

Geodesy	762
Ch. I. Introduction	5
1. Geodesy and its significance in the national Economy	5
2. Historical sketch of the development of geodesy	6
Ch. II. Determining the Position of Points on the Earth's Surface	12
3. The Earth's size and shape	12
4. Representation of the Earth's surface	14
5. Systems of coordinates used in geodesy	15
Ch. III. Charts and Maps	23
6. Contour and profile	23
7. Scale	24
8. Effect of transition from a spherical to a flat surface on horizontal and vertical distances	28

Card 4/12

Geodesy	762
9. Maps	30
10. Map nomenclature	31
11. Symbols (Conventional signs)	35
12. Representation of relief	38
13. Degree and kilometer grids (networks). Information placed beyond the confines of the frame	42
14. Interpreting a topographic map	44
15. Reduction of maps	46
Ch. IV. Orienting Lines on a Locality	49
16. Orientation of lines. True and magnetic azimuths. Directional angle. Bearing	49
17. Relationship between azimuths and directional angles	52
18. Compass and surveying compass	55
19. Orientation of topographic plan or map for a locality	57

Card 5/12

Geodesy	762
Ch. V. Problems Solved With Topographic Maps	61
20. Determining right angle coordinate points on the map and plotting points on the map by their coordinates	61
21. Determining the height of points by horizontals	62
22. Determining the steepness of inclines and grades by horizontals. Gradient of slope	63
23. Measuring areas with plans and maps	65
24. Planning a route having a given incline	73
25. Constructing a profile for a given route	74
26. Determining the limits of drainage areas	76
27. Determining the volumes of earth configurations by means of a map with horizontals	77
28. Plotting recesses and embankments on a chart	78
29. Charting a locality	79

Card 6/12

	762	
Geodesy		
Ch. VI. General Information on Geodetic Surveys		80
30. Types of surveys		80
31. Principles for organizing surveys. The concept of a bearing grid		81
32. Geodetic methods of creating a bearing grid		82
33. Designating and fixing points in a geodetic bearing grid		87
34. Leveling grid		91
Ch. VII. Measurement Errors		92
35. General information		92
36. Basic characteristics of random errors		93
37. Mean quadratic errors		94
38. Deduction (derivation) errors		98
39. Reliability of observational data		100
Ch. VIII. Measuring the Length of Lines		103
40. Point designation		103
41. Staking out lines		104

Card 7/12

Geodesy

762

42.	Instruments for measuring the length of lines	105
43.	Measuring lines with a steel tape	107
44.	Corrections for inaccuracy in the length of the tape	108
45.	Reducing inclined lines to the horizon	109
46.	Clinometer	111
47.	Errors in measuring lines with a steel tape	113
48.	Work norms	114
Ch. IX.	Goniometers and the Measurement of Angles	116
49.	Fundamentals in horizontal angle measurement	116
50.	Limb and alidade	117
51.	Vernier	121
52.	Alidade eccentricity	122
53.	Magnifier	123
54.	Telescope	124
55.	Levels	130
56.	Verifying transits	133
57.	Measuring horizontal angles with a transit	137
58.	Errors in measuring horizontal angles	139

Card 8/12

Geodesy	762
59. Care of transits	142
60. Work norms in measuring angles	143
Ch. X. Surveying With a Theodolite	144
A. Field Operations	144
61. General information	144
62. Transit traverses	144
63. Connecting transit traverses to points in the bearing grid	146
64. Surveying topographical features	147
B. Office Operations	151
65. Processing angle measurements	151
66. Computing directional angles of polygon sides	152
67. Computing horizontal extensions	153
68. Computing increments in coordinates	153
69. Connecting increments in coordinates	157
70. Computing coordinates	161

Card 9/12

Geodesy		762
71.	Diagonal traverses	161
72.	Constructing a coordinate grid	164
73.	Constructing a chart based on transit surveying by coordinates	167
74.	Work norms	169
Ch. XI.	Vertical Surveying	170
75.	Purpose and types of vertical surveys	170
76.	Geometric leveling	171
77.	Corrections for the Earth's curvature and refraction	173
78.	Complex leveling	175
79.	The state leveling grid	177
80.	Levels and surveying rods	179
81.	Engineering and technical leveling	190
82.	Problems solved on the basis of a cross section obtained by engineering and technical leveling	208
83.	Leveling specific areas	215
Ch. XII.	Tacheometric Surveying	
Card 10/12		

762

Geodesy

84.	General information	215
85.	Vertical circle of the tacheometer	216
86.	Range finder	220
87.	Horizontal circle of the tacheometer	227
88.	Tacheometric surveying	228
89.	Office operations	232
90.	Work norms	239
Ch. XIII.	Large-scale Plane Tabling Topographic Surveying	240
91.	General information	240
92.	Plane table and its attachments	241
93.	Telescopic alidade	242
94.	Plane table attachments and their verification	244
95.	Large-scale plane table surveying	245
96.	Surveying contours and relief	246
97.	Work norms in plane table surveying	250
Ch. XIV.	Principles of Photogrammetric Surveying	251

Card 11/12

	762	
Geodesy		
98. Problems and types of photogrammetric surveying	251	
99. Ground (terrestrial) stereophoto surveying	251	
100. Aerial photo surveying	255	
101. Office processing of aerial surveys	258	
102. Interpreting aerial photographs	260	
103. Simple geodetic measurements with contact plane table impressions	263	
Ch. XV. Geodetic Operations at Mine Construction Sites	274	
104. Types of geodetic operations at construction sites	274	
105. Geodetic operations in horizontal charting	275	
106. Geodetic operations in vertical charting	282	
Appendix	288	
Bibliography	289	
AVAILABLE: Library of Congress (QB301.P3)		
Card 12/12	MM/wde	
	11-13-58	

REYZENKIN, Iosif Yakovlevich, SINANYAN Ruben Rubenovich; PAVLOV, F.F.,
professor, doktor, ratsenent, PRUEGUDOV, M.A., kandidat tekhnicheskikh nauk, ratsenent; OGLOBLIN, D.N., redaktor, PARSYVANSKY
V.N., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor.

[stereophotogrammetric surveying of open-cut mines] Stereofotogrammetricheskaya s"emka kar'ierov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po Chernoi i tsvetnoi metallurgii, 1956. 177 p. (MIRA 2000)
(Photogrammetry) (Mine surveying)

PAVLOV, Fedor Fedorovich, prof.; MASHKEVICH, Vladimir Pavlovich, dots.;
FEDOROV, Boris Dmitriyevich, dots.; MAZMISHVILI, A.I., otvetstven-
nyy red.; SLAVOROSOV, A.Kh., red.izd-va; ALADOVA, Ye.I., tekhn.red.;
BERLOV, A.P., tekhn.red.

