NAZAROV, A.G.

NAZAROV, A.G.

Mechanical similitude of solid bodies and its use in investigating structural components and seismic stability of buildings. Report no.1. Izv. AN Arm. SSR. Ser. tekh. nauk 10 no.5:15-28 '57.
(MIRA 11:1)

1. Institut stroymaterialov i sooruzheniy Ministerstva stroitel'stva ArmSSR.

(Earthquakes and building) (Strains and stresses)

NAZAROV, A.G.

Mechanical similarity of solid bodies and its utilization in studying structural components and earthquake resistance of buildings. Izv.AN Arm.SSR. Ser.tekh.nauk 10 no.6:3-16 '57.
(MIRA 11:2)

1.Institut stroymaterialov i sooruzheniy Ministerstva stroitel'stva ArmSSR.
(Engineering models) (Strength of materials)

NAZAROV, A.G.

SOV/24-58-10-33/34

AUTHOR: Panovko, Ya. G.

TITLE: A Conference on Elastic Vibrations at the Institute of Mechanical Engineering of the Academy of Sciences of the Latvian SSR (Soveshchaniye po voprosam uprugikh kolebaniy v Institute mashinovedeniya Akademii nauk Latviyskoy SSR)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 10, pp 158-159 (USSR)

ABSTRACT: This Conference took place on June 11-15, 1958, in Riga. Altogether over 70 people took part in the conference (apart from those normally based at Riga). Eleven papers were read:
1) "The effect of vibration on systems with dry friction", by I. I. Blekhman and G. Yu. Dzhanelidze (Leningrad).
2) Two papers on dynamic problems in the nonlinear theory of plates and the shells by V. V. Bolotin and A. S. Vol'mir (Moscow).
3) "A qualitative study of the form and frequencies of natural vibrations of thin elastic shells", by A. L. Gol'denveyzer (Moscow).
4) "Some problems in connection with vibrations of elastic rods in the case of large displacements", by Ya. S. Shkenev (Moscow).
5) "Coupled vibrations of vanes and discs in turbines" and

Card 1/2

"Passage through resonance of a linear system with non-linearly varying frequency", by A. P. Filippov (Khar'kov).
6) "Some problems in the dynamics of an ideally elastic stretched thread", by V. A. Svetlitskiy (Moscow).
7) "On the similarity of dynamic processes in solid bodies", by A. G. Nazarov (Yerevan).
8) "The problem of constructional hysteresis", by Ya. G. Panovko (Riga)
9) "Constructional hysteresis in resin-metallic shock absorbers", by S. I. Strakhov (Riga).
The conference was closed with a speech by N. A. Pilenko-Borodich (Moscow).

Card 2/2

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R001136230(

NAZAROV, A.G.

Mechanical similarity of solid bodies and its utilization in studying structural components and earthquake resistance of buildings. Part 3. Izv. AN Arm.SSR. Ser.tekhn.nauk 11 no.4: 3-20 '58. (MIRA 11:10)

1. Institut stroymaterialov i sooruzheniy Ministerstva stroitel'stva ArmSSR.
(Engineering models) (Strength of materials)

NAZAROV, A.G.

Mechanical similarity of solid bodies and its use in the study of structural components and earthquake resistance of buildings. Izv.AN Arm.SSR. Ser.tekh.nauk 11 no.6:3-10 '58. (MIRA 12:3)

1. Institut stroymaterialov i sooruzheniy Ministerstva stroitel'stva Arm.SSR.
(Strains and stresses) (Engineering models)

3(10) PHASE I BOOK EXPLOITATION SOV/2537

Nazarov, Armenak Gevorkovich

Metod inzhenernogo analiza seysmicheskikh sil (Engineering Analysis of Seismic Forces) 2d ed., rev. and enl. Yerevan, Izd-vo AN Armyanskoy SSR, 1959. 285 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk Armyanskoy SSR. Institut stroymaterialov i sooruzheniy.

Resp. Ed.: B. K. Karapetyan; Ed. of Publishing House: A. G. Sikuny; Tech. Ed.: M. A. Kaplanyan.

PURPOSE: The book is intended for scientific and engineering personnel in the field of seismology.

COVERAGE: The book describes a new method of direct determination of seismic forces by seismographs. The method, introduced by the author, consists of the direct integration of the equations for ground motion by special multi-channel seismometers which reflect the behaviour of structures during an

Card 1/6 1/3

earthquake. The author proposes several types of simplified maximum-amplitude multi-pendulum seismometers to record highly destructive earthquakes without time marking. The seismometers, described in detail, consist of a number of linear oscillators equipped with freely oscillating damping devices of various periods. Among them, the AIS-1 and AIS-2 (including a portable model, the AIS-2p) seismometers were developed at the Institut stroitel'nykh materialov i sooruzheniy (Building Materials and Structures Institute) of the Armenian SSR in collaboration with the Armenian branch of the Soyuzvzryvprom (All-Union Drilling and Blasting Trust). Ground vibrations were tested by these seismometers in connection with the Gyumush power development on the Razdan River. The author determines the intensity of earthquakes from the observed amplitudes of seismic accelerations and evaluates the seismic resistance of structures. In the last section the author recommends a program of seismic-control networks for localities subject to earthquakes and defines the tasks of engineering seismology as applied to local and general conditions. Areas of regionally uniform occurrence of seismic disturbances are outlined. A number of suggestions are presented towards organizing engineering seismology services in the Soviet Union. Valuable material is available in chapters dealing with the engineering aspects of seismic studies in Transcaucasia, above all those chapters evaluating the seismic resistance of local structures and the devices used to

determine resistance. A short survey of the development of seismological instrumentation is given. Specifically mentioned are the contributions of G. Ya. Arutyunov, A.K. Shanshiyev, K.S. Zavriyev, S.V. Medvedev, I.L. Korchinskiy, B.K. Karapetyan, M.T. Urazbayev, V.K. Kabulov, V.T. Rasskazovskiy, and E.Ye. Khachiyan. The author thanks K.S. Zavriyev, Ya.G. Panovko, S.A. Ambartsumyan, L.V. Shakhsuvaryan, S.S. Darbinyan, I.V. Peshtmaldzhyan, and also Wang Kuan-yüan of Harbin (CPR). There are 151 references, of which 118 are Soviet.

TABLE OF CONTENTS:

S/169/62/000/009/013/120
D228/D307

AUTHOR: Nazarov, A. G.

TITLE: Dynamic likeness of solid bodies

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 9, 1962, 21, abstract 9A133 (Tr. Arm. in-ta stroymaterialov i sooruzh., no. 1, 1959, 11-20)

TEXT: The conditions of dynamic similarity are considered. If the processes of ageing and creep are disregarded by virtue of their duration, the possibilities of modeling will be enlarged. It may be reckoned that at the time of shock or seismic action a material's properties will hardly change during the course of dynamic processes, and that no creep will be displayed. It is also possible to disregard viscous resistance and to reckon that the attenuation of free vibrations is independent of their frequency. The conditions of dynamic likeness are considered for prismatic pivots under the action of variable, transverse, and longitudinal forces and in the case of a collision between an elastic pivot and an immobile elastic slab. [Abstracter's note: Complete translation.]

Card 1/1

NAZAROV, A.G. (Yerevan)

Fundamental theorem of similitude as used in modeling construction elements. Stroi.mekh. i rasch.soor. 1 no.3:15-19 '59. (MIRA 12:8)

(Dimensional analysis) (Structural frames--Models)

NAZAROV, A.G.; KARAPETYAN, B.K.; MUSAYELYAN, A.A.; PIRUZYAN, S.A.; SAFARYAN, A.N. [deceased]; SHAGINYAN, S.A.

Preliminary work results of the engineering seismological detachment of the Joint Tajik Seismological Expedition in the Stalinabad region. Izv. Otd. est. nauk AN Tadzh. SSR no.3:11-26 '59. (MIRA 15:5)

1. Institut seysmostoykogo stroitel'stva i seysmologii AN Tadzhikskoy SSR, Institut stroymaterialov i sooruzheniy AN Armyanskoy SSR i Institut stoitel'nogo dela AN Gruzinskoy SSR.

(Stalinabad region--Seismological research)

NAZAROV, A.G.

Simplified proof of the basic theorem of broadened similitude of solid deformed bodies. Izv.AN Arm.SSR.Ser.tekh.nauk. 12 no.1: 57-58 '59. (MIRA 12:4)

1. Institut stroymaterialov i sooruzheniy Ministerstva stroitel'stva Arm.SSR.

(Engineering models)

Nazarov, A.G.

82529

S/173/59/012/05/06/009

16.1000

AUTHOR: Nazarov, A.G.

