S/081/60/000/012(I)/001/002
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 12 (I), p. 86,
46084

AUTHORS: Tverdovskiy, I.P., Vert, Zh.L., Karpova, R.A., Mosevich, I.A.

TITLE: On the Solubility of Hydrogen in Alloys of Palladium With Silver, Copper and Gold

PERIODICAL: Sb. tr. Gos. in-ta prikl. khimii, 1959, No. 42, pp. 182-198

TEXT: The author puts forward a scheme of distribution of electrons and "vacancies" in 4d- and 5s- bands in the Pd - Ag system and in 4d- and s- bands in the Pd-Cu system. Using simulation notions and assuming a limited number of vacancies for hydrogen dissolution in the Pd - Ag, Pd - Cu and Pd - Au systems, isothermal equations of hydrogen dissolution in the alloys are obtained. They serve to determine the magnitude of the chemical potential of hydrogen dissolved $\Delta \mu_H$, and the coefficient α, characterizing the deviation from the ideal state in the Langmuir equation. An equation is obtained for calculating

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S/081/60/000/012(I)/001/002
A006/A001

On the Solubility of Hydrogen in Alloys of Palladium With Silver, Copper and Gold

the differential heat of hydrogen dissolution Q (⊖) and its applicability is demonstrated.

Authors' resume

Translator's note: This is the full translation of the original Russian abstract.

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5(4)

SOV/20-127-4-30/60

AUTHORS: Tverdovskiy, I. P., Vert, Zh.L., Kondrashev, Yu. D.

TITLE: Determination of the Dimensions of an Elementary Cell of Cathode-polarized Dispersion Alloys Pd-Au and Pd-Cu

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 835-837 (USSR)

ABSTRACT: In the present paper, the lattice parameters of an electrode were determined during its polarization. These investigations permit checking of some assumptions concerning the dependence of the overvoltage of the hydrogen deposition on the interatomic distances in the alloys. Investigations were carried out by means of the binary dispersed alloys mentioned in the title. These alloys dissolve hydrogen in a sufficiently wide composition interval. The dissolved hydrogen was eliminated by anodic polarization of the alloy until the deposition of the first hydrogen bubbles. For the recordings, a special Plexiglas cell was used (Fig 1). The recording was made by means of a URS-50-I diffractometer. The lattice periods could be determined up to an accuracy of $\pm$ 0.001 kX. The experiments were made in 1N H_2SO_4-solution at room temperature. The data obtained for the

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lattice periods is compiled in table 1. The values obtained showed an error of only $\sim \pm 0.001$ kX. The values for the electrolytically deposited alloy could not be obtained with the same accuracy. The lattice periods for the alloys after polarization are shown by figure 2 for the various systems with different Au- and Cu-content, and also in the process of hydrogen deposition. There was good agreement with the results obtained by Kuznetsov (Ref 10). The strongest enlargement of the parameters of the elementary cell resulted in pure palladium. By the introduction of gold or Cu it decreases, and disappears completely at a content of 65% Au or 50% Cu, respectively. At a low palladium content, the solubility of hydrogen in the alloy also decreases down to zero. A change in the current intensity during the experiments had nearly no effect on the lattice parameters. There are 3 figures, 1 table, and 15 references, 7 of which are Soviet.

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii
(State Institute of Applied Chemistry)

PRESENTED: April 13, 1959, by A. N. Frumkin, Academician

SUBMITTED: April 13, 1959

VERT, Zh.L.; KAMENTSEV, M.V. [deceased]

Reduction of TiO_2 by carbon in binary mixtures with Fe, Al_2O_3, SiO_2, CaO and Si. Zhur.neorg.khim. 4 no.1:17-22 Ja '59.
(MIRA 12:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya.
(Titanium oxides) (Reduction, Chemical) (Carbon)

5(2) SOV/78-4-1-4/48

AUTHORS: Vert, Zh. L., Kamentsev, M. V. (Deceased)

TITLE: The Reduction of TiO_2 With Carbon From the Binary Mixtures With Fe, Al_2O_3, SiO_2, CaO, and Si (Vosstanovleniye TiO_2 uglerodom iz dvoynykh smesey s Fe, Al_2O_3, SiO_2, CaO i Si)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 17-22 (USSR)

ABSTRACT: The reduction process of titanium dioxide with carbon was carried out with a mixture of TiO_2 and petroleum coke. Iron, argillaceous earth, quartzsand cleaned with acid, calcium oxide and metallic silicon were used as additions. The tests were conducted in a closed graphite crucible in a tamman furnace in a CO atmosphere within the temperature range from 1250 to 1800°. For temperatures of 800-1250° a tube furnace with silite bars was used. The reduction products in the system TiO_2-C, TiO_2-Fe-C and TiO_2-Al_2O_3-C investigated were tested by X-ray analysis. The X-ray analysis was carried out by V. I. Kudryavtsev and M. I. Sokhor. The reduction of titanium dioxide with carbon

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The Reduction of TiO_2 With Carbon From the Binary Mixtures With Fe, Al_2O_3, SiO_2, CaO, and Si

at normal pressure starts at 900° and ends at 1300°C. On increasing temperature up to 1800° the reduction product contains titanium carbide. The TiC content rises up to 60% in the solid phase. The reduction process is not influenced by an increase of the carbon content in the reduction mixture. The gradual reduction of TiO_2 from the lower titanium oxides to the formation of titanium carbide is confirmed by analyses of the X-ray structure. The influence of various additions upon the reduction processes of titanium dioxide with carbon was investigated and it was found that iron influences the reduction process positively. Within the temperature range 1600-1800° titanium dioxide is transformed into titanium carbide. The specific effect of iron during the reduction process of titanium is explained by the fact that iron can separate carbide. Aluminum oxide improves the reduction process of titanium dioxide. Calcium oxide, silicon dioxide and metallic silicon do not influence the reduction process of TiC_2 with carbon. There are 6 figures, 2 tables, and 12 references, 9 of which are Soviet.

SOV/78-4-1-4/48

The Reduction of TiO_2 With Carbon From the Binary Mixtures With Fe, Al_2C_3, SiO_2, CaO, and Si

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya (All-Union Scientific Research Institute of Abrasives and Grinding)

SUBMITTED: May 15, 1957

Card 3/3

VERT, Zh.L.; KAMENTSEV, M.V. [deceased]

Interaction between FeS and TiO_2 in the presence of carbon. Part 5. Zhur. neorg. khim. 3 no.5:1200-1204 My '58. (MIRA 11:6)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut abrozivov i shlifovaniya.

(Iron sulfide) (Titanium oxides)

VERT, Zh. L.

AUTHORS: Vert, Zh. L., Kamentsev, M. V. (Deceased) 78-3-5-24/39

TITLE: V. The Interaction Between FeS and TiO_2 in the Presence of Carbon (V. Vzaimodeystviye FeS s TiO_2 v prisutstvii ugleroda)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol 3, Nr 5. pp 1200-1204 (USSR)

ABSTRACT: The interaction between TiO_2, FeS and carbon, as well as the influence on this reaction of other components such as Al_2O_3, SiO_2 and CaO, were investigated in the present report.
Titanium sulfide (in solution in FeS) is formed by interaction between TiO_2 and FeS in the presence of carbon, at a temperature of 1300°C. The formation of titanium sulfide sets in at 1300°C and attains its maximum value at 1600 to 1700°C. The output decreases according to a further rise of temperature. The formation of titanium sulfide as a single phase was not observed. The formation of titanium sulfide increases

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V. The Interaction Between FeS and TiO_2 in the Presence of Carbon 78-3-5-24/39

according to a rise of temperature. In the presence of a surplus of carbon, titanium subsequently binds with carbon by forming carbide. The increase of the FeS-content in the intial mixture favors the formation of titanium sulfide. The surplus of carbon, on the other hand, inhibits the reaction. The process of the formation of titanium sulfide is not inhibited by the addition of Al_2O_3 and a mixture of Al_2O_3 + Fe_2O_3. The formation of titanium sulfide, on the other hand, is reduced by the action of calcium oxide, because the sulfur is bound as CaS. SiO_2 favors the complete linkage of titanium with sulfur.

There are 5 figures, 2 tables and 11 references, 6 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya (All-Union Scientific Research Institute of Abrasives and Grinding)

SUBMITTED: May 15, 1957
AVAILABLE: Library of Congress

Card 2/2

1. Titanium sulfide--Synthesis--Effects of carbon 2. Carbon --Applications 3. Iron sulfide--Chemical reactions 4. Titanium dioxide--Chemical reactions

VERT ZH.L.,

USSR/Inorganic Chemistry. Complex Compounds. C

Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26498.

Author : Vert, Zh.L.; Kamentsev, M.V.
Inst :
Title : Formation of Ferrous Sulfide at Interaction of Pyrite with Pig Iron Shavings.

Orig Pub : Zh. neorgan. khimii, 1956, 1, No. 9, 2171 - 2175.

Abstract : The half of the pyrite sulphur, which easily evaporates at pyrometallurgical processes requiring the introduction of sulfide S, can be utilized if bound in FeS according to the reaction $FeS_2 + Fe = 2FeS$ (1). In order to investigate the conditions of FeS formation, bricks of pyrite concentrate (brand KSF-2) and pig iron shavings were prepared using

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VERT, ZH. L.

20-5-32/48

AUTHORS: Vert, Zh. L., Kamentsev, M. V. (Deceased), Kudryavtsev, V. I., and Sokhor, M. I.