[Surveying] Geodeziia. Moskva, Ugletekhizdat, 1957. 356 p.
(Surveying) (MIRA 11:5)

AUTHOR: Smirnov, S. P., Professor, Doctor of Technical Science

TITLE: On the problem of estimating the Accuracy of Balancing according to a Two-Group Method (K voprosu ob otsenke tochnosti poravnoveshivaniya po metodu dvukh grup)

PERIODICAL: Izvestiya vysshikh i srednykh zavedeniy. Geodeziya i aerofotos"yemka, 1967, No. 3, pp 17-21 (1967)

ABSTRACT: The author proceeds from formula (1) for the regression of the function of balanced elements. This formula is used for the two-group balancing of elements with equal accuracy. The reciprocal weight of the function makes it possible to find the mean square deviation of the function of the balanced values of measured quantities - formula (2). Taking into account that in the balancing of the geometrical nets of the first group the conditions for balancing with correction factors (which equal unity) are used, formula (1) takes the form of (3). This formula (3) gives the computations and deductions which are connected with the determination of the reciprocal weight of balanced values of measured quantities. Formula (3) is in this paper used for theoretical derivations and

Card 1 2

On the Problem of Estimating the Accuracy of Balancing according to the Two-Group Method

for the solution of some sample problems. The application of this formula is illustrated by some numerical problems. From the calculations presented it can be seen that the use of (3) considerably facilitates and simplifies the estimation of the accuracy of balancing results. There are 2 tables.

ASSOCIATION: Moskovskiy Gornyy Institut im. I. V. Stalin (now Mining Institute imeni I. V. Stalin)

SUBMITTED: November 1954

1955

AUTHOR: Novikov, F. S., Professor, Doctor of Technical Sciences

TITLE: On the problem of estimating the accuracy of balancing according to a Two-Group Method (K voprosu ob otsenke tochnosti pri uravnoveshivani, po metodu dvakh grup)

PERIODICAL: Izvestiya vysshikh shkolnykh zavedeniy. Geodeziya i aerofotos"yemka, 1967, No. 5, pp 17-21 (USSR)

ABSTRACT: The author proceeds from formula (1) for the regression of the function of balanced elements. This formula is used in the two-group balancing of elements with equal accuracy. The reciprocal weight of the function makes it possible to find the mean square deviation of the function of the balanced values of measured quantities - formula (2). Taking into account that in the balancing of trigonometrical nets of the first group the conditions are determined with correction factors (which equal unity) are introduced, formula (1) takes the form of (3). The formula (4) gives the summations and deductions which are connected with the determination of the reciprocal weight of balanced values of measured quantities. Formula (5) is in this paper used for theoretical derivations and

Card 1 2

On the Problem of Estimating the Accuracy of Balancing According to the
Group Method

for the solution of some sample problems. The application of
this formula is illustrated by some numerical problems. From
the calculations presented can be seen that the use of (3)
considerably facilitates and simplifies the estimation of the
accuracy of balancing results. There are 2 tables.

ASSOCIATION: Moskovskiy Gornyy Institut im. I. V. Stalina (Moscow Mining
Institute imeni I. V. Stalin)

SUBMITTED: 1986.11.10

PAVLOV, F.F., prof., doktor tekhn.nauk

LU-1 goniometer for underground mine surveying. Nauch.dokl.vys.shkoly;
gor.delo. no.4:91-98 '58. (MIRA 12:1)

1. Predstavleno kafedroy geodezii Moskovskogo gornogo instituta imeni
I.V. Stalina. (Mine surveying) (Goniometers)

PAVLOV, E. P., prof.; MECHIKOV, O.S., inzh.

Determining blasted rock lumpiness in quarries and studying
fissured bench edges by the photogrammetric method. Izv.vys.
ucheb.zav.; gor.zhur. no.10:61-63 '58. (MIRA 12:8)

1. Moskovskiy gornyy institut. (Photogrammetry)
(Quarries and quarrying)

PAVLOV F.F.

MAZHISHVILI, Abram Ivanovich, prof., doktor tekhn.nauk; BELYAYEV, Boris Ivanovich, nauchnyy sotrudnik, kand.tekhn.nauk; SHILOV, P.I., prof., doktor tekhn.nauk, retsenzent; PAVLOV, F.F., prof., doktor tekhn.nauk, red.; PAVLOV, F.F., red.; SHURYGINA, A.I., red.izd-va; ROMANOVA, V.V., tekhn.red.

[The method of least squares] Sposob naimen'shikh kvadratov.
Izd-vo geod.lit-ry, 1959. 370 p. (MIRA 13:2)

1. Kafedra Marksheyderskogo dela Moskovskogo gornogo instituta im. I.V.Stalina (for Belyayev).
(Least squares) (Surveying)

3(4)

AUTHOR:

Paylov, P. P., Doctor of Technical
Sciences

SOV/6-59-12-3/22

TITLE:

Adjusting the Polygon Nets^{tr} by the Trilateration Method

PERIODICAL:

Geodeziya i kartografiya, 1959, Nr 12, pp 14 - 17 (USSR)

ABSTRACT:

The trilateration method can be used for the approximate adjusting of polygon nets. In this case, the corrections of the angles and sides measured will come closer to the corrections determined by the method of least squares. It is assumed that the nodal points of the polygon net and the starting points (in which the polygonal traverses are joining) can be connected by straight lines. Thus, triangles are obtained with sides of known length, i. e. a trilateration net. As there are excessive side measurements available for determining the coordinates of the nodal points, this artificial net can be balanced. The adjusting of such a net is shown here. The adjusting method by indirect observations is used. The procedure described is explained by means of an example. There are 2 figures, 1 table, and 1 Soviet reference. ✓

Card 1/1

PAVLOV, P.F., prof., doktor tekhn.nauk

Concerning a mistake made in investigating angular errors in
traverse surveys. Izv. vys. ucheb. zav.; geod. i aerof. no.2:41-
42 '60. (MIRA 13:6)

1. Moskovskiy gornyy institut imeni I.V. Stalina.
(Traverses (Surveying))

PAVLOV, F.F., prof.

Adjusting traverse lines and orientations through several shafts
by means of a triangulation network. Izv. vys. ucheb. zav.; gor.
zhur. no.10:38-46 '60. (MIRA 13:11)

1. Moskovskiy gornyy institut imeni I.V. Stalina. Rekomendovana
kafedroy marksheyderskogo dela Moskovskogo gornogo instituta.
(Mine surveying)

PAVLOV, Fedor Fedorovich, prof.; MASHKEVICH, Vladimir Pavlovich, dots.;
FEDOROV, Boris Dmitriyevich, dots.; RODIONOV, L.Ye., otv. red.;
SLAVOROSOV, A.Kh., red. izd-va; BOLDYREVA, Z.A., tekhn.red.;
PROZOROVSKAYA, V.L., tekhn. red.

