

BALAKINA, L.M.

General regularities in the directional main pressures acting  
in the ~~focuses~~ of earthquakes in the Pacific Ocean seismic  
belt. Izv. AN SSSR. Ser. geofiz. no.11:1471-1483 N '62.  
(MIRA 15:11)

1. Institut fiziki Zemli AN SSSR.  
(Pacific Ocean--Seismology)

BALAKINA, L.M.; BULMASOV, A.P.; DUVZHIR, G.; YESKIN, A.S.; KURUSHIN, R.A.; LOGACHEV, N.A.; LUK'YANOV, A.V.; NATSAG-YUM, L.; SOLONENKO, V.P., prof.; TRESKOV, A.A.; FLORENISOV, N.A.; KHIL'KO, S.D.; SHMOTOV, A.P.; ARSEN'YEV, A.A., red. i zd-va; DOROKHINA, I.N., tekhn. red.

[Gobi Altai earthquake] Gobi-Altaiskoe zemletriasenie. Moskva, Izd-vo Akad. nauk SSSR, 1963. 390 p. (MIRA 16:5)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Vostochno-Sibirskiy geologicheskiy institut. 2. Chlen-korrespondent Akademi nauk SSSR (for Florensov).  
(Gobi Altai--Earthquakes)

TARKHOVA, T.N.; BIYUSHKIN, V.N.; BALAKINA, L.M.

Labyrinth trap for scattered X rays. Zav.lab. 30 no.3:373-374  
'64. (MIRA 17:4)

1. Gor'kovskiy issledovatel'skiy fiziko-tehnicheskii institut.

L 43039-66 EWT(1) CW

ACC NR: AP6029665

SOURCE CODE: UR/0387/66/000/008/0022/0035

AUTHOR: Balakina, L. M.; Vvedenskaya, A. V.; Kolesnikov, Yu. A.

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

TITLE: Investigation of the outer boundary of the earth's core by means of spectral analysis of seismic waves

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 8, 1966, 22-35

TOPIC TAGS: seismic wave, ~~system~~, earth core, seismic landing, earth interior

*seismicity, geodesy*  
ABSTRACT: The amplitude and phase spectra of incident and reflected transverse waves were used in the investigation of the outer boundary of the earth's core. Records from the Moskva, Irkutsk, and Kabansk seismic stations obtained with Golitsyn instruments were used. The amplitude and phase spectra of the seismic waves were determined with the aid of a computer. From these spectra the frequency dependence of the coefficients of reflection and the phase shifts in the waves reflected from the core boundary were determined. The state of the matter at the outer boundary of the core was estimated by comparing these dependencies with the theoretical values computed for the case of a boundary between elastic and elastic-viscous media. The theoretical values of the coefficients of reflection and the phase shifts in the reflected waves were computed for two possible elastic-viscous states of the matter in the core.

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UDC: 550.341:550.31

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ACC NR: AP6029665

corresponding to a Maxwell body and a Kelvin body. Discrepancies in the theoretical calculations of core properties obtained from frequency variations of the coefficients of reflection and the phase shifts in the reflected waves are believed to indicate that the real conditions of seismic-wave reflection at the core boundary differ from the reflection conditions at the boundary taken in the computations of ideal media. The author thanks G. S. Pod'yapol'skiy, Ye. F. Savarenskiy, and N. V. Golubeva.  
Orig. art. has: 8 figures. [DM]

SUB CODE: 08/ SUBM DATE: 10Sep65/ ORIG REF: 004/ *ATD Pusa 5065*

Card 2/2 *20*

SOV/70-4-2-22/36

**AUTHORS:** Shevelev, A.K. and Balakina, L.M.

**TITLE:** A Camera for Taking X-ray Diffraction Photographs at Low and High Temperatures (TRK) (Kamera dlya s'yemki rontgenogramm pri nizkikh i vysokikh temperaturakh (TRK))

**PERIODICAL:** Kristallografiya, 1959, Vol 4, Nr 2, pp 247-248 (USSR)

**ABSTRACT:** The powder camera described is designed for vacuum operation between  $-196$  and  $+600$  °C. The camera is like a Dewar flask with film and specimen in the vacuum. Thermal contact is made with the specimen by a copper rod and heating or cooling fluids can be put into the flask. The whole of the inner vessel rotates to turn the specimen, sliding occurring in a double conical joint which can be water-cooled (or heated). The specimen has to be centred before closing up the camera as no adjustments are possible during operation. The design is particularly simple but depends on thermal conduction through the specimen to make good radiation losses. This will be adequate for metal specimens but may not be suitable for insulators. A differential thermocouple has been used to check this point but results are not reported. A diagram of the apparatus is given.

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A Camera for Taking X-ray Diffraction Photographs at Low and High  
Temperatures (TRK) SOV/70-4-2-22/36

There are 2 figures and 3 Soviet references.

ASSOCIATION: Issledovatel'skiy fiziko-tehnicheskiy institut pri  
Gor'kovskom gosudarstvennom universitete imeni  
N. I. Lobachevskogo (Physico-technical Research State  
University im. N.I. Lobachevskiy)

SUBMITTED: December 16, 1958

Card 2/2

S/148/61/000/012/007/009  
E193/E585

**AUTHORS:** Apayev, B.A., Sysuyev, Yu.A. and Balakina, L.M.

**TITLE:** The effect of carbide transformations on the variation of structure and properties of cold-worked and hardened carbon steels during tempering

**PERIODICAL:** Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no. 12, 1961, 117 - 124

**TEXT:** Other workers (Ref. 1: V.K. Babich, K.F. Starodubov - IVUZ, Chernaya metallurgiya, 1958, no.2; Ref. 2: A.P. Gulyayev, N.I. Burova - Metallovedeniye i obrabotka metallov, no. 1, 1955) who have studied changes occurring during tempering of steel at temperatures above 300 °C have found that similar changes take place in both cold-worked and hardened specimens. Starting from the assumption that plastic deformation does not bring about any phase transformations, these workers concluded that the changes observed during tempering could not be caused by transformation of the carbide phases. Results of more recent studies of this problem (Ref. 3: B.A. Apayev, FMM, v.4, no.2, 1957; Ref. 4: B.A. Apayev, Yu.A. Sysuyev - Nauchnyye doklady vysshey shkoly, Card 1/8 - )



The effect of ....

S/148/61/000/012/007/009  
E193/E383

Metallurgiya, no. 2, 1958; Ref. 5: B.A. Apayev, Yu.A. Sysuyev, FMM, v.8, no.6, 1959) indicate, however, that this conclusion is not quite correct. It has been found that plastic deformation of steel with lamellar cementite is accompanied by the formation of carbide  $\chi\text{Fe}_2\text{C}$  and by an increase in the proportion of the  $\alpha$ -phase; as the proportion of lamellar cementite decreases, the plastic deformation-induced transformation diminishes and ceases completely when granular cementite only is present in a given steel. The behaviour of cold-worked steel during tempering should therefore depend on the form of cementite it contains and the object of the present investigation was to check the validity of this postulate. The experiments were carried out on specimens of steel  $\gamma 10$  (U10), annealed under conditions which ensured the formation of granular cementite, normalized (i.e. containing lamellar cementite) and hardened. The annealed and normalized specimens were cold-worked (by forging and drawing) after which both the cold-worked and hardened (quenched) specimens were tempered for 30 min at progressively higher temperatures in the

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S/148/61/000/01-/007/007  
E195/E383

The effect of ....

300 - 700 °C range. After each tempering operation, the constitution of the specimen was determined by a magnetometric method, its coercive force  $H_c$  was measured to provide information on the changes in the state of stress, the size of blocks in the  $\alpha$ -phase grains was determined and the Rockwell hardness  $R_A$  was measured. The results can be summarized as follows. No change in the constitution during tempering was observed in cold-worked specimens of steel containing granular cementite. In contrast, the constitution of cold-worked steel containing lamellar cementite changed during tempering in a manner similar to that observed in hardened specimens. This is demonstrated by the results presented in Fig. 1, where the proportion ( $p_v$ , %) of the  $\alpha$ -phase (Curves 1), cementite (Curves 2) and  $\chi$ -carbide (Curves 3) is plotted against the tempering temperature (°C), Curves a and b relating, respectively, to plastically-deformed (50% reduction) and hardened steel specimens. The temperature range at which the transformation of the  $\chi$ -carbide took place during tempering of cold-worked

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E193/E383

The effect of ....