TITLE: Reduction of Al_2O_3 by Carbon (K voprosu o vossta-novlenii Al_2O_3 uglerodom)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 5, pp. 834 - 837 (USSR)

ABSTRACT: It was noticed by the authors that during the reduction of TiO_2 by carbon in presence of Al_2O_3 in a atmosphere of Co at 1650° a loss in substance occurred. Apparently Al_2O_3 entered into the reaction. It is stated that the interaction between Al_2O_3 and C begins under normal pressure at approximatively 2000°. In the vacuum the temperatures amounted to 1560 and 1750°. The pressure of the gases above the reaction mixture reached 1 atmosphere at 1980°, a fact which agrees well with the above mentioned data. The authors investigated the interaction between Al_2O_3 and C between 1500 and 1900°, furthermore the interaction in the mixture Al_2O_3-C-TiC, in order to eliminate the influence of the lower oxides and of the oxycarbide of Ti. The molar relation of the components is given in table 1. The experimental method and the characteristic of the components is given. The experimental results given in figure 1 show

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Reduction of Al_2O_3 by Carbon

that a considerable reduction Al_2O_3 begins above 1600°. Titanium compounds do not influence this process. The loss in aluminum (as gas) and the carbide formation are low, compared to the quantity of the liberated oxygen. Thus the reduction process is described neither by the equation $Al_2O_3 + 3C = 2Al + 3CO$ (2), nor by $2Al_2O_3 + 9C = Al_4O_3 + 6CO$ (3). The comparison between the remaining quantity of the free C, as well as of the quantity of C necessary for the formation of titanium carbide and for the reduction of Al_2O_3, and the chemical properties of the products admit the assumption that during the reaction some lower aluminum oxides are produced in free or bound form. The x-ray analysis showed that beginning with 1650° corundum α-Al_2O_3 partly changes into a new spinel-like compound. With rising temperature increases the spinel content at the cost of the corundum which at 1750° vanishes completely. The new product is macroscopically a white powder with a greyish-bluish tinge. Table 2 gives the computation of the radiogram of this spinel phase. According to structure type and value of the constant lattice the spinel phase reminds to a great extent of the low temperature intermediary aluminum modification γ-Al_2O_3. In reality, however, it is of different structure. For: 1.) Al_2O_3 is here reduced up a lower oxide. 2.) The here described spinel phase

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Reduction of Al_2O_3 by Carbon

consists of corundum, whereas, γ-Al_2O_3 is a transition form from the hydrooxide forms of alumina to corundum. 3.) Clear lines in the spinel radiogram prove a high degree of the crystallization state of the phase in question. It is stable, is neither in water nor in hydrochloric or sulphuric acid decomposed, nor in cold or by long boiling. Above 1750° a second phase is found which quantity increases with the temperature rise. At 1900° black crystals are formed in the inner which are covered by a light grey crust. It consists to 90 % of a hexagonal phase and is very stable, too. It is analogous to the superoxide Al_2O (reference 6). The progressive reduction of the aluminum oxides agrees with the temperature curve of the oxygen leakage. The structure of the above mentioned black crystals is not yet deciphered up to now. There are 1 figure, 2 tabbs, and 6 references, 2 of which are Slavic.

20-5-32/48

Reduction of Al_2O_3 by Carbon

ASSOCIATION: All-Union Scientific Research Institute for Abrasives and Polishing (Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya)

PRESENTED: May 15, 1957, by I. P. Bardin, Academician

SUBMITTED: May 13, 1957

AVAILABLE: Library of Congress

Card 4/4

Vert, Zh. L.

USSR/Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry. Catalysis. B-9

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3836

Author : Vert Zh.L., Kamentsev M.V.
Title : Formation of Sulfides on Interaction of Iron Sulfide with Oxides of Metals. III. Interaction of FeS with CaO

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 3, 489-498

Abstract : A study was made, at 400-1800°, of the interaction of FeS with CaO (pure and with admixtures of Al_2O_3, SiO_2, C and Fe_2O_3), at the initial molar ratio FeS:CaO = 3.2. Reaction between FeS and CaO starts at 400° in the solid phase. Maxima in CaS yield (and corresponding minima of CaO yield) are observed at 550, 715, 900 and 1100°; minima in CaS yield and maxima in CaO -- at 630, 800 (formation of CaO.FeS) and 1005° (formation of $CaO.Fe_2O_3$). In the presence of C in the proportions CaO:FeS:C = 1:3.2:1.2, increase of temperature to 1400° results in

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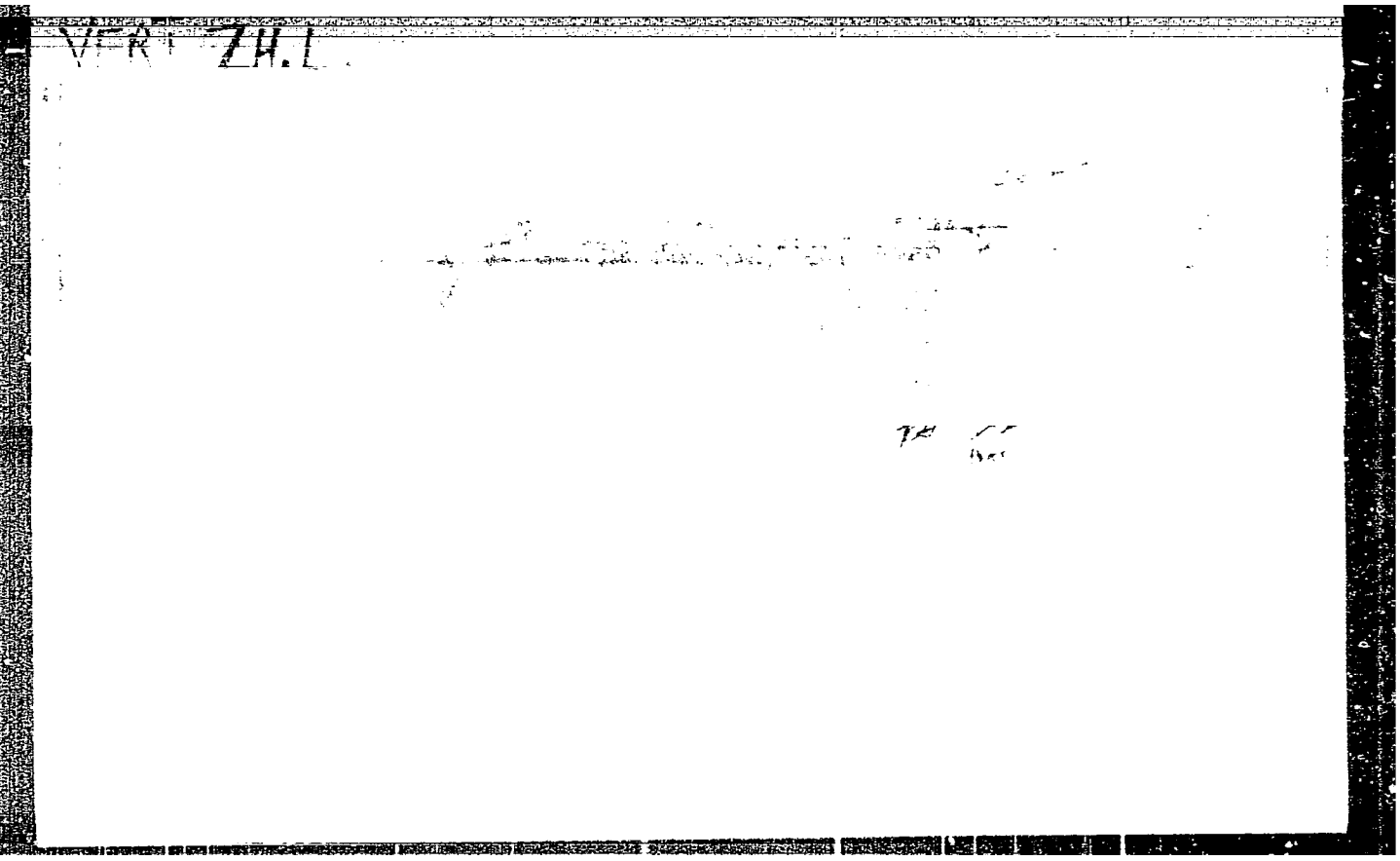

