

BARBUKOVA, V.I., kand. ist. nauk; DEMIDOVA, Z.F., kand. ist. nauk;
POSELYANINA, O.K., kand. ist. nauk; SCRIN, Yu.N., kand.
ist. nauk; SHATVOROVA, V.D., kand. ist. nauk; KHRUSHCHEV,
V.I.; STARODUBTSEV, N.I.; **SHVETS, I.Ye.**; **TOROPCHIN, N.S.**,
red.; **IVANOVA, R.N.**, tekhn. red..

[Krasnyi Aksay; from the history of the M.V.Frunze Rostov
Plant of Agricultural Machinery] Krasnyi Aksai; iz istorii
Rostovskogo zavoda sel'skokhoziaistvennogo mashinostroeni-
ia imeni M.V.Frunze. Rostov-na-Donu, Rostovskoe knizhnoe izd-
vo, 1962. 158 p. (MIRA 15:9)

1. Prepodavateli Rostovskogo gosudarstvennogo universiteta
(for Barbukova, Demidova, Poselyanina, Sorin, Shatvorova).
 2. Otvetsvennyy sekretar' mnogotirazhnoy gazety "Krasnyy
aksayets" (for Khrushchev).
 3. Zaveduyushchiy kabinetom po-
liticheskogo prosveshcheniya partiynogo komiteta Rostovskogo
zavoda sel'skokhozyaystvennogo mashinostroyeniya "Krasnyy
Aksay" (for Starodubtsev).
 4. ~~Rabochiy remontno-mekhanicheskogo~~
tsekh Rostovskogo zavoda sel'skokhozyaystvennogo mashino-
stroyeniya "Krasnyy Aksay" (for Shvets).
- (Rostov-on-Don--Agricultural machinery)

MURAV'YEV, S., brigadir; DENNIK, F.; KOLESOV, O.; TOROPCHIN, S.;
KOROLEV, I.; AGZAMOV, D., gornyy master

To live and work the communist way. Sov.shakht. 10 no.12:4-11
D '61. (MIRA 14:12)

1. Zhakhta No.1 "TSentral'naya" tresta Krasnoarmeyskugol' (for Murav'yev).
2. Zamest'itel' sekretarya partorganizatsii Shakhty No.1 "TSentral'naya" tresta Krasnoarmeyskugol' (for Dennyk).
3. Nachal'nik shakhty "Kommunist-Novaya" tresta Oktyabr'ugol' (for Kolesov).
4. Predsedatel' komiteta profsoyuzov shakhty "Kommunist-Novaya" tresta Oktyabr'ugol' (for Toropchin).
(Coal miners)

TOROPCHIN, S.

Year of great accomplishments. Sov. shakh. 11 no.10:5-6 0
'62. (MIRA 15:9)

1. Predsedatel' komiteta profsoyuza donetskoy shakhty
"Kommunist-Novaya" tresta Oktyabr'ugol'.
(Donets Basin--Coal mines and mining)

BUSHE, N.A., doktor tekhn. nauk; DVOSKINA, V.A., inzh.; TOROPCHINOV, A.N. , inzh.

Evaluating the properties of bearing alloys operating with various lubricants and cast iron and steel rollers (journals). Trudy TSNII MPS no.277:16-43 '64. (MIRA 17:6)

TOROPCHINOV, A.N., inzh.

Methodology for evaluating the lubricating properties of lubricants.
Vest. TSNII MPS 23 no.1:36-39 '64. (MIRA 17:4)

VOLKOV, V.N.; GAVRILOVA, O.I.; TOROPETS, S.A.

Relationship between specific gravity and density in the peat -
anthracite series. Izv. AN SSSR.Ser.geol. 28 no.8:86-96 Ag '63.
(MIRA 17:2)

1. Ekspeditsiya No.5 Vsesoyuznogo nauchno-issledovatel'skogo geologi-
cheskogo instituta, Leningrad.

ACC NR: AR6033765 SOURCE CODE: UR/0058/66/000/007/A020/A020

AUTHOR: Kayak, L. K.; Toropin, S. I.; Trishin, N. V.; Yachmentsev, O. V.

TITLE: Double photoelectric microscope for comparing subdivisions of caliper
measures of length *q/m*

SOURCE: Ref. zh. Fizika, Abs. 7A173

REF SOURCE: Tr. in -tov Gos. kom-ta standartov, mer i izmerit. priborov
SSSR, vyp. 78(138), 1965, 49-63

TOPIC TAGS: microscope, error measurement, measurement

ABSTRACT: A double photoelectric microscope and special electronic equipment for measuring the differences in length of comparable caliper measures are described. An investigation of measurement accuracy is carried out. The use of the device increases the efficiency of comparison by a considerable factor and permits the reduction of measurement errors. Bibliography of 10 titles. Ye. Kiyaev. [Translation of abstract]

SUB CODE: 14/

Card 1/1

ACC NR: AT7000581

SOURCE CODE: UR/2589/65/000/078/0049/0063

AUTHOR: Kayak, L. K.; Toropin, S. I.; Trishin, N. V.; Yachmentsev, O. V.

ORG: VNIIM

TITLE: Dual photoelectric microscope for comparison of divisions on linear scales

SOURCE: USSR. Komitet standartov, mer i izmeritel'nykh priborov. Trudy institutov Komiteta, no. 78(138), 1965. Issledovaniya v oblasti lineynykh izmereniy (Research in the field of linear measurements), 49-63

TOPIC TAGS: ~~photoelectric~~ microscope, photoelectric method, photoelectric tracking, optic scanning, photoelectric scanning, automatic scale, reading equipment, metrology

ABSTRACT: A dual photoelectric scale comparator microscope for direct measurement of linear displacement differences between two scales is described. This instrument has the advantage over the majority of photoelectric microscopes designed for line alignment in that it generates through electronic means a direct readout of the difference between two linear scales under comparison. This is possible due to the conversion of linear displacement into the corresponding time interval that can be very accurately measured by conventional methods. The principle of operation is as follows: The images of lines on the scale are scanned by means of a vibrating mirror in the plane of a fixed slit. At the instant of the crossing of the slit by the line image the light

Card 1/3

ACC NR: AT7000581

flux is modulated, and a photodetector converts the modulated light into electrical impulses. An electrical coincidence circuit generates an output pulse if, and only if the pulses generated during the forward and during the reverse motion of the mirror coincide, i. e., the optical axis of the instrument coincides with the center of the line being scanned. There are two independent scanning systems, one for each scale, which are identical in construction and operation. When the position of two lines on two scales is compared the pulse which occurs first, when both scanners traverse their respective scales (the scales are mounted on precision tables driven at uniform speed through lead screws), opens a gate which admits pulses from a calibrated pulse generator into a bidirectional counter. The second pulse from the photoelectric microscope turns the gate off. The relation between the pulse repetition rate, the scanning speed, and the units of length is accurately known and fixed. Hence, the pulse count displayed on the counter is an accurate measure of the difference in the position of the marks on the two scales being compared. Two versions of the instrument are described: one for comparing two parallel scales, the other for scanning two scales located one behind the other on the same axis. The optical system of the latter version is shown in Figure 1. The scales γ and γ' are illuminated by the light source 3. Two identical optical systems image the scale lines into the plane of two fixed slits 1 and $1'$, respectively. The scanning of the line images across the fixed slits is due to the motion of the vibrating mirrors 8 and $8'$. The modulated light is converted into electrical signals by the photodetectors 4 and $4'$. The authors have experimentally investigated the accuracy of both systems and found it to be well below one micron