[Geodesy] Geodeziia. Moskva, Gos. nauchno-tekhn. izd-vo lit-
ry po gornomu delu, 1961. 274 p. (MIRA 14:5)

1. Moskovskiy gornyy institut (for Pavlov, Mashkevich, Fedorov)
(Surveying)

PAVLOV, F.F.

The KP-2 comparator. Geod.i kart. no.8:52-54 Ag '61. (MIRA 14:10)
(Measuring instruments--Standards)

PAVLOV, F.F.

Error of the position of points determined by trilateration.
Geod. i kart. no.10:10-16 0 '61. (MIRA 14:11)
(Triangulation)

PAVLOV, F.F., prof.

Concerning the article of B.A.Litvinov "More about the distribution
of errors in traverse nets." Izv. vys. ucheb. zav.; geod. i aerof.
no.5:122-123 '64. (MIRA 18:5)

VOSTROVA, Ol'ga Danilovna; PAVLOV, F.F., prof., otv. red.; NIKOLAYEVA,
T.A., red.; VINOGRADOVA, V.A., tekhn. red.

[TT-50 and TOM theodolites, NV-1, NSM-2 and NP levels; their
description and tests; laboratory manual] Teodolity TT-50 i
TOM, niveliry NV-1, NSM-2 i NP, ikh opisaniye i poverki; poso-
bie k laboratornym rabotam. Moskva, Univ. druzhby narodov,
1963. 51 p. (MIRA 17:4)

PAVLOV, Fedor Fedorovich, prof.; ~~TRUBNI, Olga Danilovna, kand. tekhn. nauk;~~ GUDKOVA, Irada Inareyevna, kand. tekhn. nauk

[Higher geodesy; handbook on practical work (section on "triangulation"); ~~spetsialna geodeziia; posobie po prakticheskim rabotam (razdel "Triangulatsiia").~~ Moskva, Mosk. gornyi in-t, 1961. 159 p. (NIKA 17:10)

1. Kafedra geodezii Moskovskogo gornogo instituta.

PAVLOV, F.F.

Error in the position of the points of a trilateration (linear)
network. Trudy Inzhener. 3. Geod., geod. delo i geod. no. 1240-
149 '63. (MIRA 18:10)

PAVLOV, F.G.; KLINOV, S.I., insh.

Providing excellent maintenance of the continuous rail track
in a high-speed section. Put' 1 put. khoz. 8 no.9:10-12 '64.
(MIRA 17:11)

1. Nachal'nik distantzii puti, stantsiya Moskva-Oktyabr'skaya
(for Pavlov).
2. Stantsiya Moskva-Oktyabr'skaya (for Klinov).

PAVLOV, F.I.; PANOV, A.N.

Device for dumping cars loaded with soil. Suggested by F.I.
Favlov, A.N. Panov. Rats. predl. no. 43:15 '59. (MIRA 14:1)
(Dumping appliances)

PAVLOV, F.I.; PANOV, A.N.

Device for dumping cars loaded with soil. Suggested by F.I.
Favlov, A.N. Panov. Rats. predl. no. 43:15 '59. (MIRA 14:1)
(Dumping appliances)

PAVLOV, F.G.; KLINOV, S.I. inzh.

Improving the technology of stress relieving. *Puti i puti. knoz.*
9 no.1:4-6 '65 (MIRA 18:2)

1. Nachal'nik distantssi puti, stantsiya Moskva-Oktyabr'skaya (for Pavlov)
2. Stantsiya Moskva-Oktyabr'skaya (for Klinov).

PAVLOV, F.I.

Blade grader mounted on an electric locomotive. Suggested by
F.I. Pavlov. Rats. predl. no. 43:16 '59. (MIRA 14:1)
(Graders (Earthmoving machinery))

SOV/137-59-3-5465

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 76 (USSR)

AUTHORS: Pavlov, F. I., Diyev, N. P.

TITLE: Oxidation of Sulfides at Low Temperatures Under Dynamic Conditions
(Okisleniye sulfidov pri nizkikh temperaturakh v dinamicheskikh usloviyakh)

PERIODICAL: Tr. In-ta metallurgii. Ural'skiy fil. AN SSSR, 1957, Nr 1, pp 32
35

ABSTRACT: Data are given on the investigation of the oxidation of sulfide ores under dynamic conditions depending upon the presence of cellulose and moisture in them and upon the duration of the action of atmospheric O_2 on them. The ore investigated consisted mainly of pyrite; Cu minerals were represented by chalcopyrite, tennantite, covellite, and chalcosine. It was established by the investigation that with continuous blowing through of air the oxidation rate of moist ore is 100 - 200% greater than that of dry ore. Moistening the ore promotes oxidation because it causes the leaching out of Fe and Cu sulfates formed and destroys the films of the reaction products, thereby exposing the nonoxidized surface of the ore. Addition of cellulose

Card 1/2

SOV/137-59-3-5465

Oxidation of Sulfides at Low Temperatures Under Dynamic Conditions

accelerates the oxidation process of the ore by 200 - 300% as compared to the oxidation of air-dry ore.

L. K

Card 2/2

PAVLOV, F. N.

USSR/Mining - Underground Fires, Mine Safety

JUL 52

"Prevention of Endogenous Fires in Copper-Pyrite Mines," A. A. Ivanov, K. M. Charkviani, N. P. Diyev, K. V. Kochnev, Z. G. Sheina, Ye. F. Jordan, F. N. Pavlov

"Iz Ak Nauk, Otdel Tekh Nauk" No 7, pp 1037-1044

Presents results of works conducted since 1947 by a group of Soviet investigators studying causes of underground fires and establishing preventive measures. Discusses selection of mining system safe in respect to fires, silting as basic preventive measures against underground fires, and ventilation for cooling ore rocks and for maintaining normal temp conditions in mines. Submitted by Acad A. A. Skochinskiy
1 Apr 52.

PA 228T99

PAYLOV, F. N.

USSR 1

Adiabatic oxidation of sulfide ores. F. N. Pavlov, E. P. Jordan, and N. P. Diev, *Gornyi Zhur.* 1953, No. 2, 30-8. Powdered (2 mm.) sulfide ore contg.: Fe 42.3, S 40.5, Cu 1.95, SiO₂ 2, and Al₂O₃ 2% was oxidized under adiabatic conditions in a slow current of air satd. with H₂O at room temp. and brought up to the temp. of the ore. The temp. rose continuously up to 269° in 209 hrs. Then it rose abruptly reaching 450° in 6 hrs. producing SO₂ and, at the higher temp., some free S. The presence of wood was not essential and mixing the ore with clay retarded but did not prevent oxidati-
I. Hancovitz

2

Paylov, F. N.

