Design, Construction and Analysis of (Cont.)   SOV/2095

Krivenko, I.S. Basic Results of a Theoretical and Experimental Investigation
of New Types of Worm Gear Trains   119
    The use of worms with concave profiles is discussed. The results of
    the investigation show the advantages of worm gears of this type.

Fedyakin, R.V. M.L. Novikov's Gearing System   129
    A brief synopsis of Novikov's system of gearing for spur gears,
    including construction of profiles for concave and convex teeth,
    is presented. The author claims that this system has a load capacity
    2 to 3 times greater than standard involute gearing systems. He further
    states that this fact has been confirmed by exhaustive tests at various
    plants.

Solov'yev, A.I.   Theoretical Fundamentals of the Friction Analysis
of Automobile Transmissions and Experimental Methods of Investigating
Friction in Automobile Mechanisms   141
    The efficiency of gearings, universals and the whole transmission
    is analyzed. Friction in roller contact bearings and in the dif-
    ferential, friction losses in the transmission during unsteady
    motion, and experimental methods of investigating friction losses in
    automobile mechanisms are discussed.

Card 6/8

Design, Construction and Analysis of (Cont.)   SOV/2095

Sigov, I.V. Some Problems in the Organization of Centralized Production
of Speed Reducers : and Gear Drives   153

Tsfas, B.S. Design for Strength of a Solid Toothed Gear, Weakened by
Key or Spline Slots   .   163
    Formulas are derived for forces and moments acting on sections of
    a gear weakened by spline (6 slots) and key (one slot) joints.

Blokh, O.T. Increase in the Accuracy of Kinematic Worm Gear Trains
Used for Reading Mechanisms of Instruments   177
    The author analyzes the accuracy of cylindrical worms and wheels
    for high-precision instruments. He makes recommendations for re-
    ducing the margin of error in the gear trains in order to reduce the
    total margin of error of the mechanism.

Belyayev, M.S., and K. I. Zablonskiy. Consideration of Simultaneous Engage-
ment of Two Pairs of Teeth in Gearing Design   187

Card 7/8

Design, Construction and Analysis of (Cont.)   SOV/2095

The distribution of load between two pairs of meshing teeth is basically determined by the rigidity of teeth and by the errors in engagement, chiefly the accumulated error of the circular pitch, causing the cyclic character of stresses. The author states that for a pair of gears of a given type the characteristic diagram for distribution of errors can be determined. He further states that this determination has been confirmed by inspection of several lots of gears manufactured by different methods.

Resolution of the Conference on the Problems of Design, Construction, and Analysis of Transmissions   195
    The resolution stresses both the progress made and the deficiencies noted in design, construction, and manufacture of gearings and worm gear trains, and in the fields of continuous speed control, chain drives, and flexible shafts.

AVAILABLE: Library of Congress

                                                                 GO/fal
Card 8/8   8-9-59

/) *D.KUDRYAVTSEV, V.A.*

PHASE I BOOK EXPLOITATION   871

Belyayev, V. N., Candidate of Technical Sciences; Birger, I. A., Doctor of Technical
Sciences; Demidov, S. P., Candidate of Technical Sciences; Korotkov, V. P.,
Candidate of Technical Sciences; Kudryavtsev, V. N., Doctor of Technical Sciences,
Professor; Martynov, A. D., Candidate of Technical Sciences; Niberg, N. Ya.,
Candidate of Technical Sciences; Ponomarev, S. D., Doctor of Technical Sciences,
Professor; Pronin, B. A., Candidate of Technical Sciences; Push, V. E., Candidate
of Technical Sciences; Sleznikov, G. I., Engineer; Stolbin, G. B., Candidate of
Technical Sciences; Tayts, B. A., Doctor of Technical Sciences

Spravochnik metallista. t. 2 (Metals Engineering Handbook. v. 2) Moscow, Mashgiz,
1958. 974 p. 100,000 copies printed.

Ed.(title page): Chernavskiy, S. A., Candidate of Technical Sciences; Ed. (inside
book): Markus, M. Ye., Engineer (deceased); Tech. Ed.: Sokolova, T. F.;
Editorial Board of the set: Acherkan, N. S., Doctor of Technical Sciences,
Professor, Chairman of the Board and Chief Ed.; Vladislavlev, V. S. (deceased);
Malov, A. N.; Pozdnyakov, S. N.; Rostovykh, A. Ya.; Stolbin, G. B.; and
Chernavskiy, S. A.

PURPOSE: The book is intended for technicians and engineers working in the field
of machine design and in production.

Card 1/19
   2-

Metals Engineering Handbook. v. 2   871

COVERAGE: The book covers the following: strength of materials, design of machine
  parts, connections, transmissions, lubrication, etc. The arrangement of
  mechanical drawings and symbols used are shown. The book contains GOST (All-
  Union State Standards) tables for standard machine parts. The book is the
  second of a five-volume series. There are 79 references, of which 76 are Soviet,
  2 are German and 1 English.

TABLE OF CONTENTS:

        STRENGTH OF MATERIALS (Candidate of Technical Sciences Demidov, S. P.)

Card 2/19

KUDRRAVTSEV, V.N.

5-58-2-25/55

AUTHOR: Solov'yev, A.I., Dotsent, Candidate of Technical Sciences

TITLE: Conference on Transmissions (Konferentsiya po peredacham)

PERIODICAL: Vestnik Vysshey Shkoly, 1958, # 2, pp 76 - 77 (USSR)

ABSTRACT: In September 1957, an All-Union Conference on Transmissions,
            convened by Odesskoye oblastnoye pravleniye nauchno-tekhni-
            cheskogo obshchestva mashinostroiteley (Odessa Oblast' Admi-
            nistration of the Scientific-Technical Society of Mechanical
            Engineers) and the Odesskiy politekhnicheskiy institut (Odes-
            sa Polytechnic Institute) took place in Odessa. The conference
            was attended by 270 delegates from different plants, and scien-
            tific and educational institutions.
                Professor, Doctor of Technical Sciences V.N. Kudryavtsev
            delivered a lecture on "Methods of Reducing the Size and Weight
            of Gear Transmission" in which he explained how this reduction
            is achieved and the industrial importance of it.
                Candidate of Technical Sciences Ya.G. Kistyan (TsNIITMAsh)
            reported on the results of Experiments in gear couplings.
                A lecture on the best selection of designs and geometry
            of planetary reducers with an evolvent out-of-pole coupling
            was delivered by Professor, Doctor of Technical Sciences
Card 1/2   V.A. Yudin.

Conference on Transmissions   5-58-2-23/33

        The conference planned out a calculation method for gear transmissions in respect to contact and bending strength.

        A report submitted by I.A. Boltovskiy referred to questions of a rational choice of coefficients of shifts and distribution of shifts among the wheels when the angle correction by means of blocking contours is used.

        Dotsent K.I. Zablonskiy of Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute) discussed in his lecture the problem of testing gear transmissions, Candidate of Technical Sciences Z.P. Pavlov (TsNIITMAASh) reported on the device "Uragan".

        Much interest was caused by a roller machine with an original method of imitating the teeth sliding; it was manufactured at the Odesskiy tekhnologicheskiy institut (Odessa Technological Institute). Engineer Kh.M. Crekov demonstrated it.

        Dotsent G.I. Kogan-Vol'man's first report treated the questions of terminology, classification and normalization of transmissions with flexible shafts, while the second report dealt with the fundamentals of constructing flexible-shaft transmissions.

ASSOCIATION: Taganrogskiy radiotekhnicheskiy institut (Taganrog Radiotechnical Institute)

AVAILABLE: Library of Congress
Card 2/2

ZABLONSKIY, K.I., kand.tekhn.nauk, otv.red.; BOROVICH, L.S., kand.tekhn.
        nauk, red.; BELYAYEV, M.S., inzh., red.; GENKIN, M.D., kand.tekhn.
        nauk, red.; ZAK, P.S., kand.tekhn.nauk, red.; KIST'YAN, Ya.G.,
        kand.tekhn.nauk, red.; KUDRYAVTSEV, V.N., doktor tekhn.nauk, red.;
        MAL'TSEV, V.F., kand.tekhn.nauk, red.; POLOTSKIY, M.S., kand.tekhn.
        nauk, red.; ERLIKH, L.B., kand.tekhn.nauk, red.; NIKIFOROV, I.P.,
        inzh., red.; KOMISSARENKO, A.R., tekhred.

[Design, construction, and investigation of transmissions; pro-
ceedings of the conference on design, construction, and investigation
of transmissions; proceedings of the conference on design, con-
struction, and investigation of gear and flexible transmissions of
September 23-28, 1957] Raschet, konstruirovanie i issledovanie pere-
dach; trudy konferentsii po voprosam rascheta, konstruirovaniia i
issledovanii zubchatykh peredach i peredach gibkoi sviaz'iu 23-28
sentiabria 1957 g. Odessa, Izd.Odesskogo politekhn.in-ta. Vol.3.
1959. 123 p.   (MIRA 12:10)

1. Odessa. Politekhnicheskiy institut.
            (Gearing)

PHASE I BOOK EXPLOITATION   SOV/3943

Kudryavtsev, Vladimir Nikolayevich

Planetarnyye peredachi (Planetary Gear Trains) Moscow, Mashgiz, 1960. 279 p.
   Errata slip inserted. 8,000 copies printed.

Reviewer: F.A. Zharenkov, Candidate of Technical Sciences, Docent; Ed.:
   A.M. Volzhenskaya, Engineer; Ed. of Publishing House: V.P. Vasil'yeva;
   Tech. Eds.: L.V. Shchetinina and P.S. Frumkin; Managing Ed. for Literature
   on the Design and Operation of Machines (Leningrad Division, Mashgiz):
   F.I. Fetisov, Engineer.

PURPOSE: This book is intended for technical and scientific personnel engaged in
   the research, design, and manufacture of mechanical transmissions. It will
   also be of interest to students of mechanical engineering.