Card 2/3

ACC NR: AT7000581

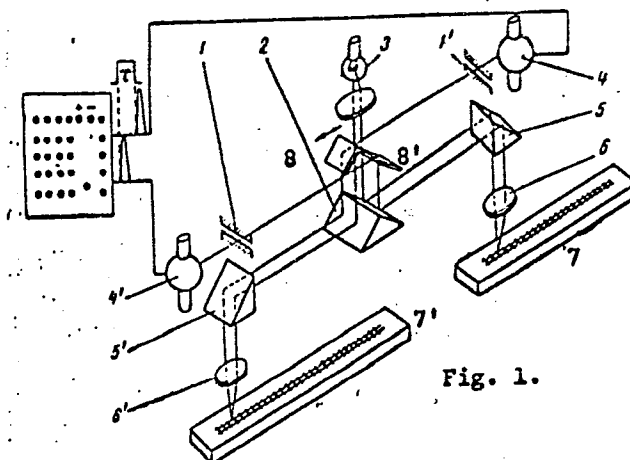


Fig. 1.

(total error). The effects of various instabilities in the optical, mechanical, and electronic systems on the magnitude of error are discussed and the results of actual measurements included. Orig. art. has: 7 figures, 4 tables.

SUB CODE: 09,14/

SUBM DATE: 08Jul64/

ORIG REF: 008/

OTH REF: 002

Card 3/3

TOROPIN, S.I.

Determination of optimum values of the scale division and the variations of the readings of scales. Izv. tekhn. no. 7:11-13
Jl '63. (MIRA 16:8)

(Scales (Weighing instruments) — Testing)

TOROPKIN, I.

Erected by the hands of young Sakhalin builders. Mast.ugl.
8 no.2:10 F '59. (MIRA 13:4)
(Sakhalin Basin--Labor and laboring classes--Dwellings)

TOROPCHIN, N.F., fel'dsher (Aleysk Altayskogo kraya).

Thirty-five years of public health service of Feldsher V.I. Palkina. Fel'd. i
akush. no.10:56-57 0 '53. (MLBA 6:10)

(Palkina, Varvara Ivanova)

1. TOROPCHIN, N. F.
2. USSR (600)
4. Public Health
7. Medical center at the collective farm "Pravda."
Fel'd. i akush. No.10, 1952

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

GOZULOV, A.I., doktor ekonom. nauk, prof.; SHUMILIN, P.G., kand.
ekonom. nauk, dots.; SHESTAKOV, P.A., red.; SHNEYDERMAN,
K.A., red.; TOROPCHIN, N.S., red.; ZHEREBKOV, I.V., red.;
IVANOVA, R.H., tekhn. red.

[Rostov Province; nature, population, economy and culture]
Rostovskaia oblast'; priroda, naselenie, khoziaistvo, kul'tura.
Rostov-na-Donu, Rostovskoe knizhnoe izd-vo, 1961. 333 p.
(MIRA 15:3)

(Rostov Province--Economic geography)

TOROPCHIN, S.F., inzhener.

Automatic operation of pumping stations. Torf. prom. 33 no.8:
20-22 '56. (MIRA 10:2)

1. Glavtorf.
(Pumping stations) (Automatic control)

To ROZENBERG, S.F.

ROZENBERG, B.I., inzhener; TOROPCHIN, S.F., inzhener.

For uninterrupted operation of electric equipment of peat enterprises in 1957. Torf. prom. 34 no.3:9-13 '57. (MLRA 10:5)

1. Glavnoye upravleniye torfyanoy promyshlennosti.
(Peat industry--Equipment and supplies)

Toropchin, S.F.

ROZENBERG, B. I., inzhener; ~~ROZENBERG, B. I.~~ TOROPCHIN, S.F., inzhener

Results of providing peat machinery with electric equipment. Torf.
prom.32 no.6:8-11 '55. (MLRA 8:12)

1. Glavnoye upravleniye torfyanoy promyshlennosti
(Peat machinery) (Electric machinery)

TOROPCHIN, S.F., inzhener.

Economizing electric power in peat enterprises. Torf.prom.
33 no.2:12-14 '56. (MLRA 9:6)

1.Glavtorf.

(Peat industry) (Electric power)

SOV/170-59-4-6/20

18(4)

AUTHORS:

Bushe, N.A., Dyoskina, V.A., Topochinov, A.N.

TITLE:

The Role of Soft Structural Components in Antifriction Alloys
(Rol' myagkikh strukturnykh sostavlyayushchikh v antifriktsionnykh splavakh)

PERIODICAL:

Inzhenerno-fizicheskiy zhurnal, 1959, Nr 4, pp 38-46 (USSR)

ABSTRACT:

Aluminum alloys coming now into wide use contain some soft metals such as lead, tin or cadmium, as structural components. It was noticed that antifrictional properties of these alloys considerably depended upon the percentage of the soft structural components. A.A. Bochvar [Ref 2] on the one hand and R.P. Bouden and D. Teybor [Ref 3] on the other hand explained in different ways the manner in which the positive effect of this soft component comes into being. In order to elucidate the problem the TsNII MPS carried out investigations of tin-containing aluminum alloys with a friction machine of the MI-type. Conditions of experiments were the following: semi-liquid friction was brought about by using diesel oil of the D-11 type heated to 100°C; specific pressure was 75 kg/cm²; the speed of shaft revolution was 450 rpm; material of the journal was axl.

ASSOCIAT.

APPROVED FOR RELEASE: 08/31/2001

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Card 1

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the authors as-
(lead, cadmium,
the same effect of re-
photos, 1 graph and 10 references,
and 2 English.
zhnogo transporta (Institute of Railroad

Card 2/2

ТОПОЧИНОВ, А.Н.

SHADIKYAN, V.S., kandidat tekhnicheskikh nauk; ТОПОЧИНОВ, А.Н., inzhener.

Determining wear resistant properties of oils with the aid of radioactive isotopes. Vest. TSNI MPS 15 no.1:17-22 Ag '56.

(MLRA 9:12)

(Oil analysis)

SHADIKYAN, V.S., kand.tekhn.nauk; TOROPCHINOV, A.N., inzh.

Method for estimating wear resistance properties of diesel
lubricants by means of radioactive isotopes. Vest.TSNII MPS
19 no.6:13-17 '60. (MIRA 13:9)
(Diesel locomotives--Lubrication)
(Radioisotopes--Industrial applications)

ROZENBERG, B.I., inzhener; TOROPCHIN, S.F., inzhener.

Using vacuum impregnation and pulverization equipment in
electric repair shop. Prom.energ. 12 no.9:4-6 S '57. (MIRA 10:10)
(Electric machinery--Maintenance and repair)

BUSHE, N.A.; DVOSKINA, V.A.; TOROPCHINOV, A.N.

Role of soft structural components in antifriction alloys [with
summary in English]. Inzh.-fiz. zhur. no.4:38-46 Ap '59.
(MIRA 12:5)

I. Institut zheleznodorozhnogo transporta, g. Moskva.
(Bearing metals--Metallography)

TRROPCHINOV, N. A., Engineer

Dissertation: "Investigation of High-Speed Methods for Machining the Rims
of Wheel Pairs."

