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USSR/Human and Animal Physiology (Normal and Pathological)
Nervous System. General Problems.

Abs Jour : Ref Zhur Biol., No 6, 1959, 26946

Author : Kesareva, Ye.P.
Inst :
Title : Tonic Reflexes in Man. I. Unconditioned Proprioceptive Tonic Reflex Described for the First Time by A.A. Ukhtomski

Orig Pub : Byul. eksperim. biol. i med., 1958, 45, No 2, 17-21

Abstract : The extent and duration of unconditioned-reflex lifting of the arm (registered visually and graphically from deltoid muscle) after repulsion from a tightly-drawn rubber cushion were smaller in untrained persons and athletes who specialized in the medium of speed exercises (sprinting), and greater in weight lifters. Reflex movement as a rule was absent in gymnasts of high qualifications, but tension of all muscles of the extended arm was

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KESAREVA Ye. P.

EXCERPTA MEDICA Sec 8 Vol 12/10 Neurology Oct 59

4875. TONIC REFLEXES IN MAN. III. CERVICAL TONIC REFLEXES IN HEALTHY ADULT PERSONS AND THE EFFECT OF UNSTABLE POSITION ON THESE REFLEXES (Russian text) - Kesareva E. P. - BYULL. EKSPER. BIOL. I MED. 1958, 46/7 (7-11) Graphs 3

The cervical tonic reflexes were investigated on deltoid muscles of healthy persons. Myotonographic and tonometric methods were used. It was revealed that when the head was bent backwards the tone increased on both sides, when the head was bent to one side the tone increased on the opposite side, whereas when the head was turned the tone increased on both sides with the prevalence on the side to which it was turned. The reflexes were more pronounced in untrained persons and less so in trained sportsmen. The reflexes were considerably increased in an unsteady position of the body. (II, 8)

Chair of Physiology + Chem.
Belorussian State Inst Physical Culture

KESAREVA, Ye. P., Doc Biol Sci (diss) -- "Unconditioned and conditioned tonic reflexes in connection with the motor activity of man". Minsk, 1959. 26 pp (Acad Sci Beloruss SSR, Inst of Biology), 200 copies (KL, No 24, 1959, 131)

T

USSR/Human and Animal Physiology - (Normal and Pathological). Nervous System. Higher Nervous Activity. Behavior.

Abs Jour : Ref Zhur Biol., No 4, 1959, 17974

Author : Kesareva, Ye.P.

Inst : Belorussian State Institute of Physical Culture.

Title : Voluntary and Involuntary Muscular Contractions as Elements of Motor Habit.

Orig Pub : Uch. zap. Belorussk. gos. in-t. fiz. kul'tury, 1957, vyp. 1, l., 23-31

Abstract : In voluntary pushing off of one hand in untrained individuals and athletes of low ability, a tension of tonic chanacter appeared also in the muscles of the idle hand. Irradiation of stimulation was especially stable in gymnasts, motorcyclists and other sportsmen, for whom synchronous work of both hands is characteristic.

Card 1/2





KESAREVA, Yelena Pavlovna

[Tonus of the skeletal muscles and its regulation in the healthy individual] Tonus skeletnykh myshts i ego reguliatsiia u zdorovogo cheloveka. Minsk, Gos.izd-vo BSSR, 1960. 307 p. (MIRA 13:11)

(MUSCLES)

KULAK, Iosif Antonovich; KESAREVA, Ye.P., prof., red.; ZAYTSEVA, T., red.; SIDERKO, N., tekhn. red.

[Formation of complex systems of time relations in man] Formirovanie slozhnykh sistem vremennykh sviazei u cheloveka. Minsk, Izd-vo Akad.nauk BSSR, 1962. 229 p. (MIRA 15:7)
(NERVOUS SYSTEM) (REACTION TIME)

KOVALGIN, Vadim Mikhaylovich; KESAREVA, Ye.P., prof., red.; BEREZKIN, Yu., red.izd-va; VOLOKHANOVICH, I., tekhn. red.

[Reflex theory of sensations] Reflektornaia teoriia oshchushchenii. Minsk, Izd-vo "Nauka i tekhnika," 1963. 409 p. (MIRA 17:3)

KESARIMSKAYA, O.G.

Organization of consultation services for the rural public.
Zdrav.Ros. Fed. 2 no.9:15-18 S '58 (MIRA 11:10)

1. Iz kafedry organizatsii zdravookhraneniya (zav. - prof. S.Ya. Freydlin) I.Leningradskogo meditsinskogo instituta imeni I.P. Pavlova (dir. A.I. Ivanov).
(MEDICINE, RURAL)

KESAYEV, B., inzhener.

Speed up the designing of standard plans for mechanized poultry farms. Sel'.stroi. 11 no.12:29 D '56. (MLRA 10:2)

1. Stavropol'skiy filial "Saratovgiprosel'stroy."
(Poultry plants)

KESAEV, I.

2785. Influence of Cd Vapour on the Sparking Discharge Potential in Argon. I. Kesaev. *Techn. Phys., U.S.S.R.* 4. 1. pp. 68–72, 1937. *In English.*—Penning has studied in detail the effect on the sparking discharge potential of inert gases of admixtures of A, Kr, Hg, etc. [See Abstract 3855 (1934).] Some admixtures lowered the potential considerably even when added in minute quantities and the lowering was always found when the ionisation potential of the admixture was lower than the excitation potential of a metastable state of the principal gas. Measurements are here described of the lowering of the sparking discharge potential of A by admixture of Cd vapour. Special care was taken to purify the A before any measurements were made. The curves given show a discernible reduction in the sparking potential for an admixture of Cd vapour of only 0·002%. The sparking potential reaches a minimum of 222 V when the Cd content is 0·5%. The most probable value of the sparking potential for pure A appears to be 362 V at room-temperature.

A. W.

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

PA 150768

USSR/Physics - Electric Discharge Nov 49
Ionization

"Conductivity of Discharge Gaps in the Deionization Stage," I. G. Kesayev Gas Discharge Lab All-Union Elec Engr Inst, 16 pp

"Zhur Tekh Fiz" Vol XIX, No 11 [illegible]

Describes measurements of gas conductivity after a high-frequency pulse discharge occurs between plane electrodes in helium, neon, argon, hydrogen and air. Low pulses of high-frequency voltage applied to the electrodes at various intervals after discharge were used for measurements. Established complexity of post discharge [illegible] 150768

USSR/Physics - Electric Discharge Nov 49
(Contd)

conductivity, reactive component of which bore a capacitative character and exceeded in absolute value the active component. Anomalous conductivity was observed in helium; it increased immediately after discharge and reached a maximum only after an interval of fractions of a millisecond. Submitted 25 Jun 48.

150768

KESAYEV, I. G.

AUTHOR: KESAYEV,I.G. PA - 2238

TITLE: On the Causes Responsible for the Ordered Motion of the Cathode Spot of an Electric Arc in a Magnetic Field. (O prichinach uporyadochennogo dvizheniya katodnogo pyatna elektricheskoy dugi v magnitnom polye, Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 4, pp 619 - 622 (U.S.S.R.)
Received: 4 / 1957 Reviewed: 5 / 1957

ABSTRACT: By the superposition of a foreign field and the eigenfield of the arc a sharp asymmetry develops inevitably in the distribution of the spot on the boundary of the field. The present work shows that such an asymmetry can be the main reason for the motion of the cathode spot at low pressures. To explain the role played by this asymmetry the following two questions must be answered: 1) Has the magnetic field an influence on the function conditions of the spot? 2)Does a relation exist between the direction of motion and that direction in which modification of the entire magnetic field within the domain of the spot is most favorable for the influence exercised upon the arc? As the experiment shows, the application of an arbitrarily orientated magnetic field noticeably decreases the stability of the cathode spot of the low pressure mercury arc. On this occasion the stabilizing effect of the field increases with increasing field strength.







On the Causes Responsible for the Ordered Motion of the Cathode Spot of an Electric arc in a Magnetic Field.

The shift of the spot due to the asymmetry of the field must be directioned towards the side of the increase. The maximum of the field strength must also correspond to the maximum of concentration.. A noticeable asymmetry in the distribution of concentration can, however, occur only at low pressures of the medium.

Within the here investigated pressure domain the direction of motion of the cathode spot on the mercury cathode must agree with the direction of the highest increase of the entire magnetic field near the boundaries of the spot. This maximum principle makes it possible, without any additional presuppositions, to predict the direction of motion in the general case of the inhomogeneous field. The equation of the trajectory of the cathode spot for a special case is explicitly given. The experimental realization of the corresponding field is discussed. Agreement of the shape of the theoretical and real trajectory of the spot in the homogeneous field and some further circumstances confirm the correctness of the here assumed presuppositions with respect to the dominating role played by the asymmetry of the magnetic field within the domain of the cathode spot. (3 illustrations)

AUTHOR KESAYEV I.G. PA - 2650

TITLE On the division of the cathode spot of an electric arc.
(O delenii katodnogo pyatna elektricheskoy dugi.- Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 71 - 74 (USSR)

Received: 5/1957 Reviewed: 6/1957

ABSTRACT Close investigations of the cathode spot of a mercury arc at low pressure show that during the whole time of its existence the spot divides itself continuously or takes on a grained form. The fission process appears to be considerably veiled and it is possible to observe only the final result, namely from 2 or more emission sources. It is of advantage to photograph the trace of the spot on the occasion of its ordered motion in a magnetic field tangential to the cathode. From the recordings thus obtained the following is found:
After division the emission sources move away from each other. With increasing current intensity the character of the division becomes more complicated by an increase of the number of branchings. The latter then have a fairly long life and they undergo divisions. There are symmetric and asymmetric branchings. With an increasing divergence of the spots the angle between the branches becomes smaller. The magnetic field exercises a marked

CARD 1/2





stabilizing effect on the cathode spot.
The spot also divides without an exterior magnetic field, because such a magnetic field changes this process only quantitatively. The intervals between the successive acts of division of the spot are distributed over a most probable time interval of about $1,10^{-5}$ sec. This corresponds to a division frequency of the spot of $10^5$ per sec. The division of the spot is one of the causes of the chaotic shifting of the spot over the surface of the cathode, if no external magnetic field is applied.
These observations can be reasonably explained if the principle of the maximum field is applied for the individual parts of the cathode spot, which is then explained in detail.
The above deliberations indicate that the continuous division and restoration of the cathode spot take a parallel course.
(2 illustrations)

ASSOCIATION: Allsoviet Electro - Technical. Institut "V.I. LENIN".
PRESENTED BY: Member of the Academy L.A. ARTSIMOVICH.
SUBMITTED: 9.11. 1956.
AVAILABLE: Library of Congress.

CARD 2/2

SOV/20-122-3-13/57

24(3)
AUTHOR: Kesayev, I. G.