COVERAGE: The book treats basic questions related to the design, classification,
   kinematics, and efficiency of planetary gear transmissions. Selection of the
   number of teeth, the geometry of meshing, principles of design for strength,
   and an analysis of selecting the type of transmission are described. Sample
   calculations are given. No personalities are mentioned. There are 49
   references: 42 Soviet, 5 German, and 2 English.
Card 1/5

DIMENTBERG, F.M., doktor tekhn.nauk; LYUKSHIN, V.S., kand.fiz.-mat.nauk;
NIBERG, N.Ya., kand.tekhn.nauk; OBMORSHEV, A.N., prof., doktor
tekhn.nauk; PLUZHNIKOV, I.S., kand.fiz.-mat.nauk; UMANSKIY, A.A.,
prof., doktor tekhn.nauk; ACHERKAN, N.S., prof., doktor tekhn.nauk,
red.; VUKALOVICH, M.P., prof., doktor tekhn.nauk, laureat Leninskoy
premii, red.; KUDRYAVTSEV, V.N., prof., doktor tekhn.nauk, red.;
PONOMAREV, S.D., prof., doktor tekhn.nauk, laureat Leninskoy premii,
red.; SATEL', N.A., prof., doktor tekhn.nauk, red.; SERENSEN, S.V.,
akademik, red.; RESHETOV, D.N., prof., doktor tekhn.nauk, red.; GIL'DEN-
BERG, M.I., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Reference book for machinery designers in six volumes] Spravochnik
mashinostroitelia; v shesti tomakh. Red.sovet: N.S.Acherkan i dr.
Izd.3., ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.
lit-ry. Vol.1. Pod red.N.S.Acherkana. 1960. 592 p. (MIRA 13:10)

1. AN USSR (for Serensen).   (Machinery--Design)

ANTSYFEROV, M.S., kand.fiz.-mat.nauk; VUKALOVICH, M.P., prof., doktor
tekhn.nauk, laureat Leninskoy premii; KRIPETS, E.S., inzh.;
LAZAREV, L.P., prof., doktor tekhn.nauk; MAZYRIN, I.V., inzh.;
NIKITIN, N.N., kand.fiz.-mat.nauk; OCHKIN, A.V., inzh.; PANICHKIN,
I.A., prof., doktor tekhn.nauk; PETUKHOV, B.S., prof., doktor
tekhn.nauk; PODVIDZ, L.G., kand.tekhn.nauk; SIMONOV, A.F., inzh.;
SMIRYAGIN, A.P., kand.tekhn.nauk; TOKMAKOV, G.A., kand.tekhn.nauk;
VAYNZIL'BER, E.M., prof., doktor tekhn.nauk; KHALIZEV, G.P., kand.
tekhn.nauk; CHESACHENKO, V.F., kand.tekhn.nauk; YAN'SHIN, B.I.,
kand.tekhn.nauk; ACHERKAN, N.S., prof., doktor tekhn.nauk, red.;
KUDRYAVTSEV, V.N., prof., doktor tekhn.nauk, red.; PONOMAREV,
S.D., prof., doktor tekhn.nauk, laureat Leninskoy premii, red.;'SATEL',
E.A., prof., doktor tekhn.nauk, red.; SERENSEN, S.V., akademik, red.;
RESHETOV, D.N., prof., doktor tekhn.nauk, red.; KARGANOV, V.G.,
inzh., red.graficheskikh materialov; GIL'DENBERG, M.I., red.izd-va;
SOKOLOVA, T.F., tekhn.red.

[Manual of a mechanical engineer in six volumes] Spravochnik ma-
shinostroitelia v shesti tomakh. Red.sovet N.S.Acherkan i dr.
Izd.3., ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashino-
stroit.lit-ry. Vol.2. 1960. 740 p.   (MIRA 14:1)

1. AN USSR (for Serensen).
        (Mechanical engineering) (Machinery--Construction)

KUDRYAVTSEV, Vladimir Nikolayevich, prof., doktor tekhn.nauk; MARKOV,
        V.G., kand.tekhn.nauk, red.; VASIL'YEVA, V.P., red.izd-va;
        SHCHETININA, L.V., tekhn.red.

        [Simple calculation of gear transmissions] Uproshchennye
        raschety zubchatykh peredach. Izd.3., dop. i perer. Moskva,
        Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 60 p.
                                                    (MIRA 14:2)
            (Gearing--Tables, calculations, etc.)

25056
S/080/60/033/012/011/024
D209/D305

S 1310

AUTHORS: Vagramyan, A.T., Kudryavtsev, V.N., and Kuznetsova,
             V.N.

TITLE: On conditions for producing electrolytic powders of
             metals

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960,
             2719 - 2724

TEXT: There are many references in literature to the mechanism and
conditions for obtaining electrolytic powders. It is generally
thought that low current densities give rise to compact, homoge-
neous deposits, while higher c.d. give soft, spongy deposits. But
the critical current determined from the loop in the polarization
c.d. curves has an indefinite value and depends on the slope of
the polarization curve. The oscillograph MPO-2 was used to measure
the polarization of the electrode, a closed glass cell and a film
moving at the rate of 4 and 10 mm/sec for registering the change

Card 1/3

25656
S/080/60/033/012/011/024
On conditions for ...   D209/D305

in polarization with time serving as essential parts of the appara-
tus. The standard electrode was saturated calomel electrode, all
experiments being conducted in a thermostat at 25°. A series of
current efficiency tests was made. The cathode was a platinized
disc of area 3 cm^2, examined graphically in the case of iron, the
break in the curve occurs sharply and earlier as the current densi-
ty is increased. With nickel .here is much the same pattern but the
break is considerably less sharp, indicating the smaller difference χ
in reduction potentials for Ni and H_2. Comparing the shape of the $\sqrt$

polarization curves with the structure of the deposit obtained
shows that in the first section a compact homogeneous deposit re-
sults. Going over to the second section, the deposit becomes soft
and powdery. When Fe and Ni are deposited by pulsed current whose
time period does not exceed the value of the first section bright,
homogeneous deposits are obtained. If the time exceeds the value of
the first section, i.e. when the electrode potential passes overto
a more negative value, a black powdery deposit is formed. The cur-
rent efficiency in the first section approaches 100 % and that cor-

Card 2/3

On conditions for ...

25656
S/080/60/033/012/011/024
D209/D305

responding to the second section for the same c.d. about 70 %. It
is concluded that study of the conditions for metallic powders
appearing at the surface of the cathode shows that with one and the
same c.d. bright and compact as well as powdery deposits can be ob-
tained. Hence the size of the current density cannot by itself af-
fect the quality of the deposit. The factor most characteristic in
the change of structure of the electrolytic deposit is not the
critical current, but the concentration of ions being discharged
in the layer adjacent to the electrode, determined by the change
of polarization with time. The boundary of transition from compact
to powdery deposits has been established for different c.d. in re-
lation to the electrolysis period and it is shown that the struc-
ture changes without any intermediate type of deposit being formed.
There are 6 figures and 9 references: 6 Soviet-bloc and 3 non-Sov-
iet-bloc.

SUBMITTED: February 8, 1960

Card 3/3

S/080/62/035/002/020/022
D258/D302

AUTHORS: Kudryavtsev, V. N., Baraboshkina, N. K. and Batrukova, M. G.

TITLE: A photometric method for studying the conditions under which metallic powders are formed

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 2, 1962, 450-452

TEXT: The author developed a method for the accurate determination of the moment, at which a powdery metallic deposit begins to form during electrodeposition. The method consists in continuously measuring the reflective capacity of the cathode as a function of time or of current density. A light beam was concentrated on the cathode surface and reflected on to a photocell; the resulting current was measured and registered on a recorder as a function of time. A typical curve started with a short horizontal section, corresponding to the pre-deposition period; this was followed by a sloping section which indicated the decrease in reflective capacity caused by the onset of powder deposition; the curve was finished by another horizontal section at a lower level. Slope of the middle
Card 1/2

A photometric method ...

S/080/62/035/002/020/022
D258/D302

section became more steep with rising current density. It was shown in the electrodeposition of Ni that the quality of the deposit underwent a sudden change from lustrous to powdery, within a relatively narrow range of current densities. This could be detected by continuously recording the change in reflective capacity as a function of current density. There are 5 figures and 13 Soviet-bloc references.

SUBMITTED: February 20, 1961

Card 2/2

S/080/62/035/007/008/013
D214/D307

AUTHORS: Vagramyan, A.T. and Kudryavtsev, V.N.

TITLE: Causes of the formation of electrolytic metal powders

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 7, 1962,
                  1546-1549

TEXT: During the study of the causes of deposition of pow-
dered Fe by the electrolysis of $FeSO_4$, the surface structure of the
deposited metal was determined photoelectrically by reflected light
measurements. At low current densities (25 mA/cm^2), the Fe has a
dense and uniform structure while at current density of 27 mA/cm^2
electrolysis gave powdered Fe. When the pH of the electrolyte was
3.1 a sharp change in the metal surface occurred at a current density
of 25 - 27 mA/cm^2, i.e. limiting current. With pH = 4.6 the powder
began to form at 11 - 13 mA/cm^2, i.e. much lower than at the limit-
ing value (23 - 24 mA/cm^2). The reason for this is that at pH = 3.1
only Fe^{2+} are present in the electrolyte; at pH = 4, Fe^{2+} gives
Fe^{3+} which forms $Fe(OH)_3$ and this is adsorbed on the surface of the

Card 1/2

Causes of the formation ...

S/080/62/035/007/008/013
D214/D307

cathode causing Fe to form a powder-like deposit. Addition of ascorbic acid to the electrolyte prevents the formation of Fe^{3+} and the electrodeposited metal is dense up to the current density of the limiting current. There are 4 figures.

SUBMITTED: September 7, 1961

Card 2/2

S/062/63/000/002/008/020
B144/B186

AUTHORS: Vagramyan, A. T., and Kudryavtsev, V. N.

TITLE: Regularities of the formation of electrolytic iron powders

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh
               nauk, no. 2, 1963, 263 - 268

TEXT: The formation of Fe electrodeposits was studied to clear up the
relation between the form of the deposit and the current density. The
limiting current was determined by plotting the polarization curves obtained
in an electrolyte containing 70 g/l $FeSO_4 \cdot 7H_2O$ and 120 g/l K_2SO_4 (pH 3) at
$20^\circ C$ by the compensation method and the oscillographic potential-time
curves. At low pH, powder formation was observed in the region of the
limiting current. The curve characterizing the transition from compact to
powder deposits was plotted using pulsed current, and showed that the
current density is not the determining factor. Compact deposits were ob-
tained below and above the limiting current and the formation of powders
proved time-independent. Powder formation above the limiting current
results from a change in the near-electrode layer brought about by a pH

Card 1/3

Regularities of the formation...   s/062/63/000/002/008/020
                                         B144/B186

change due to discharge of H^+ ions. The near-electrode layer is alkalized
and the hydroxide forming is adsorbed on the surface of the cathode. This
favors the formation of powder deposits. Thus, the deposition of powders
at current densities below the limiting current could be expected from
electrolytes of low acidity and was actually confirmed photometrically (Zh.
prikl. khimii 35, 450 (1962)). Whereas the structure of the deposit in

pH 3 solutions changed in the 25 - 27 ma/cm^2 range, which coincides with
that of the limiting current density, in the structural change in pH 4.6

solutions took place at 11 - 13 ma/cm^2 and the limiting-current density was

23 - 24 ma/cm^2. This was also confirmed by reflectance studies. Powder
formation is explained by formation of colloidal ferric hydroxide in
electrolytes with pH $>$ 4.2. Adsorbed on the electrode surface, ferric
hydroxide prevents normal crystal growth and consequently the formation of
a compact deposit. The correctness of this theory was proved by adding

12 g/l of ascorbinic acid, which inhibits the formation of Fe^{3+} ions, to a
pH 4.6 electrolyte. The deposit obtained was compact below the critical
current density. There are 7 figures.

