

KUKLIN, G.V.

Observations of lunar occultations of stars at the Irkutsk ~~Magnetic~~
Ionospheric Station. Astron. tsir. no. 215-32 0 '60. (MIRA 14:3)

1. Irkutskaya magnitno-ionosfernaya stantsiya.
(Occultations)

KUKLIN, G.V.; KHANZHIN, A.G.

Observations of lunar occultations of Venus in Daliny. Astron.
tsir. no.215:32-33 0 '60. (MIRA 14:3)
(Occultations)

KUKLIN, G.V.

Aurora borealis. Astron. tsir. no. 216:33 D '60. (MIRA 14:4)

1. SibIZMIR.

(Auroras)

S/035/62/000/005/046/098
A055/A101

AUTHOR: Kuklin, G. V.

TITLE: On the Wilson effect asymmetry

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 5, 1962, 50,
abstract 5A375 ("Solnechnyye dannyye", 1961, no. 3, 59 - 60)

TEXT: Starting from the assumption that the Wilson effect is caused by the inclination of the spot-axis towards the west with respect to the photosphere surface, the author calculates the ratio of probabilities of the observation of this effect on the western and the eastern limb. The results are in good agreement with the data on the frequencies of the emergence of the Wilson effect on the western and eastern limbs, published by W. Sandner for the period extending over the years 1925 to 1960. These frequencies are essentially different, which confirms the asymmetry of the effect. The results of the observations of the opposite effect show that both the direct, and the opposite effect can be explained also by the anomalous refraction in the atmosphere of the Sun over the spot.

T. Mandrykina

[Abstracter's note: Complete translation]

Card 1/1

S/035/61/000/012/029/043
A001/A101

AUTHOR: Kuklin, G.V.

TITLE: The contour of the Earth's umbra during the partial lunar eclipse on May 24, 1956

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 12, 1961, 74, abstract 12A610 ("Byul. Vses. astron.-geod. o-va", 1961, no. 29, 30 - 38)

TEXT: To obtain the contour of the umbra, the author made use of the observations by A.A. Kaverin, V.G. Pesenkov and V.G. Teyfel' in addition to his own. Processing of the data was performed by the S.M. Kozik method. The following information is given in the tables: the moments used, selenographical coordinates of the objects observed, corresponding to those moments, coordinates of the points of the umbra contour at contact moments, and the values of umbra radius r and position angle ψ . The umbra contour obtained was reduced to the plane $z=62,400$. The results of calculations, expressed in the form of differences Δz and Δr for each object, are also tabulated and presented graphically. Specific features of the contour obtained are discussed in detail. Some of these features

Card 1/2

The contour of the Earth's umbra ...

S/035/61/000/012/029/043
A001/A101

(e.g., correlation between Δz and Δr) disappear after a more rigorous analysis of the data. What remains are: a depression between $\psi = -25^\circ$ and $\psi = -40^\circ$ and a protrusion between $\psi = -40^\circ$ and $\psi = -65^\circ$ which have dimensions 0.0035, the average scatter of points being 0.0030. The author holds these features to be real and explains them by the presence in the upper layers of the Earth's atmosphere of a meteor dust cloud near the terminator. A fine structure of the umbra border is also noted, which arises apparently due to the presence at the umbra border of two boundaries: the line of maximum gradient and the line of diffuse transition of the umbra into its margin. There are 6 references.

I. Lebedeva

[Abstracter's note: Complete translation]

Card 2/2

KUKLIN, G.V.; TYAGUN, N.F.

Observations of lunar occultations of stars at the SibIZMIR.
Astron. tsir. no. 224:35-36 Ag '61. (MIRA 16:1)

1. SibIZMIR.

(Occultations)

KUKLIN, G.V.; TYAGUN, N.F.

Observations of lunar occultations of stars in Irkutsk.
Astron.tsir. no.221:13-14 Ap '61. (MIRA 14:11)

1. SibIZMIR. (Occultations)

KUKLIN, G.V.

Elements of some variable stars. Astron. tsir. no. 222; 25-26
My '61. (MIRA 15:4)

1. Sib IZMIR.

(Stars, Variable)

KUKLIN, G.V.

Interpretation of a peculiarity of the partial lunar eclipse of
May 24, 1956. Astron.tsir. no.223:7-8 J1 '61. (MIRA 15:3)

1. Sib IZMIR, Irkutsk.

(Eclipse, Lunar--1956)

KUKLIN, G.V.

Observations of lunar occultations of stars in SibIZMIR. Astron.
tsir. no.226:14-15 0 '61. (MIRA 16:1)

1. SibIZMIR.

(Occultations)

S/214/62/000/001/002/002
1023/1223

AUTHOR: Kuklin, G. V.
TITLE: High-latitude groups and active longitudes
PERIODICAL: Solnechnyye Dannyye, no. 1, 1962, 72-74

TEXT: The purpose of the present work is to find a correlation between the longitudinal distribution of high-altitude groups and the active longitudes. The investigation is based on the catalogue compiled by M. Kopetskiy (1958) and the bulletin "Solnechnyye Dannyye" (Solar Data) for the years 1954-60. In cycle no. 18 only 18 high latitude groups were observed, a number too small to reveal any correlation. During cycle no. 19, 41 groups were observed, 28 in the northern hemisphere and 13 in the southern. From the distribution of the Sun spots and excessive activity was found at 15° and 185° longitude in the southern hemisphere, and a clear peak at 100° and a slight rise around 330° in the northern hemisphere. Because of the small number of groups the choice of the size of longitude intervals can influence the result. Therefore intervals of 20°, 30° and 40° were taken. The calculated probabilities were checked by the chi-test and Kalmogorov's test. The tests show that the maxima of the longitudinal distribution of high latitude groups are not connected with the maxima of the longitudinal distribution of Sun spots. There are 3 figures and 1 table.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovolu Sibirskogo Otdeleniya Akademii nauk SSSR (Institute of Terrestrial Magnetism, Ionosphere and Radio-wave Propagation, Siberian Section, Academy of Sciences USSR)

Card 1/1

KUZ'MIN, A.I.; KUKLIN, G.V.; SERGEYEV, A.V.; SKRIPIN, G.V.; CHIRKOV, N.P.;
SHAFFER, G.V.

