

007/20-120-6-52/59

AUTHOR: Lazarev, I.Z.

TITLE: ~~On Certain Characteristic Features of the Kinetics of Electric Conductivity of the Inner Tissue of Potato Tubers in the Course of the Rest Period~~ (O nekotorykh osobennostyakh kinetiki elektroprovodnosti vnutrenney tkani klubney kartofelya pri prokhozhdenii perioda pokoya)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6, PP 1353-1355 (USSR)

ABSTRACT: After a short survey of publications (Refs 1,4,7) the author states that his measurements conducted through several years proved that the kinetics mentioned in the title can be used as an indicator of the state of the tubers during the rest period. The data on the said kinetics agree well with the results obtained by observations made through many years by potato growers. The results of measurements showed that the rules governing the total variation of electric conductivity in the course of the rest period during an arbitrary kind of storage may be represented by a curve of equal shape. The curve of the sort Lorkh has e. g. in the case of cool storage 3 salient points (Fig 1).

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On Certain Characteristic Features of the Kinetics of Electric Conductivity of the Inner Tissue of Potato Tubers in the Course of the Rest Period SOV/20-120-6-52/59

The position of these points (A,C,E) depends on the sort of the tubers as well as of the conditions of storing and growing. The position of the said points corresponds furthermore to the change of the water content in the protoplasm, to its capacity of swelling and to the starch content (Ref 2). If the rest period is divided into 3 phases, the salient points separate the curve into corresponding sections. The distance A - E corresponds to the total rest period, the distance B - D to the duration of the true rest (second phase). There are 1 figure and 8 references, which are Soviet.

ASSOCIATION: Kubanskiy sel'skokhozyaystvennyy institut  
(Kuban' Agricultural Institute)

PRESENTED: April 1, 1958, by A. L. Kursanov, Member, Academy of Sciences, USSR

Card 2/3

On Certain Characteristic Features of the Kinetics 607/20-120-6-52/59  
of Electric Conductivity of the Inner Tissue of  
Potato Tubers in the Course of the Rest Period

SUBMITTED: September 9, 1957

1. Tissues (Biology)--Conductivity
2. Potatoes--Storage
3. Potatoes--Test methods

Card 3/3

LAZAREV, I.Z.

Possibility of indicating the period of dormancy in potato tubers and the specific features of its course by the electric conductivity of interior tissues. Fiziol. rast. 6 no.5:579-584 S-0 '59.  
(MIRA 13:2)

1.Kuban Agricultural Institute, Krasnodar.  
(Dormancy (Plants)) (Potatoes)  
(Plants cells and tissues--Electric properties)

LAZAREV, I.Z.

Indication of the molecular structure and ionic state of plant tissues of reverse current. Zhur. ob. biol. 21 no.3:213-220 My-Je '60. (MIRA 13:7)

1. Kubanskiy sel'skokhozyaystvennyy institut, g. Krasnodar. (ELECTROPHYSIOLOGY OF PLANTS)

LAZAREV, I.Z.

Molecular-structural heterogeneity of the internal tissue in the apical and stolonate parts of a potato tuber. Biofizika 6 no.4:503-511, '61.  
(MIRA 14:7)

1. Kubanskiy sel'skokhozyaystvennyy universitet, Krasnodar.  
(PLANT CELLS AND TISSUES) (POTATOES)  
(ELECTROPHYSIOLOGY OF PLANTS)

LAZAREV, I.Z.; POLUPHAINA, V.S.

Possibility of stimulating or inhibiting the sprouting of  
potato tubers by an industrial-frequency electric field.  
Fiziol.rast. 12 no.6:1086-1090 N-D '65.

(MIRA 18:12)

I. Krasnodarskiy gosudarstvennyy pedagogicheskiy Institut  
Imeni 15-letiya V.KSM. Submitted September 8, 1964.

LAZAREV K. F.

Lazarev K. F. - The Role of Absorbing Processes at the Leaching Out of Isotopes of Several Elements From Monazite.

The Sixth Session of the Committee for Determining the Absolute Age of Geologic Formations at the Department of Geologic-Geographical Sciences (OGGN) of the USSR Academy of Sciences at Sverdlovsk in May 1957

Izv. Ak Nauk SSSR, Ser. Geol., No. 1, 1958, p. 115-117 author Pekarskaya, T. B.



STARIK, I.Ye.; LAZAREV, K.F.

From of uranium and thorium atoms found in radioactive minerals.  
Radiokhimiia 1 no.1:60-65 '59. (MIRA 12:4)  
(Uranium ores) (Thorium ores)

LAZAREV, K.F.; GRASHCHENKO, S.M.

Concentrating radioelements out of large volumes of natural water.  
Radiokhimiia 1 no.4:493-496 '59. (MIRA 13:1)  
(Radioactive substances)

LAZAREV, K.F.

Methods for determining the maximum leaching of radioelements from  
minerals. Radiokhimiia 1 no.5:603-612 '59. (MIRA 13:2)  
(Radioactive substances) (Extraction (Chemistry))

5(2)

AUTHORS:

Starik, I. Ye., Starik, F. Ye.,  
Lazarev, K. F.

SOV/75-14-3-9/29

TITLE:

Photometric Determination of Micro-Quantities of  
Thorium (Fotometricheskoye opredeleniye mikrokolichestv  
toriya)

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 3,  
pp 306-312 (USSR)

ABSTRACT:

The optical conditions for the photometric determination of thorium were devised on the basis of standard curves by means of the colorimetric photometer FEK-M using thoron as reagent. As can be seen from the figure the influence exercised by Ce and La upon the light absorption is suppressed at pH 0.96 - 0.85. Small calcium amounts do not disturb. The separation of thorium from sodium, potassium, calcium, and barium is carried out by precipitation of thorium together with  $Fe(OH)_3$ . The quantitative precipitation was checked with  $UX_1$  and  $RdTh$ . The separation of thorium from iron and uranium was carried out in weakly acid solution by precipitation with calcium oxalate. The mean absolute error was  $\pm 0.3\%$  at  $1 - 10 \mu Th$

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Photometric Determination of Micro-Quantities of  
Thorium

SOV/75-14-3-9/29

The maximum error does not exceed  $\pm 0.5\%$ . There are 1 figure,  
4 tables, and 23 references, 5 of which are Soviet.

ASSOCIATION: Radiyevyy institut AN SSSR, Leningrad imeni V. G. Khlopina  
(Institute of Radium imeni V. G. Khlopin, Academy of Sciences,  
USSR, Leningrad)

SUBMITTED: February 3, 1958

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LAZOROV K.F.

467  
AUTHORS: Sharif, I. Ya., Corresponding Member AS DSSR, Komsomol' Ya. F.,  
Bukolayev, D. S., Legin, V. K., Lazorov, K. F.,  
S. M., Kolyadin, L. B., Leningrad, U.S.S.R.

TITLE: Distribution of Radio-Elements in the Sediments of the Black Sea.  
PERIODICAL: Doklady Akademi nauk SSSR, 1959, Vol 123, Pt 5, pp 1142-1145 (USSR)

ABSTRACT: The radioactivity of the sediments in the enclosed seas is almost uninvestigated. The Black Sea shows characteristic hydrological and hydrochemical conditions. It is also intensively fed with sedimentary material. For this reason its sedimentation strongly differs from that in large oceans. In this connection the authors wanted to explain the specific conditions of distribution of the radio elements in the Black Sea, both by the nature of the sediments and by the nature of the elements. The results achieved are not sufficient to draw final conclusions. For this reason only some assumptions are expressed. The authors studied the vertical distribution of uranium, radium, iron, thorium, and calcium in a sediment core which was taken from the bottom of the Black Sea from a depth of 2177 m. It was 227 cm long and consisted mainly of gray homogeneous clay with 5 intermediate sand strata. The upper 18 cm

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consisted of extremely fine-disperse sand with thin argopel in the intermediate strata. Figure 1 shows the vertical distribution of the radio elements in the core. Table 1 gives the corresponding figures. From these data it may be concluded that in the uranium series is widely disturbed: the ionium content is almost 4 times higher than the amount corresponding to the equilibrium with uranium. The radium content, however, consists only 1/4 of this amount. The radium content in the water of the Black Sea is only 15% of the equilibrium value of uranium dissolved in the water. Thus the radium content in the sediment is hardly one fourth of the amount which should be measured if the radium migration takes place in the core of the sediment. (Fig. 1) The discrepancy in the radium balance in these sediments in the sediment of the Black Sea may be explained by rain and leaching from the sediment in its upper layers. On the other hand, the iron content decreases downwards to 42-48 cm rapidly and then practically remains constant. According to X. X. Strakhov more than 50% of CaCO<sub>3</sub> were sedimentated by physical

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methods. The main bulk of iron, however, is transported into the deep-seated sediments with the river water. The authors conclude from this that the vertical CaCO<sub>3</sub> distribution reflects the change of the sedimentation conditions in the course of time. Since the vertical distribution of iron and uranium agrees with the theoretical CaCO<sub>3</sub> it indicates that the amount of iron which was separated from the parallel change in the thorium content. It is concluded from the parallel change in the thorium content with that of iron that the major part of thorium is of sedimentation origin. The authors calculated the rate of sedimentation in the Black Sea from the data from table 1. It is 12-15 cm within thousand years. If it is however assumed that in the horizon 100-108 cm the equilibrium between ionium and uranium is still attained (Fig 2) the rate of sedimentation is only 0.4-0.5 cm per 1000 years. The problem as to which of the two values is correct has hitherto not been definitely solved. There are 2 figures, 1 table, and 6 references, 4 of which are Soviet.

