SOV/21-59-5/26

On the Effect of the Pre-heating Temperature on the Residual Stresses of the First and Second Kinds and the Fatigue Strength of Rolled Steel.

ASSOCIATION: Institut mashinovedeniya i avtomatiki AN UkrSSR (Institute of Mechanical Engineering and Automation of the AS UkrSSR)

PRESENTED: September 26, 1958, by F.P. Belyankin, Member of the AS UkrSSR

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88689

S/137/61/000/001/033/043
A006/A001

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Translation from: Referativnyy zhurnal, Metallurgiya, 1961, No. 1, pp. 36 - 37, # 1Zh277

AUTHORS: Yatsyuk, A.I., Shved, M.M.

TITLE: The Effect of Heating on Residual Stresses and Endurance Strength of Rolled Steel

PERIODICAL: "Nauchn. zap. In-ta mashinoved. i avtomat. AN USSR", 1960, Vol. 7, pp. 106 - 109

IX

TEXT: The authors investigated 45 grade steel. Residual stresses of the I and II order were determined by X-ray analysis. It was established that residual stresses of the I and II order increased with higher temperatures of preheating the rolled specimens, raised up to 300°C. Further elevation of preheating temperature causes a decrease of the aforementioned values and at > 550°C residual stresses are eliminated. σ_{ur} depends in the same way on the preheating temperature, the effect of rolling vanishes at > 550°C. It is assumed that the increase of residual compression stresses of the I order with higher preheating tem-

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The Effect of Heating on Residual Stresses and Endurance Strength of Rolled Steel

peratures can be explained by an increase in the volume of the plastically deformed metal zone. With higher preheating temperatures (up to 300°C) distortions in the cold hardened metal layere are developed which cause an increase of residual stresses of the II order. There are 5 references.

Z. F.

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

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S/813/62/000/001/007/008
E193/E383

AUTHOR: Shved, N.M.

TITLE: X-ray method of investigating the mechanism of the action of the ambient media on a metal

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut mashynoznavstva i avtomatyky, l'viv. Voprosy mekhaniki real'nogo tverdogo tela. no. 1. Kiev, 1962, 136-139

TEXT: The author introduces a concept of the true lattice parameter which he defines as the value calculated from X-ray diffraction patterns produced by a specimen free from oriented microstresses and residual stresses of the first type. He also points out that X-ray diffraction is often used to study materials which had been subjected to treatment (hydriding, sulphiding, nitriding, carburizing, serving in a molten metal) as a result of which both the stresses of the first type and a change in the lattice parameter could have taken place. It happens frequently in these cases that in using X-ray diffraction (the back-reflection method) for determining the lattice parameter, no account is taken of the possible effect of the stresses of the

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where Δa_σ is the change in the lattice parameter in the direction normal to the specimen surface caused by the residual stresses of the first type, a_ψ is the lattice parameter calculated from the pattern obtained at an angle ψ, $a_\perp$ is the lattice parameter calculated from the pattern obtained by the right-angle and ν is the Poisson ratio. The variation in the true lattice parameter is then given by:

$$\Delta a_H = a_\perp - a_H + \frac{2\nu(a_\psi - a_\perp)}{(\nu + 1)\sin^2\psi} \qquad (9)$$

where a_H is the lattice parameter of the metal in the initial state. When X-ray analysis is used to study the effect of the ambient media on a metal, the following cases are possible:

1. $a_\psi - a_\perp \neq 0$; $a_\perp - a_H \neq 0$; $a_\perp - a_o \neq -\frac{2\nu(a_\psi - a_\perp)}{(\nu + 1)\sin^2\psi}$.

In this case, the external medium diffuses to a certain depth,

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changing the lattice parameter of the surface layer of the metal and giving rise to residual stresses of the first type;

2. $a_\psi - a_\perp \neq 0$; $a_\perp - a_H \neq 0$; $a_\perp - a_H = -\frac{2\nu(a_\psi - a_\perp)}{(\nu + 1)\sin^2\psi}$.