steel (with lamellar cementite) depended on the degree of preliminary deformation, being shifted towards the lower temperatures in heavily deformed material. The variation of other properties is illustrated in Fig. 3, where the coercive force ( $H_c$ , erg - graph a) and hardness ( $R_A$  - graph b) are plotted against the tempering temperature ( $^{\circ}C$ ). Curves 1-3 relating, respectively, to hardened specimens, cold-worked steel with lamellar cementite and cold-worked specimens of steel with granular cementite. The results described above confirmed the findings reported in Ref. 1 on the similar nature of changes occurring during annealing in the properties of hardened and cold-worked steel with lamellar cementite and showed that this similarity was absent when the cold-worked specimens contained granular cementite. In the same way, the form of the cementite affected the changes in the width,  $B$ , of X-ray diffraction lines of the  $\alpha$ -phase, as illustrated in Fig. 4, where  $B(\text{mm})$  is plotted against the tempering temperature ( $^{\circ}C$ ). Curves 1 and 2 relating, respectively, to deformed specimens of steel with lamellar and granular cementite. On the other hand neither the

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The effect of ....

variation in the X-ray diffraction-lines width of the  $\alpha$ -phase nor the  $H_c$  curve (Fig. 3a) obtained for the cold-worked specimens of steel with granular cementite resembled those obtained for hardened specimens. The cause of these differences and similarities becomes clear if the tempering-induced changes in the constitution of cold-worked and hardened specimens are compared. As can be seen in Figs 1, 3a and 4, anomalous variation in the coercive force and the X-ray diffraction-lines width takes place in the same temperature range in which the  $\chi$ -carbide undergoes a transformation. In cold-worked steel with granular cementite in which no phase-transformation occurs, no anomalies in the variation of these two properties were observed. Consequently, the changes in the fine structure which occur during tempering at temperatures above 350 °C and which cause anomalous variation of  $H_c$  and B in hardened and cold-worked steel with lamellar cementite are associated with the

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The effect of ....

S/143/61/000/G12/007/009  
E193/E383

$\chi\text{Fe}_2\text{C} \rightarrow \text{Fe}_3\text{C}$  transformation, whereas the variation in these properties during tempering of cold-worked steel with granular cementite is associated only with the variation in the state of stress in the  $\alpha$ -phase. This difference provides an explanation of the character of the softening process during tempering of hardened and cold-worked specimens. The variation in hardness of cold-worked steel with granular cementite practically ceases at 550 °C (Curve 3 in Fig. 3B). The relatively slow rate of decrease in hardness of hardened and cold-worked specimens of steel with lamellar cementite can be attributed to hardening of the  $\alpha$ -phase caused by carbide transformation. Thus, it can be concluded that the similarity in the variation of the fine structure of hardened and cold-worked steel with lamellar cementite is closely associated with the  $\chi\text{Fe}_2\text{C} \rightarrow \text{Fe}_3\text{C}$

transformation. Approximately 50% of the carbide phase undergoes this transformation, which obviously is accompanied by a change in the conditions at the carbide/ $\alpha$ -phase boundaries.

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S/148/61/CCO/C12/C07/009  
E195/E332

The effect of ....

As a result, the stability of the mosaic structure of the  $\alpha$ -phase is destroyed, which leads to the onset of plastic slip in the crystal lattice, causing fragmentation of blocks and/or inhibiting their growth. These processes, in turn, cause a similar variation in the coercive force and similar character of the softening process during tempering. The results of the present investigation are correlated with those obtained by other workers and it is suggested that changes in other properties (intensity of magnetization, specific volume, etc.) are also affected to a greater or lesser extent by the carbide transformation. On the other hand, this does not apply to specific heat, whose variation is more likely associated with the relief of stresses of the second type in the  $\alpha$ -phase lattice. There are 7 figures and 23 references: 20 Soviet-bloc and 3 non-Soviet-bloc. The three English-language references mentioned are: Ref. 12: Ceado, Arato - J. Japan Inst. Metals, v.19, no. 2, 1955; Ref. 22: G.I. Taylor, H. Quinoy - Proc. Soy. Soc., 1954, 143, 507; Ref. 23: T. Sato - Sci. Rep. Imp. Univers., 1951, 20, 1.

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S/139/60/000/005/025/031  
E073/E135

Investigation of the Phase Composition and of the Fine Crystal Structure of a Plastically Deformed Steel

means of a ballistic <sup>circuit</sup> magnetometer in fields of 10 000 Oe. For determining the quantitative ratio of the phases the sections of the magnetograms of the phase components were extrapolated to room temperature, using the approximation of Heisenberg (Ref. 12). To detect the nature of the dependence of the stressed state and the crystal structure on the degree of deformation, X-ray measurements were made by means of iron radiation with an ion tube after removing the surface layer by etching. For the investigations the lines (220) of the  $\alpha$ -phase and (222) of copper were used. Photometering of all the X-ray diffraction patterns was effected by means of a microphotometer with an amplification of 9 X. The results show that plastic deformation of steels with lamellar and granular cementite leads to differing results. The basic difference consists in the fact that phase transformations are caused in steel with lamellar cementite, whilst in the case of granular cementite this has not been observed. The character of the changes of the fine structure as a result of plastic deformation of steel U 10 in both states is qualitatively equal.

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S/139/60/000/005/025/031  
E073/E135

Investigation of the Phase Composition and of the Fine Crystal Structure of a Plastically Deformed Steel

A high level of type II distortions and the smaller size of blocks in the normalized steel can probably be explained by a change in the coherent bond between the  $\alpha$ -phase and the cementite as a result of phase reconstruction in the latter. In a number of papers, the change in strength is attributed to changes in the fine structure of the phase components. On the example of single phase systems and satisfactorily annealed multiphase alloys, changes in type II stresses and in the size of blocks have indeed been found to determine the strengthening during plastic deformation (Refs 4, 16, 17). The experimental data given in the present paper indicate that this analogy also applies to steel with granular cementite. Since during deformation of such structures the cementite phase is not subjected to any changes, the changes in hardness can only be due to the state of the  $\alpha$ -phase. The higher hardness of the normalized steel both in the initial state and after plastic deformation can also be attributed to the difference in the fine structure. The change in the fine structure is similar for both states of the steel;

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S/139/60/000/005/025/031  
E073/E135

Investigation of the Phase Composition and of the Fine Crystal Structure of a Plastically Deformed Steel

however, the character of the strengthening differs. This indicates that the changes in the fine structure of the  $\alpha$ -phase do not reflect the law of strengthening during plastic deformation of steel with lamellar cementite. There are 5 figures and 17 references: 11 Soviet, 5 English and 1 Japanese.

ASSOCIATION: Issledovatel'skiy fiziko-tekhnicheskiy institut Gor'kovskogo gosuniversiteta imeni N.I. Lobachevskogo (Physics and Engineering Research Institute, Gor'kiy State University imeni N.I. Lobachevskiy)

SUBMITTED: December 19, 1959

Card 4/4

BAKINA, L. I.

Chemical Abstracts  
May 25, 1954  
Electrochemistry

Tempering hardness of layers produced by the electric-spark method. Y. N. Tsybej, B. A. Krupitskij, and L. N. Balakina. *Vestnik Mashinostroeniya* 33, No. 12, 76-8 (1953).—The microhardness of layers deposited on annealed steel by discharge of 6 microfarads at 0.25 amp. and 86 microfarads at 1 amp. and employing as electrodes hard metal alloys, FeCr, Armeo Fe, steel, W, Al, and Cu were but little affected by the procedure used. However, their thickness was a function of both techniques and the nature of electrodes. Hardness distribution and softening produced by heating at 200-700° were shown in charts. Softening depended on the ease with which deposited layer alloyed with the base. J. D. Gat

Insulation B-77574

SOV/137-57-6-10459

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 150 (USSR)

AUTHORS: Balakina, L.N., Krupitskiy, B.A., Lukhina, Ye.M.

TITLE: Investigation of the Wear Resistance of a Layer Hardened by Electric Spark Treatment (Issledovaniye iznosostoykosti sloya, uprochnennogo elektroiskrovoy obrabotkoy)

PERIODICAL: Tr. Leningr. voyen.-mekhan. in-t, 1955, Nr 3, pp 151-157

ABSTRACT: An investigation of the comparative wear resistance of 40-grade steel which was hardened by electric spark treatment (ET) with a hard T15K6 type alloy, nitrogenized, carburized, and quenched. ET was performed at a 200  $\mu\text{f}$  capacity and a 5-6 amp intensity of the short-circuit current, and was followed by a smoothing operation at a 6  $\mu\text{f}$  capacity and a 0.25 amp current intensity. The thickness of the hardening layer was 0.02-0.03 mm. The microhardness  $H_v$  of the specimens investigated was 1300 after ET, 1200 after nitrogenization (St 35KhMYuA grade steel), 930 after carburization followed by quenching (St 15 grade steel), and 595 after quenching and annealing at 200°C (St 40 grade steel). Rings hardened by ET exhibit a high wear resistance in contact with a hardened or

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SOV/137-57-6-10459

Investigation of the Wear Resistance of a Layer (cont.)

nitrogenized surface. A rubbing pair in which both surfaces have been hardened by ET is undesirable because in that case a great wear of the block (shoe) surface is observed. It is noted that with a decrease of the difference in the hardness of the bearing surface and the ring, the wear resistance of the rubbing pair is decreased. The authors advance their opinion that in a number of cases the employment of a rubbing pair can be recommended in which the ring has been hardened by ET and the bearing surface has been quenched and annealed instead of receiving thermochemical treatment. For lightly loaded articles the authors recommend use of a friction pair in which the bearing surface has been hardened by ET and the ring is made of refined steel quenched and annealed at low temperature. It is pointed out that the substitution of electric-spark hardening for carburization and nitrogenizing permits a considerable reduction in the cost of thermochemical treatment.

