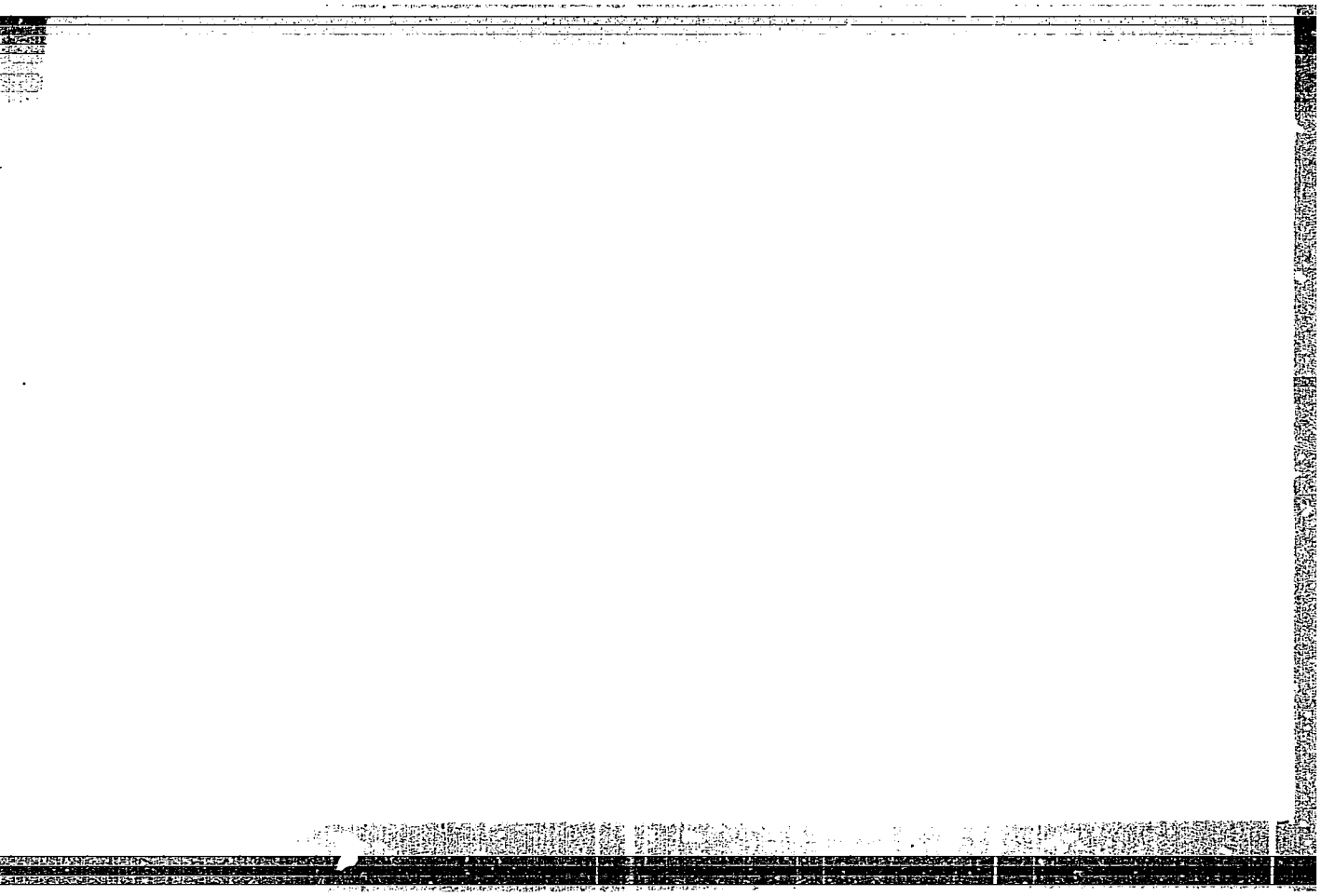

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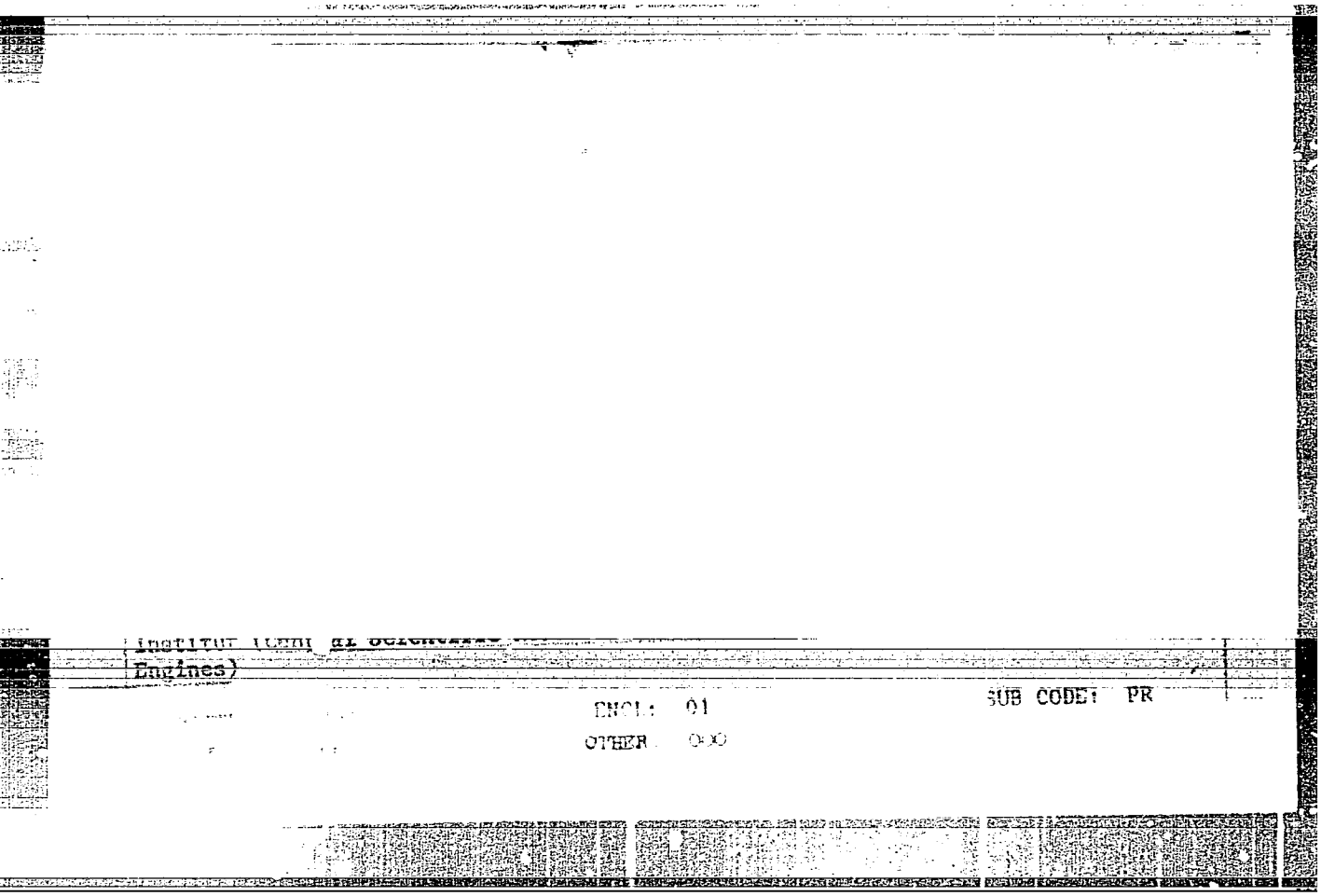

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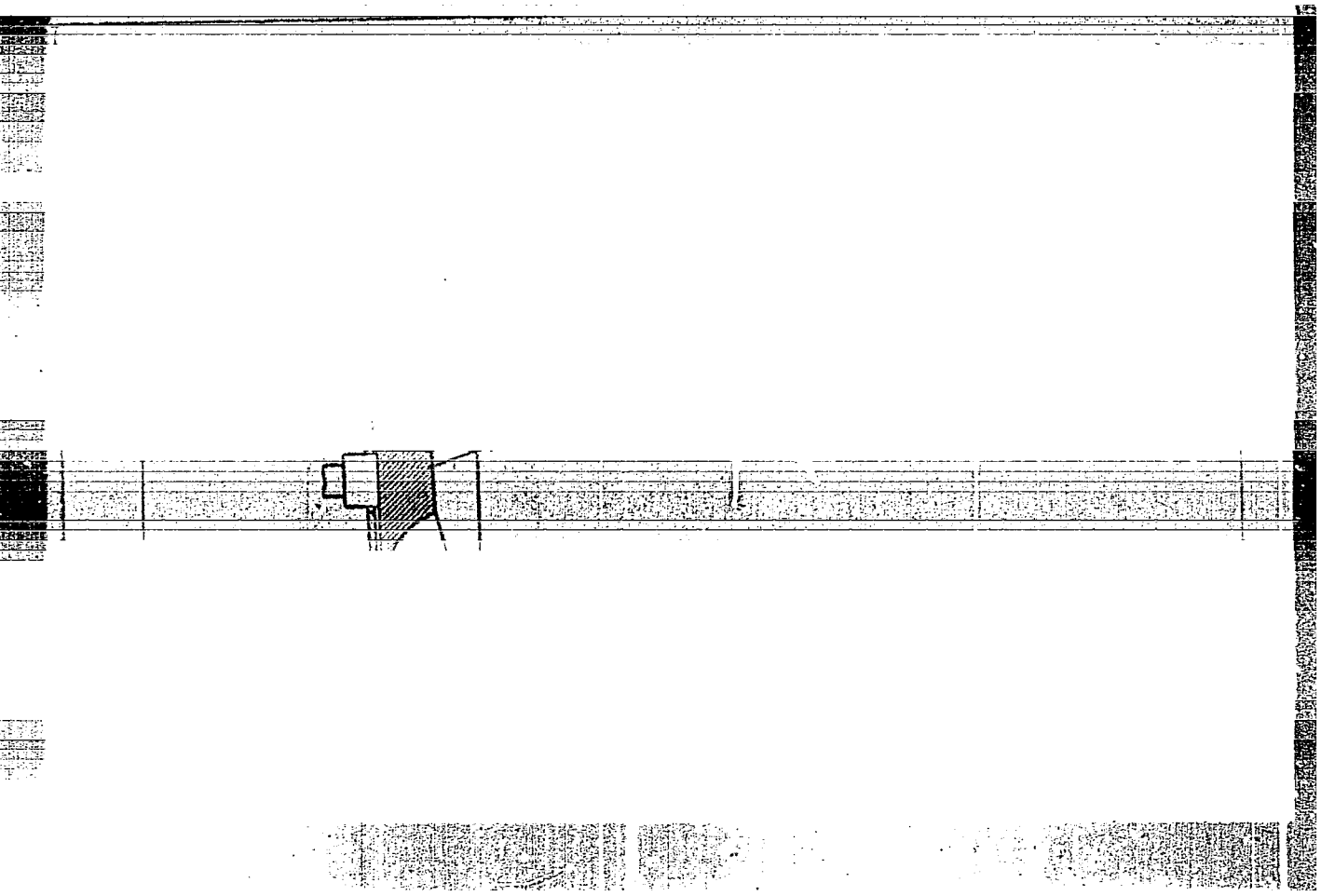