TITLE: On the Internal Instability of an Arc With a Cold Cathode (O vnutrenney neustoychivosti dugi s kholodnym katodom)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 3, pp 371-374 (USSR)

ABSTRACT: The natural criterion of the stability of any steady discharge (that is a discharge fed by a source of constant voltage) is its capacity to maintain constant values of amperage or voltage for an infinitely long time. This paper discusses some peculiarities of an arc with a cold cathode which are not compatible with the above-mentioned criterion. One of the manifestations of the instability of an arc is its spontaneous extinction in the region of low amperages (from 0,1 to 7 - 10 A for a mercury arc). The instability is not exclusively limited to this amperage interval. Instability, however, is a property of the arc itself which is caused by a continuous division and decay of the cathode spot. The data concerning the systematic dividing and decay of the spots may by explained only as an argument in favor of the instability

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On the Internal Instability of an Arc With a Cold Cathode

of the cathode spot on the cold cathode at low pressures. It is very natural to connect the extinction of the arc with the above-mentioned instability of the spot. The following conclusion may be drawn from the analysis of the extinction of the arc and of the behavior of the spot at low and high amperages: The feeding of the arc is an uninterrupted alteration of cycles of extinction and cycles of restoring the spot by voltage pulses. The inductivity which is always present in the circuit participates in the formation of these voltage pulses. It is significant that an arc burns for a very long time if the discharge is distributed among several cathode spots. The conclusions concerning the instability of the arc and concerning the mechanism of its restoration were confirmed by some experiments in which a storage battery was used as a voltage source (150 V). The main source of the light flux and of its oscillations was the cathode spot. One of the typical oscillograms of the oscillations of an arc with fixed cathode spot is shown by a figure. Many of the found results and conclusions apply also to an arc with a freely wandering cathode spot. But in this case, the amplitude of the oscillation is several times higher. The suggested

On the Internal Instability of an Arc With a Cold Cathode

interpretation of the mechanism of the restoration of the arc may be confirmed by a simple experiment. If neon of a pressure of 0,1 - 30 torr is added to a tube with a mercury cathode, a red glow appears in the cathode region of the arc. The intensity of this glow increases with decreasing amperage. The data concerning the oscillations of a short arc confirm the internal instability of an arc with a cold cathode. The instability of the cathode spot investigated in this paper satisfactorily explains the high mobility of the spot and its tendency towards uninterrupted division. There are 3 figures and 11 references, 3 of which are Soviet.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Institute of Electrical Engineering imeni V. I. Lenin)

PRESENTED: May 13, 1958, by L. A. Artsimovich, Academician

SOV/109-4-8-12/35

AUTHOR: Kesayev, I.G.

TITLE: Data on the Division of the Cathode Spot in Mercury in a Low-pressure Arc

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1289 - 1294 (USSR)

ABSTRACT: It is known that a high-current arc discharge in a tube with a mercury cathode can take place in the presence of several cathode spots. However, the data on the mechanism of the appearance and the division of the spots appear to be few. An investigation of the problem was therefore undertaken by the author. The principal method of investigation or observation was the photographing of the spot onto a fixed film, while the spot was shifted by means of a magnetic field tangential to the cathode. The effect of the field was additionally investigated by employing a mirror "time base" and photographing the spot onto a moving film. The investigation showed that the division of the spot can be represented schematically by the picture in Figure 1. Each stage of the division corresponds to a split

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of the line; the length of the branches in the direction of the "time base" can be regarded as a measure of the lifetime $\tau$ of autonomous spots. The analysis of the photographs can provide the following data on the cathode spot.

1) The lifetime distribution of the splitting spots, denoted by $V(\tau)$.
2) Distribution of the time interval t between successive division stages, denoted by W(t) .
3) Interaction of the spots after their separation.
4) Data on the causes of the spot division and the structure of the spots.

The function $V(\tau)$ is represented by the histograms of Figure 2, which give the relative frequency of the appearance of spots having a particular lifetime $\tau$ at various currents. The histogram was obtained from the analysis of about 2 000 measurements of $\tau$ .

From Figure 2, it is seen that the average lifetime $\tau$ Card2/5 is about $10^{-5}$ sec. The answer to the question of whether

Data on the Division of the Cathode Spot in Mercury in a Low-pressure Arc

the division of the spot is a random or regular quantity is provided by the histograms of Figure 3. This shows the relative frequency of the spot division during a certain time interval $t$. The histograms indicate that the distribution of the interval $t$ differs substantially from the purely random distribution. This shows that the spot division cannot be regarded as a purely random process. The most probable value of the time interval $t_o$ between the stages of the spot division and the probability $W$, as a function of the number of the observations, are illustrated in Figure 4. The interaction of the spots is in the form of "repulsion". The trajectories of the spots can be represented schematically by means of the graph given in Figure 5. When the spot is first divided at a point D (Figure 5), the two portions of it diverge until a certain equilibrium distance $l_e$ is reached. At this distance, repulsion between the spots is balanced by the action of the external field which

Data on the Division of the Cathode Spot in Mercury in a Low-pressure Arc

forces them to move towards the axis of symmetry. The distance $l_e$ can therefore be regarded as a measure of the interaction between the spots. After the disintegration of one of the spots at the point F (see Figure 5), the second spot returns to the axis of symmetry. This mechanism is confirmed by comparing the results of the measured and calculated values of $l_e$ for two different fields; these are shown in Figure 6. The above data show that the division of the cathode spot can be regarded as a form of its existence on a cold cathode in a low-pressure medium. The division of the spot is less likely to occur in the presence of an external magnetic field; it hardly ever occurs at currents lower than 7 A. In the absence of the field, the division takes place at any values of the current, provided these are large enough to maintain an arc.

Data on the Division of the Cathode Spot in Mercury in a Low-pressure Arc SOV/109-4-8-12/35

There are 6 figures and 3 references, 1 of which is German and 2 Soviet.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V.I. Lenina (All-Union Electrotechnical Institute imeni V.I. Lenin)

SUBMITTED: March 5, 1959

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SEMYONOV, I.G.

66702
SOV/109-4-8-22/35
24(2)/20
AUTHORS: Granovskiy, V.L., Lukiyanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

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[illegible] Fedorenko and N.G. Kovalskiy - "New Data on X-ray Radiation During Pulse Discharges"
V.A. Ehrabrov and N.N. Sudakovskiye dealt with the investigation of the neutron radiation in powerful gas discharges in chambers with conducting walls.
M.A. Bortnyuk et al. - "Investigation of the Gas Discharge in a Conical Chamber".
S.M. Osovets et al. - "A Turn of Plasma in Transverse Magnetic Fields".
I.G. Kesayev - "Data on the Division of a Cathode Spot in Mercury in a Low-pressure Arc" (see p 1289 of the journal).
A.B. Robson (England) - "A New Theory of the Cathode Spot" (see p 1295 of the journal).
L.M. Biryukova - "Positive Column in a Hydrogen Discharge With Stationary and Pulse Loads".
I.G. Nakhshunish and A.A. Ivlev - "Current Distribution on the Surface of Electrodes in Electric Pulse Discharges".
L.S. Ke - "Some Properties of Gas Discharges in Low-voltage in Halogen Counters".
G.V. Glotova and V.M. Granovskiy - "Comparison of the Initial De-ionization in the Isotopes of Hydrogen (H and D)".
L.A. Akol'zina communicated some results on the pre-breakdown current pulses at low pressures.
M.Ya. Vasil'yeva and A.A. Zaytsev - "Charge-density oscillation Waves in Cylindrical Plasma".
L. Pekárek of Czechoslovakia communicated some information on the wave-like phenomena in gas-discharge plasma.
B.G. Reythman dealt with the problem of the determination of the energy of fast ions in pulse discharges.
B.B. Kadomtsev - "Convection Instability of a Plasma String".
V.P. Silin and V.P. Shafranov - "Theory of a High-temperature Plasma String".
The fifth section was presided over by N.A. Kaptsov and dealt with high-frequency currents in gases. The following papers were read:
V.Ye. Golant - "Formation of Ultra-high Frequency Pulse Discharges in Inert Gases".
G.F. Fateyuk - "Influence of the Boundary Conditions on the Formation and Maintenance of High-frequency Discharges".
P.S. Bulkin et al. - "Investigation of a Self-maintained Ultra-high Frequency Pulse Discharge and the Process of its Development".
G.M. Zastenker and G.S. Solntsev - "Some Results of the Investigation of the Formation of Low-pressure High-frequency Discharges".
G. Marsenau (USA) - "Conductivity of Weakly Ionized Plasma".
A.A. Kutepnikov - "The Conditions of Transition From High-frequency Corona Discharge at Atmospheric Pressures".
V.Ye. Golant - "The Relationship Between the Character-istics of The Ultra-high Frequency Current and the Direct Current in Gas Discharges".
R.B. Lagovskiy analyzed the conductivity of the disin-tegrating plasma in the window of a resonance discharge tube.
S.M. Levitskiy and L.P. Shestakin dealt with the applicability of the probe method to high-frequency discharges (see p 1330 of the journal).
The paper by V. Ye. Mitnik et al. was devoted to the investigation of the ultra-high frequency plasma by means of the Stark effect.
G.S. Solntsev et al. dealt with the problem of electric fields in a high-frequency discharge at low pressures.
Yu. Rademan of Rumania read a paper entitled "High-frequency Discharges in Methane".
The work of the sixth section was devoted to the problems of plasma and its radiation; the section was presided over by V.A. Fabrikant. The following papers were read:
Yu.M. Kagan - "Methods of Investigation" [illegible] Prove Methods of Plasma
V.I. Drozdov - "Oscillographic Measurements in Plasma".
V.A. Simonov and A.G. Maleshin - "Investigation of the Movement of [illegible] by Means of a Mass Spectrometer of

KESAYEV, I.G.

Internal instability of an arc with a mercury cathode. Part 1: Spontaneous extinction of the arc. Zhur.tekh.fiz. 29 no.12:1462-1472 D '59. (MIRA 14:6)

1. Vsesoyuznyy elektrotekhnicheskiy institut imeni V.I.Lenina.
(Electric arc)

24(3)

AUTHOR: Kesayev, I. G.

SOV/20-124-3-19/57

TITLE: The Increase of the Stability of an Arc in a Magnetic Field and the Principle of the Maximum of the Field (Uvelicheniye ustoychivosti dugi v magnitnom pole i printsip maksimuma polya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol. 124, Nr 3, pp 563-566 (USSR)

ABSTRACT: In one of the author's earlier papers (Ref 1) several phenomena of the internal instability of metal arcs were investigated on the basis of an arc with mercury cathode; these phenomena depend on the properties of the cathode spot on cold cathodes. For the proper understanding of the nature of this instability and the part played by it in the behavior of the cathode spot the data on the variation of arc stability as a function of the external condition of the discharge are of essential importance. These data are dealt with by the present paper. Among the most conspicuous phenomena of arc instability there is the spontaneous extinction, with the aid of which the conception of the average life $\vartheta$ of the arc may be introduced. It is natural to use this quantity as a measure of arc stability under the given experimental conditions. In the present case, applying a

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longitudinal magnetic field served as one of the methods of acting upon the arc. For the measurement of $\vartheta$ an electronic circuit was composed, which is based on the principle of charge accumulation and which consists of 3 blocks. Measurements are described in short. The results obtained by measuring $\vartheta$ are represented as a function of the mean amperage I for a short arc (d = 0.3 cm) by a diagram with semilogarithmic scale. A family of curves relates to a pure mercury discharge under the action of a magnetic field. Other curves illustrate the results of measurements of $\vartheta$ with lacking field but with the addition of various quantities of helium. Most of these curves consist of 2 rectilinear regions which indicate an exponential dependence of the kind $\vartheta = \vartheta_0 e^{\psi I}$. $\vartheta_0$ and $\psi$ assume different values for the lower and upper region of the curve. In the lower region measuring results may be expressed by the constants $\vartheta_0 = 6.3.10^{-5}$ sec, $\psi = (4.5 + 1.17\ H^2)a^{-1}$, where H must be expressed in kilo-oersted. In the upper region the dependence on H is of complicated character, and therefore $\vartheta$ can only in

some special cases be expressed analytically as function of I. With increasing amperage and field strength, $\vartheta$ increases monotonously and considerably. When explaining this considerable increase two different aspects of field action must be taken into account: One of them is based on the true stability of the spot in the magnetic field. On the other hand, the increase of $\vartheta$ to a certain extent is also connected with the simplification of the conditions for the re-establishment of the arc in the presence of a field. The data discussed in the present paper lead to the conclusion that the scattering of charges and of the corresponding energy out of the region of the cathode spot is one of the primary causes of the instability of the arc. There are 2 figures, 1 table, and 7 references, 3 of which are Soviet.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin)

80589

S/109/60/005/06/014/021
E140/E163

9.4120

AUTHOR: Kesayev, I.G.