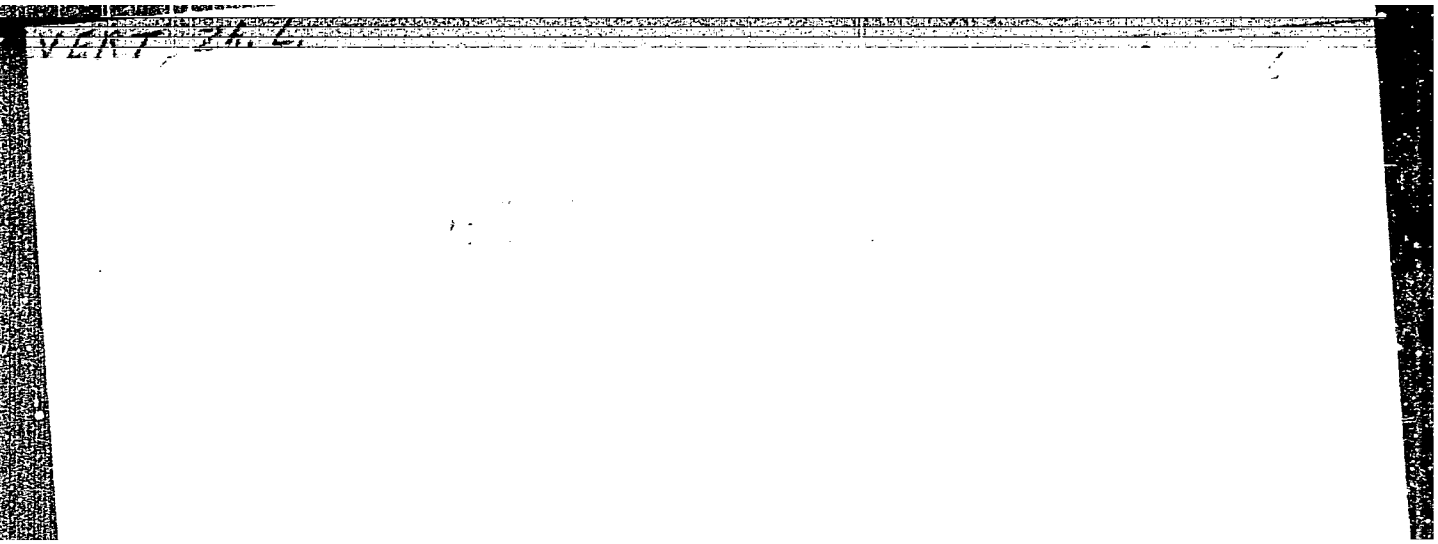

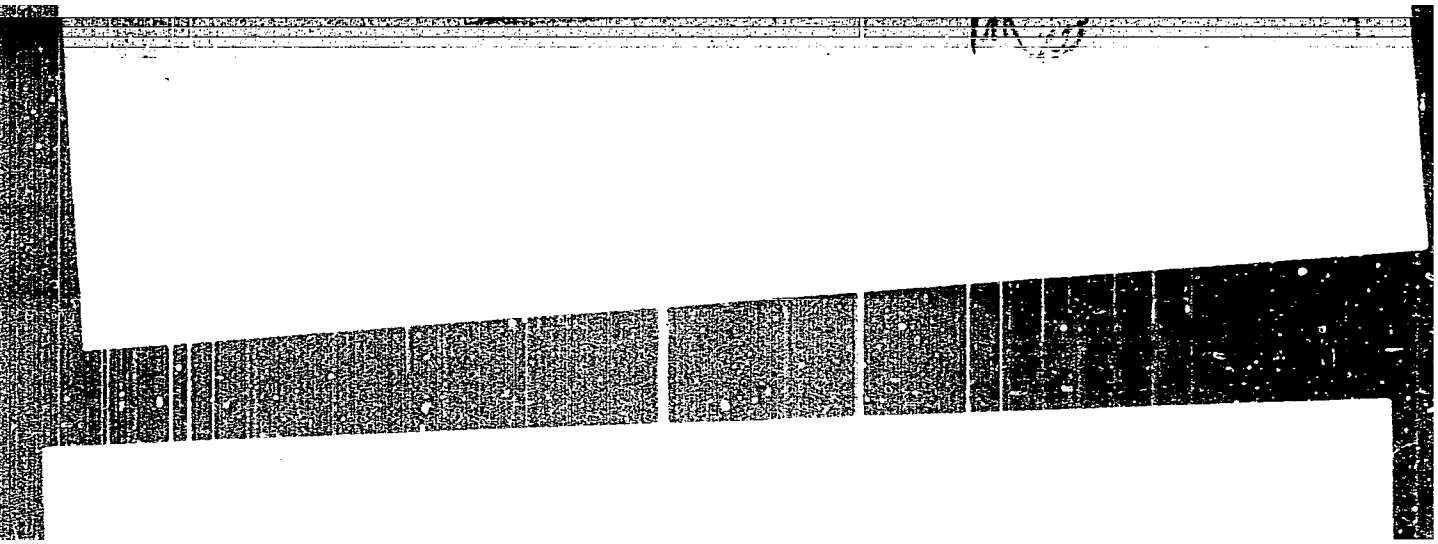

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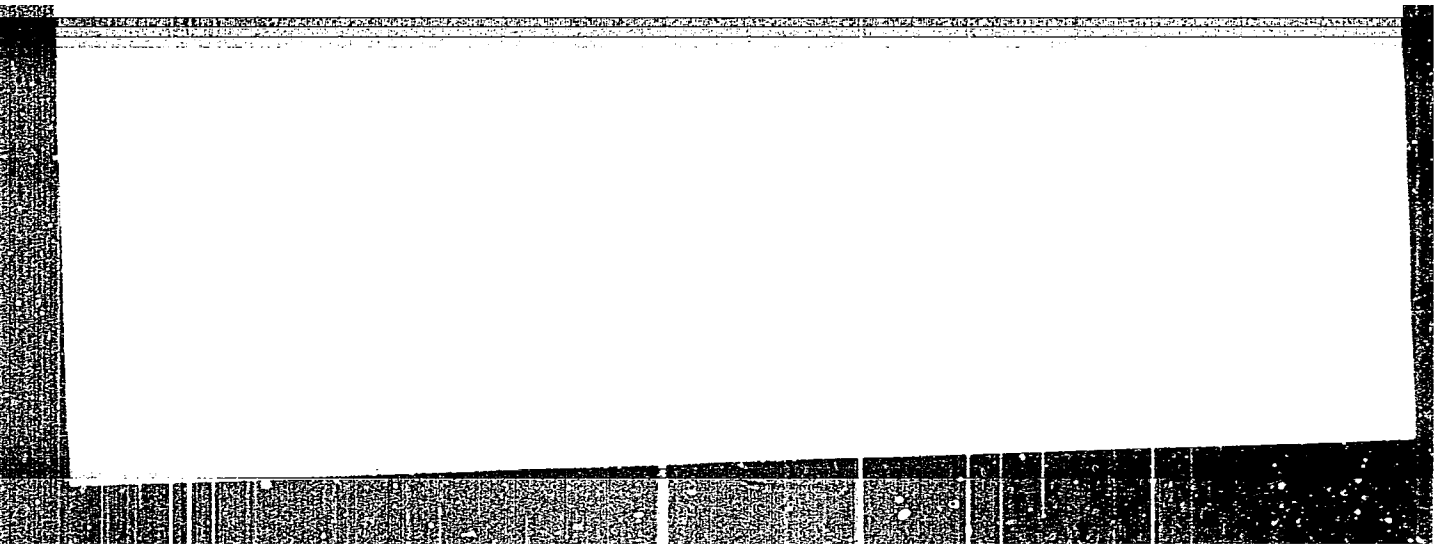

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859520019-1"

MOSEVICH, I.A.; TVERDOVSKIY, I.P.; VERT, Zh.L.

Sorption of hydrogen by disperse palladium-gold alloys. Trudy GIPKH no.42:173-181 '59. (MIRA 13:10)
(Palladium-gold alloys) (Hydrogen)

VERT, Zh.L.

Formation of ferrous sulfide in the reaction of pyrite with iron ships. Zhur.neorg.khim. 1 no.9:2171-2175 S '56. (MIRA 10:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut abrazivov i shlifovaniya, Leningrad.
(Iron sulfides)

VERTAN, Magda, dr.; KOTAY, Eva, dr.; KIFOR, Olga, dr.; SZIGETI, I., dr.

Determination of thrombocyte adhesiveness (with a modified Bobek and Cepelak method). Med. intern. (Bucur) 17 no.6:749-752 Je '65.

1. Lucrare efectuata in Clinica medicala I, Institutul medico-farmaceutical, Tirgu-Mures (director: prof. P. Doczy).

VERTAYMER, N.

USSR/Medicine - Biochemistry

Card 1/1 Pub. 22 - 34/59

Authors : Palladin, A. V., Academician; and Vertaymer, N.

Title : Rejuvenation of albumins in the central nervous system at various functional states

Periodical : Dok. AN SSSR 102/2, 319-321, May 11, 1955

Abstract : The inclusion of methionine amino acid containing the S^{35} radio isotope in albumins was investigated to determine the rejuvenation intensity [illegible] in the central nervous system. The experiments were conducted [illegible] after intravenous injection [illegible] solution. Results are presented on graphs.

Institution : Acad. of Sc., Ukr. SSR, Inst. of Biochemistry

Submitted : March 17, 1955

VERTE, A.I.

N.F. Pogrebov and the study of the hydrogeology of Estonia. Inform.sbor. VSEGEI no.48:71-80 '61. (MIRA 15:7)
(Estonia--Water, Underground)

VERTE, A. I.

23-4-14/18

AUTHORS: Verte, A. I. and Mark, E. Yu., Candidates of Geologico-Mineralogical Sciences

TITLE: On the Stratigraphic Position of the Pyarnu ($D_2a_1^1$) Formation in the Estonian SSR (O stratigraficheskom polozhenii Pyarnuskogo ($D_2a_1^1$) gorizonta v Estonskoy SSR)

PERIODICAL: Izvestiya Akademii Nauk Estonskoy SSR, Seriya Tekhnicheskikh i Fiziko-Matematicheskikh Nauk, 1957, # 4, pp 392-393 (USSR)

ABSTRACT: The stratigraphic position of the Pyarnu formation, which lies in the lower part of the Middle-Devonian system in the Estonian SSR and adjacent regions, is sufficiently well determined by K. Orviku (Ref. 1,2), W. Gross (Ref. 3 to 5), D. V. Obruchev (Ref. 6, 7) and R. F. Gekker (Ref. 8, 9). Nevertheless, in 1953 an article by S. N. Naumova and S. V. Tikhomirov (Ref. 10) was published in which they came to the conclusion that the Pyarnu sandstones were similar to the lower part of the Tartu formation.

The authors of the present article contend this conclusion and show, by the comparison of lithological and paleontological data, the differences between the Tartu and Pyarnu

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sandstones. Therefore, they conclude that there is no basis for re-naming the Pyarnu formation into the Sub-Narva one as proposed by Naumova and Tikhomirov.

The article contains 2 Estonian, 4 German and 8 Russian references.

ASSOCIATION: Academy of Sciences, of the Estonian SSR, Institute of Geology

SUBMITTED: 24 May 1957

AVAILABLE: Library of Congress

Card 2/2

Verte, A. I.

20-5-33/54

AUTHOR: Verte, A. I.,

TITLE: On the Laminarite and Superlaminarite Strata of the Lower Cambrian in the Estonian SSR (O lyaminaritovykh i nadlyaminaritovykh sloyakh nizhnego kembriya v Estonskoy SSR)

PERIODICAL: Doklady Akad. nauk SSSR, 1957, Vol. 115, Nr 5, pp. 971-974,(USSR)

ABSTRACT: The occurence of these strata in the respective area is denied by some geologists. These statements, for the following reasons, do not conform with the actual facts: As early as in 1940, Asatkin drew the conclusion that a suite of Laminaritis loams exist in Estonia, although it is not so widely spread and has not such a fixed position as in the area of Leningrad. According to a verbal report of Oepik, A. they were found in some cross-sections of Cambriun loams in Estonia. They do not occur, however, in the boreholes of Tallin-Paldiski. As early as in 1939, P. Kents stated the occurrence of a layer of violet-red and bluish greenish loam of 1 to 3 m thickness beneath blue loams with Platysolenites antiquissimus, the latter kind occurs also in the aforementioned layer. Its stratigraphical position remained open. Post-war results of borings for water now permitted and already more substantiated the assumption of the occurrence of strata, as mentioned in the title, in Estonia, including Tallin. (see fig.1 and 2 :cross-sections of the Lower Cambrium from Leningrad to the Baltic in Estonia).In this place, the rythmical structure of the lower Cambrian sediments and

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20-5-33/54

On the Laminarite and Superlaminarite Strata of the Lower Cambrian in the Estonian SSR.