The external medium diffuses to a certain depth, increasing the volume of the surface layer and setting up residual stresses of the first type but is not dissolved in the metal;

3. $a_\parallel - a_\perp = 0$; $a_\perp - a_H \neq 0$.

In this case the external medium has diffused throughout the specimen studied, changing the lattice parameter in the entire volume.

4. $a_\psi - a_\perp = 0$; $a_\perp - a_H = 0$.

No diffusion of the external medium has taken place.

SUBMITTED: June 26, 1961

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42180
S/813/62/000/001/008/008
E073/E135

10760

AUTHOR: Shved, M.M.

TITLE: On the formation of residual stresses of the first kind and changes in the crystal lattice produced by electrolytic hydrogen-saturation of steel

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut mashynoznavstva i avtomatyky, L'viv. Voprosy mekhaniki real'nogo tverdogo tela. no.1. Kiev, 1962. 140-142.

TEXT: To elucidate the phenomena taking place in the layer of metal adjacent to the surface as a result of its saturation with hydrogen, an X-ray method was used to investigate the surface of 30 x 20 x 2 mm armco-iron specimens (vacuum-annealed at 700 °C for 2 hours), electrolytically-polished and saturated with hydrogen in a 26% aqueous solution of H_2SO_4, using a current density of 5 A/dm^2 for various durations. The lattice constants before and after hydrogen-saturation were measured at angles of 90 and 45°, applying iron radiation. The calculations were made from the line (310) $K_{\beta 1,3}$ for which Θ = 75° 42'.

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SHVED, M.M.

Measuring lattice parameters and residual stresses of the first order by means of X rays. Fiz.met.i metalloved. 13 no.1:146-148 Ja '62. (MIRA 15:3)

1. Institut mashinovedeniya i avtomatiki AN USSR.
(Crystal lattices) (Strains and stresses) (X rays—Diffraction)

SHVED, M.M.

Using the method of eddy currents to determine the hydrogen concentration in steel. Vliian.rab.sred.na svois.stali no.1:65-67 '61. (MIRA 15:5)
(Steel—Hydrogen content) (Electric currents, Eddy)

SHVED, M.M.; YANCHISHIN, F.P.

Effect of hydrogen on the hardness of steel. Vliian.rab.sred.na svois.stali no.1:68-72 '61. (MIRA 15:5)
(Steel--Hydrogen content) (Hardness)

SHVED, M.M.

X-ray diffraction method for studying the mechanism of the effect of external media on metals. Vop. mekh. real'. tver. tela no.1: 136-139 '62. (MIRA 16:1)
(X-ray crystallography) (Dislocations in metals)

SHVED, M.M.