TITLE: On the Relation between the Random Motion of a Cathode Spot and its Division

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 6, pp 986-993 (USSR)

ABSTRACT: Attempts to explain the random motion of the cathode spot on a liquid mercury cathode (Refs 1-3) have been based on the idea of vigorous local boiling of the metal and the gas-dynamic effects accompanying this. However, this point of view has not been based on either experiment or theoretical calculations. In Ref 4 the author came to the conclusion that the cause of random motion of the spot is its division. According to Ref 6 the mercury cathode spot consists of a number of fine active foci of emission distributed in the form of a chain drawn out primarily in one direction. Spot division occurs through breaking of the chain into two parts moving away from each other in the direction of the initial orientation of the entire chain. In the absence of an external magnetic field all directions of division and subsequent spot shift

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On the Relation between the Random Motion of a Cathode Spot and its Division

should be equi-probable. The present work concerns an experimental-statistical analysis of spot division and repulsion of the spots to determine if that is the dominating cause observed in actual random motion. The simplifying assumption is made that each new division occurs only after the breakdown of one of the autonomous spots. This condition should be observed at low values of discharge current (up to 10 - 15 A). Introducing certain corrections into the experimental data based on the theoretical loss in the method of observation of a number of acts of division, etc, the final results seem to indicate that under the particular experimental conditions the dominating role in random motion of the spot is its division. However, the author does not deny the possibility of other mechanisms, particularly at low currents or high gas density.

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There are 6 figures, 1 table and 6 references, of which 2 are English, 3 Soviet and 1 German.

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S/109/60/005/06/014/021
E140/E163

On the Relation between the Random Motion of a Cathode Spot and its Division

ASSOCIATION: Sesoyuznyy elektrotekhnicheskiy institut imeni V.I. Lenina
(All-Union Electrotechnical Institute imeni V.I. Lenin)

Card 3/3

SUBMITTED: September 26, 1959

* See also Ref 5 : Radiotekhnika i electronika, 1959, Vol. 4, Nr. 8, pp 1289-1294 (USSR)

88219

S/110/60/000/010/005/011
E073/E435

26.2521

AUTHOR: Kosayev, I.G., Candidate of Technical Sciences

TITLE: Effects of "Plunging" and Jumpy Movement of the Cathode Spot onto New Sections of the Cathode

PERIODICAL: Vestnik elektropromyshlennosti, 1960, No.10, pp.31-32

TEXT: The author reports on the behaviour of the spot on a liquid mercury cathode on the basis of observations during electromagnetic fixation of the cathode spot. A radial magnetic field was produced for maintaining the cathode spot for an unlimited time in a pre-determined ring-shaped zone. The field of the necessary configuration can be produced, for instance, by means of an electromagnet with concentric pole pieces, separated by a narrow gap and located below the mercury level. In such a case the cathode spot will tend to move above the ring-shaped gap transverse to the magnetic lines of force in a direction opposite to that of the deflection of the electrons, describing a regular circular trajectory. The behaviour of the spot was investigated when barriers, in the form of a metallic or a quartz plate which

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are deflected from

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Effects of "Plunging" and Jumpy Movement of the Cathode Spot onto New Sections of the Cathode

protruded above the mercury surface, were put in its path. Sheet molybdenum barriers did not prevent the movement of the cathode spot along the circular trajectory. On approaching the sheet the spot ran along it, proceeded to the other side and continued its rotary movement along the mercury surface. The traces on the molybdenum sheet showed that the spot moved along trajectories which were perpendicular to the lines of force. Quartz-plate barriers retained the spot at the side from which it last approached the plate: it moved chaotically along the plate. In a direction opposite to that of the rotation of the spot there was a bright lightening-up of the mercury surface, along a bent circular path above the ring-shaped gap, with a gradually decreasing brightness. In the illuminated zone, new cathode spots formed periodically. They tended to move along a circular path to the quartz plate and were retained by it. Probably this illumination represents an area of intensive excitation of the mercury vapour by electrons, which are deflected from the cathode spot by the electric and magnetic

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E073/E435

Effects of "Plunging" and Jumpy Movement of the Cathode Spot onto New Sections of the Cathode

fields. These electrons are "closed in" in the zone of intensive magnetic fields and return partly to the cathode. If the depth of submersion of the quartz plate into the mercury did not exceed 5 to 7 mm, it was possible, by increasing the current or the potential of the magnetic field, to achieve a submersion of the cathode spot near the quartz barrier to such a depth that it plunged under the quartz and then emerged again on the surface of the mercury at the opposite side. Following that, it continued to move along a circle, again stopping at the quartz plate for the short time that was necessary for the next plunge to take place. This is attributed to the fact that in the region of the spot the mercury vapour pressure is so high that the mercury in front of the spot separates from the quartz; the spot penetrates into the cavity thus formed and again throws off the mercury. The depth of penetration of the spot along the quartz can serve as a measure of the pressure generated in the spot region. The view expressed here is confirmed by the mercury spray produced above the submerging cathode spot

88219

S/110/60/000/010/005/014
E073/E435

Effects of "Plunging" and Jumpy Movement of the Cathode Spot onto New Sections of the Cathode

Effects of a different character were observed if the barriers consisted of metallic spirals or of a wedge After penetrating into traps of this type under the effect of the magnetic field, the spot decomposed Simultaneously, if particles of insulation in the form of glass beads or simple contaminations were floating on the mercury, a new spot formed in another point of the ring zone where there was an intensive magnetic field The new spot tended to move to the trap and the process repeated regularly for an unlimited time with a frequency of 1 kc/s; the spot travelled a number of times between the particular glass bead and the trap The regular formation of a new cathode spot under the given conditions is attributed to the flow of fast electrons which emanate from the cathode spot and proceed in a direction opposite to that of the rotation of the spot in the magnetic field There are 5 figures.

(Note This is a slightly abridged translation)

SUBMITTED March 4, 1960
Card 4/4

9.3150

81593
S/057/60/030/06/13/023
B012/B064

AUTHOR: Kesayev, I. G.

TITLE: Appearance of Inner Instability in an Arc With a Mercury Cathode. 2. Nonstationary Processes in the Cathode Range of the Arc

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 6, pp. 674-684

TEXT: This is a continuation of the author's paper (Ref. 1). The nonstationary processes in the cathode range of the mercury arc are investigated. In order to determine the nature of the voltage fluctuations in the cathode and to clarify the interrelations between these fluctuations and the extinction of the arc, the behavior of the arc in the range of the low values of the discharge current was investigated. The two methods used for this purpose are described. In both cases the same results were obtained. Fig. 1 shows the oscillograms obtained. These oscillograms show that the voltage is subject to a cyclic change of a complex nature. A simple and clear relationship between the voltage fluctuations and the extinction of the arc is noted. Furthermore, the oscillograms show that in the investigated

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Appearance of Inner Instability in an Arc With a Mercury Cathode. 2. Nonstationary Processes in the Cathode Range of the Arc

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range the arc is particularly retarded in two extreme positions. These positions are completely different as regards voltage and stability. They can be interpreted as two different forms of the arc discharge. The volt-ampere characteristics shown in Fig. 2 give an approximate idea of the extent of the cathode drop in one or the other form of the arc. The more stable form of the arc is referred to as the basic form while the less stable form is referred to as the transition form. At an amperage of 0.07 - 0.5 a each cycle of the arc is terminated by the transition form with a double value of the cathode drop. At amperages of 0.5 - 2 a the transition form is gradually replaced by the basic form subject to a rise in current (Fig. 3). The observations made clarify to some extent the existence of the so-called dropping static characteristic of the arc at small interelectrode distances. Investigations are also made to explain the existence of numerous cycles shown in the oscillograms and terminating without an interruption of the arc. It is shown that this phenomenon is caused by the existence of a certain regenerating mechanism. Under favorable circumstances the discharge is activated by this mechanism as soon as the critical stage of instability is reached. Its mode of operation is clearly

Appearance of Inner Instability in an Arc With a Mercury Cathode. 2. Nonstationary Processes in the Cathode Range of the Arc

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shown by the fact that the beginning of each new cycle is always preceded by a more or less extreme increase in voltage. In order to prove this statement a direct experiment is described. By this experiment it is shown that a periodical increase in voltage in the arc electrode is indeed accompanied by an increase in the cathode drop which always results in an increase in energy of the primary electron. On the basis of the investigations made the following statement is made: The voltage fluctuations observed in burning a short arc may be regarded as the result of systematic disturbances of equilibrium in individual processes of the arc discharge in the range of the cathode spot. The interpretation of the inert arc cycle may serve as a key for the explanation of the nature of the two different forms of the arc discharge. The fact that the lifetime of the arc increases with a rise in current cannot be regarded sufficient proof that this form of discharge stabilizes in the case of high current intensities. This pseudo-stability is nothing else but the result of the increased effectiveness of the regenerating mechanism in the arc. The basic conditions for this mechanism are the short-term voltage increases in the arc electrodes at the beginning of the arc decay. There are 5 figures and 3 Soviet references.

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81593

Appearance of Inner Instability in an Arc With a Mercury Cathode. 2. Nonstationary Processes in the Cathode Range of the Arc

S/057/60/030/06/13/023
B012/B064

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut imeni V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin)

SUBMITTED: July 14, 1959

Card 4/4

84679

S/057/60/030/007/016/018/XX
B006/B064

26.2311

AUTHOR: Kesayev, I. G.