TITLE: Preference Numbers and the Technique of Calculation

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR, 1959, Vol 12, No 5, pp 55 - 60

TEXT: The author welcomes the introduction of the Soviet standard GOST 8032-56 entitled "Standard and Series of Preference Numbers". The simplification of industrial calculation is of particular interest and it was established that any arithmetical operation can be performed with the aid of preference numbers. To facilitate this, all other values should be abolished from the system and every arithmetical operation performed exclusively by preference numbers which, in turn, requires the standardization of the latter. Preference numbers series $q^N \sim x$ at $q^{100} = 10$ and $0 \leq N \leq 99$ are shown on Table 1. Any preference number can be shown as: $y = 10^{\pm n}x$, thus every value can be replaced by a preference number with an accuracy of $\sim$1.15%. Assuming that the calculation is based on $q^{1.000} = 10$, e.g., $q \sim 1.0023$, every value can be replaced by a preference number with an accuracy of $\sim$0.115% which is adequate for the majority of calculations. The divi-

Card 1/3

Preference Numbers and the Technique of Calculation

sion, multiplication and involution of preference numbers results again in a preference number. The addition is carried out according to Table 2, showing β values in relation to α values. In order to establish the sum of two preference numbers, the amount of the smaller item is substracted from the amount of the greater item, β value is determined by value α and the result added to the number of the greater amount. Subtraction is carried out according to Table 3, showing γ values in relation to α values. The difference between two preference numbers is determined by subtraction of the smaller number from the greater, γ value is determined according to value α and the result subtracted from the greater number. Table 3 shows γ values at $\alpha \geq 8$ which is the permissible subtraction error of $\pm 5\%$. Multiplication, division, involution and evolution are carried out according to afore-described methods, whereby addition and subtraction symbols are replaced by vertical lines indicating that Tables 2 or 3 should be used. Data on Tables 1, 2 and 3 vouchsafe an accuracy similar to that of a slide rule, therefore tables based on $q^{1.000} = 10$ are of particular value. Merits of the proposed method are as follows: the relative difference between two proximate values of two preference numbers

82529
S/173/59/012/05/06/009

Preference Numbers and the Technique of Calculation

$$\frac{q^{n} - q^{n-1}}{q^{n-1}} \times 100 = (q - 1) \times 100\%$$

does not depend on their absolute value, i.e., is a constant value. Logarithms of preference numbers appear always as whole numbers. Interpolation is replaced by serial tables and complicated mathematical operations by simple ones, i.e., multiplication instead of evolution etc. A small reserve of numbers is sufficient for a wide range of calculations which is a great asset to storage devices. Taking the smallest and the greatest known values, i.e., 10^{-13} and 10^{-28}cm, one finds that only 4.100 numbers are necessary to determine any length with an accuracy of $\sim$1% if the denominator of geometrical progression is assumed to be $q^{100} = 10$, of 41.000 numbers with an accuracy of $\sim$1% at a denominator of $q^{1.000} = 10$. The expediency of this system in regard to computers is being considered. There are 3 tables and 2 Soviet references.

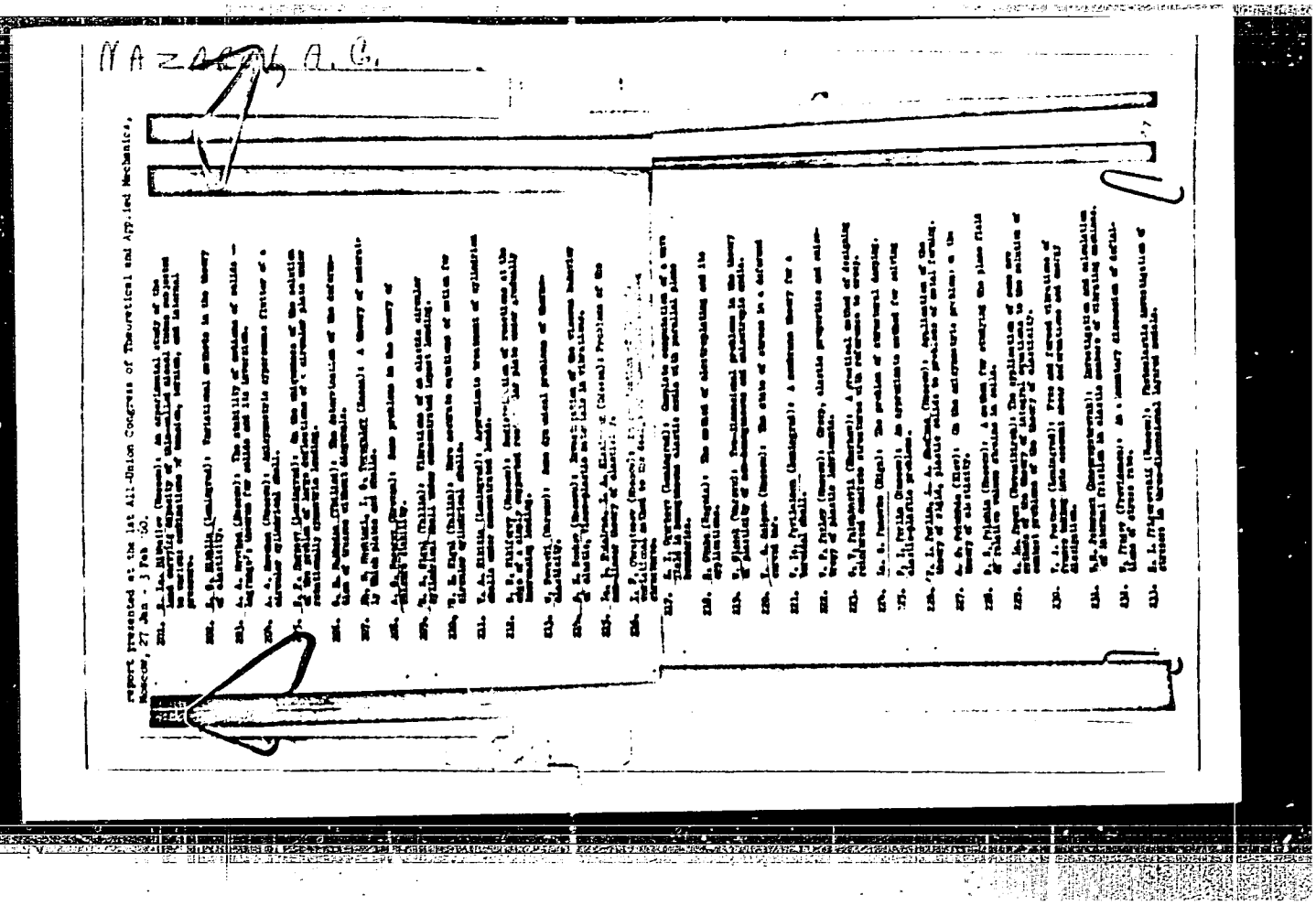
SUBMITTED: March 15, 1959

Card 3/3

KAZAROV, A. G.; KARAPETIAN, S. K.; SHAGINIAN, S. A.

"The Method of Direct Determinations of Reduced Spectra of Seismic Accelerations."

report submitted for the Second World Conference on Earthquake Engineering, Tokyo and Kyoto, Japan, 11-18 July 1960.



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S/173/61/014/001/001/002
A104/A129

244200 1327, 3309, 1109

AUTHOR: Nazarov, A. G.

TITLE: On the mechanical similarity of solids and its application in the investigation of building structures and the seismic resistance of structures. Communication 5

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya. Seriya tekhnicheskikh nauk, v. 14, no. 1, 1961, 3-16

TEXT: The author describes further development of the theory of simulation of solids under strain, presented in Communications 1, 2, 3, 4 (Ref. 1: Izvestiya AN Armyanskaya SSR. Seriya tekhnicheskikh nauk. 1957, v. 10, no. 5; 1957, v. 10, no. 6; 1958, v. 11, no. 4, and 1958, v. 11, no. 6: and Ref. 2: Manuel Rocha, "Experimental Dimensioning of Constructions", Laboratorio de engenharia civil, Lisbon, 1952, no. 21). Mechanical similarity in the statistical sense is achieved when the corresponding points of the prototype and the model show identical relations between stress and strain tensors. If model A' is an exact replica of prototype A, their statistical characteristics are bound to coincide. The same rule applies to a series of models and prototypes (assemblies) Ai and A'i. This

Card 1/6

26056
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A104/A129

Or. the mechanical similarity ...

juxtaposition, though hardly feasible in practice, was necessary to prove that the creation of the mechanical similarity of prototype and model systems requires their identity in the statistical sense. Careful selection of material, technclogy ecc. may produce a series of models endowed with required statistical data, thus providing statistical similarity of systems Ai, A'i by artificial means. It appears that the statistical coincidence of mean values and root mean square deviations is sufficient for this purpose. Experiments carried out on samples made of similar material showed that at the reduction of their dimensions the strength increases. This was particularly evident on samples made of brittle material; the occurrence is generally known as scaling effect and contradicts the law of similarity of solids. The most frequent interpretation of the scaling effect is linked with the statistical theory of strength of brittle materials which is based on the heterogeneity of the latter, i.e., the presence of stronger and weaker grains causes an nonhomogeneous strain. The bigger the sample the greater is the number of grains deviating strongly from the mean strength causing a general decrease of strength. At the same time smaller samples will have a higher mean strength but also higher mean deviations, which leads to a deviation from the condition of similarity in the statistical sense. Thus the scaling effect defies the basic requirement of the law of similarity, i.e., the statistical

Card 2/6

On the mechanical similarity ...

identity of prototypes and models. N. N. Davidenkov (Ref. 9: L. S. Moroz, "On the Problem of the Strength of Cemented Steel", L., 1947, and Ref. 10: N. N. Davidenkov, "On the Effect of the Dimension of Samples on Their Mechanical Properties", Zavodskaya laboratoriya, 1960, no. 3) suggested a connection between the scaling effect at brittle fractures and the accumulation of the potential energy in the system testing-device-sample. The bigger the sample the greater is the accumulation of potential energy spread during the initial cracking passing into the kinetic energy of the system, thus accelerating the destruction process. Experiments in respect of this theory revealed that the scaling effect appeared to be the result of an inadequate testing method, rather than a factor preventing proper simulation. Obviously the scaling effect can be caused by the choice of production technology of prototypes and models. There are two possibilities: 1) similar technology but differing results, depending on the proportional relation of the prototype and the model, and 2) different technology necessitated by the dimensions of the sample. Further causes of the scaling effect are: varying hardening and thermal processing; surface stress, and the relation between the strength and the gradients of stress components. It is possible that strain components depend not only on stress components but also on their partial derivatives along coordinates. Therefore deformations may depend on the "velocity" of

On the mechanical similarity ...

stress variations in given directions which would result in disturbed similarity conditions at an uneven stress distribution. Pertinent literature contains no reference to experimental confirmation of this possibility. Thus the scaling effect distorts or rather obstructs proper simulation of solids under strain and should be taken into consideration during experiments on models. With the comparative increase of the sample in relation to the extent of its "defect", the scaling effect asymptotically tends towards a limit. For this reason the scaling effect may pass unnoticed on samples of sufficient dimensions. The development of plastic properties of the material modifies the scaling effect. A further difficulty is the simulation of the material itself, i.e., its proper selection. Simulation of homogeneous isotropic solids under strain is simple within the limits of Hooke's law, particularly if the effect of the proper weight can be ignored, as it requires only the parity of Poisson's ratio for the prototype and model. Models assembled of parts made of different materials present greater difficulties, as their elasticity modules must coincide separately for the prototype and separately for the model, whereas Poisson's ratio for analogous materials should be equal. This difficulty does not apply to simple simulation as here the prototype and the model can be made of the same material. Main difficulties are encountered in models subjected to stress and strain beyond their elasticity