✓ Oxidation of sulfides at low temperatures under static conditions. E. F. Jordan, F. N. Paylov, and N. P. Dnev. *Trudy Inst. Khim. i Metall. Akad. Nauk S.S.S.R. Ural. Filial* 1955, No. 3, 18-23. — Ores contg. 30-45% Fe and 46-61% S were oxidized at 20° for 30 days, initially at atm. pressure, in an app. shown in the diagram. This consisted of two bottles, both connected with a U-tube contg. oil which served as a differential manometer. The ore was placed in one bottle and an equal vol. of glass placed in the other; then the system was sealed tightly, and from time to time the O₂ absorbed was detd. from the oil level. Also the samples were analyzed before and after. The oxidation rate depended upon particle size; thus 11.85 × 10⁻⁴ g. O₂ was absorbed per day on 1 g. of ore with particles of 0.13 mm. diam. and 2.9 × 10⁻⁴ g. on that with 5 mm. diam. A moistened ore oxidized twice as fast as an air-dried one. The presence of sawdust had no effect upon the oxidation rate.

Malcolm Anderson

*Check
M.A. 3*

0000

EM

PAVLOV, F.N.

USSR/Cosmochemistry - Geochemistry. Hydrochemistry

D.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4166

Author : Pavlov, F.N., Flyusnin, V.G., Iordan, Ye.F.

Title : Search for Organic Compounds Inhibiting the Oxidation of Sulfide Ores.

Orig Pub : Zh. prokl. khimii, 1956, 29, No 2, 166-175

Abstract : Control of underground fires at pyrite deposits can be effected not only by mechanical but also by chemical means on utilizing water soluble substances which prevent oxidation -- antioxidants or inhibitors. Over a period of 65 days experiments were carried out on testing various inhibitors: 1) tar water; 2) technical xylenes; 3) aniline; 4) phenyl hydrazine; 5) furfural; used in the form of aqueous solutions, and for the sake of comparison therewith, also of tap water. Operational procedures and the results are described in detail. It was found that some organic substances, such as phenol

Card 1/2

- 56 -

PAVLOV, F. N.

4600

Chem / Organic compounds retarding oxidation of solids etc.
F. N. Pavlov, V. G. Myusina, and K. P. Loshak. *J. Appl. Chem. U.S.S.R.* 29, 187-97 (1956) (Engl. translation). See C.A. 50, 12773d. B.M.R.

PM

PAVLOV, F. N.

Spontaneous ignition of sulfide ores. N. P. Diev and F. N. Pavlov. *Prirada* 43, No. 5, 82-4 (1950).—The oxidation of sulfide ores such as FeS_2 , $CuFeS_2$, Cu_2FeS_4 , Cu_2S , and CuS decreases with increasing size of the particles. The velocity of oxidation increases twice as much in wetted ores than in air-dried ores. Sawdust did not show a significant influence on the oxidation process of ores but when mixed with ores increase the surface of the reacting ores and accelerate the oxidation. The ratio of av. speed of oxidation for unity area, the air-dried, wetted and wetted in the presence of 5% of the sawdust is 1:2.5:2.6, resp. It was established that ores wetted with tar water from peat or tech. xylenols inhibit 13-14 times more than those wetted with H_2O .
M. Charmandarian

Metal 2

PAVLOV, F.N.; PLYUSHKIN, V.G.; IORDAN, Ye.P.

Investigating organic compounds which retard the oxidation of
sulfide ores at increased temperatures. Zhur.prikl.khim. 30
no.6:944-947 Je '57. (MIRA 10:10)
(Sulfide ores) (Oxidation)

KUZNETSOV, S.I.; SEREBRENNIKOV, O.V.; DEREVIANKIN, V.A.; VOLKOVA, F.I.;
PAVLOV, F.M.; YEVTYUTOV, A.A.; CHEMODANOV, V.S.; STOLYAR, B.A.;
KONOVALOV, I.V.; LIVER, V.B.; MIYCHENKO, V.S.; SMIRNOV, B.A.

"Production of alumina" by A.I. Lainer. Reviewed by S.I.
Kuznetsov and others. TSvet. met. 34 no.11:85-86 N '61.

(MIRA 14:11)

1. Ural'skiy politekhnicheskii institut (for Kuznetsov,
Serebrennikov, Derevyankin). 2. Ural'skiy filial AN SSSR
(for Volkova, Pavlov). 3. Ural'skiy alyuminiyevyy zavod (for
Yevtyutov, Chemodanov, Stolyar). 4. Bogoslovskiy alyuminiyevyy
zavod (for Konovalov, Liver, Miychenko). 5. Sverdlovskiy
Sovnarkhoz (for Smirnov).

(Alumina)

(Lainer, A.I.)

PAZDNIKOV, P.A.; PAVLOV, F.N.

Determining the possibility of copper and cadmium precipitation
from complex sulfate solutions. Trudy Inst. met. UFAN SSSR
no. 6:115-119 '59. (MIRA 13:12)
(Copper--Metallurgy) (Cadmium--Metallurgy)

PAZDNIKOV, P.A.; VOLKOVA, P.I.; PAVLOV, P.N.

Concentration of precious metals in insoluble residues following
the aqueous sulfatization of copper-zinc concentrates. Trudy
Inst. met. UFAN SSSR no. 6:85-88 '59. (MIRA 13:12)
(Hydrometallurgy) (Precious metals)

PAZDNIKOV, P.A.; VOLKOVA, P.I.; PAVLOV, Y.N.

Oriented content of rare and dispersed elements in copper-zinc concentrates and products of their processing. Trudy Inst. met.
UFAN SSSR no. 6:89-92 '59. (MIRA 13:12)
(Nonferrous metals--Metallurgy)
(Metals, Rare and minor)

PAZDNIKOV, P.A.; PAVLOV, F.N.

Kinetics of dewatering a solution of a mixture of zinc, copper,
iron and cadmium sulfates. Trudy Inst. met. UFAN SSSR no. 6:93-
97 '59. (MIRA 13:12)

(Sulfates) (Nonferrous metals--Metallurgy)

PAZDNIKOV, P.A.; PAVLOV, F.H.

Iron separation in the form of oxide by thermal decomposition
of iron sulfates from a mixture of powder sulfates. Trudy Inst.
met. UFAN SSSR no. 6:99-104 '59. (MIRA 13:12)
(Nonferrous metals--Metallurgy)
(Hydraulic metallurgy)

PAZDNIKOV, P.A.; PAVLOV, P.N.

Investigating water evaporation and decomposition of suspended
iron sulfates in the same apparatus. Trudy Inst. met. UPAN SSSR
no. 6:105-109 '59. (MIRA 13:12)
(Nonferrous metals--Metallurgy)

PAZDNIKOV, P.A.; PAVLOV, F.N.