21/6/50

Moscow Order of the Labor Red Banner Electromechanical Inst of Railroad
Engineers imeni F. E. Dzerzhinskiy

SO Vecheryaya Moskva
Sum 71

BALON, I.D., kand.tekhn.nauk; ROMANENKO, N.T., inzh.; YUPKO I.D., inzh.;
BOLKUNOV, Ye.P., inzh.; TULUYEVSKAYA, T.A., inzh.; ASTAFUROV, P.I., inzh.;
VOLOVIK, A.V., inzh. Prinsipalni uchastiye: BAKAYEV, A.I.; VOKHNIK, A.R.;
KOLOS, V.D.; KAYSTRO N.P. [deceased]; LITVINENKO, V.I.; MAKARCHENKO, N.M.;
ONOPRIYENKO, V.P.; PALAGUTA, V.P.; PIKA, V.S.; RAGIN, B.I.; ROMANCHENKO,
Ye.I.; SAYENKO, S.D.; STOLYAR, V.V.; SKORIK, N.M.; TOROPENKO, P.D.

Characteristics of making ferromanganese in large capacity blast furnaces
and the effect of slag conditions on basic technical and economic indices.
Stal' 23 no.12:1069-1073 D '63. (MIRA 17:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov i zavod "Zapo-
rozhtal'".

GORPADE, Al., ing.; POPESCU, Gabriel F., ing.; TORPENYI, L., ing.;
JUDE, A., ing.

Fighting dilution during the exploitation in mining complex
ores veins. Rev min 12 no.5:207-215 My '61.

TOROPAVA, I.P.

SOV/3038

PHASE I BOOK EXPLANATION

3(1)

Abdastyaevskiy Institut Astrofizicheskii Institut
 Ivestiya, tom VIII (News of the Astrophysics Institute, Kazakh SSR Academy of
 Sciences, vol. 8) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1979. 60 copies printed.
 Eds.: P. D. Oreshchik and Yu. E. Kuznetsov; Tech. Ed.: Z. F. Kuznetsov; Editorial
 Board: G. M. Kallit, M. G. Kartsov, Z. V. Karyagina (Secretary), D. A.
 Buzhkovskiy, V. G. Pashenkov (Resp. Ed.).

PURPOSE: This collection of articles is intended for geophysicists and astronomers.
 COVERAGE: This collection of articles in astronomy contains studies on the distri-
 bution of asteroids as revealed by radical light characteristics, the distortion
 of the luminosity curve of a variable star, the integrals of motion of an in-
 dividual star, the electromagnetic mechanism in solar prominences, sky polariza-
 tion in the Libyan desert, projector research, etc. English abstracts accompany
 each article. References follow individual articles.

Barinov, M. G. Transparency Coefficients of the Atmosphere in the Ultra- violet by Observing Several Stars	59
Barinov, M. G. The Yellow Coronae Line 5694A From Observations Outside Kellies	59
Chashov, S. O. Electromagnetic Mechanism of Heating Solar Prominences	64
Karyagina, Z. V. The Low-Latitude Aurora of September 29-30, 1977	68
Oreshchik, P. D. Spectral Photometry in the Red Spectrum Part of the Low-Latitude Aurora on Sept 29-30, 1977	79
Toropava, I. P. Some Data on Polarization in the Sky in Southern Egypt	82
Kuznetsov, Z. F., G. M. Kallit, and Z. F. Kuznetsov. Projector Studies of The Intensities of Light Scattering	98
Kuznetsov, Z. F. Spectroelectrophotometer Equipped With an Automatic Spectrum Recorder	108

TOROPIN, S.I.

Precision of the measurement of temperature of standards of length
in checking them with comparators. Trudy inst.Kom.stand., ser i izm.
prib no.47:49-62 '61. (MIRA 15:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im.
D.I.Mendeleyeva.

(Thermometry) (Length measurements)

KAYAK, L.K.; TOROPIN, S.I.

The thirty-meter interference comparator of the All-Union Research
Institute of Metrology. Trudy inst.Kom.stand., ser 1 izm.prib no.47:
92-112 '61. (MIRA 15:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im.
D.I.Mendeleyeva.

(Length measurement)

KAYAK, L.K.; TOROPIN, S.I.

Photoelectric microscopes for comparing hatched length measures.
Izm.tekh. no.2:3-5 F '60. (MIRA 13:6)
(Photoelectric measurements)

25(6)

S/115/60/000/02/031
D002/D003

AUTHORS: Kayak, L.K., Toropin, S.I.

TITLE: Photoelectric Microscopes for Checking Line Standards

PERIODICAL: Izmeritel'naya tekhnika, 1960, Nr 2, pp 3-5 (USSR)

ABSTRACT: The method of checking line standards by means of special photoelectric microscopes is under development in the USSR and abroad, e.g. in Switzerland [Ref 1], and England [Ref 2]. This work was continued at VNIIM. The article contains information on the test unit of a photoelectric microscope (Figure 1) used not only for focussing on the line but also for direct measurement of length differences compared on the line-standard comparator. The working principle is the following: When the moving image of the "STs79" lamp's filament passes over the line of the line standard, the light flow is reduced, and this is recorded by a photocell converting the light flow change into an electric signal. On the screen

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S/115/60/000/02/031
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Photoelectric Microscopes for Checking Line Standards

of the oscillograph, the passing of the filament image over the line is shown by a swing. The micrometer of the test microscope has a scale with 0.09 micron divisions. The medium spare error is ± 0.15 microns. Another microscope (Figure 2) with two objectives for observing the lines of two line standards at a time, was also developed. It is assembled on a one-meter measuring device. There are 2 diagrams and 3 references, of which 1 is English, 1 French and 1 Soviet.

Card 2/2

7189. Ioselin, D. L., (the differential physical properties of ...)

"APPROVED FOR RELEASE: 08/31/2001

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APPROVED FOR RELEASE: 08/31/2001

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TOROPIN, S.I.

Differential physical pendulum with a system of knife edge and
support. Trudy VNIIM no.23:5-17 '54. (MIRA 11:6)
(Gravimeter) (Pendulum)

TOROPIN, S. I.

24(0); 5(4); 6(2) PHASE I BPOK EXPLOITATION SOV/2215
Vsesoyuzny nauchno-issledovatel'skiy institut metrologii imeni
D. I. Mendeleeva

Referaty nauchno-issledovatel'skikh rabot; sbornik No. 2 (Scientific
Research Abstracts: Collection of Articles, No. 2) Moscow,
Standartgiz, 1958. 139 p. 1,000 copies printed.
Additional Sponsoring Agency: USSR, Komitet standartov, ser 1
Imperial'nykh priborov.

Ed.: S. V. Beshetina; Tech. Ed.: M. A. Kondrat'yeva.
PURPOSE: These reports are intended for scientists, researchers,
and engineers engaged in developing standards, measures, and
EASes for the various industries.