Flare-up of cosmic ray intensity on May 4, 1960. Trudy
IAFAN SSSR. Ser. fiz. no.4:132-137 '62. (MIRA 15:12)
(Cosmic rays)

KUKLIN, G.V.

Elements of some variable stars. Astron. tsir. no.228:25-26
Ap '62. (MIRA 1686)

1. SibIZMIR.

(Stars, Variable)

KUKLIN, G.V.; TYAGUN, N.F.

Observations of lunar occultations of stars in Irkutsk.
Astron. tsir. no.229:35 Je '62. (MIRA 16:6)

1. SibIZMIR Sibirskogo otdeleniya AN SSSR.
(Occultations)

KUKLIN, G.V.; TYAGUN, N.F.

Observations of lunar occultations of stars in Irkutsk. Astron. tsir.
no.231:26-27 N '64. (MIRA 16:4)

1. SIBIZMIR.

(Occultations)

ACCESSION NR: AP4007513

S/0214/63/000/001/0055/0067

AUTHOR: Kuklin, G. V.; Stepanov, V. Ya.

TITLE: Motion of gas and magnetic field in a sunspot

SOURCE: Solnechny*ye danny*ye, no. 1, 1963, 55-67

TOPIC TAGS: gas velocity field, magnetic field, magnetic field configuration, sunspot, penumbra, umbra, effective mass rotation, rotation templet, magnetic force line, sunspot photograph, chromosphere, spectral line, magnetic force tube

ABSTRACT: The rotational motion of gas masses in a large sunspot was studied by means of several maps drawn each day, with time intervals of 30 min to 1.5 hr. Radial velocities of gas motion changed from day to day. The effective rotation of gas was computed from mean radial velocities for the umbra, the penumbra, and the whole spot. The rotation is clockwise, with a mean velocity of 179 ± 48 m/sec for the whole spot. The angular velocity of gas rotation in the umbra is twice that in the penumbra. The direction of rotation of gas masses in the spot coincides with twists in the magnetic force lines. The

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ACCESSION NR: AP4007513

vertical motion of gas is unstable, with rapid changes of direction. The mean lifting velocity is -150 m/sec and the sinking velocity, +120 m/sec. The spiral structure of the penumbra is surprisingly similar to the spiral form of magnetic force lines. Kuklin and Stepanov conclude that streams of gas flowing from a sunspot follow along magnetic force lines, pass through the photospheric layer, and go into the chromosphere. Orig. art. has: 8 figures and 3 tables.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery* i rasprostraneniya radiovoln Sibirskogo otdeleniya AN SSSR (Institute of Terrestrial Magnetism, Ionosphere, and Propagation of Radio Waves, Siberian Department, AN SSSR

SUBMITTED: 00

DATE ACQ: 21Jan64

ENCL: 00

SUB CODE: AS

NO REF SOV: 006

OTHER: 011

Card 2/2

ACCESSION NR: AP4007531

S/0214/63/000/002/0043/0050

AUTHOR: Kuklin, G. V.; Stepanov, V. S.

TITLE: Motion of gas and magnetic field in a sunspot

SOURCE: Solnechny*ye danny*ye, no. 2, 1963, 43-50

TOPIC TAGS: sunspot, velocity vector, magnetic force line, solar surface curvature, sunspot radius, penumbra, photosphere

ABSTRACT: Four kinds of motion vectors in a sunspot are studied: v_1 , the rotation velocity about the spot axis; v_2 , the velocity of the vertical motion of gas masses; v_3 , the velocity of horizontal dilatation; and v_4 , the velocity of the jet outflow of gas masses. The functional correlation between the observed radial velocities and the four vectors is given by a formula which is applied to the determination of vectors under certain assumptions about the magnetic field and the shape of the spot. The magnetic field is assumed to be totally connected with the gas, and the spot is assumed to be radially symmetric. The results obtained for radial velocities at different r values are represented graphically in order to find the

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ACCESSION NR: AP4007531

vector dependence upon the radial velocity. The velocity vectors were determined by a special templet. These preliminary investigations detected the rotational motion of the magnetic field, the dilatation of the magnetic field, and the vertical motion of gas masses and their outflow from the spot penumbra. The angular velocity of the magnetic field rotation is different in various parts of the spot: The period of rotation at the border of the whole spot is 3.7 days, and at the border of the umbra it is 1.3 days. Orig. art. has: 6 figures and 5 formulas.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery* i rasprostraneniya radiovoln Sibirskogo otdeleniya AN SSSR (Institute of Terrestrial Magnetism, Ionosphere, and Propagation of Radio Waves, Siberian Department, AN SSSR)

SUBMITTED: 00

DATE ACQ: 21Jan64

ENCL: 00

SUB CODE: AS

NO REF SOV: 002

OTHER: 001

Cord 2/2

KUKLIN, G.V.

Precision in the determination of the shape of the earth's shadow during lunar eclipses. Biul. VAGO no.33:27-32 '63.
(MIRA 16:4)

1. Irkutskoye otdeleniye Vsesoyuznogo astronomo-geodezicheskogo obshchestva.

(Eclipses, Lunar)

LUZOV, A.A.; KUKLIN, G.V.

Directional diagram of an azimuthal telescope. *Gismag. i aer.* 3
no.6:1094-1107 N-D '63. (MIRA 16:12)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya
radiovoln Sibirskogo otdeleniya AN SSSR.

KUKLIN, G.V.; LUZOV, A.A.

Existence of a semidiurnal variation of cosmic ray intensity
in a disturbed period. Geomag. i aer. 4 no.1:171-174. Jan'64.
(MIRA 17:2)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya
radiovoln Sibirskogo otdeleniya AN SSSR.

U 4199-65 EWT 11 107
CLASSIFICATION NR: APN000515

Classification of the document

24
22
8

NOTE: Some problems in the mathematical treatment of geophysical data

REF: Geomagnetizm i aeronomiya, v. 4, no. 2, 1964, 99-1001

INDEX TAGS: signal noise ratio, geophysical data processing

ABSTRACT: The special characteristics of methods used for the mathematical treat-
ment of data consisting of signals and noise are studied.