Card 2/3

Regularities of the formation...   S/062/63/000/002/008/020
                                                  B144/B186

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of
             Physical Chemistry of the Academy of Sciences USSR)

SUBMITTED: May 7, 1962

Card 3/3

GUZENKCV, Petr Georgiyevich, prof.; KUDRYAVTSEV, V.N., prof.,
    doktor tekhn. nauk, retsenzent

    [Brief handbook for the design of machine parts] Kratkii
    spravochnik k raschetam detalei mashin. Izd.4., perer. i
    dop. Moskva, Vysshaia shkola, 1964. 323 p.
                                        (MIRA 18:4)

L 5220-66   EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c)   MJW/JD

ACCESSION NR: AP5022654   UR/0365/65/001/005/0477/0481
                                          620.193.41
                                          669.788

AUTHOR: Kudryavtsev, V. N.; Baakin, Yu. P.; Vagramyan, A. T.

TITLE: Hydrogen absorption in steels during cathodic polarization in acid solutions. I. Effect of current density

SOURCE: Zashchita metallov, v. 1, no. 5, 1965, 477-481

TOPIC TAGS: hydrogenation, electrolysis, steel, low carbon steel, hydrogen embrittlement
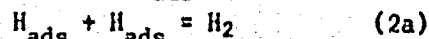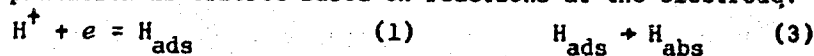
ABSTRACT: Cathodic polarization experiments were performed in 0.1 N H_2SO_4 solutions, both with and without As_2O_3 which was used as a stimulant. Armco iron and 30KhGSA steel were used; 30KhGSA steel had the following composition: C (0.3%), Si (1%), Mn (0.9%), P (0.03%), S (0.025%), Cr (0.9%), Ni (0.2%), and Cu (0.2%). The quantity of absorbed hydrogen was determined by vacuum extraction at 400°C, while mechanical properties were measured on samples 3 mm diameter and 20 mm long, at a strain rate of 8 mm/min. The criterion for determining the amount of hydrogen embrittlement was the difference $\Delta\psi$ between the reduction in area for charged and

Card 1/3

L 5220-66
ACCESSION NR: AP5022654

uncharged samples. Results are given in terms of $\Delta\psi\%$ as a function of i_k ($m\text{-}\!/cm^2$), the polarization current density; and hydrogen concentration as a function of i_k. The influence of cathodic polarization of steel on the loss in ductility is severe; the curves for $\Delta\psi$ and absorbed hydrogen content both pass through a maximum at about 25 ma/cm^2. These same curves were given for cathodic polarization in 0.1 N H_2SO_4 solution with 0.01 g/ℓ addition of As_2O_3. A difference is observed; with increase in i_k, the brittleness of the samples and the amount of absorbed hydrogen continually increase. An explanation is offered based on reactions at the electrode:

$$H^+ + e = H_{ads} \qquad (1) \qquad\qquad H_{ads} \rightarrow H_{abs} \qquad (3)$$

$$H_{ads} + H_{ads} = H_2 \qquad (2a)$$

$$H_{ads} + H^+ + e = H_2 \qquad (2b)$$
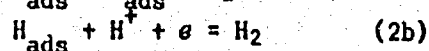
Thus the concentration $[H]_{ads}$ depends on the speed of disintegration of hydrogen ions, and on the rate of removal of atoms of hydrogen from the surface of the electrode. The increase in the current density depends on the amount of absorbed hydrogen on the surface of the electrodes, as well as on the speed of its removal; this removal depends on the recombination mechanism (reaction 2a), whose speed is pro-

Card 2/3

L 5220-66
ACCESSION NR: AP5022654

portional to the concentration of absorbed hydrogen squared—$i = K_1([H]_{ads}^i)^2$. The data are explained using the above considerations, the maxima being associated with a limiting value of hydrogen concentration at the electrode due to the recombination mechanism. For the As_2O_3 additions, there is no maximum because the removal of the absorbed hydrogen lessened by retarded recombination. Orig. art. has: 4 figures, 1 table.

ASSOCIATION: Akademiya nauk SSSR Institut fizicheskoy khimii (Academy of Sciences SSSR, Institute of Physical Chemistry)

SUBMITTED: 25May64   ENCL: 00   SUB CODE: GC, MM

NO REF SOV: 014   OTHER: 004

Card 3/3

ACCESSION NR: AT4006705   S/3043/63/000/002/0020/0047

AUTHOR: Chudov, L. A.; Kudryavtsev, V. P.

TITLE: Round-off errors in finite difference solutions of elliptic
equations and systems subject to initial conditions

SOURCE: Moscow. Universitet. Vy*chislitel'ny*y tsentr. Sbornik
rabot, no. 2, 1963. Chislenny*ye metody* v gazovoy dinamike, 20-47

TOPIC TAGS: round-off error, elliptic differential equation, finite
difference method, many-point scheme, net step selection, supersonic
flow, blunt body, boundary value problem

ABSTRACT: A study was carried out to estimate the round-off errors
and the approximation errors and to select the most rational mesh
size of a net for the simplest many-point difference schemes of the
form

$$\frac{v_m^{n+1} - v_m^n}{\tau} = -\frac{1}{h}\sum_{q=-p}^{p} a_q^{(p)} v_{m+q}^n ;$$

$$\frac{v_m^{n+1} - v_m^n}{\tau} = \frac{1}{h}\sum_{q=-p}^{p} a_q^{(p)} u_{m+q}^n . \qquad (1)$$

Card 1/3

ACCESSION NR: AT4006705

where h and τ are the mesh size of the net, ($\tau = \tau(h)$ and $\tau(h) \to$ when $h \to 0$), and the $a_q^{(p)}$ are coefficients determined from a given formula. The stability and convergence of the difference scheme (1) are analyzed in connection with the boundary value problem for the Cauchy-Riemann equations. It is proved that these difference schemes are stable with respect to initial conditions and that the approximate solution converges to the exact solution. "Estimates of the relative approximation errors and of the relative round-off errors are derived for difference scheme (1) in cases in which the indices of the scheme are $p = 1$ and $p = 2$. The problem of selecting h (τ is assumed to be sufficiently small) such that the relative round-off error does not exceed a certain given value of c is analyzed. It is stressed that for a given y, the selection of h will be optimal when approximation errors and round-off errors are of the same order. These difference schemes are applied to the solution of equations describing supersonic flow of a reacting mixture of gases past an axisymmetric blunt body. The method of determining the lower bound for the mesh size h is presented using the known values of shock wave parameters. Orig. art. has: 41 formulas and 2 figures.

Card 2/3

KUDRYAVTSEV, V.P.; FRANK, L.S.; CHUDOV,L.A. (Moscow)

"Finite difference methods of solution of incorrect problems with initial conditions and their application in gasdynamic calculations".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

KONONENKO, V.G., kand. tekhn. nauk; PAKHOMOV, A.G.; KUDRYAVTSEV, V.P.;
SMOLOVIK, V.V.

New method of briquetting metal chips. Met. i gornorud.
prom. no.3:31-34 My-Je '64.   (MIRA 17x10)

KUDRYAVTSEV, V. S.

Technology

(Effect of lubrication on the process of cutting copper). Sverdlovsk, Mashgiz, 1951.

9. Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

KUDRYAVTSEV, V.S., kandidat tekhnicheskikh nauk.

Testing evenness in sliver and yarn. Tekst.prom.16 ne.4:33-36 Ap
'56.   (Spinning)   (MIRA 9:7)

KUDRYAVTSEV, V.S.

SUBJECT	USSR / PHYSICS	CARD 1 / 4	PA - 1735
AUTHOR	KUDRJAVCEV,V.S.		
TITLE	On the Problem of Quasi-Classical Quantization.		
PERIODICAL	Žurn.eksp.i teor.fis,31, fasc.4, 688-692 (1956)		
	Issued: 1 / 1957		

The present work describes a method for the computation of the energy levels for the one-dimensional case of quasi-classical quantization.

In the quasi-classical method of solving the problem of quantum mechanics the wave function Ψ is written down in the form $\Psi = e^{i\sigma/\hbar}$. By inserting this formal ansatz into the SCHROEDINGER equation $\Delta \Psi + (2\mu/\hbar^2)(E-U) = 0$ the following equation $(\nabla\sigma)^2 + (\hbar/i)\Delta\sigma = 2\mu(E-U)$ is obtained for the function σ. The formal solution of the latter equation is set up in form of a development in series according to powers of $\hbar$: $\sigma = \sigma_0 + (\hbar/i)\Delta\sigma_1 + (\hbar/i)^2\sigma_2 + \ldots$

By inserting this ansatz into the equation, $\sigma_0' = p$; $\sigma_1' = -p'/2p$; $\sigma_2' = p''/4p^2 - 3p'^2/8p^3$; etc. is obtained in the one-dimensional case. Here $p = \sqrt{2\mu(E-U)}$ denotes the classical momentum. In the case of a real p, the quantities σ_0', σ_1',... as well as σ_0, σ_1 are real, and the quantity σ can be univocally devided into two factors denoting modulus and phase of the wave

Žurn.eksp.i teor.fis,31,fasc.4,688-692 (1956) CARD 2 / 4   PA - 1735

function: $\Psi = \exp\left\{\sigma_1 - \hbar^2\sigma_3 + \hbar^4\sigma_5 - \ldots\right\}\exp\left\{i(\sigma_0/\hbar - \hbar\sigma_2 + \hbar^3\sigma_4 - \ldots)\right\}$.

Another solution of the SCHROEDINGER equation, which is linearly independent, is obtained by replacing i by - i in the latter equation. With imaginary p the entire expression in the exponent is real.

Let a turning point be assumed at x = a, i.e. U(a) = E. Here the phase of the wave function at x > a is determined on the assumption that in this domain E > U(x) and in the domain x a the inequation E < U(x) applies. The modulus of the wave function diminishes with increasing distance of the point x from a. By the exact solution of the SCHROEDINGER equation near the turning point (where the potential energy can be approximated by a linear function of the coordinate x) and by amalgamating the exact solution with the quasi-classical solution an expression for the phase is obtained. Next, the exact solution of the SCHROEDINGER equation is explicitly given with a linear potential satisfying the above mentioned conditions. Also the asymptotic development of this solution at $\hbar \to 0$ is written down.