COVERAGE: The volume contains 128 reports on standards of measure-
ment and control. The reports were prepared by scientists of
institutes of the Komitet standartov, ser 1 Imerial'nykh
priborov pri Sovetskiy Ministroy SSSR (Commission on Standards,
Measures, and Measuring Instruments under the USSR Council of
Ministers). The participating institutes are: imeni D. I.
Mendeleeva (All-Union Scientific Research Institute of Met-
rology imeni D. I. Mendeleeva) in Leningrad; Sverdlovsk branch
of this institute; VNIIM - Vsesoyuzny nauchno-issledovatel'skiy
institut Komiteta standartov, ser 1 Imerial'nykh priborov
(All-Union Scientific Research and Measuring Instruments), created
from NIIIMIP - Moskovskiy gosudarstvennyy institut ser 1
Imerial'nykh priborov (Moscow State Institute of Measures
and Measuring Instruments) October 1, 1955; VNIIPRI - Tekhnich-
eskoy nauchno-issledovatel'skiy institut fiziko-nauchnykh
izmereniy (Institute of Physico-technical and Radio-Engineering
Research Imeni D. I. Mendeleeva) in Moscow; KhIMIP - Kharkovskoye gosudarstvennyy
institut ser 1 Imerial'nykh priborov (Kharkov State Institute
Measures and Measuring Instruments); imerial'nykh priborov
birzhi gosudarstvennyy institut ser 1 Imerial'nykh priborov
(Novosibirsk State Institute of Measures and Measuring Instru-
ments). No personalities are mentioned. There are no references.

- 33
- Dubitskiy, O. V. (VNIIPRI). Studying and Improving Astronomical
Pendulum Clocks Made by the "Etalon" Plant
- Shapelnikov, L. D., F. M. Fedchenko, and V. N. Dudarchik. (KHIMIP).
Studying Astronomical Pendulum Clocks with Trichronous Suspension 35
- Tovchigrechko, S. S., A. D. Zagatina, L. A. Solovyeva, and S. I.
Toropin (VNIIM). Studying Temperature Coefficients of the
-KIBO of Invar Rods Produced by the "Etalon" Plant 36
- Aleksandrov, S. I. (VNIIM) Studying the Pivots of the VNIIM Transit
Instrument "A" 36
- Tovchigrechko, S. S. (VNIIM). Studying a Model of the Vernier
Clock 38
- Stepanov, V. S. (VNIIM) Cylindrical Chronograph for Recording the
Running of Clocks 38
- card 8/27

TOROPIN, S.I.

Effect of the knife edge and support on the absolute determination
of gravity acceleration by means of pendulums. Trudy VNIIM no.23:
18-25 '54. (MIRA 11:6)

(Gravity) (Pendulum)

TOROPIN, S.I.

Eliminating the effect of vibration of the stand in the absolute
determination of acceleration due to gravity as measured by
a torsion pendulum. Trudy VNIIM no.23:26-31 '54. (MIRA 11:6)
(Gravity) (Pendulum)

TOROPIN, S. I.

"Differential Physical Pendulum with One System Prism-Cushion", Tr. Vses.
n-i in-ta Metrologii, No 23, pp 5-7, 1954.

Attempt is made to eliminate a certain indefiniteness of the rotational axis, due to elastic strain of prism and cushion, on which the pendulum is suspended. A differential pendulum with one prism, leaning on one cushion, is suggested to this end. Two mobile loads are attached in the suggested construction as auxiliary tests of accuracy. The possible error does not exceed ± 3 mgr. (RZhAstr, No 11, 1955)

SO: Sum 812, 6 Feb 1956

TOROPIN, S. I.

"Elimination of the Oscillatory Effect of the Support During Absolute Determination of Acceleration of Gravity by Means of Rotatable Pendulums," Tr. Vses. n. -i. in-ta metrologii, No 23, 1954, pp 26-31

Two rotatable pendulums are considered, one with parameters of mass M , length L , and period T , and the other with corresponding m , l , and t . It is demonstrated that if the pendulums swing on one support imparting oscillations to the latter and producing a horizontal shift of the rotational axis, then the gravity acceleration g as a result of measurement by these two pendulums, may be expressed, using a differential method, by

$$g = \frac{L - l + \frac{g}{\epsilon} (M - m)}{T^2 - t^2}$$

where ϵ is the elasticity constant (MT^{-2}) of the support.

RZhFiz, No 3, 1955

TOROPIN, V., agronom.

Closer to the life of agriculturalists. Zemledolie 5 no.3:65
Mr '57. (MLRA 10:3)

1. Kalininskaya Mashinno-traktornaya stantsiya, Kalininskoy oblasti.
(Agriculture--Periodicals)

TOROPIN, Ye.V., aspirant

Using the quadrilateral method in determining the coordinates of points in the preliminary laying out of a construction net.
Trudy MIIGAIK no.47:51-61 '61. (MIRA 15:7)

1. Kafedra prikladnoy geodezii Moskovskogo instituta inzhenerov geodezii, aerofotos"yemki i kartografii.
(Surveying)

IGOLKIN, N.I., inzh.; TOROPIN, Yu.A.

Putting down rough wearing surfaces. Avt.dor. 24 no.5:17-18 My
'61. (MIRA 14:6)

(Road construction)

TOROPKIN, I.

Fourth Sakhalin mine. Mast. ugl. 7 no.11:16-17 N '58.

(MIRA 11-)

(Sakhalin Basin--Coal mines and mining)

TOROPKIN, I. (g.Gornozavodsk, Sakhalinskaya oblast')

Sakhalin innovators. Mast. ugl. 8 no.8:4 Ag '59. (MIRA 12:12)

(Sakhalin--Coal miners)

TOROPIN, Ye.V.

Scale of the topographic foundation for the design of industrial
enterprises. Geod. i kart. no.7:40-42 JI '60. (MIRA 13:9)
(Topographical surveying)

BIBERMAN, L.M.; TOROPKIN, Yu.N.; UL'YANOV, K.N.

Theory of stepwise ionization and recombination. Zhur.tekh.fiz.
32 no.7:827-834 JI '62. (MIRA 15:8)

1. Moskovskiy energeticheskiy institut.
(Ionization) (Electrons)

38931
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B104/B102

17

26.2340
AUTHORS:

Biberman, L. M., Toropkin, Yu. N., and Uliyanov, K. N.

TITLE:

Theory of stepwise ionization and recombination

PERIODICAL:

Zhurnal tekhnicheskoy fiziki, v. 32, no. 7, 1962, 827-834

TEXT: Considering radiative recombination by which a many-electron excited atom is formed, the probabilities for ionization of excited atoms by radiation and by electron impact are investigated, as well as the probabilities for the corresponding recombinations. The coefficient

$$\alpha^e = 1.04 \cdot 10^{-11} T^{-1/2} [\ln 1.78 u_e - e^{u_e} E_1(u_e)]$$

for the spontaneous recombination of a hydrogen atom in the n-th state is obtained from the expression

$$\alpha_n^s = \frac{2^9 \pi^{1/2} 10}{6^{1/2} m^{1/2} \sigma^2 h^3 (kT)^{1/2}} \frac{1}{n^3} e^{-\frac{I_1}{kT}} E_1\left(\frac{I_1}{n^2 kT}\right)$$

derived by G. Elwert (Zs. f. Naturforsch., 7a, 432, 1952) by summation

Card 1/2

TOROPKIN, Yu.

The first-born of the cultural three-year plan. Prof.-tekh.obr.
17 no.3:24 № '60. (MIRA 13:6)
(Kazakhstan --Intellectual life)

TOROPKINA, Yu.I.; MOSHKEVICH, V.S.

Pathology of the thyroid gland in inhabitants of two regions of central Kazakhstan. Zdrav.Kazakh. 22 no.7:15-17 '62.

(MIRA 16:1)

1. Iz Instituta krayevoy patologii (direktor - kand.med.nauk B.A.Achabarov) AN Kazakhskoy SSR.

(KARAGANDA PROVINCE--THYROID GLAND--DISEASES)

TOROPKINA, Yu.I.; VELIKANOV, I.I.