The applicability is given and new methods of determining certain
quantitative characteristics of observed phenomena are proposed. The transforming
of mathematical operations (linear and nonlinear) and the theory of
filters (linear and nonlinear) are studied. The use of linear and nonlinear number filters to
extract signals from noise is discussed. The properties of linear and nonlinear
number filters are studied. The properties of linear and nonlinear number filters
in terms of the mean square error are studied. The properties of linear and nonlinear
number filters are studied. The properties of linear and nonlinear number filters
of short duration when there are few data (about 10 items). Analysis

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2

is made of the "curved sum"

$$f(t) = \int_0^t f(t) dt.$$

where it is required that $f(t)$ be steady and contain no secular variations. This method was used to analyze the cosmic-ray burst of May 4, 1960. "The authors thank M. L. Platonov for his valuable advice." Orig. art. has: 3 figures and 42 formulas.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestrial Magnetism, the Ionosphere and Radiowave Propagation, AN SSSR)

SUBMITTED: 25Apr64

ENCL: 00

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NO REF SOV: 017

OTHER: 004

Card 2/2

AP5005186

amplitude and phase characteristics of the diurnal variations of the

after the introduction of temperature corrections into the two-hour
intensity values. The analysis of the amplitude and phase characteristics of the
diurnal wave in the cosmic ray neutron component for the storm of 21 October 1957

illustration. For example, a comparison of curves of the latitude

of these changes. This fact and the average of the

of the difference in the diurnal curves is

leading to an isotropic component. The anisotropy discovered by use of the mentioned method clearly

computations of the corrected numerical

ACCESSION NR: AP5005186

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln
SO AN SSSR (Institute of terrestrial magnetism, the ionosphere and radio wave pro-
pagation, Siberian division, AN SSSR)

May 6

AA

NO REF SOV: 006

OTHER: 004

Card 3/3

KUKLIN, G.V.; LUZOV, A.A.

Dynamical frequency spectra of short-period variations in
cosmic ray intensity. Geomag. i aer. 5 no.3:384-391 My-Je
'65. (MIRA 18:5)

1. Institut zemnogo magnetizma ionosfery i rasprostraneniya
radiovoln Sibirskogo otdeleniya AN SSSR.

APPROVED FOR RELEASE: 08/23/2000
PROCESSION NR: AP5014100 Feb/P1-4 GW UR/0203/65/005/003/0392/0400

... A. A.; Kuklin, G. V.; Pezhemakty, A. V.

... of ... intensity ... selected

... aeron-miya, v. 5, no. 3, 1964, p. 127

... cosmic ray intensity, Fourier series, harmonic analysis, filter method,

... extract-

... position of diurnal variations. A filter method was used, consisting of the sepa-
... frequencies of the diurnal variation investigated. Filter characteristics
... by the filter.

L 53765-65

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OTHER

L 45766-66

ACC NR:

AP6026461

SOURCE CODE: CZ/0092/66/017/002/0045/0057

66
65
B

AUTHOR: Kopecky, M.; Kuklin, G. V.

ORG: Astronomical Institute of the Czechoslovak Academy of Sciences, Ondrejov

TITLE: The decay time of sunspot magnetic fields

SOURCE: CSAV. Byul astron inst Chekhoslov, v. 17, no. 2, 1966, 45-57

TOPIC TAGS: sunspot, solar plasma, electric conductivity, hydrogen ion, sunspot magnetic field, plasma decay

ABSTRACT: On the basis of previous works, the authors compare the lifetime of observed sunspots and the theoretically estimated plasma decay time of sunspot magnetic fields, assuming that the dissipation is that of Joule. They discuss the different types of formulas used to calculate the electrical conductivity of solar plasma. The values of the electrical conductivity, the anisotropy coefficients, and the decay time are calculated for some sunspot models of different areas. The authors show that the influence of negative hydrogen ions H^- and positive hydrogen

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L 45366-66

ACC NR: AP6026461

ions may be disregarded. The authors also consider the determination of the magnetic field dissipation time and show that calculations lead to a decay time longer than that obtained by Schroter in another work [Schroter, E. H., 1964, Reprint from "Convegno sulle Macchie Solari," Firenze] and discuss some possible causes of these discrepancies. The "effective" optical depth corresponding to the observed decay time is estimated for some sunspot models. The discussion of the results without considering the fine structure of the sunspot, shows that the conception of the gasokinetic electrical conductivity in hydrodynamic approximation may not be applicable in the case of sunspots. It is stated in conclusion that the solution of the problem of magnetic field dissipation given in the article is incomplete. The authors are greatly indebted to Dr. V. Bumba for a number of useful discussions. One of the authors (G. V. Kuklin) is grateful to the Czechoslovakia Academy of Sciences and to the staff of the Astronomical Institute for the opportunity to work on this problem. Orig. art. has: 2 figures, 24 formulas, and 8 tables.

[GC]

SUB CODE: 20/ SUBM DATE: 28Jul65/ ORIG REF: 002/ SOV REF: 008/
OTH REF: 020/

Card 2/2 *AMN*

L 45365-66

ACC NR: AP6026462

SOURCE CODE: CZ/0092/66/017/002/0057/0064

16
B

AUTHOR: Bumba, V. ; Kopecky, M. ; Kuklin, G. V.

ORG: [Bumba, Kopecky, Kuklin] The Astronomical Institute of the Czechoslovak Academy of Sciences, Ondrejov. [Kuklin] the Siberian Institute of Terrestrial Magnetism, Ionosphere, and Radiowave Propagation, Academy of Sciences, Irkutsk, SSSR

TITLE: Some aspects of a theoretical study of sunspots ^{1/2}

SOURCE: CSAV. Byul astron inst Chekhoslov, v. 17, no. 2, 1966, 57-64

TOPIC TAGS: sunspot, umbra, penumbra, sunspot magnetic field, photosphere, sunspot velocity field, intergranular space

ABSTRACT: The authors discuss some theoretical aspects of the dynamics of evolution of basic elements in the fine structure of sunspots at various stages of their evolution and organization. They also discuss their relation to the magnetic field structure. The close relation of "pores" to intergranular space is emphasized, and it is shown that sunspots are organized systems of structural and field elements.