In the point x = a the momentum p assumes the value zero. If x is a complex variable, the point x = a is for p(x) a branch point, and p(x) then is a bi-valent function. Also the functions σ_0'. σ_2', σ_4' ... are then bivalent with a

branch point at x = a. When determining the functions σ_0, σ_2, σ_4, it is best

to pass over from ordinary to contour integration, which is described in detail.

Žurn.eksp.i teor.fis,$\underline{31}$,fasc.4,688-692 (1956)   CARD 3 / 4   PA - 1735

With such a definition of the functions σ_o, σ_2, σ_4 ... it applies that

$\sigma_o = (1/2)\int_{c_1} \sigma_o' \, dx;\ \sigma_2 = (1/2)\int_{c_1} \sigma_2' \, dx;\ \sigma_4 = (1/2)\int_{c_1} \sigma_4' \, dx,\ \dots$.

For x which are near a, the expression $\sigma_o/\hbar + \pi/4 - \hbar\sigma_2 + \hbar^3\sigma_4 - \dots$ is obtained for the phase, where σ_o, σ_2, σ_4 are defined by the above formulae.

There now follows the investigation of such a form of the potential energy $U(x)$ in which two turning points $x = a$ and $x = b$ exist. Here the inequation $U(x) < E$ applies at $a < x < b$, and in the remaining domains it applies that $U(x) > E$. The wave function which decreases at $x < a$ has the following shape at $x > a$ (with the exception of a constant factor):

$\exp\left\{\sigma_1 - \hbar^2\sigma_3 + \hbar^4\sigma_5 - \dots\right\} \sin((\sigma_o/\hbar) + (\pi/4) - \hbar\sigma_2 + \hbar^3\sigma_4 - \dots),$

where σ_o, σ_2, σ_4 are determined by the above mentioned integral expressions.

The wave function which diminishes at $x > b$, in the case of $x < b$ has the form

$\exp\left\{\sigma_1 - \hbar^2\sigma_3 + \hbar^4\sigma_5 - \dots\right\} \sin((s_o/\hbar) + (\pi/4) - \hbar s_2 + \hbar^3 s_4 - \dots),$ where

$s_o, s_2, s_4 \dots$ are determined by the formulae $s_o = (1/2 \int_{c_2} \sigma_o' \, dx;\ s_2 = (1/2)\int_{c_2} \sigma_2' dx;$

$s_4 = (1/2) \int_{c_2} \sigma_4' \, dx,\ \dots$. The course taken by integration C_2 is described in detail. - The wave function of the energy level must diminish at $x < a$ and $x > b$.

Žurn.eksp.i teor.fis,31,fasc.4,688-692 (1956) CARD 4 / 4   PA - 1735

Finally, the following condition is obtained: $\oint_C \sigma_0' dx - \hbar^2 \oint \sigma_2' dx +$

$+ \hbar^4 \oint \sigma_4' \, dx - \dots = (n + 1/2) \, 2\pi\hbar$. The functions σ_0', σ_2', σ_4' occurring here-
in were defined in the first part of this work. It applies that n = 0,1,2,...,
and the closed course of integration C comprises the points x = a and x = b in
the direction which is inverse to that of the hands of a clock. The last-men-
tioned formula is BOHR'S precise quantization rule. Integration is carried out
in a general manner in the latter formula on the condition that the potential
energy U(x) has a minimum at a certain point and that the relation U(a) = U(b)=E
applies at the points x = a and x = b. The course taken by the integration curve
is shown. The expressions for the functions σ_0', σ_2', σ_4' found in this manner are
explicitly given. By inserting these functions into the aforementioned generalized
quantization condition an equation for E is obtained, the solution of which is
set up in form of a series according to $\hbar$: $E = \hbar E_1 + \hbar^2 E_2 + \hbar^3 E_3 + \dots$ The
equation obtained by the insertion of this ansatz is explicitly written down. By
equating the terms with the same powers of $\hbar$ the coefficients of this ansatz in
series can be successively determined. The term without $\hbar$ is identically equal
to zero and the terms at $\hbar$ result in $-i(\sqrt{2\mu E_1}/2) \int_C dx/\sqrt{U} = (n+(1/2))2\pi$. The
terms computed by this method for E_1, E_2, E_3 are, in the end, explicitly given. The
term E_1 corresponds to a harmonic oscillator and the higher terms characterize
deviation from the harmonic state. The formulae mentioned are applicable with the
greatest exactitude to small n, i.e.for the lower levels.
INSTITUTION:

KUDRYAVTSEY V. S.

Kudriavtsev, V. S. On quasiclassical quantization. So- 1-F\W
viet Physics. JETP 4 (1957), 527-530

A method of calculating the energy levels in quasi-
classical quantization is presented for the one-dimensional
case. The value of the levels is obtained in the form of an
expansion in ħ. Under certain assumptions on the form
of the potential energy $U(x)$, this expansion can be ob-
tained in a general form. Computations are carried out
for a potential energy having a minimum and rising on
either side of the minimum, i.e., of an oscillator type.

Author's summary.

KUDRYAVTSEV, V. S.

56-7-35/66

AUTHOR KUDRYAVTSEV, V.S.

TITLE Elastic Collision Cross Section for Hydrogen Atoms.
(Secheniye uprugogo stolknoveniya atomov vodoroda drug s
drugom.- Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 33, Nr 7,
pp 243-250 (USSR.)

ABSTRACT The author here computes the cross sections of the elastic
scattering of nonexcited hydrogen atoms by one another by
means of the method of the perturbed steady states. The
system investigated here consists of two hydrogen atoms which
pass each other at a certain distance. If the relative velocity
of the atoms is small compared to the velocity of the electrons
in the interior of the atoms, both electrons are in a quasi-
adiabatic condition and as a wave function the wave functions
of the steady states of the hydrogen molecule at assumed
position of the nuclei can be used. The kinetic energy of the
nuclei in the following approximation is a small perturbation
which causes the transitions. First, SCHRÖDINGER'S equation
for the system investigated here is written down. The eigen-
functions

$$\varphi_n(\vec{r}, \vec{r}_1, \vec{r}_2)$$

of the HAMILTONIAN of this system and the eigenvalues $\xi_n(r)$

CARD 1/3

Elastic Collision Cross Section for Hydrogen Atoms.

56-7-35/66

of the energy are electron functions and electron terms of the hydrogen molecule at an assumed position of the nucleï. The functions ψ_n form an orthogonally normalized system. The wave function $\psi\,(\vec{r},\vec{r}_1,\vec{r}_2)$ of the system is developed here according to the eigenfunctions $\psi_n(\vec{r},\vec{r}_1,\vec{r}_2)$. The problem of the elastic scattering of the atoms is reduced to the problem X of the scattering of one particle in the field $\varepsilon_m(r)$. The molecular terms: For the solution of this problem the energies of the terms

$$ ^1\Sigma_g^+ \qquad \text{and} \qquad ^3\Sigma_u^+ $$

of the hydrogen molecule as a function of the distance r between the nuclei has to be known. These terms are discussed here in detail.

Quantum effects, (which are caused by the similarity of the atoms) on the occasion of the scattering into small angles towards the front and rear are not essential for the case investigated here and the cross sections may be computed by means of the formulae of classical mechanics. The last chapter discusses the computation of the cross sections.

CARD 2/3

KUDRYAVTSEV, V. S.

"Plasma Radiation in a Magnetic Field", by V. A. Trubnikov, V. S. Kudryavtsev

Report presented at 2nd UN Atoms-for-Peace Conference, Geneva, 9-13 Sept 1958.

Ku DRy Av Ts {v) V.5

10(4); 21(5); 24(8)   PHASE I   BOOK EXPLOITATION   SOV/2457

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke. 2d. Moscow, 1957

Teplotekhnika i gidrodinamika; trudy konferentsii, tom. 4 (Heat Engineering and Hydrodynamics; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, Vol 4) Moscow, Gosenergoizdat, 1958. 88 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR, and USSR. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii.

Eds.: M. A. Styrikovich (Resp. Ed.), G. Ye. Kholodovskiy, and K. S. Fomichev; Ed. of Publ. House: L. M. Sinel'nikova; Tech. Ed.: M. I. Borunov.

PURPOSE: This collection of articles is intended for scientists and laboratory workers concerned with the use of radioactive and stable isotopes.

COVERAGE: This collection of papers deals with the application of radioactive and stable isotopes as measuring tools in various types of scientific investigation. No personalities are mentioned. References are given after some of the articles.

2. Bartolomey, O.G., Ya. G. Vinokur, V.A. Kolokol'tsev, and V.I. Petukhov. Use of Gamma Rays for Studying the Process of Diffusion 9.

3. Rutkiladze, G.S., and V.N. Moskvichev. Use of Gamma-radioscopy for Studying the Hydrodynamics of a Multifluid System 12.

4. Polenkin, P.O., and M.A. Shapkin. Method of "Tagged" Atoms for Investigating Water and Steam Content in Surface Boiling of a Fluid 16.

5. Kudryavtsev, V.S. Determining the Specific Surface Area of Quartz and Cement Powders by the Sorption Method With the Use of "Tagged" Atoms 20.

6. Moskvin, V.M., and I.L. Rubetsova. Use of Radioactive Isotopes for Studying Sulfate Corrosion of Concrete 28.

7. Tsytovich, N.A., V.I. Ternovskiy, and V.A. Lukin. Methods for Determining the Density and Moisture Content of Soils With the Aid of Radioactive Emulsions 33.

8. Polozova, I.G., and R.I. Reyman. Study of the Processes of Moisture Transfer in Building Materials by Means of Gamma-radioscopy 38.

9. Styrikovich, M.A., L.Kh. Khaybullin, and L.K. Khokhlov. Use of Radioactive Isotopes for Investigating the Solubility of Salts in Water Vapor at High Pressures 41.

10. Sigman, L.S., A.Ya. Antonov, and A.V. Surnov. Investigation of the Characteristics of Vapor at a Pressure of 185 abs. atm. With the Aid of Radioactive Isotopes 48.

11. Dubrovskiy, V.A. Use of Radioactive Isotopes for Observing the Motion of the Molten Glass Mass in Glass Furnace Tanks 52.

12. Rachinskiy, V.V. Use of Radioactive Isotopes in Studying the Filtration of Fluids Through Porous Media 57.

13. Lagunskaya, D.I., and A.Ya. Faulin. Radioisotope Methods for Investigating Flow Processes of Fluids in a Porous Medium 62.