E.S.

Card 2/2

BALAKINA, N.V., agronom-entomolog (Leningrad)

At the station for the protection of ornamental and shade-trees.  
Zashch. rast. ot vred. i bol. 8 no.8:13-15 Ag '63. (MIRA 16:10)

SAKHAROV, Nikolay Alekseyevich; BALAKINA, V.M., red.; IVANOV, P.A.,  
spets. red.; LEVINA, L.B., tekhn. red.

[Technique of training service dogs] Tekhnika dressirovki  
sluzhebnykh sobak. Moskva, Izd-vo M-va sel'.khoz. RSFSR,  
1961. 141 p. (MIRA 15:2)

(Dogs--Training)

BALAKINA, V.S.; SIPOVSKIY, P.V.

Studying experimentally reproduced free intraarticular bodies.  
Ortop.travm. i protes. 17 no.6:133-134 N-D '56. (MIRA 10:2)

1. Iz patologo-anatomicheskogo otdeleniya Leningradskogo nauchno-  
issledovatel'skogo instituta travmatologii i ortopedii.  
(JOINTS)

~~GIRGOLAV, S.S., professor; BLINOV, N.I., professor; BALAKINA, V.S.,~~  
professor; KIBINL'NITSKIY, O.K., kandidat meditsinskikh nauk;  
BRIGANNIK, Ye.V., kandidat meditsinskikh nauk; BOYKO, E.K., kandidat  
meditsinskikh nauk; BYSTROVA, V.V., kandidat meditsinskikh nauk;  
VLASOVA, Z.A., kandidat meditsinskikh nauk; ANTIPINA, A.N., nauchnyy  
soтрудnik

Petr Vasil'evich Sipovskii. Arkh.pat. 18 no.8:131-132 '56. (MLRA 10:2)

1. Deystvitel'nyy cheln ANM SSSR (for Girgolav).
2. Direktor Instituta usovershenstvovaniya vrachey imeni S.M.Kirova (for Blinov).
3. Direktor Nauchno-issledovatel'skogo instituta travmatologii i ortopedii (for Balakina)  
(SIPOVSKII, PETR VASIL'EVICH)



**BALAKINA, V.S.**, professor (Leningrad, ul.Kuybysheva, d.3., kv.53);  
**FRIDULIN, S.Ya.**, professor

Some problems in the organization of aid for injuries [with summary  
in English]. Vest.khir. 78 no.4:51-54 Ap '57. (MLRA 10:9)

1. Iz Leningradskogo nauchno-issledovatel'skogo instituta travmatologii i ortopedii (dir. - prof. V.S.Balakina)  
(WOUNDS AND INJURIES, prev. & control.  
traumatol. serv. in Russia (Rus))

EGIPTA MEDICA Sec. 19 Vol 2/5 Rehabilitation May 59

1050. Remote results of treatment of pseudoarthroses at the Leningrad Institute of Traumatology and Orthopaedics for the last five years (1951-1956) (Russian text) BALAKINA V. S. and KYIKOVICH K. V. *Khirurgiya* 1958, 2 (3-11) Tables 2 Illus. 8

Pseudoarthrosis which appears in peacetime is usually the result of wrong treatment of the fractures. Therefore it is very important to organize proper traumatological aid and advanced training of surgeons. Treatment of pseudoarthrosis of the long bones is a difficult task and failed in 27.4% of cases. Excellent, good and satisfactory results were obtained in 72.6% of the patients. Best results in the treatment of pseudoarthrosis are provided by osseous autoplasty connected with metallic osteosynthesis. Homoplasty by frozen bone requires further study.

EXCERPTA MEDICA Sec 9/Vol 13/5 SURGERY May 59

dam

2192. (619) SOME PROBLEMS OF OSTEOSYNTHESIS IN THE TREATMENT OF FRACTURES (Russian text) - Balakina V. S. - ORTOP. TRAVM. I PROTEZ. 1958, 10/2 (3-9)

A historical review on the different alloplastic techniques is presented. Special attention is given to intramedullary metallic fixation, its indications and advantages. All Russian and some western contributions to this question are mentioned.  
Boychev - Sofia (IX, 10)

BALAKINA, V.S.; SIPOVSKIY, P.V.

Study of experimentally reproduced free intra-articular bodies  
(Joint mice). Trudy Len.gos.nauch.-issl.inst.travn.i ortop.  
no.7:17-25 '58. (MIRA 13:6)

1. Iz patologoanatomicheskogo otdeleniya Leningradskogo gosudarstvennogo nauchno-issledovatel'skogo instituta travmatologii i ortopedii.

(JOINTS--DISEASES)

BALAKINA, V.S., prof. (Leningrad)

"Problems in traumatology, orthopedics, and reconstructive surgery," collected paper no.2 of the Novosibirsk Institute of Traumatological and Orthopedic Research. Reviewed by V.S. Balakina. Ortop.travm. i protes. 19 no.4:75-77 J1-Ag '58  
(MIRA 11:11)

(ORTHOPEDICS)

BALAKINA, V.S., prof.; KVITEVICH, K.V.

Surgical treatment of pseudarthroses at the Leningrad Institute of traumatology and Orthopedics during the past five years (1951-1956) [with summary in English]. Khirurgiia 34 no.2:3-11 F '58.

(MIRA 11:4)

1. Iz Leningradskogo instituta travmatologii i ortopedii (dir. - prof. V.S. Balakina)

(PSEUDOARTHROSIS, surg.  
results (Rus))

BALAKINA, V.S., prof.; KVITKEVICH, K.V.

Late results of treating fractures of the femur; from data of the  
Leningrad Institute of Traumatology and Orthopedics for the past  
10 years. Ortop.travm.i protes. 20 no.9:11-18 S '59. (MIRA 13:2)  
(FEMUR, fract. & disloc.)

BALAKINA, V.S., prof. (Leningrad, ul.Kuybysheva, d.3, kv.53)

Late results of surgery for free intra-articular bodies. Vest.  
khir. 83 no.7:101-107 J1 '59. (MIRA 12:11)  
(JOINTS--DISEASES)



BALAKINA, V.S.; MEDVEDEVA, N.I.

Treatment of diaphysial fractures of the shin bone. Vest. khir. 85  
no. 8:101-108 Ag '60. (MIRA 14:1)  
(TIBIA—FRACTURE) (FIBULA—FRACTURE)

BALAKINA, V.S.; FREYDLIN, S.Ya.

Prospects for further improving public traumatological services:  
in the R.S.F.S.R. Ortop., travm. i protes. 22 no.2:40-44 F 1(1.  
(MIRA 14:3)

(ACCIDENTS)

BALAKINA, V.S., prof.

Skin as plastic material for interposition in arthroplasty of rigid joints; experimental study. Ortop. travm.i protez. 22 no.1:38-43  
Ja '61.. (MIRA 1/15)

1. Iz patologoanatomicheskogo otdeleniya Leningradskogo nauchno-issledovatel'skogo instituta travmatologii i ortopedii. Adres avtora: Leningrad, Park Lenina, d.5, Institut travmatologii i ortopedii.

(JOINTS—SURGERY)

(SKIN GRAFTING)

BALAKINA, V.S.; MEDVEDEVA, N.I.; GRIBENNIK, Ye.V.

Combined anesthesia in operations on the extremities. Trudy Len.gos.  
nauch.-issl.inst.travm.i ortop. no.8:16-24 '61. (MIRA 15:9)  
(EXTREMITIES (ANATOMY)—SURGERY)

BALAKINA, V.S., prof.; VERINGER, Yu.V., doktor med. nauk; VAYNSHTEYN,  
V.G., prof.; YERETSKAYA, M.F., starshiy nauchnyy sotr.;  
KASHKAROV, S.Ye., starshiy nauchnyy sotr.; TITOVA, A.T., starshiy  
nauchnyy sotr.; FREYDLIN, S.Y., prof.; TAL'MAN, I.M., red.;  
KHARASH, G.A., tekhn. red.; SAFRONOVA, I.M., tekhn. red.