Residue leaching following the thermal decomposition of iron
sulfates. Trudy Inst. met. UPAN SSSR no. 6:111-113 '59.
(MIRA 13:12)
(Nonferrous metals--Metallurgy) (Leaching)

PAZDNIKOV, P.A.; PAVLOV, F.N.

Regeneration of sulfuric acid and potassium sulfate from
sulfate solution mixtures. Trudy Inst.mot.UFAN SSSR no.5:
183-195 '60. (MIRA 13:8)
(Sulfates) (Sulfuric acid)

PAVLOV, P.N.; DIYEV, N.P. [deceased]

Formation of sulfur dioxide in the process of oxidizing pyritic
copper ores at low temperatures. Trudy Inst.met.UFAN SSSR no.3:
5-7 '59. (MIRA 13:4)
(Copper ores) (Sulfur dioxide)

PAVLOV, F.N.

PABLOV, F.N.; DIYEV, N.P. [deceased]; PLYUSNIN, V.G.

Effect of solutions of certain inorganic and organic substances
on the rate of sulfide ore oxidation. Trudy Inst. met. UPAN SSSR
no. 3:9-14 '59. (MIRA 13:4)
(Sulfides) (Oxidation)

PAVLOV, F.N.; TSYBULEVSKIY, B.L., red.; ROMANOVA, N.I., tekhn.red.

[Czechoslovakia is completing the building of socialism]
Chekhoslovakiia zavershaet stroitel'stvo sotsializma. Moskva.
Izd-vo In-ta mezhdunar.otnoshenii, 1960. 57 p. (MIRA 13:5)
(Czechoslovakia--Economic policy)

SOV 137-59 3-5227

Translation from: Referativnyy zhurnal. Metallurgiya. 1959, Nr 3, p 42 (USSR)

AUTHORS: Pavlov, F. N., Diyev, N. P.

TITLE: Oxidation of Pyrite Under Isothermal Conditions (Okisleniye pirita v izotermicheskikh usloviyakh)

PERIODICAL: Tr. In-ta metallurgii. Ural'skiy fil. AN SSSR, 1957, Nr 1, pp 22-25

ABSTRACT: The authors show the dependence of the oxidation of pyrite under isothermal conditions at 100°C on the grain size. Formation of SO₂ at temperatures > 50° is established. The laboratory apparatus is described and tables and graphs for the study of the parameters are given.

I. M.

Card 1/1

SOV/137-59-1-449

Translation from Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 56 (USSR)

AUTHORS: Pavlov, F. N., Diyev, N. P.

TITLE: Oxidation of Sulfide Ores Under Simulated Natural Conditions
(Okisleniye sul'fidnykh rud v usloviyakh, blizkikh k yestestvennym)

PERIODICAL: Tr. In-ta metallurgii. Ural'skiy fil. AN SSSR, 1957, Nr 1, pp 26-31

ABSTRACT: An attempt is made to simulate the conditions of the oxidation of a sulfide ore by means of approximating the natural conditions of this process. Preliminary investigations dealing with the effect of particle size on the intensity of H_2SO_4 formation demonstrated that a reduction in the size of the ore particles tends to accelerate the process of oxidation of the ore. The equipment employed in the model set-up is described. It is demonstrated that sulfates which cover the surface of the ore and thus reduce the area that is capable of absorbing O_2 are responsible for the transition of metal sulfides into a soluble state occurring at low temperatures. As the formation of a film of oxidized materials progresses, the rate of oxidation diminishes. Hydrates formed as a result of hydrolysis bring about the cementation of ore

Card 1/2

Oxidation of Sulfide Ores Under Simulated Natural Conditions

SOV/137-59-3-449

finer. During the reaction between water and the ore, a selective leaching of certain metals (Co, Ni, etc.) takes place.

L. S.

Card 2/2

SOV 137 59 4-5478

Translation from: Referativnyy zhurnal Metallurgiya 1959 No. 1 p. 77 USSR

AUTHORS: Pavlov, F. N., Puzdnikov, P. A.

TITLE: A Method for the Separation of Iron From a Mixture of Metallic Sulfates by Thermal Decomposition of the Iron Sulfates (Metod vydeleniya zheleza iz smesi sulfatov metallov putem termicheskogo razlozheniya sulfatov zheleza)

PERIODICAL: Tr. In-ta metallurgii, Ural'skiy fil. AN SSSR 1958 No. 1 pp. 227-233

ABSTRACT: In order to separate the main mass of Fe from complex sulfate solutions formed during hydrometallurgic processing of multimetalliferous concentrates the author recommends the method of thermal dewatering of the sulfate solution and a selective decomposition of the Fe sulfates to Fe_2O_3 at 600-650°C. All these processes can be performed in a single apparatus, namely, a shaft kiln equipped for atomizing the sulfate solution. As a result of dewatering and decomposition in the kiln there remains a powder consisting of Fe_2O_3 and sulfates of Zn, Cu, Cd, etc., which cannot be decomposed because of their greater stability. In leaching out of the powdery scoria with water, the

Card 1/2

SOV/137-59 3-5478

A Method for the Separation of Iron From a Mixture of Metallic Sulfates (cont.)

undecomposed sulfates of Cu, Zn, Cd, and others pass into solution while Fe_2O_3 is separated in the form of insoluble precipitates. The Fe_2O_3 obtained contains 57.97 - 59.72% Fe, 0.5 - 0.86% Cu, and 1.58 - 2.54% Zn; it can be used without further treatment in paint preparation or as jeweler's rouge. When Fe_2O_3 is reduced at 900 - 1000° a powder of cuprous Fe can be produced. The filtrate remaining after the separation of Fe_2O_3 can be used for the separation of Cu and Cd and in the preparation of metallic Zn by electrolysis.

N. P.

Card 2/2

PAVLOV, F. N.

SOV 1137-58-12-24277

Translation from: Referativnyy zhurnal Metallurgiya, 1958, Nr 12, p 50 (USSR)

AUTHORS: Pazdnikov, P. A , Pavlov, F. N

TITLE: Dewatering and Thermal Decomposition of Iron Sulfates in Complex Sulfate Solutions (Obezvozhivaniye i termicheskoye razlozheniye sulfatov zheleza iz slozhnykh sul'fatnykh rastvorov)

PERIODICAL: Izv. Sibirsk otd. AN SSSR, 1958, Nr 2, pp 51-56

ABSTRACT: In order to remove Fe from complex sulfate solutions obtained in hydrometallurgical treatment of polymetallic concentrates, a method of thermal decomposition of the Fe sulfates is proposed. Conditions of concentration and selective thermal decomposition are studied. At 620-240° virtually complete decomposition of Fe sulfate takes place without decomposition of Cu, Zn, and Cd sulfates. When the pyrite cinders are leached by water, these sulfates go into solution, and it is virtually pure Fe oxide containing 0.5-0.86% Cu and 1.58-2.5% Zn that remains in the insoluble residue. A model of an equipment of the shaft-furnace type for dewatering and decomposition of Fe sulfates is tested.