14. Botts, M.A., L.S. Zarubin, V.S. Kaninskiy, and L.L. Korsak. Investigation of the Hydrodynamics of a Fluid in the Contral Rotor of a Settling Centrifuge With the Aid of Radioactive Isotopes 67.

15. Volarovich, M.P., M.V. Churayev, and B.Ya. Minkov. Investigations of the Motion of Water in Peat Under Laboratory and Field Conditions With the Use of Radioactive Isotopes 72.

16. Arkhangel'skiy, M.M. Use of Radioactive Isotopes for Investigating Suspensions of River Silt 78.

17. Vernik, A.I., and A.S. Shubin. Use of Radioactive Isotopes for Investigating the Mechanism of the Drying Process 85.

KUDRYEVTSEV, V. S.

"The Distribution Function of Electrons in a Plasma Situated in a Magnetic Field,"
(Work carried out in 1956, pp. 114-120).

   "The Physics of Plasmas; Problems of Controlled Thermonuclear Reactions." VOl. III.
   1958, published by Inst. Atomic Energy, Acad. Sci. USSR.
resp. ed. M. A. Leontovich, editorial work V. I. Kogan.

Available In Library.

AUTHOR: Kudryavtsev, V. S.   SO7/56-34-6-24/51

TITLE: The Energy Diffusion of Fast Ions in an Equilibrium Plasma
              (Energeticheskaya diffuziya bystrykh ionov v ravnovesnoy
              plazme)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
              Vol. 34, Nr 6, pp. 1558-1565 (USSR)

ABSTRACT: The first part of this paper deals with the derivation of the
              kinetic equations. First the author gives the kinetic equation
              for a totally ionized plasma when there are no external fields.
              In the case investigated in this paper the distribution function
              of each type of particles is isotropic with respect to the
              velocity. A small number of ions with definite energy (with a
              spherically symmetrical distribution with respect to the direc-
              tions of the velocities) may be launched into a totally ionized
              equilibrium plasma. An expression is given for the particle flux
              in the velocity space. The kinetic equation for the launched

              ions has the form $\frac{\partial f}{\partial t} = -\frac{1}{v^2}\frac{\partial}{\partial v}(v^2 j)$. f denotes the distribution

Card 1/2   function of the particles in the velocity space. Subsequently

The Energy Diffusion of Fast Ions in an Equilibrium Plasma

the author passes over from f to the distribution function ϱ with respect to the energy. The equation for ϱ has the form

$$\frac{\partial \varrho}{\partial \tau} = \frac{\partial}{\partial x}\left[\Gamma(x)\left(\varrho - \frac{\varrho}{2x} + \frac{\partial \varrho}{\partial x}\right)\right] \quad \text{with} \quad \int_0^\infty \varrho\, dx = 1.$$

The second part of this paper deals with the solution of this equation. This paper has to find the time dependence of the distribution, especially for long time intervals and for energies greater than the energy x_0 of the monochromatic distribution. The final expression for the density $\varrho(x,t)$ of the distribution with respect to the energy describes the distribution of the ions launched into the plasma with a sufficiently good approximation. The author thanks A. B. Migdal who formulated the problem. There are 1 figure and 2 references, 2 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR (AS of the USSR)

SUBMITTED: January 2, 1958

Card 2 2

KUDRYAVTSEV, V.S.

Theory of the motion of charged particles in a strong magnetic
field in the presence of a strong transverse electric field.
Dokl. AN SSSR 152 no.2:313-316 S '63.   (MIRA 16:11)

1. Predstavleno akademikom M.A. Leontovichem.

KUDRYAVTSEV, V.S.

Diffusion-adsorption activity of the carbonate rocks of the Upper
Cretaceous (Crimea). Izv. vys. ucheb. zav.; neft' i gaz 8 no.3:
3-7 '65.   (MIRA 18:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti
im. akademika Gubkina.

LUPANOVA, N.P.; KUDRYAVTSEV, V.T.

    The formula of pumpellyite. Dokl. AN SSSR 141 no.6:1457-1460
D '61.   (MIRA 14:12)

    1. Institut geologii rudnykh mestorozhdeniy, petrografii, mineral-
ogii i geokhimii AN SSSR.
                          (Pumpellyite)

LUPANOVA, N.P.; KUDRYAVTSEV, V.T.

Pumpellyite of the Northern Caucasus. Izv. AN SSSR. Ser.geol.
27 no.6:23-33 Je '62.   (MIRA 15:5)

1. Institut geologii rudnykh mestorozhdeniy, petrografii,
mineralogii i geokhimii AN SSSR, Moskva.
                    (Caucasus, Northern--Pumpellyite)

LUPANOVA, N.P.; KUDRYAVTSEV, V.T.

  Middle Paleozoic alkali porphyrites in the Laba basin (Northern
  Caucasus). Trudy IGEM no.77:115-129 '62.   (MIRA 16:2)
                      (Laba Valley—Porphyrites)

KUDRYAVTSEV, V, V,

Peat Industry

The Chernoram'ye transportation workers are preparing for the winter.   Torf.prom.
29 No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952.   UNCLASSIFIED.

KUDRYAVTSEV, V. V.   PA 75T26

USSR/Electricity   May 1948
     Furnaces, Electric
     Controls, Electric

"Automatic Control of Electric Resistance Furnaces,"
V. V. Kudryavtsev, L. M. Ioffe, L. P. Shvalev, K. I.
Glushkov, P. I. Selivanov, B. S. Popov, Plant imeni
Molotov, Ministry of Armament, 1 p

"Prom Energet" No 5

Staff of above plant did not allow shortage of elec-
tric automatic controls to prevent increased output.
Designed and installed a thermacouple-potentiometer
type system, a circuit diagram of which is reproduced.
Suggestion was awarded a fifth prize in All-Union
competition.
                                              75T26

SUKOL'NIKOVA, R.I., kand.khim.nauk; KUDRYAVTSEV, V.V.

 Dustless passage of ore through permanent ore chutes. Bor'ba s sil.
 5:178-186 '62.   (MIRA 16:5)

 1. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy
 nikelevoy promyshlennosti.
  (Ore handling)   (Mine dusts—Removal)

L 13365-63   EWP(j)/BDS/EWT(m)/ES(s)-2   ASD/ESD-3/SSD   Pc-4/
Pt-4   RM

ACCESSION NR: AP3003307   S/0191/63/000/007/0028/0031

AUTHORS: Andrianov, K. A; Krestov, N. I.; Rokat, V. B; Kudryavtsev, V. V.;
Kvashnin, V. S.

TITLE: The production of dielectric laminates with non-alcoholic phenolformalde-
hyde resins

SOURCE: Plasticheskiye massy, no. 7, 1963, 28-31

TOPIC TAGS: laminate, phenolformaldehyde, resin, paraformol, cresol, polyoxy-
methylene.

ABSTRACT: The scope of this study is to produce liquid phenolformaldehyde resins
without the use of alcohols which are to be used in the production of laminates.
A new method for the preparation of liquid non-alcoholic phenolformaldehyde resins
in which a large portion of formaldehyde is replaced by paraformol has been obtained.
The ratio of intermediates is taken in such proportions that the water from formal-
dehyde and from the condensation is used in the formation of the liquid resin.
This eliminates many steps from the process such as decantation or distillation,
or vacuum drying by which the excess water is removed, the purification step of
removing the undesirable by-products. Since there are no losses, the amount of
Card   1/2

L 13365-63
ACCESSION NR: AP3003507

oresol is decreased. The characteristic of the above resin is its rapid change in viscosity upon standing. The production of laminates by a non-alcoholic method has a great economical effect not only by the fact that its matereal cost is about 16% less than the alcoholic method, but also the absence of alcohol and explosive vapors simplifies the production and increases the production capacity. Other substitutes used in the laboratory preparation of liquid resins was Alpha-poly-oxymethylene. Orig. art. has: 2 tables, and 2 figures.

ASSOCIATION: none

SUBMITTED (KO   DATE ACQ: 30Jul63   ENCL: 00

SUB CODE: ML   NO REF SOV: 000   OTHER: 000

Card   2/2

SHEREMETEVA, T.V.; BORISOVA, Z.V.; KUDRYAVTSEV, V.V.

Synthesis of N-β-trifluoro derivatives of maleic and citraconic
acids. Izv. AN SSSR Otd.khim.nauk no.12:2237-2239 D '61.
(MIRA 14:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
            (Maleic acid) (Citraconic acid)

SHEREMETEVA, T.V.; GUSINSKAYA, V.A.; KUDRYAVTSEV, V.V.

Synthesis of N-substituted diamides of succinic and citraconic acids.
Izv. AN SSSR Ser.khim. no.10:1821-1823 O '63.   (MIRA 17:3)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

KUDRYAVTSEV, V. V.

KVASHNIN, V.S.; KRESTOV, N.I.; KUDRYAVTSEV, V.V.; REKST, V.B.; TA-
REYEV, B.M., redaktor; LARIONOV, G.Ye., tekhnicheskiy redaktor.

[New production techniques for laminated electric insulators]
Novaia tekhnologiia proizvodstva sloistykh elektroizoliatsion-
nykh materialov. Moskva, Gos. energ. izd-vo, 1953. 51 p.
(Electric insulators and insulation)   (MLRA 7:8)

Kudryavtsev, V.V.

A new electric insulation material Textogetinax. V. V. Kudryavtsev. Inform. Tekh. Sbornik 1954, No. 05, 14-16; Referat. Zhur., Khim. 1956, Abstr. No. 14389.—In order to save cloth used for the preparation of Textolite, a new electric insulation material Textogetinax (I) was developed. The latter consists of alternating cloth and paper sheets. During the production of I the package (half product) is so prepd. that the reverse side alignment of the paper coincides with the roof of the cloth. The bakelite-covered cotton cloth applied for the surface sheets of I has a slightly thicker coat of resin than the sheets inside the material (55-60% as compared to 52-7%). A comparative table is given contg. phys.-mech. and elec. properties of Textolite (2 brands), Getinax, and I. It follows from this table that I is superior to Textolite in heat-resistance, water-resistance, elec. flexing strength, and stretching, but inferior in specific resilience and in cleavage resistance. The suitability for stamping (cutting out) of the 2 materials is similar.   J. Mloszewska

KUDRYAVTSEV, V.V.

ERNST, V.B.; KUDRYAVTSMV, V.V.

Maintaining the quality of varnished cambric in insulation and
winding work. Vest. elektroprom. 27 no.10:65-67 O '56.(MLRA 10:9)

1. Zavod "Electroizolit.".
                (Electric insulators and insulation)

LEBEDEV, Yuliy Ivanovich; KUDRYAVTSEV, Vitaliy Vasil'yevich, laureat Sta-
linskoy premii; MESHKOVSKAYA, M., red.; SHLYK, M., tekhn.red.

