YEPATKO, Yu.M. [IEpatko, IU.M.]; MEL'NIK, Yu.P. [Mel'nyk, IU.P.]

Role of supergene leaching out of quartz during the enriching of
iron rocks and ores from the Saksagan' area of the Krivoy Rog
Basin. Geol.zhur. 18 no.5:63-69 '58.                     (MIRA 12:1)
      (Krivoy Rog Basin--Iron ores)      (Ore dressing)

YEPATKO, Yu.M. [IEpatko, IU.M.]; MEL'NIK, Yu.P. [Mel'nyk, IU.P.]

Some experimental and theoretical data on the formation of
goethite and hematite in the weathering surface of the Krivoy
Rog iron ore basin. Geol. zhur. 25 no.2:12-21  '65.

(MIRA 18:6)

1. Institut geologicheskikh nauk AN UkrSSR.

YEPATKO, Yu M.

BELEVTSEV, Yakov Nikolayevich; BURA, Galina Georgiyevna; DUBINKINA, Raisa
Pavlovna; YEPATKO, Yuriy Mikhaylovich; ISHCHENKO, Dmitriy Ivano-
vich; MEL'NIK, Yuriy Petrovich; STRYGIN, Aleksey Il'ich. Prinimali
uchastiye: KOZHARA, V.L.; KRAVCHENKO, V.M.; TAKHTUYEV, G.V.; SHCHER-
BAKOVA, K.F.. RODIONOV, S.P., otv.red.; ZAVIRYUKHINA, V.N., red.
izd-va; YEFIMOVA, M.I., tekhn.red.

[Genesis of iron ores in the Krivoy Rog Basin] Genezis zheleznykh
rud Krivorozhskogo busseina. Kiev, Izd-vo Akad.nauk USSR, 1959.
306 p.                                                    (MIRA 13:2)

1. Chlen-korrespondent AN USSR (for Rodionov).
       (Krivoy Rog Basin--Iron ores)

BELEVTSEV, Ya.N.; YEPATKO, Yu.M.; STRYGIN, A.I.

Subsurface oxidation zones in the Krivoy Rog Basin. Sov.geol.
2 no.11:110-123 N '59.                                    (MIRA 13:5)

1. Institut geologicheskikh nauk AN USSR.
          (Krivoy Rog Basin--Oxidation)

YEPATKO, Yu.M.; SHNYUKOV, Ye.F.

Conditions governing the formation of carbonate concre-
tions in the Kerch basin. Zap. Ukr. otd. Min. ob-va [no.1]:
75-82  '62.                                    (MIRA 16:8)

1. Institut geologicheskikh nauk AN UkrSSR, Kiyev.

BELEVTSEV, Ya.N. [Bielievtsev, IA.M.]; YEPATKO, Yu.N. [IEpatko, IU.M.];
PETUKHOVA, G.N. [Petukhova, H.M.]

Solubility of quartz and hematite in waters of various composit-
ion.  Geol. zhur. 20 no. 5:51-56 '60.                (MIRA 14:1)
              (Quartz)        (Hematite)

YEPATKO, Yu.M. [IEpatko, IU.M.]; LAGUTIN, P.K. [Lahutin, P.K.]; LALO, V.M.

Experimental data on the leaching of quartz-feldspar sandstones.
Geol.zhur. 23 no.1:89-92 '63.                                              (MIRA 16:4)

1. Institut geologicheskikh nauk AN UkrSSR.
          (Sandstone)              (Leaching)

BELEVTSEV, Ya.N.; FOMENKO, V.Yu.; NOTAROV, V.D.; MOLYAVKO,G.I.;MEL'NIK,
        Yu.P.; SIROSHTAN, R.I.;/DOVGAN', M.N.; CHERNOVSKIY, M.I.;
        SHCHERBAKOVA, K.F.; ZAGORUYKO, L.G.;.GOROSHNIKCV, B.I.;
        AKIMENKO, N.M.; SEMERGEYEVA, Ye.A.; KUCHER, V.N., TAKHTUYEV,
        G.V.; KALYAYEV, G.I.; ZARUBA, V.M.; NAZAROV, P.P.; MAKSIMOVICH,
        V.L.; STRUYEVA, G.M.; KARSHENBAUM, A.P.; SKARZHINSKAYA, T.A.;
        CHEREDNICHENKO, A.I.; GERSHOYG, Yu.G.; PITADE, A.A.; PADUTSKAYA,
        P.D.; ZHILKINSKIY, S.I.; KAZAK, V.M.; KACHAN, V.G.; STRIGIN,
        A.I., red.; LADIYEVA, V.D., red.; ZHUKOV, G.V., red.; YEPATKO,
        Yu.M., red.; SHCHERBAKOV, B.D., red.; SLENZAK, O.I., red.izd-va;
        RAKHLINA, N.P., tekhn. red.

        [Geology of Krivoy Rog iron-ore deposits]Geologiia Krivorozhskikh
        zhelezorudnykh mestorozhdenii. Kiev, Izd-vo Akad. nauk USSR.
        Vol.1.[General problems in the geology of the Krivoy Rog Basin.
        Geology and iron ores of the deposits of the "Ingulets,"
        Rakhmanovo, and Il'ich Mines]Obshchie voprosy geologii Krivbassa.
        Geologicheskoe stroenie i zheleznye rudy mestorozhdenii rudnikov
        "Ingulets," Rakhmanovskogo i im. Il'icha.  1962.  479 p.
                (Krivoy Rog Basin—Mining geology)      (MIRA 16:3)
                  (Krivoy Rog Basin—Iron ores)

YEPEL'BOYM, P.

Practices of Starchenkovskiy Brick Factory in producing ceramic robbon roofing tiles. Bil'.bud. 10 no.1:19-21 Ja '60.
(MIRA 13:5)

1. Nachal'nik otdela stroitel'nykh materialov Kiyevskogo oblmezhkolkhozstroya.
(Starchenkovskiy District--Brick industry)

YEPEL'BOYM, P.

How to sample clay to be used in laboratory and semiindustrial
testing.  Sil'.bud.  10  no.5:18-19  My  '60.
(MIRA 13:7)

1. Nachal'nik otdela stroitel'nykh materialov Kiyevskogo
oblmeshkolkhozstroya.
                (Clay--Testing)

YEPEL'BOYM, P.

We are organizing mass production of hollow bricks. Sil'. bud. 11
no.3:15-17 Mr '61.
(MIRA 14:2)

1. Nachal'nik otdela stroymaterialov Kiyevskogo oblmezhkolkhozstroya.
(Kiev Province--Hollow bricks)

YEPERIN, P.P.; KHREBTIKOVA, Z.P.

Our proposals. Elekt.i tepl.tiaga no.5:11-13 My '57. (MIRA 10:7)

1. Zamestitel' nachal'nika slushby lokomotivnogo khozyaystva Sverdlovskoy zheleznoy dorogi (for Yeperin). 2. Nachal'nik otdela remonta Sverdlovskoy zheleznoy dorogi (for Khrebtikova).
(Locomotives--Maintenance and repair)

YEPERIN, P.P.; TRET'YAK, T.P.

Our results and reserves for further economizing of electric energy. Elek.i tepl.tiaga 4 no.1:4-6 Ja '60.

(MIRA 13:4)

1. Glavnyy inzhener sluzhby lokomotivnogo khozyaystva Sverdlov-skoy dorogi (for Yeperin). 2. Glavnyy inzhener sluzhby elektrifi-katsii i energeticheskogo khozyaystva Sverdlovskoy dorogi (for Tret'yakov).

(Electric railroads--Cost of operation)

Yepeykina, K.P.

USSR/Analytical Chemistry - Analysis of Inorganic Substances          G-2

Abs Jour   :  Referat Zhur - Khimiya, No 2, 1957, 4790

Author     :  Babkin, R.L., Yepeykina, K.P.
Title      :  Rapid Determination of Nitrates in Boiler Water

Orig Pub   :  Energetik, 1956, No 8, 13-14

Abstract   :  The method which the authors recommend as a rapid method
              is based on the possibility of a direct titration of $NO_3$
              with a solution of indigocarmine (I) in a strongly
              acid medium.  Into a 100 ml flask are placed 10 ml of the
              water being investigated, 10 ml concentrated $H_2SO_4$ (Sp.
              Gr. 1.84) are rapidly added and the hot solution is
              titrated immediately with a solution of I to a dirty-
              green coloration.  To prepare the titrating solution of
              I, a weighed sample of finely comminuted I is placed
              into a porcelain dish, carefully moistened with concen-
              trated $H_2SO_4$ (6-8 ml $H_2SO_4$ per 1 g I), heated with

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USSR/Analytical Chemistry - Analysis of Inorganic Substances    G-2

Abs Jour    :  Referat Zhur - Khimiya, No 2, 1957, 4790

occasional stirring on a water bath until completely
dissolved, diluted to the predetermined volume, allowed
to stand for 5-6 days, filtered, and the titer of this
solution is then determined by using a standard solution
of $KNO_3$ or $NaNO_3$. Since the main reaction is accompanied
by secondary processes it is necessary to adhere strictly
to the set conditions of titration.

Card 2/2

- 38 -

BABKIN, R.L., inzh.; YEPEYKINA, K.P., inzh.

Determining microquantities of silicon and phosphorus in condensate.
Elek.sta. 29 no.6:34-37 Je '58.                          (MIRA 11:9)
(Silicon--Analysis) (Phosphorus--Analysis) (Steam--Analysis)

BABKIN, R.L., insh.; YEPEYKINA, K.P., insh.

Determining pH of weakly buffered mediums. Teploenergetika
7  no.2:66-70  F '60.                           (MIRA 13:5)

1. Vostochnyy filial Vsesoyuznogo teplotekhnicheskogo instituta.
              (Hydrogen-ion concentration)

BABKIN, R.L., inzh.; YEPEYKINA, K.P.