TITLE: Phenomena of Internal Instability of an Arc With Mercury Cathode. III. Decomposition and Rebuilding of the Cathode Spot Under the Conditions of a Steady Arc

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 7, pp. 803 - 814

TEXT: In the first two parts (Refs. 1,2), the author published details on investigations of the spontaneous extinction and on oscillation processes on mercury arc discharges. The present third and last part deals with investigations of stability. Data on the structure and behavior of the cathode spot on mercury are given, proving the instability of emission from a mercury cathode, and being in favor of a continuous rebuilding of the emitting surface. A large number of photographs confirm the experimental results. The experiments carried out to investigate the internal instability of low-pressure arc discharges with a mercury cathode led to the following particular results: 1) A close

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84679

Phenomena of Internal Instability of an Arc With Mercury Cathode. III. Decomposition and Rebuilding of the Cathode Spot Under the Conditions of a Steady Arc

S/057/60/030/007/016/018/XX
B006/B064

relation exists between the spontaneous extinction of the arc, the charge oscillations on the electrodes, and the unsteady phenomena of the cathode region of discharge. 2) The reason for all unsteady phenomena observed lies in the instability of the cathode spot which reflects the internal instability of the discharge cycle. 3) In spite of its instability, the arc cycle can be maintained closed for any period of time due to the existence of a certain regeneration mechanism whose effectivity increases with increasing current, and depends on the experimental conditions. 4) The arc is maintained by continuous oscillations that are due to a disturbance of the equilibrium between the individual processes of the arc cycle. 5) The cathode spot consists of unstable elementary cells that decompose and re-develop. The cells are linked the closer, the more the stability of the cells on the boundaries grows; their linkage depends on the experimental conditions. 6) The cathode spot is in a state of continuous rebuilding, which can be seen from a change of its shape and its position on the cathode. 7) All varieties of the motion of the spot on the homogeneous, liquid

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Phenomena of Internal Instability of an Arc With Mercury Cathode. III. Decomposition and Rebuilding of the Cathode Spot Under the Conditions of a Steady Arc

S/057/60/030/007/016/018/XX
B006/B064

cathode, including its decomposition, the chaotic shift and the translational motion in a magnetic field can be described as the result of a rebuilding under participation of the magnetic field of the arc; the task of describing the behavior of the spot leads to the problem of the spot stability. 8) The so-called "reverse" motion proves to be a special case of the rebuilding process of the spot in a homogeneous magnetic field. There are 6 figures, 2 tables, and 11 references: 5 Soviet, 3 US, 1 German, 1 British, and 1 Dutch.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin)

SUBMITTED: February 8, 1960

Card 3/3

84680

S/057/60/030/007/017/018/XX
B006/B064

26.2310

AUTHORS: Kesayev, I. G. and Levshenkova, L. A.

TITLE: The Dependence of the Stability of an Arc on the State of Aggregation of the Cathode

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 7, pp. 815 - 816

TEXT: Aim of the present investigation was to find in what manner the state of aggregation of the (cold) cathode has an influence upon the stability of the metallic discharge arc in vacuum. The cathode was made of readily meltable metal (Hg, Bi, Pb, or Sn), and the time of arc discharge measured at low discharge currents. The mean lifetime $\vartheta$ of a vacuum arc as a function of amperage is compared in a diagram for a mercury- and a bismuth cathode (ranges: $10^{-1}$ - $10^{-5}$ sec, 0 - 5 a). Measurements were made at temperatures that were only 10-20°C below the melting point of the cathode metal. Cooling of the cathode until the solidification point of its material is reached, leads to a considerable

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84680

The Dependence of the Stability of an Arc on the State of Aggregation of the Cathode

S/057/60/030/007/017/018/XX
B006/B064

growth of the angle of inclination of the straight line $\log \vartheta = f(I)$, thus prolonging the lifetime of the arc (at I = 1a to the 1000-fold). With a bismuth cathode, measurements were made both at room temperature and near the melting point and the results were found to be practically the same. Changes of the arc stability were therefore only due to changes of the state of aggregation, i.e., to changes in the structure of the cathode surface. The conditions prevailing on a solid cathode surface (with crystalline structure) deviate essentially from those on a liquid cathode - first with respect to the high electric field strength, and, secondly, with respect to the comparatively low diffusion rate of thermal energy. The transition of the cathode metal from the liquid to the solid state entails a reduction of the cathode drop of the arc; in the case of a mercury cathode the cathode drop is reduced from 10 to 8 v. There is 1 Soviet reference.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V.I. Lenina (All-Union Electrotechnical Institute imeni V.I. Lenin)

SUBMITTED: February 8, 1960

Card 2/2

9.4120
26.2311

29815
S/020/61/140/006/011/030
B104/B102

AUTHOR: Kesayev, I. G.

TITLE: The minimum potential of an arc discharge, and the problem of two forms of cold-cathode arcs

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 6, 1961, 1289 - 1292

TEXT: The author defines two groups of arc discharges with cold metallic cathodes. In arcs of the first group, the metal atoms are stepwise ionized by electrons. Arcs of this group may form between cathodes made of metals of the second group of elements. In arcs of the second group, metal vapors are directly ionized by electrons. Arcs of this group may form between cathodes made of metals of the first and third groups of elements. The arcs of the second group are called "elementary arcs". A relatively high value of cathode drop as compared with the ionization potential of the cathode metal is characteristic of an elementary arc. Only at electron energies 2-3 times as high as the ionization potential, the ionization function reaches the necessary high values. For various

Card 1/3

The minimum potential of an arc ...

cathode materials the author measured the minimum arc potentials. Measurements were made with high-purity metals in vacuo and air (atmospheric pressure). The arc length was 2-5 mm. A compensation method was used in vacuo (I. G. Kesayev, Katodnyye protsessy rtutnoy dugi i voprosy yeye ustoychivosti (Cathode Processes of a Mercury Arc and Problems of Its Stability), gl. II, 1961). The potential of a steady discharge at a minimum distance of the electrodes was determined in air. In a discussion of the results given in Table 1 the author demonstrates the important part played by metastable states of atoms of the second group of elements in stepwise ionization of atoms. The maximum probability of stepwise ionization is reached at electron energies somewhat smaller than the ionization potential. Metals of the first group of elements have no metastable states. The metastable states of metals of the third group of elements are located too deeply. There are 1 table, 1 figure, and 3 references: 2 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: M. P. Reece, Nature, 181, 475 (1958).

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin)

Card 2/2 3

29815
S/020/61/140/006/011/030
B104/B102

The minimum potential of an arc ....

PRESENTED: June 7, 1961, by L. A. Artsimovich, Academician

SUBMITTED: June 7, 1961

Table 1. Results of measurement. Legend: (1) group of elements; (2) atomic number; (3) element; (4) energy of resonance levels; (5) energy of metastable levels; (6) ionization potential; (7) minimum potential of the arcs; (8) air; (9) vacuum; (10) boiling point; (11) scandium series and high-melting metals.

Card 3/13

KESAYEV, Igor' Georgiyevich; BULGAKOV, V.A., red.; BORUNOV, N.I., tekhn.red.

[Cathode processes and problems concerning the stability of a mercury arc] Katodnye protsessy rtutnoi dugi i voprosy ee ustoichivosti. Moskva, Gos.energ.izd-vo, 1961. 319 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut. Trudy, no.67) (MIRA 14:9)

(Mercury) (Cathodes) (Electric arc)

L 10287-63 EWP(k)/EWT(l)/EWG(k)/EWP(q)/EWT(m)/EDS/ES(w)-2--AFFTC/ASD/SSD--
Pf-4/Pz-4/Pab-4--JD/AT/HM/IJP(C)
ACCESSION NR: AP3000017

S/0057/63/033/005/0603/0615

AUTHOR: Kesayev, I. G.

89
88

TITLE: Investigation of the stability of metallic vacuum arcs. Part 1.

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 603-615

TOPIC TAGS: metallic arcs, vacuum arcs, cathode spot, arc voltage oscillations

ABSTRACT: The paper presents a summary of the results of experimental studies of the stability of vacuum and low-pressure arcs between stainless steel anodes and cathodes of pure Li, Cu, Au, Zn, Cd, Hg, Al, Ga, In, Tl, Sn, Pb and Bi. The effect of melting and crystallization of the cathode metals was also studied. Attention was also given to oscillatory processes and to the structure of the cathode spot. The experiments were carried out in a special vacuum contained with an igniter and a heater, the cathode materials being contained in a molybdenum cup. The arc persistences as a function of the average current are plotted for different cathodes (see Enclosure) and for some typical cathodes with other conditions being varied. Oscillograms of the arc voltage under

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L 10287-63
ACCESSION NR: AP3000017



different conditions and time-resolved photographs of the cathode spots are reproduced. Many of the results differ from those of Cobine, J. D. and Farrall, G.A. (J. Appl. Phys., 31, 2296, 1960). The experimental data are discussed in Part 2 (next article in the same issue of the journal). Orig. art. has: 9 figures.

ASSOCIATION: Vsesoyuzny*y elektrotekhnicheskiy institut im. V. I. Lenina, Moskva (All-Union Electrical Engineering Institute, Moscow)

SUBMITTED: 26Jun62 DATE ACQ: 12Jun63 ENCL: 01

SUB CODE: PH NR REF SOV: 003 OTHER: 001

Card 2/2

L 9914-63 EWP(k)/EWT(l)/EWG(k)/EWP(q)/EWT(m)/BDS/ES(w)-2--
AFFTC/ASD/SSD--Pf-4/Pz-4/Pab-4--JD/HW/AT/IJP(C)

ACCESSION NR: AP3000018 S/0057/63/033/005/0616/0624

79
75

AUTHOR: Kesayev, I. G.

TITLE: Investigation of the stability of metallic vacuum arcs. Part 2.

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 616-624

TOPIC TAGS: metallic arcs, vacuum arcs, cathode spot, arc voltage oscillations

ABSTRACT: Experimental data on the persistence (time to spontaneous extinction), voltage oscillations and structure of the cathode spots of vacuum arcs between a stainless steel anode and cathodes of different pure metals in the solid and liquid states were presented in Part 1 of the report (preceding article in the same journal). In this part (2) the data are discussed and analyzed. A formula for the burning time as a function of the arc current is deduced and the results of calculations by means of it are compared with the experimental data for liquid Hg and In cathode arcs. The agreement is good. It is concluded that the spontaneous extinction, voltage oscillations and structure of the cathode spot are inter-related effects, all associated with internal instability inherent

Card 1/2

L 9914-63
ACCESSION NR: AP3000018

4

in all metallic arcs. Analysis indicates that the arc cycle cannot be described in terms of such time-invariant parameters as the cathode drop, cathode spot current density and the ratio of the ionic and electronic current components. "In conclusion the author acknowledges his indebtedness to Ye. I. Tsopina, L. A. Levshenkova and M. I. Broydo for assistance in carrying out the work." Orig. art. has: 20 equations and 2 figures.

ASSOCIATION: Vsesoyuzny*y elektrotekhnicheskiy institut im. V. I. Lenina, Moskva (All-Union Electrical Engineering Institute, Moscow)

SUBMITTED: 26Jun62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 002

lm/nh
Card 2/2

KESAYEV, I.G.