Cardiovascular and respiratory function in silicosis. Izv. AN Kazakh.
SSR. Ser. med. i fiziol. no.1:29-44 '59. (MIRA 13:1)
(CARDIOVASCULAR SYSTEM) (RESPIRATION) (LUNGS--DUST DISEASES)

ТОРОПКИНА, Ю.И.
TOROPKINA, Yu.I.

Results of treating silicosis and other nontuberculous pulmonary diseases at the Borovoye health resort. Trudy Inst. Krsev. pat. (MIRA 11:2)
AN Kazakh SSR 5:43-49 '57.
(LUNGS--DISEASES)
(BOROVOYE--THERAPEUTICS, PHYSIOLOGICAL)

TOROPKINA, Yu I.

BEKLEMISHEV, N.D.; ZHELEZNIKOV, I.G.; TOROPKINA, Yu.I.

Prospects of building a sanatorium for silicosis patients in Kazakh-
stan. Trudy Inst.kraev.pat. AN Kazakh.SSR 4:201-225 '56. (MLBA 10:3)
(LUNGS--DUST DISEASES)
(BUROVOYE--CLIMATOLOGY, MEDICAL)

TOROPKINA, Yu. I.

Toropkina, Yu, I. -- "Experiment in Treating Patients with Silicosis and Other Lung Infections of Non-Tubercular Etiology at the Borovoye Spa." Inst of Physiology, Inst of Regional Pathology, and Inst of Experimental Surgery, Acad Sci Kazakh.SSR. Alma-Ata, 1956. (Dissertation For the Degree of Candidate in Medical Sciences).

So: Knizhnaya Letopis', No. 11, 1956, pp 103-114

DZHAMALOV, S.A.; KONDRASHOV, V.D.; TOROPKO, R.M.

Effective utilization of artesian and underground waters in the
northern part of the Caspian Lowland. Trudy Geol.inst.Dag.fil.
AN SSSR 1:151-166 '57. (MIRA 14:9)
(Caspian Lowland--Water, Underground)

TOROPKOVA, A.A., inzh.

Joint thermal operation of ovens and kilns for tiles. Stroil.
mat. 9 no.7:23 J1 '63. (MIRA 16:11)

GOL'DMAN, A.G., akademik; TOROPKOVA, L.V.

Infrared electoluminescence of cuprous oxide. Dokl. AN SSSR
147 no.5:1053-1056 D '62. (MIRA 16:2)

1. Institut fiziki AN UkrSSR. 2. AN UkrSSR (for Gol'dman).
(Luminescence) (Copper osides)

TOROPOGRITSKIY, D. P.

Afforestation - Kharkov (Province)

Spot seeding of oak on the northern steppe. Les i step ,4, No.2, 1952

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

TOROPOGRITSKIY, D. P.

Afforestation

For the application in production of advances resulting from leading experimental activity. Les. khoz. 5, No. 6, June 1952.

9. Monthly List of Russian Accessions, Library of Congress, August ¹⁹⁵²~~1953~~, Unclassified.

TOROPOGRITSKIY, D. P.

Afforestation

Organization of work for the afforestation of gullied lands on collective farms
Les i step' 14, no. 5 May 1952

Monthly List of Russian Accessions, Library of Congress, August 1952. UNCLASSIFIED.

TOROPOGRITSKIY, D. P.

"Agricultural Techniques of Nurturing Pine Seedlings in Nursery Conditions in Lower Dnepr Sand Soils." (Dissertation for Degree of Candidate of Agricultural Sciences) Min Higher Education USSR, Khar'kov Order of Labor Red Banner Agricultural Inst imeni V. V. Dokuchayev, Khar'kov, 1955

SO: M-1036 28 Mar 56

IVANOVA, Irina Vladimirovna; TOROPKOV, Vadim Vasil'yevich; VAKS, I.A.,
dots., red.; FREGER, D.F., red. izd-va; BELOGUROVA, I.A.,
tekhn. red.

[Aesthetics in technology; a bibliography] Estetika v tekhnike;
bibliograficheskiy ukazatel'. Sost. I.V. Ivanova i V.V. Toropkov.
Pod red. I.A. Vaks. Leningrad, 1962. 34 p. (MIRA 15:11)

1. Leningradskiy dom nauchno-tekhnicheskoy propagandy. Nauchno-
tekhnicheskaya biblioteka.

(Bibliography--Factories--Lighting)

(Bibliography--Color--Physiological effect)

4030

TOROPKOVA, A. D.

Khozyaystvenno - kul'turnoye stroitel'stvo i byudzhets Buryat - Mongol'skoy
ASSR za 30 let (1923-1953 gg.) L., 1954. 20s. 21sm. (M-vo vyssh. obrazovaniya.
Leningr. fin.-ekon. in-t). 100 ekz. B. ts. - (54-56892)

KUZMENKO, Stepan Yegorovich; TOROPOV, A., red.; TROYANOVSKAYA, N., tekhn.
red.

[Master of welding] Master ognennogo dela. Moskva, Gospolitizdat,
1962. 31 p. (MIRA 15:6)

1. Zhurnalist gazety "Pravda" (for Kuzmenko).
(Ulesov, Aleksei Aleksandrovich)

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

COMMON ELEMENTS COMMON VARIANTS INDEX

CA TOROPOV, A.

Viscosimeter for very volatile liquids. A. Toropov. J. Applied Chem. (U. S. S. R.) 12, 1744(1959) — Construction details. A. A. Bozhilnik

ASS. ILLA METALLURGICAL LITERATURE CLASSIFICATION

18000 11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000

18000 17000 16000 15000 14000 13000 12000 11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000

18000 17000 16000 15000 14000 13000 12000 11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000

TOROPOV, A.A., inzh.; MAKIVCHUK, V.F., inzh.

Designing impulse pressure feeding systems of two-cycle diesel engines. Energomashinostroenie 7 no.7:37-39, 48 J1 '61.
(Diesel engines)
(Fuel pumps)

TCROPOV, A.A., inzh.; MAKIVCHUK, V.F., inzh.

Calculation and choice of the circuit of a supercharged diesel engine with constant gas pressure before the turbine. Energomashinostroenie 9 no.6:18-20 Je '63. (MIRA 16:9)

TOROPOV, A.A., kand.med.nauk; ARYAYEV, L.N., kand.med.nauk; TOMCHUK, P.F.,
meditsinskaya sestra-narkotizator (Odessa)

Work of the anesthesiological nurse. Fel'd. i akush. 26 no. 2:48-51
F '61. (MIRA 14:4)

(ANESTHETISTS)

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001756330001-5

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001756330001-5"

KOROLEVA, V.A., MEL'NIKOV, A.I., TOROPOV, A.G., SAFRONOVA, R.Ya.

Avoiding waviness of hot-rolled electrical steel sheets. Metallurg 5 no.7:28- 9 J1 '60. (MIRA 13:7)

1. Versh-Isetskiy metallurgicheskiy zavod.
(Sheet steel) (Annealing of metals)

PETRICHENKO, A.M.; SOLNTSEV, L.A.; BURAKOV, L.M.; TOROPOV, A.I.