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ACC NR: AP6026462

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The authors also discuss the relation of penumbral structures to the structure of the photosphere, the part played by the magnetic field configuration, and the consequences of the above observations for theoretical considerations. Some criteria and estimates of the applicability of the equation for changes of the magnetic field in sunspots are discussed. The role of fine structure in dissipation and the turbulent electroconductivity used by Rubasev in another work [Rubasev, B. M., 1958, Izv. Pulkovo XXI., vyp. 3, No. 162, p. 39] are mentioned. The authors conclude that more detailed information is needed on all stages of the development of photospheric features of regular sunspots, for which detailed spectrographic observations of magnetic and velocity fields are not available. More information is also needed on dark nuclei and bright points in umbra. More attention should also be given to problems of the stability of magnetic fields' configurations and organization as influenced by material motion. One of the authors (S. V. K.) would like to thank the Astronomical Institute of the Czechoslovak Academy of Sciences for making his stay at Ondrejov Observatory possible. Orig. art. has: 14 formulas, and 4 tables. [GC]

SUB CODE: 03, 20/ SUBM DATE: 08Oct65/ ORIG REF: 008/ SOV REF: 003/
OTH REF: 017/

Card 2/2 *awm*

KUKLIN, I.S., kand. tekhn. nauk.

Relation between longwall length and labor productivity.

Izv. vys. ucheb. zav.; gor. zhur. no.8:11-15 '58.

(MIRA 12:5)

I.Sverdlovskiy gornyy institut.

(Coal mines and mining--Labor productivity)

KUKLIN, I.S.

Effect of longwall length on the labor productivity of underground miners. Trudy Gor.-geol. inst. UFAH SSSR no.31:31-43 '58.

(MIRA 12:9)

(Coal mines and mining--Labor productivity)

KUKLIN, I.S., kand.tekhn.nauk

Efficient length of longwalls for flat and inclined seams in
Kizel Basin. Izv.vys.ucheb.zav.; gor.zhur. no.3:36-42 '58.
(MIRA 12:8)

1. Sverdlovskiy gornyy institut.
(Kizel Basin--Coal mines and mining)

KUKLIN, I.S., kand.tekhn.nauk; KULIKOV, G.S., inzh.

Main drawbacks in the use of the variation method for solving problems of baring coal deposits. Izv.vys.ucheb.zav.; gor. zhur. no.10:13-19 '58. (MIRA 12:8)

1. Sverdlovskiy gornyy institut.
(Coal mines and mining)

KUKLIN, I.S., kand. tekhn. nauk

Economic evaluation of losses of coal in mines. Izv. vys. ucheb.
zav.; gor. zhur. no.11:41-45 1959. (MIRA 14:5)

1. Ural'skiy filial Akademii nauk.
(Mine valuation)
(Coal mines and mining)

KUKLIN, I.S.

Efficient length of longwalls in steeply pitching seams of the
Kizel Basin. Trudy Gor.-geol.inst.UFAN SSSR no.41:99-104
'59. (MIRA 13:5)
(Kizel Basin--Coal mines and mining)

KUKLIN, I.S., kand.tekhn.nauk

Response to A.L. Malets's article "Characteristics of the relationship between the length of the face and the worker's labor productivity." Ugol' 36 no.10:48 O '61. (MIRA 14:12)
(Coal mines and mining--Labor productivity)
(Malets, A.L.)

KUKLIN, I.S.

Some problems in scientific studies in the field of hydraulic rock
breaking. Trudy Inst. gor. dela UFAN SSSR no.3:3-7 '62. (MIRA 16:3)
(Hydraulic mining) (Rocks—Testing)

KHRUSHCHEV, G.N.; KUKLIN, I.S.

Study of the efficiency of the hydraulic breaking of hard coals under
laboratory conditions. Trudy Inst. gor. dela. UFAN SSSR no.3:9-18
'62. (MIRA 16:3)

(Hydraulic mining)

(Coal--Testing)

SIDOROV, I.N.; KUKLIN, I.S.; KHRUSHCHEV, G.N.; SHTUKATUROV, K.M.; ROZOV,
B.V.; BUDKOV, V.Ye.; VANYUSHIN, N.M.; GICHKO, V.A.; SUMIN, A.A.

Hydraulic breaking of hards in the Kizel Basin coal mines. Ugol'
37 no.3:16-18 Mr '62. (MIRA 15:2)

1. Gornogeologicheskiy institut Ural'skogo filiala AN SSSR (for
Sidorov, Kuklin, Khurshchev, Shtukaturov). 2. Kombinat Kizelugol'
(for Rozov, Budkov, Vanyushin, Gichko, Sumin).
(Kizel Basin -Hydraulic mining)

KHRUSHCHEV, G.N.; KUKLIN, I.S.; SIDOROV, I.N.

Study of the hydraulic breaking of coal in a stope and the parameters
of the mining system for a steep seam. Trudy Inst. gor. dela UFAN SSSR
no.3:29-38 '62. (MIFA 16:3)

(Kizel Basin--Hydraulic mining)

FEDOROVA, G.G.; KUKLIN, I.S.; KHRUSHCHEV, G.N.

Effect of some physicochemical factors on the breaking of coal in a
laboratory experiment. Trudy Inst. gor. dela UFAN SSSR no.3:45-47
'62. (MIRA 16:3)

(Coal—Testing)

MUKLIN, I.S.; OSKOLKOV, Yu.N.; PADUCHEVA, A.V.

Experiments of the eroding-away of arenaceous-argillaceous specimens
with two interacting jets. Trudy Inst. gor. dela UFAN SSSR no.3:49-51
462. (MIRA 16:3)

(Hydraulic mining)

(Jets)

KUKLIN, I.S.

Basic problems in the engineering theory of a hydraulic giant jet.
Trudy Inst. gor. dela UFAN SSSR no.3:53-61 '62. (MIRA 46:3)
(Hydraulic mining--Equipment and supplies) (Jets)

KUKLIN, I.S.; SHTUKATUROV, K.M.