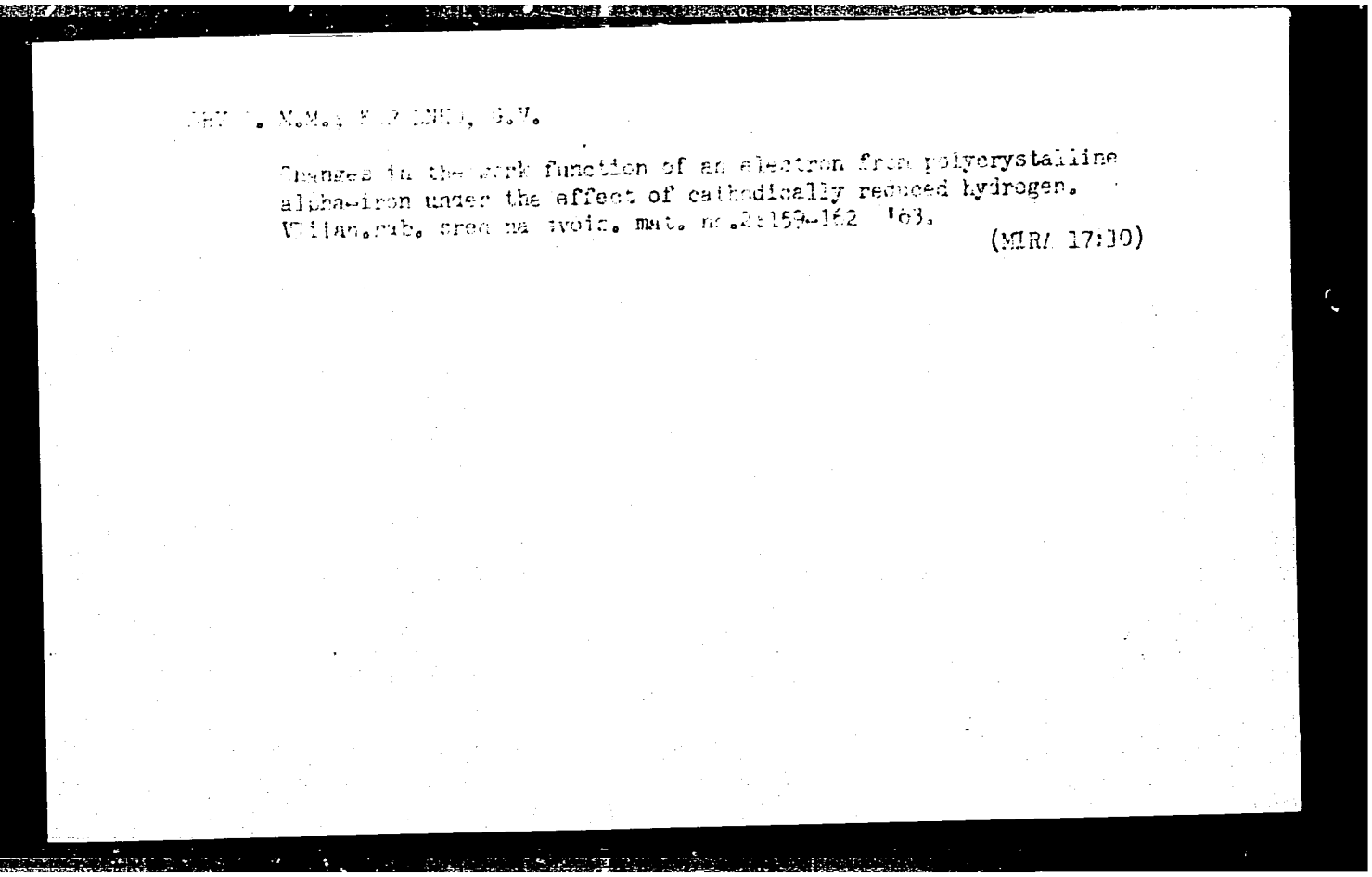
Residual first-order stresses and variations in the lattice constant in steel due to electrolytic hydrogen absorption. Vop. mekh. real'. tver. tela no.1:140-142 '62. (MIRA 16:1)
(Strains and stresses) (Steel--Hydrogen content)
(Crystal lattices)

SHVED, M.M.

Measuring lattice parameter and residual stresses in semicrystals in the presence in them of solid solutions and unsymmetrical stressed state by plane. Vop. mekh. real. tver. tela no. :120-127 '64.

Determining the E and ν elastic constants by means of X-rays. Ibid.:128-135

Using the X-ray diffraction method for determining residual stresses of the first kind in case of a stressed state by volume. Ibid.:136-141
(MIRA 17:11)



[illegible] M.M., [illegible], G.V.

Changes in the work function of an electron from polycrystalline alpha-iron under the effect of cathodically reduced hydrogen. Fiz.-khim. mekh. materialov no.2:159-162 '63. (MIRA 17:10)

ACC NR: AP7004183 (N) SOURCE CODE: UR/0369/66/002/006/0661/0663

AUTHOR: Pokhmurskiy, V. I.; Boltarovich, A. V.; Shved, M. M.; Karpenko, G. V.