Regularities of the cathode drop and cut-off currents of an arc discharge on pure metals. Zhur. tekh. fiz. 34 no.8:1482-1493 Ag '64. (MIRA 17:9)

1. Vsesoyuznyy elektrotekhnicheskiy institut imeni V.I. Lenina, Moskva.

L 00928-66 EWT(l)/EWP(e)/EWT(m)/EPF(c)/EPA(w)-2/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/
EWA(m)-2 IJP(c) JD
ACCESSION NR: AP5020640

UR/0147/65/000/003/0083/0088
629. 194. 365

AUTHOR: Kesayev, Kh. V.; Latyshev, L. A. 21

TITLE: Surface ionization in a porous wall

26
B

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 3, 1965, 83-88

TOPIC TAGS: ionization coefficient , surface ionization, porous surface
14

ABSTRACT: Surface ionization processes occurring within a single capillary of a heated porous diaphragm are analyzed mainly in view of the frequent use of such materials for the determination of ionization coefficients. The usual formulas for surface ionization have been modified to take into account the self-consistent field, and methods are proposed for the approximate solution of equations. It is shown that the calculations compare favorably with the available experimental data. A working formula is presented which makes it possible to determine the ratio of ions to the total number of particles passing through the capillary. Orig. art. has: 3 figures and 12 formulas. [LB]

ASSOCIATION: none

Card 1/2

L 00928-66

ACCESSION NR: AP5020640

SUBMITTED: 27Feb64 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 003 OTHER: 004 ATD PRESS: 4077

Card 2/2

KESAYEV, S. A.:

KESAYEV, S. A.: "The diagnosis and surgical treatment of cystercosis (cysticercosis?) of the brain." State Order of Lenin Inst for the Advanced training of Physicians imeni S. M. Kirov, Leningrad Sci Res Neurosurgical Inst imeni Professor A. L. Polenov. Leningrad, 1956. (DISSERTATION For the Degree of Candidate in Medical Science.)

So: Knizhnaya Letopis', No. 18, 1956

KESAYEVA, T.P.

TSEYDLER, S.A., kand.med.nauk, KESAYEVA, T.P. (Moscow)

Thyreotoxic liver. Probl.endok. i gorm. 4 no.2:53-59 Mr-Ap '58 (MIRA 11:5)

1. Iz patologoanatomicheskogo otdeleniya Moskovskoy infektsionnoy gorodskoy klinicheskoy bol'nitsy No.1 (zav. - doktor meditsinskikh nauk A.P. Avtsyn)

(LIVER DISEASES, etiology & pathogenesis
thyroid dis. (Rus))
(THYROID GLAND, diseases
causing liver disord. (Rus))

HETENYI, G., Jr.; ISSEKUTZ, B.; SZABO, G.; KESCH, Nagyi, J.

Effect of enzyme poisons on the vascular reactions of isolated rabbit ear. Acta physiol. hung. 6 no.2-3:277-288 1954.

1. Physiologisches Institut der Medizinischen Universitat, Szeged.
(NITRITES, eff.
nitroglycerin on vasc. reactions of isolated rabbit ear)
(EAR, blood supply
eff. of nitroglycerin & perparine in rabbit)
(ANTHRAQUINONE, deriv.
perparine, eff. on vasc. reactions of isolated rabbit ear)

DUMITRU, Caprioara, Prof. Dr.; MENYASZ, Emil, Dr.; KESE, Gyorgy, Dr.; FANEA, Emilian, Dr.

Report on the genital tuberculosis cases of the Gynecological Clinic of Kolozsvar (Cluj) with special regard to diagnostic and therapeutic methods. Magy. noorv. lap. 21 no.3:125-130 June 58.
(TUBERCULOSIS, FEMALE GENITAL
diag. & ther. (Hun))

KESE, G.

EXCERPTA MEDICA Sec 15 Vol 12/8 Chest Dis. Aug 59

1947. SPONTANEOUS DELIVERY AT TERM IN A PRIMIPARA WITH GENITAL TB (WITH LESIONS OF THE PLACENTA) - Ausgetragene Spontangeburt bei Erstgebärender mit tuberkulöser Erkrankung des Uterus und der Adnexe (Läsionen der Plazenta) - Kese G., Menyász E. and Negrut J. Univ.-Frauenklin., Cluj - ZBL. GYNAK. 1958, 80/36 (1450-1454) Illus. 3

A primipara with bacteriologically and histologically verified tb of the uterus and adnexa gave birth at term to a healthy child by spontaneous delivery. Microscopical examination of the placenta revealed lesions characteristic of tb. During the puerperium, a thrombophlebitis developed, favoured by the tuberculous process in the adnexa; it ran the usual course.

(X, 15)

CAPRIOARA, D.; KESE, Gh.; CONSTANTINESCU, M.; DEAC, M.

The significance of determination of b-fibrinogen in obstetrics and gynecology. Cas.lek.cesk 100 no.34:1072-1075 25 Ag '61.

1. Ustav pro studium lekarstvi a farmacie, Cluj. 2. spojena klinicka nemocnice pro dospele v Klausenburgu a 2. gynekologicka a porodnicka klinika, reditel D. Caprioara.

(FIBRINOGEN chemistry)
(OBSTETRICS diagnosis)
(GYNECOLOGY diagnosis)

IONESKO, Val'ter [Ionesco, Valter]; NISTOR, Ion; KESEI, Karoy; RODRIGO, Khose

What the Fifth World Congress of Trade Unions means to the workers of Rumania, Hungary, and Latin America. Vsem.prof.dvizh. no.10: 23-28 O '61. (MIRA 14:10)

1. Predsedatel' komiteta provsoyuza bukharestskogo zavoda "Semanatkarea" (for Ionesko). 2. Predsedatel' TSentral'nogo komiteta Federatsii profsoyuzov rabotnikov prosveshcheniya i kul'tury Rumynskoy Narodnoy Respubliki (for Nistor). 3. Sekretar' soveta profsoyuzov g. Budapeshta (for Kesei).
(Trade unions--Congresses) (Labor and laboring classes)

Kesel', N.A.

OSIN, I.A., inzh.; KESEL', N.A.

Mechanizing the preparation of molding mixtures. Mashinostroitel' no.9:8-10 S '57. (MLRA 10:9)

(Sand, Foundry)

KESEL', Ya. B. and SHCHUPAK, B. N.

"Our Experience with Improvement in Operations of the Medical Station of a Unit," Voyenno-medits. zhur., No.10, pp. 72-74, 1955

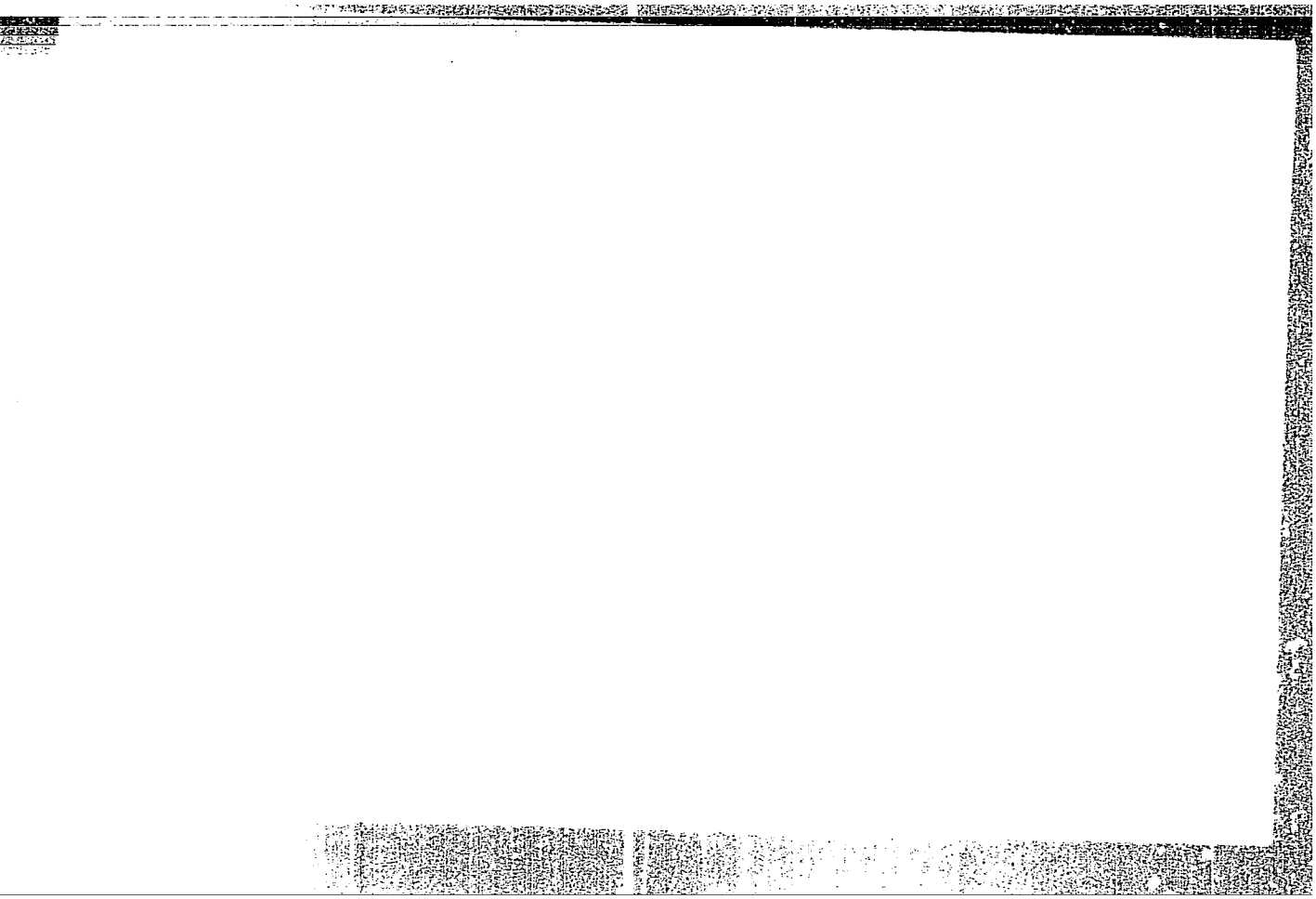
Translation 1071931

KESEL', Ya.V., mayor meditsinskoy sluzhby; SHCHUPAK, B.N., starshiy leytenant meditsinskoy sluzhby

Our practice in the improvement of the work of medical centers in units. Voen.-med. zhur. no.10:72-74 O '55. (MLRA 9:10)
(MEDICINE, MILITARY)

KONDRASHOV, A.A., podpolkovnik meditsinskoy sluzhby; KESEL', Ya.,V., mayor meditsinskoy sluzhby

Medical training for the personnel of a unit. Voen.-med.zhur. no.9:77 S '61. (MIRA 15:10)
(MEDICINE, MILITARY--STUDY AND TEACHING)