SUBMITTED: August 22, 1959  
Card 3/3

GRASHCHENKO, S.M.; KUZNETSOV, Yu.V.; LAZAREV, K.F.; LEGIN, V.K.;  
NIKOLAYEV, D.S.

Concerning the article by V.I. Baranov and L.A. Khristianova  
"Radioactivity of waters in the Indian Ocean." *Geokhimiia*  
no.7:650-651 '60. (MIRA 13:11)  
(Indian Ocean--Radioactive substances)  
(Baranov, V.I.) (Khristianova, L.A.)

24098

S/18E/60/002/006/024/026  
A051/A129

21.4200

AUTHORS: Starik, I. Ye.; Lazarev, K. F.

TITLE: The effect of grinding minerals on the extractability of radioactive elements

PERIODICAL: Radiokhimiya, v. 2, no. 6, 1960, 749 - 752

TEXT: The relationship between the extractability of ThX, U, RaTh and Th atoms and the degree of grinding of monazite samples was studied. It was shown that the change in the lixiviation depends not only on the change in the surface of the mineral when the latter is ground, but also on the change in the adsorption properties of the surface. It was established that with an increase in the specific surface of the minerals the lixiviation percentage of the radium isotopes increases. In some cases this relationship was linear. The ratio of lixiviated ThX and U remains constant within the limits of error when monazite is ground, regardless of an increase in the specific surface by over 100 times. It is assumed that the behavior of the thorium isotope is connected with the change of the adsorption properties of the mineral surface when ground. The percentage of desorption of the thorium atom from the walls of the capillaries de-

X

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S/186/60/002/006/024/026  
A051/A129

X

The effect of grinding minerals on the ....

increases when going over to samples of less than 0.25 mm grinding. The increase in the adsorption properties of the mineral surface is associated with the appearance of a high specific surface in the particle samples ( $\Sigma > 800 \text{ cm}^{-1}$ ). The values of the maximum lixiviation of RnTh and Th were computed from the formula of (Ref. 10: K. F. Lazarev, Radiokhimiya, 1, 5, 603, 1959):

$$B = \frac{b \cdot 100}{\% \text{ indicator yield}}$$

where B is the percentage of the maximum lixiviation of the radicelement and b the percentage of lixiviation of the radicelement under the conditions of the experiment. By comparing the values of the maximum lixiviation of the investigated isotopes, it was noted that with an increase in the degree of grinding of the mineral their ratios

$$\left( \frac{B_{ThX}}{B_j}, \frac{B_{ThX}}{B_{RnTh}}, \frac{B_{ThX}}{B_{Th}} \right)$$

remain constant within the margin of error of the experiment. The constancy confirms the homogeneous distribution of the radicelements in the capillaries of the

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S/186/60/002/006/024/026  
A051/A129

The effect of grinding minerals on the ....

investigated sample of the mineral which proves its preservation. It is therefore thought that the conducted investigation may serve as an additional criterion for determining the preservation of the mineral sample. There are 2 tables, and 10 Soviet-bloc references.

SUBMITTED: February 3, 1960.

X

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KOLYADIN, L.B.; NIFOLAYEV, D.S.; GRASHCHENKO, S.M.; KUZNETSOV, Yu.V.;  
Iazarev, K.F.

Forms of the occurrence of uranium in waters of the Black Sea.  
Dokl.AN SSSR 132 no.4:915-917 Je '60. (MIRA 13:5)

1. Predstavleno akademikom N.M.Strakhovym.  
(Black Sea--Uranium)

21.3000  
AUTHORS:

81418

S/020/60/132/06/52/068  
B011/B126

Nikolayev, D. S., Korn, O. P., Lazarev, K. F.,  
Kolyadin, L. B., Kuznetsov, Yu. V., Grashchenko, S. M.

TITLE:

The Concentration of Uranium in the Waters of the  
Black Sea

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6,  
pp. 1411 - 1412

TEXT: It follows from an introductory survey publication that a fairly  
equal distribution is to be found in the oceans, an average of  
 $2.7 \cdot 10^{-6}$  g/l. Strong deviations from this concentration can occur in  
coastal waters and inland seas. The Black Sea has a special position  
among those that are related to the ocean. The exchange of water with  
the ocean is limited, mineralization is diminished, and the water is  
contaminated with  $H_2S$  up to the upper 125-175 m. It is to be assumed  
that under these conditions, hexavalent uranium is reduced to a state  
of pentavalency. This should lead to active uranium sedimentation and

X

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81418

The Concentration of Uranium in the Waters of the Black Sea

S/020/60/132/06/52/068  
B011/B126

a change in concentration in the depths. Table 1 correlates data from 1951 and 1958 (central and western parts of the Sea). Uranium was determined by a luminescence method from 0.3 - 1 l samples with an accuracy of  $\pm 20\%$ . The authors draw the following conclusions from Table 1: 1) the uranium concentration fluctuates in the samples examined between  $1.5 \cdot 10^{-6}$  and  $2.8 \cdot 10^{-6}$  g/l. 2) These variations occur on the surface as well as in the depths. No regularity in these concentration changes could be detected. Thus the specific reductive milieu of the Black Sea from 125-175 m upwards remains without influence on the distribution of the uranium concentration. According to approximate calculations, the average concentration of uranium in the part of the Black Sea examined is  $2.0 \pm 0.3) \cdot 10^{-6}$  g/l, which approaches the average value in the ocean. The decline in concentration in the Black Sea does not exceed 30-35%, while the mineralization is lowered by 54% in comparison to the ocean. The authors thank I. Ye. Starik, Corresponding Member AS USSR, in whose laboratory the work was carried out. There are 1 table and 16 references: 2 Soviet, 7 American, 1 Swedish, 1 Japanese, and 3 Austrian.

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The Concentration of Uranium in the Waters  
of the Black Sea

PRESENTED:

February 16, 1960, by N. M. Strakhov, Academician

SUBMITTED:

August 22, 1959

814I8

S/020/60/132/06/52/06a  
B011/B126

X

Card 3/3

STARIK, I.Ye.; LAZAREV, K.F.

Study of adsorption processes in leaching. Biul.Kom.po  
opr.abs.vozr.geol.form. no.4:136-143 '61. (MIRA 15:1)

(Leaching)

(Isotopes)

23002

S/186/61/003/002/013/018  
E111/E452

21.3200

AUTHORS: Starik, I.Ye., Lazarev, K.F. and Petryayev, Ye.P.  
TITLE: The form in which atoms of radioactive elements exist in minerals

PERIODICAL: Radiokhimiya, 1961, Vol.3, No.2, pp.207-214

TEXT: The authors' study of the leachability of radioactive elements from minerals has shown that their capillaries contain atoms of isotopes of radium and other daughter radio-elements finding their way there through radioactive recoil. Uranium and thorium, as well as various non-radioactive elements, are also present. They are leached out of monazite and viikite by the action of acid solution even when they do not dissolve. These results could be explained only by the capillaries of these minerals containing, in addition to daughter-element atoms, those of uranium, thorium and the rare-earth elements. For a deeper understanding of the form in which atoms of the elements exist in minerals, the isotope ratios in the damaged parts of the mineral must be found. The authors have developed various methods for finding that proportion of atoms of elements which is located in capillaries and damaged parts of minerals accessible to the leaching solution.

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X



23002

S/186/61/003/002/013/018  
E111/E452

The form in which atoms ...

They have called the percentage of all the atoms of an isotope present in a mineral which exist in capillaries and disturbances of its crystal lattice the "limiting leachability" of this isotope. Limiting leachability values show that capillaries contain enough atoms to form an independent solid phase. The composition of the compounds present there varies with the mineral. Different minerals also have different capillary structures, which accounts for the relative effects of neutral and acid leaching solutions varying from mineral to mineral. Fig.2 shows the values of limiting leachability for radium, uranium and thorium (curves 1, 2 and 3 respectively) as a function of acidity (0 - 0.2 N hydrochloric acid). This indicates that for determinations of limiting leachability acid solutions must be sufficiently acid to dissolve fully the colloidal compounds in the capillaries and bring the atoms of the elements present there into a form capable of exchange with ions of the leaching solution. Solutions containing salts give leachability values less than obtained with salt-free solutions of the same acidity. There is no sharp boundary between the capillary material, i.e. the fully disrupted lattice, and the undamaged lattice. The maximum depth from which atoms can reach

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23002

S/186/61/003/002/013/018  
E111/E452

The form in which atoms ....

the surface of the mineral crystal lattice will be different for those formed in alpha-composition and for those ejected from lattice points by alpha-particles or recoil nuclei. The authors show, using results published by Ye.P.Petryayev (Ref.13: Radiokhimiya, 1, 1, 105 (1959)) that in the test sample of monazite the radius of the sphere without capillaries or damaged parts in its surface is  $1.7 \times 10^{-4}$  cm. The surface zone has the greatest damage and supplies most atoms entering the capillaries. Unlike atoms in capillaries, those in the damaged parts of the lattice can only be removed by more concentrated acid solutions. The dynamic leaching of minerals by strong solutions of acids is a fruitful way of studying this part of the lattice. For this leaching rate relative to the quantity of solution passing through a mineral-filled column in a given time interval is observed. Graphical analysis then enables the quantities of radioelement entering the solution through leaching and through dissolution to be found separately. For most minerals, the authors conclude that the main mass of atoms composing the mineral are in the undamaged lattice, a small part are in the capillaries and damaged parts and in the surface damaged part of the lattice (10 to 15%). In