Analysis of oxygen dissolved in water. Teploenergetika 9 no.2:
48-54 F '62. (MIRA 15:2)

1. Vostochnyy filial Vsesoyuznogo teplotekhnicheskogo instituta.
(Water--Analysis) (Colorimetry)

YEPIFANOV, A.

Radioperedaiushchie ustroistva. [Radio transmitting equipment]. Moskva, Voen-morizdat, 1945, 159 p. illus. .

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference department, Washington, 1951, Unclassified.

L 44564-65   EWT(d)/EWT(1)/EWP(c)/EWA(d)/EWP(v)/T/EEC(b)-2/EWP(k)/EWP(h)/EWP(1)/EWA(h)
Pm-4/Po-4/Pq-4/Pf-4/Pg-4/Peb/Pl-4

ACCESSION NR AM5012948                BOOK EXPLOITATION                UR/

Yepifanov, Aleksandr Dmitriyevich

Reliability of automatic systems  (Nadezhnost' avtomaticheskikh sistem)  Moscow,
    Izd-vo "Mashinostroyeniye",  64. (335 p. illus., biblio. Errata slip inserted.
    9,600 copies printed.

TOPIC TAGS:  automation, operation research, production engineering

PURPOSE AND COVERAGE:  The book presents the theoretical principles of automatic
system reliability and offers methods of analysis and synthesis of systems with and
without redundancy, restored and non-restored.  Most of the theoretical proposi-
tions are illustrated with block diagrams.  The book is intended for broad sections
of scientific and technical engineering personnel connected with design development
and operation of automatic systems and also as an aid for students of higher ed-
ucational institutions at course and diploma design.

TABLE OF CONTENTS: (abridged):

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ACCESSION NR AM5012948

     and restoration of systems — 33
Ch. III Effect of the operational conditions on the faultless operation of compon-
     ents and systems — 90
Ch. IV Faultless operation of automatic systems without redundancy and restoration
     —114
Ch. V Steady redundancy in automatic systems — 167
Ch. VI Redundancy with application of logical circuits — 214
Ch. VII Reliability of restored systems — 241
Ch. VIII Methods of experimental determination of reliability of elements and systems
     —294
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SUBMITTED: 22Oct64         SUB CODE: DP, IE

NO REF SOV: 022         OTHER: 023

Card 2/2

YEPIFANOV, A.P.; inzh.

Excellent track maintenance under difficult conditions. Puti i put.
khoz. no.4:9-10 Ap '59.                                    (MIRA 13:3)

1.Nachal'nik distantsii, stantsiya Vavilovo, Ufimskoy dorogi.
     (Chelyabinsk Province--Railroads--Maintenance and repair)

YEPIFANOV, A.R., podpolkovnik.

Eliminate mistakes in cadets' piloting technique. Vest.Vozd.Fl.
40 no.7:58-63 Jl '57.                                      (MIRA 10:11)
                           (Flight training)

1.   YEPIFANOV, B. P..

2.   USSR (600)

4.   Iron Ores—Tula Province

7.   Calculation of the Tula iron ore reserves based on prospecting and previous surveys, for Januaryl, 1944.   Izv. Glav. upr. geol. fon. no. 2  1947.

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

YEPIFANOV, B. P.

USSR/Geology - Sedimentary Rocks          Mar/Apr 51

"On Pustovalov's Article 'Problem of Scientific
State of Sedimentary Rocks,'" Assoc Prof B. P.
Yepifanov, Voronezh State U

"Iz Ak Nauk, Ser Geol" No 2, pp 139-149

Yepifanov outlines his opinion on Pustovalov's
errors in latter's theory of "sedimentary differen-
tiation" and "periodicity law of deposit formation"
and on his incorrect application of Marxian dia-
lectical methods to theory of sedimentary rocks.

180T61

LC

YEPIFANOV, B.P.

Interrelations between ferruginous quartzites and overlaying pre-Cambrian shale-carbonate series found in the Voronezh auticline. Dokl.AN SSSR 107:no.3:453-454 Mr '56. (MIRA 9:7)

1.Moskovskiy institut tsvetnykh metallov i zolota imeni M.I. Kalinina. Predstavleno akademikom N.M.Strakhovym. (Voronezh--Geology, Stratigraphic)

TEPITANOV, B.P.

k On the Geological p...
Инов...
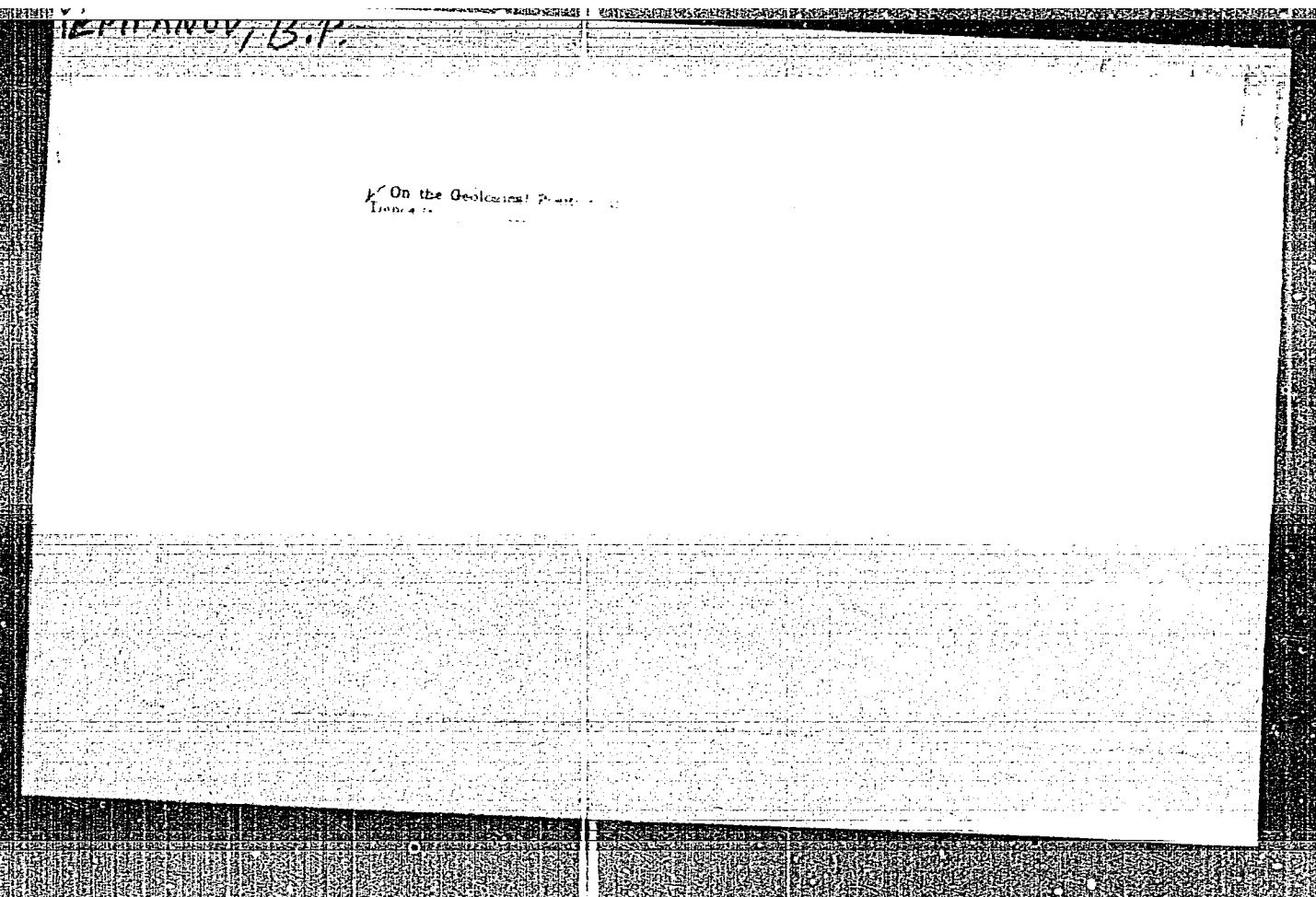
,AUTHOR:          Yepifanov, B.P.                          20-2-54/50

TITLE:           On the Geological Conditions of the Iron-Ore  Horizons of Lipetsk
                 and Tula (O geologicheskikh otnosheniyakh lipetskogo i tul'skogc
                 zhelezorudnykh gorizontov)
PERIODICAL:      Doklady AN SSSR, 1957, Vol. 116, Nr 2, pp. 284 - 286 (USSR)

ABSTRACT:        These two ore deposits were considered as results of the accumula-
                 tion of brown iron oxides in a network of lakes at the beginning
                 or in  the middle of the Jurassic era, i.e. as of the same age and
                 formed under the same conditions. It was later on proved, however,
                 that the Tula ores were formed in littoral-marine lagoons in the
                 middle of the Visé epoch. Material for a similar revision concern-
                 ing the Lipetsk ores also exists now. The paleontological material
                 indicates that the Lipetsk ore horizon can by no means be younger
                 than Lower  Carboniferous. The lithological characteristics do
                 not admit the assumption that the deposits of the ore horizon in
                 one and the same reservoir were accumulated with the Jurassic rocks
                 covering it. This is also contradicted by a complete absence of
                 remains of Jurassic organism and by the cutting off of the ore ho-
Card 1/3         rizon by Jurassic rocks. A further precise definition of the stra-
                 tigraphic position of the Lipetsk ore horizon at first view meets

.On the Geological Conditions of the Iron-Ore Horizons of Lipetsk and Tula     *20-2-34/50*

with insuperable difficulties. It is deposited on limestones of
the Fran stage and is covered by Middle Callovian rocks. The
author's observations showed, however, that the Lipetsk ores
northward rise to higher Devonian horizons and then to the Lower
Tourné. Nowhere, however, they lie on carboniferous (stalinogorsk)
deposits. On the contrary, in the Tula and Smolensk regions iron
ores were discovered under the carboniferous deposits. The totali-
ty of data leads to the conclusion that the Lipetsk ore horizon
is of the same age as the bauxite horizon of the Moscow basin,
and northward goes over onto the latter. It belongs to the lake
stage,of facies of the carboniferous period. The original siderite
nature of the Lipetsk ores was supposed and proved, too. These
siderites shall be considered as diagenetic. Consequently certain
common features of the Tula and Lipetsk ore horizons are explained
by their belonging to the humid formation of the Visé stage and
by their common history in the Post-Paleozoic (namely washing out
in the Mesozoic). The differences between them, especially the
lack of remains of marine fauna in the Lipetsk ores, is explained
by their belonging to different facies. The technological differ-
ences of the Lipetsk ores, well-known to the metallurgists, are
to be traced to their original siderite-like nature. There are

Card 2/3

20-2-34/50.