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, N.S.; SHERSTYUK, A.N.; ZAYCHENKO, Ye.N.; DINEYEV, Yu.N.; PORTNOV, D.A., doktor tekhn.nauk, prof., retsenzent

[Supercharging and superchargers of motor-vehicle engines] Nadduv i nagnetateli avtomobil'nykh dvigatelei. Moskva, Mashinostroenie, 1965. 221 p. (MIRA 18:8)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, SH. G.

KHANIN, SH. G. "The effect of staphylococcal antiphagins on the distribution factor of staphylococcal cultures", Trudy Smol. gos. med. in-ta, Vol. II, 194[illegible], p. 78-82.

SO: N-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey'; No. 2[illegible], 1949).

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KRASIN, S. G.

STRATOMOVICH, N. I., ANDREYEVA, Ye. P., and KRASIN, S. G. "The Weil-Felix reaction inorganisms inoculated with vaccine prepared by the Dyuran-Krontovskaya method," Trudy Smol. gos. med. in-ta, Vol. II, 1948, p. 83-88.

SO: U-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey', No. 22, 1949).

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, S. G., KIRVEL, M. M., PARAMONENKOVA, A. Ye. and BRUDNIKOVA, M. B.

"Effectiveness of Dried Live NIIEG Tularemia Vaccine Being Turned Out by IEM," a monograph extract Effect of Vaccination Against Tularemia, 1953. p. 143.

Translation D 568409

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANINA, E.M.; KAREVA, V.A.; KHANIN, S.G., kandidat meditsinskikh nauk, direktor; STARIKOV, G.M., kandidat meditsinskikh nauk, direktor; PETRYAYEVA, A.T., professor, zaveduyushchaya.

Immunoprophylaxis of measles with gamma globulin. Pediatriia no.2:6-8 Mr-Ap '53. (MLRA 6:5)

1. Smolenskiy institut epidemiologii i mikrobiologii (for Khanin). 2. Kafedra pediatrii Smolenskogo meditsinskogo instituta (for Petryayeva). 3. Smolenskiy meditsinskiy institut (for Starikov). (Measles) (Gamma Globulin)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

DOSSER, Ye.M.; KHANIN, S.G., kandidat meditsinskikh nauk, direktor; YUDENICH, V.A., dotsnet, nauchnyy rukovoditel'.

Type-specificity of immunity in Flexner's dysentery. Zhur.mikrobiol.epid.i immun. no.7:74-76 Jl '53. (MLRA 6:9)

1. Smolenskiy institut epidemiologii i mikrobiologii. (Dysentery)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, Sh.G.

Stabilization of fixed rabies virus. Zhur. mikrobiol. epid. i immun. no.11:42-46 N '54. (MLRA 8:1)

1. Iz kafedry mikrobiologii (zav. dotsent V.A.Yulenich) Smolenskogo meditsinskogo instituta (dir. dotsent G.M.Starikov)
(RABIES, virus,
stabilization of fixed viruses)
(VIRUSES,
rabies, stabilization of fixed viruses)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

USSR / Virology. Human and Animal Viruses. Rabies Virus. E-3

Abs Jour : Ref Zhur - Biol., No 18, 1958, No 81286

Author : Khanin, Sh. G.
Inst : Smolensk Medical Institute
Title : Further Observations on a Stabilized, Dry, Live Antirabic Vaccine.

Orig Pub : Tr. Smolenskogo med. in-ta, 1957, 6, 141-147.

Abstract : A dry antirabic vaccine prepared from rabbit brain after having been held for 24 hours at 1-3° in a 1% phenol solution retained its initial virulence and immunogenicity for no less than 4 years. A vaccine prepared by a similar method with the addition of 1% phenol as a preservative lost its virulence by the end of the 4-year period, but retained its immunogenicity. There is no strict parellelism between virulence and immunogenicity of dry antirabic vaccine; however, a vaccine totally inactivated becomes non-immunogenic. -- I. A. Shuneykina.

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USSR/Human and Animal Morphology - Pathological Anatomy. 3

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, Sh.G.

Mechanism of stabilization of dry living rabies vaccine.
Zhur.mikrobiol.epid. i immun. 30 no.5:142-143 My '59.
(MIRA 12:9)

1. Iz Smolenskogo meditsinskogo instituta.
(RABIES) (VACCINES)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, Sh.G.; SOLONINA, K.I.

Fifty years of the Smolensk Pasteur Station. Zhur.mikrobiol., epid. i immun. 33 no.4:138-141 Ap '62. (MIRA 15:10)

1. Iz Smolenskogo meditsinskogo instituta i Smolenskoy oblastnoy sanitarno-epidemiologicheskoy stantsii.
(SMOLENSK--RABIES)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, Sh.G.; BELGORODSKAYA, S.N.

Experience in practical use of Pizzi's formula for the evaluation of the reliability of LD50 determined by Reed and Muench's method. Zhur. mikrobiol., epid. i immun. 40 no.2:76-82 F '63. (MIRA 17:2)

1. Iz Smolenskogo meditsinskogo instituta.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANOV, S.G.

Feeding the filaments of the tubes of the tubes of the ("PFS") recording photoelectric summator using a lighting network source. Sbor.luch.rats.predl. pt. 2:71-72 '63. (MIRA 17:5)

1. Trest "Ukrgeofizrazvedka".

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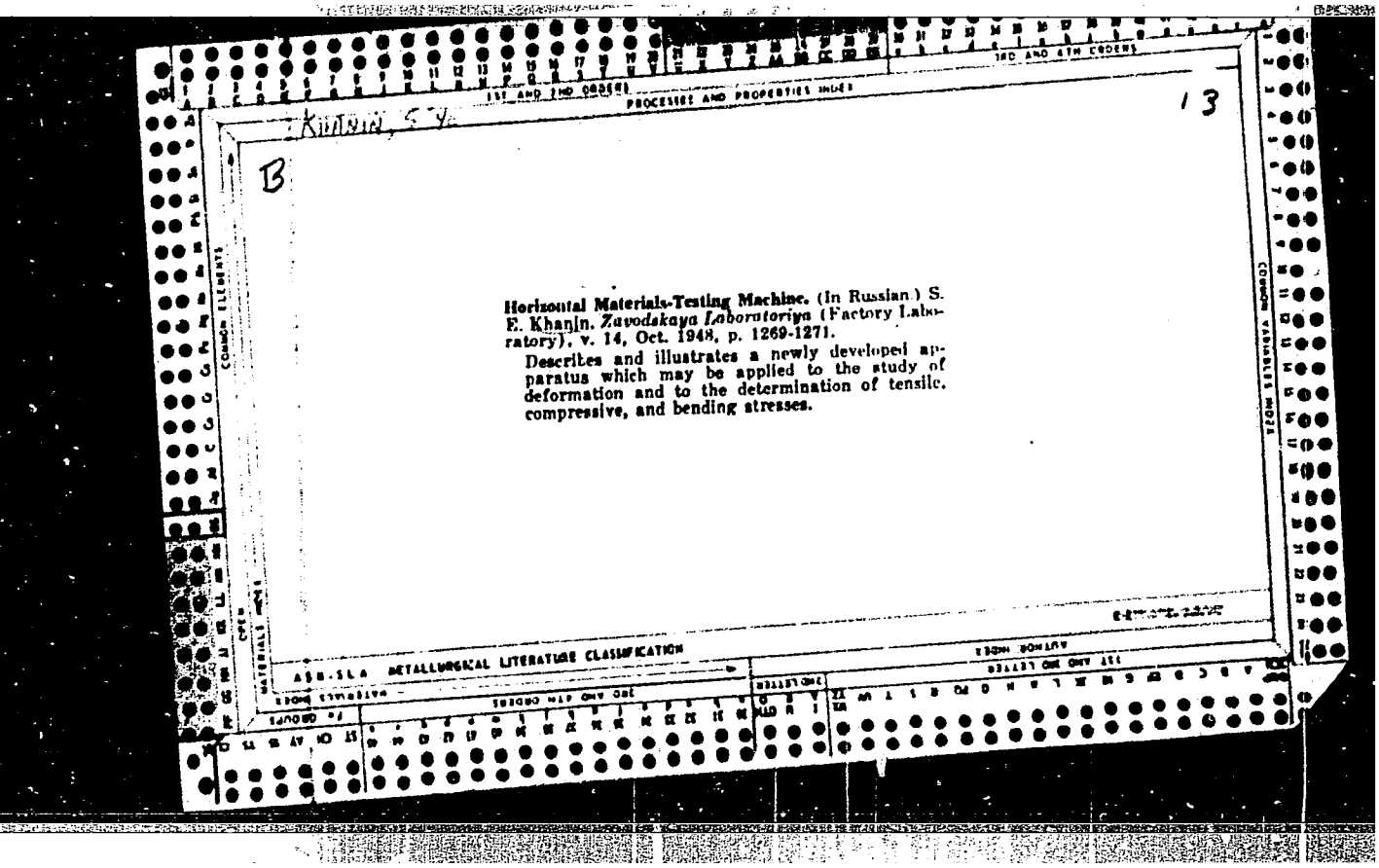

Khanin, S. E.