Card 4/6

On the mechanical similarity ...

limits. It is practically impossible to obtain an exact correlation between stress and strain tensors applicable to expanded similarity $\sigma = \beta\sigma$, $\varepsilon' = \gamma\varepsilon$ for a general case of complex stress state. Such cases can be solved only individually by approximate simulation. Whilst the choice of method will depend on the nature of the construction, the solution should contain an estimate as to the simulation error. A stricter method requires specific mechanical values to be shown with deficiencies and excess. The solution will then resemble the "fork" widely used in mathematical analysis. Some factors indicate the expediency of this method. Another satisfactory solution is the application of analytical and experimental methods. Its aim is to gain information on the conduct of the prototype based on a model of inexact construction. One of the approximate simulation methods involves a part-by-part simulation. Data on the mechanical properties of individual parts can be easily obtained and the experimental selection of appropriate models and their conjugate joints, satisfying the requirements of similarity under the influence of analogous loads, solves the problem of simulation. This method requires a careful selection of material and precise copying during simulation, as even considerable deviations have no adverse effect providing that all main mechanical characteristics meet the similarity standard. As each prototype consists of several parts, their mechanical similarity in the

Card 5/6

On the mechanical similarity ...

statistical sense should be ensured. Test results of one type of prototype parts provides information to their mean strength (R) and root mean deviation. The modeling technology should ensure that $R_m = \beta R_m$ and root mean square deviation with the same β factor [Abstracter's note: subscript m (mean) is a translation of the original ср (srednaya)]. Statistical characteristics can be obtained by using the combined results of destructive tests on individual samples and the results of mass-scale nondestructive tests. The part-by-part method permits thorough tests on model groups, large enough to provide reliable data on the performance of prototypes and even their statistical characteristics. Models made on 1/10 - 1/20 or 1/2 - 1/5 scale (for large objects) are adequate, particularly as mechanical values of large objects are hardly affected by further increase. In case of large concrete blocks only one large slab is required; here the part-by-part method degenerates into approximate selection of model material suitable for governing stress conditions. There are 13 references: 11 Soviet-bloc, and 2 non-Soviet-bloc.

ASSOCIATION: Institut stroymaterialov i sooruzheniy Gosstroya Armyanskoy SSR (Institute of Building Materials and Structures of the State Office of Construction, Armyanskaya SSR)

SUBMITTED: November 5, 1960

Card 6/6

S/173/61/014/002/001/001
D202/D305

AUTHORS: Nazarov, A.G., Karapetyan, B.K., and Piruzyan, S.A.

TITLE: A method for approximate seismic micro-division into districts

PERIODICAL: Izvestiya akademii nauk Armyanskoy SSR, Seriya tekhnicheskikh nauk, v. 14, no. 2, 1961, 43-45

TEXT: The present material was presented to the Institut fiziki zemli AN SSSR (Institute of Earth Physics, AS USSR), for drawing up instructions on seismic microdivision into districts. In order to accumulate factual, comparative data about earthquake intensities in various local conditions, the authors propose carrying out an approximate seismic microdivision of inhabited and building areas in the manner indicated, since it is impossible to solve this question with instrumental surveys in the experience of A.G. Nazarov, B.K. Karapetyan and S.A. Piruzyan (Ref. 1: Seysmicheskoe

Card 1/8

A method for approximate ...

mikrorayonirovaniye na instrumental'noy osnove (Seismic Microdivision into Districts by Surveying with Instruments) Doklady AN ArmSSR, Yerevan, 1961 (in print)). Geological and geophysical investigations carried out in the areas [Abstractor's note: These not given] subjected to these microdivisions will result in obtaining data about the velocities of seismic longitudinal waves in the various soils encountered. A relative seismicity of individual sections of the territory is then determined, according to their basic geological, hydrogeological and geomorphological characteristics. These local characteristics are determined by introduping the following coefficients: k_g - taking into account the type of ground in a dry state in the base of the building, k_v - taking into account the ground water level, k_r - taking into account the topographical relief of the area. The overall coefficient k which will consider the variation of the earthquake intensity in various local conditions will then be the product of the established

Card 2/8

A method for approximate ...

coefficients:

$$k = k_g \cdot k_v \cdot k_r \qquad (1)$$

Multiplying the seismic building coefficient k_s (Ref. 2: Normy i pravila stroitel'stva v seysmicheskikh rayonakh SSSR (Norms and Regulations for Construction in Seismic Regions of the USSR), (SN-8-57), M., 1957) by this new coefficient k, one obtains a coefficient of seismicity k_s' for the zones considered: $k_s' = k \cdot k_s$ (2)

To establish approximately the coefficient k_g which refers to the type of ground in the zone considered, the following formula is proposed, based on the principle of conservation of seismic energy flux, not accounting for reflection and dispersion in the parts overlying the hypocentrum:

$$k_g = \sqrt{\frac{\rho_s v_s}{\rho v}} \qquad (3)$$

where ρ_s = density of the ground at the initial point; v_s = velo-

Card 3/8

city of the seismic waves (longitudinal) at the initial point; ρ = density of the ground at the point considered; v = velocity of seismic waves (longitudinal) at the point considered. Ground densities and velocities of the seismic waves are determined by measurements in the field or are ascertained from data in I.I. Gurvich (Ref. 4: Seysmorazvedka (Seismic Prospecting), M. 1954). From the analyses of results obtained from observations of earthquakes and explosions by multipendulum seismometers. Table 1 was prepared, in which approximate values of k_g for various types of soil are given in relation to the clay - sandy loam considered as a "unity type" of soil on the map of seismic divisions of Soviet territory (Ref. 2: Op.cit.) and S.V. Medvedev (Ref. 13: Seysmicheskoye rayonirovaniye territorii SSSR (Seismic Division into Districts of the Territory of the USSR), Tr. Instituta Fiziki Zemli, No. 1 (163), M., 1958)

Card 4/8

Table 1. The average values of coefficient k_g obtained by instrumental measurements

Type of rock	k_g
Granite	0.35
Tuff	0.50
Massive limestone (compact)	0.55
Conglomerate (cemented)	0.55
Conglomerate	0.60
Compact sandstone	0.65
Fractured basalt	0.70
Marls, Gipsum	0.75
Clay	0.80
Clay (sandy loam)	1.00
Loess (Over a thick layer of conglomerate)	1.10
Sand	1.20
Contemporary praluvial layer	1.40
Embankments	2.50

Card 5/8

Choosing the coefficient k_g, one should consider, if possible, that its value depends to a large extent on the spectral composition of ground vibration as well as on the form of building erected on it. For instance a non-elastic building on rocky soil and an elastic building on pliable soil react worse than structures on soils having average properties. Coefficient k_v which takes into account the presence of the soil water level can be determined by formula (4) obtained as a result of analyses of earthquake and explosion data observed with multiunit seismometers:

$$k_v = \frac{3}{1 + \frac{H}{8}} \qquad (4)$$

for $H > 16$ m, $k_v = 1$, where H is the depth of the soil water (The limiting value of H = 16 m below which the presence of the wave has no effect). It should be noted that relation (4) was computed for conglomerates covered with loess, when erecting buildings on it of

A method for approximate ...

average rigidity. Considering that the seismic effect in relation to the ground relief may be doubled, it is recommended calculating coefficient k_r -- which takes into consideration topographical relief -- with the following formula:

$$k_r = 1 + \tan\alpha \qquad (5)$$

where α is the slope of the ground which may vary from 0 - 45°. (When α = 45 - 90°, k_r should be accepted as equal to 2). When the slopes consist of soft, contemporary sediments, the erection of principal buildings should be forbidden. When non-elastic buildings are erected on isolated rock remnants, on narrow watersheds or on edges of cliffs there is always a possibility of an increase in the seismic effect. It is not recommended building on slopes composed of pliable materials especially when the slope exceeds 30°. There are 1 table and 13 references: 11 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications reads as follows: B. Gutenberg "Effects of Ground on Shaking in

Card 7/8

Earthquakes". Trans. Am. Geophys. Union, 37, 1956; and B. Gutenberg, "Effects of Ground on Earthquake Motion." Bulletin of the Siesmological Society of America, Vol. 47, No. 3, 1957. [Abstractor's note: This is essentially a complete translation].

ASSOCIATION: Armyanskiy institut stroymaterialov i sooruzheniy (Armenian Institute of Building Materials and Constructions).

Card 8/8

NAZAROV, A.G., akademik; KARAPETYAN, B.K.; PIRUZYAN, S.A.

Establishing seismic microdistricts on the basis of instrumental data. Dokl.AN Arm.SSR 32 no.3:149-154 '61. (MIRA 14:5)

1. Institut stroitel'nykh materialov i sooruzheniy Gosstroya Armyanskoy SSR. 2. Akademiya nauk Armyanskoy SSR (for Nazarov).
(Seismology)

NAZAROV, A.G.

Mechanical similitudes of solid bodies and their use in studying construction designs and the seismic resistivity of structures. Izv.AN Arm.SSR.Ser.tekh.nauk 15 no.6:3-12 '62.
(MIRA 16:2)

1. Institut geofiziki i inzhenernoy seysmologii AN Armyanskoy SSR.

(Earthquakes and building) (Engineering models)

NAZAROV, A. G.

Some problems of research in engineering seismology. Biul. Sov. po seism. no.14:8-13 '63. (MIRA 16:4)

(Earthquakes and building)

NAZAROV, A.G.