the advance of these rythms from the Leningrad area to Estonia becomes apparent. Up to three rythms occur. They begin with coarse-clastic rocks and end with fine clastic rocks at the top. The rythm beginning with A 1 a + A_1 b (basis of the lowest rythm) are fully described. Worm-ducts were found in theloams, sand-stones are paleontolgically barren. The loams concerned, because of the occurrence of algae residues, are known as mentioned in the title. These residues are, according to Asatkin, Sapropel films. The middle rythm ($A_1b_1^1 + A_1b_2^2$) is, in parts, completely lacking. The loams of the upper rythm are known as blue loams in geological publications, whereas the sandstones deposited beneath them are known as superlaminartes. A zone of alternating deposits of loams with sandstones is particularly abundant in Platysolenites antiquissimus. Besides the latter kind, according to A.Oepik, Plaurotomania, Kunda Opik, Hyolites Mickwithi Oepik, Linquella, and others, as well as the aforementioned La.antiquissimus and the Sapropel films still occur. The thickness of both the sand stone and loam layers increases from West to East. The Laminarites and the blue loams differ in the same direction in the Lower Cambrium. The layers concerned begin to assume a wedge-like structure in the North-Western boundary zone of the slope of the Baltic crystalline shield, so that the position of alternating layers of sandstones and loams in the direction of one or

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On the Laminarite and Superlaminarite Strata of the Lower Cambrian in the Estonian SSR.

the other stratigraphical stratum is rendered difficult. Concerning the fluctuation of the number of rythms from 1 to 3, it may be said that both the number and the thickness of individual layers may be explained by the mobility and position of the crystalline fundament during sedimentation in the marine area of the Baltic. These rythms, according to a report by Paasikivi -continue to be observed in a wide area of the Russian plateau. The lower and middle complex belong to the Valdaya plateau, whereas the upper rythm belongs to Sokolov's Baltic complex. Both the red color, and the oblique position of layers, as well as their position on the crystalline fundament give rise to the assertion that they represent Continental formations. On the other hand, the upper parts of the sub-section of the sand-stones and loams covering them, are of maritime origin, according to the lithographical characteristic feature. The lack of algae residues of Laminarites antiquissimus and of the sepropel films in the loams covering the so-called "Gdovsche" sand-stones, is not a proof of the lack of Laminarites loams as a certain stratigraphical unit. These residues can either be present, or lacking or they may also be present in higher horizons (according to Oepik). Therefore the occurrence and the stratigraphical position of the Laminarites and of the superlaminarites in Estonia become by far more convincing by the method of investi-

On the Laminarite and Superlaminarite Strata of the Lower Cambrian in the Estonian SSR. 20-5-33/54

gation and comparison of analogous lithological masses.
There are 2 figures and 7 Slavic references.

ASSOCIATION: Institute for Geology of the AN Estonian SSR (Institut geologii Akademii nauk EstSSR)

PRESENTED: Malivkin, D.V., Academician , December 28, 1958

SUBMITTED: December 18, 1956

AVAILABLE: Library of Congress.

Card 4/4

VERTE, A.

Geologo-lithological subdivision of the lower sand and clay strata of the Devonian on the territory of the Estonian SSR. Dokl. AN SSSR 105 no.4:782-785 D '55. (MLRA 9:3)

1. Predstavleno akademikom D.V. Nalivkinym.
(Estonia--Geology, Stratigraphic)

VERTE, A.I.

Tectonic nature of a small dome-type structure near Tallinn.
Vest.LGU 14 no.6:155-157 '59. (MIRA 12:6)
(Tallinn region--Geology, Structural)

VERTE, A.I.

Prospects of obtaining mineral waters in the Estonian S.S.R.
Vop.kur.fizioter. i lech.fiz.kul't. 21 no.1:60-62 Ja-Mr '56.
(MLRA 9:9)

1. Institut geologii Akademii nauk Estonskoy SSR.
(ESTONIA--MINERAL WATERS)

VIRTS, A.I.

On the laminarite and superlaminarite strata of the Lower Cambrian in the Estonian S.S.R. Dokl. AN SSSR 115 no.5:971-974 Ag '57.
(MIRA 11:3)

1. Institut geologii Akademii nauk Estonskoy SSR. Predstavleno akademikom D.V. Nalivkinym.
(Estonia--Geology, Stratigraphic)

86933

S/118/60/000/009/004/009
A161/A026

11,3950 also 2316

AUTHOR: Verte, L.A., Engineer

TITLE: Automation of Foundry and Metallurgical Processes by Electromagnetic Pumps

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, 1960, No. 9, pp. 15-17

TEXT: Transportation of molten iron by the existing means requires more labor than before when the output of the blast furnaces grows due to automation, and in foundries the transportation from furnaces to conveyers is still taking high labor numbers. The described electromagnetic metal pumps, developed by the author, are based on the same principle as the latest electromagnetic pumps used in atomic reactors for pumping liquid heat carrier - sodium and potassium alloy. The motive forces in metal inside the pump are produced by interaction of magnetic fields and electric current passed through metal. The article gives a brief description of two pumps. The flat three-phase induction pump (Fig. 1) is designed for refractory metals. Cooled-pipe windings placed in the slots of magnetic circuit produce a running magnetic field that penetrates the walls and the duct in a refractory tube, the ends of which are the inlet and the outlet of the pump. The output end may be connected with a pressure line or remain open. An electro-

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Automation of Foundry and Metallurgical Processes by Electromagnetic Pumps

magnetic field controls the metal flow out of the open end. A running magnetic field produces induction currents in metal along the duct axis and in the same direction with the magnetic field. Metal flow out of the pump can be stopped by reversing the field motion. The inductor has to be supplied with three-phase current of 300 - 500 cycles frequency, but in most cases the usual frequency is sufficient for controlling metal flow under moderate pressure (of few atm). The work capacity of the pump, or of pressure produced by it can be controlled simply by controlling the voltage of the feed current; the remote controlled ATMK (ATMK) autotransformers are suitable for this purpose. The other pump (Fig. 2) is a cylindrical three-phase induction pump, of better design from the engineering point of view. Its duct has annular cross section, and the magnetic circuit is divided into several sections in the shape of a star. This pump develops a pressure 2 -3 times higher than the flat one, but the cooling of the inner core is difficult. It is therefore better suited for nonferrous metals with lower melting point than ferrous. The practical application of the pumps has not yet left the experimental stage; they have been tested with mercury and stannium, and zinc overheated to 700°C. PKBNIIST have designed an automatic device for feeding molten brass into pressure die casting machines. It is a flat pump built into a

S/118/60/000/009/004/009
A161/A026

Automation of Foundry and Metallurgical Processes by Electromagnetic Pumps

teeming furnace; liquid metal rises in an inclined refractory tube into the machine pressure chamber, and after filling the chamber (the metal level is measured by a radioactive indicator, or a time relay is used) the running magnetic field is reversed. Similar feed devices for aluminum alloys are under development at the Institut fiziki AN Latviyskoy SSR (Institute of Physics of AS Latvian SSR). At Avtozavod im. Likhacheva (Automobile Plant imeni Likhachev), it is intended to test a closed chute heated by gas and fitted with an inductor over its entire length to pull metal on horizontal and ascending chute sections. This experimental installation will be 6 m long and serve for moving liquid cast iron from cupolas to mold boxes moving on conveyer. Metal will be poured into molds by a flat induction pump inside a drum ladle. This unit will simulate the future doser consisting of a reciprocating ladle with a pump. Automatic controlling of continuous teeming of steel or nonferrous metal may be arranged as shown (Fig. 3). GIPROMEZ is working on electromagnetic pump systems for the transportation of large metal masses from blast furnaces. The electric part of induction pumps may be considered finally developed, and the work principle finally tested with nonferrous metals. For ferrous metal, more durable refractories for the duct still have to be found, and this must be done by the appropriate institutes and

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plants. There are 3 figures.

Figure 1:

Flat pump: 1 - housing; 2- filler (concrete); 3 - magnetic circuit; 4 - - refractory tube; 5 - heat insulation; 6 - pipe winding; 7 - panel for terminals; 8 - winding lead-out; 9 - nipple for cooling-water hose; 10 - duct for liquid metal.

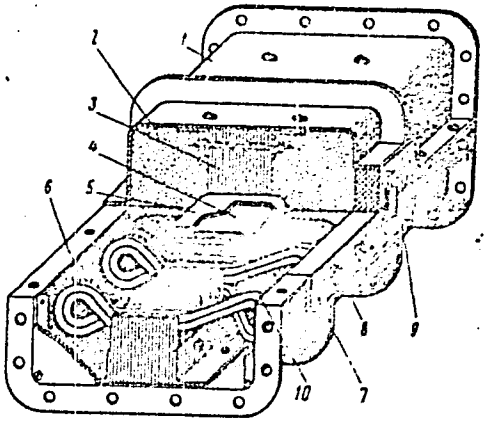

Рис. 1. Плоский трехфазный индукционный насос:

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Figure 2:

Cylindrical pump: 1 - housing; 2 - magnetic circuit; 3 - core; 4 - core lining; 5 - refractory tube; 6 - winding; 7 - duct for liquid metal.

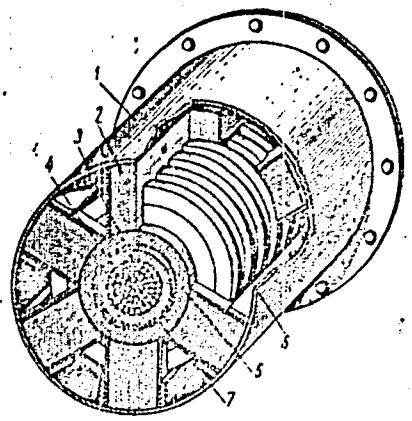

Рис. 2. Цилиндрический трехфазный индукционный насос:

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Figure 3:

Automatic system for controlling the metal flow in continuous teeming: 1 - furnace; 2 - induction pump; 3 - crystallizer; 4 - ingot; 5 - pulling mechanism; 6 - ATMK voltage regulator; 7 - electric motor; 8 - electronic regulator; 9 - level transmitter.

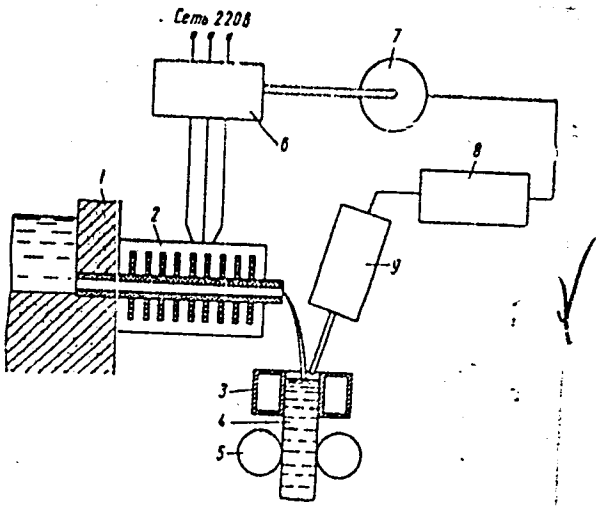

Рис. 3. Схема автоматического регулирования струи металла при непрерывной разливке:

Card 6/6

VERTE, L., insh., izobretatel'

Flow of fire in magnetic boundaries. Izobr. i rats. no.11:22-25 N '60. (MIRA 13:10)
(Foundries—Equipment and supplies)
(Magnetoelectric machines)

18.8100 1138, 1418, 1045, also 1164 S/136/61/000/006/002/003
E073/E535

AUTHOR: Verte, L. A.