13

B

Horizontal Materials-Testing Machine. (In Russian.) S. E. Khanin. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 14, Oct. 1948, p. 1269-1271.

Describes and illustrates a newly developed apparatus which may be applied to the study of deformation and to the determination of tensile, compressive, and bending stresses.

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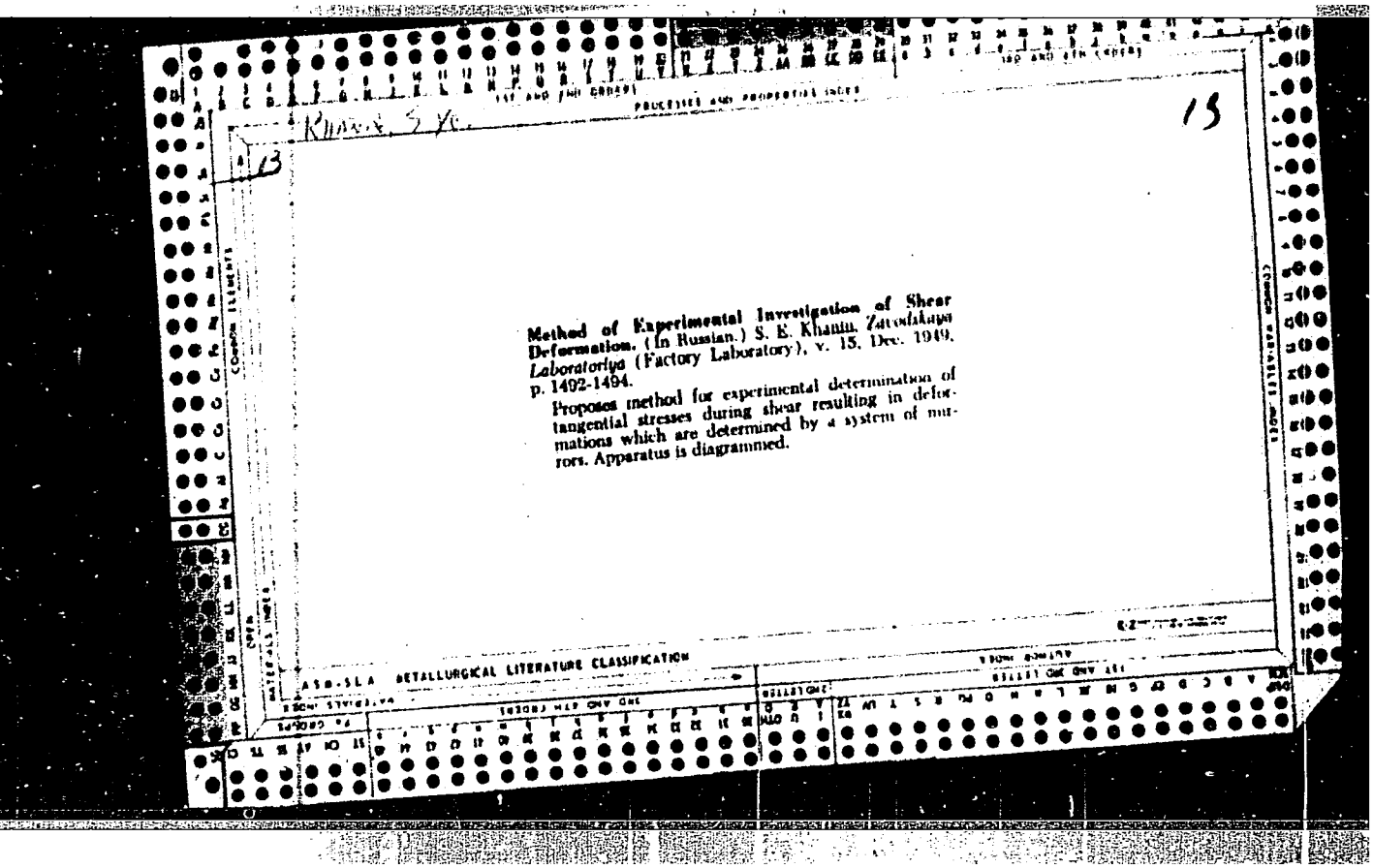

Method of Experimental Investigation of Shear Deformation. (In Russian.) S. E. Khanin. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 15, Dec. 1949, p. 1492-1494.

Proposes method for experimental determination of tangential stresses during shear resulting in deformations which are determined by a system of mirrors. Apparatus is diagrammed.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

(1)

Heat-resistant concrete made with blast furnace slag agglomerate. S. E. Khanin and A. A. Ivanov. Stroitel. Prom. 33, No. 7, 33-6(1955).—A concrete having a 0.85 water-cement ratio and contg. 1 part of cement, 0.4 part of ground blast-furnace slag, 1.8 parts slag screen [illegible] of blast-furnace slag is [illegible] made with firebrick agglomerate [illegible] cement [illegible] is agen[illegible] of 242 kg [illegible]

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, S.Ye., kandidat tekhnicheskikh nauk.

The process of fatigue in metals. Stal' 16 no.2:181-182 F '56.
(MLRA 9:5)

1. Zhdanovskiy metallurgicheskiy institut.
(Metals--Fatigue)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

SOV/137-58-9-18598

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 61 (USSR)

AUTHORS: Khanin, S.Ye., Kirillov, B.S., Kiritsev, A.D.

TITLE: Determination of the Load-carrying Capacity of a Bridge Crane After Protracted Service in an Open-hearth Shop (Opredeleniye gruzopod"yemnosti mostovogo krana, nakhodivshegosya v dlitel'noy ekspluatatsii v usloviyakh martenovskogo tsekha)

PERIODICAL: Sb. nauchn. tr. Zhdanovsk. metallurg. in-t, 1957, Nr 4, pp 205-215

ABSTRACT: Using, by way of illustration, a 75/25-ton gantry crane which had been in operation in a smelting shop for a period of 40 years, the authors present a method for the determination of the true load-carrying capacity of cranes which had been in service for considerable periods of time and the design load-carrying capacity of which is no longer valid. It is noted that corrosion reduces the cross-sectional area of metal by approximately 10%. Samples of metal from the structural members of the gantry taken from neutral zones or from layers of minimum stress were investigated. The elements were subjected to mechanical (bending, notch sensitivity, hardness, and

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SOV/137-58-9-18598

Determination of the Load-carrying Capacity of a Bridge Crane (cont.)

fracture tests), chemical, and metallographic tests. Experimental data permit the conclusion that the steel of the crane structure is a rimmed low-carbon steel similar to St. 1 but of a poorer quality. Impurities in the form of slag inclusions considerably reduce its tensile strength and ductility. It is pointed out that the formula for determination of permissible stresses, $\sigma_{perm} = K \sigma_o$, where $K \Rightarrow \epsilon_1 \cdot \sigma_{b1} / \epsilon \cdot \sigma_b$, is not acceptable for the determination of permissible stresses in old metal. Therefore, such stresses must be determined on the basis of combined characteristics of the quality of metal obtained in various laboratory tests. An optical method of determining the flexure of a crane beam is described together with a method employing strain gages for the determination of stresses. It is noted that auxiliary girders have a salutary load-relieving effect upon the main structure (10-15% of the useful load on the gantry).

M.Kh.

1. Hoists--Loading 2. Hoists--Structural analysis 3. Hoists--Mathematical analysis

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

SOV/97-59-1-9/18

AUTHORS: Khanin, S.Ye., Candidate of Technical Sciences; Obodovskiy, B.A., Candidate of Technical Sciences, and Bondarev, M.V., Engineer

TITLE: Concrete Reinforced with Thin Twisted Wires (Zhelezobeton, armirovannyy vitoy pryad'yu iz tonkikh provolok)

PERIODICAL: Beton i Zhelezobeton, 1959, Nr 1, pp 29-32 (USSR)

ABSTRACT: Thin twisted wire reinforcement has similar adhesion to concrete to that of reinforcement of standard profile. In comparison with reinforcement of non-periodic profile which acquires brittleness, twisted reinforcement preserves elasticity, which in many cases is an important advantage. Its loss in strength is approximately 3% compared with 8% in the case of non-periodic profile (see K.V. Mikhaylov, "Reinforced Concrete Constructions", published by Gosstroyizdat, 1952). Twisted reinforcement has many other constructional advantages over single smooth reinforcing rod: in particular, it lowers the centre of gravity of the reinforcement in the section, and allows for wider spacing between reinforcement. Owing to the

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Concrete Reinforced with Thin Twisted Wires

good adhesion of twisted reinforcement to concrete it is possible to lower the strength of the concrete for pre-stressed reinforced concrete constructions to 200-250 kg/cm^2; it is also possible to remove the tensioning implements much earlier. Many troubles experienced in reinforced concrete construction are due to brittleness of reinforcement (A.P. Vasil'yev in "Stroitel'naya promyshlennost'", 1957, Nr 2). Tests with twisted wire reinforcement were carried out by the Chair for Strength of Materials of the Zhdanov Metallurgical Institute (Kafedra soprotivleniya materialov Zhdanovskogo metallurgicheskogo instituta) together with Azovstal'stroy. Two or 3 wires of 2.6 mm diameter were twisted together in such a way that one full twist occurred every 40-45 mm of length. This reinforcement was tested to breaking point on a UIM-50 machine, which showed that its strength was 9-10% lower than that of ordinary reinforcement, as described previously in an article by R.I. Veyts ("Stroitel'naya promyshlennost'", 1955, Nr 10). Macro- and micro-tests of this reinforcement were made, which revealed defects in the structure of the

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material. Fig.1 illustrates metal anchoring wedges for tensioning of twisted reinforcement, and Fig.2 shows the testing of this reinforcement to breaking point. In addition to tests on twisted reinforcement comprising 2 x 2.6 mm diameter wires, a single wire obtained by separating the twisted wires was tested. Results obtained in these tests are included in Table 1. Tests to define the modulus of elasticity were carried out by means of tensimeters. Fig.3 gives a graph of the reduction of the modulus of elasticity during increase of tension of the reinforcement. The use of a deformation graph, obtained for a given section of reinforcement under given stress, is recommended by N.M. Boginyy (Beton i Zhelezobeton, 1956, Nr 3) for obtaining precise values of stresses in reinforcement by measurement of its elongation. Practical tests to obtain the value of the strength of adhesion of twisted reinforcement to the concrete are described and illustrated in Fig.4. Fig.5 shows the machine used for pulling out the reinforcement from the concrete. The results of these latter tests are given in Table 2. Further tests of twisted

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

Concrete Reinforced with Thin Twisted Wires

and tensioned reinforcement were carried out in concreting yards; for example, in Zhdanov factory for prestressed concrete "Azovstal'stroy". Fig.6 shows the layout of the slab and reinforcement during testing. The results are given in Table 3. Similar tests were carried out using 5 mm diameter wires of non-periodic profile mark ChMTU 4987-55. The results of these tests showed that twisted reinforcement is as advantageous as reinforcement of non-periodic profile. Similar results were obtained by Candidate of Technical Sciences E.G. Katts. There are 6 figures and 3 tables.