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23002

S/186/61/003/002/013/018  
E111/E452

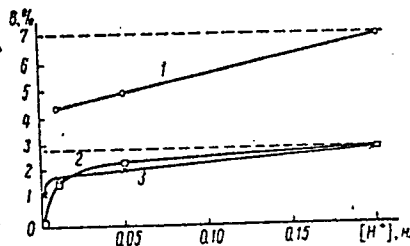
X

The form in which atoms ...

monazite and viikite, distribution of radioelements is non-uniform, with enrichment of the surface zone of the lattice and capillaries with certain daughter and parent elements. In monazite capillaries radium-isotope elements exist in two forms with different capacities for exchange with ions of leaching solutions. There are 2 figures, 5 tables and 13 references: 9 Soviet-bloc and 4 non-Soviet-bloc. The reference to the English language publication reads as follows: P.M.Hurley, H.W.Fairbairn, Bull. Geol. Soc. Am., 64, 659 (1953).

SUBMITTED: April 18, 1960

Fig.2.



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22492

S/186/61/003/003/016/018  
E071/E435

21.3200

AUTHOR: Lazarev, K.F.

TITLE: On the Problem of Kinetics of Leaching Out  
Radioactive Elements From Minerals

PERIODICAL: Radiokhimiya, 1961, Vol.3, No.3, pp.359-364

TEXT: Kinetics of the leaching process of radioactive elements other than radium and its isotopes were not investigated. In order to find out if the regularities observed for radium would be applicable to other elements the author investigated the leaching process of monazite and viikite from pegmatites of the Northern Karelia. To weighed samples of the minerals crushed below 0.25 mm placed in beakers, a given volume of a leaching solution was added. The leaching process was continued for a given time on constant stirring. Then the solution was separated from the residue by centrifuging and its content of radioactive elements determined. The experimental results for leaching out with hydrochloric and sulphuric acid solutions of ThX, U, Th, RdTh, UX1 and rare earth elements have shown that the velocity of leaching out of all the elements studied is highest during the  
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S/186/61/003/003/016/018  
EO71/E435

On the Problem of Kinetics ...

first one to three hours of the process; due to desorption from capillary walls, the main proportion of atoms of elements capable of leaching under these conditions is transferred into solution during that time. At long leaching times, the velocity of leaching out sharply decreases and the transfer of atoms of elements into solution is due to the diffusion of atoms of elements along capillaries from the deeper layers of minerals. The observed differences in kinetics of leaching out of various elements are explained by differences in the form in which atoms are present in capillaries of minerals, differences in the adsorption ability of the surface of minerals in respect of various elements and the composition of the leaching solutions used. There are 3 figures, 4 tables and 13 Soviet-bloc references.

SUBMITTED: June 10, 1960

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S/186/61/003/005/017/022  
E071/E185

AUTHORS: Lazarev, K.F., Nikolayev, D.S., and Grashchenko, S.M.

TITLE: Concentration of thorium isotopes in sea waters

PERIODICAL: Radiokhimiya, v.3, no.5, 1961, 623-635

TEXT: A method of concentrating thorium isotopes from large volumes of natural waters (200-500 litres) by their coprecipitation with iron hydroxide on cold and the determination of thorium and ionium in the concentrates obtained was developed. The experimental procedure is described in detail. Using this method the concentration of thorium isotopes in waters of various parts of the Black and Azov Seas was determined. The concentration of thorium and ionium in the water of the open part of the Black Sea was found to be  $(2.2 \pm 0.2) \times 10^{-9}$  g/litre and  $(2.5 \pm 1.0) \times 10^{-13}$  g/litre respectively. It was shown that the concentration of thorium isotopes in water decreases from coastal parts to the open sea which is explained by decreasing concentrations of suspended matter in the water. That the concentration of thorium decreases more sharply than that of ionium or radiothorium is explained by the fact that thorium-232

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Concentration of thorium isotopes ... S/186/61/003/005/017/022  
E071/E185

is mainly confined to the coarser terrigenous part of the suspended matter and ionium and radiothorium to the finer colloidal part which settles to the bottom much more slowly and is carried out into the open sea. The work was carried out in cooperation with the Institut okeanologii AN SSSR (Institute of Oceanology, AS USSR). Acknowledgments are expressed to Corresponding Member AS USSR I.Ye. Starik for his interest in the work.

There are 4 figures, 7 tables and 27 references: 11 Soviet-bloc, 2 Russian translations from non-Soviet publications and 14 non-Soviet-bloc. The four most recent English language references read as follows:

Ref. 9: E. Rona, W.D. Urry. Am. J. Sci., v.250, 4, 241 (1952).

Ref. 12: F. Koczy, Deep-Sea Res., v.3, 2, 93 (1956).

Ref. 14: W.M. Sackett, H.A. Potratz. Science, v.128, 3317, 204 (1958).

Ref. 20: P.F. Thomason, M.A. Perry, W.M. Byerly, Anal. Chem., v.21, 10, 1239 (1949).

SUBMITTED: April 24, 1961

Card 2/2

NIKOLAYEV, D.S.; LAZAREV, K.F.; GRASHCHENKO, S.M.

Thorium isotope concentration in waters of the Sea of Azov. Dokl.  
AN SSSR 138 no.3:674-676 My '61. (MIRA 14:5)

1. Predstavleno akademikom N.M.Strakhovym.  
(Azov, Sea of--Thorium--Isotopes)



S/186/62/004/003/011/022  
E075/E436

AUTHORS: Starik, I.Ye., Lazarev, K.F.

TITLE: Study of the kinetics of formation of adsorption equilibrium during leaching with the aid of radioactive indicators

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 322-328

TEXT: The authors present data obtained by studying the formation of adsorption equilibrium during leaching of thorium isotopes from monazite, with the aid of radioactive indicator -  $UX_1$ . The leaching was carried out by mixing the crushed mineral with acidic solutions for various lengths of time. The time for the formation of equilibrium between the surface of the mineral and the solutions, depended on their composition and primarily their acidity. This is connected with the fact that the initial stage of leaching of polyvalent elements (Th, U, rare earth elements, etc) from minerals is the solution of the hydrolysis products forming from the elements present in the capillary pores. The more acid the leaching solutions the more rapidly the hydrolysis products dissolve, thus letting free the ions of the elements, which then  
Card 1/2

S/186/62/004/003/011/022  
E075/E436

Study of the kinetics ...

distribute themselves between the surface of the minerals and the solution, alongside the indicator ions. For sufficiently acid solutions ( $> 1N$ ) the kinetics of the first stage of leaching are determined by the rapidity of formation of the adsorption equilibrium between the solution and mineral. The time for this process is not longer than 60 min. Much more time is needed for weakly acid solutions. The results for the leaching of monazite with 0.07 N  $H_2SO_4$ , 0.23 and 11.1 N HCl show that the equilibrium times are 8, 3 and 1 h respectively. There are 5 figures and 4 tables. ✓

SUBMITTED: May 22, 1961

Card 2/2

STARIK, I. Ye.; LAZAREV, K. F.

Kinetics of the establishment of adsorption equilibrium during  
leaching studied with the aid of radioactive indicators.  
Radiokhimiia 4 no.3:322-328 '62. (MIRA 15:10)

(Adsorption) (Leaching) (Thorium--Isotopes)

STARIK, I. Ye.; LAZAREV, K.F.

Studying the comparative distribution of the isotopes of radium,  
uranium, and monazite. Metod. opr. ats. vozm. geol. obr. no.63  
27-31 164 (MIRA 18:2)

NIKOLAYEV, D.S.; LAZAREV, K.F.; KORH, O.P.; YAKUNIN, M.I.; DROZNEZHIN, V.M.;  
SAMARTSEVA, A.G.

Isotopic composition of uranium in the waters and sediments of the  
Black and Azov Seas. Dokl. AN SSSR 165 no.1:187- 89 N '65. (MIRA 18:10)

1. Submitted April 10, 1965.

DROZHZHIN, V.M.; LAZAREV, K.F.; NIKOLAYEV, D.S.

Determination of radium in natural waters without its preliminary  
chemical isolation. Radiokhimiia 7 no.3:374-375 '65.

(MIRA 18:7)

L 9730-66 EWT(1)/EWT(m)

DIAAP

GW

ACC NR: AP5025868

SOURCE CODE: UR/0020/65/164/004/0910/0912

AUTHOR: Lazarev, K.F.; Grashchenko, S.M.; Nikolayev, D.S.; Drozhzhin, V.M.