[We shall surpass the standards of world technology] Prevzoidem
obraztsy mirovoi tekhniki. Moskva, Mosk.rabochii, 1960. 98 p.
(MIRA 14:4)

1. Direktor Khot'kovskogo zavoda "Elektroizolit" (for Lebedev).
2. Glavnyy inzhener Khot'kovskogo zavoda "Elektroizolit" (for
Kudryavtsev).
(Khot'kovo (Moscow Province)--Electric insulators and insulation)
(Socialist competition)

BROMBERG, Viktor Aleksandrovich; GAMAYUNOV, Nikolay Ivanovich;
ZVORYKIN, Aleksey Dmitriyevich; KUDRYAVTSEV, Vitaliy
Vasil'yevich; TEVEROVSKIY, Yevgeniy Ivanovich; EPSHTEYN,
Lev Abramovich; SHIROKOVA, M.M., tekhn. red.

[Mechanization of the manufacture of electrical insulating
materials of winding insulation, and drying as well as
saturating operations] Mekhanizatsiia proizvodstva elektro-
izoliatsionnykh materialov, izoliatsionno-obmotochnykh i
sushil'no-propitochnykh rabot. By V.A.Bromberg i dr. Moskva,
Gos. energ.izd-vo, 1961. 99 p.   (MIRA 15:2)
              (Electric insulators and insulation)

L 34848-65   EPA(s)-2/EWT(m)/EPF(c)/EWG(v)/EPR/EPA(w)-2/EWP(j)   Pc-4/Pab-10/Pe-5/Pr-4/
ACCESSION NR: AP5008546   Ps-4/Pt-10   WW/RM /   S/0266/65/000/006/0061/0061

AUTHOR: Alekseyenko, V. I.; Pokrovskiy, N. I.; Mishustin, I. U.; Lebedev, Yu. I.;
Kudryavtsev, V. V.; Levin, B. I.; Abramyan, I. A.; Rekat, V. B.; Bernshteyn, L.M.;
Kazakova, L. I.; Tryapkina, L. A.; Ishmayeva, L.I.; Luginina, V.K.

TITLE: A method for producing insulating plastics   Class 39, No. 169246

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 6, 1965, 61

TOPIC TAGS: plastic insulator, polar polymer, nonpolar polymer

ABSTRACT: This Author's Certificate introduces a method for producing insulating
plastics based on polyvinylchloride modified with rubber. The electrical insula-
tion properties and heat resistance of the product are improved by using a mixture
of polar and nonpolar rubbers as the modifiers with the addition of mineral fillers.

ASSOCIATION: none   SUB CODE: MT,GC

SUBMITTED: 31Mar61   ENCL: 00

                                   OTHER: 000
NO REF SOV: 000

Card 1/1

L 32301-65   EWT(m)/EPF(c)/EPR/EWP(j)/T   Pc-4/Pr-4/Pr-4/

S/0286/65/000/003/0113/0113

ACCESSION NR: AP5007217

AUTHOR: Peshekhonov, A. A.; Baybakov, K. P.; Makharinskiy, Ya. G.; Smyslov, V. I.; Khrenov, A. M.; Smirnov, A. A.; Mironov, A. K.; Kudryavtsev, V. V.

TITLE: A method for manufacturing pipes and similar articles from laminated plastics/ Class 80, No. 168169

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 3, 1965, 113

TOPIC TAGS: thermosetting plastic, glass fabric, laminated plastic, plastic technology

ABSTRACT: This Author's Certificate introduces a method for manufacturing pipes and similar articles from laminated plastics. The process consists of winding some such material as resin-saturated glass fabric on a mandrel and heating (e.g. with hot rollers). Liquid thermosetting resins which do not contain volatile solvents are fed continuously to the mandrel during the winding and heating process. This is done to make the completed article airtight.

ASSOCIATION: none

Card 1/1

ACC NR: AP6024364   SOURCE CODE: UR/0280/66/000/002/0065/0071

AUTHOR: Kudryavtsev, V. V. (Leningrad)

ORG: none

TITLE: Analysis of monitoring data on combinational relay-switching circuits on the basis of solutions of equations of algebraic logic

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 2, 1966, 65-71

TOPIC TAGS: algebraic logic, switching circuit, test monitoring, equation theory

ABSTRACT: Methods of solutions of systems of algebraic-logic equations serving to determine the state (correct functioning, malfunction) of the contacts of a circuit according to its reactions to an input effect are examined. Along with the known methods of solution based on the transfer-function principle and on checking the reliability of the monitoring device, the author proposes a new method whereby the determination of the states of the contacts of combinational relay-switching circuits reduces to the solution of a system of equations of algebraic logic which are of independent significance to the theory of automata. With the aid of methods of solution of the general problem it is possible to construct a contact circuit of any configuration

Card 1/2

ACC NR: AP5024364

realizing a specified algebraic-logic function. Mathematically, the problem is formulated as follows: Given: the functions of algebraic logic $f(x_1, x_2, \ldots, x_n)$ and $F(x_1, x_2, \ldots, x_n)$, where $x_1, x_2, \ldots, x_n$ are independent variables. Find: the values of variables at which the equality

$$f(x_1, x_2, \ldots, x_n) = F(x_1, x_2, \ldots, x_n) \qquad (1)$$

is satisfied. This problem is a particular case of a more general problem consisting in the determination of the functions $y_1, y_2, \ldots, y_m$ at which the equality

$$f(x_1, x_2, \ldots, x_n, y_1, y_2, \ldots, y_m) = F(x_1, x_2, \ldots, x_n, y_1, y_2, \ldots, y_m) \qquad (2)$$

(where $x_1, x_2, \ldots, x_n$ are independent variables) becomes an identity. Eq. (1) may be solved with the methods of solution of Eq. (2) on assuming that the variables x_1, x_2 are dependent. The general solution of the pertinent system of equations can be compactly recorded by using the calculus of events; this also makes it possible to readily solve probabilistic problems of monitoring. For practical purposes it is expedient to introduce the concept of the conjunctive and disjunctive variants of the general solution. Orig. art. has: 3 figures, 9 formulas.

SUB CODE: 09, 12, / SUBM DATE: 18Apr64/ ORIG REF: 002/ OTH REF: 003

Card 2/2

SOURCE CODE: UR/2649/65/000/224/0095/0102

ACC NR: AT6022759

AUTHOR: Kudryavtsev, V. V.; Remizov, O. A.; Alekseyev, Yu. L.

ORG: None

TITLE: An experimental study of the temperature field of a melt during single crystal growing

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy no. 224, 1965, Voprosy slozhnogo teploobmena (Problems of complex heat exchange), 95-102

TOPIC TAGS: single crystal growing, temperature measurement, crystallization, temperature gradient

ABSTRACT: The authors study the effect of the temperature field of a melt on the distribution of alloying admixtures in a crystal during single crystal growing by the Czochralski method. The temperature field of the melt is varied by using heating units with various shapes, changing the location of the crucible with respect to the heating unit and varying the parameters of pulling. The following pulling parameters were used throughout this study: seed crystal rotation 20, 30 and 60 rpm; crucible rotation 0, 2, 5, 10 and 20 rpm; rate of seed crystal raising 1, 2 and 3 mm/min. The crystals were pulled in an argon atmosphere with a residual pressure of 0.4 gauge atmosphere. Chromel-alumel thermocouples were used for measuring the temperature field of the melt.

Card 1/2

ACC NR: AT6022759

Temperature measurements were taken in several of the horizontal cross sections of the melt with a depth interval of 3-5 mm and under the crystallization front. Standard heating units were used as well as a series of experimental ones developed at the MIIT Laboratory. The standard crucible charges were 2500 and 3500 g. The single crystals pulled usually were 200-240 mm long and 30 mm in diameter. An analysis of the temperature fields of the melt shows that the axial component of the temperature gradient in the melt region under the crystal decreases as the rate of pulling is increased.
Three types of heating units were studied: radial heating, bottom-radial heating and bottom heating. The results show that the procedures worked out for measuring the temperature field in a melt may be used to measure the temperature in any part of the melt during crystal pulling. It is also shown that the shape of the heater, its location with respect to the crucible, and pulling parameters have a significant effect on ingot size. Controlling the rate of rotation of the seed crystal and crucible is an effective means for improving the quality of single crystals. The rate of seed crystal rotation has a significant effect on the distribution of alloying admixtures between the liquid and solid phases. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 004

Card   2/2

L 8127-66   EWT(m)/EWP(j)/EWA(c)   RPL   JW/RM

ACC NR: AP5025021   SOURCE CODE: UR/0286/65/000/016/0081/0081

AUTHORS: Koton, M. M.; Kudryavtsev, V. V.; Rudakov, A. P.; Bessonov, M. I.

ORG: none

TITLE: Method for obtaining polyimides. Class 39, No. 173931 /announced by the Institute for High-Molecular Compounds, AN SSSR (Institut vysokomolekulyarnykh soyedineniy AN SSSR)_/

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 81

TOPIC TAGS: polyimide, diamine, polycondensation

ABSTRACT: This Author Certificate presents a method for obtaining polyimides by the polycondensation of aromatic diamines and the dianhydride of tetracarbonic acid. To increase the variety of polyimides, the dianhydride of butanetetracarbonic-1,2, 3,4 acid is used as the starting material.

SUB CODE: OC/ SUBM DATE: 20Oct64

nw
Card 1/1   UDC: 678.675.4'4.002.2

KUDRYAVTSEV, V.Ye.

An interesting case of the intergrowth of fluorite and phenacite.
Zap. Vses. min. ob-va 87 no.6:686-690 '58.   (MIRA 12:3)
                  (Fluorite) (Phenacite)

KUDRYAVTSEV, V.Ye.

Composition and age of the Baytayginskiy intrusive complex in
northwestern Tuva. Inform.sbor. VSEGEI no.16:67-74 '59.

(MIRA 15:3)

(Tuva Autonomous Province--Rocks, Igneous)

KUDRYAVTSEV, V.Ye.(Moskva)

Frictionless pump. Priroda 49 no.7:112 Jl '60.
(MIRA 13:7)

(Vacuum pumps)

KUDRYAVT'SEV, Ya.B., kand.tekhn.nauk

Liquid expenditure of hydraulic transformers as a function of the
runner parameters. Vest.TSNII MPS 22 no.6:28-31 '63.
                                                   (MIRA 16:10)

KUDRYAVTSEV, Ya.B., inzh.