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83295
S/138/59/000/010/007/010
A051/A029

15,9130

AUTHORS: Kuz'minskiy, A.S.; Frenkel', R.Sh.; Khanin, S.Ye.; Fel'dshteyn, L.S.

TITLE: The Effect of Certain Organic Acid Salts on Rubber Vulcanization

PERIODCIAL: Kauchuk i Rezina, 1959, No. 10, pp. 32 - 35

TEXT: The problem of increasing the rate of vulcanization of rubber without decreasing the initial plasticity of the mixtures and without causing any detriment to the scorching resistance and the physico-mechanical properties of the vulcanizates was studied. The use of inorganic bases as activators did not always render favorable results due to the poor distribution of the base in the mixture and the tendency of the mixtures to scorching. Organic substances with an alkaline nature, such as aliphatic amines, were also applied with the result that the vulcanizates had better physico-mechanical properties and a higher rate of vulcanization, but the mixtures containing triethanolamine acquired an elevated hardness, had a tendency to scorching and too wide a range of their physico-mechanical properties. The accelerating effect of potassium, sodium and ammonium salts of weak acids, such as orthophosphoric acid, acetic acid and benzoic acid

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were investigated. In the case of the salts of ortho-phosphoric acid, there was some accelerating action, but the same shortcomings were observed as in the case of sodium hydroxide or sodium. The salts of acetic and benzoic acids proved to be very good activators of the organic accelerators. The strongest activator was shown to be ammonium benzoate, obtained from the reaction between an aqueous solution of ammonia and benzoic acid. The physical and chemical properties of this salt are listed and Tables 1 - 3 show the compositions and the physico-mechanical indices of the rubbers investigated. Figures 1 and 2 show the vulcanization level of the mixtures with ammonium benzoate. The latter actually serves as an activator of other organic accelerators, since it has only a slight accelerating action itself. The activating effect of this salt is present in mixtures not containing sulfur. The accelerating action of ammonium benzoate is explained by the alkaline properties of ammonia which forms during the vulcanization process. In addition to this, the benzoic acid which forms upon the decomposition of the ammonium benzoate also has been found to have some activating effect in the last stages of the vulcanization process. It increases the hardness of the vulcanizates and slows up the vulcanization at the processing temperature of the mixture.

Card 2/3

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, S.Ye., dotsent, kand.tekhn.nauk

Mirror strain gauge for measuring linear and angular deformations. Izv.vys.ucheb.zav.; mashinostr. no.5:61-64 '60. (MIRA 13:7)

1. Zhdanovskiy metallurgicheskiy institut.
(Strain gauges)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

S/145/60/000/005/006/010
D221/D301

AUTHOR: S.Ye. Khanin, Candidate of Technical Sciences, Docent

TITLE: Mirror tensometer for measuring linear and angular deformations

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 5, 1960, 61 - 64

TEXT: The article describes an optical instrument covered by author's certificate no. 82625. Simultaneous readings permit the true value of deformations to be determined, when the object is under load. It is clamped by pressing a pointed screw 2, into the examined item (Fig.1). Another pointer 6, is connected to a mirror assembly 9, which may be adjusted by a ball joint. The fork, 10, is used for regulating the penetration of the pointer into the object. The steel plate 13, brings the latter out of engagement, when not in working position. The distance between the pointers (minimum 10 - 12 mm) forms the basis of measurements, but it may be adjusted by displacing a slider 3.

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The bottom plate 1, can be given a curved outline for measurements on an object with curved surfaces. The instrument differs from that of Martens by the use of pointers instead of prisms, which can swing in one plane only. The fixed support is a cone with its apex (point) touching the object, and the moving support is formed by a short needle rigidly supported, but is free to rotate in any direction. The deformation is measured by reading on an illuminated screen with coordinate net, through a visor with a graticule. The displacement read on the horizontal and vertical screens form the geometrical components of projections of the displacement. The practice revealed that setting the instrument is easy even with the two screens. The optical magnification is determined by the distance from the instrument to the screen, and amounts to 1334 for a distance of 2 m; the magnification is, therefore, greater than that of the Gugensberger instrument. The magnification can be increased when the distance is extended to 5 or 10 m, and this is an important advantage. The setting of the mirror becomes easy after some training. A diagram illustrates the determination of the magnitude and direction of deformation. It is based on

Card 2/3

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FEL'DSHTEYN, L.S.; KHANIN, S.Ye.; FRENKEL', R.Sh.; KUZ'MINSKIY, A.S.

Vulcanization of rubber with mercaptan in the presence of carbon blacks. Kauch. i rez. 20 no.8:28-32 Ag '61. (MIRA14:8)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.

(Vulcanization)

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S/138/62/000/003/003/006
A051/A126

15.9701

AUTHORS: Frenkel', R. Sh., Kuz'minskiy, A. S., Fel'dshteyn, L. S., Khanin, S. Ye., Vinogradova, L. F.

TEXT: The effect of ingredients in rubber mixes on the structuralizing of butadiene-nitrile rubber

PERIODICAL: Kauchuk i rezina, no. 3, 1962, 10 - 12

TEXT: An investigation was conducted to determine the effect of ingredients other than altax, for example (in the absence of sulfur), on the process of thermal structuralizing in synthetic rubbers. Butadiene-nitrile rubber СКН-26 (SKN-26) (commercial) was used in the experiments in an air medium. The thermomechanical method was used to determine the initial temperature of the mixture structuralizing. Accelerators and activators of vulcanization have a significant effect on the rate of thermal structuralizing. The accelerators increase the rate of structuralizing and lower the initial temperature. At the addition of zinc oxide into the system rubber-altax decreases the initial temperature and increases the rate of structuralizing. Thus, it is thought that the zinc oxide serves as a catalyst in the process of thermal decomposition. Data on the reaction kinetics with

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The effect of...

iodine prove this supposition. The following conclusions are drawn: Certain fillers (gaseous and thermal carbon black) and accelerators (captax) increase the tendency to structuralizing of the mixtures based on butadiene-nitrile rubber. Those filled with gaseous carbon black, containing altax or captax, are particularly prone to structuralizing. Zinc oxide increases the structuralizing action of captax in mixtures with gaseous carbon black. In the case of altax, the zinc oxide speeds up the structuralizing process both in filled and non-filled mixtures. The zinc oxide increases the ratio of the thermal decomposition of altax to free radicals. There are 3 figures, 2 tables and 5 Soviet-bloc references.

ASSOCIATIONS: Volzhskiy filial Nauchno-issledovatel'skogo instituta rezinovoy promyshlennosti i Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Volga Branch of the Scientific Research Institute of the Rubber Industry and the Scientific Research Institute of the Rubber Industry)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

ANGERT, L.G.; KHANIN, S.Ye.; KUZ'MINSKIY, A.S.

Thermal aging and protection of rubber based on natural caoutchouc. Kauch. i rez. 22 no.10:19-23 O '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

OBODOVSKIY, Boris Arnol'dovich; KHANIN, Solomon Yefimovich; Prinimali uchastiye ORZHEKHOVSKAYA, O.P.; ITSKOVICH, G.M.; DARKOV, A.V., prof., doktor tekhn. nauk, retsenzent; KRYUKOVSKIY, S.S., prof., retsenzent [deceased]; KRYTOV, G.M., dots., retsenzent; RAKIVNENKO, V.N., st. prepod., retsenzent; VINOKUROV, A.I., otv. red.; VAYNBERG, D.A., red.

[Strength of materials in examples and problems] Soprotivlenie materialov v primerakh i zadachakh. Khar'kov, Izd-vo Khar'kovskogo gos. univ., 1965. 314 p. (MIRA 18:5)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, V.G., inzhener.

Pipe cutting machine of new design. Stroi.i dor.mashinostr. no.9:29-30 S '56. (MLRA 9:11)
(Pipe cutting)

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37229

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A004/A101

1.1100

AUTHOR: Khanin, V. G.

TITLE: Tools for the precision machining of bores of unlimited length

PERIODICAL: Mashinostroitel', no. 4, 1962, 24 - 26

TEXT: The author reports on a new technology of finish machining of surfaces of long cylinder bores by expansion instead of honing, applied by the Moskovskiy mashinostroitel'nyy zavod im. Kalinina (Moscow Mechanical Engineering Plant im. Kalinin). Rough and finish machining is carried out on a modernized model 163 screw-cutting lathe of the Ryazanskiy stankostroitel'nyy zavod (Ryazan' Machine Tool Plant). The inner cylinder surface is bored to a surface finish of the 5th class in one operation, then the bore is reamed in two operations with floating sintered carbide reamers. Expanding of the bore is effected with ball-type or roller-type expanders. This process consists in the cold plastic deformation of the metal by rotating balls or rollers which are rolling along the surface at a high specific pressure, deforming and compressing the projecting microroughness and the metal grains. The necessary pressure of the balls or rollers

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on the metal is produced on account of the negative allowance between the bore and the expander diameter. The author presents a description and illustrations of ball-type and roller-type expanders with balls or rollers made of ШХ5 (ShKh15) grade steel heat-treated up to a hardness of HRC 62 - 64. The expander rollers are rotating around their axes and around the axis of expansion. The roller expander designs used in industry differ mainly in the roller geometry and angle of gradient φ relative to the axis of expansion. Angle φ ensures the automatic drag of the expander in the bore, so that no compulsory feed is necessary. The following formula determined the feed of the expander head during one revolution of the component: $s = \pi D_1 \operatorname{tg}\varphi$, where s - expander feed in mm/rev, D_1 - diameter of the expanded bore. Expanders with different angles φ are used, e.g. the expanders manufactured by the Kiyev "Krasnyy ekskavator" Plant have an angle $\varphi = 0^\circ 43'$, those of the Lyuberetskiy zavod sel'skokhozyaystvennogo mashinostroyeniya im. Ukhtomskogo (Lyubertsy Agricultural Machine Plant im. Ukhtomskiy) possess an angle $\varphi = 0^\circ 20'$. The Plant im. M. I. Kalinin uses roller-type expanders having an angle $\varphi = 0^\circ$, i.e. the roller axis is parallel to the expander head axis. The feed of the head is compulsory from the lathe feed shaft. The author presents a schematic illustrating the expanding of a bore by a roller-type expander. It

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Tools for the precision...