ORG: none

36  
35  
B

TITLE: <sup>19</sup> Mesothorium-I concentration in the Black Sea waters

SOURCE: AN SSSR. Doklady, v. 164, no. 4, 1965, 910-912

TOPIC TAGS: geochemistry,<sup>12</sup> ocean dynamics, ocean current, ocean *property*,  
radioisotope, radioactivity <sub>12,55</sub>

ABSTRACT: Existing data on radioisotope concentration in sea water are limited to the Ra<sup>226</sup> element. The paper presents in the form of comprehensive tables results of MsTh-I determination in various sections of the Black Sea and of Th-X concentration in its coastal waters. An analysis of the results shows that 1) the MsTh-I concentration in water most remote from the shores exceeds by some three orders of magnitude the concentration of Th<sup>232</sup> which starts the particular radioactive family; this means that in seas MsTh-I seems to have its own geochemical history independent on the behavior of its Th<sup>232</sup> ancestor; and 2) changes in the MsTh-I concentration are closely related to the speed and direction of ocean water and, consequently, this element can serve as a sensitive

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L 9730-66

ACC NR: AP5025868

indicator of the formation and transfer of masses of sea water. The paper was presented by Academician N. M. Strakhov, 28 Apr 65. The authors extend their deep gratitude to O.P. Korn for his help during the experimental part of the investigation. Orig. art. has: 1 figure and 2 tables.

SUB CODE: 08, 18 / SUBM DATE: 17Aug64 / ORIG REF: 006 / OTH REF: 004

Card 2/2



LAZAREV, K.F.; NIKOLAYEV, D.S.; GRASHCHENKO, S.M.; DROZHZHIN, V M.

Radium concentration in the Azov Sea and some lagoons. Dokl. AN  
SSSR 164 no.5:1151-1153 0 '65. (MIRA 18:10)

1. Submitted April 28, 1965.

CA

7

The accuracy of several gravimetric and volumetric methods for determining calcium in precipitated calcium oxalate. K. G. Lazarev. (Hydrochem. Inst., Novocherkassk). *Gidrokhim. Materialy* (Hydrochem. Materials) 14, 38 (1968). - A crit. review and an exptl. verification of the accuracy of methods used in detg. Ca. Among the gravimetric methods, the most accurate and consistent results are obtained (when 13-55 mg. Ca is present) by weighing as  $\text{CaCO}_3$  or  $\text{CaSO}_4$ . As  $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$  the results average 0.05% higher. At temps. below  $100^\circ$  the dehydration is easily accomplished and the ppt. is not hygroscopic. Above  $100^\circ$  the dehydration is less satisfactory and the ppt. is hygroscopic. As  $\text{CaO}$  the results are usually higher. Under most careful conditions the error is 0.0%. From the study of the volumetric method the following conclusions were drawn: The most accurate and consistent results, when 5-100 mg. Ca was present, were obtained by alkalimetric titration of the ignited ppt. with HCl, with methyl red, as well as with  $\text{AgNO}_3$  titration (treatment of the oxalate ppt. with HCl, evapn. of excess HCl, and  $\text{AgNO}_3$  titration of the resulting  $\text{CaCl}_2$ ). These methods give as accurate results as the gravimetric  $\text{CaSO}_4$  or  $\text{CaCO}_3$  methods. With HCl titration the error is  $\pm 0.05$  and with  $\text{AgNO}_3$  up to 0.17 mg. Ca higher. The  $\text{KMnO}_4$  titration is less accurate. The least accurate method is the titration with  $\text{H}_2\text{SO}_4$ . A bibliography with 104 titles is given. J. S. Joffe.

Lazarev, K. G.

Lazarev, K. G. "The determination of the capacity of an animal lung for holding water by the method of runoff into funnels placed under a vessel overturned in the solution", Glavlitizdat materialy (Akad. nauk SSSR, Glavlitizdat. in-6), Vol. XVI, 1946, p. 10-1, - Bibliog: 6 items.

So: U-3261, 1 April 53, (Letovik 'Zhurnal' Inzh. State, no. 24, 1943).

LAZAREV, K. G.

Lazarev, K. G. "The determination of the capacity of medicinal mud for holding water by the method of runoff into flasks covered with glass", *Gigiyen. i sanit.* (Akad. nauk SSSR, Gidrobiol. Inst., Vol. XV, 1949, p. 44-45).

So: U-1241, 10 April 50, (Letopis 'Zhurnal 'nykh Stroy, no. 12, 1949).

LAZAREV, K. G.

Lasarev, K. G. "The dependence of the amount of water held by air on the content of  
NaCl solution in the water", *Gidrometeorologicheskiye Materialy* (Akad. nauk S.S.S.R., *Geofiz. Inst.*),  
Vol. XVI, 1949, p. 42-53.

So: U-3261, 10 April 53, (*Letopis 'Zhurnal Inykh Statey, So. 1'*, 1949).

KRIVENTSOV, M.I.; LAZAREV, K.G.; FESENKO, N.G.

Mineralization of water of the Kuybyshev water reservoir and of the part of Volga river from the reservoir to Volsk city. *Gidrokhim.mat.* no.20:3-17 '53. (MLRA 7:3)

1. *Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.* (Kuybyshev reservoir) (Volga river) (Water--Composition)

LAZAREV, K. G.

The determination of calcium in solutions of magnesium chloride and magnesium sulfate. K. G. Lazarev (Hydrochem. Inst. Acad. Sci. U.S.S.R., Novocherkassk). *Izvestiya Akad. Nauk S.S.S.R.* 21, 114-20(1953).— The  $\text{CaSO}_4$  ppt. is washed with 90% EtOH to remove  $\text{MgCl}_2$ , dissolved in HCl, pptd. as the oxalate, and heated, the converted  $\text{CaCO}_3$ .  $\text{CaO}$  is treated with HCl, evapd. to dryness, and heated at  $150^\circ$  to drive off excess HCl, and the residue ( $\text{CaCl}_2$ ) is titrated with  $\text{AgNO}_3$ . I. S. Joffe

AA BZ

LAZAREV, Konstantin Grigor'yevich; ALEKIN, O.A., otvetstvennyy red.;  
VASSERBERG, V.E., red.izd-va; PRUSAKOVA, T.A., tekhn.red.

[Hydrochemical aspects of the lowland course of the Amu Darya  
River] Hidrokhimicheskii ocherk ravninnoi chasti techenia  
reki Amu-Dar'i. Moskva, Izd-vo Akad.nauk SSSR, 1957. 105 p.  
(MIRA 11:1)

1. Chlen-korrespondent AN SSSR (for Alekin).  
(Amu Darya River)



LAZAREV, K.G.

Effect of cation exchange on the chemical composition of water during its filtration through the ground. *Gidrokhim.mat.* 28:151-164 159. (MIRA 12:9)

1. *Gidrokhimicheskiy institut Akademii nauk SSSR, g. Novochoerkassk.*  
(Ion exchange) (Water, Underground) (Soil absorption)

POSOKHOV, Ye.V.; LAZAREV, K.G., otv.red.; TOLSTIKHIN, N.I., prof., retsen-  
zent; TOKAROV, N.S., prof., retsenzent; SIMKIN, S.M., red.izd-va;  
MAKUNI, Ye.V., tekhn.red.

[Studies in the hydrochemistry of underground waters in central  
regions of Kazakhstan] Ocherki po gidrokhimii podzemnykh vod  
tsentral'nykh raionov Kazakhstana. Moskva, Izd-vo Akad.nauk SSSR,  
1960. 158 p. (MIRA 13:4)

(Kazakhstan--Water, Underground)

LAZAREV, K.G., kand. khim. nauk, otv. red.; VOLYNETS, M.P., red.;  
RYLINA, Yu.V., tekhn. red.

[Modern methods of analyzing natural waters] Sovremennye metody  
analiza prirodnykh vod. Moskva, Izd-vo Akad. nauk SSSR, 1962.  
203 p. (MIRA 15:10)

1. Akademiya nauk SSSR. Gidrokhimicheskiy institut, Novoche-  
rassk.

(Water--Analysis)

LAZAREV, K.G.

Hydrochemical characteristics of the pollution of Novocherkassk  
ground waters. *Gidrokhim. mat.* 35:121-130 '63. (MIRA 16:7)

1. *Gidrokhimicheskiy institut, Novocherkassk.*  
(Novocherkassk--Water, Underground--Pollution)

LAZAREV, K.G.; DESPILLER, A.D.

Use of the graphic method of studying the formation of the chemical composition of the water of the Amu Darya at its outflow from the mountains. *Gidrokhim. mat.* 38:179-187 '64.

(MIRA 18:4)

1. *Gidrokhimicheskiy institut AN SSSR, Novocherkassk, i Meditsinskiy institut im. N.I. Pirogova, Vinnitsa.*

LAZAREV, K.G.

Ionic flow of the Amu Darya at the Bassaga-Kerki and Chatly  
hydrometeorological stations. Gidrokhim.mat. 36:26-30 '64.  
(MIRA 18:11)

1. Gidrokhimicheskiy institut, Novochoerkassk. Submitted  
December 6, 1961.

SMORODINOV, M.A., kand.tekhn.nauk; LAZAREV, Kh.M., inzh.

Automotive transportation should be used for short distance shipments. Zhel.dor.transp. 44 no.11:47-49 N '62.

(MIRA 15:11)

1. Nachal'nik otдела organizatsii transportno-ekspeditsionnoy raboty Moskovskogo upravleniya konteynernykh perevozok i transportno-ekspeditsionnykh operatsiy (for Lazarev).  
(Freight and freightage)

PAN'KINA, I.F., kand.med.nauk; LAZAREV, K.N.; TSIBIN, Yu.N.