On the Geological Conditions of the Iron-Ore Horizons of Lipetsk and Tula

1 figure, 1 table and 14 Slavic references.

ASSOCIATION:  Moscow Institute for Nonferrous Metals and Gold imeni M.I Kalinin
(Moskovskiy institut tsvet_nykh metallov i zolota im. M.I. Kali-
nina)

PRESENTED:   May 3, 1957, by N.M. Strakhov, Academician

SUBMITTED:   April 28, 1957

AVAILABLE:   Library of Congress

Card 3/3

YEPIFANOV, B.P.

      Pre-Cambrian stratigraphy on the Kursk-Voronezh arch. Mat. po geol.
i pol. iskop. tsentr. raino. evrop. chasti SSSR no.2:28-52 '59.
                                        (MIRA 13:9)

      1. Institut tsvetnykh metallov i zolota im. Kalinina.
         (Kursk Magnetic Anomaly--Geology, Stratigraphic)

YEPIFANOV, Boris Yefimovich, kandidat tekhnicheskiy nauk; SMIRENNIKOV, Pavel Stepanovich, inzhener; ORESHKIN, B.S., redaktor; ARNOL'DOVA, K.S., redaktor izdatel'stva; SHITS, V.P., tekhnicheskiy redaktor;

[Operation and repair of railroads for transportation of lumber] Ekspluataisiia i remont lesovoznykh zheleznykh dorog. Moskva, Goslesbumizdat, 1956. 207 p.                                    (MLRA 10:5)
        (Lumber—Transportation) (Railroads)

BELOZERTSEV, Vasiliy Yefimovich, kand.tekhn.nauk; KUVSHINSKIY, V.V.,
    inzh., retsenzent; IKPIVANOV, B.Ya., dotsent, kand.tekhn.nauk,
    retsenzent; IONOV, B.D., red.; PITERMAN, Ye.L., red.izd-va;
    PARAKHINA, N.L., tekhn.red.

[Road-building machinery] Dorozhnostroitel'nye mashiny.  Moskva,
Oosleabumizdat, 1960.  263 p.                          (MIRA 14:3)
                (Road machinery)

YEPIFANOV, Boris Yefimovich, dotsent; IONOV, Boris Dmitriyevich, dotsent; KORUNOV, M.M., prof., retsenzent; SHCHELKUNOV, V.V., dotsent, retsenzent; SHCHENNIKOV, P.N., dotsent, retsenzent; SMIRNOV, A.I., dotsent, red.; PITERMAN, Ye.L., red.izd-va; VDOVINA, V.M., tekhn.red.

[Road-building machinery in the forest industries and principles of road building] Dorozhno-stroitel'nye mashiny v lesnoi promyshlennosti i osnovy dorozhnogo dela. Moskva, Goslesbumizdat, 1961. 376 p. (MIRA 14:12)

1. Ural'skiy lesotekhnicheskiy institut (for Korunov). 2. Arkhangel'skiy lesotekhnicheskiy institut (for Shchelkunov).
    (Road machinery)    (Wood-using industries)

YEPIFANOV, Dmitriy Yefimovich; OSIPOV, G.A., otv.red.; FROLOVA, Ye.I.,
    red.izd-va; SHKLYAR, S.Ya., tekhn.red.

    [Protective grounding of electric systems in mining]  Zashchitnye
    zazemleniia elektricheskikh ustanovok v gornorudnoi promyshlen-
    nosti.  Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu,
    1960.  161 p.                                        (MIRA 14:6)
            (Electricity in mining)
            (Electric currents—Grounding)

KISHINSKIY, Mikhail Il'ich, kand. tekhn. nauk, dots.; YEPIFANOV,
    Boris Yefimovich, kand. tekhn. nauk, dots.; SMIRENNIKOV,
    Pavel Stepanovich, inzh.; STRASHINSKIY, B.A., inzh.,
    retsenzent; NOVIKOV, G.G., prepodavatel', retsenzent;
    GAVRILOV, I.I., red.

[Use and repair of logging roads] Ekspluatatsiia i remont
lesovoznykh dorog. Izd.2., perer. Moskva, Izd-vo "Lesnaia
promyshlennost'," 1964. 40. p.                    (MIRA 17:7)

1. Alatyrskiy lesotekhnicheskiy tekhnikum (for Novikov).

YEPIFANOV, G., inzh.; YERMOLOV, Yu., inzh.

Standardize the design of safety valves. Bezop.truda v prom. 6
no.6:33 Je '62. (MIRA 15:11)

(Pressure vessels—Safety appliances)

USSR/Diseases of Farm Animals.  Diseases Caused by           R-1
        Bacteria and Fungi.

Abs Jour:  Ref Zhur-Biol., No 18, 1958, 83537

Author   :  Yepifanov, G. F.
Institute:  Siverian Scientific Research Veterinary Institute
Title    :  The Diagnostic Value of Blood Serum Reaction in Para-
            tuberculosic Enteritis in Cattle.

Orig Pub :  Sb. nauchn. rabot Sibirsk. n.-i. vet. in-ta, 1957,
            vyp. 7, 195-197

Abstract :  Allergic tests with fowl tuberculin may fail on all
            the animals of the herd in long lasting paratubercu-
            losis (P) enzooty.  Control of P on farms can not
            always be achieved with methods of allergic examina-
            tions alone.  The blood serum reaction is of great
            diagnostic importance and is recommended for wider use.
            -- From the author's summary.

COUNTRY      : USSR                                                    R

CATEGORY     : Diseases of Farm Animals. General Problems

ABS. JOUR.   : RZhBiol., No.13,1958 No. 59632

AUTHOR       : Epifanov, G.

INST.        : -

TITLE        : Therapeutic Properties of Colostric Curds

ORIG. PUB.   : S. kh. Sibiri, 1957, No 12, 73-74

ABSTRACT     : For the treatment and prophylaxis of gastrointes-
               tinal diseases of the young stock, dry colostric
               curds (DCC) were applied with a good result. For
               the prophylaxis, DCC was administered once a day
               along with food in the following doses: to a calf,
               up to 10 days of age - 20 to 35 g.; from 10 to 20
               days of age - 50 to 70 g.; to a young pig, up to
               20 days of age - 2 to 3 g., and to an older one -
               3 to 5 g. Sick animals were given DCC twice daily

Card:          1/2

                              R - 1

COUNTRY      :  USSR                                                    R
CATEGORY     :  Diseases of Farm Animals. General Problems

ABS. JOUR.   :  RzhBiol., No.13, 1958, No. 59652

AUTHOR       :
INST.        :
TITLE        :

ORIG. PUB.   :

ABSTRACT     :  in twice as high doses. The technique of prepara-
cont'd.         tion of DCC is described.-- L. S. Kirichenko

Card:           2/2

USSR / Virology.  Human and Animal Viruses.  Swine Disease Viruses.    E-3

Abs Jour    : Ref Zhur - Biol., No 20, 1958, No 90592

Authors     : Okuntsov, I. V.; Yepifanov, O. F.
Inst        : Siberian Veterinary Scientific Research Institute
Title       : Experimental Studies of Immunization of Hogs Against Plague
              With Dry Rabbit Vaccine.

Orig Pub    : Byul. nauchno-tekhn. inform. Sibirsk. n.-i. in-t, 1958, No. 3
              21-23.

Abstract    : No abstract given.

Card 1/1

12

YEPIFANOV, G., *F.,* nauchnyy sotrudnik.

"Hogging off potato fields. Nauka i pered. op. v sel'khoz. 8 no.5:
42 My '58.                                              (MIRA 11:5)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy institut.
        (Swine--Feeding and feeding stuffs)   (Potatoes)

YEPIFANOV, G.F., referent.

Testing a virus passed through rabbits for use in immunizing swine
against plague (from "Bulletin de l'Académie Veterinaire de France,
XXVI, No.9, 1953). Veterinariia 35 no.6:75-76 Je '58. (MIRA 11:6)
                    (Swine plague)

ROMANCHENKO, I.F.; OVSYANOV, N.K.; YEPIFANOV, O.F.; OVANESOVA, N.B.;
        SHMULEVICH, I.S.

    Throughout the Soviet Union. Veterinariia 35 no. 7:92-95 Jl '58.
                    (Veterinary medicine)

OKUNTSOV, I.V., kand.vet.nauk, sasluzhennyy veterinarnyy vrach RSFSR;
YEPIFANOV, G.F., nauchnyy sotrudnik

Lapinized vaccine against hog cholera in experiments and in practice.
Veterinariia 36 no.2:48-51 F '59.                    (MIRA 12:2)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy institut.
(Omsk Province--Hog cholera)

YEPIFANOV, G.F.

Parakeratosis, an equilibrium disorder syndrome related to the feeding
of pigs. L. Perper, L. Placidi. Recuel de Medicine Veterinaire de
L'ecole d'Alfort, CXXXII, No.12, 1956. Veterinariia 36  no.3:82 Mr '59.
                                            (MIRA 12:4)

(Swine—Diseases and pests)

YEPIFANOV, G., starshiy nauchnyy sotrudnik

New books on veterinary medicine. Veterinariia 37 no.4:
89 Ap'60.                                    (MIRA 16:6)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy in-
stitut.
          (BIBLIOGRAPHY--VETERINARY MEDICINE)

YEPIFANOV, G.F.; VARDOSANIDZE, D.G.; ALIVERDIYEV, A.A.; GUL'YEV, P.K.