[Concise course in traumatology]Kratkii kurs travmatologii.  
Leningrad, Medgiz, 1962. 287 p. (MIRA 16:1)  
(TRAUMATISM)

BALAKINA, V.S., prof.; RUHAN, K.V., mladshiy nauchnyy sotrudnik

Errors and complications in metal osteosynthesis. Ort. travm.  
i protez. 23 no.10:46-50 O '62. (MIRA 17:10)

1. Iz Leningradskogo instituta travmatologii i ortopedii (dir.-  
prof. V.S. Balakina). Adres avtorov: Leningrad, P-46, park  
Lenina, d.5, Institut travmatologii i ortopedii.

BALAKINA, V.S., prof. (Leningrad P-46, ul. Kuybysheva, d.3, kv.53);  
RUBAN, K.V.

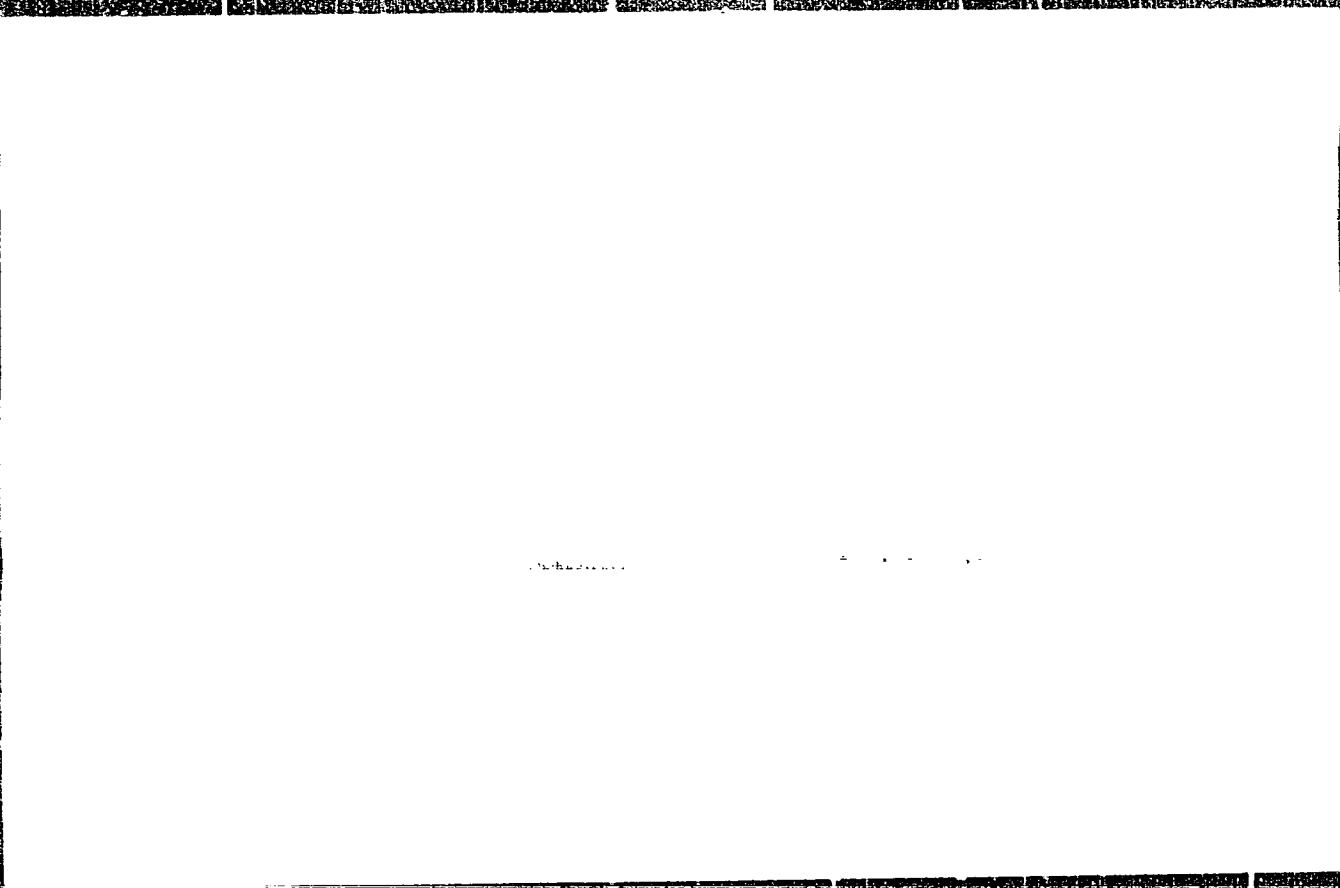
Results of treatment in spinal fractures. Ortop., travm. i protez.  
26 no.1:11-18 Ja '65. (MIRA 18:5)

1. Iz Leningradskogo instituta travmatologii i ortopedii (dir. -  
prof. V.S. Balakina).

BALAKINA, V.S., prof.

Creative path of Professor Vladimir Grigor'evich Vainshtein,  
1895-? Ortop. travm. i protes. 26 no.6:82 Je '65.  
(MIRA 18:8)





BALAKIREV, A.A.; POIUBOYARINOV, D.N.

Hydration of ceramic products made of loess rocks. Trudy MKHFI no.24:  
117-123 '57. (MIRA 11:6)

(Ceramic materials) (Hydration)

BALAKIREV, A. A. Cand Tech Sci -- (diss) "Physicochemical <sup>principles</sup> ~~bases~~ of a rational technology of products of construction ceramics made of loess raw material." Mos, 1959, 19 pp (Min of Higher and Secondary Specialized Education RSFSR. Mos Order of Lenin Chemicootechnological Inst im D. I. Mendeleev), 125 copies. (KL, 52-59, 120)

BALAKIREV, A.A.; POLUBOYARINOV, D.N.

Phase composition of ceramic products made of loess. Trudy  
MKHITI no.27:215-228 '59. (MIRA 15:6)  
(Ceramic industries) (Loess)

KHAYET, M.Z.; BALAKIREV, A.A.; LISINIEVSKIY, M.I.

Operation of specific-weight gauges in a thermal-cracking unit.  
Nefteper. i neftekhim. no.6:36-40'63 (MIRA 17:7)

1. Novo-Gor'kovskiy neftepererabatyvayushchiy zavod i Spetsial'-  
noye konstruktorskoye byuro po avtomatike v neftepererabotke  
i neftekhimii.

L 40320-66 EMI(m)/TEP(1)/I IJF(c)

ACC NR: AP6019448 (A) SOURCE CODE: UR/0303/66/000/003/0037/0038

36  
9

AUTHOR: Khomat, I.; Balakirev, A. A.; Zhebrovskiy, V. V.

ORG: none

TITLE: Some properties of coatings with epoxy and urethane resins

15

SOURCE: Lakokrasochnyye materialy i ikh primeneniye, no. 3, 1966, 37-38

TOPIC TAGS: ~~coating~~, enamel coating, polyurethane, <sup>resin</sup> ~~polyurethane~~ <sup>specialized</sup> coating, ~~resin~~, epoxy resin, elasticity, hardness

ABSTRACT: A comparative study has been made of some properties of enamel coatings made with E-33, E-41, and E-10 epoxy resins against polyurethane coating with a UR-930 varnish base. It has been established that coatings made with E-10 resin were more resistant to dichloroethane. Enamel coatings with E-33 and E-41 resin base were found to have lower vapor permeability than polyurethane coatings. All coatings tested have shown a good metal-adhesion property. The enamel coating with an E-10 resin base was found to have a high degree of hardness but lower

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L 40320-66

ACC NR: AP6019448

elasticity as compared to other coatings. The E-33 resin-base coating has shown a higher degree of hardness combined with high elasticity. Tests with laboratory-type artificial-weather apparatus on naturally drying epoxy-urethane coatings have shown high resistance under test conditions. Orig. art. has: 2 figures and 4 tables. [Based on authors' abstract] [AM]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: none/

Card 2/2 MLP

GRIGOR'YEV, Georgiy Leonidovich; GRUSEVICH, Stanislav Iosifovich; MATYUSH,  
B.I., otvetstvennyy red.; BALAKIREV, A.F., red.; FIRSOVA, A.G.,  
tekhn.red.

[Full-anatomic testing apparatus for testing selectors of modernised  
ten-step systems] Polnoavtomaticheskaya ispytatel'naya apparatura  
dlya proverki iskatel'noi modernizirovannoi dekadno-shagovoi ATS.  
Moskva, Gos. izd-vo lit-ry po vopr. aviatsii i radio, 1957. 49 p.  
(MIRA 11:4)

(Telephone, Automatic--Apparatus and supplies)



KITAYEV, Yevgeniy Vasil'yevich; BALAKIRYEV, A.P., red.; SHEFER, G.I., tekhn.  
red.