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can be seen from this schematic that the expander is adjusted to a diameter which is somewhat larger than that of the expanded bore, thus care is taken of residual and elastic deformations of the metal. Plant practice revealed that the expansion of bores is by tens of times more efficient than honing. It is possible to expand bores of components made of the steel grades 20,30, 40, 45, 20Kh and 40Kh, either not heat-treated or treated to a hardness of HRC 28 - 32. One meter of bore length is machined in 1.25 - 3.0 min. There are 8 figures and 1 table.

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KHANIN, V.G.

Cutting tool for machining holes with an indefinite length. Mashinostroitel' no.4:24-26 Ap '62. (MIRA 15:5)
(Metal-cutting tools)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, V.N., inzh. (Leningrad)

Special features of the use of current transformers with poured insulation. Energetik 14 no.1:23-25 Ja '66.
(MIRA 19:1)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

L 34810-66

ACC NR: AP6021794 SOURCE CODE: UR/0413/66/000/012/0058/0058

INVENTOR: Ordyntsev, V. M.; Khanin, V. P.

ORG: none

TITLE: Automatic multirange multiposition bridge. Class 21, No. 182796

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 12, 1966, 58

TOPIC TAGS: resistance bridge, ELECTRIC MEASURING INSTRUMENT

ABSTRACT: An automatic multirange variable arm bridge is shown in Fig. 1. It consists of a rheostat measuring circuit, voltage divider, unbalance signal amplifier,

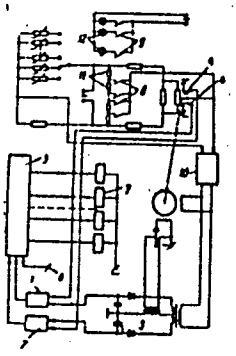

Fig. 1. Automatic multirange resistance bridge

1, 2 - Coincidence gates; 3 - phase detector; 4 - end terminals; 5 - register; 6 - control pulse source; 7 - relay; 8, 9 - normally open contacts; 10 - amplifier; 11 - calibrated resistors, 12 - range indicator.

Card 1/2

UDC: 621.317.733

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L 34810-66

ACC NR: AP6021794

phase detector, reversible divider, transducer switch, printing carriage with end terminals, measurement range switch, and a digital range indicator. The range switch is in the form of two coincidence gates whose inputs are the phase detector outputs and the printing carriage end terminals. The two AND gates together with a control pulse generator drive a reversible shift register which in turn controls the states of electromagnetic relays. A portion of the relay normally open contacts are connected between the amplifier input and voltage divider circuit containing calibrated resistors. The other normally open contacts control the states of digital range indicator lamps. Orig. art. has: 1 figure. [BD]

SUB CODE: 09/ SUBM DATE: 30Apr65/ ATD PRESS: 5030

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, V. S.

IA 12T37

USSR/Cams
Engines, Gasoline

Nov/Dec 1946

"Modification of the Profile of Gas Distributor Cams to Prevent Abrasion of the Plunger," N. S. Khanin, M. A. Ryzhik, 3 pp

"Avtomobil'naya Promyshlennost'" No 11/12

Detailed discussion, with diagrams and formulas, of modified profile of cams to prevent abrasion and, to increase usefulness of plungers.

12T37

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

AUTHORS: Artyukhin, A. Ya., Khanin, V. Z. (Moscow) SOV/103-19-10-7/12

TITLE: One-Cycle Magnetic Shift Register (Odnotaktnyy magnitnyy registr sdviga)

PERIODICAL: Avtomatika i telemekhanika, 1958, Vol 19, Nr 10, pp 977-987 (USSR)

ABSTRACT: This is an analysis of the most simple type of scheme of a one-cycle register. On the strength of this analysis this register can be calculated with an accuracy sufficient for practical purposes. The method of calculation presented can also be generalized to a readout about two or more cores. It is shown that a one-cycle register is discriminative with respect to a variation of the duration of the shifting pulse in contrast to a two-cycle register. The backward motion of information taking place in this circuit and the current branch-off in the (n + 1)-th core, when the signal "1" is read out by the n-th core imply a dependence of the shape of the signal at the condenser upon the structure of the information in the register. This feature may lead to difficulties in the synthesis of logical schemes incorporating

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one-cycle registers. The scheme presented in this paper is recommended for use in schemes of ring-counters and of registers of a not-too-wide scope. There are 15 figures, 1 table, and 8 references, 2 of which are Soviet.

SUBMITTED: May 25, 1957

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, Ya. D.

Cand Agr Sci - (diss) "Effectiveness of fertilizers in grapevine plantings." Kishinev, 1961. 21 pp; (Ministry of Agriculture Ukrainian SSR, Odessa Agricultural Inst); 280 copies; price not given; (KL,10-61 sup, 223)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, YA.I.; YUDIN, O.I.

Radio emission of the comets. Astron.zhur. 32 no.5:439-444 S-O '55.
(MLRA 9:1)

1. Fiziko-teknicheskiy institut Gor'kovskogo gosudarstvennogo universiteta.

(Comets) (Radio astronomy)

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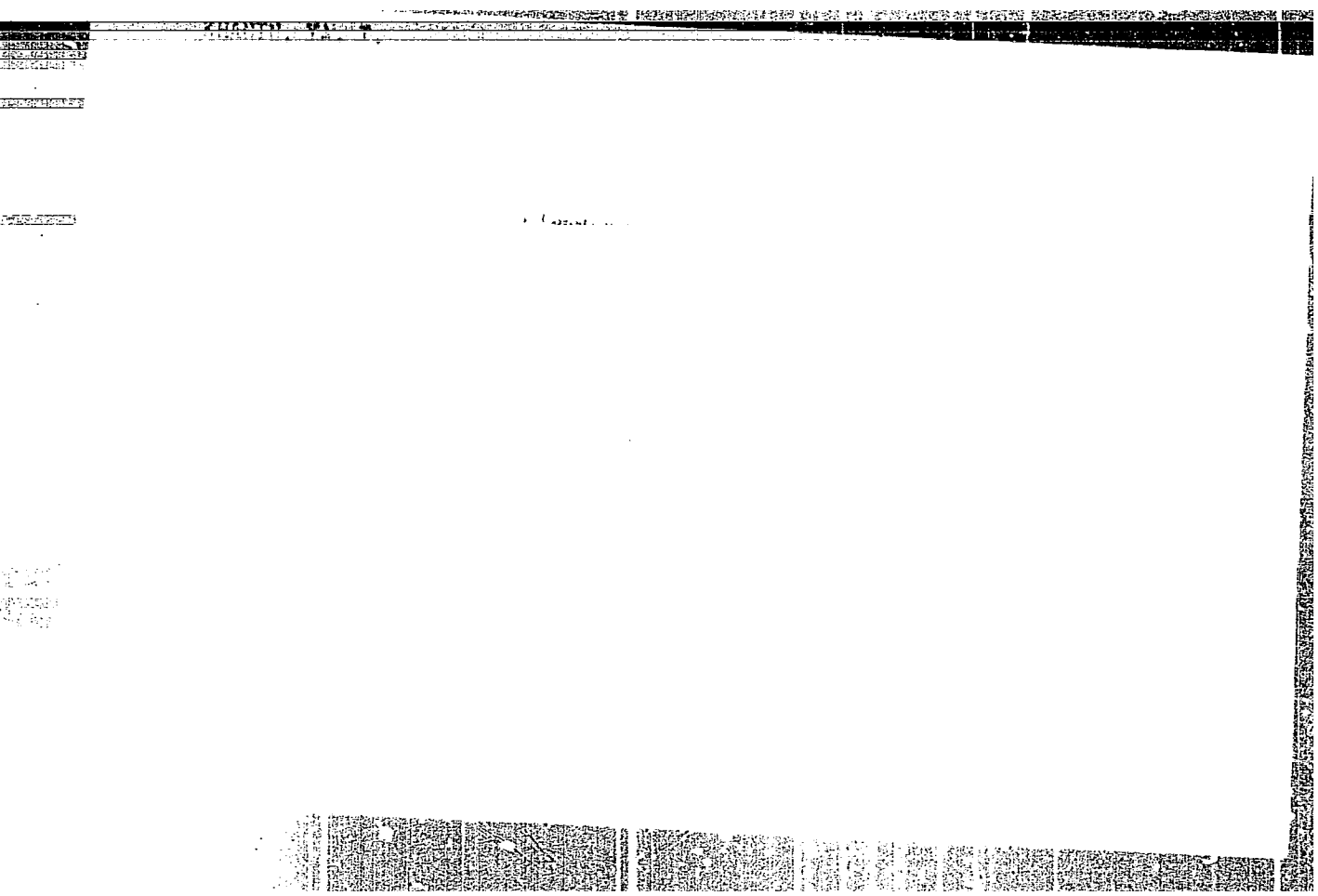

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

AUTHOR: Khanin, Ya.I.