Information and brief news. Veterinariia 38 no.7:95-96
Jl '61.                                    (MIRA 16:8)

(Veterinary medicine)

LOBANOV, K.P.; YEPIFANOV, G.F., kand.veterin.nauk

Eradication of hog cholera in Omsk Province. Veterinariia 40
no.7:25-26  Jl  '63.                                                  (MIRA 16:8)

1. Nachal'nik veterinarnogo otdela Omskogo oblastnogo upravleniya
proizvodstva i zagotovak sel'skokhozyaystvennykh produktqv (for
Lobanov). 2. Sibirskiy nauchno-issledovatel'skiy veterinarnyy
institut (for Yepifanov).
                        (Omsk Province--Hog cholera)

BORISOVICH, Yu.F.; YEPIFANOV, G.F.; MEL'NIKOV, P.; SERGIYENKO, Ye.S.;
        SHEVCHENKO, R.; FROLOV, L.; LODYANOV, V.; NIKOL'SKIY, Ya.D.;
        LUZYANIN, D.; AZIMOV, D.

        Information and brief news. Veterinariia 40 no.2:91-96   F '63.
                                                          (MIRA 17:2)

OKUN'KOV, P.; OSTAPENKO, K.; YEPIFANOV, G.F.; MEDVEDEV, I.D.; FORTUSHNYY, V.;
IBRAGIMOV, R.P.; KOLEGAYEV, G.

Brief news. Veterinariia 41 no.12:101-109 D '64. (MIRA 18:9)

OSTAPENKO, K.; KRYKIN, A.; DUL'NEV, V.I.; OSETROV, V.S.; TOPALYAN, K.M.;
    FEDOROV, Yu.; YATSYSHIN, A.I.; TITOK, V.A.; YEPIFANOV, G.;
    RASTEGAYEV, Yu.

    Controlling little-known animal diseases. Veterinariia 42
    no.8:118-124 Ag '65.                          (MIRA 18:11)

YEPIFANOV, G.F., kand. veterin. nauk

Practices in the extermination of hog cholera. Veterinariia 41
no.9:4-6  S '64.                                        (MIRA 18:4)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy institut.

9

Change of physical properties of cold-drawn brass on annealing. O. L. Esilanov (Phys. Lab., Dzaudzhikau). J. Tech. Phys. (U.S.S.R.) 16, 1475-82(1946)(in Russian). —Brass (Cu 64.38, Zn 35.11) wire of 1.0 mm. diam. was drawn out, with ice-cooling, to a diam. of 0.69 mm.; spiral-shaped samples were annealed progressively, by steps of 20° for 2 min., at $t$ from 24° to 390°. The elec. resistivity $r$ (at 34°) falls with rising $t$, by approx. 15%, between 24° and 390°. The curve differs from that of Tammann (Ann. Physik 16, 111, 667(1933); Z. Metallkunde 26, 97(1934)) in that it shows three discontinuities of $r$ around $t = 100, 200,$ and 320°. The same 3 discontinuities appear, even more distinctly, in the curve of the ther-mo-elec. e.m.f. $V$ of brass wire annealed at $t$ against the same wire slowly annealed at 450°, 30 min. Correspond-ingly, plots of $dr/dt$ against $t$ show 3 distinct max. in the temp. intervals 90-120°, 180-240°, and 300-390°, those of $dV/dt$ at 90-120°, 100-180°, and 200-320°.  N. T.

A S R . I S L A    METALLURGICAL LITERATURE CLASSIFICATION

C A

Energy balance of the process of cutting metals. G. I. Epifanov and P. A. Rebinder. *Doklady Akad. Nauk S.S.S.R.* 66, 653-4 (1949).—The amt. of energy absorbed as excess potential energy of the crystal lattice of the plastically deformed shavings produced in the drilling of Al, detd. by the difference of the mech. work A and the calorimetrically measured evolved heat Q, proved to be but a very small fraction of A; its variation in the presence of capillary-active substances is within the limits of exptl. error. Thus, in nonpolar kerosene, and in solns. (concn. in millimoles/l.) of caprylic acid (200), palmitic acid (8), heptyl alc. (343), and cetyl alc. (61), $100(A - Q)/A =$ 2.5, 0.5, 1.6, 1.2, and 1.1%, resp. At equal thickness of the removed metal layer (equal time of drilling), presence

of capillary-active substances decreases Q about 2-3 times as compared with the pure nonpolar solvent. The in-significance of the fraction of the total energy absorbed owing to plastic deformation in the drilling process, is attributed to a sort of satn. phenomenon wherein, begin-ning with a certain degree of cold-working, further strain results in no further absorption of energy. This point is not reached in the usual expts. of plastic deformation of metals. For Al, the work of cutting is of the order of $10^{10}$ ergs/sq. cm., the absorbed energy of the order of $10^8$, i.e. about 1%, in agreement with the expt.     N. Thon

METALLURGICAL LITERATURE CLASSIFICATION

**Influence of the nature of the metal on the adsorptive easing of the cutting process.** G. I. Epifanov, P. A. Rebinder, and L. A. Shreiner. *Doklady Akad. Nauk S.S.S.R.* 66, 879-881(1949).—The torque, $M$, of the drill (diam. 7 mm., cutting angle 90°, 440 r.p.m.), the cutting work $A$, and thickness, $h$, of metal removed in one revolution of the drill, were detd. for 3 groups of metals: (I) Al and Cu, representing highly plastic metals, undergoing a high degree of cold working in the cutting process; (II) Zn, Sn, and Cd, representing metals of lower plasticity; and (III) bronze and cast iron, representing brittle metals, subject to elastic deformation only. The easing of the cutting work due to immersion in a liquid is expressed by $\gamma = A_0/A$, where $A_0$ refers to dry cutting (in air). In soln. (optimum concn. in millimole l.) of heptyl alc. (313), cetyl alc. (10), caprylic acid (288), and palmitic acid (8), in nonpolar kerosene, $\alpha$ is highest ($\sim 5$) for group I (Al), smaller ($\sim 1.5$) for II (Zn), and $\sim 1$ for III (bronze), i.e., in the last group, surface-active substances have no effect on $A$. The ratio $\beta = h/h_0$ varies in the same proportion as $\alpha$, i.e., $\alpha \approx \beta$, that is, presence of a surface-active substance increases $h$ most markedly in group I, less in group II, not at all in group III. The ratio $\gamma = M_0/M$ remains unchanged, $\gamma \approx 1$, in all 3 groups. This behavior of the 3 magnitudes $\alpha$, $\beta$, and $\gamma$ (related by $\alpha = \beta\gamma$) proves that the effect of the polar soln. consists in an easing of the plastic deformation of the metal, i.e., in counteracting its cold working, not in a lubricating action.

If the latter were the case, only $M$ should undergo a change, whereas $h$ should remain unchanged; actually, $M$ remains const., and $h$ changes. N. Thon

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*9*

*1951*

**Influence of the mechanical properties of metals on the effectiveness of liquid media in free shaving.** G. I. Epifanoy (Acad. Sci. U.S.S.R., Moscow). *Doklady Akad.*
*Nauk S.S.S.R.* 75, 415-18(1950).—Surface-active liquid media lower the work of cutting in metals of high plasticity, but have very little effect on low-plasticity brittle metals. The 1st group should comprise the face-centered cubic metals Al and Cu, whereas in Sn and Zn, resp., tetragonal and hexagonal, plastic flow is limited to few slip planes, and brittle rupture occurs at a relatively early stage of the shaving operation. A 3rd group includes typically brittle metals, bronze, cast iron, and Sb, the cutting of which involves practically no plastic deformation. The degree of plastic deformation in the milling of annealed samples of pure Al, Cu, Sn, and Zn was detd. by the ratio of the length of the cut and the length of the chip. In dry milling, this ratio was (in the above order) 7.3, 4.3, 1.88, and 1.68; under BuOH, 2.8, 2.7, 1.65, and 1.60. Consequently, the effect of the surface-active medium, BuOH, is most marked with the most highly plastic metals, and is relatively insignificant with Sn, and, even more, with Zn. For the highly plastic metals, the work of plastic deformation makes up the major part of the work of cutting. The following data give the hardness (kg./sq. mm.), the sp. work of cutting (kg./cc.) under dry conditions, and the same under BuOH: Al, 20, 90, 29.5; Cu, 46, 130, 67; Sn, 8.3, 11.4, 8.0; Zn, 53, 46.5, 42.5; bronze, 105, 62, 62; cast iron, 303, 62, 45; Sb, 53, 1.3, 1.4. The work of cutting clearly increases with the plasticity of the metal; thus, at approx. equal hardness, 40-50, that work is only 1.8 in the case of Sb, increases to 46.5 for Zn, and to 130 for Cu; for cast iron, it is 1.5 times as low as for Al, despite the considerably greater hardness, and comparison of Sb with Sn shows for Sb a work of cutting only one-sixth of that of Sn, despite a hardness 7 times as great. In the series of the above 7 metals, the ratio of the work expended on shaving under dry conditions and in BuOH is, resp., 3.1, 1.94, 1.43, 1.1, 1.0, 1.38, 1.28. In the case of the plastic metals, the lowering of the work by the surface-active medium is due to a decrease of the plastic deformation, or, in other words, to earlier occurrence of brittleness. The effectiveness of the surface-active medium decreases with decreasing susceptibility to cold-work, and disappears almost completely in Zn, and completely in bronze. With very highly brittle metals, cast iron and Sb, the surface-active medium again becomes effective. In this instance, its role consists in adsorptive prevention of the collapse of the microcracks, the formation of which precedes brittle rupture.     N. Thon