Recent developments in methods of studying the structure of hydraulic
giant jets. Trudy Inst. gor. dela UFAN SSSR no.3:63-69 '62. (MIRA 16:3)

(Hydraulic mining--Equipment and supplies) (Jets)

SHTUKATUROV, K.M.; KUKLIN, I.S.

Basic parameters and breaking capacity of a jet. Trudy Inst. gor. dela
UFAN SSR no.3:71-81 '62. (MIRA 16:3)
(Hydraulic mining—Equipment and supplies) (Jets—Fluid dynamics)

KUKLIN, I.S.; KULIKOV, G.S.; PADUCHEVA, A.V.

Pressure of a hydraulic giant jet on a flat wall. Trudy Inst. gor. dela
(MIRA 16:3)
UFAN SSSR no.3:87-90 '62.
(Hydraulic mining--Equipment and supplies) (Jets--Fluid dynamics)

KUKLIN, I.S.

Proposal on terminology in the field of hydraulic rock breaking. Trudy Inst.
gor. dela UFAN SSSR no. 3191-93 '62. (MIRA 16:3)
(Hydraulic mining—Terminology)

KUKLIN, L. G.

KUKLIN, L. G.: "The dependence of the condition of the surface layer and the wear resistance of steel parts on cutting conditions." Sverdlovsk, 1955. Min Higher Education USSR. Ural Polytechnic Inst imeni S. M. Kirov. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis' No: 47, 19 November 1955. Moscow.

KUKLIN, L.G.; PERFIL'YEV, G.I.

Method for measuring residual stresses in the surface layer of
parts formed by milling. Zav.lab.22 no.11:1350-1352 '56.
(MLRA 10:2)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.
(Strains and stresses) (Metals--Testing)

KUKLIN, L.G., kandidat tekhnicheskikh nauk.

Temperature of workpiece surface layers during grinding.

Trudy Ural.politekh.inst. no.63:70-81 '56.

(MIRA 10:2)

(Grinding and polishing) (Thermometry)

KURLIN L.G.

3

PHASE I BOOK EXPLOITATION

882

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sverdlovskoye otdeleniye

Povysheniye kachestva i ekonomichnosti mashin (Increasing the Quality and Efficiency of Machinery) Moscow, Mashgiz, 1957. 626 p. 5,000 copies printed.

Additional Sponsoring Agency: Ural'skiy dom tekhniki.

Eds.: Pal'mov, Ye. V., Doctor of Technical Sciences, Sokolovskiy, V. I., Candidate of Technical Sciences; Reviewers: Bogachev, I. N., Doctor of Technical Sciences, Gorshkov, A. A., Doctor of Technical Sciences, Zhukov, P. A., Candidate of Economic Sciences; Tech. Ed.: Sarafannikova, G. A.; Managing Ed. (Ural-Siberian Division of Mashgiz): Sustavov, M. I., Engineer.

PURPOSE: The book is intended for engineering and technical personnel.

COVERAGE: The book generalizes and synthesizes experience accumulated by the Ural plants and to some extent that of the Siberian plants in improving the technical and economic features of manufactured machines and in improving their quality. Data are also presented on attempts to lower the cost and to increase the quality of machines during the designing and production stages. The author

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Increasing the Quality (Cont.)

882

describes the shortening of the production cycle, reducing weight and dimensions along with improvement of operational qualities, increase in durability, and finally improvements in the external appearance of machines. There are 98 references of which 95 are Soviet, 2 German, and 1 English.

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AVAILABLE: Library of Congress

Card 15/15

JG/flc
12-15-58

KUKLIN, L.G.

122-3-18/30

AUTHOR: Kuklin, L.G., Candidate of Technical Sciences.

TITLE: Test Procedure for the Temperature Measurement in the Surface Layer of a Component during Turning (Metodika izmereniya temperatury poverkhnostnogo sloya detali pri tochenii)

PERIODICAL: Vestnik Mashinostroyeniya, 1957, No.3, pp. 46 - 48 (USSR).

ABSTRACT: The temperature field in cutting has not been given due consideration owing to absence of accurate measurements. Previous apparatus (including Schmidt, A.O. Workpiece and Surface Temperatures in Milling. "Transactions of the ASME", Vol.7, no.5, 1953) is inadequate owing to inertia and insufficient localisation. The new methods consist of producing a semi-artificial thermocouple between the machined metal and a constantan wire. For this purpose, the constantan wire is led through the hollow centre of a mandrel and through a radial hole and clamped between two rings mounted on the mandrel separated by two mica washers of 0.2 mm thickness. The wire continues radially between the mica washers to the periphery of the rings which constitutes the experimental machining surface. Microscopic examination has shown that the real contact is so positioned as to yield the average momentary temperature value of a layer 0.03 - 0.04 mm below the surface.

122-3-18/30

Test Procedure for the Temperature Measurement in the Surface Layer of a Component during Turning.

The thermocouple current was recorded without any amplifier by an electro-magnetic oscillograph vibrator unit. Investigations have shown that the time constant of heating up at a cutting speed of 300 m/min is below 0.004 sec. The calibration of the measuring circuit and of the thermocouples was carried out in an electric furnace by a thermocouple consisting of constantans and a chip from the machined metal. The records show that the plastic deformation wave advances ahead of the cutter by 5 to 6 mm. To measure the temperature at various depths below the surface, the constantan wire is led towards the surface in an oblique channel so that the actual thermocouple can be placed at various depths below the surface. A family of curves of temperature versus depth is shown in graphs. There are 5 figures including 1 photograph and 1 graph, and 3 references, 2 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2

ROZIN, Aleksandr Iosifovich; FEDOROV, V.N., inzh., retsenzent; KLIMOV, V.I., inzh., retsenzent; KUKLIN, L.G., kand.tekhn.nauk; retsenzent; RABOTIN, A.N., inzh., retsenzent; SHABASHOV, S.P., kand.tekhn.nauk, retsenzent; UVAROVA, A.F., tekhn.red.; DUGINA, N.A., tekhn.red.

[Operator of machines for manufacturing metal-cutting tools]
Slesar' - instrumental'shchik. Izd.2., perer. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 247 p.