Eighth Leningrad City Scientific Conference of Young Surgeons,  
May 29 - 31, 1962. Vest.khir. 89 no.11:147-154 N '62.

(MIRA 16:2)

(SURGERY---CONGRESSES)



18-41000

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3/137/61/000/011/030/123  
A060/A101

AUTHORS: Kravchenko, V.F., Abrosimov, Ye.V., Lazarov, L.A.

TITLE: Improvement in the quality of ingots from rimmed steel by vibration

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 11, 1961, 62, abstract  
11V363 (V sb. "Novoye v teorii i praktike proiz-va martenovsk.stali",  
Moscow, Metallurgizdat, 1961, 343-350, Discuss. 428 - 439)

TEXT: Ingots from rimmed steel, 7 tons in weight, poured from the top were subjected to vibration on a vibrator with eccentric weights, whose rotation caused a vibration of the bridge of the founding platform at a frequency of 1,470 vibrations per minute and amplitude ~ 1 mm. Under vibration the intensity of the steel ebullition in the mold was increased notably, the rising was reduced and the thickness of sound crust was increased. Depending on the duration of the vibration it is possible to obtain any given thickness of dense crust, since in order to obtain ingots with 25-30 mm occurrence depth of cellular bubbles it is sufficient to subject them to vibration for 5-6 min from the moment the pouring starts. Under 7 minute vibration the cellular bubbles were situated at a distance of 42 mm from the surface and under vibration for 24 min 20 sec they vanished.

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S/737/61/000/000/002/010

**AUTHORS:** Rabinovich, Ye.I., (1), Lazarev, L.A., (2), Zarzhitskaya, N.G., (2), Skul'skiy, M.K., (2), Kravchenko, V.F., (1). [ (1) = Candidate of Technical Sciences; (2) = Engineer ]

**TITLE:** Influence of vibration on the formation and quality of a rimmed-steel ingot.

**SOURCE:** Stal', sbornik statey. Ed. by A.M. Yampol'skiy. Moscow. 1961, 258-273.

**TEXT:** It is important to obtain a rimmed ingot with an external skin > 8 mm thick to protect the honeycomb blowholes from oxidation during soaking in pits. High-grade ingots with up to 0.2% C were obtained at plants in the Urals. To accelerate the rate of pouring and to improve the quality further, a vibrator designed by the Moscow Steel Institute was used in experimental castings. An a.c.-motor-driven eccentric vibrator was mounted on the platform of a 50-ton casting car and was operated at approximately 1,500 cpm and at amplitudes which varied from 0.4-0.8 mm to 1.5-1.8 mm, depending on the elasticity of the track and the change in load on the car. Vibration times varied from 2'45" to 24'20"; test runs were timed at various stages of the casting process, and the capping of the ingots was done

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S/737/61/000/000/002/010

Influence of vibration on the formation...

either immediately after cessation of vibration or some time later. Longitudinal sections were photographed, and samples were cut from the 3, 5, 8, 12, 13, 15, 17, 20, and 25% horizons, as measured from the top of the ingot. Templets were cut for metallography; the templets were deep-etched, sulphur-printed, and chemically analyzed. A detailed description is given of the casting process, and the composition of the test melts is tabulated. The results of the casting of 7-ton ingots at various time rates, with and without vibration, are also tabulated. The character of the rimming of ingots subjected to vibration is shown to be greatly altered, and shortly after commencement of the vibration the rimming becomes violent, to the point of gushing and spraying. Instead of the ordinary peripheral rimming of steel Ct. 3 (St. 3) along the interface of the liquid and solid phase, the vibrated steel rims all over. Contrary to the continuous growth of ordinary ingots, which begins 1-2 min after the pouring is stopped, vibrated ingots sag 30-50 mm, and even up to 100 mm, within 7-8 min and then grow slightly, but never back to their initial level, unless the vibration is stopped prematurely. As to structure, vibration eliminates the ordinarily observed difference between the upper and the lower part of the ingot; however, some tendency toward the formation of cracks in the lower part of the ingot is observed. In the ordinary ingots at the plant, the dense external skin is 8-15 mm thick (thicker with slower pouring and with lower Mn content). The length of the honeycomb blowholes is about 80-100 mm; the

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Influence of vibration on the formation...

S/737/61/000/000/002/010

secondary blowholes are spherical and lie at 100-125 mm from the outer surface, forming a vertical lace up to the rising part of the ingot. Vibration causes disappearance of the blowholes, going from the periphery toward the center and thickening the skin. 10-12 min of vibration result in a total disappearance of the blowholes. However, the zone formerly occupied by the primary honeycomb blowholes is always occupied by sparse small, circular, bubbles, 1 - 4.5 mm dia, some 5-10 mm apart. Macrostructurally, vibration is conducive to a displacement of the shrinkage porosity into the depth of the ingot. Vibration affects the distribution of sulfides only very little. Vibrated ingots have sulfide veins that are the remnants of the now-filled blowholes. Spot-sample analysis at various depths shows that the liquating-element content in the outer zone remains equal or is even increased by the vibration. C, S, and P contents in the outer zone are not appreciably affected by vibration. Both the zone of concentrated liquation and the zone of porosity are located more deeply in vibrated ingots, as shown by chemical analysis. In summary, vibration affords production and faster pouring of a rimmed steel with a higher C content and an improved production of semikilled steel. There are 9 figures and 2 tables; no references.

ASSOCIATION: None given.

Card 3/3

GRASHCHENKO, S.M.; NIKOLAYEV, D.S.; KOLYADIN, L.B.; KUZNETSOV, Yu.V.;  
LAZAREV, L.F.

Radium concentration in waters of the Black Sea. Dokl. AN SSSR  
132 no.5:1171-1172 Je '60. (MIRA 13:6)  
(Black Sea--Radium)

S/180/62/000/006/003/022  
E071/E151

AUTHORS: Tsarevskiy, B.V., Popel', S.I., and Lazarev, L.L.  
(Sverdlovsk)

TITLE: The penetration of iron alloys into packed sand

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye  
tekhnicheskikh nauk. Metallurgiya i toplivo,  
no.6, 1962, 49-54

TEXT: The pressure ( $P_k$ ) at which cast iron, steel and Fe-C-Si penetrate into pores between rounded grains of quartz sand of known size distribution was determined. Using the determined values of  $P_k$ ,  $\sigma$  (surface tension of the alloys) and  $\theta$  (wetting angle), the effective mean radius of the pores was calculated. The experimental procedure and apparatus used are described in some detail. Sand specimens (20.2 mm diameter, 23 mm in height) were made by compression under a standard load (3.5 kg) of mixtures of washed quartz sand with 4% of bentonite and 5% of water and subsequent drying at 200 °C. The reproducibility of the results was about 10%. The mean radius of pores for a majority of sand fractions tested was found to be 0.31 - 0.41 of the radius of

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The penetration of iron alloys ...

S/180/62/000/006/003/022  
E071/E151

sand grains. With increasing temperature from 1380 °C the penetration pressure of an iron alloy containing 4.6% carbon showed a slight local decrease at about 1615 °C and then followed a sharp increase on approaching 1700 °C. These changes are related to the surface melting of sand grains and their subsequent sintering. With increasing concentration of carbon and silicon in iron the penetration pressure decreases comparatively uniformly from 338 to 250 mm Hg (at 4.6% C) or to 264 mm Hg (at 3.6% Si). Sulphur causes a more marked decrease in the penetration pressure. Increasing the sulphur concentration from 0.004 to 0.136% causes the value of  $P_k$  to decrease from 245 to 107 mm Hg. There are 4 figures and 3 tables.

SUBMITTED: April 10, 1962

Card 2/2

TSAREVSKIY, B. V. (Sverdlovsk); POPEL', S. I. (Sverdlovsk);  
LAZAREV, L. L. (Sverdlovsk)

Penetration of iron alloys into packed sand. Izv. AN SSSR,  
Otd. tekhn. nauk, Met. i topl. no.6:49-54 N-D '62.  
(MIRA 16:1)

(Porous materials) (Liquid metals)



ACCESSION NR: AP4012542

S/0056/64/046/001/0176/0181

AUTHOR: Lazarev, L. M.

TITLE: Angular correlations near the threshold of production of an unstable particle

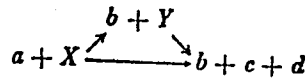
SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 176-181

TOPIC TAGS: unstable particle, unstable particle production, unstable particle production threshold, angular correlation, unstable particle spin, unstable particle parity

ABSTRACT: It is shown what additional information can be obtained concerning an unstable particle  $Y^*$  (which is obtained from the reaction  $X(a, b)Y^*$  and which decays into two particles after a time  $\tau \sim \Gamma^{-1}$ ) from an analysis of the angular dependence of this reaction

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ACCESSION NR: AP4012542



near the threshold of production of Y. It is found that in the simplest cases measurement of the angular correlations yields the spin and parity of the unstable particle. The calculations are based on the theory of Migdal (ZhETF, v. 28, 3, 1955) and Watson (Phys. Rev. v. 88, 1163, 1952), with the behavior of the cross section of the three-particle reaction extrapolated to include the entire energy interval. It is shown that comparison with the experimental data can yield the spin and parity under certain conditions. The conditions under which this extrapolation is valid are given. Orig. art. has: 22 formulas.