Characteristics of changes in the liquid consumption of the hydraulic torque converter. Trudy MIIT no.130:170-179 '60.

(MIRA 14:3)

(Diesel locomotives--Hydraulic drive)

KUDRYAVTSEV, Ya.B., inzh.

Studying the blading systems of hydraulic torque transformers
with a centrifugal turbine and cylindrical blades. Trudy
MIIT no.141:69-100 '61.   (MIRA 15:2)
        (Diesel locomotives--Hydraulic drive)

KUDRYAVTSEV, Ya.B., inzh.

Effect of the finite number of blades in the pumping wheels of hydraulic torque transformers. Trudy MIIT no.141:101-107 '61.
                                                    (MIRA 15:2)
          (Turbomachines—Fluid dynamics)

KUDRYAVTSEV, Ya.B.

Study of the deviation of a flow from the blades of the gate mechanism of a hydraulic torque converter. Trudy MIIT no.139:273-286 '61.

(MIRA 16:4)

1. Moskovskiy institut inzhenerov zheleznodorozhnogo transporta.
(Hydraulic machinery)

KUDRYAVTSEV, Ya.B., aspirant

Studying the characteristics of hydraulic torque converters regulated by the rotation of the blades. Trudy MIIT no.150:
103-121 '62.   (MIRA 16:2)
         (Oil hydraulic machinery—Testing)

KUDRYAVTSEV, Ya.B., kand. tekhn. nauk

Heat emission in a non transparent hydraulic torque converter during its joint work with the diesel engine. Vest. TSNII MPS 24 no.2:29-32 '65.   (MIRA 18:5)

KUDRYAVTSEV, Ye.

BERSHAK, P.; KUDRYAVTSEV, Ye.; FRIDMAN, S.

Double capacity sieve middling purifier. Muk. elev. prom. 23 no.12:
17-18 D '57. (MIRA 11:2)

1. Tekhnicheskiy otdel Ministerstva khleboproduktov SSSR (for Bershak).
2. Moskovskiy mel'nikchnyy kombinat No.3. (for Kudryavtsev, Fridman).
(Sieves)

KUDRYAVTSEV, Ye.; ZOTIKOV, V.

Increasing the life of flour sifter screens. Muk.-elev. prom. 23
no.6:25 Je '57.   (MIRA 10:9)

1. Moskovskiy mel'nichnyy kombinat No.3.
                        (Sieves)

YATSEVICH, V., inzhener; KUDRYAVTSEV, Ye., inzhener.

Introduction of beaters for cleaning husks. Muk.-elev.prom.
23 no.3:16-18 Mr. '57.   (MIRA 10:5)

1. Moskovskiy mel'nichnyy kombinat No. 3.
                    (Grain milling)

L 46301-65   EWT(1)   IJP(c)

ACCESSION NR: AR5012225

UR/0058/65/000/003/D013/D013

SOURCE: Ref. zh. Fizika, Abs. 3D81

AUTHOR: Sobolev, N.N.; Antropov, Ye.T.; Gippius, Ye.F.; Dronov, A.P.; Krindach, N.I.; Kudryavtsev, Ye.N.; Pechenov, A.N.; Sviridov, A.G.; Tunitskiy, L.N.; Fayzullov, F.S.; Cheremisinov, V.P.

TITLE: Experimental determination of electronic oscillator strengths of diatomic molecules

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 64-81

TOPIC TAGS: oscillator strength, electron oscillator, diatomic molecule, shock wave, oxygen, nitric oxide, cyan, electronic spectrum

TRANSLATION: To determine the oscillator strengths of electronic transitions of diatomic molecules, an experimental method was developed, based on the measurement of the absorption of gas behind a shock wave reflected from the end of a shock tube. By varying the velocity of the incident shock wave and by calculating the state of the gas behind the shock wave, it is possible to determine the temperature and the concentration that the molecules behind the reflected

Card   1/2

L 46301-65
ACCESSION NR: AR5012225

shook wave must have to permit determination of the oscillator strengths from the measured absorption. The theoretically obtained temperature was monitored by two experimental methods. A method was also developed for determining the oscillator strengths from the study of the gas behind the shock wave; these strengths were determined for the Schumann-Runge bands of oxygen, the beta and gamma systems of nitric oxide, the violet band system of CN, and the C2 Swan bands.

SUB CODE: NP, ME.   ENCL: 00

Card 2/2

ACCESSION NR: AR4040823   S/0058/64/000/005/D026/D026

SOURCE: Ref. zh. Fizika, Abs. 5D191

AUTHOR: Kudryavtsev, Ye. M.; Gippius, Ye. F.; Pechenov, A. N.;
Sobolev, N. N.

TITLE: Definition of matrix element of dipole moment of electron transition
of violet system of bands of cyanogen. II.

CITED SOURCE: Teplofiz. vy*sokikh temperatur, v. 1, no. 2, 1963, 218-227

TOPIC TAGS: matrix element, dipole moment, electron transition, cyanogen,
cyanogen band, radioscopy

TRANSLATION: There is described the installation used for obtaining absorption
spectrum of violet system of CN bands during radioscopy with a pulse source
of a mixture of gases CO and N_2, heated by a reflected shock wave to a tem-
perature of 4000 - 6000° K. This spectrum is used for measurement of rotary

Card 1/2

ACCESSION NR: AR4040823

temperature of CN. Results of measurement of temperature of gas by two independent methods $\angle$ by absorption spectra and by generalized methods of conversion (cf. abstract No. 5 D190) $\angle$ coincide with the data of gas-dynamic calculation. Bibliography: 16 references.

SUB CODE: NP, OP   ENCL: 00

Card 2/2

S/051/63/014/003/005/019
E039/E120

AUTHORS: Krindach, N.I., Kudryavtsev, Ye.M., Sobolev, N.N.,
Tunitskiy, L.N., and Fayzullov, F.S.

TITLE: Determination of the electronic transition moments of
the Schumann-Runge band system in oxygen. I.

PERIODICAL: Optika i spektroskopiya, v.14, no.3, 1963, 351-361

TEXT: A method is developed for determining the square of
matrix elements for electron transitions of molecules based on a
measurement of the absorption in gases behind shock waves. The
Schumann-Runge absorption bands for oxygen are obtained on a shock
tube using helium as a working gas and equipped with apparatus for
measuring temperature by the usual method of rotation of spectral
lines; in this case by observing the resonance line of
Ba II (λ = 4554 Å). An ionization probe is used for measuring the
velocity of the front of the incident shock waves. The pulsed
light source and the synchronizing circuit are described in
detail. Spectra are recorded on ДФС-13 (DFS-13) and КС-55
(KS-55) spectrographs with glass and with quartz optics. By
plotting the absorption index against wave number ν for the

Card 1/2

Determination of the electronic ...   S/051/63/014/003/005/019
                                          E039/E120

groups $R(K)P(K - 4)$ and measuring the area under the curve, a
value for the integral of the absorption index is obtained for
lines of R and P form, from which is calculated the square
of the moment for electronic transitions $\left| R_e^{n\,m} \right|^2$. The value
of this integral obtained graphically agrees with the calculated
value. These results and the analysis of possible errors will be
examined in a later paper.
There are 10 figures.

SUBMITTED: May 18, 1962

Card 2/2

KUDRYAVTSEV, YE. M.   95

                                    8/089/62/013/006/019/027
                                    B102/B186

AUTHORS: G. T. and M. R.

TITLE: Nauchnaya konferentsiya Moskovskogo inshenerno-fisicheskogo
             instituta (Scientific Conference of the Moscow Engineering
             Physics Institute) 1962

PERIODICAL: Atomnaya energiya, v. 13, no. 6, 1962, 603 - 606

TEXT: The annual conference took place in May 1962 with more than 400
delegates participating. A review is given of these lectures that are
assumed to be of interest for the readers of Atomnaya energiya. They are
following: A. I. Leypunskiy, future of fast reactors; A. A. Vasil'yev,
design of accelerators for superhigh energies; I. Ya. Pomeranchuk,
analyticity, unitarity, and asymptotic behavior of strong interactions at
high energies; A. B. Migdal, phenomenological theory for the many-body
problem; Yu. D. Fiveyskiy, deceleration of medium-energy antiprotons in
matter; Yu. M. Kogan, Ya. A. Iosilevskiy, theory of the Mössbauer effect;
M. I. Ryasanov, theory of ionisation losses in nonhomogeneous medium;
Yu. B. Ivanov, A. A. Rukhadse, h-f conductivity of subcritical plasma;

Card 1/4

36.

Nauohnaya konferentsiya...

S/089/62/013/006/019/027
B102/B186

Ye. Ye. Lovetskiy, A. A. Rukhadze, electromagnetic waves in nonhomogeneous plasma; Yu. D. Kotov, I. L. Rozental', the origin of fast cosmic muons; Yu. M. Ivanov, muon depolarization in solids; V. G. Varlamov, Yu. M. Grashin, B. A. Dolgoshein, V. G. Kirillov-Ugryumov, V. S. Roganov, A. V. Samoylov, μ^- capture by various nuclei; V. S. Demidov, V. G. Kirillov-Ugryumov, A. K. Ponosov, V. P. Protasov, P. M. Sergeyev, scattering of π^- mesons at 5 - 15 Mev in a propane bubble chamber; S. Ya. Nikitin, M. S. Aynutdinov, Ya. M. Selektor, S. M. Zombkovskiy, A. P. Grashin, muon production in π^-p interactions; B. A. Dolgoshein, spark chambers; N. G. Volkov, V. K. Lyapidevskiy, I. M. Obodovskiy, study of operation of a convection chamber; K. G. Finogenov, production of square voltage pulses of high amplitudes; G. N. Aleksakov, problems of color vision; V. K. Lyapidevskiy, relation between number of receivers and number of independent colors; Ye. M. Kudryavtsev, N. N. Sobolev, N. I. Tisengausen, L. N. Tunitskiy, P. S. Faysulov, determination of the moment of electron transition of oscillator forces and the width of the Schuhman-Runge bands of molecular oxygen; B. Ye. Gavrilov, A. S. Kharikov, V. I. Rayko, decomposition of the volume charge of intense ion streams; Ye. A. Kramer-Ageyev, V. S. Troshin, measurement of neutron spectra; G. G. Doroshenko, new methods of fast-neutron recording; V. I. Ivanov, dosimetry terminology; R. M. Voronkov,

Card 2/4

5.4100

AUTHORS: Fayzullov, F.S., Sobolev, N.N. and Kudryavtsev, Ye.M.

TITLE: A Spectroscopic Investigation of the State of Gas Behind a Shock Wave. III.