TITLE: The Effect of the Apparent Change of the Specific Weight of Liquid Metal Produced by Electromagnetic Forces

PERIODICAL: Tsvetnyye metally, 1961, No.6, pp.61-64

TEXT: If passing an electric current through the liquid bath of a metal, which is located in a magnetic field, the direction of the current and the field can be so chosen that the electromagnetic forces act downwards and add to the gravity forces. This manifests itself to the outside as an increase of the specific weight. The apparent increase in the specific weight of a metal due to the uniformly distributed electromagnetic forces acting downwards can be expressed by the following equation

$$\gamma' = \gamma\left(1 + \frac{10.2Bj}{\gamma} \cdot 10^{-5}\right) \text{ g/cm}^3,$$

where γ - specific weight of the liquid metal, g/cm^3;

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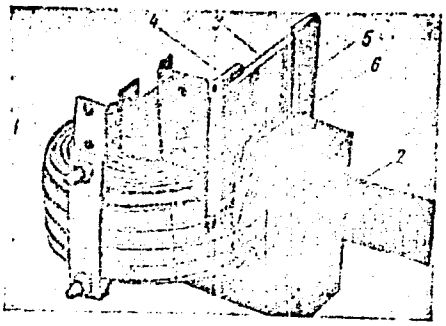
B - induction of the magnetic field, gauss; j - current density, A/cm^2. In analogy with magnetohydrodynamic processes which take place in electromagnetic pumps for liquid metals, these phenomena can be referred to as magnetohydrostatic phenomena. If the liquid metal contains non-conducting inclusions (slag, oxides etc.), the current by-passes these inclusions and does not produce electromagnetic forces in them and thus there is no increase in their apparent specific weight. If desired, the same effect can be applied to "reduce" the specific weight of a liquid metal with the electromagnetic forces directed upwards. This effect was verified using an external magnetic field and a conduction method of feeding the current to the liquid metal. Prior to the experiments, a theoretical investigation was made of the possibility of passing a current of sufficient density through a liquid metal placed into a strong external magnetic field. It was found that the influence of the magnetic field and also the close proximity of the iron masses of the core of the electromagnet do not produce an increased instability of the surface of the liquid metal or an intensification of the undesirable pinch effect

compared to what occurs as a result of the magnetic field generated by the current flowing through the liquid metal. The experiments were carried out by means of a modified electromagnetic mercury pump, a photo of which is shown in Fig.2. The magnetic field was produced by the coil 1 consisting of ten turns of a copper strip wound around the core 2. A flat container made of bonded perspex 3 was placed into a 15 mm gap inside the core. This container with mercury simulated a liquid metal bath with the dimensions 4 x 50 x 40 mm. The current was fed in through the electrodes 4 and 5. In the final experiments the electrode 5 was connected to the current source by means of a copper bar 6 which was inside the gap of the magnet and in it the direction of the current flow was opposite to that of the current flow in the bath. The system was so designed that a stable current of 300 A could be fed to the mercury. First, the intensity of the pinch effect in absence of an external magnetic field was determined. It was found that the applied method of suppressing the pinch effect produced by the magnetic field generated by the current in the metal bath was effective; during preliminary experiments, without

the busbar 6, the movement of the mercury during current flow was very intensive, whilst in the final tests there was no movement. Following that, the external field was applied and as a result of this the level of the mercury dropped and a part of the mercury was pushed upwards into the gaps between the electrodes and the walls of the bath where there was no passage of current and, consequently, no electromagnetic forces occurred. In subsequent experiments, this was prevented by filling out these spaces with stearine. In the subsequent tests, tungsten wire (specific gravity 19) of 2.5 mm diameter was provided with a coating of vaseline or glue (to act as a non-conducting substance) and was dropped into the mercury (specific gravity 13.6). Without current flow the tungsten wire dropped to the bottom but, on passing current through the mercury, the wire floated to the surface and remained there until the current flow was stopped. During the experiments the surface of the mercury was not completely horizontal and there were "mounds" 3 to 5 mm high at the edges; in the central part the surface of the mercury was horizontal. Professor A. I. Vol'dek explains these "mounds" of

the mercury around the electrodes by the nonuniformity of the magnetic field in the gap of the electromagnet. This phenomenon has no connection with the pinch effect and can be suppressed by equalizing the electromagnetic forces in the liquid metal. The following conclusions are arrived at:
1. The described experiments confirm the effect of the apparent change in the specific weight of a conducting liquid inside a magnetic field during the passage through it of an electric current.
2. This effect can be applied for devising new methods of purifying metals. The possibility of such applications requires check experiments with metals containing oxides, slags, fluxes etc.
There are 3 figures.

Fig.2



S/118/61/000/008/002/005
D267/D304

AUTHOR: Verte, L.A., Engineer

TITLE: An electromagnetic trough for transporting molten iron

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 8, 1961, 39 - 43

TEXT: The Moskovskiy avtozavod imeni Likhacheva (Moscow Automobile Plant imeni Likhachev) has developed a new type of electromagnetic trough for conveying molten metal. The assembly consists of an open, lined iron chute surmounting an inductor that runs its whole length and generates a traveling magnetic field that acts on the molten metal. The stream of iron is heated from above by panel gas burners fitted in the insulated lid that covers the chute. The inductor consists of a magnetic waveguide of electrotechnical steel with a water-cooled wave winding of copper tube. The method of calculating the inductor is described, a method based on the concept of the

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An electromagnetic trough...

equivalent slope angle, i.e., the angle at which the natural flow chute must be inclined so that the longitudinal component of the force of gravity is equal to the electromagnetic forces acting on the molten metal. An experimental check of the calculating method showed that it was quite accurate when metal with a high specific resistance was used and when the inductor is powered at low frequency. The chamotte for lining the trough and its production technology were developed by Candidate of Technical Sciences V.P. Zegzhda of the Vsesoyuznyy institut ogneuporov (All-Union Institute of Refractory Materials). The assembly was tested by passing white iron at 1500 - 1550°C through from one end to the other. Tests showed that the selected slope angle of 10° was excessive. For a metal flow of 40 - 60 tons/hr it proved possible to pump the metal up a rising incline. This has the advantage of clearing slag from the metal since the slag is not affected by the electromagnetic field and does not climb the incline. Reversal of the travelling magnetic field effectively cut the stream of metal; the

method could therefore be used for controlling the flow of molten metal through the trough. The active power of the inductor is about 10 kwt per meter of trough. Tests showed that the copper section of the pipe winding could be increased 2 - 5 times by decreasing the lumen for the cooling water. The active power for a trough of the same section could, thereby, be reduced to 4.5 kwt/meter. This could be further reduced by 1.5 - 2 times by using tubes of special section. In this way power consumption for conveying molten iron up a 1.5 - 20 rising incline could be reduced from 0.2 kwt-hr per ton-meter on the pilot installation to 0.05 kwt-hr per ton-meter. The use of a horizontal trough would cut power consumption severalfold. There are 6 figures and 1 table.

Card 3/3

28053
S/136/61/000/009/001/007
E073/E335

26.2251

AUTHOR: Verte, L.A.

TITLE: Electromagnetic pumps and prospects of their application in non-ferrous metallurgy

PERIODICAL: Tsvetnyye metally, no. 9, 1961, pp. 56 - 61

TEXT: In conduction pumps current is fed directly to the liquid metal and, simultaneously, a strong magnetic field is applied in the perpendicular direction. Such pumps can be used primarily for circulating alkali metals, which have a high conductivity and low corrosivity in closed circuits, so that the metals are protected from contamination. An experimental conduction pump for liquid lead was built and tested successfully at Gintsvetmet but it has not been developed sufficiently for industrial use. Conduction pumps can be operated both on DC and AC; in the case of DC, the efficiency reaches 40-50% but in the case of AC the efficiency is appreciably lower. In induction pumps the current in the liquid metal is induced by the electromagnetic field without direct contact. An experimental induction pump was built and

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tested as early as 1956 at the "Elektrotsink" plant. This pump was capable of lifting about 400 kg Zn per minute to a height of 640 mm; the power consumption was 4.5 kW. Experimental specimens of induction pumps are being tested for liquid aluminium and iron. These are fitted with water-cooled windings made of copper tubing. Selecting the correct material for the pipes through which the liquid metal flows is a difficult problem. The Vsesoyuznyy institut ogneuporov (All-Union Refractory Institute) has developed a technology for producing fireclay-graphite tubes for such pumps, which withstand satisfactorily the effect of molten pig iron, aluminium and zinc alloys. The drawback of these tubes is that they have a minimum wall thickness of 5-10 mm. The work aimed at obtaining protective coatings on the surface of thin-walled metallic nichrome and austenitic steel tubes is of great importance. The most promising for the majority of molten non-ferrous metals are coatings of molybdenum disilicide, aluminium oxides, borides and other similar compounds. If the problem of producing thin metallic tubes with satisfactory

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Electromagnetic pumps ....

protective coatings is solved, it will be possible to reduce considerably the size of the air gap and to improve the efficiency of induction pumps. The problem of starting-up and stopping the pumps is briefly considered. Induction pumps could also be used to regulate the flow of metal for the purpose of automation in semicontinuous casting. The induction regulator is so designed that the level of the metal in the crystalliser is automatically maintained and when the flow of metal to the crystalliser is stopped, this flow is diverted into a rotating mixer. The rotating mixer permits freeing the pump channels from the liquid metal when the pump is to be stopped. There are 4 figures and 3 Soviet-bloc references.

Card 3/3

S/130/61/000/012/001/006
A006/A101

AUTHOR: Verte, L. A.