(MIRA 13:2)

(Machine-shop practice)

KUKLIN, L.G.

Effect of stresses on the wear of hard alloys. Stan.1 instr. 30 no.3:30
Mr '59. (MIRA 12:3)

(Mechanical wear)

PHASE I BOOK EXPLOITATION

SOV/4517

Kuklin, Leonid Grigor'yevich, Vasilii Ivanovich Sagalov, Valeriy Borisovich Serebrovskiy, and Semen Pavlovich Shabashov, Candidate of Technical Sciences

Povysheniye prochnosti i iznosostoykosti tverdosplavnogo instrumenta (Increasing Strength and Wear Resistance of Carbide Tools) Moscow, Mashgiz, 1960. 182 p. 6,000 copies printed.

Ed.: Semen Pavlovich Shabashov, Candidate of Technical Sciences; Reviewer: F. A. Barbashov, Docent, Candidate of Technical Sciences; Managing Ed. (Ural-Siberian Department, Mashgiz): L. A. Kon'shina, Engineer; Tech. Ed.: N. A. Dugina.

PURPOSE: This book is intended for technical personnel at machine-building plants, scientific workers, and students at schools of higher technical education.

COVERAGE: The book is devoted to the problem of increasing the strength and wear resistance of carbide-tipped tools. The authors discuss the theoretical bases for brittle fracture and excessive wear of carbide-tipped tools occurring during

Card 1/7

Increasing Strength and Wear (Cont.)

SOV/4517

the fabrication and operation of tools. The results of experimental research in this area are examined. The book contains information on the properties of carbide tips at delivery, the brazing of tips, and the sharpening of tools. The authors analyze the internal stresses occurring in carbide-alloy tips during brazing and grinding, and make recommendations for improving brazing and grinding techniques. Also discussed are investigations for determining cutting capacity when cutting coarse chips under conditions of intermittent, non-uniform loading. Recommendations are made for the efficient use of carbide-tipped tools under such conditions. L. K. Zotova, A. S. Cherepanov, and students Cheng Hua-an, T'ien Ho-ch'un, and Cheng Kuai-k'uei participated in the investigations. There are 29 references: 28 Soviet, and 1 German.

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14000

S/121/61/000/004/006/008
D040/D113

AUTHOR: Kuklin, L.G.

TITLE: Fatigue resistance of T5K10 alloy

PERIODICAL: Stanki i instrument, no. 4, 1961, 30

TEXT: The fatigue resistance of cutting tools tipped with T5K10 (T5K10) alloy was tested using a machine with hydraulic drive and a load frequency of 50 cycles per second. The study was conducted since 50 to 60% of carbide tools were breaking in operation, particularly in operation with frequent impact loads such as planing, milling, or turning workpieces with uneven machining allowance. The results are shown in a graph with three curves (Fig.). The state of the test specimens' surface and the surface machining method obviously had a high effect on the fatigue resistance - specimens finished by lapping had the highest resistance, namely 75 kg-f/mm²; specimens with untreated surface had lower resistance, namely 55 kg-f/mm²; and specimens subjected to grinding had the lowest resistance of all - 37.5 kg-f/mm². The fatigue limit was considerably below the ultimate

Card 1/3

Fatigue resistance of T5K10 alloy

S/121/61/000/004/006/008
D040/D113

strength as determined in static tests. It is stated that it is wrong to use the conventional ultimate strength value in calculations of tools that have to work under cyclic impact load. It is suggested to calculate the total number of load cycles expected for tools as the product of n load applications per minute (rpm of milling cutter, or double travel number per minute of the planing cutter) for the total work life of the tool TK (where T is the durability, and K-the number of sharpenings). The following conclusions are drawn: (1) The frequent breakage of carbide tipped tools in milling and planing under normal operational conditions is caused by the low fatigue resistance limit of carbide tips. (2) The cutting edges must be ground and lapped more carefully. (3) The producer plants ought to include the fatigue limit in the characteristics of the carbides. Carbide grades with higher fatigue resistance must be developed. There is 1 figure. [Abstracter's note: An editorial note to the article points out that the reduction in the strength of specimens by grinding is not a regular phenomenon.].

X

Card 2/3

S/123/62/000/003/016/018
A004/A101

AUTHORS: Shabashov, S. P., Kuklin, L. G.

TITLE: The efficiency of new cooling methods in metal cutting

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1962, 67, abstract
3B387 ("Tr. Ural'skogo politekhn. in-ta", 1961, v. 112, 81-88)

TEXT: The authors analyze the effect of new cooling methods on the tool life, surface roughness and microhardness of the surface layer of the part being machined. During the investigations, cooling was effected by an atomized jet by feeding compressed air at a pressure of 4 - 5 atm and by the jet-pressure method at a pressure of 15 - 20 atm. The authors investigated the wear of the sintered carbide grades BK8 (VK8), T5K10 and T15K6 during the machining of the steel grades 38XГН (38KhGN), 9H481 (EI481) and Г13Л (G13L). The temperature of the tool back surface was measured with a semi-artificial constantan - tool sintered carbide thermocouple. The H-10 (N-10) four-loop magnetoelectric oscillograph was used as recording device. It was found that using the new cooling methods, the tool life increased on the average by a factor of 2.5 - 3.5, which made it possible to increase the cutting speed by a factor of 1.5. The maximum effect

Card 1/2

S/123/62/000/003/016/018
A004/A101

The efficiency of new cooling methods ...

was obtained during the cutting with the VK8 sintered carbide. Jet-pressure cooling is the most efficient, but it requires a dependable protection from spattering. Cooling by an atomized jet can be used in all operations of mechanical working. As cutting fluid the authors recommend an aqueous emulsion containing 10% emulsol and 2% sulfofrezol. The surface layer quality of the part being machined is improved as a result of strengthening and the creation of residual stresses. There are 7 figures and 1 table.