ASSOCIATION: None

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ACC NR: AP7012409

SOURCE CODE: UR/0367/67/005/001/0101/0108

AUTHOR: Lazarev, L. M.

ORG: none

TITLE: Three-particle nuclear reactions and the complete experiment

SOURCE: Yadernaya fizika, v. 5, no. 1, 1967, 101-108

TOPIC TAGS: nuclear reaction, scattering matrix, elastic scattering

SUB CODE: 20

ABSTRACT: The complete experiment is considered for nuclear reactions with open two- and three-particle channels. It is shown that the matrix elements of the processes  $a + A \rightarrow l + Y$ ,  $l + Y \rightarrow l + Y'$  ( $Y, Y'$  are unstable particles) can be constructed from the complete experiment. The part of the reaction matrix corresponding to the elastic scattering  $a + A$  and the reaction  $a + A \rightarrow l + Y \rightarrow l + 2 + 3$  near the production threshold of  $Y$  can be constructed without performing three-particle scattering experiments. Orig. art. has: 19 formulas.

[Based on author's Eng. Abst.] [JPRS: 40,393]

Card 1/1

0932 1341

ABRAMOVA, Zh.I., kand. med. nauk; GADASKINA, I.D., prof.; GOLUBEV, A.A., kand. med. nauk; DANISHEVSKIY, S.L., prof.; ZIL'BER, Yu.D., kand. med. nauk; LAZAREV, L.N., kand. khim. nauk; LEVINA, E.N., doktor med. nauk; LOYT, A.O.; LYUBLINA, Ye.I., doktor biol. nauk; LYKHINA, Ye.T., kand. biol. nauk; MINKINA, N.A., kand. med. nauk; RUSIN, V.Ya., kand. med. nauk; SALYAMON, L.S., kand. med. nauk; SPERANSKIY, S.V., TRAKHTENBERG, I.M., dots.; FILOV, V.A., kand. biol. nauk; TSIRK, K.G., kand. med. nauk; CHEKUNOVA, M.P., kand. med. nauk; GRIVA, Z.I., red.; LAZAREV, N.V., zasl.deyat.nauki, prof., red.; LEVIN, S.S., tekhn. red.; BASINA, M.Z., tekhn. red.

[Toxic industrial substances; handbook for chemists, engineers and physicians] Vrednye veshchestva v promyshlennosti; spravochnik dlia khimikov, inzhenerov i vrachei. Izd.4., perer.i dop. Leningrad, Goskhimizdat. Pt.2.[Inorganic and metallo-organic compounds] Neorganicheskie i elementorganicheskie soedineniia. 1963. 619 p. (MIRA 17:2)

VDOVENKO, V.M.; LAZAREV, L.M.; KHVOROSTIN, Ya.S.

Mechanism of zirconium extraction by amines from nitrate-oxalate solutions. Radiokhimiya 1 no.4:408-413 '59. (MIRA 13:1)  
(Zirconium) (Amines)

LAZAREV, L. N.

AUTHORS: Vdovenko, V. M., Lazarev, L. N. 75-1-28/43

TITLE: The Extraction of Uranium as Anilin-Uranyl-Triacetate (Ekstragirovaniya urana v vide anilinuranyltriatsatata).

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 1, pp. 155-159 (USSR).

ABSTRACT: After a brief survey of the methods of extraction of uranium, where-  
by especially amines are effective for uranyl-nitrate (references 1  
to 3), the authors presume that not only compounds  $RNH [UO_2(NO_3)_3]$   
are capable of being extracted, but also analogous compounds in  
which the place of the nitrate-ions is occupied by any other anions.  
In this case the hexavalent uranium can be extracted by means of  
amines from solutions in which it forms anion-complexes. This assump-  
tion was examined by the authors with acetate-solutions in which, as  
is known, the complex  $[UO_2(CH_3COO)_3]^-$  is formed (reference 4). Aniline  
was used both as complex-forming amine and simultaneously as organic  
solvent. The kind of dependence of the percentage of extraction of  
uranium on the relation  $(CH_3COOH)/(UO_2^{2+})$  in the initial solution

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The Extraction of Uranium as Anilin-Uranyl-Triacetate.

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(figure 1) leads to the assumption that uranium is extracted as any type of acetate-compound. Various further facts indicate this, a. o. the spectroscopic difference of various concentrations of acetic acid (figure 2). The knowledge on the extraction of uranium with aniline furnishes no specific data on the form of the extracted compounds. The application of the method of continuous modifications (nepreryvnyye izmeneniya) show that a compound is formed in the aqueous solution in which 1 mol aniline corresponds to 1 mol uranium. The modifications of the spectra of aqueous solutions were investigated with a constant concentration of uranium (0,03 mol) - when various quantities of aniline were dissolved therein (figure 1) - for the purpose of determination of the composition of this complex compound. After various computations the authors found the formula  $C_6H_5NH_3(UO_2(CH_3COO)_3)$ . The data on the formation of aniline-uranyl-triacetate were confirmed in a preparatory way. The average results of analysis which agree satisfactorily with those for the aforesaid compound are given in table 2. The concerned compound is soluble both in aniline, as well as in several organic solvents (alcohols, ketones). It is insoluble in ether, chlorinated hydrocarbons and benzene. The solubility of aniline and the similarity of the spectrum of the aqueous solution (figure 2, IV) with that of the uranium extracted

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The Extraction of Uranium as Anilin-Uranyl-Triacetate.

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with aniline (figure 2, III) show that due to the formation of this compound, uranyl acetate in particular passes over into the organic phase during the extraction.

There are 4 figures, 2 tables, and 4 references, 1 of which is Slavic.

SUBMITTED: June 18, 1957.

AVAILABLE: Library of Congress.

Card 3/3



VDOVENKO, V.M.; LAZAREV, L.N.; KHVOROSTIN, Ya.S.

Method of removing Nb<sup>95</sup> from the radioactive indicator, Zr<sup>95</sup>.  
Radiokhimiya 1 no.3:364 '59. (MIRA 12:10)  
(Zirconium--Isotopes) (Niobium--Isotopes)

SOV/63-4-2-14/39

5(0)

AUTHORS: Vdovenko, V.M., Corresponding Member of the AS USSR, Lazarev, L.N.

TITLE: The Extraction Method of Element Separation in Analytic Chemistry

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 2, pp 230-234 (USSR)

ABSTRACT: Extraction permits the separation of any element from mixtures. The extracted elements are soluble in organic reagents, like copperon [Ref 8, 9], 8-oxyquinoline [Ref 12-13], etc, but not in water. The salts of complex cations with organic additions can be extracted as well as inorganic cations in the form of salts of organic acids with a large hydrocarbon part in the molecule. A special group are acidocomplex compounds which are soluble in organic media. The high selectivity of the extraction method is based on a proper acidity of the aqueous solution. Acidocomplex compounds need a high concentration of acid. The acid employed is also very important. Ga is well extracted from HCl, but not from HI; In is well extracted from HI, but not from HCl. Coextraction is the extraction of more than one element by a single process. This is a drawback in many cases, e.g. in the extraction of uranium in the form of a trinitrate complex.

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SOV/63-4-2-14/33

The Extraction Method of Element Separation in Analytic Chemistry

Coextraction may be used, however, for extracting small quantities which would not be extracted without the presence of another element, e.g. the extraction of ruthenium in the presence of copper by a mixture of benzene and butyric acid [Ref 30]. Metals are extracted by means of alkylamines, e.g. niobium and tantalum by methyldioctylamines [Ref 34]. Uranium is separated from thorium, rare earths, etc, by extraction from sulfuric acid solution using organic solutions of tertiary amines as extraction agents [Ref 36]. Separation of thorium, uranium and transuranium elements is obtained by extraction from nitric acid solutions with tributylphosphate [Ref 38]. The oxides of trialkylphosphines have the best extraction properties among phosphorus-organic compounds [Ref 43, 44]. Alkali metals are extracted by nitromethane, -benzene and diethylether [Ref 45]. Many colored compounds may be concentrated by extraction, e.g. iron by rhodanide [Ref 47]. Radiometric titration, i.e. the use of labeled atoms, is also possible

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The Extraction Method of Element Separation in Analytic Chemistry

with the help of extraction [Ref 50]. Sendel, Babko and Pilipenko investigated extraction in photometry [Ref 11, 57]. There are 4 graphs, 1 table and 57 references, 27 of which are Soviet, 23 English, 5 German, 1 American and 1 Swedish.

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L 55078-65 EWT(m)/EPF(c)/EPR/EWP(f)/T/EWP(t)/EWP(b) Pc-l/Pr-l/Ps-l IJP(c)

JD/EM

ACCESSION NR: AF5018001

UR/0186/64/006/006/0724/0732

AUTHOR: Vdovenko, V. M.; Lazarev, L. N.; Khvorostin, Ya. S.