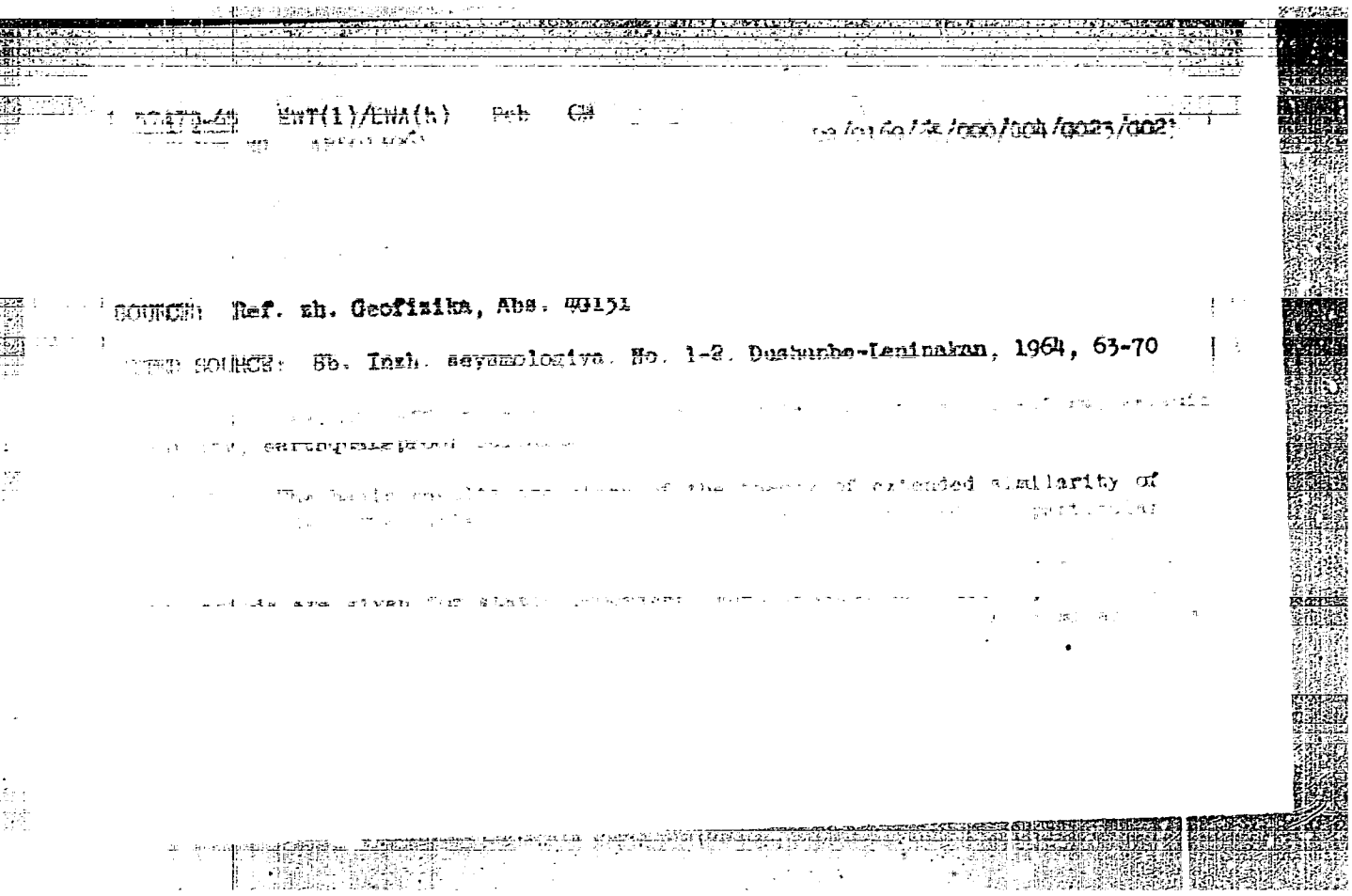
Mechanical similitude of solid bodies and its application to the investigation of structures and their seismic resistance. Part 7. Izv. AN Arm. SSR. Ser. tekh. nauk 16 no.1:3-12 '63. (MIRA 16:6)

1. Institut geofiziki i inzhenernoy seysmologii AN Armyanskoy SSR. (Architectural models) (Earthquakes and building)

NAZAROV, A.G.

Geochemistry of landforms as a theoretical basis for geochemical prospecting; concerning A.I. Perel'man's book "Geochemistry of landforms." Sov. geol. 6 no.9:156-161 S '63.
(MIRA 17:10)

1. TSentral'naya geologos"yemochnaya ekspeditsiya Severo-Kavkazskogo geologicheskogo upravleniya.



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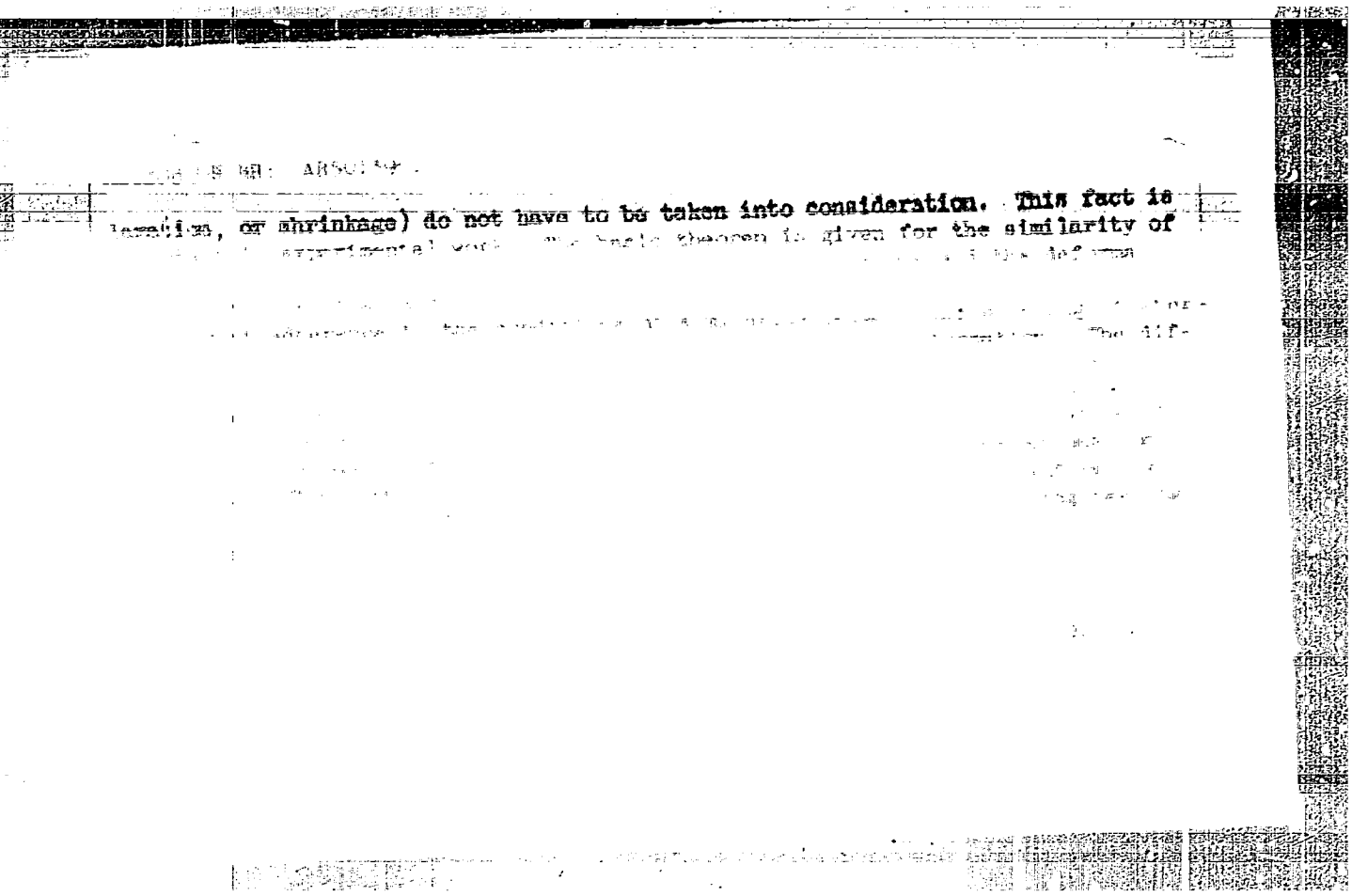
SOURCE: Ref. zh. Geofizika, Abs. 9G151

SOURCE: Sb. Inzh. seysmologiya. No. 1-2. Dushanbe-Leninakan, 1964, 63-70



tension, or shrinkage) do not have to be taken into consideration. This fact is

NAZAROV, A.G., akademik; KARAPETYAN, B.K.; SHAGINYAN, S.G.

Method for studying the seismic stability of structures on models subjected to seismic-explosion effects. Dokl. AN Arm. SSR 39 no. 3:177-180 '64. (MIRA 18:1)

1. Institut geofiziki i inzhenernoy seysmologii AN ArmSSR.
2. AN ArmSSR (for Nazarov).

ACC NR: AM5020929 (A) Monograph UR/

Nazarov, Armen Georgiyevich

Mechanical similarities of deformed hard bodies; on the theory of modeling (O mekhanicheskom podobii tverdykh deformiruyushchikh tel; k teorii modelirovaniya) YErevan, Izd-vo AN ArmSSR, 1965, 217 p. illus., biblio. (At head of title: Akademiya nauk Armyanskoy SSR. Institut geofiziki i inzhenernoy seysmologii) Added t. p. in Armenian. Errata slip inserted. 1,500 copies printed.