ORG: Physicomechanical Institute, Academy of Sciences, UkrSSR, L'vov (Fiziko-mekhanicheskiy institut AN UkrSSR)

TITLE: Effectiveness of surface strain hardening in increasing the fatigue and corrosion-fatigue strength of some stainless steels

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 6, 1966, 661-663

TOPIC TAGS: strain hardening (steel property), stainless steel, martensitic ferritic steel, austenitic steel, precipitation hardening, fatigue strength, Kh17N2 stainless steel, Kh17N5M3 stainless steel, corrosion

ABSTRACT:
Specimens of martensitic-ferritic Kh17N2 stainless steel were annealed at 1000C, oil quenched and tempered at 580C; specimens of precipitation-hardenable Kh17N5M3 stainless steel were annealed at 950C, air cooled, refrigerated at -70C, and aged at 450C. The heat-treated specimens were cold rolled to determine the effect of surface strain hardening on the fatigue and corrosion-fatigue strengths. It was found that the fatigue strength of Kh17N2 steel increases slightly (about 10%) with increased pressure of rolling and reaches its maximum at a pressure of about 50 dan. Increasing the pressure to 100 dan caused a sharp decrease in fatigue strength due to peeling and

Card 1/2 UDC: none

ACC NR: AP7004183

laminating of the surface. The rolling pressure magnitude has a similar effect on the corrosion-fatigue strength, which was maximum at about 65 dan. Cold rolling of Kh17N5M3 steel with 100 dan of pressure increases the fatigue strength by 30%, the corrosion-fatigue strength by more than 2.5 times, and the rupture life under high stresses 30—50 times. It is concluded that surface strain hardening is not very effective in increasing the fatigue strength of Kh17N2 steel and high rolling pressures even have a harmful effect. However, this method is very effective for increasing the fatigue strength and, particularly, the corrosion-fatigue strength of Kh17N5M3 steel, in which the strengthening effect increases with increasing rolling pressure. Orig. art. has: 3 figures and 1 table. [TD]

SUB CODE: 11, 13/ SUBM DATE: 14Aug66/ ORIG REF: 007/ ATD PRESS: 5115

Card 2/2

MIKHAL'CHENKO, V.M.[Mykhal'chenko, V.M.]; MISNICHENKO, O.M.; MARCHENKO, T.I.; MIKHAYLOVA, M.Y.[Mykhailova, M.I.]; SHVED, M.P.; OSTAPENKO, M.G.[Ostapenko, M.H.]; BULDEY, I.A.; MARKIN, M.S., glav. red.; OSTAPENKO, M.G. [Ostapenko, M.H.], otv. za vyp.; MINEVICH, M.I.[Minevych, M.I.], tekhn. red.

[Soviet trade in the Ukrainian S.S.R.; statistical abstract] Radians'ka torhivlia v Ukrains'kii RSR; statystychnyi zbirnyk. Kyiv, Derzh. stat. vyd-vo, 1963. 318 p. (MIRA 16:9)

1. Ukraine. Statisticheskoye upravleniye. 2. Otdel statistiki torgovli TSentral'nogo statisticheskogo upravleniya pri sovete ministrov Ukr. SSR (for Mikhal'chenko, Misnichenko, Marchenko, Mikhaylova, Shved, Ostapenko, Buldey). 3. Nachal'nik TSentral'nogo statisticheskogo upravleniya Ukr.SSR (for Markin).
(Ukraine--Commerce) (Ukraine--Statistics)

GRINBERG, I.V.; KORZHINSKIY, A.F.; MASLYAKEVICH, Ya.V.; SHVED, N.A.

Study of the nature of new rare organic minerals in Transcarpathia. Dokl. AN SSSR 158 no.1:116-118 S-O '64 (MIRA 17:8)

1. Institut geologii goryuchikh iskopayemykh AN UkrSSR. Predstavleno akademikom A.P. Vinogradovym.

GRINBERG, L.V.; SHVED, M.A.

Gravimetric microchromatographic analysis of bitumens (on the group composition of natural oils and bitumens). Zhur. anal. khim. 19 no.11:1385-1390 '64. (MIRA 18:2)

1. Institute of Geology and Geochemistry of Mineral Fuels, Ukrainian S.S.R. Academy of Sciences, Lvov.

S/263/62/000/019/003/004
I007/I207

AUTHOR: Shved, N.N.