31  
B

TITLE: Investigation of nitrosoruthenium complexes in solutions

SOURCE: Radiokhimiya, v. 6, no. 6, 1964, 724-732

TOPIC TAGS: ruthenium, nitrate, ruthenium compound, solution property

Abstract: A spectrophotometric method was used to investigate nitros-nitrates of ruthenium, and to study the processes of replacement of coordinated nitrate ions by other ligands. The absorption spectra of ruthenium nitrosnitrates and their distribution between aqueous and organic solvents were studied, utilizing the absorption maximum in nitric acid solutions of nitrosoruthenium at 450 millimicrons. The extraction of ruthenium by solutions of alkyl ammonium nitrates is due to the presence of the so-called RuD form in the aqueous phase. In the organic phase, ruthenium exists in the form of the pentanitrato complex of nitrosoruthenium. It was shown that chromatographic separation of nitrosoruthenium complexes on paper can be widely used as a method of checking on the chemical state of ruthenium in solutions, using methyl isopropyl ketone as the organic solvent. In nitric

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ACCESSION NR: AP5018001

acid solutions, ruthenium nitrosulfates react with thiourea, sulfate and chloride ions. Fluoride compounds are not formed by nitrosoruthenium under these conditions. The reaction of the nitrosulfates with  $Cl^-$  leads to the formation of a number of nitrate-chloride complexes of nitrosoruthenium. Data were obtained on the compositions of some of these compounds and on their stability. Orig. art. has 6 formulas, 6 graphs, and 5 tables.

ASSOCIATION: none

SUBMITTED: 20Nov65

ENCL: 00

SUB CODE: IC, GC

NO REF SOV: 004

OTHER: 007

JPES

Card 2/2

VDOVENKO, V.M.; LAZAREV, L.N.; SHIRVINSKIY, Ye.V.

Study of thermodynamic characteristics of the system HF - HNO<sub>3</sub> - H<sub>2</sub>O.  
Part 1: Measurement of vapor pressure of components of systems  
HF - H<sub>2</sub>O and HF - HNO<sub>3</sub> - H<sub>2</sub>O. Radiokhimiya 7 no.1:46-48 '65.  
(MIRA 18:6)

VEDENEV, V.M.; LAMBEV, I.H.; SIBIRSKAYA, Ye.V.; GURKIN, Ye.V.

Thermodynamic characteristics of the system HF - HNO<sub>3</sub> - H<sub>2</sub>O.  
Part 2: Calculation of activity of components in the system  
HF - HNO<sub>3</sub> - H<sub>2</sub>O. Radiokhimiya 7 no.2:151-159 1965.

(MIRA 12:11)



VDOVENKO, V.M.; LAZAREV, L.N.; KHVOROSTIN, Ya.S.

Solutions of Ru(IV) in perchloric and sulfuric acids. Radiokhimiya 7 no.2:232-240 '65.  
(MIRA 18:6)

LAZAREV, L.T.

ACHERKAN, N.S., doktor tekhnicheskikh nauk, professor, glavnyy redaktor;  
ANTSIFYEROV, M.S., kandidat fiziko-matematicheskikh nauk; ASTAKHOV, K.V.,  
professor; YUKALOVICH, M.P., professor, doktor tekhnicheskikh nauk;  
KORNLIN, A.I., kandidat tekhnicheskikh nauk; KRIPETS, E.S., inzhener;  
LAZAREV, L.P., kandidat tekhnicheskikh nauk; MAZYRIN, I.V., inzhener;  
MATYUKHIN, V.M., kandidat tekhnicheskikh nauk; NIKITIN, N.N., kandidat  
fiziko-matematicheskikh nauk; PANICHKIN, I.A., kandidat tekhnicheskikh  
nauk; PETUKHOV, B.S., kandidat tekhnicheskikh nauk; PODVIDZ, I.G.,  
kandidat tekhnicheskikh nauk; SIMONOV, A.F., inzhener; SMIRYAGIN, A.P.,  
kandidat tekhnicheskikh nauk; FAYNZIL'BER, E.M., professor, doktor  
tekhnicheskikh nauk; KHALIZEV, G.P., kandidat tekhnicheskikh nauk;  
YAN'SHIN, B.I., kandidat tekhnicheskikh nauk; MARKUS, M.Yo., inzhener,  
redaktor; KARGANOV, V.G., redaktor graficheskikh materialov, inzhener;  
SOKOLOVA, T.F., tekhnicheskij redaktor.

[A machinebuilder's manual in six volumes] Spravochnik mashinostroitelia  
v shesti tomakh. Izd. 2-e, ispr. i dop. Moskva, Gos. nauchno-tekhn.  
izd-vo mashinostroit. lit-ry, Vol. 2. 1954. 559 p. (MIRA 8:1)  
(Machinery—Construction) (Mechanical engineering)

LAZAREV, L. P.

124-1957-1-36

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 5 (USSR)

AUTHOR: Lazarev, L. P.

TITLE: Determination of the Basic Parameters of the Motion of a Fighter During an Attack on a Straight-flying Target (Raschet osnovnykh parametrov dvizheniya istrebitelya, atakuyushchego pryamolineynno letyashchuyu tsel')

PERIODICAL: Sb. statey Mosk. vyssh. tekhn. uch-shcha, 1955, Vol 57, pp 41-98

ABSTRACT: Supplementing the usual assumptions, the Author assumes a constant projectile velocity and derives approximate analytical expressions for the relative-motion parameters of the target in terms of elementary time functions. The method of the solution is based upon the expression of the integrand functions by means of power series, with retention of their two first members. No proof of the correctness of the process is given. Evaluation of the results obtained is made by numerical comparison thereof with known solutions.

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1. Airplanes--Flight paths--Mathematical analysis A. I. Zenkin

LAZAREV, L. P.

7(6); 24(4)

P. 2

PHASE I BOOK EXPLOITATION

SOV/3483

Moscow. Vyssheye tekhnicheskoye uchilishche

Opticheskoye priborostroyeniye; sbornik statey (Optical-Instrument Building; Collection of Articles) Moscow, Oborongiz, 1959. 150 p. (Series: Its [Trudy] 73) Errata slip inserted. 3,150 copies printed.

Eds. (Title page): S. I. Freiberg, Honored Worker in Science and Technology, Professor (Deceased) and L. P. Lazarev, Doctor of Technical Sciences, Professor; Ed. (Inside book): V. M. Tokar', Engineer; Ed. of Publishing House: A. G. Kuznetsova; Tech. Ed.: N. A. Pukhlikova; Managing Ed.: A. S. Zaymovskaya, Engineer.

**PURPOSE:** This collection of articles is intended for scientists and engineers at instrument-making plants and institutes. It will also be of interest to students and teachers concerned with optical instruments.

**COVERAGE:** This collection of articles on problems in optical instrumentation was compiled by members of the MVTU imeni N. E. Baumana (Moscow Higher Technical School imeni N. E. Bauman). Individual articles discuss problems of designing, analysis and manufacture of optical instruments. Sighting devices

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## Optical-Instrument Building (Cont.)

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in military aircraft are also treated. Research conducted in the school in 1955-1957 is outlined, and theoretical and experimental premises stated. References accompany individual articles.

## TABLE OF CONTENTS:

- Lazarev, L. P. [Professor, Doctor of Technical Sciences]. Calculation and Theoretical Analysis of the Generation of Lead Angle in Gyroscopic Optical Gun Sights 9  
A method is presented to calculate the lead angle in the gun sight for a conventional fighter aircraft. The author gives recommendations on optimum parameters for the gun sight to be analyzed further by design bureaus. There are 19 diagrams, 1 table, and 3 Soviet references.
- Sembratov, M. N. [Docent, Candidate of Technical Sciences]. Glass Grinding and the Operating Regimes of a Precision Grinder 37  
Calculation of grinding speed and efficiency with respect to precision is presented. The results of experimental regimes and methods of glass working are given. Forces in grinding and polishing are analyzed. There are 6 diagrams and 4 Soviet references.

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Optical-Instrument Building (Cont.)

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Derevenko, N. K. [Docent, Candidate of Technical Sciences]. Characteristic Coefficients of Optical Systems 50

A theory of characteristic (typical) coefficients of centered optical systems is presented and methods of calculating such systems are given.

Functions of 4 typical coefficients are determined mathematically.

A method to correct aberrations in optical systems is analyzed.

There are 5 diagrams and 9 references, of which 6 are English and 3 Soviet.

Dikarev, V. N. [Candidate of Technical Sciences]. Determination of the "Multiple Factor" of the Lateral Sighting Mechanism in Bomb Sights 67

Methods of calculating and analyzing the lateral-sighting mechanism is presented. The method is based on the determination of the sighting angle. There are 8 diagrams.

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K-7

Optical-Instrument Building (Cont.)

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Kulagin, S. V. [Candidate of Technical Sciences]. Application of the Method of Optical Compensation of Image Shift in High-Speed Cameras 117  
The article analyzes the problem of compensation and means of compensation (lenses, mirrors, etc.) for the shift of image. Optimum parameters for compensators are suggested. There are 4 diagrams.

Lebedev, Ye. N. [Engineer]. Calculation of Parameters of the Relative Motion of an Air Target With Respect to the Angle of Attack of a Fighter 125  
The article presents the theory of the relative motion of an air target. There are 10 figures, 3 tables, and 6 references, of which 4 are Soviet and 2 English.

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Card 5/5

ANTSYFEROV, M.S., kand.fiz.-mat.nauk; VUKALOVICH, M.P., prof., doktor  
 tekhn.nauk, laureat Leninskoy premii; KRIPETS, B.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;  
 FAYNZIL'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)



LAZAREV, L.F., doktor tekhn.nauk, prof., red.; ZOLOTOV, P.F., inzh.red.;  
VINOGRADSKAYA, S.I., izdat.red.; ORESHKINA, V.I., tekhn.red.