[Telephony; principles of telephony and manually operated telephone  
stations] Telefonii; osnovy telefonii i telefonnye stantsii ruch-  
nogo obsluzhivaniia. Izd.3., perer. Moskva, Gos. izd-vo lit-ry po  
voprosam sviasi i radio, 1958. 283 p. (MIRA 11:7)  
(Telephone)

REZVIYAKOV, Aleksandr Petrovich; AKINFIYEV, N.N., otv.red.; BALAKIREV,  
A.F., red.; KARABILOVA, S.F., tekhn.red.

[Effect of nonlinearity on the quality of long distance telephone  
communication] Vliianie nelineinosti na kachestvo dal'nei tele-  
fonnoi svyazi. Moskva, Gos.izd-vo lit-ry po voprosam svyazi i  
radio, 1959. 33 p. (MIRA 12:9)

(Telephone)

KHARKEVICH, A.D.; ROGINSKIY, V.N.; OPOL'SKAYA, Ye.K.; LAZAREV, V.O.;  
SHAPIRO, S.B.; GORYACHEV, V.A.; PARAFONOV, L.S., otv.red.;  
BALAKIRKOV, A.F., red.; KARABILOVA, S.F., tekhn.red.

[Crossbar telephone substation; information collection]  
Koordinatsnaya telefonnaya podatantsiya; informatsionnyi  
sbornik. Moskva, Gos.isd-vo lit-ry po voprosam svyazi i  
radio, 1959. 87 p. (MIRA 13:1)  
(Telephone, Automatic)

PETRUSHIN, I.P., otv.red.; BALAKIREV, A.F., red.; MARKOCH, K.G.,  
tekhn.red.

[Rules for the operation of long distance telephone and  
telegraph cables] Pravila tekhnicheskoi ekspluatatsii  
kabel'nykh linii meshdugorodnoi telefonno-telegrafnoi  
svyazi. Moskva, Svyaz'izdat, 1959. 113 p. (MIRA 12:10)

1. Moscow (1923- U.S.S.R.) Ministeratvo svyazi SSSR. Glav-  
noye upravleniye meshdugorodnoy telefonno-telegrafnoy svyazi.  
(Telegraph cables) (Telephone cables)

SOKOLOV, Vasil'y Vasil'yevich; FAT'KIN, D.F., otv.red.; BALAKIREV, A.F.,  
red.; MARKOCH, K.G., tekhn.red.

[Urban telephone lines] Linii gorodskikh telefonnykh setei.  
Moskva, Gos.isd-vo lit-ry po voprosam sviasi i radio, 1959.  
303 p. (MIRA 13:7)  
(telephone lines)

CHESNOKOVA, V.I., otv. red.; BALAKIREV, A.F., red.; SHEFER, G.I.,  
tekh. red.

[Safety engineering regulations for work on long-distance  
municipal telecommunication and wire broadcasting lines] Pra-  
vila tekhniki bezopasnosti pri rabotakh na mezhdugorodnykh, go-  
rodskikh kabel'nykh liniakh sviasi i kabel'nykh liniakh radio-  
fiketsii. Moskva, Gos.izd-vo po voprosam sviasi i radio, 1960. 99 p.  
(MIRA 15:1)

1. Russia (1923- U.S.S.R.) Ministerstvo sviasi. Laboratoriia  
okhrany truda.

(Telephone lines--Safety measures)  
(Electricity, Injuries from)

GRODNEV, Igor' Izmaylovich; KULESHOV, Vasil'y Nikolayovich; SOKOLOV, Vasil'y Vasil'yevich [deceased]; SERGEYCHUK, K.Ya., kand.tekhn. nauk, red.; BALAKIREV, A.F., red.; SHEFER, G.I., tekhn.red.

[Cable communication lines] Kabel'nye linii svyazi. Pod red. K.IA.Sergeichuka. Moskva, Gos.isd-vo lit-ry po voprosam svyazi i radio, 1960. 494 p. (MIRA 13:7)  
(Electric cables)

KUTASHOV, P.D.; LIVSHITS, B.S.; OPOL'SKIY, Ye.K.; GOLUBTSOV, I.Ye., otv.  
red.; BALAKIREV, A.F.; red.; SHEFER, G.I., tekhn.red.

[Universal ten-level step-by-step automatic telephone exchange  
with a capacity of 50 to 100 numbers designed for metropolitan  
and rural use] Universal'naya [sel'skaya i uchreshdencheskaya]  
dekadno-shagovaya ATS na 50/100 nomerov; informatsionnyi sbornik.  
Moskva, Gos.isd-vo lit-ry po voprosam svyazi i radio, 1960. 147 p.  
(MIRA 13:11)

(Telephone, Automatic)



DIVNOGORTSEV, Gennadiy Petrovich; NOVIKOV, Vasilii Aleksandrovich;  
REZVYAKOV, Aleksandr Petrovich. BELOUS, V.M., kand.tekhn.nauk,  
retsensent; YAKUB, Yu.A., kand.tekhn.nauk, retsensent; NOVIKOV,  
V.A., otv.red.; BALAKIREV, A.P., red.; KARABILOVA, S.F., tekhn.red.

[Theory of long-distance communications] Teoriia dal'nei svyazi.  
Izd.3., perer. Moskva, Gos.izd-vo lit-ry po voprosam svyazi i  
radio, 1960. 494 p. (MIRA 13:12)  
(Telecommunication)

LIVSHITS, Boris Samoylovich; GOLUBTSOV, I.Ye., otv. red.; BALAKIREV,  
A.F., red.; MARKOCH, K.G., tekhn. red.

[K-40/80 Rural Automatic Telephone Exchange] Sel'skaia ATS K-40/80.  
Moskva, Gos.izd-vo lit-ry po voprosam sviasi i radio, 1961. 47 p.  
(MIRA 15:2)

(Telephone, Automatic)

GRIGOR'YEV, Georgiy Leonidovich; GOLUBTSOV, I.Ye., otv.red.; BALAKIREV,  
A.F., red.; SHKFER, G.I., tekhn.red.

[Problems concerning the joint operation of municipal automatic  
telephone exchanges of different types of systems] Voprosy  
sovmestnoi raboty gorodskikh ATS raznykh sistem. Moskva, Gos.  
izd-vo lit-ry po voprosam svyazi i radio, 1961. 50 p.

(MIRA 14:4)

(Telephone, Automatic)

MIKHAYLOV, Mikhail Ivanovich; RAZUMOV, Aleksandr Sergeevich; KHOROV,  
Leonid Davydovich; BALAKIREV, A.F., red.; ROMANOVA, S.F.,  
tekhn.red.

[Protection of wire communications lines from the electro-  
magnetic effect of high-voltage power transmission lines]  
Zashchita ustroystv provednoi svyazi ot elektromagnitnogo  
vliyaniia linii vysokogo napriazheniia. Moskva, Gos.isd-vo  
lit-ry po voprosam svyazi i radio, 1961. 70 p.

(MIRA 14:12)

1. Tsentral'nyy nauchno-issledovatel'skiy institut svyazi  
Ministerstva svyazi SSSR (for Mikhaylov, Razumov, Khorov).  
(Telephone lines--Overhead) (Shielding (Electricity))  
(Telegraph lines)

KOSHCHYEV, Ivan Alekseyevich; REZVYAKOV, Aleksandr Petrovich; POPOVA, N.E.,  
starshiy nauchnyy sotr., kand. tekhn. nauk, otv. red.; BALAKIREV,  
A.F., red.; SHEPER, G.I., tekhn. red.

[Fundamentals of the theory of electrical communications and long-  
distance communications] Osnovy teorii elektricheskoi svyazi i dal'-  
nialia svias'. Moskva, Gos. izd-vo lit-ry po voprosam svyazi i radio,  
1961. 398 p. (MIRA 14:11)

1. Tsentral'nyy nauchno-issledovatel'skiy institut svyazi (for Popova).  
(Telecommunication)

POLEKHIN, Sergey Illarionovich; BALAKIREV, A.F., red.; SHEFER, G.I.,  
tekhn. red.

[Crosstalk coupling between telecommunication networks]  
Vzaimnoe vlianie mezhdu tsepiami svyazi. Moskva, Svyaz'-  
izdat, 1962. 68 p. (MIRA 15:10)  
(Radio lines) (Telephone lines)

EYDEL'MAN, Lev Yakovlevich; STOYANOV, M.N., otv.red.; BALAKIREV, A.F.,  
red.; SLUTSKIN, A.A., tekhn.red.

[Asymmetry of the power supply bridges of telephone stations]  
Asimetriia pitaiushchikh mostov telefonnykh stantsii. Moskva,  
Sviaz'izdat, 1962. 121 p. (MIRA 15:4)  
(Telephone stations)  
(Electric power supply to apparatus)

SHMELEV, I.G.; BALAKIREV, B.G.