TITLE: Device for determining vibration sensitivity

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 32. Izmeritel'naya tekhnika, no. 19, 1962, 16, abstract 32.19.119 (Tr.Leningr. sangigien.med.in-ta, no. 73, 1961, 19)

TEXT: Brief description is given of a device for determining vibration sensitivity of various portions of the human body. The device permits investigations at an oscillation frequency of 20 to 250 cps and varying amplitude. Sound-frequency oscillations generated by a sound oscillator are fed to a power amplifier and further, through a commutating device and measuring instrument, to the excitation winding of a miniature electrodynamic vibrator that converts electric oscillations into mechanical vibrations. Finally, the oscillations are transmitted through a circular tip to that portion of the human body subjected to the investigation. The device enclosed in a metal casing is portable and is fed from the mains (network). Its weight is 5 kg.

[Abstracter's note: Complete translation.]

Card 1/1

S/194/62/000/010/044/084
A061/A126

AUTHOR: Shved, N.N.

TITLE: Instrument for the determination of the surface reflection factor

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 10, 1962, 9, abstract 10-5-17ch (Tr. Leningr. san.-gigiyen. med. in-ta, 1961, 73, 10 - 11)

TEXT: An ФСК (FSK) photoconductive cell connected to one of the arms of an electric bridge is used as the pickup in the instrument described. The recording is made visually on the dial of a 100-μa М-24 (M-24) micro-ammeter. The standard of whiteness is white chalk paper, and the standard of absorbing surface is black velvet.

G.I.

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/011/023/061
A160/A101

AUTHOR: Shved, N. N.

TITLE: A flame photometer

PERIODICAL: Referativnyy zhurnal, Fizika, no. 11, 1962, 24, abstract 11G217 ("Tr. Leningr. san.-gigiyen. med. in-ta", 1961, 73, 48 - 50)

TEXT: A description is given of an instrument designed for diagnostic investigations in the flame of acetylene.

[Abstracter's note: Complete translation]

Card 1/1

18.8300,18.9200

77159
SOV/129-60-1-7/22

AUTHOR: Shved, S. A. (Engineer)

TITLE: Acid-Resistant Castings Nonsusceptible to Intercrystalline Corrosion

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, Nr 1, pp 20-24 (USSR)

ABSTRACT: Additions of chromium ferrite to austenitic acid-resistant steel without titanium were found to promote resistance to intercrystalline corrosion. The author explains this fact by the peculiarities of chromium and carbon migration along the α- and γ-phase boundaries. In cast steel, chromium ferrite (maximum 20 to 25%) is distributed at random, which distinguishes that type of steel from rolled steel. Minimum additions of 0.3% Ti produce hard, brittle dendritic inclusions along grain boundaries. Further additions increase brittleness. In quantities over 0.35 to 0.40%, Ti affects the plastic properties of 1Kh18N9T-steel adversely. The author investigated possibilities of finding a substitute for

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Acid-Resistant Castings Nonsusceptible to Intercrystalline Corrosion

77159
SOV/129-60-1-7/22

1Kh18N9T-steel (composition: C, 0.12%; Si, 0.8; Mn, 2.0; Cr, 17.0 to 20.0; Ni, 8.0 to 11.0; Ti, 5%) by testing 40 specimens with a low Ti content and 6 Kh18N4G4-steel (composition not given) specimens with regular Ti content. Sequence of tests: Specimens were cast into sand molds according to State Standards (GOST 977-53). Test billets (25 x 30 x 200 mm) were cut by electric arc method, hardened together with castings, planed and ground to specifications. The procedure was followed by A-2 State Standard (GOST 6032-51) tests (description of test not given) and results verified by 90° bending and tenfold magnification of the surface. Specimens with less than 0.15% Ti showed no tendency toward intercrystalline corrosion. The author found the presence of Ti to exert a decisive influence on the amount of the α-phase. In order to obtain 10 to 25% α-phase after hardening, which ensures a high degree of corrosion-resistance, the author recommends Kh20N8-steel of the following composition: C, 0.11%; Si, maximum 0.8%; Mn, 1 to 2%; Cr, 18.5 to