C. A.

Influence of preliminary cold-working of aluminum on the effectiveness of the action of active liquids during free planing. G. I. Epifanov. *Doklady Akad. Nauk S.S.S.R.* 73, 555-7(1950); cf. C.A. 45, 5081f.—An exptl. study was made of the effectiveness of water and of BuOH in the free planing of commercially pure Al that had been cold-rolled 75, 50, 25, 17, and 0% after annealing at 400°. Specimens 2.5 mm. thick were free planed at a const. speed of 10 cm./min., a feed of 0.3 mm., and a cutting angle of 68°. The longitudinal shrinkage of the chips on cutting dry was about 8% for specimens cold-rolled 0% and was 4.5% for specimens cold-rolled 75%. This behavior was explained by the exhaustion of slip systems and indicated that chip formation occurs at a given degree of deformation whether this deformation is produced by preliminary cold-working or by the cutting action. The specific work of dry-cutting was 95 kg. m./cc. for specimens cold-rolled 0% and was 50 for specimens cold-rolled 75%. The specific work of cutting in water was 85 kg. m./cc. at 0% and 35 at 75% cold-work, and the corresponding longitudinal shrinkage was about 4.5 and 3.0%. These two properties were essentially independent of the amt. of cold-work for cutting in BuOH. The difference in behavior between cutting dry and in BuOH is due to the higher deformation of the chip that occurs in dry-cutting. When BuOH is used in cutting a ductile metal, presumably a narrow zone of brittle material is present at the cutting edge.     A. G. Guy

YEPIFANOV, G.

"Influence of an Active Liquid Medium on the Specific Cutting Work and Longitudinal Setting of the Chip in the Free Planing of Metals"

Rev., 1953, 6, 2421 [in Russian]. The experiments consisted of planing Al, Cu, Fe, Pb, Sn, and Zn with high-speed steel cutters having cutting angles of 58° and 68°. In order to study the efficiency of non polar kerosene, methyl-, ethyl-, and heptyl-alcohol, oleic acid and ethyl laurate. E. and A. arrive at the following conclusions: The view of Rebbinder and his school confirmed namely that the liquid media have ... a surface active cutting effect ... some experiments has a definite adverse effect because it ... cannot be attributed to their lubricating and still less their cooling properties. The cutting action of surface active liquids is exemplified by their capacity to transform a very small zone of the metal adjacent to the cutting edge of the tool into a peculiarly brittle state, which leads to detachment of the chip at a smaller degree of deformation of the entire cutting zone. (3) The change of the sp. cutting work, under the effect of active media, takes place if the longitudinal setting of the chip. It is concluded that the basic part of the work of cutting plastic metals is expended in plastic deformation of the cutting zone, the measure of which is the longitudinal setting of the chip. The relation between the cutting work and setting is well represented by Kuznetsov's formula $\sigma_s = \sigma_a \zeta^m$, where $\sigma_s$ conditional cutting stress, dimensionally and numerically ...

C. a.
/ 951

The effectiveness of the action of liquid media in free shaving of metals. N. A. Pletneva and G. I. Epifanov (Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 77, 1051-3(1951).—The sp. work of cutting, $A$ (in kg./cc.), was detd. for a series of metals, in shaving at a cutting angle of 68° (58° with C), to a depth of 0.20 mm. for Al and Cu, 0.15 for Fe, Ni, and stainless steel, 0.30 for Sn, and 0.50 for Pb. In dry cutting (without liquid), the values, $A_0$, are: Al 50, Cu 90, Fe 270, Ni 180, Pb 5.7, Sn 11.3, stainless steel 280, heat-resistant alloy 300. Values of the ratio $A_0/A$ in liquid media, in the same order of the metals, are: in nonpolar hydrocarbons, 1.4-1.7, 1.7-2.0, 0.88, 1.1, 1.4, 1.3, 0.84, 0.95; in H₂O, 1.7, 1.0, 2.0, 2.0, 1.5, 1.3, 1.1, 1.1; in MeOH, 3.5, 1.5, 1.7, 1.7, 1.5, 1.4, 1.1, 1.0; in BtOH, 4.5, 1.5, 1.9, 1.6, —, 1.3, 1.0, 1.0; in C₃H₇OH, BuOH, 4.5, 1.8, 2.1, 1.4, 1.5, 1.4, 1.2, 1.0; in C₅H₁₁OH, 5.0, 1.9, 2.3, 1.4, —, 1.4, —, —; in AcOH, 2.0, 1.5, 2.4, —, 1.3, 1.2, 1.2, 1.0; in BuCO₂H, 3.1, 1.9, 2.4, 1.8, 1.3, —, 1.3, 1.2, 1.2, 1.0; C₅H₁₁CO₂H, 4.0, 2.1, 2.3, 1.7, 1.3, 1.3, 1.4, 1.3, 1.3, 1.1; C₅H₁₁CO₂H, 4.0, 2.1, 2.3, 1.7, 1.3, 1.3, 1.1; in 1.1; in oleic acid, 4.8, 2.1, 2.2, 1.6, 1.3, 1.5, 1.5, 1.1; in EtCO₂Et, 3.5, 1.7, 2.5, 1.7, 1.2, 1.3, 1.0, 0.97; in BuCO₂Et, 5.3, 3.9, 1.7, 2.3, 1.6, 1.3, 1.3, 0.93, 1.0; in C₅H₁₁CO₂Et, 5.9, 1.9, 2.3, 1.9, 2.2, 1.5, 1.3, 1.3, 1.0, 1.0; in AmCO₂Et, 5.9, 1.9, 2.3, 1.4, 1.2, 1.3, 1.0, 1.0; in CCl₄, 5.9, 2.6, 2.8, 2.5, 0.7, 0.97, 1.8, 1.3. These data show the specificity of the effects of different liquids on different metals, and the diversity of the phenomena which obviously involve more factors than simple adsorption. N. Thon

YEPIFANOV, G. I.

USSR/Metals - Aluminum, Machining          11 Oct 51

"Decrease of the Zone of Plastic Deformation, Caused
by Removal of a Chip, Under the Action of Active
Liquid Media," G. I. Yepifanov, L. A. Shreyner, Inst
of Phys Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXX, No 5, pp 781, 782

Investigates effect of ethyl-laurate on extent of
plastic deformation zone in surface layer of alumi-
num during shaping.  Dry cutting produces 2 zones of
cold working, high and weak, total deformation zone
being $2\frac{1}{2}$ times cutting depth, while cutting in ethyl-
laurate gives single zone of weak cold working equal
approximately to depth of cutting.  Submitted by Acad
P. A. Rebinder 16 Jun 51.                     221T48

YEPIFANOV, G. I.

Metal Cutting

Two theories on cutting of metals.   Zhur. tekh. fiz. 22, no. 3, 1952.

9.  Monthly List of Russian Accessions, Library of Congress,  __August__    195%, Unclassified.

USSR/Chemistry - Metallurgy Lubricants 21 Sep 53
Metallurgy - Extrusion

"The Effect of Lubricants on the Coefficient of
Friction during Extrusion of Metals," S.Ya. Veyler
and G.I. Yepifanov, Inst of Phys Chem Acad Sci USSR

DAN SSSR, Vol 92, No 3, pp 593-595

Studied the effect of MeOH, BuOH, and nonylic acid
on the coef of friction of steel, copper, and brass
during punch-press extrusion of these metals. Found
that these lubricants effectively reduce the coef
of friction. This reduction is due to the plasti-
cising action of the lubricant, i.e. the layer of

268T4

metal closest to the punch is plasticized and hence
is more readily deformed. The effect is distinct
from that of external lubrication. Presented by
Acad P.A. Rebinder 11 Jul 53.

YEPIFANOV, G. I.

268T4

YEPIFANOV, Georgiy Ivanovich.

Academic degree of Doctor of Physico-Mathematical Sciences, based on his defense, 10 June 1954, in the Council of the Inst of Physical Chemistry, Acad Sci USSR, of his dissertation entitled: "Physical Bases of the External Medium on the Processes of Deformation and Destruction of Metals during Cutting."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 10, 30 Apr 55, Byulleten' MVO SSSR, No. 15, Aug 56, Moscow, pp. 5-24, Uncl. JPRS/NY-537

EPIFANOV, G. I.

| | |
|---|---|
| **USSR/Physics** | Techn. Physics |
| **Card** | **:** 1/1 |
| **Authors** | **:** Shreyner, L. A. and Epifanov, G. I. |
| **Title** | **:** Strengthening coefficient of metallic monocrystals |
| **Periodical** | **:** Dokl. AN SSSR, 97, Ed. 1, 85 - 87, July 1954 |

**Abstract : ** The phenomenon called "the strengthening coefficient" is explained. The displacement of one part of the crystal relative to the other, in a narrow band oriented in a sliding surface, is apparently the result of the non-homogeneous displacement of atoms which distort the crystal lattice and hinder free displacement. The quantitative measure of strengthening is expressed by the tangent of the sloping angle of the curve which expresses the relation between the shearing stress and the magnitude of the specific crystallographic displacement. Four USSR references. Graph.

**Institution :** Acad. of Sc. USSR, Institute of Physical Chemistry

**Presented by :** Academician, P. A. Rebinder, March 30, 1954

EPIFANOV, G. I.

USSR/Chemistry - Physical Chemistry

Card 1/1

Authors        :  Epifanov, G. I., Pletenəva, N. A., and Rebinder P. A., Academician

Title          :  About the mechanism of the effect of active media during cutting of metals

Periodical     :  Dokl. AN SSSR, 97, Ed. 2, 277 - 279, July 1954

Abstract       :  The effect of active media is analogous to the effect of additions intro-
                  duced into the metal for the purpose of improving its workability and
                  includes only a narrow zone of disintegration. The idea about the cutting
                  effect of active media serves as an aid in explaining the large experimen-
                  tal material regarding the effect of media on the deformation and disinte-
                  gration processes of metals during the cutting. Cutting is the only process
                  which produces a clear metal-surface free of any films or impurities.
                  Thirteen references.