TOPIC TAGS: solid mechanics, material deformation, mechanical stress, soil mechanics, similarity theory, model theory, statistic mechanics

PURPOSE AND COVERAGE: This book discusses several problems of the theory of similarities of deformed bodies. It begins with a purely physical introduction, then gives the possibilities of wide formulation for the condition of similarity. As a result, the possibility is established in principle of expanded similarity of mechanical states, fracture formations and even full disintegration under static and dynamic loading. The concept of mechanical similarity in the statistical sense is introduced. In this case single samples of originals and models are not subject to comparison, but ensembles of originals and of models are compared. It is shown that disturbance of the conditions of mechanical similarity in the statistical sense always leads to a so-called scale effect. Similarities of loose bodies and in general bodies with gran-

Card 1/2

ACC NR: AM5028929

ular structure are viewed. The book also presents theoretical premises for modelling based on approximately maintaining the conditions of similarity. The book is recommended for scientists, aspirants and engineers in the field of physical modelling of hard deformed bodies.

TABLE OF CONTENTS (abridged):

SUB CODE: 20,12 SUBM DATE: 22Jul65 ORIG REF: 094 OTH REF: 016

Card 2/2

Dec 1947

NAZAROV, A.I.

USSR/Electricity
Power Plants, Electric

"Comments on L.I. Dvoskin's Article, 'Switching Systems and Construction of Substations of 110-KW Capacity with Bypassing Circuit Breakers'", G.A. Kireyev, M.M. Belousov, A.I. Nazarov, V.N. Gurevich, Engineers, Etc., 2 pp

"Elektricheskiye Stantsii" No 12

Presents views, comments, and suggestions by several engineers on Dvoskin's article that appeared in "Elektricheskiye Stantsii" No 1

PA 50T19

NAZAROV, A. I.

PA 161T14

USSR/Electricity - Substations Insulators Feb 50

"Prophylactic Testing of Insulators at 35-Kilovolt Substations," A. I. Nazarov, Engr, 2 pp

"Elek Stants" No 2

Describes various methods which can be used to test insulators at substations. Their adoption would prevent many breakdowns by enabling cracks to be detected in time.

[redacted] 161T14

FINKEL'SHTEYN, I.I.; NAZAROV, A.I.

Load capacity of the feeding cylinder on a carding machine.
Tekst.prom. 15 no.2:14-17 F '55. (MLRA 8:3)

1. Dotsent Ivanovskogo tekstil'nogo instituta (for Finkelshteyn).
2. Nachal'nik chesal'nogo tsekha imeni Varentsovoy (for Nazarov).
(Carding machines)

NAZAROV, A.I. (Moskva)

An oblique shock of a two-dimensional gas jet onto a flat wall.
Prikl.mat. i mekh. 21 no.3:431-437 My-Je '57. (MIRA 10:10)
(Shock waves)

32(3) SOV/112-59-4-7152

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 4, p 105 (USSR)

AUTHOR: Nazarov, A. I.

TITLE: Modernization of Industrial Electric Locomotives

PERIODICAL: Prom.-ekon. byul. Sov. nar. kh-va Sverdl. ekon. amd. r-na, 1958, Nr 4, pp 25-27

ABSTRACT: Bibliographic entry.

Card 1/1

21(8) 21(7) SOV/89-7-2-14/24

AUTHORS: Ivanova, V. V., Nazarov, A. I., Polunskaya, Ye. V., Khabakhpashev, A. G. Tsenter, E. M.

TITLE: Use of the $O^{18}(\alpha,n)Ne^{21}$ Reaction to Determine the Concentration of α-active Substances in Aqueous Solutions (Ispol'zovaniye reaktsii $O^{18}(\alpha,n)Ne^{21}$ dlya opredeleniya kontsentratsii α-aktivnykh veshchestv v vodnykh rastvorakh)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 166 - 168 (USSR)

ABSTRACT: The method mentioned in the title was first proposed by Ye. V. Polunskiy and A. I. Nazarov. A neutron detector is installed in a cylindric pipe closed at the bottom and located in a cylinder-shaped tank of 34 l contents (height 43 cm, diameter 50 cm). The tank is then filled with a radioactive solution The pipe can be moved in such a way that the cylindric tank can be divided in equally sized zones by the different positions of the neutron detector; each of these zones can be measured. This possibility is needed for example for testing the sensitivity of the method (the measuring procedure is described). The method can be applied already with concentrations of 1-2 mc/l.

Card 1/3

When the detector (SNM-9) is used with a lead filter, the concentration can still be measured with a γ-background of $\sim$ 150 gramm equivalent/l. The condition of the solution has practically no influence on the neutron yield. If the concentration of nitric acid is changed from a 1 n solution to an 8 n solution, the neutron yield is only 2% less. The presence of U^{235} and Pu^{239} in the solution has the following effect: if the uranium concentration is 100 g/l (natural isotope composition) the neutron yield increases 2.6% due to the fission neutrons, but it decreases simultaneously by 3% due to the moderation. Therefore the uranium concentration has no influence if the α-radiation of the uranium has not to be considered. A plutonium concentration of 1 g/l increases the neutron yield by $\sim$ 10%. This fact has to be taken into consideration. The presence of light elements in the solution to be examined can cause errors in the results. The presence of following concentrations increases the neutron yield by only 1%: Be - 8 mg/l, Al - 1.4 g/l, Na - 0.42 g/l. Special advantage of the developed method is that the measurement can be carried out in any desired distance from

Use of the $O^{18}(a,n)Ne^{21}$ Reaction to Determine the Concentration of α- active Substances in Aqueous Solutions SOV/89-7-2-14/24

the measured object and that the airtightness is not injured. There are 3 figures and 2 Soviet references.

SUBMITTED: January 24, 1959

Card 3/3

KAZAROV, A.I. (Moskva)

Survey of foreign literature on human engineering in 1961.
Vop.psikhol. no.6:173-180 N-D '62. (MIRA 16:2)
(Bibliography--Human engineering)

NAZAROV, A.I. (Moskva)

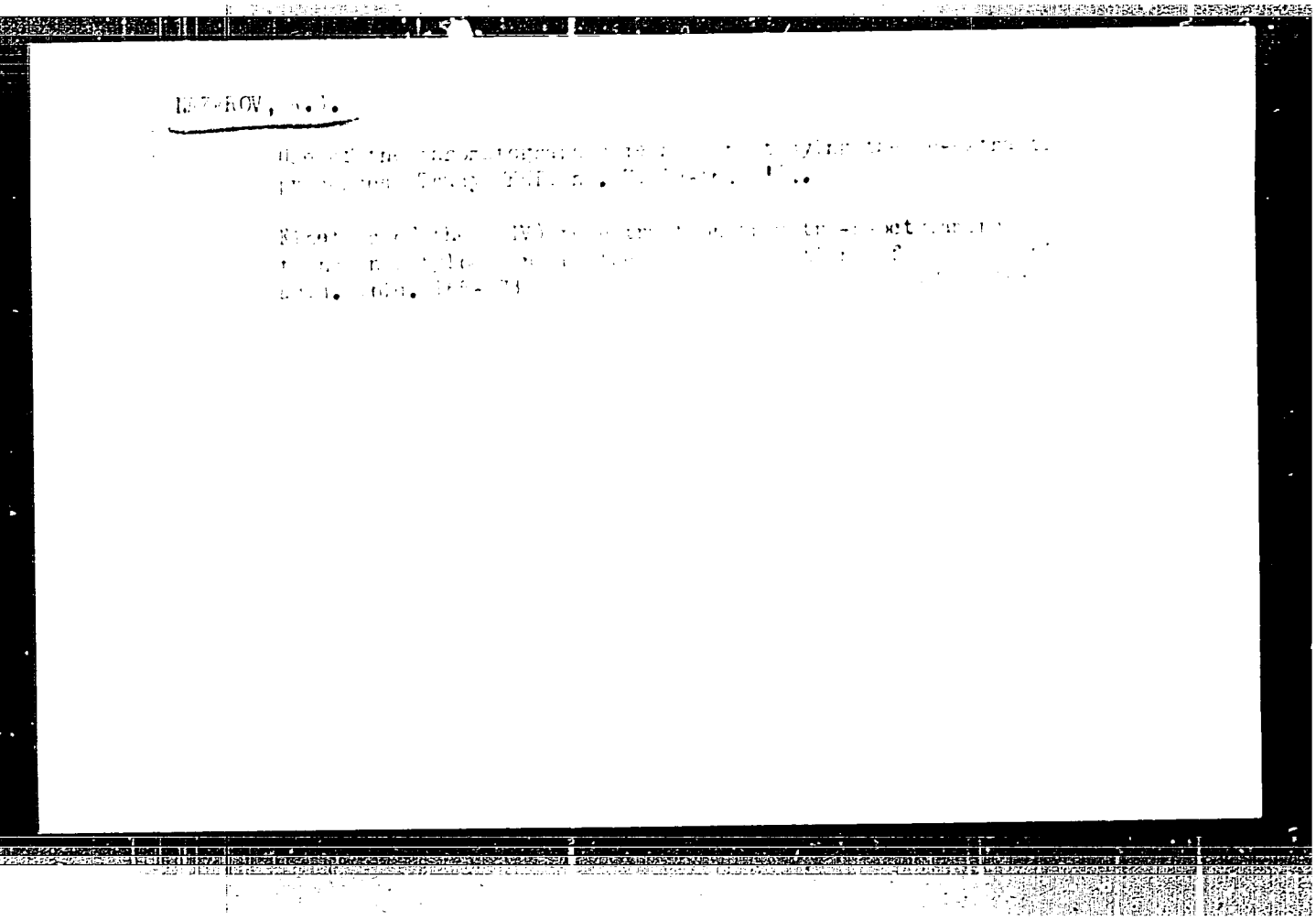
Organization of human engineering research in the United States.
Vop. psikhol. 9 no.5:176-186 S-O '63. (MIRA 17:2)

NAZAROV, A.I. (Moskva)

Survey of foreign literature on human engineering published in 1962. Vop. psikhol. 9 no.6:158-165 N-D '63. (MIRA 17:4)

LEONT'YEV, A.N., otv. red.; ZINCHENKO, V.P., red.; PANOV D.Yu., red.; NAZAROV, A.I., red.