[Manufacture of optical instruments; collected articles] Optiches-  
skoe priborostroenie; sbornik statei. Moskva, Gos.nauchno-tekhn.  
izd-vo Oborongiz, 1961. 125 p. (Moscow. Moskovskoe vysshee tekhn-  
icheskoe uchilishche. Trudy, no.103). (MIRA 14:12)  
(Optical instruments)

LAZAREV, L. P.

"Latest achievements in science and engineering as the basis for the contemporary system of training scientific and engineering cadres"

report to be submitted for the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas - Geneva, Switzerland, 4-20 Feb 63.

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24,3300 (1051, 1057)

31652  
S/549/61/000/103/001/005  
D033/D112

AUTHOR: Lazarev, L.P., Doctor of Technical Sciences, Professor

TITLE: Present state and prospective development of optical devices  
simulating the movement of fast moving objects

SOURCE: Moscow. Vysshoye tekhnicheskoye uchilishche, [Trudy] no. 103,  
1961. Opticheskoye priborostroyeniye, 5-16.

TEXT: The author describes two optical methods of simulating the movements of fast-moving objects in aircraft simulators, developed at the Department of Optical Instruments at the MVTU im. Bauman, where research into the problem of simulating fast-moving objects has been carried out for the last decade. Results of this research are contained in the present article and in the articles of Ye.N. Lebedev, I.I. Pakhomov and V.A. Perov. The first method is based on two principles: (a) simulation of the linear movement of a spatial fast-moving target along the sighting line by means of a zoom collimator around whose focus the spatial model of the aircraft revolves in space; (b) simulation of the relative angular movements of the target by turning the

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D033/D112

Present state and prospective ...

reflector of an optical target-sighting device in all three dimensions. Use of this method in an optical collimation sighting system, widely used in aircraft firing sights, is described (Fig.1). Although this method is universal and can be used in all cases when it is desired to reproduce the movement of any spatial object along a spatial curve in a relative coordinate system, the target remains immobile in absolute angular coordinates. It is therefore suitable only for test benches and special-purpose trainers, not for universal trainers where it is necessary to simulate the movement of objects beyond the field of vision of the aiming sight. A test unit for dynamic research was constructed on the basis of this method. After further research, the Department developed a second method, for both special-purpose and universal trainers, in which the range is simulated by an optical system in which both the objective and the object plane are moved by means of potentiometric servosystems. The objective has fixed components, as in existing Soviet optical systems with movable components aberration occurs when the components are moved, and magnifications of only 4-5 x are possible. The optical system devised at the MVTU has a magnification of 10 x and a total maximum length of 290 mm, and uses a serial objective. Operation of the

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Present state and prospective ...

servodrive is based on the functions (Fig.4):

$$\text{(nonlinear)} \quad S_1'(t) = f' \cdot \left[ 1 - \frac{k}{U(t)} \right]; \quad (1)$$

$$\text{(linear)} \quad S_1(t) = f' \cdot \left[ \frac{U(t)}{k} - 1 \right]; \quad (2)$$

$$\text{(nonlinear)} \quad S_m(t) = -f \frac{[U(t) - k]^2}{k \cdot U(t)}; \quad (3)$$

where  $f'$  is the focal length of the objective,  $S_1'$  is the distance from the objective to the image,  $S_1$  is the distance from the model to the objective,  $S_m$  is the distance from the model to the image,  $k$  is a constant coefficient and  $U(t)$  is the change in the voltage in time. Plotting of the function  $S_1'(t)$  is done by a nonlinear potentiometer. Plotting movements of the model by a nonlinear potentiometer in an absolute coordinate system in the form  $S_m(t)$  would have caused considerable design difficulties, as the latter function is ambiguous on the working section upon variation of the magnification above 5-6 x. The movements of the model were therefore plotted in a

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Present state and prospective ...

relative coordinate system connected with the objective in the form of the linear function  $S_1(t)$  using formula (2) with the aid of a linear potentiometer and a differential which adds the algebraic values  $S_1'(t)$  and  $S_1(t)$ . When installing the system in the cockpit of a fighter-trainer, the swivel reflector should be mounted higher than the cabin above the pilot's eye-level, a corrector being used to compensate for distortions and blurring of the projected image. The MVTU built such a corrector. The testing of a prototype projector with the above-mentioned range-simulating system constructed in the MVTU in 1958 proved the correctness of the above calculations. The total root-mean-square deviation in range for the entire screen area was about 3%. The experimental model of a "Lupa"-type optical simulator developed and constructed by the Department of Optical Instruments at the MVTU in Bauman [Abstracter's note: presumably incorporating the optical system described] was the first instrument produced in the USSR for simulating the visible movement of a spatial object within the entire hemisphere, observed by the operator and within wide variations of simulated range. The principle of optical simulation devised at the MVTU is being used for simulators in industry and can be used in observation instruments and sights, especially in automatic laying systems. The author also states that it would be possible

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to create a combined optical-television-projection system with still greater magnification by the use of optical and magnetic lenses with variable focal lengths; however, such a system would be costly, complicated to operate and slightly less reliable. The article also contains a brief critique of the East German STL-2 trainer. There are 5 figures, 2 tables and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The two English-language references are: G.B. Ringham and A.E. Quiler, The Journal of the Aeronautical Society, 1954, No 518, p. 153-172; A. Forman, Tele-Tech. and Electronic Industries, 1955, May, p. 68-70.

Card 5/7

MUKHLENOV, I.P.; ROZOVA, T.N.; LAZAREV, L.S.

Removing dust from gases in froth-type gas washers. Trudy LTI  
no. 54:94-102 '59. (MIRA 13:8  
(Gases--Cleaning) (Dust collectors) (Metallurgy)



L 22254-66 EWT(1)/EWT(m)/EWP(t) IJP(c) GG/JD

ACC NR: AP6010974

SOURCE CODE: UR/0056/66/050/003/0546/0550

AUTHOR: Lazarev, B. G.; Lazareva, L. S.; Makarov, V. M.; Tereshina, N. S. 59

ORG: Physicotechnical Institute, Academy of Sciences, Ukrainian SSR (Fiziko-tehnicheskii institut Akademii nauk Ukrainy SSR) 8

TITLE: Effect of impurities on the variation of the superconducting transition temperature of thallium with pressure 2/

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 3, 1966, 546-550

TOPIC TAGS: superconductivity, superconductor, critical temperature, transition temperature, thallium, indium, *temperature dependence*

ABSTRACT: The effect of indium impurities on the dependence of the superconducting transition temperature ( $T_k(p)$ ) of thallium on pressure was investigated. It was found that the effect of indium (which has the same valency as thallium) on the  $T_k(p)$  dependence of thallium is similar to that of antimony and bismuth (the valence of which is greater than that of thallium). For thallium alloys containing 3.57 and 7.15 at.% of indium, the dependence  $T_k(p)$  is linear, the values of  $dT_k/dp$  being  $1.2 \cdot 10^{-5}$  and  $1.6 \cdot 10^{-5}$  deg/atm, respectively. These values are close to that for pure thallium ( $dT_k/dp = 1.4 \cdot 10^{-5}$ ) at pressures from 20,000 to 28,000 atm. The

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experimental data obtained confirm earlier predictions on the sensitivity of the electron spectrum of thallium to impurities and pressure.

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E191/E535

16.7120

AUTHORS: Gubarev, A.V., Filippov, G.A., Lazarev, L.Ya. and Pand'ya, A.D.

TITLE: A method of design and the results of investigations of a bladeless guiding assembly for radial-axial turbines

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, no.2, 1962, 113-123

TEXT: A simplified analysis of the flow rests on the assumptions of an ideal gas, a uniform distribution of the flow parameters in the outlet section of the volute, and the flow parameters at the outlet section of the entry socket being constant in each cross-section of the volute. Analysis of the continuity equation shows the ratio of the inlet and outlet velocities in the volute to be the main parameter which determines the volute geometry. This ratio (the "acceleration factor") also determines whether a bladeless assembly is advisable and when it drops below 0.5, a bladed one is preferable. As the acceleration factor increases, the radius of the volute decreases. Various relations

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A method of design and the results ... S/147/62/000/002/014/020  
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are derived and illustrated in graphs between the volute dimensions and the acceleration factor. The model of a bladeless stator for a rotor diameter of 130 mm, a rotor width of 12 mm and a flow angle of 12° at the rotor entry was tested in the laboratory. Energy losses in 16 cross-sections around the periphery were measured together with the flow angles and static pressures. The static pressures were also measured in the entry socket and along the mean volute line. Conclusions: the design procedure put forward permits the determination of the volute geometry and the behaviour of the volute flow under non-design conditions. The flow exit angle from the bladeless assembly depends on the flow velocity even at sub-critical heat transfer conditions. The efficiencies of bladeless and bladed assemblies (with well developed entry sockets) are equal. The volute must be accurately machined to avoid distortion of the velocity field at the turbine inlet. The limits of application of the bladeless stator have not yet been fully explored. There are 9 figures.

ASSOCIATION: Moskovskiy energeticheskiy institut, Kafedra  
parovykh i gazovykh turbin (Moscow Power Engineering  
Card 2/2 Institute, Department of Steam and Gas Turbines)  
SUBMITTED: November 17, 1961