Institution    :  Acad. of Sc. USSR, Institute of Physical Chemistry

Submitted      :  March 30, 1954

USSR/ Chemistry - Physical chemistry

Card   1/1      Pub. 22 - 35/56

Authors      :  Epifanov, G. I.; Soloshko, F. P.; and Rebinder, P. A., Academician

Title        :  New method of determining the sliding friction coefficient and its appli-
                cation to the study of the adsorption-lubrication effect.

Periodical   :  Dok. AN SSSR 99/5, 801-804, Dec 11, 1954

Abstract     :  A new method is presented for the determination of the sliding-friction
                coefficient. The distinctive characteristic of this method is the existence
                of a nonstationary zone in which continuous conversion from rolling friction
                through mixed friction into sliding friction takes place. The stationary
                state of the system is the state of the pure sliding friction at which the
                system arrives gradually through asymptotic approximation. This asymptotic
                approximation of the system toward the stationary state, corresponding to
                the sliding friction, prevents any possibility for the origination of auto-
                vibration in the system. Such a system will have only a periodic vibrations
                which will lead it into a stable equilibrium state. Seven references: 6-
                USSR and 1-English (1933-1954). Graphs; drawing.

Institution:    Academy of Sciences USSR, Institute of Physical Chemistry
Submitted  :    September 28, 1954

EPIFANOV, G. I.

USSR/Chemistry - Physical chemistry

Card 1/1        Pub. 22 - 24/54

Authors    : Soloshko, F. P., and Epifanov, G. I.

Title      : The effectiveness of liquid media during free burning of Pb-Sb Alloys

Periodical : Dok. AN SSSR 100/3, 491-493, Jan 21, 1955

Abstract   : The effectivenss of liquid media on the process of cutting a binary-
component alloy (Pb-Sb) was investigated with respect to the composition
of the alloy. The effectiveness of the medium was evaluated by the
reduction in the specific cutting operation and by the reduction in the
shrinkage of the shavings. The results indicate that the effectiveness
of active liquid media during the cutting of plastic and brittle bodies
is different. Three USSR references (1944-1951). Graphs.

Institution : Academy of Sciences USSR, Institute of Physical Chemistry

Presented by: Academician P. A. Rebinder, July 27, 1954

EPIFANOV, G. J.

Effectiveness of the action of liquid media on (the plastic behaviour) of lead-antimony alloys. P. P. Soloshko and G. J. Epifanov (Doki. Akad. Nauk SSSR, 1955, 100, 491—493).—Standard cutting tests on binary Pb–Sb alloys covering a range of composition and plasticity were carried out under various liquid media. The alloys consisted of a mechanical mixture of eutectic (13% Sb) with the excess component; plasticity fell with increase in antimony content until complete brittleness was reached at 15% Sb. Tests were carried out in the dry and under the following liquid media : water, Me, Et, Bu, and octyl alcohols, 4% solution of cetyl alcohol in toluene, and CCl₄. Curves of the reduction of comparative work given by the four alcohols with increase in Sb content show that their effectiveness falls together with the plasticity to a min. at the eutectic and then begins to increase in the brittle range. CCl₄, in contrast, showed an increase in work required for cutting pure Pb; this increase reached a max. for the alloy at ~2% Sb; the comparative work fell with increase in Sb content; and pure Sb in CCl₄ required 20% less work. Measurements by depth of cut gave results very similar to those by comparative work.

K. F. A. LINTON.

YERIFANOV G.I.

/139   Influence of Surface Active Agents on the Dispersion of AlF Elements The Cutting. L. Brusilov Translator...

Graduat Calif

dividu i single element of surface active cutting fluids

YEPIFANOV, Georgiy Ivanovich, doktor fiziko-matematicheskikh nauk;
UDAL'TSOV, A.N.,glavnyy redaktor; BRYANTSEVA, V.P.,inzhener, redaktor

[Asymptotic method of studying gliding friction] Asimptoticheskii
metod izucheniia treniia skol'zheniia. Tema 2, no. P-56-463.
Moskva, Akad. nauk SSSR. 1956 9 p.                    (MLRA 10:5)
        (Friction)

The effectiveness of liquid media is the result of noble

depended neither on their chem. activity nor on the activity
of the metals, and was tentatively attributed to an intensi-
fication of the strengthening of the metals in the destruc

1. Institut Fizicheskoy Khimi Akademi
Nauk SSSR, Pred. akad. P.A. Rebindexam.

YEPIFANOV, G. I.

Category: USSR / Physical Chemistry - Surface phenomena. Adsorption.
          Chromatography. Ion exchange.                          B-13

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30196

Author  : Pleteneva N. A., Yepifanov G. I.
Inst    : Academy of Sciences USSR
Title   : Effectiveness of the Action of Media in Cutting of Noble Metals

Orig Pub: Dokl. AN SSSR, 1956, 110, No 3, 414-416

Abstract: A study of the effects of water and organic liquids (hydrocarbons,
          alcohols, acids, esters, $CCl_4$) on the process of cutting Ag, Au and
          Pt. The effectiveness of cutting action was evaluated on the basis
          of the ratio $\alpha$ of dry cutting action ($A$) and cutting action in
          the given medium ($A$). It was found that with Ag and Au $\alpha$ has a
          relatively low value ($\alpha \approx 1.2 - 1.6$), which is practically the
          same for all the liquids which were investigated. In the case of
          Pt $\alpha \approx 3 - 4$. Effect of the length ($n$) of the hydrocarbon chains
          of the molecules is practically nil on cutting of Ag and Au, while
          with Pt the $\alpha$ decreases with increase of $n$ in the alcohol series

Card    : 1/2                          -12-

Category: USSR / Physical Chemistry - Surface phenomena. Adsorpticn.
Chromatography. Ion exchange.                                    B-13

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30196

and especially in the acid series; with equal n the effect of acids
is more pronounced than that of alcohols. On the other hand the
authors had shown previously (Dokl. AN SSSR 1951, 77, No 6), that
with more active metals (Al, Cu, Fe) the effect of acids and alco-
hols is practically the same, and that it is less pronounced than
with Pt. Hence, it follows that effectiveness of media, in cutting
of metals, is not directly correlated with their chemical activity;
their slight effect in the case of Ag and Au is due not to the che-
mical inertness of the metal, but to mechanical properties which
are unfavorable to manifestation of the action of the medium. In
particular, there are involved in these instances the extent of
shrinkage of the chips and the degree of adsorptive plasticizing
of the surface layers of the metal.

Card    : 2/2                        -13-

YEPIFANOV, G.I.                                         137-58-5-10611

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 250 (USSR)

AUTHORS:    Rebinder, P.A., Yepifanov, G.I.

TITLE:      Effect of a Surface-tension Reducing Medium on Boundary Fric-
            tion and Wear (Vliyaniye poverkhnostnoaktivnoy sredy na gran-
            ichnoye treniye i iznos)

PERIODICAL: V sb.: Razvitiye teorii treniya i iznashivaniya. Moscow,
            AN SSSR, 1957, pp 47-56

ABSTRACT:   A literature survey is presented along with results obtained
            in the authors' experiments in investigating the effect of a sur-
            face-tension reducing medium on boundary friction (F) and wear.
            The experiments are founded on a method involving immersion
            of surfaces of F in excess lubricant (L), the latter being fluids
            ranging in polarity from water to non-polar hydrocarbon oils or
            a solution of a surface-tension reducing substance in a non-polar
            solvent. A schematic diagram of a new instrument for investiga-
            tion of the physical chemical regularities of F and wear is pre-
            sented. This instrument was used to study the effect of solutions
            of surface-tension reducing substances on the coefficient of F in
Card 1/2    boundary lubrication. It is established that in a pure benzene

137-58-5-10611

Effect of a Surface-tension (cont.)

medium the coefficient of F is not constant, but upon attaining a maximum
value of $\sim$0.7, corresponding to dry F, drops sharply to 0.3-0.4 and then again
rises to 0.7, and so forth. The hypothesis is advanced that these fluctuations,
occurring at approximately equal time intervals, are due to infinitesmal con-
tamination by surface-tension reducing substances not discoverable by ordi-
nary methods. When surface-tension reducing substances are introduced into
benzene in gradually increasing concentrations, the magnitude of the jumps
diminishes, finally disappearing, and the coefficient of F takes on a com-
pletely stable value equal to $\sim$0.1 in the case of the most powerful surface-
tension reducing additives. It is shown that the action of lubrication under
conditions of boundary F in the case of an arbitrarily established layer of L
is purely adsorptive in nature. The adsorptive reaction, which may be pro-
moted by the purely chemical bond between polar groups and atoms of metal,
determines the strength of the bond of the lubricant layer and the surfaces of
the metal. The phenomenon of adsorptive facilitation of the deformation and
failure of solids is examined as it affects the process of adsorption fatigue
and fatigue wear of microscopic asperities on the surface of mating contacts
as is the effect of active media on the process of the cutting of metals. Bib-
liography: 24 references.

L. G.

Card 2/2    1. Friction--Theory

YEPIFANOV, G. I.

"The Binomial Law of Friction" P. 60-69, in book Research in the Physics of Solids, Moscow, Izd-vo AN SSSR, 1957. 277 p. Ed. Bol'shanina, M. A. Tomsk Universitet, Siberskiy fiziko-tekhnicheskiy institut.

Personalities: Deryagin, B. V.; Kragel'skiy, I. V., and Minayev, N. I. Materils tested: electrolytic copper, high purity aluminum. Armco iron, brass, steel EI -417, and alloy EI -437. There are 7 figures, 3 tables, and 5 references, 3 of which are Soviet.

This collection of articles is maeant for metallurgical physicists and for engineers of the metal-working industry. This book contains results of research in the field of failure and plastic deformation of materials, mainly of metals, Problems of cutting, abrasion, friction, and wear of solid materials. (metals) are discussed.