TITLE: Controlling the tapping of liquid cast iron with the aid of a running electromagnetic field

PERIODICAL: Metallurg, no. 12, 1961, 6-8

TEXT: An electromagnetic runner for removing liquid cast iron with the aid of an electromagnetic field, was designed and tested at the Moscow Automobile Plant imeni Likhachev. The runner bed is lined with pressed refractory blocks and is located over an inductor which consists of a three-phase water-cooled tubular winding and a dented magnetic conduct (Fig. 1). The runner is covered with heat insulated lids with built-in panel gas torches, which are intended to maintain the temperature of the liquid cast-iron. During the testing of a six meter long section of such a runner the cast iron moved behind the magnetic field, both along a horizontal and at an inclined position of the runner. The cast iron was refined from the slag which moved downwards along the sloped surface of the jet. The use of the new runner will make it possible to direct the liquid metal as desired, to accelerate, or to stop its motion by switching over the

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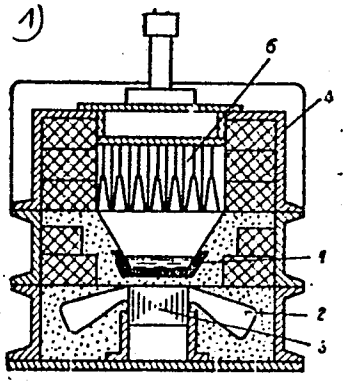
inductors. It will then be necessary to mount, besides straight runner sections, "switches" for the transfer of the metal from one runner into another. Scrap formation in the electromagnetic runner will be eliminated by a new preheating system which is now being developed at the Plant. The next stage of introducing the electromagnetic technique will be the transport of liquid cast iron with the aid of induction pumps. Simultaneously the system of closing the cast iron tap hole will be changed. The refractory material will be replaced by an electromagnetic field which will make it possible to close or open the way to the metal, to control its flow, and to stop it, if necessary. The construction of a "magnetic tap hole" is much more complicated than the design of the aforementioned runner. The ferrostatic pressure of the metal column in the blast furnace is very high. The induction pump preventing the outflow of the cast iron through the channel of the refractory pipe must counterbalance the total pressure of 5 atm. The cross section of the channel must be large enough to assure the rapid teeming of a considerable amount of metal. Preheating of the induction tap hole channel is another problem which must be solved, as the metal should not cool off in the channel. This requires power supply from special generators. Some experts consider a variant without preheating the tap hole channel, where the cast iron jet is not completely interrupted.

Controlling the tapping of liquid cast ...

This method would, however, require a substantial change in the existing blast furnace technology. Therefore, it will be easier to introduce the variant where the basic mass of cast iron will be tapped periodically. To prevent obstruction of the tap hole channel by cooled-off metal, a small amount of cast iron will pass through it to the teeming machine. At the Plant imeni Likhachev a test model of an induction tap hole was designed which will be used for automated cast-iron pouring into molds moving on a conveyer line. There are 4 figures.

Fig. 1:



ASSOCIATION: Moskovskiy avtozavod imeni Likhacheva
(Moscow Automobile Plant imeni Likhachev)

Fig. 1
Legend: 1 - refractory lining; 2 - winding; 3 - magnetic conduct; 4 - lid; 5 - panel torch.

VERTE, L.A.

Electromagnetic pumps and prospects for their application in nonferrous metallurgy. TSvet.met. 34 no.9:56-61 S '61. (MIRA 14:10)

(Nonferrous metals—Metallurgy) (Electromagnets)

VERTE, L.A., inzh.

Electromagnetic trough for transporting molten metals.
Elektrichestvo no.5:74-77 My '62. (MIRA 15:5)

1. Moskovskiy avtozavod imeni Likhacheva.
(Liquid metals)

VERTE, Leonard Arturovich, izobretatel'

Metal flows in pipes. Izobr.i rats. no.11:6-8 N '62. (MIRA 15:12)

1. Glavnyy spetsialist Gosudarstvennogo soyuznogo instituta po proyektirovaniyu metallurgicheskikh zavodov.
(Metallurgy) (Magnetoelectric machines)

S/112/63/000/001/002/002

AUTHOR: Verte, L. A., Engineer

TITLE: The application of electromagnetic pumps in foundry work

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 1, 1963, 40-42

TEXT: Thin-walled metal pump ducts with stable corrosion-resistant coatings (aluminum oxide in the experimental pump developed in the Tallinskiy politekhnicheskiy institut (Tallinn Polytechnical Institute) and ducts made of nonmetallic materials have been developed to transport and pour liquid metals in foundries, graphite-containing refractories being most suitable. [illegible] made in the Vsesoyuznyy institut ogneuporov (All-Union Institute of Refractories) by V. P. Zegzhda were practically impervious to zinc, aluminum, and copper and were fairly impervious to molten cast iron. The first experiments in handling refractory metals were conducted in the Elektrotsink Plant. An experimental pump lifted about 400 kg of zinc per minute to a height of 640 mm and required about 15 kw for operation. Developmental work is underway for pumping and pouring aluminum, magnesium, zinc, and other alloys. Extensive experience indicates that an induction pump should have a straight duct as short as possible and that residues of metal must be removed from the pump when the flow is stopped. An electromagnetic siphon for handling liquid zinc was developed

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The application of ....

so that electromagnetic pumps did not have to be connected directly with metal baths. Electromagnetic pumps can also heat liquid metal, this effect being a function of the frequency, the conductivity of the metal, and the cross section of the duct. High-frequency current (3.0-4.0 cps) from special three-phase generators is expedient for small [illegible]. [illegible] heavy three-phase ionic generators developed in the Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute) by Professor V. Ye. Kozenfeld are promising due to low cost and use of standardized parts while their frequency instability is not important. A chute was developed for transporting liquid metal without any pressure head. This device in the avtozavod im. Likhacheva (Automobile plant imeni Likhachev) transported liquid cast iron at a temperature of 1[illegible] up a 3-5° incline at a rate of 40-50 tons/hr at the maximum incline and several times that amount when the chute was horizontal. Power required was about 60 kw. Three figures were given.

Card 2 of 2

VERTE, L.A., kand. tekhn. nauk

Experimental induction pump for liquid pig iron. Elektrichestvo no.12:64-66 D '63. (MIRA 17:1)

1. Gosudarstvennyy soyuznyy institut po proyektirovaniyu metallurgicheskikh zavodov.

VERTE, Leonard Arturovich; VOL'DEK, A.I., doktor tekhn. nauk, prof. retsenzent; YARES, Kh.I., kand. tekhn. nauk, dots., retsenzent; ROZENSVEYG, Ya.D., red.

[Electromagnetic conveying of liquid metal] Elektromagnitnyi transport zhidkogo metalla. Moskva, Metallurgiia, 1965. 235 p. (MIRA 18:3)

ACC NR: AP6026505 (A) SOURCE CODE: UR/0118/66/000/005/0016/0018

AUTHOR: Verte, L. A. (Candidate of technical sciences); Filimonov, S. S. (Candidate of technical sciences)

ORG: none

TITLE: Induction pump for liquid aluminum

SOURCE: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 5, 1966, 16-18

TOPIC TAGS: liquid metal pump, electromagnetic pump

ABSTRACT: In 1961, a new induction pump was developed for the purpose of circulating liquid aluminum through an experimental heat-exchange circuit at the Power-Engineering Institute im.Krzhizhanovskiy. The pump's essential parts (see figure) are: 1 - housing, 2 - magnets, 3 - three-phase windings made from cooling-water-carrying copper tubing, 4 - aluminum-carrying graphite channel, 5 - starting heaters, 6 - graphite connection nipples. The pump has a capacity of 0.195×10^{-3} m^3/sec and develops a pressure of 1 kg/cm^2; phase voltage, about 45 v. The pump has had over 30 operations; overall working time, 150 hrs. Orig. art. has: 2 figures and 1 table.

UDC: 621.65/68:656.546.621

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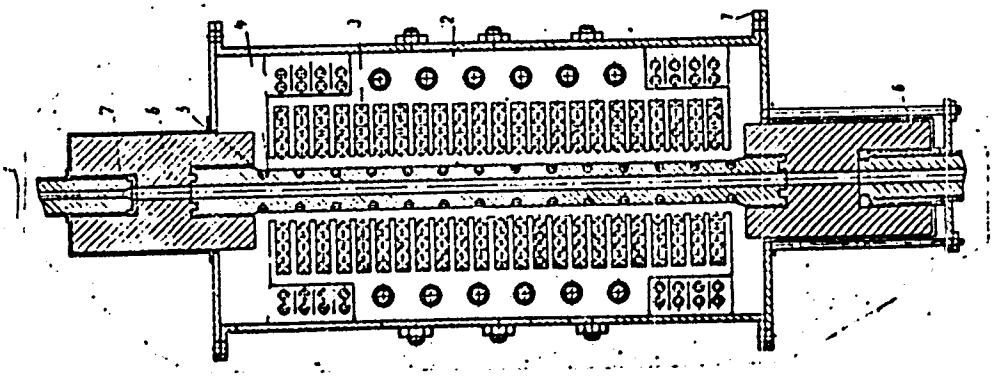
ACC NR: AP6026505



SUB CODE: 13, 09 / SUBM DATE: none

Card 2/2

VERTE, L.A.; KISEL'GOF, Yu.S.; SUCHKOV, V.N.

Experimental induction pump-feeder for lead alloys. Khim. prom. 40 no.11:858-859 N '64 (MIRA 18:2)

VERTE, L.A.

Magnetohydrostatic purification of liquid metal from non-metallic inclusions. Fiz. met. i metalloved. 17 no.5 (MIRA 17:9) 772-773 My '64.

VERTEPOVA, V.M., kand. med. nauk; IVANOV, A.V.

Radiography of the vena cava in urological diseases. Urologiia no.6:13-16 N-D '63. (MIRA 17:9)

1. Iz urologicheskoy kliniki (zav.- prof. I.M. Epshteyn) I Moskovskogo meditsinskogo instituta imeni Sechenova.

FOLDVARI, Ferenc, dr.; VERTES, Bodog, dr.; MASSZI, Jozsef, dr.

Problem of morbidistic steroid therapy of pemphigus. Orv. hetil. 101 no.22:770-771 29 My '60.

1. Budapesti Orvostudomanyi Egyetem, Bor-es Nemikortani Klinika.
(PEMPHIGUS ther.)
(CORTICOTROPIN ther.)
(CORTISONE ther.)