[Engineering psychology] Inzhenernaia psikhologiia. Moskva, Izd-vo Mosk. univ., 1964. 395 p. (MIRA 18:3)



GUSEV, Vladimir Petrovich. Prinimali uchastiye: SAKHAROV, M.A.; OBICHKIN, Yu.G.; FOMIN, A.V.; SEMIKOV, G.A.; NAZAROV, A.S.; ANDREYEVSKIY, M.N., retsenzent; KUNYAVSKIY, G.M., retsenzent; BLINNIKOV, I.V., retsenzent; BEREZNITSKIY, V.S., red.; SUKHANOV, Yu.I., red.; SVESHNIKOV, A.A., tekhn. red.

[Technology of the manufacture of radio electronic equipment] Tekhnologiia proizvodstva radioelektronnoi apparatury. Moskva, Izd-vo "Sovetskoe radio," 1961. 387 p. (MIRA 14:9)
(Radio—Equipment and supplies)

GUSEV, V.P.; FOMIN, A.V.; KUNYAVSKIY, G.M.; OBICHKIN, Yu.G.; MOLOSTOV, Ye.A.; NAZAROV, A.S.; SAKHAROV, M.A.; GREBNEV, A.K.; VARLAMOV, R.G., retsenzent; DEMBITSKIY, L.N., retsenzent; RAKOV, N.A., retsenzent; LYUBIMOVA, T.M., red.; BELYAYEVA, V.V., tekhn. red.

[Calculation of electrical tolerances in radio-electronic apparatus] Raschet elektricheskikh dopuskov radioelektronnoi apparatury. [By] V.P.Gusev i dr. Moskva, "Sovetskoe radio," 1963. 366 p. (MIRA 17:1)

GUSEV, Vladimir Petrovich; KAZANOV, A.S., inzh.; MINKEVICH, B.I., nauchn. red.; SOLOVOVA, A.Sh., red.; NUPRINA, V.G., red.

[Manufacture of radio equipment] Proizvodstvo radioapparatury. Moskva, Vysshaia shkola, 1964. 342 p. (MIRA 18:1)

NAZAROV, A.S.; IVANOVSKIY, G.F.; MEN'SHIKOV, M.I.

Getter-ion pump with straight-channel titanium and chromium vaporizers. Prib. i tekh. eksp. 8 no.5:157-161 S-O '63. (MIRA 16:12)

ZHUKOV, A.I.; NAZAROV, A.S.

Sorption of titanium (IV) on the KU-1 cation exchanger. Zhur. neorg. khim. 9 no.6:1465-147[illegible] Je '63 (MIRA 17:8)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

NAZAROV, A.S.; SERGIYEVSKIY, V.V.; GROMOV, B.V.

Interaction of $UO_2SO_4/2.4H_2O$ with sulfate and bisulfate of tri-n-octylamine. Zhur. neorg. khim. 10 no.6:1590-1591 Je '65. (MIRA 18:07)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva, kafedra tekhnologii radioaktivnykh i redkikh elementov.

NAZAROV, Afanasiy Ivanovich; MEDVEDEVA, L.V., red.; ANDREYEVA, L.S., tekhn. red.

[How to organize a daily accounting for socialist competition] Kak organizovat' ezhednevnyi uchet sotsialisticheskogo sorevnovaniia. Izd.2., perer. i dop. Moskva, Profizdat, 1963. 101 p. (MIRA 17:1)

L [illegible] EWP(1)/EWT(m)/EWA(t)/ETI IJP(c) JD/WW/WJ

ACC NR: AP6029906 (A, N) SOURCE CODE: UR/0413/66/000/015/0070/0071

INVENTORS: Nazarov, A. S.; Rakh, E. A.; Ivanovskiy, G. F.; Kuznetsov, M. V. [illegible]

ORG: none

TITLE: Getter-ion pump. Class 27, No. 184389

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 70-71

TOPIC TAGS: ionization, magnetic field, electric field, anode, cathode

ABSTRACT: This Author Certificate presents a getter-ion pump with ionization in the electric and the magnetic fields. The pump contains an anode and an evaporator of the getter substance, serving simultaneously as the cathode (see Fig. 1). To increase the effectiveness of ionization of the residual gases, the anode is made in a spiral shape, while the cathode-evaporator is Π-shaped in form and is located on the out-

UDC: 533.582

Card 1/2

L 09252-67
ACC NR: AP6029906

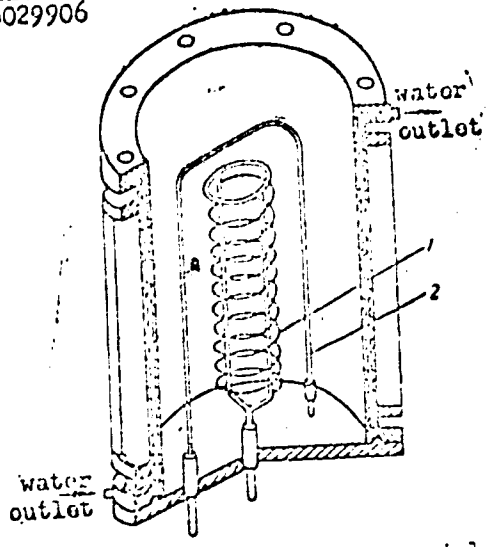


Fig. 1. 1 - anode;
2 - cathode evaporator

side of the anode in the plane of its axial section. Orig. art. has: 1 figure.

SUB CODE: 13, 20/99/ SUBM DATE: 14Apr65

ACC NR: AP6035873 SOURCE CODE: UR/0413/66/000/020/0094/0094

INVENTOR: Ivanovskiy, G. F.; Nazarov, A. S.; Mednikov, M. I.; Makh, E. A.; Barabanshchikov, S. K.

ORG: None

TITLE: A sorption vacuum pump. Class 27, No. 187205

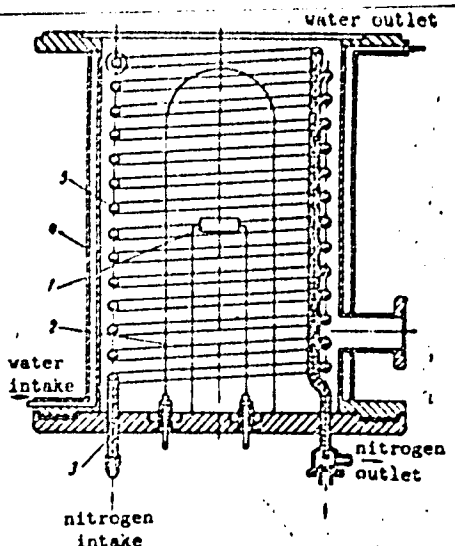
SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 94

TOPIC TAGS: vacuum pump, sorption

ABSTRACT: This Author's Certificate introduces: 1. A sorption vacuum pump containing a getter substance evaporator located within the sorption surface which is cooled by a low temperature refrigerant. The pumping range is expanded by making the sorption surface in the form of a hollow coiled tube with gaps between the turns. This coil is located within the water-cooled jacket of the pump. 2. A modification of this pump with a heater inside the coil cavity to increase heating efficiency in outgassing the pump.

Card 1/2 UDC: 533.582

ACC NR: AP6035873



1 and 2—evaporators; 3—coiled tubing; 4—pump housing; 5—heater

SUB CODE: 13/ SUBM DATE: 15May65

Card 2/2

ACC NR: AP6013509 UR/0120/66/000/002/0102/0108

AUTHOR: Nazarov, A.S.; Ivanovskiy, G.F.; Kuznetsov, M.V.

OTG: None

TITLE: Getter-ionic pumps with directly heated titanium evaporators

SOURCE: Pribory i tekhnika eksperimenta, no.2, 1966, 102-108

TOPIC TAGS: vacuum pump, getter ionic vacuum pump, titanium/GIN-5 vacuum pump

ABSTRACT: This paper describes a series of three getter-ionic vacuum pumps with directly heated titanium evaporators. Type GIN-5 has a 5000 liter/sec, type GIN-2 - a 2000 l/sec, and type GIN-05MJ - a 500 l/sec pumping speed. Enumeration, discussion and presentation of pump parameters, and a design drawing and photograph are given. The getter ionic pump are attractive by their simplicity, reliability, convenience of operation and a much smaller weight than electric discharge pumps; however, they are critically vulnerable to air breakthrough. The limit of the getter-ion pump vacuum level is 3.10^{-9} torr, with the heater on. The pumping speed can be regulated by the rate of titanium evaporation, which is related in a definite way to the evaporator temperature and its power. The evaporator-heater is a 3 mm dia. U-shaped titanium-molybdenum wire with a titanium reserve of 24 grams. The pump schematic is shown in Fig. 1. Here, 1 - is the central anode; 2 - the heateable anode, 3 - the cathodes; 4 - the directly

Card 1/2 UDC: 621.528.5

ACC NR: AP6013509

heated titanium evaporator, 5 - forepump outlet manifold. The residual gases compr.- sed H_2, H_2O, CH_4, CO and Ar. The foreline vacuum, preliminary to starting the getter ion pump, should not be worse than 10^{-3} to 10^{-4} torr. It is supplied by a foreline pump of another, suitable type. Orig. art. has 12 figures and 1 table.

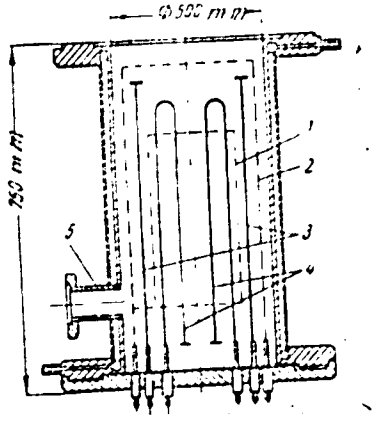


Fig. 1. Schematic of getter-ionic vacuum pump GIN-5.

SUB CODE: 13 SUBM DATE: 28Jun65 ORIG REF: 006 OTH REF: 007

Card 2/2

SHISHKINA, Nina Nikolayevna; NAZAROV, Arkadiy Stepanovich; ARISTOV, D.V., retsenzent; GUL', V.Ye., retsenzent; D'YAKONOVA, T.P., spets. red.; NOZDRINA, V.A., red.