YEPIFANOV, G.I.

Asymptotic method for the study of sliding friction.   Trudy Inst.
fiz.khim.   no.6:174-180   '57.                          (MIRA 11:10)
                   (Friction--Measurements)

AUTHOR      YEPIFANOV G.I.                                    PA - 3046
TITLE       On the Dependence of Conditional Cutting Stress on the Supply
            of Material.
            (O zavisimosti uslovnogo napryazheniya rezaniya ot podchi  -Russian)
PERIODICAL  Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 4, pp 799-802 (U.S.S.R.)
            Received 6/1957                          Reviewed 7/1957

ABSTRACT    First, the opinions expressed by other author in connection with this
            problem are discussed. The author believes that what has been said by A.M.
            ROZENBERG in "The Dynamics of Milling" (1945) is, on the whole, correct,
            but does not serve as a sufficient basis from which to obtain a quantitati-
            ve expression for the dependence of the conditional cutting stress on the
            thickness of the cut. ROZENBERG explains the lack of direct proportionality
            between the cutting force and the thickness of the cut by an inhomogeneous
            distribution of the deformation over the cross section of the cutting. Ac-
            cording to the author's opinion it is necessary to proceed from the point of
            of view of the scale factor when explaining this dependence.
            As samples grow smaller, their properties with regard to strength are known
            to increase, particularly within the range of small dimensions. It is note-
            worthy that the modification of these properties (in dependence of the size
            of the sample) is expressed by the same formula as also the dependence of
            the conditional cutting stress depends on the thickness of the cut $\tau = \tau_0 + (c/a)$.
            Here $\tau$ denotes the strength characteristic of the material, a -the linear di-
Card 1/2    mension (diameter of the sample to be torn, length of the diagonal of the

On the Dependence of Conditional Cutting Stress on the          PA - 3046
Supply of Material.

pyramid impression when determining the strength etc.). $J_0$ and c are con-
stants. Cutting is a local destruction of metal within a narrow zone with
following displacement of individual elements of the cutting. The details
of this process of destruction are discussed in short. A conditional in-
crease of shearing strength due to a scale factor must increase cutting
stress. The following formula is obtained for the principal component:
$P_z = k_1 ab + k_a b$. Here a denotes the thickness of the cut, b -the width of
the cut, $k_1$ and $k_a$ are coefficients which depend on cutting conditions. In
conclusion some information is given concerning the cutting of brittle ma-
terial.
(with 2 illustrations)

ASSOCIATION    Institute for Physical Chemistry of the Academy of Science of the USSR
PRESENTED BY   REBINDER, P.A., Member of the Academy
SUBMITTED      2o.6.1956
AVAILABLE      Library of Congress
Card 2/2

AUTHOR:       Yepifanov, G. I.

20-114-4-24/63

TITLE:        Friction as Resistance to Shear of Thin Surface Layers of
Solids (Treniye kak soprotivleniye sdvigu tonkikh poverkhnost-
nykh sloyev tverdykh tel)

PERIODICAL:   Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4,
pp. 764-767 (USSR)

ABSTRACT:     First the present stage of the problem is shortly described
and reference is made to some relevant preliminary works.
In the first test series the relation between the friction
layer and the adhesion of the slide-block to the surface of
the sample was investigated. Adhesion was determined as
follows: A lubricant was inserted under the slide-block which
came to a standstill but which was not unloaded. The stress
was then determined which is necessary for moving the slide-
-block in a direction opposite to that of the initial motion.
When the slide-block was slowly pushed aside the tangential
force increased up to a certain maximum value and then it
sharply decreased to a value which corresponds to the
frictional force in the given lubricant. This sudden change
was usually accompanied by a characteristic sound. The author

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Friction as Resistance to Shear of Thin Surface Layers of    20. 114-4-24/63
Solids

here equates the adhesive power with the difference between
the maximum deflection of the dynamometer and the frictional
force when a lubricant is present. The results thus obtained
are compiled in a table, according to which the adhesive
force does not amount to more than 15% of the dry friction.
Therefore the resistance caused by adhesion bridges (in
contrast to the opinions of various scientists) probably
constitutes only a small portion of the frictional force. The
surface $S_0$ on which the metal practically shifts during
friction is considerably larger than the total surface of
the cross section of the bridges of molecular intermeshing.
For the purpose of estimating $S_0$ the author investigated the
surface of a sample under the slide-block and then metallo-
graphically determined the plastic deformation caused by the
motion of the slide-block under the surface of the sample.
If the amount of the area of displacement is correctly
estimated the frictional force practically agrees with the
shearing resistance of the surface layer of the metal.
There are 2 figures, 2 tables, and 9 references, 7 of which
Card 2/3    are Soviet.

Friction as Resistance to Shear of Thin Surface Layers of    20-114-4-24/63
Solids

ASSOCIATION:    Institut fizichenkoy khimii Akademii nauk SSSR (Institute
                of Physical Chemistry of the AS USSR)

PRESENTED:      December 11, 1956, by P. A. Rebinder, Member, Academy of
                Sciences, USSR

SUBMITTED:      December 11, 1956

Card 3/3

BARTENEV, O.M.; YEPIFANOV, O.I.

Nature of external friction of metallic surfaces [with summary in English]. Inzh.-fiz.zhur. no.12:18-24  ' 58.
(MIRA 11:12)

1. Pedagogicheskiy institut imeni Potemkina, Vecherniy mashino-stroitel'nyy institut, g. Moskva.
(Friction)

AUTHOR:     Yepifanov, G. I.                                    20-118 6-17/43

TITLE:      An Experimental Check of the Two-Term Friction Law
            (Eksperimental'naya proverka dvukhchlennogo zakona treniya)

ABSTRACT:   The present paper checks experimentally the two-term friction
            law

$$F = S_o \mathcal{T}_o + k\sigma_n S_o = S_o \mathcal{T} + kN.$$

            The term $S_o \mathcal{T}_o$ of this formula describes the dependence of the
            frictional force on the plane of displacement and the term $kN$
            takes into account the rôle of the normal forces (among them
            also of the adhesion forces) on the development of the
            frictional force. The author studies here the relative rôle
            of these two terms. The first series of experiments
            investigates the dependence of the amount of the plane of
            displacement, of the frictional force, and of the coefficient
            of friction on the standard load by means of a device which
Card 1/3     is similar to the device described in a previous paper by

An Experimental Check of the Two-Term Friction Law                20-118-6-17/43

the author (ref 1). The first diagram shows such a dependence for the friction couple: spheric ball of hardened high-speed steel-fresh-cut aluminum surface. With increasing normal load $N$ the displacement surface gradually increases in the case of friction more slowly, however, than $N$. In complete agreement with the increase of the displacement surface also the frictional force $F$ increases. The coefficient of friction $\mu$ decreases gradually with increasing normal load. This is explained by the absence of a direct proportionality between the displacement surface and the normal load. In the second series of experiments the dependence of the frictional force on the normal pressure was investigated under following conditions: The true contact surface could develop only up to a certain strictly fixed value, and remained constant after having reached this value in spite of further increase of normal pressure on the contact. The special method worked out by the author for such investigations is based upon the application of a chisel in the case of which amount of the contact surface of the front edge is strictly limited. A further

Card 2/3        diagram illustrates the dependence of the frictional force

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on the normal load for the friction couple high-speed steel -
fresh-cut aluminum surface. The first and also the second
series of experiments lead to the same final conclusions
concerning the rôle of the separate terms of the two-term
friction law: The frictional force is determined chiefly by
the term that depends on the total displacement surface
developing in the friction. The rôle of the term which does
not depend on the amount of the displacement surface and
which describes the dependence of the frictional force on the
normal pressure is not so important in contrast to the
opinion of several researchers.
There are 3 figures and 5 references, 4 of which are Soviet

ASSOCIATION:   Institut fizicheskoy khimii Akademii nauk SSSR
               (Institute of Physical Chemistry, AS USSR)

PRESENTED:     April 17, 1957, by P. A. Rebinder, Member of the Academy of
               Sciences USSR

SUBMITTED:     April 9, 1957

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SOV/20-123-4-24/53

18(7)

AUTHORS:       Yepifanov, G. I.,  Glagolev, N. I.,  Rebinder, P. A., Academician

TITLE:         The Influence of Surface-Active Media on the Surface-Hardening of Metals (Vliyaniye poverkhnostno-aktivnykh sred na poverknostnyy naklep metallov)

PERIODICAL:    Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 4, pp 663-666 (USSR)

ABSTRACT:      When investigating the hardening of metals it is necessary to
               distinguish between true and       effective hardening. The
               true hardening of the slipping surfaces means increase of
               the shearing strength along a given surface with growing ab-
               solute shearing. The effective strengthening of a single
               grain as a single crystal characterizes the increase of the
               resistance of the metal to plastic deformation with increas-
               ing deformation and is expressed by the effective hardening
               coefficient  $\lambda = d\tau/da$, where a denotes the specific crys-
               tallographic displacement in the grain. For the true harden-
               ing coefficient k it holds that $k = d\tau/ds$, where $\tau$ denotes
               extreme tangential tension and s - the absolute shear.
               Between k and $\lambda$ the connection  $\lambda = hk$ holds , where h denotes

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The Influence of Surface-Active Media on the Surface-Hardening of Metals

the average density of the slipping layers. The effective
coefficient of hardening thus depends not only on the true
strengthening capacity of the slipping surfaces but also on
the degree of dispersion of the crystal during deformation.
The present paper describes the results obtained by the com-
plex investigation of the kinetics of the formation of the
hardened layer in the surface hardening of technically pure
iron in air and in some active media. In this connection,
the influence exercised by some given effects produced by the
hardening instrument (small roll) upon the microhardness of
the sample surface, the frictional force, the structure of
the hardened surface of the sample, the specific work of
hardening, and the temperature at the place of contact between
roll and sample, are investigated. These investigations were
carried out by the method developed by T. Yu. Lyubimova (Ref 3)
in an improved form. A diagram shows, by way of an example,
the results obtained by experiments carried out in air and
in a 0.2% solution of stearic acid in Decalin. The micro-
hardness $H_0$ increases with an increase of the number of
hardening actions: this increase is irregular and passes

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SOV/2o-123-4-24/53

The Influence of Surface-Active Media on the Surface-Hardening of Metals

through several maxima. A very characteristic quantity is
the differential work of the plastic pressing-in of a hole
(a = dA/dV). This quantity conveys an idea of the degree of
resistance offered by the sample to growing plastic deforma-
tion. Surface-active media exercise a dual influence upon
the process of metal surface hardening: As a result of the
reduction of strength due to adsorption, they facilitate
the development of plastic deformation during the first
stages of hardening and they cause an intense strengthening
of the surface layer during the following stages of hardening.
The strengthening and plasticizing effect produced by surface-
actice media is able to  influence the process of metal cold-
working considerably. In the cutting of metals the strengthen-
ing and plasticizing effects of these metals usually lead to
to the same result, viz. to a reduction of the degree of
volume-deformation of the cuttings and of the surface layer
of the workpiece. There are 3 figures and 8 Soviet refer-
ences.