Letter to the editor. Izv.AN SSSR Otd.tekh.nauk no.5:780-781 My '53.

(MLRA 6:8)

(Bearings (Machinery)) (D'iachkov, A.K.)



BALAKIREV, B.

Automatization and telemechanics in the Kuibyshev Hydroelectric-Power Station (GES).  
p. 182

TECHNICKA PRACA. Czechoslovakia, Vol. 7, No. 4, 1955

Monthly List of East European Accessions (EEAI), LC, Vol. 8, No. 9, September 1959  
Uncl.

Лаб. тех. 114

AUTHOR: Balakirev, D.A.

120-4-35/35

TITLE: Laboratory Equipment for Calibration of Gas Flowmeters  
(Laboratornaya ustanovka dlya graduirovki gazovykh  
raskhodomerov)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, no.4,  
pp. 106-107 (USSR)

ABSTRACT: The equipment is designed for measurement of large and small outputs of gas under pressure and is distinguished from existing types by its compactness, absence of frictional components, simplicity and suitability for laboratory conditions with maintenance of its accuracy. The layout of the apparatus is shown in Fig.1: 1) gas cylinders; 2) gas ramp; 3) manometer; 4) valve; 5) reducer; 6) batcher; 7) flow measuring orifice; 8) and 9) manometer  $P_1$  and a thermocouple for measurement of the pressure and temperature of the gas at the input to the orifice; 10) manometer  $P_2$  (pressure at the orifice); 11) special high-pressure tank; 12) and 13) manometer and a thermocouple for measurement of the pressure and temperature of the gas in the tank; 14) safety pressure valve; 15), 16) and 17) flow measuring orifice, thermocouple and inverse differential manometer for measuring

Card1/4

120-4-35/35

Laboratory Equipment for Calibration of Gas Flowmeters.

the output of the water from the tank; 19) filter; 20) valve; 21) cut-off valve; the opening and closing of which is simultaneously accompanied by connection and disconnection of an electric seconds-meter; 22) throttle cock for creation of back-pressure in the tank at the output; 23) receiver for the water flowing from the tank during the time of one measurement for this or the other constant output.

The method of calibration of this equipment is based on the equality of the volumetric output of the liquid and of the gas in the reservoir (11). The output of the liquid is determined by weighing. From the measurements of the volumetric outputs of the gas and of the corresponding parameters of the state of the gas in the reservoir, the gravimetric output of the gas is determined. If a truncated flow measuring orifice is used as the throttle apparatus for measurement of the output of the gas with a supersonic drop ( $\beta^* \gg P_2/P_1$ ), then the weight

output of the gas reduced to the standard conditions will be directly proportional to the gas pressure at the input of the orifice 7 (Fig.2).

For the inverse differential manometer shown in Fig. 1 a  
Card2/4 reversed differential manometer  $\Delta T-150$  or  $\Delta T-50$  with an

Laboratory Equipment for Calibration of Gas Flowmeters

120-4-35/35

additional valve a, previously cleansed of mercury, can be successfully used. The basic advantage of the reversed differential manometer over the usual mercury differential manometer is that it is not necessary to use an intermediate working liquid - mercury - the use of which is undesirable due to its perniciousness. Also higher than permissible splashes of the liquid in the reverse differential manometer due to sudden increase of the output are obviously safe as compared to the usual differential manometers. Priming of the pipelines and of the liquid set-up to zero (0 - 0) in the reverse differential manometer is realised by the valves (a, 6, 8). These same valves also balance the pressure in the tank, and in the reverse differential manometer 17 at the water output through the orifice 15. The liquid output G can easily be ascertained from the drop on the reverse differential manometer  $\Delta h$  and from the graph  $G = f(\sqrt{\Delta h})$  (Fig. 3) as also in the case when a differential manometer is used. The laboratory apparatus described and the inverse differential manometer worked well in use. This is a full translation. There are 3 figures.

Card 3/4

Laboratory Equipment for Calibration of Gas Flowmeters.

120-4-35/35

ASSOCIATION: Institute of Mineral Fuels Ac. Sc. USSR  
(Institut goryuchikh iskopayemykh AN SSSR)

SUBMITTED: February 5, 1957.

AVAILABLE: Library of Congress

Card 4/4

BALAKIREV, E.

Outstanding physician, navigator and discoverer. Mor. flot 25 no.7;  
37 J1 '65. (MIRA 18:7)

1. Rukovoditel' otдела predupreditel'nogo sanitarnogo nadzora  
TSentral'noy nauchno-issledovatel'skoy laboratorii gigiyeny Vodnogo  
transporta.

BALAKIREV, I.A.

Wrench for the receptacle holding the gamma-ray source. Geofis. razved.  
no.3:120-121 '61. (MIRA 17:2)

ACCESSION NR: AP4038424

S/0166/64/000/002/0089/0090

AUTHOR: Balakirev, I. D.; Dolmatov, K. I.

TITLE: One method of measuring the velocity of motion of an electro-conductive liquid

SOURCE: AN UzSSR. Izv. Seriya fiziko-matematicheskikh nauk, no.2, 1964, 89-90

TOPIC TAGS: conductive liquid, electrode, electrochemical polarization, copper sulphate, current strength, circuit, galvanic pair, resistor, balancing pair, electrolyte

ABSTRACT: The authors propose a new method for the measurement of low velocity motion based on the utilization of electrochemical polarization of electrodes. Experiments were conducted in long tubes (~1m) having an I.D. of 30 mm. It was experimentally shown that by increasing the temperature of a small concentration of  $\text{CuSO}_4$ , the current increases; by increasing the concentration of the solution, however, the current decreases. Since the velocity corresponds to the current strength, then this effect can be used for measurement purposes. The authors concluded that water, in its natural state, is a good electrolyte and, therefore, the phenomenon described can be applied to determine the velocity of motion of water. Orig. art. has: 2 figures.  
Card 1/2



ACCESSION NR: AP4038424

ASSOCIATION: Tashkentskiy institut inzhenerov zheleznodorozhnogo transporta (Tash-  
kent Institute of Railroad Transport Engineers)

SUBMITTED: 8Oct63

DATE ACQ: 26Jun64

ENCL: 00

SUB CODE: EC

NO REF SOV: 001

OTHER: 000

Card 2/2

BALAKIREV, N., inzh. (Baku)

~~New method for calculating flights. Grazhd.av. 18 no.11:27 N~~  
'61. (MIRA 15:2)  
(Azerbaijan--Aeronautics in mosquito control)

BALAKIREV, Nikolay Gavrilovich, inzhener; MOLCHANOV, R.S., kandidat  
tekhnicheskikh nauk, nauchnyy redaktor; KAPLAN, M.Ya., redaktor  
izdatel'stva; PUL'KINA, Ye.A., tekhnicheskiy redaktor

[Equipment for manufacturing hollow reinforced concrete elements]  
Oborudovanie dlia proizvodstva pustotelykh zhelezobetonnykh izdelii.  
Leningrad, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 67 p.  
(Precast concrete) (MLBA 10:8)

MINATSEVICH, Iosif Karlovich; BALAKIREV, Nikolay Gavrilovich; LEVCHENKO,  
Ya.V., inzh., red.; GVIKHO, V.L., tekhn.red.

[New building material "mokhovit" and its production] Mokhovit -  
novyi stroitel'nyi material i ego proizvodstvo. Leningrad,  
Leningr.dom nauchno-tekhn.propagandy, 1958. 15 p. (Informatsionno-  
tekhnicheskii listok, no.32. Stroitel'naya promyshlennost')

(MIRA 12:12)

(Building materials)

BALAKIREV, O. [Balakiriev, O.]

They make machine parts of wood. Znan. ta pratsia no.8:13 Ag '60.  
(MIRA 13:9)  
(Khartsizsk--Wood, Compressed)

BALAKIREV, N. N., inzh.

Simple method for calculations in dusting chemicals from  
airplanes. Zashch. rast. ot vred. 1 bol. 5 no.10:37 0 '60.  
(MIRA 16:1)

1. Azerbaydshanskoye territorial'noye upravleniye Grazhdanskogo  
vozdušnogo flota.

(Spraying and dusting in agriculture)

MALYSH, V. [Malysh, V.]; BALAKIREV, O. [Balakiriev, O.]; KOBELETSKIY, Ya.  
[Kobelets'kiy, Ya.], red.; LOBKO, A., kand.tekhn.nauk

News of soviet science and technology. Znan. ta pratsia no. 12:16  
D '60. (MIRA 14:4)

1. Redaktor DeraMlitvidavu URSR (for Kobeletskiy).  
(Technological innovations)

BALAKIREV, O. [Balakiriev, O.]