[Use of polymeric films for the packaging of meat products] Primenenie polimernykh plenok dlia upakovki miasoproduktov. Moskva, Pishchevaia promyshlennost', 1965. 131 p. (MIRA 18:7)

SHUCAYEV, V.V., kand.tekhn.nauk; NAZAROV, A.T., inzh.

Manufacture of thin-walled reinforced concrete members by the vibratory banding method. Gidr. i mel. 17 no.4:1-12 Ap '65. (MIRA 18:5)

1. Nauchno-issledovatel'skiy institut betona i zhelezobetona Gosstroya SSSR.

BARYSHNIKOV, K.I.; BRISKIN, A.I.; VOROTYNTSEV, A.P.; GONCHAROV, P.I.; DRUGOV, Yu.V.; LIPSHITS, L.A.; MOKEYEV, M.I.; NAZAROV, A.V.; PETROV, L.P.; SERDYUK, D.S.; SMETANKIN, K.P.; CHERNYAVSKIY, A.A.; ARTEM'YEV, S.G., red.; ZAKHAROVA, A.I., tekhn.red.

[Sanitary and chemical protection; pathology, clinical aspects, and treatment of poisoning. Manual for students and physicians] Sanitarno-khimicheskaia zashchita; patologiia, klinika i terapiia porazhenii otravliaiushchimi veshchestvami. Rukovodstvo dlia studentov i vrachei. Moskva, Gos.izd-vo med.lit-ry, 1959. 434 p. (MIRA 13:6)

(CHEMICAL WARFARE---SAFETY MEASURES)

MAMAYEV, A.V., Aspirant

"An Investigation of Plaster Used in the Facings of Buildings in Winter With Terazzo Solutions." Cand Tech Sci, Moscow Order of the Labor Red Banner Construction Engineering Inst imeni V. V. Kuybyshev, 23 Nov 54. (VM, 12 Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

NAZAROV, A.V.; VASIL'YEVA, V.I.

Some properties of "winter" cement. Izv.vys.uch.zav.; stroi. i arkhit. 5 no.4:105-108 '62. (MIRA 15:9)

1. Voronezhskiy inzhenerno-stroitel'nyy institut.
(Cement)

LYUTIN, M.F., inzh.; NAZAROV, A.V., inzh.

SKS-1 planter for large seedlings. Trakt. i sel'khozmash. 33 no.5: 35 My '63. (MIRA 16:10)

VYSHCHEPAN, Aleksandr Georgiyevich; MEL'MAN, Mikhail Yevdokimovich; NAZAROV, Boris Aleksandrovich; MAKSIMOVICH, A.G., red.; SUDAK, D.M., tekhn.red.

[Vegetables, fruits, and wine; a commercial guide] Tovarovedenie ovoshchei, plodov i vina. Moskva, Gos.izd-vo torg. lit-ry, 1959. 292 p. (MIRA 12:6)
(Vegetables) (Fruit) (Wine and winemaking)

NAZAROV, Boris Aleksandrovich; MAKSIMOVICH, A.G., red.; EL'KINA, E.M., tekhn. red.

[Dairy products and fats] Tovarovedenie molochnykh tovarov i zhirov. Moskva, Gostorgizdat, 1962. 135 p. (MIRA 15:6)
(Dairy products) (Oils and fats, Edible)

VYSHCHEPAN, Aleksandr Georgiyevich; MEL'MAN, Mikhail Yevdokimovich; NAZAROV, Boris Aleksandrovich; AYRIYEVA, N.S., red.; TERYUSHIN, M.I., tekhn. red.

[Commercial study of vegetables, fruit and vine]Tovarovedenie ovoshchei, plodov i vina. Izd.2., perer. Moskva, Gostorgizdat, 1963. 303 p. (MIRA 16:4)
(Vegetables) (Fruit) (Wine and wine making)

NAZAROV, Boris Aleksandrovich [deceased]; NIKOLAYEVA, N.G., red.

[Commercial study of milk products and fats] Tovarovedenie molochnykh tovarov i zhirov. Moskva, Ekonomika, 1965. 151 p. (MIRA 18:5)

NAZAROV, B.F.

[illegible] of the contact diameter and size of a hanging mercury drop on the active surface in the method of amalgam polarography with storage. Elektrokhimiia 1 no.7:851-853 Jl '65.
(MIRA 18:11)

1. Tomskiy politekhnicheskiy institut imeni [illegible].

S/065/62/000/004/003/004
E194/E184

AUTHORS: Kel'tsev, N.V., Nazarov, B.G., and Torocheshnikov, N.S.

TITLE: Thorough drying of transformer oil by adsorption

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.4, 1962, 21-24

TEXT: Transformer oil requires drying to obtain high electric strength, but existing methods of drying have various disadvantages. Accordingly, laboratory bench tests were made in which transformer oil was dried by passing over a column 200 mm long and 10 mm in diameter of NaA type artificial zeolites at rates of 0.002 and 0.005 m/sec which reduced the water content (measured by the Karl Fischer method) from about 600 to 24 - 30 parts per thousand [Abstractor's note: parts per million is surely intended] and raised the electric strength from 22 to 70 - 100 kV/cm. On the basis of these data the method is recommended for general use.
There are 5 figures and 2 tables.
ASSOCIATION: MKhTI imeni D.I. Mendeleyeva
(MKhTI imeni D.I. Mendeleyev)

Card 1/1

ACCESSION NR: AP4043461 S/0075/64/019/008/0959/0963

AUTHORS: Mesyats, N.A.; Nazarov, B.F.; Zakharov, M.S.; Stromberg, A.G.

TITLE: Determination of microamounts of thallium in high purity indium by means of preconcentration amalgam polarography

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 8, 1964, 959-963

TOPIC TAGS: thallium polarography, thallium analysis, indium analysis, amalgam polarography, stripping analysis, extraction, preconcentration

ABSTRACT: Because high purity metallic indium and indium alloys find various applications in electronic engineering, semiconductor technology and since thallium is the usual impurity, it was the purpose of this work to develop a method for the determination of thallium. The method was amalgam polarographic. The effect of the electrolysis potential on the height of the anodic peak of thallium is shown in Figure 1, and the maximum height of the thallium peak is achieved from -0.9 to -1.0 volt vs S.C.E. Thallium was extracted with diethyl ether. Since thallium and indium peak potertials coincide in a majority of supporting electrolytes, the indium peak was

Card 1/3

ACCESSION NR: AP4043461

suppressed by complexan III. Since simple extraction is not sufficient to remove interfering amounts of indium, extraction was carried out twice. Recovery of thallium by extraction and the determination accuracy comprises 85-100%, as found on synthetic solutions. The method is very precise. Orig. art. has: 4 tables and 2 figures.

ASSOCIATION: Tomskiy politekhnicheskiy institut im. S. M. Kirova (Tomsk Polytechnic Institute)

SUBMITTED: 29Jul63 ENCL: 01

SUB CODE: IC , GC. NR REF SOV: 001 OTHER: 002

Card 2/3

ACCESSION NR: AP4043461 ENCLOSURE: 01

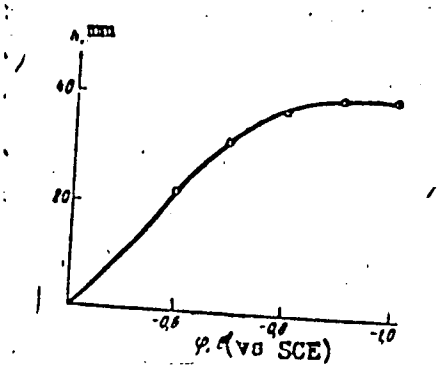


Figure 1
The anodic peak height of thallium as a function of electrolysis potential

Card 3/3

MESYATS, N.A.; NAZAROV, B.F.; ZAKHAROV, M.S.; STROMBERG, A.G.

Determination of microimpurities of thallium in high-purity indium by the method of amalgam polarography with storage. Zhur. anal. khim. 19 no.8:959-963 '64.

(MIRA 17:11)

1. Tomskiy politekhnicheskiy institut imeni Kirova.

GRISHIN, L.V.; NAZAROV, M.G.; KOL'TSOV, N.V.; KUZNETSOV, O.A.; FUREER, I.E.

Determining the oil content in high-pressure gas. Gaz. prom. 9 no. 4: 49-50 '64. (MIRA 17:10)

NAZAROV, B. I. (Candidate of Technical Sciences)

"On Errors of a Two-Degree Integrating Gyroscope Depending on the Oscillations of the Base"

paper presented at the Second Scientific and Technical Intervuz Conference on Problems of Contemporary Gyroscopy, Ye. F. Otvagin, Secretary of the Organization Committee; Leningrad, Izvestiya Uchebnykh Zavedenity, Priborostroyeniye, No. 5, Sep/Oct 1958, pp 161-163

The Second Intervuz Conference on Problems of Contemporary Gyroscopy Technique, convoked by decision of the Ministry of Education USSR, took place in the Leningrad Institute of Precision Mechanics and Optics from 24 to 27 November 1958.

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13,2523

S/146/60/003/006/003/013
B012/B060

AUTHOR: Nazarov, B. I.