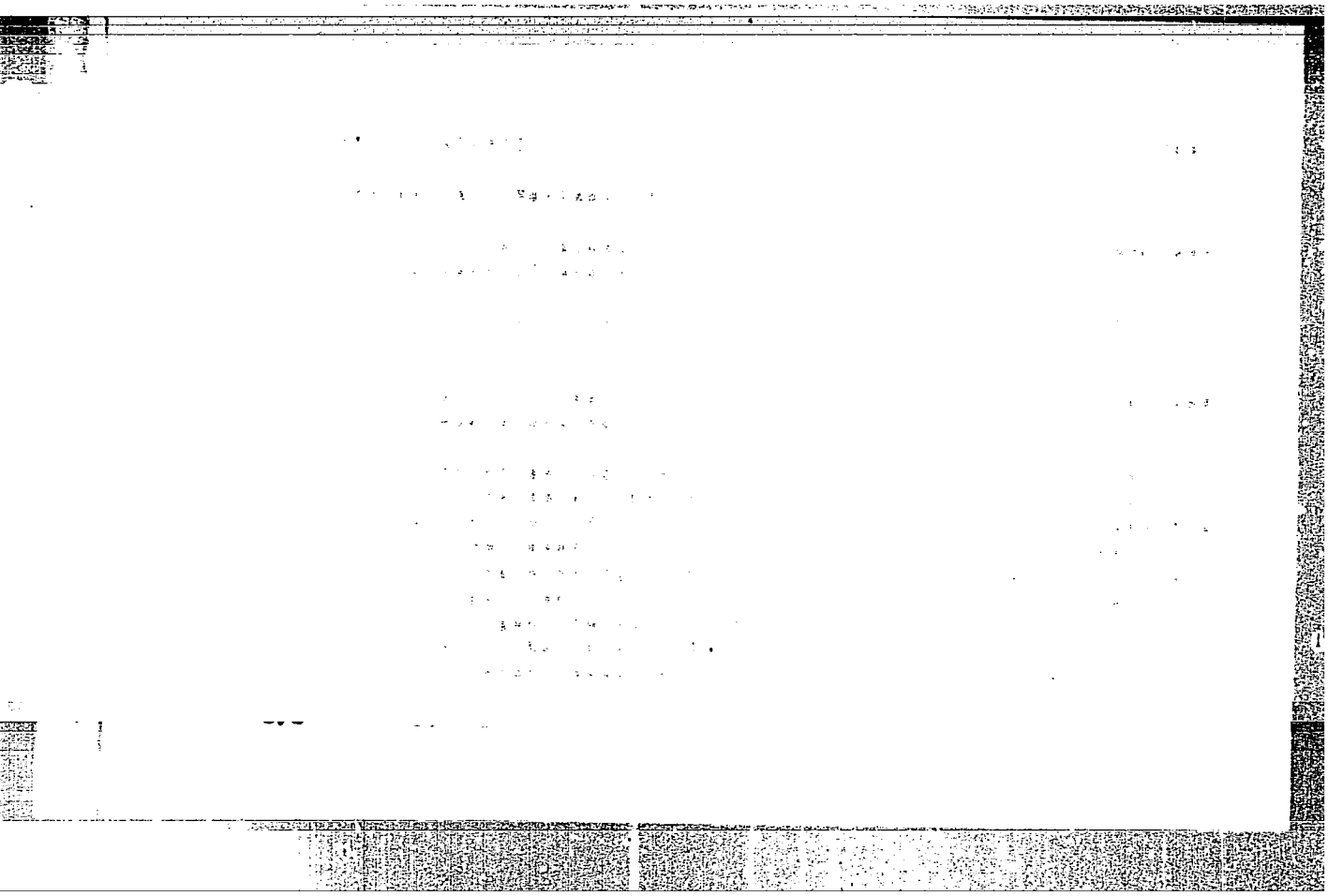
APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721610009-5"

KESEL'BRENER, Ye.G.; BOKSHA, V.G.; BOGUTSKIY, B.V.; BRUDNYY, O.Ye.; KASATKIN, V.N.

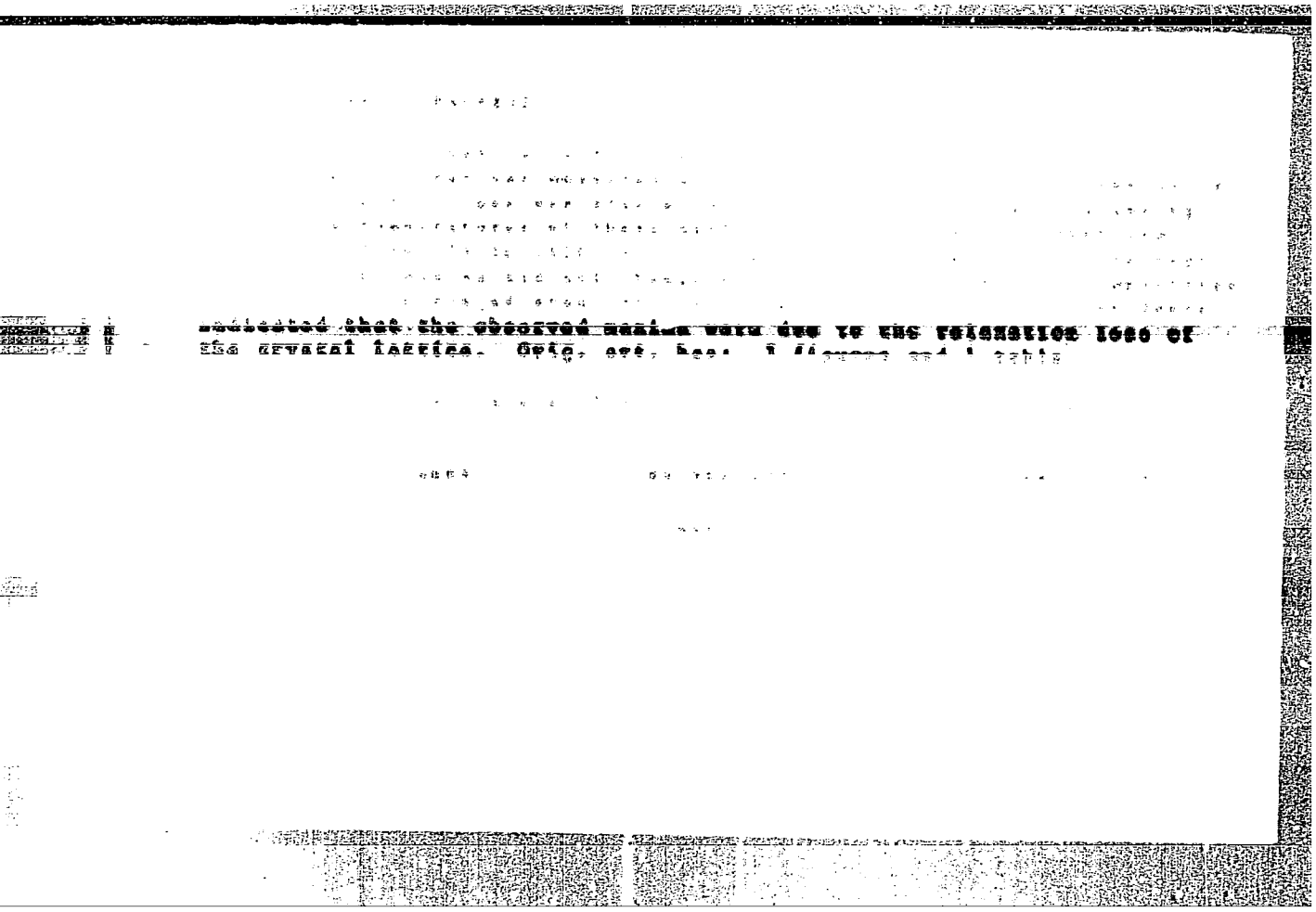
Use of cybernetics in climatic therapy. Vop. kur., fizioter. i lech. fiz. kul't. 28 no.5:404-410 S-O '63.

(MIRA 17:9)

1. Iz bazovogo sanatoriya imeni V.V. Kuybysheva, Yalta i Instituta meditsinskoy klimatologii i klimatoterapii imeni Sechenova.



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721610009-5"



KESELER, Yu.M.; POVAROV, Yu.M.; GORBANEV, A.I.

Close interaction of ions in solutions. Zhur.strukt.khim. 3 no.1:93-94 Ja-F '62. (MIRA 15:3)

1. Institut elektrokhimii AN SSSR.
(Electrolyte solutions)

KESELEVIC, S.

YUGOSLAVIA/Chemical Technology. Chemical Products and Their Application. Part 4. - Dyeing and Chemical Treatment of Textile Materials. H

Abs Jour: Referat. Zhurnal Khimiya, No 21, 1958, 72693.

Author : Stanislav Keshelyevich, Petar Popovich.
Inst :
Title : Sizing in Textile Industry.

Orig Pub: Tehnika, 1957, 12, No 1, Hem. ind., 11, No 1, 13-15.

Abstract: A bibliographical review. The following is described: new means of sizing, their most important characteristics, additions improving the sizing effect, methods of determination of size properties, methods of preparation of sizes.

Card : 1/1

RUSSIA MAN., D. A.

Larynx - Diseases

Treatment of dry and atrophic laryngitis. Vest. oro-rin., 14, No.2, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

KESEL'MAN, G.M.

Generalization of the concept of basis and N.K. Bari's theorems on bases. Dokl. AN SSSR 141 no.2:300-303 N '61. (MIRA 14:11)

1. Predstavleno akademikom A.N.Kolmogorovym.
(Hilbert space)

SHATS, Ya. Yu., kand.tekhn.nauk, dotsent; KESEL'MAN, G.M., assistent

Kinematic synthesis of simple cam-lever mechanisms. Izv.vys. zav.; mashinostr. no.2:3-13 '61. (MIRA 14:3)

1. L'vovskiy politekhnicheskiy institut.
(Mechanical movements)

KESEL'MAN, G.M. (L'vov)

Absolute convergence of expansions in eigenfunctions of certain differential operators. Izv. vys. ucheb. zav.; mat. no.2:82-93 '64. (MIRA 17:8)

KESEL'MAN, G.M.

Single-valued analytic extensibility of the resolvent of a linear bounded operator. Usp. mat.nauk 17 no.4:135-139 '62.
(MIRA 15:8)
(Operators (Mathematics))

SHATS, Ya.Yu., kand.tekhn.nauk, dotsent; KESEL'MAN, G.M., assistent

Synthesis of simple cam-lever mechanisms satisfying a range of given conditions. Izv.vys.ucheb.zav.; mashinostr. no.6:16-27 '62. (MIRA 15:11)

1. L'vovskiy politekhnicheskiy institut.
(Mechanical movements)

L 18805-63 EWT(d)/FCS(f)/FCC(w)/BDS AFFTC/IJP(C)

ACCESSION NR: AP3000282 S/0021/63/000/005/0588/0591

AUTHOR: Kesel'man, G. M.

TITLE: About the structure of the non-selfconjugated differential operator of the second order on a semiaxis (Presented by B. V. Gnyedenko, member, AN URSR)

SOURCE: AN UkSSR Dopovidi, no. 5, 1963, 588-591

TOPIC TAGS: matrix, Jordanian form, non-selfconjugated linear differential operator, Gilbertian space, quasi-nilpotent operator, half-axis, spectral operator, spectral structure

ABSTRACT: The author describes the structure of a linear operator in n-dimensional space by a theorem which shows the feasibility of converting any matrix to a Jordanian normal form. He establishes the spectral structure of Niemark's type of a non-self-conjugate differential operator of the second order on a semi-axis by citing reference works and, by means of a lemma, proves that a linear operator in Gilbertian space, Lsup2(0,infinity), has a spectral structure. He thereby proves the theorem that T = S plus N, where

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L 18805-63

ACCESSION NR: AP3000282

T is a Niemark type of a non-selfconjugate differential operator of the second order in Gilbertian space, Lsup2(0,infinity); S is similar to a normal operator; and N is a finite-dimensional nilpotent operator commutative with S. The 13 equations identified numberically in the text represent the 13 steps he used in arriving at the proof of the theorem.