In the brigade of Mikhaïlo Telytchenko. Znan. to pratsia no. 2:10  
F '61. (MIRA 14:5)  
(Donets Basin—Mining engineering)



BALAKIREV, V., inshener-kontr-admiral

"Submarine boats of the imperialist states" by V.N.Gerasimov,  
V.F.Droblenkov. Reviewed by V.Balakirev. Starsh.-serzh. no.9:  
37 S '61. (MIRA 15:2)

(Gerasimov, V.N.) (Droblenkov, V.F.)  
(Submarine boats)

BALAKIREV, V. Inzhener-Zenitovskiy.

Soviet submarines. Tekh. i voenn. nauch. zh. 1964

(1964)

BALAKIREV, V. I.

Automatization of hydro-electric stations. Moskva, Gos. enery. izd-vo, 1949.  
183 p. (50-25565)

TK1081.B3

BALAKIREV, V. F.

"Automatization and Telemechanization of Hydroelectric Power Stations,"  
1950.

YARUSTOVSKIY, A.A.; SVETLOV, M.P.; LIKIN, V.V., redaktor; BALAKIRIN, V.P.,  
redaktor; FRANK, S.I., vedushchiy redaktor; BEGICHEVA, M.N.,  
tekhnicheskiy redaktor.

[Operation of mechanical and electrical sluice gate equipment]  
Eksploatatsiia mekhanicheskogo i elektricheskogo oborudovaniia  
shluzov. Moskva, Izd-vo Ministerstva rechnogo flota SSSR, 1952.  
210 p. [Microfilm] (MLBA 7:11)  
(Sluice gates)

ZHDANOV, G.M.; BALAKIREV, V.F., redaktor; LARIONOV, G.Ye, tekhnicheskii  
redaktor.

[Telemetering] Teleizmerenie. Moskva, Gos. energ. izd-vo.  
Pt.2. [Synchronous-trace and impulse] Sinkronno-slediaschie i  
impul'snye sistemy. 1953. 415 p. (MLRA 7:12)  
(Telemetering)

10414888  
USSR/Engineering - Automatization

Card 1/1 Pub. 77 - 3/20

Authors : Balakirov, V. F., Engineer

Title : Automatization and remote control at the Kuybyshev State Electric Power Plant

Periodical : Nauka i zhizn' 21/12, 7-9, Dec 1954

Abstract : An explanation is given of some of the features in the automatization and remote control of the Kuybyshev Electrical Power Plant on the Volga, which is scheduled to start operating in 1955 and is said to be one of the largest in the country. The need for such automatization is based on the fact that both the water supply and the load on the system vary. The operation is not completely automatic since the stopping and starting of the various turbines is controlled by a dispatcher who bases his action on signals received automatically from the various parts of the installation. Illustrations.

Institution : ...

Submitted : ...

KUCHKIN, Mikhail Dmitriyevich; SPITSYN, Nikolay Andreyevich; BALAKIREV, V.F.,  
retsensent; KOZIS, V.L., retsensent; LARIONOV, G.Ye., tekhn.red.

[Automatisation of hydroelectric power stations] Avtomatisatsiia  
gidroelektricheskikh stantsii. Pod obshchei red. M.D. Kuchkina.  
Moskva, Gos.energ.isd-vo, 1957. 350 p. (MIRA 10:12)  
(Hydroelectric power stations) (Automatic control)



BALAKIREV, V. F.

103. Andriya and M.M. Bevilacqua. Swiss Metallurgy  
Study, V. 4 (Transactions of the Institute of Metallurgy, Vol. 1,  
Annals of Chimie, (N.S.), Geneva, 1958, 177 p. French  
only translated. 1,000 copies printed.

104. Michael Bardi, R.A. Finkels (Sup. M.), Committee of Technical Sciences  
A.A. Kholodnyy, Professor, Sergey V. The Miller, Professor, P.A. Pashchikov,  
Committee of Technical Sciences and R.S. Litvinov, Committee of Technical  
Sciences, M.S. Serebrennyy.

105. REPORT: This book is intended for foreign and domestic metallurgists.  
It contains the best present results of investigations of theoretical pro-  
blems in metallurgy and chemistry and gives information on the practical  
use of new materials in foreign and domestic metallurgy and on the de-  
velopment of new materials in the metallurgical industry. The  
specialties of the authors are: the production of new materials, the  
chemistry and electrochemistry, Vol. 1, Branch Academy of Sciences, USSR,  
Chemistry, S.V. V. V. Kuznetsov, and R.S. Litvinov. Electrochemical  
and Phase Equilibria of Selected Elements During the Industrial Smelting  
Process

106. Shul'ga, A.A., and P.A. Voznyy. On the Connection Between the Kinetics of  
the Vaporization of Metals and the Pressure of Interstitial Vapor

107. Shul'ga, A.A., and V.P. Neyer (Dresden). Institute of Germanium During the  
Smelting of Silicide Semiconductors

108. Shul'ga, A.A., and R.S. Litvinov. On the Interaction of the Lower Oxidation of  
Metals and Ores

109. Shul'ga, A.A., and R.S. Litvinov. Oxidation of the Lower Oxidation of Metals  
and Ores

110. Shul'ga, A.A., and R.S. Litvinov. Polarization of Impurities-Oxide-Carbon  
Layers in Metal Smelting

111. Shul'ga, A.A., L.F. Smirnova, and P.A. Pashchikov. Investigation of the  
Conditions for Electroreduction of Copper from Molten Solutions in the  
Presence of Iron, Zinc, and Cadmium Oxides and the Electrode Anodes

112. Shul'ga, A.A., P.A. Pashchikov, and L.F. Smirnova. Some Perspectives for  
the Electrolytic Production of Lead Springs from Alkaline Chloride Solutions  
and Substitution of Insoluble Anodes for Electrolysis

113. Shul'ga, A.A.. Some Features of the Reaction of Elements With Solid  
Substances During the Smelting Process

114. Shul'ga, A.A., and R.S. Litvinov. Optimum Conditions for Leaching Metals  
in Molten Salts

115. Shul'ga, A.A., and R.S. Litvinov. Production of Molten Salts by  
Carbon Reduction of the Oxides of Carbons (Supplementary Notes)

116. Shul'ga, A.A., P.A. Pashchikov, A.A. Zhukovskiy, and A.A. Zhukovskiy. On  
the Problem of Feeding of Iron from [Copper] Melts to the Common Phase  
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117. Shul'ga, A.A., S.A. Trunchevskiy, and R.S. Litvinov (Dresden). Comparative Data  
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verter

118. Shul'ga, A.A., R.S. Litvinov, and V.I. Zhuravlyov. On the Behavior of Oxides  
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119. Shul'ga, A.A., and V.P. Chernobrovitskiy. On the Melting and Overheating of  
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120. Shul'ga, A.A., and V.P. Chernobrovitskiy. Change in Chemical Composition and  
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121. Chernobrovitskiy, V.P., A.A. Zhukovskiy, and V.I. Zhuravlyov. Phosphorus and Si-  
licon in Primary Pig Iron

122. Filmer, Th.L.. On the Deposition of Ferrite from Molten

123. Tsarev, A.V., and S.G. Zhuravlyov. Investigation of the Capillary of Molten  
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124. Florkin, R., and V.G. Filyanin. Production of Impurities by Alloying  
of Iron with Oxygen

125. Florkin, R., V.G. Filyanin, and V.G. Filyanin. Investigation of the  
Production of Impurities by Alloying

BALAKIREV, V.F.; VETRENKO, Ye.A.; TISHCHENKO, A.A.; BABADZHAN, A.A.

Zinc passage from matte to the gaseous phase under the effect  
of converter blow. Trudy Inst. met. UFAN SSSR no.4:81-85 '58.  
(MIRA 12:10)

(Zinc--Metallurgy)

S/020/60/135/005/025/043  
B016/B052

**AUTHOR:** Balakirev, V. F.  
**TITLE:** Mechanism and Kinetics of the Reduction of Cobalt Oxides  
**PERIODICAL:** Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5,  
pp. 1127 - 1130

**TEXT:** The author studied the reduction kinetics of  $\text{Co}_3\text{O}_4$ , and reports on X-ray examinations of solid reduction products. He intended to explain some discrepancies found in publications. According to Ref.4,  $\text{Co}_3\text{O}_4$  is reduced in two stages:  $\text{Co}_3\text{O}_4$  into  $\text{CoO}$ , and  $\text{CoO}$  into  $\text{Co}$ . Ref.2 states that no  $\text{CoO}$  forms below  $300^\circ\text{C}$ . The author reduced  $\text{Co}_3\text{O}_4$  by hydrogen in a vacuum at:  $225^\circ$ ,  $250^\circ$ ,  $275^\circ$ ,  $300^\circ$ ,  $323^\circ$ , and  $350^\circ\text{C}$ . Hydrogen pressure was 100, 200, 400, and 600 mm Hg. Fig.1 shows the reduction rates at the above temperatures and under a pressure of 400 mm Hg. Fig.2 depicts this rate at  $250^\circ\text{C}$  and different hydrogen pressures. From the maxima of the curves, the author concludes that the process follows the laws of topochemical