ABSTRACT: The paper is a continuation of earlier work (for Parts I and II see Refs 2 and 4, where the theory, experimental procedures and treatment of results are described in detail). A 92 mm long shock tube, with either one or two diaphragms, was employed to produce shock waves of 1.9 to 4.3 km/sec velocities and with 0.1 to 4 atm pressures in the region immediately behind the shock wave (known as the "plug"). The temperatures of nitrogen and air "plugs" were measured by a generalized version of spectral line reversal (for details see Part II, Ref 4), using the D-lines of Na and the resonance line of Ba II at 4554 Å. The measured temperatures were found to fall along the length of the "plugs" (Figs 1 and 2) due to a decrease of the shock-wave velocity along the shock tube. The "plug" temperatures rose with the shock-wave velocity, U_s, in satisfactory agreement with the theory: for air (Fig 5) the temperatures rose

Card 1/2

80543

S/051/60/008/06/004/024
E201/E691

A Spectroscopic Investigation of the State of Gas Behind a Shock Wave. III.

from ~2000°K at U_s ~ 1.75 km/sec to >4500°K at U_s ~ 4.5 km/sec;
for nitrogen (Fig 7) the temperatures were ~2000°K at U_s ~ 2 km/sec
and ~4000°K at U_s ~ 3 km/sec. These experiments were repeated with
argon but here the agreement between experiment and theory was much
poorer (Fig 9); the reasons for this discrepancy are discussed.
Acknowledgments are made to A.V. Potapov and S.S. Semenov for their
advice and to Ye.T. Antropov and A.A. Sapronov for their help in
making the apparatus. There are 9 figures and 10 references, 6 of
which are Soviet, 3 English and 1 translation from English into Russian.

SUBMITTED: September 28, 1959

Card 2/2

$\mathcal{X}$

10.2000
26.2114

82945

S/051/60/008/005/001/027
E201/E491

AUTHORS: Fayzullov, F.S., Sobolev, N.N. and Kudryavtsev, Ye.M.

TITLE: A Spectroscopic Investigation of the State of Gas behind a Shock Wave. II

PERIODICAL: Optika i spektroskopiya, 1960, Vol.8, No.5, pp.585-593

TEXT: The authors describe a photoelectric variant of the generalized spectral-line reversal method (Ref.2) based on measurements of the intensities of emission and absorption. The photoelectric variant was used for a pyrometric investigation of the state of nitrogen and air behind a shock wave propagated at the rate of 1.8 to 4.3 km/sec in a shock tube. The main results were reported briefly at the Ninth All-Union Conference on Spectroscopy held in December 1957 (Ref.3). Temperatures behind shock waves were measured using the D-lines of Na. The required sodium was introduced by smearing the shock-tube walls lightly with a solution of sodium chloride; sometimes the natural sodium impurity in air or in the tube was sufficient. As a calibration source the authors used either an incandescent tungsten lamp (luminance temperature of this lamp was 2660°K in the region of the D-lines of sodium) or a xenon d.c. arc lamp (effective
Card 1/5

82945

S/051/60/008/005/001/027
E201/E491

A Spectroscopic Investigation of the State of Gas Behind a Shock
Wave. II

luminance temperature $4750°K$ in the D-line region).   The xenon
lamp was itself calibrated by means of a standard incandescent
lamp.   Light from the calibration source $\mathcal{I}_1$ (Fig. 1) passed
(via glass windows O_1 and O_2)   through a part of the shock
tube 3.5 m away from the diaphragm.   An ISP-51 spectrograph and
two FEU-17 photomultipliers $(P_1$ and P_2 in Fig. 1) were used to
compare the light flux coming directly from the excited gas in the
shock tube (Φ_x) with the flux $(\Phi_{x+\mathfrak{M}})$ emitted by the same gas
when irradiated with light from the calibration source.   Hence the
temperature in the shock tube (T_x) was deduced from

$$T_x = T_{\mathfrak{M}} \cdot \left[1 + \frac{\lambda T_{\mathfrak{M}}}{C_2} \cdot \ln \left(1 - \frac{\Phi_{x+\mathfrak{M}} - \Phi_{\mathfrak{M}}}{\Phi_x} \right) \right]^{-1}$$

where $T_{\mathfrak{M}}$ is the luminance temperature of the calibration source
and $\Phi_{\mathfrak{M}}$ is the light flux from that source.   The accuracy of the
method was $\pm\ 60°K$ at $4000°K$ and it yielded temperatures behind shock
Card 2/5

82945
S/051/60/008/005/001/027
E201/E491

A Spectroscopic Investigation of the State of Gas Behind a Shock
Wave. II

waves which were in close agreement with theoretical values.
This is illustrated in Fig.2, where the experimental temperature
behind a shock wave (travelling at 3.08 km/sec in air which was
originally at a pressure of 10 mm Hg) was initially ~3400°K,
compared with the theoretical value of 3350°K.   Shock-wave
velocities were measured by oscillographic determination (a cathode-
ray oscillograph OK-17M was used) of the time a shock wave took to
travel between ionization probes (Π_1 to Π_8 in Fig.1 and 4)
placed along the shock tube;   typical oscillograms are shown in
Fig.5.   The shock-wave velocities measured by the ionization
method were checked by a method of "peaks" (Ref.4).   The method
of "peaks" uses refractive index disturbances produced by a shock
wave: two light beams cross the shock tube a distance of 190 mm
apart and the time taken by a shock wave to travel between those
two beams is measured oscillographically (oscillograms show
characteristic "peaks ", cf. Fig.6).   The results of the
ionization and the "peak" methods were found to be identical (Fig.7).
Card 3/5

82945
S/051/60/008/005/001/027
B201/E491

A Spectroscopic Investigation of the State of Gas Behind a Shock
Wave. II

The ionization method was simpler than the "peaks" method and
therefore the former was used to measure variation of the shock-
wave velocity along the shock tube.   The results obtained for air
and nitrogen (Fig.8) show that the shock-wave velocity rose
monotonically with the distance away from the diaphragm, reaching a
maximum approximately 2.5 m from it.   The method of "peaks" was
also used to find the length of the "plug" (the region between the
shock-wave front and the surface of contact between two gases used
in a shock tube, cf. Ref.1).   The "plug" length fell with rise of
the shock-wave velocity (Fig.9).   The method of "peaks" was also
employed to investigate the delay between incidence of a shock
wave and sodium emission.   For this purpose the usual shadow
system was supplemented by a monochromator which separated out the
D-lines of sodium (Fig.1).   Sodium emission and the shadow signals
were recorded simultaneously and typical oscillograms are shown
in Fig.10.   It was found that the D-line emission of sodium begins
immediately behind a shock-wave front and reaches a maximum in

Card 4/5

82945

S/051/60/008/005/001/027
E201/E491

A Spectroscopic Investigation of the State of Gas Behind a Shock
Wave. II

10 to 20 μ sec.   There are 10 figures and 7 references:
4 Soviet and 3 English.

SUBMITTED: September 28, 1959

Card 5/5

5(4), 24(8)   SOV/20-127-3-17/71

AUTHORS: Fayzullov, F. S.,   Sobolev, N. N.,   Kudryavtsev, Ye. M.

TITLE: The Temperature of Nitrogen and Air Behind a Shock Wave

ABSTRACT: 1) If a shock wave propagates in a shock tube, it is possible,
                by measurement of the propagation rate of the shock wave u_s ,
                to calculate the temperature T_2, density ϱ_2, pressure p_2,
                and the velocity of the gas u_2 behind the shock wave if the
                temperature T_1, density ϱ_1, and pressure p_1 of the gas before
                propagation of the shock wave are known. For the simplifica-
                tion of calculation, it is assumed in thermodynamics that
                T and P are constant along the obstruction formed, and that
                the latter grows linearly with time. The agreement of the
                calculation carried out under these simplified conditions
                with the experiment is investigated in the present paper.
                The experimental data on T_2 and p_2 of the air and the nitro-
                gen behind the shock wave were obtained by the generalized

Card 1/3   method of the reversal of lines with photoelectric recording.

\

The Temperature of Nitrogen and Air Behind a Shock Wave

Good agreement between experimentally and theoretically cal-
culated data was obtained. Moreover, the temperature dis-
tribution along the obstruction was investigated in this
paper, and its influence exercised upon the calculated values
was evaluated. In the case of a small u_s, the temperature

was found to remain constant along the obstruction. At a
velocity of $u_s \sim 3 - 4$ km/sec, a sharp temperature drop,
however, occurred. The two possible ways of explaining this
drop are investigated: 1) The temperature along the tube
is not constant, and thus also not T along the obstruction.
2) The sodium flashes up with a delay, and the temperature
at the end of the obstruction is first recorded. In the second
case it was found that the very slight delay of flashing up
could not cause the sharp temperature drop, which could be
removed, however, by thoroughly cleaning the tube. Agreement
between experiment and theory then remained good. This proved
the correctness of the assumptions made in thermodynamics.
The method of the reversal of lines as used here may also be
employed with success for measuring the temperature along the
Card 2/3   obstruction. It is recommended, at temperatures of up to

The Temperature of Nitrogen and Air Behind a Shock Wave

3,500°K behind the shock wave, to use the Na-D-line, and
at higher temperatures the ion line of Ba. The temperature
distribution at the beginning of the obstruction could not
be investigated. In the case of nitrogen, an increase of
temperature was found to occur at the end of the obstruction,
which possibly originated from a chemical reaction of N and
the used combustion gas H on the contact surface. In conclu-
sion, the authors thank A. V. Potopov and S. S. Semenov
for discussing the results, and Ye. T. Antropov for his
assistance in experiments. There are 4 figures and 8 ref-
erences, 4 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev of the Academy of
Sciences, USSR)

PRESENTED: April 4, 1959, by D. V. Skobel'tsyn, Academician

SUBMITTED: April 4, 1959

Card 3/3

ACCESSION NR: AP4038432   S/0294/64/002/002/0181/0187

AUTHORS: Gippius, Ye. F.; Kudryavtsev, Ye. M.; Pechenov, A. N.;
Sobolev, N. N.; Fokeyev, V. P.

TITLE: Determination of the red cyan-band system electronic transi-
tion dipole moment matrix element

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 2, 1964, 181-187

TOPIC TAGS: absorption spectrum, shock wave, dipole moment, absorp-
tion band, matrix element, carbon dioxide, nitrogen

ABSTRACT: The investigation is a continuation of research on the de-
termination of the matrix element of the dipole moment of the elec-
tronic transition of the violet system of the CN bands (Teplofizika
vy*sokikh temperatur v. 1, no. 1, 73, 1963; no. 2, 1963; no. 3,
1963). The absorption spectrum of the red system of the cyan band
is obtained behind the front of the reflected shock wave in a mix-

Card 1/3