TITLE: On the Problem of Determining the Electron-density Fluctuation in the Ionosphere (K voprosu ob opredelenii fluktuatsiy elektronnoy plotnosti v ionosfere) (Letter to the Editor)

SOV/109-3-11-9/13

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 11, pp 1399 - 1402 (USSR)

ABSTRACT: In a work by Al'pert (Ref 1), a method for determining the electron-density fluctuation:

$$(\delta N)^2 = \left(\frac{\Delta N}{N}\right)^2$$

in the ionosphere was suggested. The density could be evaluated by measuring the ratio of the energy of the scattered waves to the energy of the mirror-reflected component. Here, the theory of Al'pert is extended and it is shown that the problem is essentially that of evaluating the integral:

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$$\frac{1}{\beta_o^2} = \int_V \frac{d(\Sigma a_s^2)}{a_o^2} \qquad (1) .$$

The energy scattered by an elementary volume is expressed by Eq (2), where z_B is the height of the reflection point, σ is the effective scattering cross-section of the ionosphere, P is the energy radiated by the antenna; the remaining symbols in Eq (2) should be clear from Figure 1. On the basis of Eq (2), it is shown that the integral of Eq (1) can be expressed by Eq (9), where θ is defined by Eq (8). If, as in Al'pert's work, the ionised layer is represented by a parabolic model, as expressed by Eqs (10), where z_m is the half-thickness, z_o is the height of the layer and ω_c is the critical frequency, the final formula is given by Eq (11), where M is expressed by Eq (12). Eq (11) was used to plot a

Card2/3 number of curves which give $\beta_o^2 (\delta N)^2$ as a function

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of λ_c/λ_o . These are shown in Figures 2 and 3 for various values of z_m and λ_c . The full curves in the figures were evaluated from Formula (11), while the "dashed" curves are taken from Al'pert's work. There are 3 figures, 1 Soviet reference.

ASSOCIATION: N.-i. in-t zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln (Scientific-research Institute of Terrestrial Magnetism, the Ionosphere and Radio-wave Propagation)

SUBMITTED: February 6, 1958

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

9.2570

AUTHOR: Khanin, Ya.I.

69962
SOV/141-2-4-17/19

TITLE: Some Possibilities of Using Three-level Systems for Receiving Weak VHF Signals

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 4, pp 661 - 663 (USSR)

ABSTRACT: The disadvantage of a three-level maser is the need for a rather powerful source of local oscillations at a frequency higher than that to be amplified. A paramagnetic material is considered which has three energy levels associated with three frequencies. The magnetic susceptibility at any of these frequencies depends on the presence, in the volume of the sample, of an oscillating magnetic field at another resonant frequency. By inserting such a paramagnetic into a resonator tuned simultaneously to two frequencies and measuring the susceptibility at one frequency it is possible to estimate the power input at the other frequency. If the local oscillator power is small compared with the saturation level then the minimum detectable power in terms of cavity and sample volumes, relaxation times, dipole moment matrix elements, Boltzmann populations, cavity quality and change

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Some Possibilities of Using Three-level Systems for Receiving Weak VHF Signals

in susceptibility is Eq (6). The criterion for local oscillator power level is Eq (7). Table 1 gives the minimum detectable powers, at 300 °K (10^{-6} W) and 4 °K (10^{-14} W), for practical circuit values at a signal frequency of 10^{11} c/s. Table 2 gives the critical values of local oscillator power (at 10^{10} c/s) at various relaxation-time products. When the product is large, amplification is possible but at present no paramagnetic is known which is suitable. The inverse operation should also be possible where the frequencies are interchanged. At a temperature of 4 °K the sensitivity should be very high. Figure 1 shows a possible arrangement for a radiospectroscope. There are 1 figure, 2 tables and 7 references, 1 of which is Soviet and 6 English.

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69962

Some Possibilities of Using Three-level Systems for Receiving Weak VHF Signals

SOV/141-2-4-17/19

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Scientific-research Institute at Gor'kiy University)

SUBMITTED: April 12, 1959

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9.4300(1035,1138,1143)
24.7900

83746

S/056/60/038/004/039/048
B006/B056

AUTHORS: Aleksandrov, A. P., Khanin, Ya. I., Yashchin, E. G.

TITLE: Observation of the Spontaneous Coherent Radiation of a Ferrite in a Resonator

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1334 - 1337

TEXT: As the previously used method of exciting ferrites does not lead to satisfactory results, the authors employed a somewhat different principle based upon the fact that the ferrite is excited at a frequency ν_1 which deviates from the frequency ν_2 of spontaneous radiation. Between excitation and emission is the time $t_2 - t_1$, during which the external magnetic field changes from $H_1 = 2\pi\nu_1/\gamma$ to $H_2 = 2\pi\nu_2/\gamma$, where γ is the gyromagnetic ratio of the electrons. The block diagram of the apparatus used is shown in Fig. 1, and is briefly described. The change of the entire field in time is shown in Fig. 2. With $|H - H_1| \lesssim \Delta H$, where ΔH is

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the half-width of the resonance line of the ferrite, the ferrite enters into interaction with the high-frequency field, and a precession of the magnetic moment with the angle θ is caused. In the following time intervals, the precession frequency does not decrease with the eigenfrequencies of the resonators ($\nu_1 < \nu < \nu_2$) and the angle θ decreases only in consequence of relaxation processes: $\theta = \theta_0 \exp(-(t-t_1)/\tau)$. With $|H - H_2| \leq \lambda\pi\Delta\nu_2/2\gamma$, the ferrite emits a short pulse which is recorded and amplified. The experiments were carried out at $\nu_1 = 8900$ Mc/sec; the field of the electromagnet H equaled 3050 oe at a pulsed field strength of 700 oe; $t_2 - t_1 = 3 \div 15 \cdot 10^{-9}$ sec. The process of coherent emission of the spin system in a resonator has already been investigated by V. M. Fayn; his results are used to estimate the energy and power of the emission. For the power of a pulse, the relation $P = \text{const} \cdot \Delta t_2 \theta_0^2 \cdot \exp\left[-2(t_2-t_1)/\tau\right]$ is obtained, i.e., direct determination of the relaxation time τ is possible by means of the experiment

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described. Fig. 3 shows an oscillogram of emitted signals and of the ferromagnetic resonance. The strong signal is emitted with $H = H_2$, the two weaker ones are the resonances with $H = H_1$. A spherically ground yttrium ferrigarnet was used as ferrite. The authors thank A. G. Gurevich, G. A. Smolenskiy, and K. P. Belov for making the samples available, and they further thank A. M. Leonov for his assistance and V. M. Fayn for his advice. There are 3 figures and 6 references: 1 Soviet, 1 French, and 4 US.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta (Institute of Radiophysics of Gor'kiy State University)

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B113/B102

AUTHORS: Fayn, V. M., Khanin, Ya. I., Yashchin, E. G.

TITLE: Nonlinear properties of three-level systems

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 3(9), 1961 , 986-988

TEXT: A reaction (e.g. polarization P) of a three-level system to two monochromatic signals may serve as characteristics of the nonlinear properties of this system. E_1, E_2, E_3 are assumed to be three levels of a quantum system. An external field $F = E_{13}\cdot\cos\Omega_{31}t + E_{23}\cdot\cos\Omega_{32}t$ (1) is assumed to act upon this system; the frequencies are $\Omega_{31} \approx (E_3 - E_1)/\hbar$ and $\Omega_{32} \approx (E_3 - E_2)/\hbar$. The equation for the density matrix ρ_{mn} is used in order to determine the field-induced polarization of the system. If in the solution of this equation only the resonance terms with the frequencies Ω_{32}, Ω_{31}, and $\Omega_{31} - \Omega_{32}$ are used and if one goes over to a system of corresponding algebraic equations, then the equation

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$$P = \rho_{31}^{-}\mu_{13}e^{-i\Omega_{31}t} + \rho_{32}^{-}\mu_{23}e^{-i\Omega_{32}t} + \rho_{21}^{-}\mu_{12}e^{-i(\Omega_{31}-\Omega_{32})t} + \text{c.c.} \quad (4)$$

is obtained where

$$\rho_{31}^{-} = 2i\gamma_{31}\Delta^{-1}(D_{13}^{(0)}[4(\tau_2^{-1}+\gamma_{12}^2\tau_1)+\tau_2\gamma_{12}^2] - D_{23}^{(0)}(2\tau_1+\tau_2)\gamma_{12}^2),$$
$$\rho_{32}^{-} = 2i\gamma_{32}\Delta^{-1}(D_{23}^{(0)}[4(\tau_2^{-1}+\gamma_{13}^2\tau_1)+\tau_2\gamma_{13}^2] - D_{13}^{(0)}(2\tau_1+\tau_2)\gamma_{13}^2),$$
$$\rho_{21}^{-} = \tfrac{1}{2}i\tau_2\gamma_{13}\gamma_{23}(\rho_{32}^{-}/\gamma_{32}+\rho_{31}^{-}/\gamma_{13}) = -2\gamma_{13}\gamma_{23}\tau_2\Delta^{-1}(D_{13}^{(0)}[2(\tau_2^{-1}+\tau_1\gamma_{23}^2)-\tau_1\gamma_{13}^2]+$$
$$+ D_{23}^{(0)}[2(\tau_2^{-1}+\gamma_{13}^2\tau_1)-\tau_1\gamma_{23}^2]);$$
$$\Delta = [4(\tau_2^{-1}+\gamma_{12}^2\tau_1)+\tau_2\gamma_{13}^2][4(\tau_2^{-1}+\gamma_{13}^2\tau_1)+\tau_2\gamma_{23}^2] - (2\tau_1+\tau_2)^2\gamma_{13}^2\gamma_{23}^2;$$
$$\gamma_{13} = \mu_{13}E_{13}/\hbar = \gamma_{31}, \qquad \gamma_{23} = \mu_{23}E_{23}/\hbar = \gamma_{32};$$

holds if $\Omega_{31} = (E_3 - E_1)/\hbar$ and $\Omega_{32} = (E_3 - E_2)/\hbar$ and $D_{13}^{(0)}$ and $D_{23}^{(0)}$ are equilibrium differences of the level population, τ_1 and τ_2 are the longitudinal and transverse relaxation times, respectively, and μ_{ml} is the matrix of the dipole moments. (4) indicates that the reaction of the system to two monochromatic signals contains a term with the combined frequency $\Omega_{12} = \Omega_{13} - \Omega_{23}$ which results from the nonlinearity of

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the system. There are 8 references: 2 Soviet and 6 non-Soviet. The three most recent references to English-language publications read as follows: N. Bloembergen, S. Shapiro. Phys. Rev., 116, 1453, 1959; P. P. Sorokin, M. J. Stevenson, Phys. Rev. Lett., 5, 557, 1960; A. Javan, W. R. Bennett, Jr., A. R. Herriott. Phys. Rev. Lett., 6, 106, 1961.