ASSOCIATION: L'vivs'ky*y politekhichny*y insty*tut (Lvov Polytechnic Institute)

SUBMITTED: 17July62 DATE ACQ: 17Jun63 ENCL: 00

SUB CODE: MM NO REF SOV: 005 OTHER: 001

Card 2/2

KESEL'MAN, G.M. [Kesel'man, H.M.]

Structure of a non-self-adjoint differential operator of second order on a semiaxis. Dop. AN URSR no.5:588-591 '63. (MIRA 17:9)

1. L'vovskiy politekhnicheskiy institut. Predstavlano akademikom AN UkrSSR B.V.Gnedenko [Hnedenko, B.V.]

S/0140/64/000/002/0082/0093

ACCESSION NR: AP4033968

AUTHOR: Kesel'man, G. M.

TITLE: Unconditional convergence of eigenfunction expansions of certain differential operators

SOURCE: IVUZ. Matematika, no. 2, 1964, 82-93

TOPIC TAGS: unconditional convergence, eigenfunction expansion, differential operator, root vector, square summable function, biorthogonal system

ABSTRACT: The author establishes conditions under which the system

$$l(y) = p_0(x)\,y^{(n)} + p_1(x)\,y^{(n-1)} + p_2(x)\,y^{(n-2)} + \ldots + p_n(x)\,y, \quad 0 \leqslant x \leqslant 1, \tag{1}$$

of root vectors of n-th order differential operator on a finite interval generated by regular (Birkhoff) boundary conditions

$$\sum_{k=0}^{n-1} [\alpha_{kj}\,y^{(k)}(0) + \beta_{kj}\,y^{(k)}(1)] = 0, \quad j = 1, 2, \ldots, n, \tag{2}$$

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TSIKERMAN, L.Ya.; KESEL'MAN, G.S.

Calculating the economic efficiency of anticorrosion methods in gas pipelines. Gaz. delo no.8:35-39 '63. (MIRA 17:3)

1. Akademiya kommunal'nogo khozyaystva im. K.D.Pamfilova i TSentral'nyy nauchno-issledovatel'skiy institut informatsii i tekhniko-ekonomicheskikh issledovaniy po neftyanoy i gazovoy promyshlennosti.

KESEL'MAN, G.S., ved. red.

[Protecting pipelines from corrosion] Zashchita truboprovodov ot korrozii. Moskva, 1962. 119 p. (MIRA 17:6)

1. Moscow. Institut tekhnicheskoy informatsii i ekonomicheskikh issledovaniy po neftyanoy i gazovoy promyshlennosti.

KESEL'MAN, G.S.

Present status of anticorrosion protection of gas pipelines. Gaz. delo. no.2:24-29 '64. (MIRA 17:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut tekhniko-ekonomicheskikh issledovaniy po neftyanoy, neftekhimicheskoy i gazovoy promyshlennosti.

KESEL'MAN, I.A., tekhn.

Repair by welding of cavitation damage on hydraulic turbine rotors. Svar. proizv. no.6:39-40 Je '63. (MIRA 16:12)

1. TSentral'nyye eksperimental'nyye svarochnyye masterskiye Vsesoyuznogo nauchno-issledovatel'skogo instituta avtogennoy obrabotki metallov.

Kesel'man, I.A.

SUBJECT: USSR/Welding

135-3-9/17

AUTHORS: Voshchanov K.P., Engineer, and Kesel'man I.A., Engineer.

TITLE: Welding of Runner of High-Pressure Hydro-Turbine. (Zavarka rabochego kolesa gidroturbiny vysokogo davleniya).

PERIODICAL: "Svarochnoye Proizvodstvo", 1957, # 3, pp 20-22.

ABSTRACT: At a hydroelectric power plant (unspecified), high pressure turbines made by Italian company San Giorgio (10,000 kwt, 600 rpm) are employed. These turbines have runners with 22 buckets. The weight of one runner is 2200 kg, and it works in horizontal position. The material is cast steel with 0.25% C; 0.63 % Mn; 0.25 % Si; 0.039 % S; 0.035 % P; 0.1 % Cr; thickness of runner body is 250 mm, minimal thickness of bucket wall is 20 mm.

After 3090 hours of operation cracks developed at junction sections at all 22 buckets, 60 to 180 mm long and 25-35 mm deep. The cracks were caused by improper design, porous and impure metal and improper heat treatment.

The cracks were burnt out by electric arc after pre-heating

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135-3-9/17

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721610009-5"

TITLE: Welding of Runner of High-Pressure Hydro-Turbine. (Zavarka rabochego kolesa gidroturbiny vysokogo davleniya).

the runner to 200-250°C by an induction winding. Then, areas were covered with powdered iron and checked for absence of cracks by local magnetising. So prepared for welding, the runner was heated by induction currents to 250-280°C, and the crack spots were welded with electrodes "УОНИ-13/55", on direct current of reverse polarity, using the common current rating. The weld metal was carefully hammered layer-by-layer with a chisel of special shape. The weld metal surface was continuously observed for absence of cracks and fissures, every suspicious spot was again burnt out and refilled. The last welds in the transfer sections from the bucket to the runner body were made particularly carefully, thus a smooth transfer to base metal, without incisions and roughness was achieved.

After welding, the runner was tempered for 3 hours at 650° and cooled together with the oven to relieve the stresses caused by welding. The check of the wheel on its shaft proved full symmetry and absence of heating.

The three repaired runners are now working under normal load.

Card 2/3

S/135/62/000/007/003/010
A006/A101

AUTHOR: Kesel'man, I. A., Technician

TITLE: Repair by welding of the bed-plate of a crank-pipe press

PERIODICAL: Svarochnoye proizvodstvo, no. 7, 1962, 29 - 31

TEXT: Information is given on repair by welding of cracks in the bed-plate of a crank-pipe press, made of a material containing 3.57% C, 1.3% Si, 0.51% Mn and 0.02% Cr. After dismounting the bed plate, the cracks were cleaned and their edges V-beveled to 20 mm depth. Screwed rivets made of "St.3" grade steel were placed alternatingly on the edges in 5 - 6 rows on each side, at 20 mm distance between the rows and 40 mm distance between the rivets. The welding process for repairing the defects consisted of the following operations: welding around the rivets, building up of the whole surface, rewelding the cracks, fastening of 300 - 400 mm long reinforcement truss bolts, welding of edges to join remote surfaces. All the welding operations were carried out with УОНИ-13/55 (UONI-13/55) electrodes, 4 and 5 mm in diameter, and Cu-Fe electrodes ОЗЧ -1 (OZCh-1) on 100 - 160 amps d-c. The press is now in operation. There are 3 figures.

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S/135/62/000/007/003/010
A006/A101



ASSOCIATION: Tsentral'nyye eksperimental'nyye svarochnyye masterskiye VNIIAVTOGENa (The VNIIAVTOGEN central experimental welding shops)

Card 2/2

KESEL'MAN, I.A., tekhnik

Reconditioning by welding the housing of crankshaft pipe press. Svar.proizv. no.7:29-31 Jl '62, (MIRA 15:12)

1. TSentral'nyye eksperimental'nyye svarochnyye masterskiye Vsesoyuznogo nauchno-issledovatel'skogo instituta avtogennoy obrabotki metallov.
(Power presses—Maintenance and repair)

L 01806-67 EWT(m)/T DJ

ACC NR: AP6030589 (AN) SOURCE CODE: UR/0413/66/000/016/0073/0073 44 B

INVENTOR: Ismailov, R. G. A. O.; Mamedov, M. A. A. O.; Spektor, Sh. Sh.; Seidov, M. M. M. O.; Vartapetov, A. A.; Shchelkonogov, I. A.; Kyazimov, A. A. O.; Aliyev, A. A. G. O.; Tangiyeva, T. A.; Kesel'man, L. G.; Lobanov, V. V.; Chikunov, V. A.; Blidchenko, I. F.; Tarumov, G. A.; Bombandirov, P. P.; Merkur'yev, G. D.; Petrov, S. A.

ORG: none

TITLE: Lubricating oil for bushings. Class 23, No. 184997

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 73

TOPIC TAGS: lubricant, bushing, petroleum

ABSTRACT: An Author Certificate has been issued describing a lubricant for bushings, with a solar fraction and mazut base. To expand the operating temperature range of the oil, a petroleum fraction with a boil-away of 4—5% at 240—320C is added to the lubricant. This fraction is obtained from the petroleum distillate at 300—310C. [Translation] [NT]

SUB CODE: 11/ SUBM DATE: 05Nov64/

UDC: 629.11.012.26

Card 1/1

GOLUBTSOV, R.A.; KARASAULIDZE, A.N.; KESEL'MAN, L.M.; SINELOBOV, K.S.

"Fundamentals of the mechanical section of overhead power transmission lines" by A.A.Glazunov, A.A.Glazunov. Reviewed by R.A.Golubtsov. Elektrichestvo no.6:91-96 Je '61. (MIRA 14:10)

1. Vsesoyuznyy gosudarstvennyy institut po proyektirovaniyu teplovykh elektrostantsiy, Moskva (for Golubtsov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut elektroenergetiki, Moskva (for Karsaulidze). 3. Vsesoyuznyy gosudarstvennyy institut po proyektirovaniyu teplovykh elektrostantsiy, Tashkent (for Kesel'man). 4. Vsesoyuznyy trest po proyektirovaniyu gidroelektrostantsiy i gidroelektrouzlov, Leningrad (for Sinelobov).

(Electric power distribution)

KESEL'MAN, L.M., inzh.; ZELICHENKO, A.S., inzh.

Weight and wind spans between towers in mountainous areas. Elek. sta. 36 no.11:68-71 N '65. (MIRA 18:10)

KESEL'MAN, L.M., inzh.

Compensating weights on overhead power lines. Elek. sta. 33 no.6:63-66 Je '62. (MIRA 15:7)
(Electric lines--Overhead)

KESELMAN, P. M. (Odessa technological Institute Lomonosov)

"A method of calculation of thermal-physical properties of gases at high temperatures under conditions of dissociation."

Report presented at the Section on Thermal-physical Properties and Non-stationary Thermal Capacity, Scientific Session, Council of Acad. Sci. Ukr SSR on High T mperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

KESEL'MAN, R.; ZALESSKIY, G., inzh.