Card 1/1

L P

PAVLOV, F. N., and DIYEV, N. P.

"Oxidation of Pyrite under Isothermal conditions," p. 22

"Oxidation of Sulfide Ores Under Near-Natural Conditions." p. 26

"Oxidation of Sulfide Ores at Low Temperatures under Dynamic Conditions."

in book, Collection of Studies in the Metallurgy of Heavy Nonferrous Metals.
Sverdlovsk, 1957, 268pp (Series: ~~Its~~ Trudy, vyp. 1, Inst. metallurgii, Ural'skiy
filial, Sverdlovsk, Acad. Sci. USSR)

PAVLOV, F.N.; DIYEV, N.P.

Oxidizing pyrites in isothermal conditions. Trudy Inst. met. UPAN
SSSR no.1:22-25 '57. (MIRA 11:9)
(Pyrites) (Oxidation)

PAVLOV, F.N.; DIYEV, N.P.

Oxidizing sulfide ores in conditions close to natural. Trudy Inst.
met. UPAN SSSR no.1:26-31 '57. (MIRA 11:9)
(Sulfides--Metallurgy) (Oxidation)

PAVLOV, F.N.; DIYEV, N.P.

Oxidizing sulfides at low temperatures in dynamic conditions.
Trudy Inst. met. UPAN SSSR no.1:32-35 '57. (MIRA 11:9)
(Sulfides) (Oxidation)

PAZDNIKOV, P.A.; PAVLOV, F.N.

Dehydration and thermal decomposition of iron sulfates from complex sulfate solutions. Izv. Sib. otd. AN SSSR no.2:51-56 '58.
(MIRA 11:9)

1. Ural'skiy filial AN SSSR.
(Iron sulfates) (Hydrometallurgy)

PAVLOV, P. P.

340.2. Spособ' sneny f. konov na mnozhestvo potoke. (Iz o yta sneny f. konov
((Sol'shevichka), Pen sgra). Pevkaya pros-st', 1999, no. 3, s. 3-4)

50: Kniznaya Letopis', Vol. 7, 1999

PAVLOV, F. S.

32625. Vliyaniye dopolnite'nogo k ratsionu vitamininogo piganiya na rost i vosproisvoditel'nyye funktsii zhiivotnykh. Sbornik nauch. Rabot omskogo nauch-issled. Vet. In-ta, vyp. 3, 1949, s. 81-93—bibliogr: 7 nazv.

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949

PAVLOV, F.T.
VOLOCHNEV, V.A., mashinist; PAVLOV, F.T., byvshiy brigadir slesarey, pensioner; SHCHIPITSYN, F.G.; POLULEKH, V.K.; KRASAVIN, M.D.

Stages in the great path. Elek. i tepl. tiaga no.11:38-40 N '57.
(MIRA 10:11)

1. Elektrovoznoye depo Zlatoust, Yuzhnyy Ural. 2. Nachal'nik elektrovoznogo depo Zlatoust, Yuzhnyy Ural (for Polulekh). 3. Glavnyy inzhener elektrovoznogo depo Zlatoust, Yuzhnyy Ural (for Krasavin).
4. Sekretar' partbyuro elektrovoznogo depo Zlatoust, Yuzhnyy Ural. (for Snachipitsyn).

(Zlatoust--Locomotives--Maintenance and repair)
(Russia--Revolution, 1917-1921)

PAVLOV, G.; STANKOV, A.; DIMOV, M.

Our experience with the removal of vertebral foci and abscesses in
tuberculous spondylitis. Khirurgiia, Sofia 14 no.2/3:337-338 '61.

(TUBERCULOSIS SPINAL surg)

PAVLOV, G.

BULGARIAN/Chemical Technology. Chemical Products and Their
Applications. Food Industry. II

Abstr Jour: Ref Zhur-Khim., No 8, 1959, 29318.

Author : Dinov, D. and Pavlov, G.

List :

Title : Peppers as Vitamin-Containing Raw Materials for the
Canning Industry.

Orig Pub: Khranitelna Promishlenost, 7, No 9, 18-20 (1958)
(in Bulgarian)

Abstract: The ascorbic acid (I) content of peppers has been
measured by the Enori-Ekelen [transliterated] method
and the effect of sealing temperature, sterilization
temperature, and vinegar content on the content of I
in the pickled peppers has been investigated. It has

Card : 1/3

PAVLOV, G.

Country : BULGARIA H-1
Category : Chemical Technology. Chemical Products and
Their Applications. General
Abs. Jour : Ref Zhur-Khimiya, No 14, 1959 No 49717
Author : Pavlov, G.
Institute : Not given
Title : Development of the Heavy Industry in Bulgaria

Orig Pub. : Tezhka prom-st, 1958 No 8, 1-5
Abstract : No abstract.

Card: 1/1

BULGARIAN/Chemical Technology. Chemical Products and Their
Applications Food Industry.

H

Abstr Jour: Ref Zhur-Khim., No 8, 1959, 29318.

Author : Dinov, D. and Pavlov, G.

Inst :

Title : Peppers as Vitamin-Containing Raw Materials for the
Canning Industry.

Orig Pub: Khimicheskaya Promishlennost, 7, No 9, 18-20 (1958)
(in Bulgarian)

Abstract: The ascorbic acid (I) content of peppers has been
measured by the Emery-Ekelen transliterated method
and the effect of sealing temperature, sterilization
temperature, and vinegar content on the content of I
in the pickled peppers has been investigated. It has

Card : 1/3

BULGARIA/Chemical Technology. Chemical Products and Their
Applications. Food Industry.

II

Obs Jour: Ref Zhur-Khim., No 8, 1959, 29305.

the total solids content; this is followed by a
determination of the weight of the skins, seeds,
and other wastes (by washing at least a kilogram
or more of tomatoes with boiling water, followed
by drying at 80°), after which the content of useful
solid substances is calculated from the difference
between the total solids and the waste solids. --
A. Marin.

Card : 2/2

2/6

KONEV, S., kand.biologicheskikh nauk; VLADIMIROV, P.; PAVLOV, G.;
LARIN, O. (g. Nukus)

It so happens that.... IUn. nat. no.11:26-27 N '61.
(MIRA 14:11)

(Nature study)

PAVLOV, G.; TSVETANOV, B.

Osteoarticular tuberculosis in patients over 50 years of age.
Khirurgia 15 no.2/3:257-258 '62.

(TUBERCULOSIS OSTEOARTICULAR in old age)

PAVLOV, G.