VERTEBNAYA, I.P.; IZ"YUROVA, A.I.; KOLTUNOVA, A.S.; LITVINOV, A.S.; [redacted], M.A.

Sanitary state of bodies of water in the Lenin Volga-Don Navigation Canal system during the first year of its filling. Gig.i san. no.3:9-17 Mr '54. (MLRA 7:2)

1. Iz Instituta obshchey i kommunal'noy gigiyeny Akademii meditsinskikh nauk SSSR.
(Volga-Don Canal--Sanitary affairs)

VERTEBNAYA, P.

Works of the All-Union Peat Institute, (Min. of Agri. RSFSR), Number 3, 1933, 189 pages. Section on the Study of Peat Beds: "Certain Data on the Biology and Chemistry of Water in Expermintal Pits of the Mytishchi Peat Industry." by Vertebnaya, P.

SO: Botanicheskiy Zhurnal, Vol XXXV, No 1, pp 100-110, Jan-Feb 1950, Russian bimo per, Moscow/Leningrad (U-5511, 12 Feb 1954)

VERTEBNAYA, P.

Works of the All-Union Peat Institute, (Min of Agri, RSFSR)

Number 5, 1933, 108 pages, A Compendium of Instructions on the Study of Peat and Peat Beds:

Part 2. Field Geobotanical Studies:

"Brief Instructions on the Hydrological and Hydro-chemical Study of Boggy Bodies of Water."

SO: Botanicheskiy Zhurnal, Vol XXXV, No 1, 100-110, Jan-Feb 1950, Russian bimo per, Moscow/Leningrad (U-5511, 12 Feb 1954)

VERTE, A.M.; KHEYNSALU, Yu.I. [Heinsalu, J.I.]

Studies of karst carried out by the Institute of Geology of the Academy of Sciences of the Estonian S.S.R. Nov.kar.i spel. no.3: 83-85 '63. (MIRA 16:10)

VMERTSHNAYA, P.I.

Microflora of waters of the Lenin Volga-Don Navigation Canal.
Biul. MOIP. Otd. biol. 61 no.1:51-60 Ja-F '56 (MLRA 9:6)

(VOLGA-DON CANAL--FRESH-WATER FLORA)

VERTEBNAYA, P.I.

Biological investigation of the Don River and TSimlyansk Reservoir in 1952-1953 from the point of view of sanitation. Trudy probl. i tem. sov. no.7:175-180 '57. (MLRA 10:4)
(Don River--Algae) (TSimlyansk Reservoir--Algae)

MOZHAYEV, Ye.A.; VERTEBNAYA, P.I.

Experimental basis for the permissible concentration of the sodium salt of dichlorophenoxyacetic acid (2,4-D) in bodies of water. San.okhr.vod.ot zagr.prom.stoch.vod no.5:158-166 '62. (MIRA 17:6)

1. Institut obshchey i kommunal'noy gigiyeny imeni A.N.Sysina AMN SSSR.

VERTEBNAYA, P.I., starshiy nauchnyy sotrudnik; IZ'YUROVA, A.I., starshiy nauchnyy sotrudnik; KOLTUNOVA, A.S., starshiy nauchnyy sotrudnik; RUFFEL', M.A., starshiy nauchnyy sotrudnik; TIKHVINSKAYA, N.N., starshiy nauchnyy sotrudnik

Role of sanitary preparation of the TSimlyansk reservoir bed on the quality of water. Gig. i san. 22 no.1:72-76 Ja '57. (MLRA 10:2)

1. Iz Instituta obshchey i kommunal'noy gigiyeny AMN SSSR.
(WATER SUPPLY,
hyg. aspects of watershed (Rus))

VERTEBHAYA, P.I.

Observations on the intensity of photosynthesis and respiration of plankton in Klyaz'ma Reservoir on the Moscow Canal. (MIRA 13:9)
Trudy Gidrobiol. ob-va 10:8-24 '60.
(Klyaz'ma Reservoir--Phytoplankton)

DRACHEV, S.M., prof.; VERTEBNAYA, P.I.; IZ"YUROVA, A.I.; KABANOV, N.M.; KOLTUNOVA, A.S.; BYLINKINA, A.A.; IZMEROV, N.F., red.; BEL'CHIKOVA, Yu.S., tekhn. red.

[Sanitation problems of the supply and utilization of water in arid districts]Gigienicheskie voprosy khoziaistvenno-pit'evogo vodosnabzheniia i vodopol'zovaniia v zasushlivykh raionakh. Moskva, Medgiz, 1961. 206 p. (MIRA 14:11)

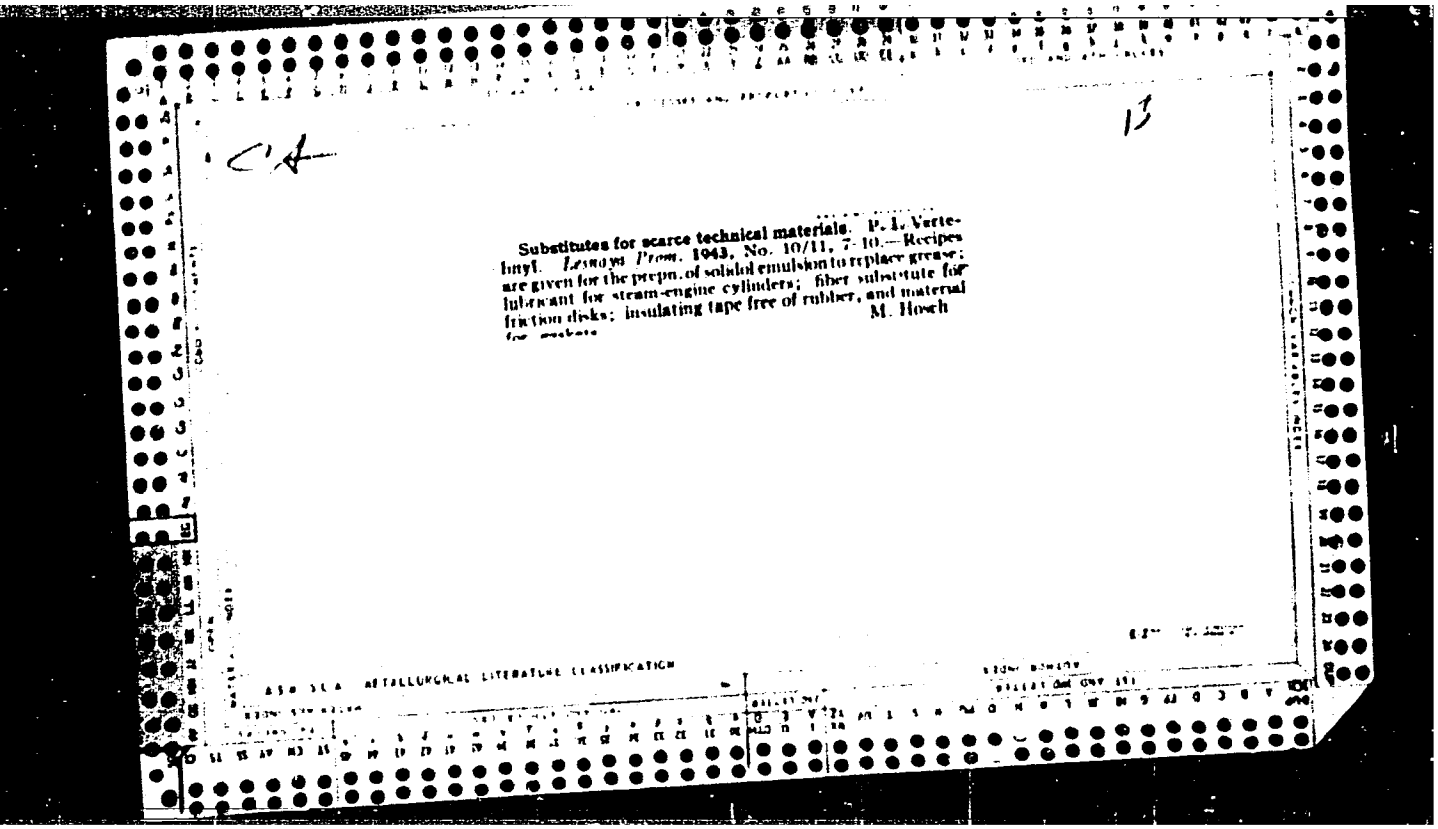
(Water supply)

VERTEBNYI, P. I.

Substitutes for scarce technical materials. P. I. Vertebnyi. *Lesnaya Prom.* 1943, No. 10/11, 7-10.—Recipes are given for the prepn. of solidol emulsion to replace grease, lubricant for steam-engine cylinders, fiber substitute for friction disks, insulating tape free of rubber, and material for gaskets. M. Hosch

VERTEENYI, P. I.

Substitutes for scarce technical materials. P. I. Verteenyi. *Lesnaya Prom.* 1943, No. 10/11, 7-10.—Recipes are given for the prepn. of solidol emulsion to replace grease; lubricant for steam-engine cylinders; fiber substitute for friction disks; insulating tape free of rubber, and material for gaskets. M. Hoyt



Substitutes for scarce technical materials. P. L. Vertebnyĭ. *Lesnaya Prom.* 1943, No. 10/11, 7–10.—Recipes are given for the prepn. of solidol emulsion to replace grease; lubricant for steam-engine cylinders; fiber substitute for friction disks; insulating tape free of rubber, and material for gaskets. M. Hosch

LEPIN, G.F.; VISHNEVSKIY, A.V.; LI SI-CHAN [Li Hsi-ch'ang]; BUDNEVSKIY, A.M.; BORODULINA, R.I.; VERTEBNYY, P.Ya.; REVEL'SKIY, I.A.

Exchange of experience. Zav.lab. 28 no.6:753-755 '62. (MIRA 15:5)

1. Kramatorskiy nauchno-issledovatel'skiy i proyektno-tekhnologicheskiy institut mashinostroyeniya (for Lepin, Vishnevskiy).
2. Institut metallurgii imeni A.A. Baykova (for Li Si-chan, Budnevskiy).