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Cobalt Oxides

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reactions. Its activation energy was calculated to be 18.5 kcal/mole. The X-ray structural analysis of samples with different degrees of reduction (13.1 - 68.9%) indicated the phases  $\text{Co}_3\text{O}_4$ ,  $\text{CoO}$ , and  $\text{Co}$  to be present in each sample. Hence, the author concludes that the reduction takes place on two levels simultaneously:  $\text{Co}_3\text{O}_4 - \text{CoO}$  and  $\text{CoO} - \text{Co}$ . The author suggests the following reduction mechanism for  $\text{Co}_3\text{O}_4$ : During the reduction, oxygen is separated by hydrogen, thus liberating cobalt ions at the surface of the crystal. Under the action of the concentration gradient, the  $\text{Co}$ -ions diffuse into the lattice of the initial phase.  $\text{Co}_3\text{O}_4$  is thus converted into  $\text{CoO}$ . The  $\text{CoO}$  crystals formed immediately must have a maximum number of vacancies which are occupied by  $\text{Co}$ -ions coming from the surface. The ions diffuse through the  $\text{CoO}$  lattice and penetrate into the lattice of the initial  $\text{Co}_3\text{O}_4$ , thus converting still more  $\text{Co}_3\text{O}_4$  into  $\text{CoO}$ . This diffusion is comparatively slow due to the relatively low temperature of the experiments, while the formation of metal ions at the surface takes place quickly. Hence, the metal phase of part of the metal ions is formed long

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before all  $\text{Co}_3\text{O}_4$  is converted into  $\text{CoO}$ . The metal crystals continue to grow due to the diffusion of cobalt ions on the interface between metal and oxide, and on the free crystal surface. G. I. Chufarov, Corresponding Member AS USSR, is thanked for guidance and assistance. There are 3 figures and 12 references: 7 Soviet, 1 British, 1 French, and 3 German.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR  
(Institute of Metallurgy of the Ural Branch of the Academy  
of Sciences USSR)

PRESENTED: June 29, 1960, by G. V. Kurdyumov, Academician

SUBMITTED: June 27, 1960

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B103/B208

24,7500(1144,1160,1136)

AUTHORS: Balakirev, V. F. and Chufarov, G. I., Corresponding Member  
AS USSR

TITLE: Equilibrium conditions in systems Co-O and Co-O-H

PERIODICAL: Doklady Akademii nauk SSSR, v. 138, no. 1, 1961, 112-114

TEXT: The authors determined the crystal lattice parameters of the two cobalt oxides accurately defined: CoO and  $Co_3O_4$ . CoO has the lattice type of NaCl,  $Co_3O_4$ , the spinel type. The authors studied samples of  $Co_2O_3$  (from the zavod "Krasnyy Khimik", plant "Krasnyy Khimik") and also detected a spinel type of the lattice with parameters similar to those of  $Co_3O_4$ . It was, however, difficult to determine the quantity of the parameter, since the lines in the roentgenogram are indistinct. The authors point out that anhydrous  $Co_2O_3$  cannot be prepared, but that CoO and  $Co_3O_4$  may form solid solutions with oxygen. Since the published data on the

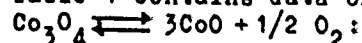
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dissociation pressures of cobalt oxides in the system Co-O-H and on the equilibrium in this system are contradictory, these problems have been studied. They are important for the production of cobalt and its compounds (for the technology of direct production of high-quality cobalt metal from its oxides by reduction with hydrogen). The authors obtained  $Co_3O_4$  by annealing analytical-grade "cobalt oxide" for 70 hr at 800°C in the air. Table 1 contains data on the equilibrium pressure of oxygen in the system



T, °K	923	973	1073	1123	1173
$P_{O_2}$ , mm	$5.32 \cdot 10^{-2}$	0.12	7.3	25.0	153.5

The equilibria in this system and in the system  $CoO + H_2 \rightleftharpoons Co + H_2O$  were studied both in the direction of the  $Co_3O_4$  dissociation and of the CoO oxidation; the oxygen pressure was determined in a vacuum device. The mean values of the  $O_2$  pressure for the dissociation of  $Co_3O_4$  are expressed by

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the following equation:  $\log P_{O_2} = -\frac{16522}{T} + 13.4$  ( $P_{O_2}$  in atm); the change of the isobaric-isothermal potential  $\Delta Z_T^0 = 37794 - 30.652 T$  cal.

The dissociation pressure of  $Co_3O_4$  being high, the equilibrium  $Co_3O_4 + H_2 \rightleftharpoons 3CoO + H_2O$  is difficult to determine directly owing to the low equilibrium pressure of  $H_2$ . But the authors determined from the equilibrium conditions of the two processes coupled in this system:

$Co_3O_4 \rightleftharpoons 3CoO + 1/2 O_2$  and of the dissociation of water vapor:

$H_2O \rightleftharpoons H_2 + 1/2 O_2$ , for the latter of which  $\log K_{H_2O}$  equals  $-\frac{13160}{T} + 3.05$ , X

the terms of temperature dependence of the equilibrium constant:

$\log K' = \log P_{H_2O}/P_{H_2} = \frac{4899}{T} + 3.65$  and of the change of the isobaric-

isothermal potential:  $\Delta Z_T^0 = -22413 - 16.699 T$  cal. The equilibrium constant decreases with increasing temperature owing to the exothermic

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character of the reaction  $\Delta H_{298,1}^{\circ} = -19412$  cal. It was found that in previous studies of the equilibrium  $\text{CoO} + \text{H}_2 \rightleftharpoons \text{Co} + \text{H}_2\text{O}$  methods with considerable errors had been applied. Among others, neither thermal diffusion has been considered, nor the equilibrium gas mixture analyzed. The authors studied analytical-grade CoO. The sample was found to be monophasic (like that of  $\text{Co}_3\text{O}_4$ ), and its lattice parameter was in agreement with published data. To eliminate thermal diffusion, a continuous circulation of the gas mixture was maintained by means of a diffusion pump. Equilibrium was attained at a constant water vapor pressure (4.579 mm) which was maintained by dipping the receiver with water into a Dewar flask containing thawing ice. After equilibrium had been attained, the sample was removed from the furnace and hardened. From the vapor-gas mixture the water vapor was frozen out in a receiver immersed in liquid nitrogen. The equilibrium gas was again analyzed for impurities. This was made by interaction of  $\text{H}_2$  with CoO which was again introduced into the furnace. The resultant water vapor was frozen out. The pressure difference gave the

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equilibrium pressure of  $H_2$ . It was converted by a correction diagram to the  $H_2$  pressure at  $0^\circ C$ . The results are presented in Table 2. They may be expressed by the relation:  $\log K'' = \frac{973.4}{T} + 0.52$ . Also in this case, the equilibrium constant decreases with rising temperature, as the reaction  $H_{298.1}^O = -631 \text{ cal}$  is exothermic. The change of the isobaric-isothermal potential is determined by  $\Delta Z_T^O = -4457 - 2.381 T \text{ cal}$ . The dissociation pressure of  $CoO$  is calculated from  $P_{O_2} = (K_{H_2O} K'')^2 \text{ atm}$ . It follows:

$\log P_{O_2} = -\frac{24373}{T} + 7.14$ , and the isobaric-isothermal potential

$\Delta Z_T^O = 55754 - 16.333 T \text{ cal}$ . There are 2 tables and 13 references:

6 Soviet-bloc and 7 non-Soviet-bloc. The 3 most recent references to English-language publications read as follows: H. W. Foot, E. K. Smith (Ref. 4: J. Am. Chem. Soc., 30, 1344, 1908), P. H. Emmet, J. E. Schultz (Ref. 8: J. Am. Chem. Soc., 51, 3249, 1929), M. Watanabe (Ref. 10: Sci.

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Rep. Tohoku Imp. Univ., 22, no. 4, 892, 1933).

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR  
(Institute of Metallurgy of the Ural Branch of the Academy of  
Sciences USSR)

SUBMITTED: January 25, 1961

Legend to Table 2: 1) T, °K, 2)  $P_{H_2}^{equil}$ , mm Hg, 4) conditions; 5)  $K''$   
mean value; 6) from the side of reduction; 7) from the side of oxidation.

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ANISHEVA, N.A.; BALAKIREV, V.F.; VETRENKO, Ye.A.; KASHIN, A.I.;  
KOMLEV, G.A.

Volatilization of zinc during the smelting of copper  
concentrates. Trudy Inst. met. UFAN SSSR no.8:83-95 '63.  
(MIRA 17:9)