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S/686/61/000/000/001/012
D207/D303

AUTHOR:    Yepifanov, G. I.

TITLE:     Effect of adhesion on the process of external friction
           of clean surfaces

SOURCE:    Soveshchaniye po voprosam teorii sukhogo treniya i obra-
           zovaniya chastits iznosa pri sukhom trenii. Riga, 1959,
           21-27

TEXT:   The author reports an investigation of dry friction on
freshly-cut and, therefore, clean surfaces of tin and lead. A sli-
der, loaded with 25 kg on tin and with 12.5 kg on lead, was moved
along a plane surface of tin or lead. The slider was a rod with a
hemispherical end of 18 mm radius; it was made of one of the fol-
lowing materials: Copper, brass, commercial iron, a magnesium al-
loy, coconut shell, and ivory. The slider was washed in benzene be-
fore tests. Tangential friction forces were measured with a dynamo-
meter and adhesion was determined by finding a vertical force nec-
essary to separate the slider from the tin or the lead surface.

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Effect of adhesion ...

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Adhesion forces were nearly equal to friction forces in the case of iron, brass and copper sliders, but they were weak in the case of coconut shell, ivory and the Mg alloy. In all cases the friction force per unit actual contact area was approximately equal to the shear strength of tin or lead. These facts indicated that friction was primarily due to surface roughness (slip in the top layers of lead or tin, scratching of lead or tin by the harder sliders, shear of microscopic projections) rather than to adhesion (sticking together of smooth surfaces). This conclusion was confirmed by further experiments on friction during planing of lead and tin by cutters made of the same materials as the sliders, and by experiments on sliding a metal rod with a hemispherical end on aluminum. The following equation is proposed for the friction force: $F = S\tau_0 + kN$, where $S$ is the total actual contact area, $\tau_0$ is the shear strength at zero normal stress, $k$ is a coefficient which gives the dependence of the tangential on the normal stresses, and $N$ is the normal load. There are 5 figures, 1 table and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the

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Effect of adhesion ...                  S/686/61/000/000/001/012
                                        D207/D303

English-language publication reads as follows: F. Bowden and D. Ta-
bor, The friction and lubrication of solids, Oxford, 1950.

ASSOCIATION:  Institut fizicheskoy khimii AN SSSR (Institute of
              Physical Chemistry, AS USSR)

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S/686/61/000/000/002/012
D207/D303

AUTHOR:      Yepifanov, G. I.

TITLE:       Dependence of the force of friction on the normal load
             (the fundamental law of friction)

SOURCE:      Soveshchaniye po voprosam teorii sukhogo treniya i obra-
             zovaniya chstits iznosa pri sukhom trenii. Riga, 1959,
             29-40

TEXT:   The author reports experimental work intended to establish
the fundamental law of dry sliding friction. In one series of ex-
periments a hardened steel slider with a hemispherical end of 6 mm
radius was loaded with 5 - 100 kg and was moved across clean alumi-
num and copper surfaces. This slider was cleaned before tests with
a fine abrasive and washed in pure benzene. Friction forces and
contact areas were measured with a dynamometer and a microscope
respectively. In another series of experiments lead, tin, aluminum,
copper, brass, iron and zinc were cut with a hardened high-speed
tool in such a way that the friction between the cutter and the

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Dependence of the force ...

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shavings occurred over an area which was constant under varying
loads. It was found that external friction of metals sliding over
clean metal surfaces involves plastic slip in surface layers of the
mechanically weaker member of the friction pair. The friction force
F obeyed the equation $F = S\tau_0 + kN$, where S is the area over which

plastic slip occurs, $\tau_0$ is the shear strength of the weaker metal
at zero normal load, k is the ratio of the shear strength to the
tensile strength of the weaker metal, and N is the normal load. The
value of S was found to be the dominant parameter, while N affected
friction only insofar as it altered the area S. When S was constant
(the second series of experiments, with cutters), the friction
force F was independent of N. These results contradict the equation
proposed by B. V. Deryagin (Ref. 7: ZhFKh, v. 5, 8, 9, 1934: Sbor-
nik: Treniye i iznos v mashinakh (Friction and Wear in Machines),3,
Izd. AN SSSR, 1949): $F = \mu(N + a_0 S_a)$ where $\mu$ is the true coefficient
of friction, N is the normal load, $S_a$ is the area over which ad-

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Dependence of the force ...

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D207/D303

hesion occurs, and $a_0$ is the "specific adhesion". There are 8 fi-
gures, 2 tables and 7 references: 6 Soviet-bloc and 1 non-Soviet-
bloc. The reference to the English-language publication reads as
follows: P. Bridgman, Proc. Am. Acad. Arts. Sci., 71, no. 9, 1937.

ASSOCIATION:  Institut fizicheskoy khimii AN SSSR (Institute of
              Physical Chemistry AS USSR)

Card 3/3

24(6)                              SOV/139-59-1-6/34

AUTHORS:    Yepifanov, G. I. and Minayev, N. I.

TITLE:      Investigation of the Dependence of the Friction Force
            on the Real Area of Friction and the Normal Load
            (Issledovaniye zavisimosti sily treniya ot istinnoy
            ploshchadi treniya i normal'noy nagruzki)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika,
            1959, Nr 1, pp 35-43 (USSR)

ABSTRACT:   A great d r a w b a c k of most of the work devoted to
            experimental study of the process of external friction
            lies in the fact that the experiments were carried out
            without knowing the magnitude of the real friction area
            which really does participate in the friction process.
            The friction theories prevailing at present are based
            on the incorrect concept that the real area of friction
            is the area of contact of the rubbing pairs.  This
            complicates understanding the process of external
            friction and also complicates the physical interpretation
            of experimentally established facts.  This relates
            particularly to the dependence of the coefficient of
Card 1/6    external friction on the normal load.  In earlier work
            one of the authors of this paper (Refs 8-10) applied

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Investigation of the Dependence of the Friction Force on the Real
Area of Friction and the Normal Load

the concept of V. D. Kuznetsov (Ref 1) and of Bowden and
Tabor (Ref 12) on the physical nature of the process of
external friction and attempted to justify the point of
view that this process consists basically of plastic
shear which proceeds inside relatively thin surface layers
of the rubbing pairs. As a result of this, the real
friction area is that along which the process of shear
takes place during friction. This point of view follows
directly from analysis of the basic types of interaction
of solid surfaces which bring about external friction
(Refs 8,9). To verify experimentally this concept, the
friction was studied of a semi-spherical slide block made
of hardened steel along freshly cut surfaces of the
following metals: tin, lead, aluminium, copper, zinc,
bronze, steels 45 and U12, iron, alloys EI437, VT2 etc.
It was found that displacement of the slide block along
a freshly cut surface of the specimen brings about the
Card 2/6    formation of a "stagnant" zone (build-up) and that the
displacement of the slide is not effected by external

Investigation of the Dependence of the Friction Force on the
Real Area of Friction and the Normal Load

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sliding along the surface of the specimen but by
shifting (shear) along the internal boundary of this
zone. Thus, in the case of pure metallic rubbing pairs,
the friction does not consist in cutting off the
molecular bridges occurring at the points of physical
contact, as was suggested by Bowden, but by shear along
the internal surface of the "stagnant" zone. On
increasing the normal load $N$ there will be an increase
in the real area of friction $S_c$ and of the friction
force. Thereby, with increasing $N$ the specific
friction force $f$ will remain practically unchanged and
will equal approximately the shear strength of the
material of the specimen (Ref 10); this indicates that
the friction force is determined de facto by the friction
surface and is almost independent of the normal pressure.
Since this latter conclusion is considered of great
importance, the authors studied the behaviour of the
friction force under conditions such that the friction
area remained practically unchanged in spite of the
continuous increase in the normal load. These experiments

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Investigation of the Dependence of the Friction Force on the
Real Area of Friction and the Normal Load

were carried out by means of a cutting tool with a
limited friction area. In the experiments chips of a
pre-determined thickness between 0.02 and 1.0-3.0 mm
were planed off by means of a specially built cutting
tool, a sketch of which is shown in Fig 3, p 38. This
tool consisted of a high speed steel wedge with an
angle of $30°$ at the apex and a facet with an angle of
$25°$, whereby the width of the facet varied between 0.2
and 1.0 mm. In Fig 5 the dependences are graphed of
the horizontal and the vertical components of the planing
force of brass as a function of the depth of cut.
Fig 6 shows a typical curve of the dependence of the
friction force on the normal force applied during planing
of aluminium by means of the special cutting tool used
in the experiments, which had a limited area of friction.
In Fig 7 the dependence is graphed of the friction force
on the normal force for iron, copper, brass, aluminium,
lead and tin. It can be seen from the graphs, Fig 7,
that qualitatively the picture is the same for all metals.

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