Speedy heading in the horizontal and vertical mine pits and the faster moving of the front line are the very basis of the ore and coal mining. Min delo 17 no.8:1-2 Ag '62.

1. Purvi zam.-predsedatel na Komiteta po promishlenosta, chlen na Redaktsionnata kolegiia, "Minno delo i metalurgii".

PAVLOV, G. (Lyubertsy, Moskovskoy obl.)

Lyubertsy is the place of the machine origin. Sov.profssoiuzy
19 no.5:16-17 Mr '63. (MIRA 16:2)
(Lyubertsy--Agricultural machinery industry--Technological innovations)

PAVLOV, G.; BOSNEV, V.

"Shoulder-hand syndrome" in pulmonary tuberculosis. Khirurgia
15 no.8:745-751 '62.

1. Nauchno-izsledovatel'ski institut po tuberkuloza. Direktor:
prof. St. Todorov.

(SHOULDER HAND SYNDROME)
(TUBERCULOSIS PULMONARY)

PAVLOV, G.

Development of chemical industries in Bulgaria. Khim i industriia 34
no.2:41-44 '62.

1. Purvi zam. predsedatel na Komiteta po promishlenosta.

TIKHONOV, N.; ROSLINA, G., zootekhnik; PAVLOV, G.; KRASNOV, V.; ALEKSANDROV, L.

Floating duck house. Nauka i pered.op v sel'khoz. 9 no.12:
21-22 D '59. (MIRA 13:4)

1. Predsedatel' kolkhosa imeni Saltykova-Shchedrina, Taldomskogo rayona, Moskovskoy oblasti (for Tikhonov). 2. Kolkhoz imeni Saltykova-Shchedrina, Taldomskogo rayonnogo komiteta kommunisticheskoy partii Sovetskogo Soyuz (for Pavlov). 3. Chlen-korrespondent Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni Lenina (for Krasnov).
(Poultry houses and equipment)

PAVLOV, G.

Adapting a used reductor. Pozh. delo 6 no. 11:29 B '60.
(MIRA 13:12)

1. Starshiy master GDZS pervoy chasti, Alma-Ata.
(Fire extinction--Chemical systems--Testing)

PAVLOV, G.; GANZUREV, G.; DZHEROVA, N.; ZHELEVA, A.; NIKOLOVA, D.;
KHITSOV, Kh.; VLASEV, K.; BOIADZHIEV, Zh.; OBREIKOV;
NEDEV, B.; PACHNIKOV, I.

Statistical data on results of various therapeutic methods
in joint tuberculosis of the extremities. Khirurgia 15 no.2/3:
167-169 '62.

(TUBERCULOSIS OSTEOARTICULAR surg)

LOBANOV, P.; LOZA, G.; CHIZHEVSKIY, M.; VOROB'YEV, S.; VIL'YAMS, V.;
SOBOLEV, S.; PAVLOV, G.; GARKUSHA, I.; FRANTSSESON, V.; MERSHIN, A.;
PERSHINA, M.

Vladimir Petrovich Bushinskii. Zemledelie 8 no.7:94-95 J1 '60.
(MIRA 13:9)
(Bushinskii, Vladimir Petrovich, 1885-1960)

ALEKSANDROV, N.I.; GEFEN, N.Ye.; GAPOCHKO, K.G.; GARIN, N.S.; GORDON, G.Ya.
KOZHUSHKO, M.I.; KORENEV, G.P.; LAZAREVA, Ye.S.; LEYKEKHMEN, Ye.P.;
MASLOV, A.I.; PAVLOV, G.A.; POLIVANOV, N.D.; ROMANOV, P.S.; RYBAKOV,
P.S.; RYBAKOV, M.G.; SIMONKHALOV, M.F.; SMIRNOV, M.S.; SHTERN, M.A.;
CHEPKOV, V.N.

Experience with mass aerosol immunization with tularemia dust
vaccine. Zhur. mikrobiol., epid. i imm. 41 no. 2: 36-43 F '64.
(MIRA 17:9)

PAVLOV, G. A., inzh.

Specialized exhibition on "Means for preventing corrosion of
metals and building materials." Mashinostroyeniye no.5:66-69
S-0 '62. (MIRA 16:1)

(Kiev--Exhibitions)
(Corrosion and anti-corrosives)

PAVLOV, G.; STANKOV, A.

"Our Experiment and Results from Treatment of the Fistulas of Tuberculosis
in the Joints During 1952-1953." p. 2,
(ZDRAVEN FRONT, No. 40, Nov. 1954, Sofiya, Bulgaria)

So: Monthly List of East European Accessions, (EASAL), LC, Vol. 4
No. 5, May 1955, Uncl.

PAVLOV, Georgi

Plan of chemical industries for 1964. Khim i industriia
34 no. 1: 1-3 '64.

1.. Predsedatel na Komiteta po khimii i metalurgii.

PAVLOV, Georgi

Chemistry and metallurgy, two main bases for economic development in Bulgaria. Min delo 18 no. 12: I-VI D '63.