Waste in mining expenditures. Fin.SSSR 21 no.4:69-71 Ap '60. (MIRA 13:4)

1. Zamestitel' nachal'nika otdela Ukrainskoy kontory Stroybanka (for Kesel'man).
(Ukraine--Coal mines and mining--Finance)

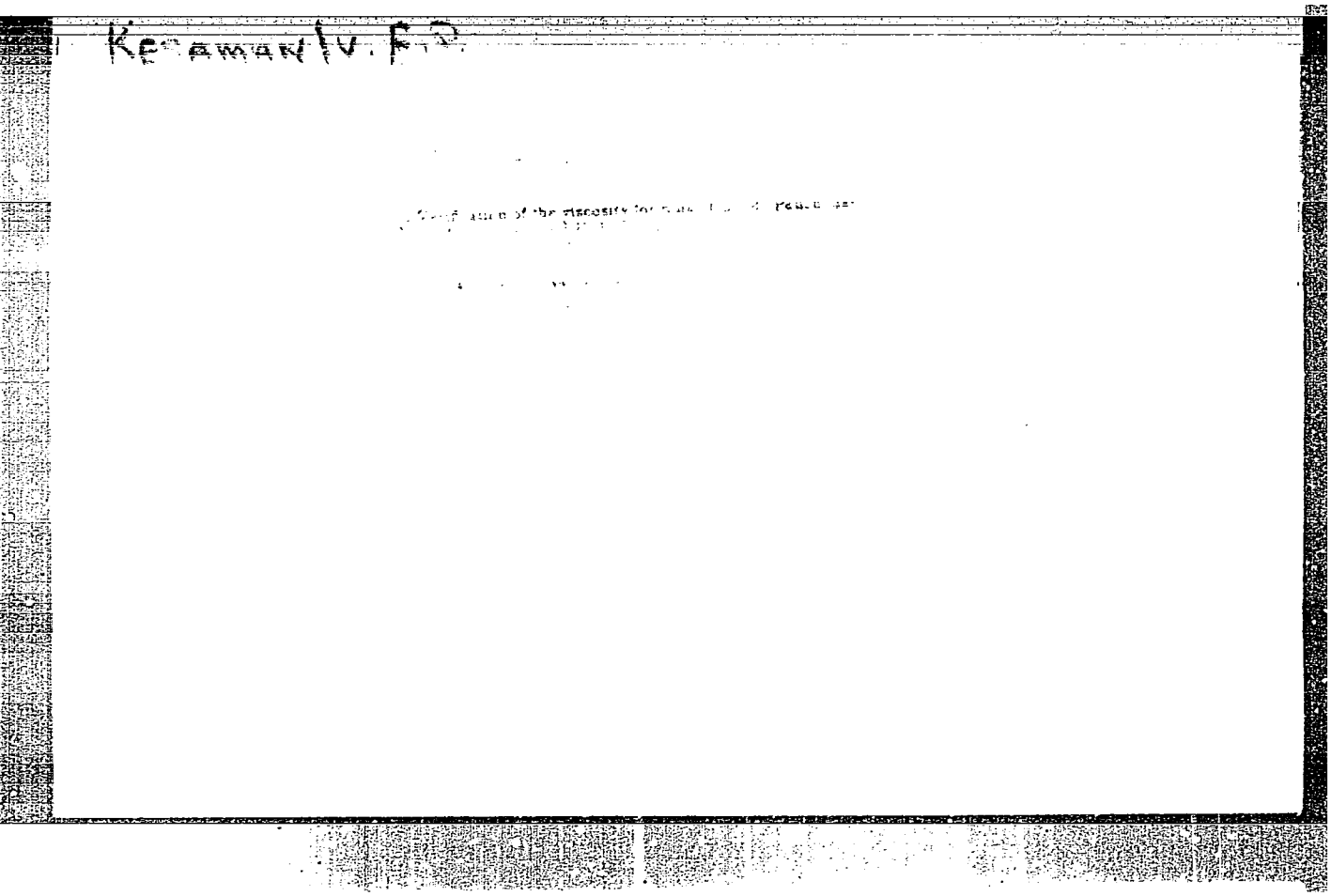
KESEL'MAN, S.I.

Effect of the distortion of the length of lines of geographical maps on the results of geophysical calculations. Geol. i geofiz. no.12:110-112 '64. (MIRA 18:6)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KORNEYEV, N.V., insh.; KESEL'MAN, V.A., insh.

Finish boring of body parts using floating cutters. Mashinostroitel' no.2/3:38-39 N-D '56. (MIRA 12:1)
(Drilling and boring)



KESAMANLY, F.

Investigating the viscosity and density of η-butyl alchol [in Azerbaijani with summary in Russian]. Dokl. AN Azerb.SSR 16 no. 8: 739-742 '60 (MIRA 13:9)

(Butyl alcohol)

KESAMANLY, F.P.

82541

S/181/60/002/007/017/042
B006/B070

24.7600

AUTHORS: Yemel'yanenko, O. V., Kesamanly, F. P.

TITLE: The Problem of Methodology of Quick Precision Measurement of the Thermo-emf of Semiconductors

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1494-1496

TEXT: The authors describe an apparatus with the help of which it is possible to measure the thermo-emf in a short time. The method is based on the application of thermocouples with controlled heating. The two thermocouples are surrounded by a heater which is in the immediate neighborhood of the measuring junction (Fig. 1). One of the junctions of couple I is in contact with the object, while one junction of couple II is separated from it by a small gap. The second couple controls the heating. With this comparison instrument a very exact measurement of temperatures is possible. Applying this method of measuring temperature, the authors constructed a simple apparatus for measuring the differential thermo-emf of semiconductors of arbitrary forms of samples in the

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temperature range 25 ÷ 150°C. The apparatus has a high degree of accuracy and rapidity of measurement. It is shown diagrammatically in Fig. 2. For the purpose of measuring, the sample is placed at the ends of two L-shaped copper blocks, the other ends of these blocks being in containers filled with ice. The sample is heated, and the thermocouple is brought manually to the points between which the thermo-emf is to be measured. The temperatures of these two points are measured. The heating of the thermocouples is recorded by two potentiometers. The thermo-emf of the semiconductor and the thermocouple were measured by a potentiometer of the type ППТВ-1 (PPTV-1) and galvanometer of the type М-21/1 (M-21/1). The temperature is measured with an accuracy of 0.1°C, that is, of about 2-3% between 7-10°C. The junctions of the thermocouple had a diameter of 0.4 - 0.5 mm, and the contact diameters were not larger than 0.02 - 0.03 mm. The method requires 10 - 15 minutes for one measurement. To determine the temperature dependence of the thermo-emf of a sample between 25 - 150°C for 10 - 15 points of measurement, 2 - 3 hours are required. The accuracy of measurement of the thermo-emf is ±(2-3)%. Fig. 3 gives an example of a measurement of the temperature dependence of the thermo-emf





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The Problem of Methodology of Quick Precision Measurement of the Thermo-emf of Semiconductors

S/181/60/002/007/017/042
B006/B070

of gallium arsenide. The authors thank Professor D. N. Nasledov for discussions. There are 2 figures and 3 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad (Institute of Physics and Technology of the AS USSR, Leningrad)

SUBMITTED: November 20, 1959

22054
S/181/61/003/004/020/030
B102/B214

24.7700 (1035, 1143, 1395, 1469)

AUTHORS: Yemelyanenko, O. V., Kesamanly, F. P., and Nasledov, D. N.

TITLE: The dependence of the effective mass of the electron in n-type InSb on the carrier concentration

PERIODICAL: Fizika tverdogo tela, v. 3, no. 4, 1961, 1161 - 1163

TEXT: The authors give the results of a determination of the effective electron mass in InSb for different carrier concentrations. The determination was done by measuring the differential thermo-emf. The experimental apparatus has been described by the authors in an earlier paper (FTT, II, vyp. 7, 1494, 1960). The samples were prepared by fusing the components in a stoichiometric ratio. They had n-type conductivity, and a carrier concentration $n = 3 \cdot 10^{16}$ cm$^{-3}$ (at room temperature). They were doped with selenium up to an impurity concentration of $2.5 \cdot 10^{19}$ cm$^{-3}$. The size of the samples was 1 x 3 x 10 mm. They were polycrystalline and sufficiently homogeneous. The differential thermo-emf can be expressed by the relation $\alpha = -\frac{k}{e}\left[\frac{r+2}{r+1}\frac{F_{r+1}(\mu)}{F_r(\mu)} - \mu\right]$ (1), where r is the exponent in

Card 1/4

The dependence of the ....

the scattering law $l \sim \varepsilon^r$, $\varepsilon$ the electron energy calculated from the bottom of the conduction band, l the electron mean free path; for the various kinds of scattering, r has the values 0, 1/2, 1, 3/2, 2; $\mu$ is the reduced Fermi level, and $F_r(\mu)$ the Fermi-Dirac integral. On the other hand the electron concentration in the conduction band is related to $\mu$:

$n = \left(\frac{m^*}{m}\right)^{3/2} \frac{4}{\sqrt{\pi}} \left(\frac{2\pi m k T}{h^2}\right)^{3/2} F_{1/2}(\tilde{\mu})$, where m* is the effective mass of the conduction electron and m the mass of a free electron. From $\alpha$ and r one can determine $\mu$, from which m* can be calculated by the last equation. Since the thermo-emf in each case is a function of the scattering mechanism, the m* values for all InSb samples were calculated for the two extreme r-values 0 and 2. These values are given in the table for $T = 300^\circ K$; so also the $\tilde{\mu}$ values. If it is assumed that the scattering mechanism does not vary from sample to sample, the effective electron mass increases significantly with increasing electron concentration. In sample 3n which contains $2.5 \cdot 10^{19}$ electrons/$cm^3$, m*/m is three times as large as in the pure sample 18n. This result is independent of the r-value. The assump-

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The dependence of the ...

tion that the character of scattering in the samples is independent of the impurity concentration is not very exact. In diamond-type crystals, to which InSb belongs, the electrons are scattered by acoustic lattice vibrations (r=0) and impurity ions (r=2). The role played by the two processes is a function of the temperature, the electron and impurity concentrations, the degeneracy of the electron gas, etc. If the increasing role of lattice scattering with an increase of the carrier concentration is taken into account, the effective mass of the electrons increases with increasing carrier concentration even more rapidly. It can, therefore, be said that in degenerate n-type InSb the effective electron mass increases significantly with increasing carrier concentration. The authors thank V. V. Galavanov for making available the InSb samples. There are 1 figure, 1 table, and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows: S. D. Smith, T. S. Moss, K. W. Taylor, J. Phys. Chem. Sol. 11, 131, 1959; W. G. Spitzer, H. Y. Fan, Phys. Rev. 106, 5, 882, 1957.

X

S/181/61/003/004/020/030
B102/B214

The dependence of the ...

ASSOCIATION: Fiziko-tekhnicheskiy institut imeni akad. A. F. Ioffe AN SSSR Leningrad (Institute of Physics and Technology imeni Academician A. F. Ioffe, AS USSR, Leningrad); Institut fiziki AN AzSSR Baku (Institute of Physics, AS Azerbaydzhanskaya SSR, Baku)

SUBMITTED: August 11, 1960

Legend to the Table: 1) Sample, 2) α, μv/deg.

| ① Образец | n, см⁻³ | ② α, мкв/град. | μ | | m*/m | |
|---|---|---|---|---|---|---|
| | | | r = 0 | r = 2 | r = 0 | r = 2 |
| 18 n | $3.0 \cdot 10^{18}$ | 308 | −1.4 | 1.0 | 0.029 | 0.011 |
| 14 n | $1.3 \cdot 10^{17}$ | 220 | −0.3 | 2.7 | 0.040 | 0.013 |
| 11 n | $9.0 \cdot 10^{17}$ | 102 | 2.4 | 7.7 | 0.048 | 0.017 |
| 6 n | $6.9 \cdot 10^{18}$ | 34 | 8.3 | 25.0 | 0.062 | 0.021 |
| 3 n | $2.5 \cdot 10^{19}$ | 23 | 12.3 | 37.0 | 0.098 | 0.033 |

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