Investigating distributing shafts made of magnesium cast iron.
Lit. proizv. no.6:22-23 Je '62. (MIRA 15:6)
(Cast iron—Testing) (Shafting—Testing)

VOROB'YEV, S.A., kand.tekhn.nauk, otv.red.; KOHOVALOV, A.I., inzh., red.;
MAKARENKO, V.P., inzh., red.; MIKHAYEV, M.V., inzh., red.; NOVIKOVA,
N.T., inzh., red.; PIKHTOVNIKOV, R.V., prof., red.; PODLOZHENOV,
P.M., inzh., red.; SEMKO, M.F., prof., red.; TOROPOV, A.I., inzh.,
red.; TSERKOVNYY, I.M., inzh., red.; CHERKASHIN, I.P., inzh., red.;
SHEVCHENKO, M.G., tekhn.red.; LIMANOVA, M.I., tekhn.red.

[Mechanization and automation of production processes; proceedings
of the city technical conference] Mekhanizatsia i avtomatizatsia
proizvodstvennykh protsessov; sbornik materialov gorodskoi tekhn-
icheskoi konferentsii. Khar'kov, Khar'kovskoe knizhnoe izd-vo,
1959. 295 p. (MIRA 13:1)

1. Kommunisticheskaya partiya Ukrainy. Khar'kovskiy gorodskoy
komitet. 2. Nachal'nik Ukrainskoy projektno-konstruktorskoy
kontory "Prommekhanizatsiya". (for TSerkovnyy).
(Automation) (Technological innovations)

SOV/128-58-11-1/24

AUTHORS: Gorshkov, A.A., Toropov, A.I., Voloshchenko, M.V. and Prozhoga, K.K.

TITLE: Magnesium Cast Iron Crankshafts for Diesel Tractor Engines
(Kolenchatyye valy dlya dizel'nykh traktornykh dvigateley iz magniyevogo chuguna)

PERIODICAL: Liteynoye proizvodstvo, 1958, Nr 11, pp 1-3 (USSR)

ABSTRACT: Information is presented on experience in the production of magnesium cast-iron crankshafts at the Khar'kov Tractor Plant and the "Serp i molot" Plant, with the participation of Academician A.A. Vasilenko, engineers L.L. Yurovskiy, T.M. Belov, S.V. Timchenko, B.K. Krymov, I.K. Udovikov, A.P. Mel'nikov, A.G. Sherman, I.G. Neizhko; Candidates of Technical Sciences I.S. Grigor'yev, N.B. Gel'perin and other workers of the "Serp i molot" Plant and the Institut mashinovedeniya (Institute of Mechanical Engineering) AS UkrSSR and NII Traktorosei'mash. Good results were obtained in the experiments and the wear-resisting properties of the cast crankshafts proved to be 30 to 40 % higher than those of forged steel shafts. In developing the casting technology special attention was de-

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SOV/128-58-11-1/24

Magnesium Cast Iron Crankshafts for Diesel Tractor Engines

voted to the double modification process obtained by separate subsequent addition of ferrosilicon in a certain time interval after the addition of magnesium. It was stated that positive results of the double modification process depend on the composition of the initial cast iron. According to technical conditions, the structure of cast crankshafts for diesel engines must consist of laminated perlite with different dispersion, globular graphite and up to 25 % ferrite. It was stated that the ferrosilicon content must be increased up to 0.55 %. The casting was carried out on a special conveyor. After machining, the cast shafts were subjected to tests on gamma flaw-detectors with radioactive cobalt radiation and on magnetic flaw-detectors. There are 4 photos, 2 diagrams, 1 graph and 3 references, 2 of which are Soviet and 1 English.

1. Crankshafts--Production
2. Iron-magnesium castings--Applications
3. Crankshafts--Mechanical properties
4. Crankshafts--Inspection

Card 2/2

VOLOSHCHENKO, M.V.; TOROPOV, A.I.

Some characteristics of the production of crankshafts from
high strength cast iron for SMD diesels. Nauk.pratsi Inst.lyv.
vyrob.AN URSR 9:73-81 '60. (MIRA 15:3)
(Iron founding) (Crank and crankshafts)

DREVETNYAK, P.P.; KOROTKOV, A.G.; TOROPOV, A.I.; BARANOVA, N.B.

Fatigue strength of the cast crankshafts of the SMD-14 diesel engines.
Trakt. i sel'khoz mash. no.7:35-36 JI '65. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut tekhnologii traktornogo i sel'skokhozyaystvennogo mashinostroyeniya (for Drevetnyak, Korotkov).
2. Zavod "Serp i molot" (for Toropov).

VOLOSHCHENKO, M.V.; TOROPOV, A.I.

Effect of residual magnesium on the shape of graphite. Lit. proizv.
no. 5:30 My '61. (MIRA 14:5)
(Cast iron—Metallography)

Toro Poy, A. M.
P. 3

24(7)

PHASE I BOOK EXPLOITATION

SOV/3240

Leningrad. Inzhenerno-ekonomicheskiy institut

Primeneniye rentgenovykh luchey k issledovaniyu materialov (Application of X-Rays in the Study of Materials) [Leningrad] Izd-vo Leningradskogo univ., 1959. 125 p. (Series: Its; Trudy, vyp. 28) Errata slip inserted. 2,000 copies printed.

Ed. (Title page): Yu. S. Terminasov, Professor, and T. N. Smirnova, Docent; Ed. (Inside book): N. I. Busorgina; Tech. Ed.: S. D. Vodolagina.

PURPOSE: This book is intended for specialists and students in educational institutions working in x-ray analysis.

COVERAGE: This book contains 12 studies prepared by the staff of the Department of Physics and of other departments of the Leningrad Engineering and Economics Institute in cooperation with industrial enterprises. The studies deal with the fatigue of metals and alloys, wear of metals due to friction, and the state of surface layers of metals subjected to preliminary hardening.

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Application of X-Rays (Cont.)

SOV/3240

The scientists applied the x-ray method of analysis to polycrystalline metals and alloys, to single crystals of metals, and to tempered and surface hardened steel. Residual stresses due to thermal treatment (Type I) and grinding (Type III) are the subject of a special study with a view to their role in the development of surface cold-hardening and their influence on the grinding process. Considerable attention is paid to the force-feed metal-cutting method of V. A. Kolesov, and to a method of surface hardening of metals by shot blasting. References follow each article.

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Terminasov, Yu. S., and Sh. Kh. Yar-Mukhamedov. X-ray Study of the Fatigue of Single Crystals of Aluminum at Standard and Low Temperatures	25
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Application of X-Rays (Cont.)

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- Terminasov, Yu. S., and Sh. Kh. Yar-Mukhamedov. X-ray Study of the Fatigue Mechanism of Single Crystals of Metals at Standard and Low Temperatures 36
- Terminasov, Yu. S., and A. M. Toropov. X-ray Study of Crystal Structure Deformations in Steel 45, Aluminum, and Cuprite Tested for Fatigue 51
- Mar'yanovskiy, Ya. I. X-ray Study of Types II and III Stress Effects in Silicon Steel Fatigue 61
- Sergeyeva, V. D. X-ray Study of Surface Layers of Metal Exposed to Friction of Rolling 75
- Sergeyeva, V. D. X-ray Study of Structure Deformations in Steel 45 Exposed to Friction of Rolling 78
- Karashev, T., and Yu. S. Terminasov. X-ray Study of Types I and III Residual Stress in the Wear of Steel Samples During the Friction Process 83

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AVAILABLE: Library of Congress

125 Device for charging samples without upsetting the vacuum
Feklistov, G. A. Electric Vacuum Furnace Equipped with a

113 the Force Feed Method
Al'yakov, A., and Yu. S. Terminabov. X-ray Study of Crystal
Structure Deformations in Surface Layers of Metals Cut by

105 Blasted Cold Hardened Steel by the X-ray Method
Myasnikov, Yu. O., and Yu. S. Terminabov. Studying Shot

96 Wear of Initially Surface Hardened Metals. X-ray Study of
Abdullina, Z. M., and Yu. S. Terminabov.

SOV/3240

Application of X-Rays (Cont.)