L. Bozin ✓

[Abstracter's note: Complete translation]

Card 2/2

KUKLIN, L.G., kand.tekhn.nauk, dotsent

Fatigue test of a hard alloy. Izv.vys.ucheb.zav.; mashinostr.
no.7:66-71 '63. (MIRA 16:11)

1. Ural'skiy politekhnicheskiy institut.

ИЗВЕСТИЯ АКАДЕМИИ НАУК СССР ТЕХНИЧЕСКОГО НАУЧНОГО КОМПЛЕКСА

ИДЕНТИФИКАЦИОННЫЙ НОМЕР: АР-041632

С/0205 04/001004/0010/0010

ИЗДАНИЕ: Ref. zh. Tekhnologiya mashinostroyeniya Sredny'y tom. Abs. 4850

АВТОР: Ауклин, Л. Г.

ТЕМА: Influence of quality of surface layer on longevity of roller bearings

ИСТОЧНИК: Tr. Ural'skogo politekhn. in-ta, sb. 129, 1963, 15-26

ТЕМАТИКА: roller bearing, surface layer 4

TRANSLATION: Results are given of investigation at State Bearing Factory No. 6 of possibilities of increasing the longevity of spherical bearings with barrel-shaped rollers by improving the quality of surface layer of the working surfaces of rollers and rings, treated by different methods of finishing. Investigations were conducted with help of a specially developed hydraulic pulsing apparatus which simulated the work and loading of roller or separate sections of rings during their work. Tests were produced at $P_{max} = 400$ and $P_{min} = 50$ kilograms. It was established that the roughness of surface layer R_{max} cleanliness R_{min} increased time of work of bearings. Together with the results of the investigation the following conclusions are made:

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ACCESSION NR: AR4041632

600X magnification a detailed investigation of microroughness of surfaces treated
by this method was conducted. It was determined that the quality of

conclusions. 1. In process of fulfillment of final operations
polishing of rollers and superfinish of track of rollers, it is
necessary to introduce a selective layer of metal.

in order to correct of rings it is necessary to introduce
a necessary correction of polishing circles after treatment of definite
circles. This significantly lowers number of microcracks in surface
and increases of surface.

SUB CODE: LE, MN

INCL: 00

Card 2/2

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

DISCUSSION NR: AT5004653

S/2694/63/000/129/0015/0025 45
42
1 0/1

AUTHOR: Kuklin, L. G.

TITLE: The effect of surface layer quality on the life of roller bearings

SOURCE: Sverdlovsk. Ural'skiy politekhnicheskiy institut Trudy, no. 129, "Izvestiya i kachestvo poverkhnosti pri mekhanicheskoy obrabotke" (Quality and surface quality in machining), 15-25

KEY TAGS: steel ball bearing, precision finishing, hydrolytic method, surface treatment

ABSTRACT: An investigation was made of the possibilities for increasing the life of roller bearings by improving the quality of the roller and race surface layers. The investigation was conducted at State Bearing Plant No 6 which specializes in the production of spherical radial bearings with barrel shaped rollers. Fatigue tests were made under conditions close to operating conditions. Parts finished by various methods were tested under cyclic compression. A special hydraulic pulse simulation was designed and built for the testing. This device imitates

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L 39296-65

ACCESSION NR: AT5004653

3

the rolling and loading of rollers and ring sections during their normal operation. The installation loads the parts being tested 50 times per second. The tests were made at $P_{max} = 400$ kg and $P_{min} = 50$ kg. It is found that grinding and final operation in finishing the rollers is essential for the quality of the surface. A defective layer 0.015-0.02 mm thick is formed during the rolling. This layer must be removed in the final operation. A low quality surface layer is removed when the rollers are matte polished and the races are polished. Bright polishing of the rollers and superfinishing of the races improves the quality of the surface.

... roller races after finishing a definite number of parts. An improvement in the finish of the working surfaces to R_{10} increases the work life of the bearings by 33%. Existing technology is not accurate enough to guarantee perfect contact between the roller and the race. ... mm wide is all that takes part...

NOTE: none

L 44595-66

EWI(d)/EWI(m)/EWP(c)/EWP(k)/EWP(h)/T/EWP(v)/EWP(t)/EWP(l)/ETI IJP(c)

ACC NR: AR6010654

WW/DJ/JD

SOURCE CODE: UR/0276/65/000/010/B176/B177

AUTHOR: Studenskiy, Ye. I.; Kuklin, L. G.

46
443

TITLE: Finding and studying a method for finishing the working surfaces of components in convex roller bearings 17

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 10B1187

REF SOURCE: Tr. Seminara po vopr. progressivn. metodov shlifov. i dovodki detaley, obespech. vysok. i stabil'n. tochnost' i dolgovechn. podshipnikov kacheniya. M., 1964, 151-157

TOPIC TAGS: metal finishing, metal polishing, roller bearing, bearing race

ABSTRACT: Research conducted to find a method for finishing convex rollers to a given surface finish showed that E5 and E6 abrasive belts (glass cloth) should be used for polishing a roller surface ground to an eighth class finish. These belts give a surface finish of the tenth, eleventh and sometimes twelfth class. The working side of the abrasive cloth is soaked with a special compound during polishing (spindle oil, oleic acid and kerosene). The results of the research work were used as the basis for making an experimental model of an automatic machine for polishing rollers. Three methods are recommended for finishing the races of internal rings for roller bearings: grinding on the GEM-28B graphite wheel, superfinishing and polishing with abrasive

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UDC: 621.923:621.822.001.5

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ACC NR: AR6010654

cloth. These methods give a tenth class surface finish with abrasive cloth giving the highest polishing productivity. A diagram is given of a special machine tool for this operation. It is shown that the average service life for bearings with rings finished by the described method is 771 hours as against 216-230 hours for presently used techniques. 8 illustrations, bibliography of 4 titles. L. Tikhonova. [Translation of abstract]

SUB CODE: 13

hs

Card 2/2

KUKLIN, L.P., inzh.

Bucket pump dredges for extracting sand and gravel. Stroi.
mat. 6 no.4:27-29 Ap '60. (MIRA 13:6)
(Dredging machinery) (Sand and gravel plants)

KUKLIN, M.A.

Roentgenkymography of the heart in pulmonary tuberculosis.
Vrach.delo no.2:201-203 F '60. (MIRA 13:6)

1. Sed'moy protivotuberkuleznyy dispanser g. Khar'kova.
(HEART--RADIOGRAPHY) (TUBERCULOSIS)

21639

18.8100 1138, 1160, 1418, 1413

.S/137/61/000/003/056/069
A006/A101

AUTHOR: Kuklin, M. M.