TITLE: Errors of an Integrating Gyroscope With Two Degrees of Freedom, Caused by Oscillations of the Base

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye 1960, Vol. 3, No. 6, pp. 24 - 33

TEXT: This is the reproduction of a lecture delivered at the 2 mezhvuzovskaya konferentsiya po problemam giroskopii (2nd Conference of Schools of Higher Education on Problems of Gyroscopy) in November, 1958. Objects such as ships and aircrafts oscillate, when in motion, around the center of mass, which, under certain circumstances, may lead to errors of the integrating gyroscope with two degrees of freedom and thus also to errors in the stabilization of the object itself. Such a gyroscope is schematically shown in Fig.1. Its mode of operation has been described in Refs. 1,2,3. Such errors of this gyroscope are examined here as depend upon the oscillations of the base with respect to the axes in perpendicular to the axis of sensitivity. The gyroscope

Card 1/6

Errors of an Integrating Gyroscope With Two Degrees of Freedom, Caused by Oscillations of the Base

S/146/60/003/006/003/013
B012/B060

construction is assumed to be rigid. The object is assigned the coordinate system $\xi\eta\zeta$, and the gyromotor the coordinate system xyz. The position of the two systems with respect to each other is determined by the angle β. This angle is measured by the pickup. The components of the instantaneous angular velocity of the object on the ξ-, η-, and ζ-axis are ω_ξ, ω_η, and ω_ζ. The gyroscope integrates the component ω_ζ, which is designated as the input angular velocity. The other two components are the "secondary" angular velocities, to which the gyroscope is not supposed to react. The following equation (3) is derived:

$$I_x\ddot{\beta} + h\dot{\beta} = H\omega_\eta - H\omega_\zeta\beta + I_x \cdot \dot{\omega}_\xi \qquad (3)$$

The effect of the oscillations with respect to the ξ-axis is examined and it is shown that they are negligible. The effect of the oscillations with respect to the η-axis is then examined. $\omega_\xi = 0$ is assumed in equation (3). To clarify the character of the effect of ω_η only the one case is examined, where the base performs purely periodic oscillations about the η- and ζ-axis: Equation (9)

Card 2/6

Errors of an Integrating Gyroscope With Two Degrees of Freedom, Caused by Oscillations of the Base

S/146/60/003/006/003/013
B012/B060

$\omega_\xi = \theta_o \cdot \omega_1 \cdot \sin \omega_1 t$;

$\omega_\eta = \psi_o \omega_2 \sin(\omega_2 t + \varphi)$ (9).

H is the kinetic moment. I_x and I_y are the moments of inertia of gyroscope and attachments with respect to the x- and y-axis, θ_o and ψ_o are the amplitudes of the base oscillations with respect to the ξ- and η-axis, respectively. ω_1 and ω_2 are the angular velocities of oscillations. φ is the phase shift of oscillations. It was not possible to find a general solution of equation (9) at arbitrary ω_1 and ω_2. One therefore restricted oneself to the case with very small time constants T. The frequency of base oscillations was assumed to amount to a few cycles at most, and equation (12) $\dot{\beta} + (m_1 \sin \omega_1 t)\beta = m_2 \sin(\omega_2 t + \varphi)$ (12)

where $m_1 = \theta_o \omega_1 \frac{H}{h} = \theta_o \omega_1 K_x$ (11a), $m_2 = \psi_o \omega_2 \frac{H}{h} = \psi_o \omega_2 K_y$ (11b), was

Card 3/6

87867

Errors of an Integrating Gyroscope With Two Degrees of Freedom, Caused by Oscillations of the Base

S/146/60/003/006/003/013
B012/B060

obtained. On the basis of the solution of the complete equation (9) upon an electronic simulator and the comparison of this solution with the approximate solution obtained here, the suitability of the simplified equation for solving the task was proved. Even in the case of relatively large $T = I_x/h = 0.1$, the results when using (12) differ at most by 10% as compared with those when using (9). It is shown here that the magnitude and the character of the gyroscope error modification depend upon the numerical values and the error of frequencies ω_1 and ω_2 among one another, on the phase shift φ between the "useful" and "side" oscillations, on the amplitudes θ and ψ_0 of these oscillations and on the static instrument amplification factor. The publication of this article was recommended by the Orgkomitet mezhvuzovskoy konferentsii po problemam sovremennoy giroskopicheskoy tekhniki (Organizational Committee of the Conference of Schools of Higher Education on Problems of Modern Gyroscopic Engineering). There are 5 figures and 3 Soviet references.

Card 4/6

87867

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S/146/60/003/006/003/013
B012/B060

ASSOCIATION: Voyennaya artilleriyskaya inzhenernaya akademiya im. F. E. Dzerzhinskogo (Military Academy for Artillery Engineers imeni F. E. Dzerzhinskiy)

SUBMITTED: February 25, 1960

Card 5/6

NAZAROV, B.I.

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE ON MODERN GYROSCOPE TECHNOLOGY (USSR)

Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963, 156-158. S/146/63/006/002/010/010

The Fourth Conference on Gyroscope Technology, sponsored by the Ministry of Higher and Secondary Special Education RSFSR, was held at the Leningrad Institute of Precision Mechanics and Optics from 20 to 24 November 1962. The conference was attended by representatives from 93 organizations in 30 S[illegible] cities, including educational establishments, scientific research institutes, design bureaus, and industrial concerns. The following are some of the topics covered in the 92 papers presented and discussed at the conference. Vibrations of a gyroscope pendulum with a movable suspension in a nonuniform gravitational field: M. Z. Litvin-Sedoy, Senior Scientific Worker; improving dynamic characteristics of some gyro instruments and devices: A. V. Reprikov, Docent, Candidate of Technical Sciences; some problems of the dynamics of a gyroscope with an electric drive installed in a gymbol suspension: S. A.

Card 1/3

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd] S/146/63/006/002/010/010

Kharlamov, Engineer; problems of the theory of the inertial method for measuring aircraft acceleration: I. I. Pomykayev, Docent, Candidate of Technical Sciences; determining the drift of a floated-type integrating gyroscope without the use of a dynamic stand: G. A. Slomyanskiy, Docent, Candidate of Technical Sciences; natural damping of nutational vibrations of a gyroscope: N. V. Gusev, Engineer; motion of a not quite symmetrical gyroscope pendulum with vertically movable support: A. N. Borisova, Aspirant; gyroscope-type inclinometer for surveying vertical freezing wells: V. A. Sinitsyn, Candidate of Technical Sciences; effect of joints between channels in triaxial gyro-stabilized platform: L. N. Slezkin, Engineer; theoretical proposal for the possible design of a generalized gyro instrument: M. M. Bogdanovich, Docent, Candidate of Technical Sciences; problem of drift in a power-type triaxial gyro stabilizer: V. N. Karpov, Engineer; methods of modeling random disturbances in gyro systems: S. S. Shishman, Senior Engineer; method of noise functions for investigating a system subjected to random

Card 2/3

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE (Cont'd) S/146/63/006/002/010/010

signals: G. P. Molotkov, Docent, Candidate of Technical Sciences; drifts in a gyro-stabilized platform as a result of the effect of cross joints under determined and random disturbances: B. I. Nazarov, Docent, Candidate of Technical Sciences; stability and natural oscillations in inhomogeneously rigid gyro systems with backlash under external influences: S. A. Chernikov; methods of designing a gyro vertical with automatic latitude and course corrections: A. V. Til', Candidate of Technical Sciences; use of asymptotic methods in solving problems of the motion of an astatic gyroscope in gymbol suspension: D. M. Klimov, Candidate of Physical and Mathematical Sciences, and L. N. Slezkin; theory of aperiodic gyro pendula: V. S. Mochalin, Docent, Candidate of Technical Sciences; and selecting basic parameters of course gyros by using nomograms: V. P. Demidenko, Engineer. [AS]

Card 3/3

NAZAROV, B. I. (Docent, Candidate of Technical Sciences)

"Drifts in a Gyro-stabilized Platform as a Result of the Effect of Cross Joints Under Determined and Random Disturbances"

report presented at the Scientific-technical Conference on Modern Gyroscope Technology Ministry of Higher and Secondary Special Education RSFSR, held at the Leningrad Institute of Precision Mechanics and Optics, 20-24 November 1962

(Izv. vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963)

NAZAROV, B. I.; TELYATNIKOV, B.M., red.

[Gyroscope in a rocket] Giroskop na rakete. Moskva, Voen-izdat, 1964. 101 p. (MIRA 17:7)

BYSTROV, D.S.; NAZAROV, B.K.

Electron acceptor linkage of metal halides and carbonium ions.
Dokl. AN SSSR 148 no.6:1335-1338 F '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A.A. Zhdanova. Predstavleno akademikom A.N.Tereninym.
(Halides) (Carbonium compounds) (Valence (Theoretical chemistry))

YAKUSHEVA, Z.P.; [illegible], B.K.

Conductometric titration of acids. Zhur. prikl. khim. 37 no.10: 2216-2223 O '64. (MIRA 17:11)

1. Kazakhskiy gosudarstvennyy universitet imeni Kirova.

HAZAROV, B.N. (Samarkand)

Obturating intestinal obstruction caused by fecalith. Khirurgiia no.9:70-71 S '54. (MLRA 7:12)

(INTESTINAL OBSTRUCTION, etiology and pathogenesis, fecalith)
(FECES, fecalith causing intestinal obstruct.)
(CALCULI, fecalith causing intestinal obstruct.)

NAZAROV, B.N.

Acute appendicitis in inguinal hernia. Khirurgiia no.2:70 F '55.
(MLRA 8:5)

1. Klin'ika gospital'noy khirurgii Samarkandskogo meditsinskogo instituta.

(HERNIA, INGUINAL, complications,
appendicitis)
(APPENDICITIS, complications,
hernia, inguinal)

NAZAROV, B.N.

Venous pressure in acute cholecystitis. Med.zhur.Uzb. no.10: 28-29 O '58. (MIRA 13:6)

1. Iz Samarkandskoy gorodskoy klinicheskoy bol'nitsy No.1 (glavnyy vrach - A.G. Grigor'yan. Nauchnyy rukovoditel' - zav. klinikoy propedevtiki vnutrennikh bolezney Samarkandskogo gosudarstvennogo meditsinskogo instituta prof. M.K. Kul'matov).
(GALL BLADDER--DISEASES) (BLOOD PRESSURE)

NAZAROV, B.N.

Connection of the cardiovascular system with the bile ducts. Med. zhur. Uzb. no.10:32-36 O '60. (MIRA 13:12)

1. Iz Samarkandskoy gorodskoy klinicheskoy bol'nitsy No.1 (glavnyy vrach - A.G. Grigor'yan, nauchnyy rukovoditel' - dotsent A.Kh. Khaydarov).

(CARDIOVASCULAR SYSTEM) (BILE DUCTS)