TOROPOV, Anatoliy Konstantinovich; AGAPOV, V.M., red.; SERGEYEVA, N.A.,
red. izd-va; GUROVA, O.A., tekhn. red.

[Mobile electric power plants and electric equipment for prospecting] Peredvizhnye elektrostantsii i elektrooborudovanie geologo-razvedochnykh rabotakh. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane neдр, 1961. 202 p. (MIRA 14:12)
(Electric power plants) (Prospecting--Electric equipment)

TERMINASOV, Yu.S.; TOROPOV, A.M.

X-ray investigation of distortions in the crystal structure
of 45 steel, aluminum, and red copper subjected to fatigue
tests. Trudy LIEI no.28:51-60 '59. (MIRA 13:4)
(Metal crystals--Testing) (Metallography)

18.9200
18.8200

68873

S/139/59/000/05/016/026
E091/E191

AUTHORS: Buyko, V.M., Makogonov, V.Ye., Terminasov, Yu.S., and Toropov, A.M.

TITLE: X-ray Study of the Mechanism of Fatigue in Ferrous and Non-Ferrous Materials and Alloys (Mono- and Poly-Crystalline Specimens)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 5, pp 93-101 (USSR) (+ 1 plate)

ABSTRACT: The aim of this work is the elucidation of the following problems: 1) the reason for the broadening of interference lines in X-ray photographs of metals subjected to cyclic deformation; 2) whether the change in intensity of the X-ray lines can be used as a criterion for fatigue; 3) how does the fatigue process proceed in specimens of ferrous and non-ferrous alloys of different crystal sizes up to monocrystals, and 4) whether low temperature brings about changes in the structure of metals subjected to fatigue. The authors have submitted the following metals and alloys to fatigue tests: commercially pure iron (Armco iron), cuprite, aluminium, and brass. Brass specimens were tested first. These were cylindrical in shape. Various crystal sizes ✓

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E091/E191

X-ray Study of the Mechanism of Fatigue in Ferrous and Non-Ferrous
Materials and Alloys (Mono- and Poly-Crystalline Specimens)

were attained in these specimens by means of heat treatment. The latter were tested in a fatigue testing machine of the NU type at room temperature. One part of the specimens was tested in the annealed condition, the other part in a worked condition (work hardening was due to turning in a lathe). All tested specimens were subjected to deformation by bending to a definite degree at definite loads for different numbers of cycles. The second group of specimens was made from sheet material. The specimens were in the form of a uniform resistance beam or rectangular plate (Fig 1). One part of the specimens had a fine-grained structure (normal polycrystalline specimens), the other part was submitted to preliminary working and subsequent recrystallisation which enabled crystals of different dimensions, from 10⁻³ mm to several cms, to be grown. For fatigue testing the authors built an apparatus in which specimens could be bent symmetrically. Its construction was based on the principle of constant deformation (Fig 2). In this

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X-Ray Study of the Mechanism of Fatigue in Ferrous and Non-Ferrous Materials and Alloys (Mono- and Poly-Crystalline Specimens)

machine the specimens were tested at amplitudes of 1, 3, and 10 mm. Testing of all the above specimens was carried out at normal temperatures as well as at liquid nitrogen temperature. The specimens were X-rayed by the back reflection method as well as by the Laue method. The significant portion of the polycrystalline specimens was X-rayed in an ionisation apparatus of the URS-50I type. Specimens submitted to testing at liquid nitrogen temperature were subsequently X-rayed at normal place of fatigue fracture of these specimens during testing, their middle portion had a different diameter from those portions of the specimen which were close to the grips of the machine. By means of heat treatment the following crystal sizes were attained in brass specimens: 10^{-4} mm, 10^{-3} and 10^{-2} mm (vacuum annealed specimens). X-ray investigations of these specimens were carried out by the ionisation method. The investigation of finely crystalline specimens (with crystal sizes of ✓

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X-Ray Study of the Mechanism of Fatigue in Ferrous and Non-Ferrous Materials and Alloys (Mono- and Poly-Crystalline Specimens)

10⁻⁴ mm) led to the following results. In the testing of these specimens at cyclic stresses of 14, 18 and 22 kg/mm², and different numbers of cycles, no secondary effects (broadening of interference lines) were observed. X-ray investigation of specimens of the second group (with crystal sizes of 10⁻³ mm), tested at the same cyclic stresses, exhibited a broadening of interference lines within limits of up to 1 million cycles (Fig 3). The third group of specimens (with crystal sizes of 10⁻² mm), tested under the same cycle stresses, exhibited a broadening of interference lines within the limits of testing up to 3 million cycles. The maximum broadening of the lines was 20% as compared with the initial width of a non-deformed specimen (Fig 4). Figs 5 and 6 show the dependence of the intensity of the (511) line on the number of cycles at a cycle stress of 22 kg/mm² for crystals of 10⁻² and 10⁻⁴ cm, respectively. Fig 7 shows the distribution of points in the specimen which were X-rayed. Fig 8 shows a Laue-graph of Al before, and ✓

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X-Ray Study of the Mechanism of Fatigue in Ferrous and Non-Ferrous Materials and Alloys (Mono- and Poly-Crystalline Specimens)

Fig 9 after, fracture. Fig 10 is a Laue-gram for Armco iron. The physical mechanism of fracture of coarsely crystalline metals is the same for all the different metals investigated in this work. Specimens of the metals investigated, which were submitted to fatigue tests at liquid nitrogen temperature and then X-rayed at normal temperature, exhibited stronger distortions in their crystal structure. A comparison of the results of the investigation of fine grained metals with that of coarse grained ones, which essentially represent monocrystals, shows that the development of secondary effects (fragmentation of crystal blocks and crystal distortions) depends on the initial condition of the metal and is not a structural characteristic of fatigue. The change in line intensity, reflecting the development of tertiary distortions, signals the approach of fracture of the specimen, but for the time being it cannot be used as a universal criterion for fatigue, and further work in this direction is required. However, there is no doubt that

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68873

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E091/E191

X-Ray Study of the Mechanism of Fatigue in Ferrous and Non-Ferrous
Materials and Alloys (Mono- and Poly-Crystalline Specimens)

the "disintegrations" in the metal structure appearing in
fatigue testing are associated with dislocations which in
their turn cause the development of tertiary distortions
which, in a definite measure, are responsible for
fracture.

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There are 11 figures and 5 references, of which 4 are
Soviet and 1 is English.

ASSOCIATION: Leningradskiy inzhenerno-ekonomicheskii institut
(Leningrad Engineering-Economics Institute) ✓

SUBMITTED: February 13, 1959

BUYKO, V.M.; MAKOGONOV, V.Ye.; TERMINASOV, Yu.S.; TOROPOV, A.M.