TITLE: The effect of suppressing induced thermo emf of metals by deformation of reverse sign

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1961, 29, abstract 3Zh186 ("Uch. zap. Chelyab. gos. ped. in-t", v. 5, no. 1, 1958, 67-81)

TEXT: Investigations were made with U-shaped Cu, Ag, Al and Ni wire specimens. The induced thermo emf was measured with the aid of a mirror galvanometer. Annealed specimens were differently deformed on a special twisting machine at different rates. It was stated that in all the 4 metals, both absolute and relative maximum suppression of induced thermo emf increased with higher preliminary deformation. The investigation of Cu-specimens has shown that at a given degree of preliminary deformation, the magnitude of absolute maximum suppression of thermo emf induced, decreased with higher test temperatures and the relative suppression increased. The magnitude of absolute and relative maximum suppression of thermo emf induced increases with higher rate of preliminary twisting and with lower rate of subsequent untwisting. There are 10 references. [Abstractor's note: Complete translation.] M. M.

Card 1/1

KUKLIN, Modest Mikhaylovich; ABRAMOVICH, G.O., red.; KOLBICHEV,
V.I., tekhn. red.

[Second sky; Chelyabinsk planetarium] Vtoroe nebo; Cheliabin-
skii planetarii. Cheliabinsk, Cheliabinskoe knizhnoe izd-vo
1960. 19 p. (MIRA 17:4)

KUKLIN, M.N., inzhener-ekonomist.

Book about the economics of the woodworking industry ("Economic problems
of the woodworking industry." A.F. Nikiforov. Reviewed by M.N. Kuklin).
Der.i lesokhim.prom. 2 no.6:31 Je '53. (MLBA 6:5)
(Woodworking industries) (Nikiforov, A.F.)

DAYNOVSKIY, Anatoliy Boleslavovich; KUKLIN, Matislav Nikolayevich;
DITKOVSKIY, A.S., red.; SIDEL'NIKOVA, L.A., red.izd-va; BACHU-
RINA, A.M., tekhn.red.

[Over-all utilization of wood in industry] Kompleksnoe ispol'-
zovanie drevesiny v promyshlennosti. Moskva, Goslesbumizdat,
1959. 78 p. (MIRA 13:2)
(Wood-using industries)

KUKLIN, N.A., mayor meditsinskoy sluzhby

Attachment for the Riva-Rocci apparatus for the determination of
capillary resistance. Voen.-med. zhur. no.3:86-87 Mr '60.

(CAPILLARIES---PERMEABILITY)

(MIRA 14:1)
(BLOOD PRESSURE)

1ST AND 2ND CROSS

PROCESSES AND PROPERTIES INDEX

CF

Significance of barite as indicator in prospecting for copper and polymetallic ores. N. V. Mikhalin. *Russkaya Zvezda*, No. 2, 12-17 (1947). A preponderant no. of chalcocite and polymetallic ore deposits in U.S.S.R. are associated with barite, either in the form of veins or as accompanying mineral. Barite was commonly present in such deposits where the iron cap, usually associated with polymetallic ores, never existed or was eroded away. Because of its high sp. gr. and stability, barite is a more dependable indicator of sulfidic ores than either Au or residual sulfidic components. M. Finch

458 35A METALLURGICAL LITERATURE CLASSIFICATION

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KUKLIN, N.V.

FRASE I BOOK EXPLOITATION 307/1886

3(5)

Собрание научных работ по металлогенезу и прогнозу металлогенеза, Алма-Ата, 1958.

Материалы научной сессии по металлогенезу и прогнозу металлогенеза. (Materials Presented at the Scientific Session on Metallogenesis and Postulated Ore Occurrence Maps; Reports) Alma-Ata, Izdatvo AN Kazakhskoy SSR, 1958. 318 p. Errata slip inserted. 3,850 copies printed.

Ed.: A.S. Pogozhev; Tech. Ed.: P.P. Alfirova.

Sponsoring Agencies: (1) Akademiya Nauk SSSR, (2) Kazakhskaya SSR, (3) USSR, Ministerstvo Geologii i Otkrytiya Nedr, (4) Kazakh SSR, Ministerstvo Geologii i Otkrytiya Nedr.

NOTE: This book is intended for exploration geologists, mining engineers, and cartographers.

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Materials Presented (cont.)

COVERAGE: This collection of reports was presented at the United Scientific Session on Metallogeny and Postulated Ore Occurrence Maps, convened by the Academy of Sciences in Alma-Ata, Kazakhstan, 1958. The reports deal with various aspects of metallogenesis and ore occurrence maps as well as the methodology and techniques of correlating geophysical exploration data. These reports deal only with non-ferrous metals. The reports were delivered at the conference but not included in this work were read by Ye.Ye. Zhabarov, M.S. Shatskiy, and Yu.K. Goretskiy. References accompany each article.

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| Aleshin, M.K., V.O. Perov, [Ural'skoye GU MGOV]. Technique of Compiling of Copper and Iron Metallogenetic and Postulated Occurrence Maps for the Urals | 88 |
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| Bok, I.Y. and L.A. Kiroshchichko [IGM AN KazSSR]. Prediction of Ore Occurrence and Exploration | 131 |
| Card 3/6 | |

KUKLIN, N.V.

Principles for plotting metallogenetic maps of Ural endogenic
deposits. Mat.po geol.i pol.iskop.Urala no.6:143-151 '58.
(MIRA 12:10)

(Ural Mountains--Ore deposits--Maps)

KUKLIN, N.V.

Distribution and formation of tungsten deposits in the Urals.
Geol. rud. mestorozh. no.4:111-120 J1-Ag '55.

(MIRA 13:1)

1. Ural'skoye geologicheskoye upravleniye, Sverdlovsk.
(Ural Mountains--Tungsten ores)

KUKLIN, N.V.

Ore skarns in the classification of endogenetic deposits. Mat.
po geol.i pol.iskop.Urala no.10:88-98 '62. (MIRA 16:2)
(Skarns) (Ore deposits)