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21%; Ni, 7.5 to 9%; Ti, 0.12 to 0.20%. The steel has excellent casting properties and a high degree of soundness. Strength and plastic properties are superior to those of 1Kh18N9T-steel. Good casting and mechanical properties were also observed in Kh18N4Gn-steel. The author emphasizes that in quantities over 0.30% Ti causes the formation of nonmetallic inclusions; dendritic inclusions of titanium sulfides form along grain boundaries. There are 3 tables; and 4 Soviet references.

ASSOCIATION: Myshega Fitting Plant (Myshegskiy armaturnyy zavod)

SHVED, S.A., inzh.

Substructure of silicon electrical steel and method of revealing it. Stal' 21 no.12:1115-1117 D '61. (MIRA 14:12)

1. Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii.
(Steel--Metallography)

SHVED, S.A.

Metallographic method of revealing the substructure. Fiz. met. i metalloved. 13 no.2:225-232 F '62. (MIRA 15:3)

1. Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii.
(Steel--Metallography)

SHVED, T.L., kand.tekhn.nauk

Reciprocal motion of loci of instantaneous acceleration centers on a plane figure and stationary plane. Trudy OTIP i KHP 8 no.1:75-88 '57. (MIRA 12:8)

1. Kafedra matematiki Odesskogo tekhnologicheskogo instituta pishchevoy i kholodil'noy promyshlennosti.
(Motion) (Geometry, Plane)

05912
SOV/107-59-7-15/42

9(

AUTHOR: Shved, V. (Rozhishchenskiy rayon Volynskoy oblasti)

TITLE: In the Rozhishchenskiy Rayon They Do Not Cooperate With Radio Amateurs

PERIODICAL: Radio, 1959, Nr 7, p 16 (USSR)

ABSTRACT: There are only a few radio amateurs in the Rozhishchenskiy rayon, among them V. Krizhanovskiy, S. Kozel, V. Yatsenko, I. Kravchuk. The local DOSAAF Committee, Chairman Ivolga, does not show any interest in radio amateur activities. Radio amateur sections could be organized at different installations in this area, for example at the Zoovettekhnikum, but DOSAAF does not use existing possibilities. Radio parts are difficult to obtain, since the manager of Raypotrebsoyuz, Yakovlev, does not show any interest in procuring them.

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SHVED, V.I.; AFONIN, V.D.; BOLDINSKIY, Z.I.; YAKOVENKO, Ye.I., red.