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AUTHORS: Fayn, V. M., Khanin, Ya. I.

TITLE: Self-excitation conditions of a laser

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v.41, no. 5(11), 1961, 1498-1502

TEXT: The authors investigated theoretically the self-excitation conditions of a molecular generator with a cavity whose dimensions are considerably greater than the wave length of the generated waves. The cavity is assumed to be completely filled with weakly interacting molecules with two energy levels. The state of the system is characterized by the density of the energy spin s(r,t) whose components satisfy the conditions

$$\left|\begin{array}{l} \dot{s}_1+\omega_0 s_2+\frac{1}{T_2}s_1+\frac{1}{h}\sum_\lambda A_\lambda(r)\,e_{2\lambda}q_\lambda=0,\\ \dot{s}_2-\omega_0 s_1+\frac{1}{T_2}s_2-\frac{1}{h}\sum_\lambda A_\lambda(r)\,e_{1\lambda}q_\lambda=0,\\ \dot{s}_3+\frac{1}{T_1}(s_3^0-s_3)-\frac{1}{h}\sum_\lambda A_\lambda(r)\,(e_{1\lambda}s_2-e_{2\lambda}s_1)\,q_\lambda;\\ \ddot{q}_\lambda+\frac{\omega_\lambda}{Q_\lambda}\dot{q}_\lambda+\omega_\lambda^2 q_\lambda=\int_{V_\pi}A_\lambda(r)\,(e_{1\lambda}s_1+e_{2\lambda}s_2)\,dV. \end{array}\right| \quad (1)$$

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ω_0 is the molecular transition frequency, ω_λ the natural frequency of the cavity, Q_λ the quality factors corresponding to these frequencies, T_1 and T_2 the Bloch relaxation times, $\vec{e}_1$ and $\vec{e}_2$ molecular constants, which are functions of the matrix elements of the dipole moment: $\frac{1}{c}\frac{d\vec{\mu}}{dt} = \vec{e}_1 r_1 + \vec{e}_2 r_2$; $\hat{\vec{\mu}}$ is the operator of the molecular dipole moment, r_1 and r_2 are the spin matrices. $\vec{e}_1 + i\vec{e}_2 = (2i\omega_0/c)\vec{\mu}_{21}$, $\vec{e}_1 - i\vec{e}_2 = (-2i\omega_0/c)\vec{\mu}_{12}$. When the vector potential of the electromagnetic field is expanded into eigenfunctions of a cavity with ideally conducting walls: $\vec{A}(\vec{r},t) = \sum_\lambda \vec{A}_\lambda(\vec{r})q_\lambda(t)$, $\int_{V_\pi} A_\lambda^2 dV = 4\pi c^2$, and with $\vec{A}_\lambda\vec{e}_1/\hbar = \alpha_{1\lambda}$, $\vec{A}_\lambda\vec{e}_2 = \alpha_{2\lambda}$, $\alpha_{2\lambda} - i\alpha_{1\lambda} = \alpha_\lambda$,

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$s_1 + is_2 = P_1$, $s_1 - is_2 = P_2$, the system (1) can be represented by

$$\dot{P}_1 + (T_2^{-1} - i\omega_0) P_1 + \sum_\lambda \alpha_\lambda q_\lambda s_3 = 0, \qquad (7a)$$

$$\dot{P}_2 + (T_2^{-1} + i\omega_0) P_2 + \sum_\lambda \alpha_\lambda^* q_\lambda s_3 = 0, \qquad (7б)$$

$$\dot{s}_3 = \frac{1}{T_1}(s_3^0 - s_3) + \frac{1}{2}\sum_\lambda (P_1\alpha_\lambda^* + P_2\alpha_\lambda) q_\lambda, \qquad (7в)$$

$$\ddot{q}_\lambda + \frac{\omega_\lambda}{Q_\lambda}\dot{q}_\lambda + \omega_\lambda^2 q_\lambda = -\frac{i\hbar}{2}\int_{V_a} (P_1\alpha_\lambda^* - P_2\alpha_\lambda)\, dV. \qquad (7г)$$

The $P_{1,2}$ are expanded according to

$$P_1(\mathbf{r}, t) = \sum_\lambda \alpha_\lambda(\mathbf{r}) P_{1\lambda}(t), \quad P_2(\mathbf{r}, t) = \sum_\lambda \alpha_\lambda^*(\mathbf{r}) P_{2\lambda}(t). \qquad (8).$$

The self-excitation conditions can be determined from an analysis of the system (7). At the initial moment, $P_{1\lambda}$, $P_{2\lambda}$, and q_λ are assumed to be

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near zero, and $s_3 = s_3^0$. It is assumed that the small perturbations $p_{1\lambda}^0 e^{i\xi_\lambda t}$, $p_{2\lambda}^0 e^{i\xi_\lambda t}$, $q_\lambda^0 e^{i\xi_\lambda t}$ exist, with $\xi_\lambda = \Omega_\lambda + i\delta_\lambda$. Eqs. (7) with (8) lead to a system of homogeneous algebraic equations which have non-trivial solutions when the determinant

$$\xi_\lambda^4 - i\xi_\lambda^3(\omega_\lambda/Q_\lambda + 2/T_2) - \xi_\lambda^2(\omega_\lambda^2 + \omega_0^2 + T_2^{-2} + 2\omega_\lambda/Q_\lambda T_2) + i\xi_\lambda\omega_\lambda[2\omega_\lambda/T_2 + (\omega_0^2 + T_2^{-2})/Q_\lambda] + \omega_\lambda^2(\omega_0^2 + T_2^{-2}) + \hbar a^2\omega_0 s_3^0 = 0. \quad (11)$$

vanishes. In the case $|\delta_\lambda| \ll \Omega_\lambda$ and neglecting the terms with δ_λ^2, δ_λ^3 and δ_λ^4 two real equations can be set up for Ω_λ and δ_λ. Here only the solutions of (7) which are increasing with time are of interest ($s_3^0 > s_{3cr}$). For $\delta_\lambda = 0$ holds

$$\Omega_{\lambda cr}^2 = \frac{\omega_\lambda(\omega_0^2 T_2 + T_2^{-1} + 2Q_\lambda\omega_\lambda)}{\omega_\lambda T_2 + 2Q_\lambda} \quad (12)$$

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Self-excitation conditions of a laser

$$s^{o}_{3cr} = \frac{\omega_\lambda \left[(\omega_o^2 - \Omega^2_{\lambda cr} + T_2^{-2})^2 + 4T_2^{-2}\Omega^2_{\lambda cr}\right]}{2Q_\lambda T_2^{-1}\omega_o \hbar a^2} \qquad (13),$$

from which the boundaries of the region of self-excitation can be estimated: $(s^{o}_{3cr})_{min} \approx 2\omega_o^2/\hbar a^2 Q_\lambda T_2$, $(T_2^{-2} \ll \omega_o^2, \omega_\lambda = \Omega_\lambda = \omega_o)$. $\Omega^2_\lambda = \omega_o^2 - T_2^{-2}$. $N_{min} = 2(s^{o}_{3cr})_{min} = \hbar/4\pi|\vec{\mu}_{12}|^2 Q_\lambda T_2$. These conditions agree with those found by N. G. Basov and A. M. Prokhorov (ZhETF, 30, 560, 1956). If the resonator walls are ideally conducting, the relations

$$\int_{V_n+V_{ск}} \sum_\mu A_\lambda A_\mu \, dV = \int_{V_n} \sum_\mu A_\lambda A_\mu \, dV + \int_{V_{ск}} \sum_\mu A_\lambda A_\mu \, dV, \qquad (17)$$

$$\int_{V_n} \sum_\mu A_\lambda A_\mu \, dV \equiv \int_{V_n} A_\lambda^2 \, dV \gg \int_{V_{ск}} \sum_\mu A_\lambda A_\mu \, dV.$$

$$\sum_\mu \int_{V_{ск}} A_\lambda A_\mu \, dV \leqslant \sum_\mu \int_{V_{ск}} \{\max A_\mu\}^2 \, dV = n\{\max A_\mu\}^2 V_{ск}, \qquad (18)$$

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Self-excitation conditions of a laser

$$\int_{V_n} A_\lambda^2 dV \geqslant n \,(\max A_\lambda)^2 V_{ск}. \qquad (19)$$

hold true; V_{ll} is the cavity volume and $V_{ск}$ the volume of the skin layer, n is the total number of natural frequencies of the cavity. The approximation derived is applicable when $Q \gg n$. This inequality is fulfilled up to optical frequencies (lasers). There are 8 references: 4 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: H. Lyons. Astronautics, 5, 39, 1960; R. J. Collins, D. F. Nelson, A. L. Schawlow, W. Bond, C. G. B. Garrett, W. Kaiser.Phys. Rev. Let., 5, 303, 1960; A. L. Schawlow, C. H. Townes, Phys. Rev., 112, 1940, 1958; A. G. Fox, T. Li. PIRE, 48, 1904, 1960.

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GENKIN, V.M.; KHANIN, Ya.I.

Lasers; survey. Izv. vys. uchsb. zav; radiofiz. 5 no.3:423-458 '62.
(MIRA 15:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Masers)

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FAYN, V.M.; KHANIN, Ya.I.; YASHCHIN, E.G.

Interaction of electromagnetic oscillations in three-level systems. Izv. vys. ucheb. zav.; radiofiz. 5 no.4:697-713 '62. (MIRA 16:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Radio waves) (Radio)

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Fayn, Veniamin Moiseyevich; Khanin, Yakov Izrailevich

Quantum radio physics (Kvantovaya radiofizika) Moscow, Izd-vo "Sovetskoye radio", 1965. 608 p. illus., biblio., indices. Errata slip inserted. 11,500 copies printed.