1. Predsedatel na Komiteta po khimii i metalurgii.

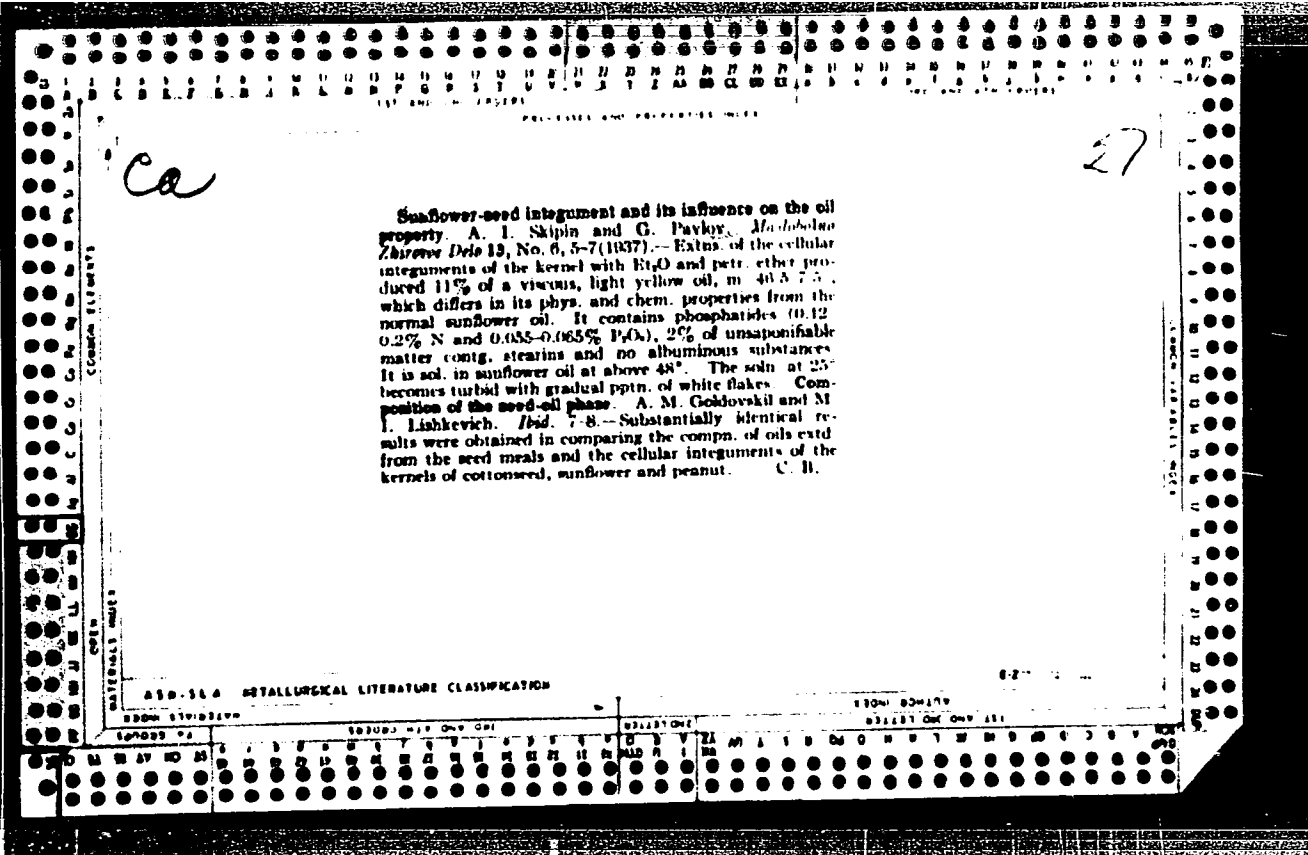
27

Investigation of the seeds and oil of *Staphylea pinnata* L. G. PASLEY. *Mado*
brine-Zhurnal Dela 1932, No 4 5, 31-5. The seeds showed the following composition:
 moisture 10.41, oil 13.06, crude protein 12.02, crude fiber 55.05, ash 1.60, N-free ex-
 tractive matter 0.06%. Constituents of the oil are: d. 0.9238, s.p. 1.4710, acid no. 2.78,
 sapon. no. 103.65, I no. (Hubl-Waller) 117.40, thiochrome no. (Kaufman) 82.77, Hehner
 no. 05.55, mean mol. wt. 289.7. The fatty acids (95.57%) consist of oleic 53.4, linoleic
 18.1 and palmitic acid 28.5%. The oil is edible.

METALLURGICAL LITERATURE CLASSIFICATION

T

M A S O R T M N S D C B Y



DESHEVOY, Georgiy Mikhaylovich; PAVLOV, Georgiy Dmitriyevich

[Descriptive geometry; abstract of lectures] Nachertatel'naia geometriia; konspekt lektsii. Leningrad, Tekhnolog. in-t. Pt.1. 1964. 149 p. (MIRA 18:7)

PAVLOV, G.D.
KLYACHKO, V.A.; PAVLOV, G.D.

Calculating radial sedimentation tanks. Vod.i san. tekhn. no.4:
15-17 J1'55. (MLRA 8:12)

(Water--Purification)

PAVLOV, G. D.

Pavlov, G. D. - "The Use of the Static Theory of Precipitation of a Suspension in a Turbulent Stream for the Hydraulic Calculation of Radial Sedimentation Tanks." Min Higher Education USSR. Moscow Order of Labor Red Banner Construction Engineering Inst ineni V. V. Kuybyshev. Chair of Water Supplies. Moscow, 1956. (Dissertation for the Degree of Candidate in Technical Sciences).

So: Knizhnaya Letopis', No. 10, 1956, pp 116-127

PAVLOV, G.D.

Determining indices of precipitability of a suspension in
a cylinder with a conical bottom. Vod. i san. tekhn. no.7:
28-29 J1 '56. (MLRA 9:10)

(Water--Analysis)

7000 G.D.

VARNELLO, V.A.; ASHANIN, V.V.; PAVLOV, G.D.

Operation of water clarifiers in Gorkiy. Vod. i san. tekhn. no.2:
26-31 F '57. (MLRA 10:6)

(Gorkiy--Water--Purification)

PAVLOV, G.D.

Statistical method of calculating sedimentation basins of water
works. Issl.poz vodopodg. no.3:159-181 '59. (MIRA 12:9)
(Water--Purification) (Sedimentation and deposition)

18(5)

AUTHOR: Pavlov, G.D., Engineer

DDV/128-59 6-4

TITLE: Clarification of the Water Supply Recirculation System at the "Stankolit" Plant

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 6, pp 7-8, 1959

ABSTRACT: The plant "Stankolit" has built a recirculation system for the water supply system of the foundry. The clarified and cleaned water returns to the foundry with only very few contaminations. The first tests were unsatisfactory. The sand trap and purification plant did not operate properly. The literature in this field does not contain sufficient data about the working principles of such a water clarification plant in a foundry. The conical shaped water strainer built by the plant "Stankolit" operates satisfactorily even after a "4" are shut down. In the opinion of the author, the installation will operate even better if the sludge is removed by artificial suction. An included drawing explains this suggestion. Furthermore it was a mistake to construct this installation for the clarification of one

Card 1/2

Clarification of the Water Supply Recirculation System at the
"Stankolit" Plant

water supply outside of the foundry department. Such
installations belong directly to the foundry. There
are 2 diagrams

Card 2/2

AUTHOR: Pavlov, G.D., Candidate of Technical Sciences and
Pervov, G.G. SOV/133-59-6-40/41

TITLE: Purification of Circulating Water from Gas Cleaning
Installations of Blast Furnaces Smelting
Ferromanganese (Ochistka oborotnoy vody ustanovok dlya
ochistki gazov domeynykh pechey pri vyplavke
ferromargantsa)

PERIODICAL: Stal', 1959, Nr 6, pp 574-575 (USSR)

ABSTRACT: Some laboratory scale experiments on settling water
from the gas cleaning installation of a ferromanganese
furnace using $Al_2(SO_4)_3 \cdot 18H_2O$, $FeSO_4 \cdot 7H_2O$ and
 $FeCl_3 \cdot 6H_2O$ as coagulants were carried out. It was
found that high proportions of coagulants are necessary
(aluminium sulphate above 500 mg/litre) for efficient
settling. On the other hand considerably smaller
(120 - 190 mg/litre) proportions of coagulants are
sufficient if the dirty water is passed through a layer
of previously precipitated solids in a suspended state.
It is suggested that settling of the circulating gas

Card 1/2