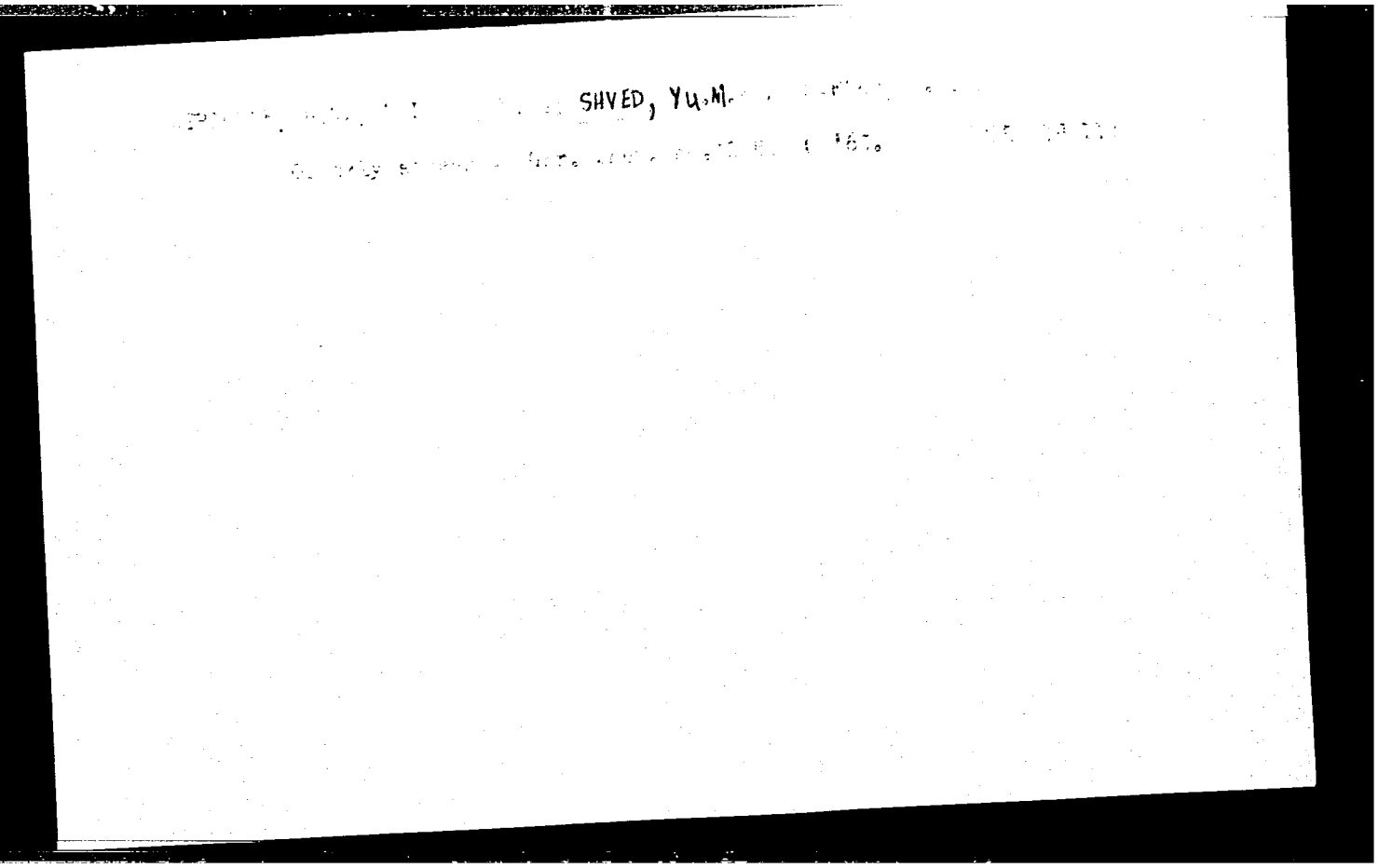
[Repair and testing of heavy electrical equipment at the Chirchik Electrochemical Combine] Remont i ispytanie krupnogo elektrooborudovaniia na Chirchikskom elektrokhimicheskom kombinate. Tashkent, Gosizdat UzSSR, 1962. 115 p. (MIRA 18:3)

SHVED, V.I.

Significance of para-strains in the active detection of subjects spreading dysentery bacelli. Zhur. mikrobiol. epid. i immun. 31 no.6:46-47 Je '60. (MIRA 13:8)
(SHIGELLA PARADYSENTERIAE) (ESCHERICHIA COLI)

SMOL'YANINOV, N.V.; [illegible], V.S.

Effect of the temperature of thermal processing of gas coals on the yield and composition of lower phenols. Izv. TPI 126:15-20 '64. (MIRA 18:7)



KIRICHUK, B.N., gornyy inzh.; SHVED, Yu.M., gornyy inzh.

Self-cleaning bar grizzlies. Gor. zhur. no.8:54-55 Ag '64.
(MIRA 17:10)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.

KALINICHENKO, V.F., kand.tekhn.nauk; KIRICHUK, B.N., inzh.; SHVED, Yu.M., inzh.

Automation of the crushing and sorting plant at the "Severnaya" Mine. Gor.zhur. no.12:46-48 D '64. (MIRA 18:1)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.