TOPIC TAGS: laser, quantum theory, perturbation theory, field theory, spontaneous radiation, induced radiation, resonator theory, nonlinear optical effect, maser, paramagnetic amplifier, TW amplifier, laser theory, gas laser

PURPOSE AND COVERAGE: This book is intended for scientists and engineers working in the field of quantum radio physics and for students in advanced courses in schools of higher education and aspirants specializing in physics. It may also be useful to physicists and engineers engaged in related fields. A series of problems on the theory of the interaction between radiation and a substance is reviewed. Elements of the theory of quantum amplifiers and generators are discussed and the results of experiments are reviewed. The reader is assumed to have a knowledge of quantum mechanics equivalent to that of a university student. The material compiled in the book is presented in such a way that the reader has

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no need to refer to supplementary literature. The authors attempt to shed light upon the major results of existing acheivements in this field. Special attention was paid to those investigations in which the authors themselves participated. The experimental material was only reviewed, and for this reason little space is given to the descriptions of technical details. Sections 1-20, 22-40, and 71 were written by V. M. Fayn; Sections 41-49 and 51-59 by Ya. I. Khanin; Section 21 by Y. N. Genkin; Section 50 by E. G. Yashchin; Section 59, 60 by V. I. Talanov, and Sections 61-70 by Ye. L. Rosenberg. The authors thank A. V. Gaponov, Professor V. L. Ginzburg, Professor A. P. Aleksandrov, V. N. Genkin, G. M. Genkin, N. G. Golubeva, G. L. Gurevich, G. K. Ivanova, M. I. Kheyfets, Yu. G. Khronopulo, Ye. I. Yakubovich, and E. G. Yashchin for their cooperation.

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AUTHOR: Khanin, Ya. I.

ORG: none

TITLE: The theory of a two-level solid-state maser

SOURCE: IVUZ. Radiofizika, v. 9, no. 4, 1966, 697-709

TOPIC TAGS: maser, maser theory, pulse amplitude modulation, solid state maser

ABSTRACT: Processes which may cause amplitude modulation of emission pulses of a two-level paramagnetic maser are investigated. It is shown that under real experimental conditions, modulation, as a rule, is not connected with the nutation of the magnetization vector. Such factors as the nonuniform widening of the paramagnetic resonance line and line sweeping may have substantial influence on the shape of the radiated signal. The qualitative results of the theory in consideration of these factors, are in good agreement with the experimental results. The quantitative estimates, although very approximate, seem to support the developed

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theory. The author thanks A. V. Gaponov for reviewing the manuscript and a number of useful comments as well as Ye. F. Shishenkov for the computer calculations. Orig. art. has: 3 figures and 42 formulas. [Author's abstract]

[DW]

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KREYNDLIN, A.; KHANIN, Ye.

"Handbook of a young worker on the manufacture of precast reinforced concrete" by IA.M.IAkobson. Reviewed by A.Kreindlin, E.Khanin. Prof.-tekh.obr. 20 no.2:30 F '63. (MIRA 16:2)
(Reinforced concrete) (IAkobson, IA.M.)

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GORBACHEV, S.S., inzh.; KHANIN, Ye.M., inzh.; MOROZOV, N.F., inzh.; RABINOVICH, Ye.M., inzh.; STROYEV, A.Ye., inzh.; FEL'MAN, Ya.M., inzh.; DOLGIKH, V.N., inzh.; ROGACHEV, S.A., inzh.; YAKUSHEV, A.A.

Dismountable plant for making and assembling house made of large aerated concrete blocks. Rats.i izobr.predl.v stroi. no.12:11-18 '59. (MIRA 13:5)

1. Glavnyy inzhener Konstruktorskogo byuro po zhelezobetonu Glavmosoblstroymaterialov pri Mosoblispolkome (for Yakushev). 2. Konstruktorskoye byuro po zhelezobetonu Glavmosoblstroy-materialov, Moskva, D'yakov per., d.4 (for all).
(Lightweight concrete) (Concrete blocks)

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VINOGRADOV, B.V.; RYABOV, M.S., kand. tekhn. nauk, retsenzent; YUDIN, K.A., retsenzent; KHANIN, Yu.A., inzh., red.; BARYKOVA, G.I., red. izd-va; TIKHANOV, A.Ya., tekhn. red.

[Labor safety and industrial hygiene in the machinery industry] Bezopasnost' truda i proizvodstvennaia sanitariia v mashinostroenii; sbornik raschetov. Moskva, Mashgiz, 1963. 262 p. (MIRA 16:5)
(Machinery industry--Hygienic aspect)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANIN, Yu.I.

Determining electron density fluctuations in the ionosphere.
Radiotekh. i elektron. 3 no.11:1399-1402 N '58. (MIRA 11:11)
(Electrons) (Ionosphere)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANINA, B. I.

The effects of different methods of sauerkraut making on its vitamin C content. O. P. Markova, B. I. Khanina and A. A. Smirnova. *Trudy Leningrad. Sanit.-Gigien. Med. Inst.* 14, 157–61(1953); *Referat. Zhur. Khim., Biol. Khim.* 1955, No. 3087.—The use of *Lactobacillus acidophilus* starters is beneficial to the preservation of vitamin C.

B. S. Levine

(2)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

VERSHININA, K.I.; MASLOVA, L.I.; KHANINA, E.E.; MARYANSKAYA, Ye.Yu.

Study of the sanitary arrangements, schedules, and incidence of infectious diseases in the schools of Dnepropetrovsk. Gig.i san. 26 no.12:88 D '61. (MIRA 15:9)

1. Iz kafedr kommunal'noy gigiyeny i gigiyeny detey i podrostkov Dnepropetrovskogo meditsinskogo instituta.
(DNEPROPETROVSK--SCHOOL HYGIENE)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANINA F. B. and KARPOVA V. A.

Measles prophylaxis with γ-globulin (Russian text) PEDIATRIJA 1953, 31/2 (6-8) Tables 2

The effectiveness of 3 and 6 ml. of γ-globulin was compared with 30 and 60 ml. of measles convalescent serum. 3 ml. of γ-globulin is as otent as 60 ml. serum. γ-globulin contrary to serum prolongs the incubation period. If measles occur it is mild even in sick and debilitated children. γ-globulin is better tolerated than serum and there are no local or general reactions. 6 ml. γ-globulin protected all children, while this was not the case with 3 ml. γ-globulin or 60 ml. of serum.

Najman - Rijeka (XX, 4, 7)

SO: Excerpta Medica
Section IV Vol 7 No. 9

Smolensk Inst Epidemiol. + Microbiol (Dr Khanina)
Chair pediatrics, Smolensk Med. Inst. (Petryayeva)

KHANINA, F. B.

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F. B. Khanina

Correction of the Orbit of the Planet (1340) Ivetta

Academy of Sci of the USSR, Inst. of Theoretical Astron., Leningrad
Vol. 4, No. 9, 1951, pp. 491-495

From Monthly list of Russian Accessions
December 1951, Vol. 4, No. 9, p. 22

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KHANINA, F. B.

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F. B. Khanina

The Orbit of the Planet (534) Nansovia

Academy of Sci. of the USSR, Inst. of Theoretical Astron. Leningrad
Vol. 4, No. 9, 1951, pp. 3[illegible]

From: Monthly list of Russian Accessions
December 1951, Vol. 4, No. 9, p. 22

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

1. KHANTHA, F. B.

2. USSR (600)

4. Planets, Minor

7. New constants for minor planet 175 Andromache, Biul. Inst. teor. astron. 5, No. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

1. KHANINA, F. B.

2. USSR (600)

4. Planets, Minor

7. New elements and the ephemerid of planet 1320 Impala, Astron.tsir. No. 110, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

1. KHANTUL, F. B.

2. USSR (600)

4. Planets, Minor

7. Planet 1320 Impala. Astron. tsir. No. 129, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANINA, F.B.

New elements for minor planet 171 Ophelia. Biul.Inst.teor.astron. 5 no.5:322-323 '53.
(Planets, Minor--171) (MLRA 7:6)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANINA, F.B.

Elements of the orbit of minor planet 1572 (1949 SC). Biul.Inst.teor. astron. 5 no.7:455 '53. (MIRA 7:5)
(Planets, Minor--1572)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6"

KHANINA, F.B.

Formulas and tables for the interpolation of special coordinates and the computation of components of velocity. Biul. Inst.teor.astron. 6 no.2:127-132 '55. (MIRA 13:3)
(Planets--Tables)

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

KHANINA, F.B.; BARTENEVA, O.N.

Correction of orbits of 16 minor planets. Biul.Inst.teor. astron. 6 no.2:133-150 '55. (MIRA 13:3)
(Planets, Minor) (Orbits)

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721730005-6

S/035/60/000/010/005/021
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 10, pp. 11-12, # 9837

AUTHORS: Khanina, F. B., Barteneva, O. N.

TITLE: An Investigation of the Motion of the Comet Fay, Report 2. The Orbit of the Comet Fay From Observations of 1932-1933, 1939-1940 and 1947-1948

PERIODICAL: Byull. In-ta teor. astron. AN SSSR, 1959, Vol. 7, No. 6, pp. 466-477 (English summary)

TEXT: In this article, which is a continuation of the work by V. V. Zheverzheyev (Byull. In-ta teor. astron. AN SSSR, 1952, Vol. 5, No. 2, p. 97), the compilation of three appearances of the comet Fay from 1932 to 1948 was performed. To obtain initial data, two appearances of 1932/33 and 1939/40 were first jointly processed on the basis of normal positions given by V. F. Zheverzheyev, and the initial instant was adopted from the second comet appearance. (1939, November 3, 0). From that instant numerical integration was carried out

Card 1/3

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A001/A001

An Investigation of the Motion of the Comet Fay, Report 2. The Orbit of the Comet Fay From Observations of 1932-1933, 1939-1940 and 1947-1948

backwards in special baricentric coordinates with allowance for the perturbations by the planets, from Mercury to Uranus. Integration, with a subsequent improvement of elements, was carried out 4 times with increasing accuracy. During the last time the perturbing forces were calculated with an accuracy up to 10^{-10}, the functions f_x, f_y and f_z up to 10^{-9} and coordinates x, y and z up to 10^{-8}. The elements and coordinates at the initial instant, calculated on the basis of this integration, were adopted as initial ones for the joint processing of the three appearances. With this purpose, integration was continued up to 1948 and the elements were improved on the basis of 11 normal positions of V. F. Zheverzheyev and 3 normal positions obtained from the observations of 1947/48. After a twofold improvement, corrections to osculating elements were obtained for the initial instant with the corresponding errors. The error of one normal position $\varepsilon = \pm 2''.0$. The system of elements was obtained. Epoch and osculation: 1939, November 3, 0 ephemeris time.

Card 2/3