X-ray investigation of the mechanism of fatigue in ferrous and nonferrous metals and alloys. Izv.vys.ucheb.zav.: fiz. no.5:93-101 '59. (MIRA 13:4)

1. Leningradskiy inzhenerno-ekonomicheskiy institut.
(Metallography) (Metals--Fatigue)

88924

S/058/61/000/001/006/008
A001/A001

18.8200
10.9220

Translation from: Referativnyy zhurnal, Fizika, 1961, No. 1, p. 315-316, # 1E311

AUTHORS: Terminasov, Yu. S., Toropov, A. M.

TITLE: X-Ray Examination of Distortions in Crystalline Structure of Steel 45
Aluminum and Red Copper Subjected to Fatigue Tests

PERIODICAL: "Tr. Leningr. inzh.-ekon. in-ta", 1959, No. 28, pp. 51-60

TEXT: The authors carried out fatigue tests of annealed specimens of Al, Cu and steel 45 (0.45% C) subjected to alternating bending at room temperature and that of liquid nitrogen. The X-ray examination was conducted with the ionization recording method and by harmonic analysis of the curves of intensities of X-ray interferences and by measuring integral intensity. It turned out that fatigue process in ferrous and non-ferrous metals was characterized by development of the domain structure, microdeformations and 3-order deformations. The part of each of these factors changes when conditions of fatigue testing alter. At a low temperature the part of the thermal effect is excluded, and distortions of crystalline structure manifest themselves in the most pronounced way. A great

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S/058/61/000/001/006/008
A001/A001

X-Ray Examination of Distortions in Crystalline Structure of Steel 45, Aluminum
and Red Copper Subjected to Fatigue Tests

effect on intensity of interference lines is exerted by extinction which prevents
the manifestation of 3-order deformations at initial phases of fatigue tests.
The roentgenographic criterion of fatigue for annealed specimens can be employed
only under conditions of fine-domain structure which excludes extinction effects.

L. Mirkin

Translator's note: This is the full translation of the original Russian abstract.

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89664

18.8200

S/149/61/000/002/013/017
A006/A001

AUTHORS: Terminasov, Yu.S., Toropov, A.M.

TITLE: Roentgenographical Investigation of the Crystal Structure of Non-Ferrous Metals Under Conditions of Alternate Loading at Room and Low Temperatures

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1961, No. 2, pp. 116 - 122

TEXT: Until the present, roentgenographical investigations of non-ferrous metals subjected to alternate loading were made at room temperatures (Ref. 1, 2). To exclude the effect of heat on the deformation of the crystal structure of the metal, the authors carried out tests at -196°C with aluminum and copper specimens. Roentgenograms were taken by the photographic and the ionization method. The specimens were subjected to fatigue tests at alternate loads in liquid nitrogen on a special device (Ref. 4) representing a hinged four-section mechanism with a crankshaft whose length could be varied to the required amplitude. Stepped tests were made at each amplitude. The photographic method and the processing of results obtained were analogous to these described in Reference 3. Radiographs were taken with a KPOC-1 (KROS-1) camera, using a БВСЛ (BVSL) tube with a copper

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Roentgenographical Investigation of the Crystal Structure of Non-Ferrous Metals Under Conditions of Alternate Loading at Room and Low Temperatures

anode mounted on a YPC-55 (URS-55) device. During exposure the specimens (an aluminum foil standard or an annealed copper specimen) were rotated. They were fastened by a special device assuring the incidence of the X-ray beam onto the same spot. Photometric readings were taken with a Mφ-2 (MF-2) microphotometer. The line width of the K_{α} -doublet was determined by dividing the surface of the curve corresponding to the interference line by the maximum height of the curve. Changes in the width of the line indicated changes in the effects of second order. The surface of the K_{α} -doublet curve was taken as integral intensity of the line, when evaluating distortions of the third order, which were estimated by changes in the relation $\frac{I(hkl)}{I_{st}}$. When using the ionization method roentgenograms were

taken with the aid of an X-ray apparatus with ionization recording of interference maxima. A \overline{BCB} (BSVI) tube with a copper anode and filtrated K_{α} -irradiation were employed. The width of K_{α} -lines was determined according to Stokes (Ref.5); the components of K_{α} -doublets were separated by the Reehinger method (Ref. 6). The magnitude of crystal domains and microdistortions of the crystal lattice were

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determined by harmonic analysis. The experiments yielded the following results: Effects of the second order (fragmentation of crystal domains and micro-distortions) developed in the crystal structure of aluminum only at heavy loads (5 mm amplitude). It was established that the fatigue process of copper was accompanied by fragmentation of crystal domains, proceeding during the initial stage of the tests, and by a slight increase of micro-distortions. Deformations of the third order appear only after discontinuation of extinction effect on the intensity of the lines, although the development of these distortions takes place probably at the beginning of deformation of the specimens; during the initial stage of tests, however, their effect on the intensity of the lines is superimposed by the effect of extinction. Fragmentation of crystal domains ends with the initial stage of the tests, and therefore the distortions of third order manifest themselves already at relatively early stages of the tests.

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Figure 1:

Dependence of the width of line (222) of aluminum on the number of cycles at 5 mm amplitudes and room temperature

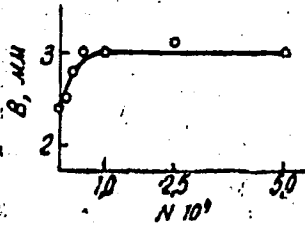
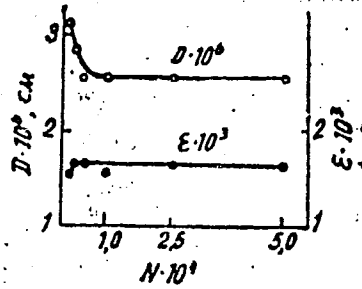


Figure 2:

Dependence of crystal domain sizes and microdistortions of aluminum on the number of cycles at 5 mm amplitude and room temperature



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Figure 3:

Dependence of crystal domain size and microdistortions of copper on the number of cycles at 3 mm amplitude and room temperature

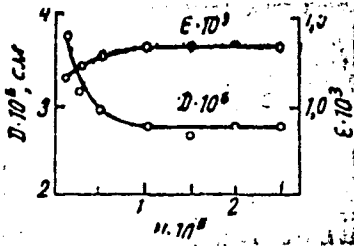
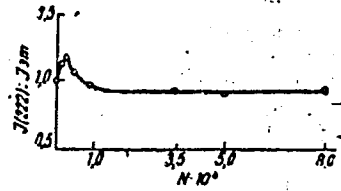


Figure 4:

Dependence of I₂₂₂/I_{st} of aluminum on the number of cycles at 5 mm amplitude and room temperature



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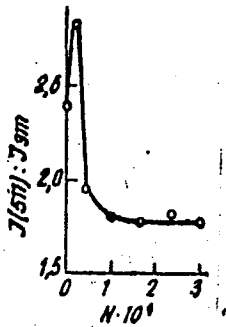
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Figure 5:

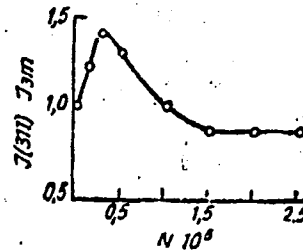
Dependence of I_{511}/I_{st} of aluminum on the number of cycles at 5 mm amplitude and room temperature (Photographical method)



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Figure 6:

Dependence of I_{311}/I_{st} of copper on the number of cycles at 5 mm amplitude and room temperature



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There are 6 figures and 7 references; 5 Soviet and 2 Non-Soviet.

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(Nonferrous metals—Metallography)
(X-ray chrystallography)