(Metallurgical analysis)

SOV/76-32-9-37/46

AUTHORS: Kalinin, I. A., Yertebnyy, P. Ya. (Zagorsk)

TITLE: Calculation of the Physical Dosage of γ-Irradiation (Raschet fizicheskoy dozy γ-izlucheniya) II. The Dosage Intensity From a Flat and a Three-Dimensional Source (II. Moshchnost' dozy ot ploskogo i ob"yemnogo istochnikov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 2192-2198 (USSR)

ABSTRACT: In the previous article (Ref 1) the strength of radiation from a point source of radiation was calculated. In the present paper the radiation strength from a level source is calculated This calculation is made for the general case and is then applied to three specific examples. Nomograms are shown for the following cases: 1) the strength of the gamma radiation at a point 1 m above the center of a circular source of radiation (Fig 3); 2) the strength of the gamma radiation at a point 1 m above the edge of a circular, level radiation source (Fig 4). For three-dimensional radiation sources the formula is again given for the general case and then demonstrated with two examples. For these example cases nomograms are also given:

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Calculation of the Physical Dosage of γ-Irradiation. II. The Dosage Intensity From a Flat and a Three-Dimensional Source

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1) the radiation strength of a circular cylindrical radiation source (Fig 6); 2) the radiation strength at a point on the surface of a cylinder or a ball when the linear over-all dimensions are greater than or equal to the mean free path of the gamma quanta (Fig 7). There are 7 figures, 1 table, and 5 references, 5 of which are Soviet.

SUBMITTED: February 14, 1958

Card 2/2

VERTEBNYY, P. YA.

USSR/Nuclear Physics - Instruments and Installations. Methods of Measurement and Investigation C-2

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33879

Author : Kalinin, I. A. and Vertebnyy, P. Ya.

Institution : None

Title : Calculation of Physical Dose of Gamma Radiation. I. Dose from Point Source. Determination of Thickness of Shielding

Original Periodical : Zh. fiz. khimii, 1956, 30, No 2, 457-463

Abstract : A simplified method is given for calculating the thickness of shielding layers for the case of point sources, based on the assumption that the scattered rays can be calculated from a relationship of the form $1 + \alpha\mu l$ (l, thickness; μ, attenuation coefficient; α, coefficient depending on the kind of medium).

Card 1/1

VERTHENYI, V.I., inzhener.

Standardization in planning electric power supply for industrial enterprises. Prom.energ. 12 no.6:17-20 Je '57. (MLRA 10:7)

1. Gosudarstvennyy politekhnicheskiy institut Tyazhpromelektroproyekt.
(Electric power)

FEDOROV, Anatoliy Anatol'yevich; VERTEBNYI, V.I., redaktor; LARIONOV, G.Ye., tekhnicheskiy redaktor.

[Supplying industrial establishments with electricity] Elektrosnabzhenie promyshlennykh predpriiatii. Izd.2-oe, perer. i dop. Moskva, Gos.energ. izd-vo, 1956. 463 p. (MLRA 9:5)
(Electric power)

SOV/81-59-24-84749

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 24, p 9 (USSR)

AUTHORS: Barchuk, I.F., Vertebnyy, V.P., Konstantinov, B.D., Nemets, O.F., Pasechnik, M.F.

TITLE: The Spectra of Fast Neutrons Scattered From Atomic Nuclei

PERIODICAL: Tr. Sessii AS UkrSSR po mirn. ispol'zovaniyu atomn. energii. Kiyev, AS UkrSSR, 1958, pp 94 - 101

ABSTRACT: The spectra of neutrons inelastically scattered from the nuclei of Mg, Al, Fe, Ni, Zn, Cu, Sn, Cd, Hg, Pb and Bi were studied by means of ionization chambers filled with hydrogen or methane, and a scintillation counter with an anthracene crystal. The reaction D (d, n) He^3 served as source of neutrons with an energy of 2.8 Mev. The experimental data obtained by means of ionization chambers were corrected for the "wall" and "induction" effects; the curves have singularities in the points which pertain to the excited states of the nuclei. The results of the measurements are presented in the form of graphs and tables.of the

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The Spectra of Fast Neutrons Scattered From Atomic Nuclei SOV/81-59-24-84749

energy levels. The authors point out that in heavy nuclei in the case of inelastic scattering of the neutrons only individual levels are excited. It is therefore incorrect to consider the process statistically in the case of energies of several Mev.

I. Sadikov

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VERTEBNYY, V.P.

PHASE I BOOK EXPLOITATION SOV/4012

Akademiya nauk Ukrainskoy SSR. Otdeleniye fiziko-matematicheskikh nauk. Sessiya po mirnomu ispol'zovaniyu atomnoy energii

Trudy (Transactions of the Session on Peaceful Uses of Atomic Energy), Kiyev, Izd-vo AN Ukrainskoy SSR, 1958. 180 p. 2,500 copies printed.

Resp. Ed.: M. V. Pasechnik, Doctor of Physics and Mathematics; Editorial Board: A. K. Val'ter, Academician, Academy of Sciences Ukrainskaya SSR, O.F. Nemets, Candidate of Physics and Mathematics, M. V. Pasechnik, Doctor of Physics and Mathematics; Ed. of Publishing House: T. K. Remennik; Tech. Ed.: N. P. Rakhlina.

PURPOSE: This collection of articles is intended for physicists and scientific personnel working in nuclear research.

COVERAGE: The articles in this collection discuss linear proton accelerators, electron accelerators, electrostatic accelerators, magnetron lenses, the interaction of charged particles and neutrons with nuclei, the applications of tagged atoms in physics research, and experimental methods. Some of the articles are descriptions of already existing nuclear installations and experimental apparatus. No personalities are mentioned. There is a bibliography of Soviet and non-Soviet sources at the end of most of the articles.

VERTEBNYY, V.P. [Vertebnyi, V.P.]; VLASOV, M.F.; PASECHNIK, M.V. [Pasichnyk, M.V.]; TOTSKIY, I.A. [Tots'kyi, I.A.]

Spherical electron-pulse ionization chambers for the study of fast neutons [in Ukrainian with summary in English]. Ukr. fiz.zhur. 3 no.2:196-203 Mr-Ap '58. (MIRA 11:6)
(Neutrons) (Ionization chambers)

28434
S/185/61/006/002/006/020
D210/D304

21.6000

AUTHORS: Vlasov, M.F., Fedorov, M.B., and Vertebnyy, V.P.

TITLE: Methane diffusion cloud chamber for neutron spectrometry

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 2, 1961, 186 - 190

TEXT: In this article the authors describe the constructions and operation of a methane diffusion cloud chamber for spectrometry of neutrons of energy 1 to 3 MeV. The construction of the chamber is shown. The chamber was operated at one atmosphere of methane using methanol for diffusion, giving a sensitive volume of 3 cm high by 20 cm diameter. The electrodes are made of two screens connected together and kept at a potential of 1kV relative to the base plate and the methanol groove. The flow of the cooling liquid nitrogen and the methanol temperature were controlled automatically to give base plate and methanol temperatures -70 and 10°C respectively, to

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Methane diffusion cloud ...

within ± 0.5°C. The chamber was operated by means of an electronic arrangement, given in the original paper, which starts the neutron generator, switches on the electric field and the pulse lamps, and winds the photographic film in the required sequence. The chamber was tested by analyzing the neutron spectrum from the D(d, n) reaction in the direction of the denterium beams of 150 keV energy, and the dispersion of the apparatus was found to be 8 % half-intensity. There are 5 figures.

ASSOCIATION: Instytut fizyky AN URSR, m. Kyyiv (Institute of Physics, AS UkrSSR, Kiyev)

SUBMITTED: August 22, 1960

Card 2/2

41642
S/185/62/007/009/003/006
D234/D308

24,6800

AUTHORS: Vertebnyy, V.P. and Kolotyy, V.V.

TITLE: Design of a neutron monochromator consisting of several discs with a longitudinal axis of rotation

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 9, 1962, 975-979

TEXT: The authors deduce an approximate equation for the path of a neutron and apply it to the calculation of the maximum possible number of slots in rotors consisting of two, three and four discs. This number is found to be $2\pi R/(2s + 2a)$, where R is the distance of the neutron from the axis of rotation, 2a the distance between slots and 2s the slot width. They also quote expressions for the resolving power and an approximate formula for the intensity of neutrons at the output. It is concluded that the weight of the rotor can be made several times smaller than in designs without slots. There are 4 figures.

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S/185/62/007/009/003/006
D234/D308

Design of a neutron ...

ASSOCIATION: Instytut fizyky AN URSR Kyyv (Institute of Physics, AS UkrSSR, Kiev)

SUBMITTED: January 30, 1962

Card 2/2

4163
S/135/62/007/009/004/006
D234/D308

AUTHORS: Vertebnyy, V.P. and Kolotyy, V.V.

TITLE: The shape of neutron pulse and the transmission function of a two-rotor neutron chopper. I. Choppers with plane slots

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 9, 1962, 980-991

TEXT: The calculations are first made for the case of a single rotor, a problem which was already considered by V.I. Mostovoy and others. The calculations are then extended to the case of two rotors. The transmission function is found to be

$$f(z,\alpha) \equiv f_1(z,\alpha) = 1 - \frac{8}{3} z^4 - 4|\alpha| z^2 + 8\left(\frac{|\alpha|}{2} + \frac{\alpha^2}{4} + \frac{|\alpha|^3}{24}\right) z^4 \qquad (13a)$$

if $0 \leqslant |\alpha| \leqslant 2$ and $0 \leqslant z \leqslant \frac{1}{2}$

$$f(z,\alpha) \equiv f_2(z,\alpha) = \frac{16}{3} \frac{1}{1 + \frac{|\alpha|}{2}} z'(1 - z')^2 \left(1 + \frac{z'}{2}\right) \qquad (13b)$$

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The shape of neutron pulse ...

if α is as before and $\frac{1}{2} < z \leqslant 1/(1 + |\alpha|/2)$,

$$f_3(z_1\alpha) = f_3(z_1\alpha) = (1 - 2|\alpha|z^2)^2 \qquad (13v)$$

if $|\alpha| \geqslant 2$ and $z \leqslant \sqrt{(\frac{1}{2}|\alpha|)}$. Here

$$\alpha = 1 + \frac{\lambda}{2R} - \frac{T}{\tau} \qquad (11a)$$

$z = \sqrt{(\omega\tau/4S)}$, $\tau = 2R/v$. R is the radius of the rotor, v the velocity of neutrons, 2S the slot width divided by R, λ the distance between the two rotors, and T the time of delay of the second rotor with respect to the first. The authors state that for design purposes it is more appropriate to classify these functions with the aid of $\beta = 1 + \lambda/2R$ and $\gamma = \omega T/4S$ instead of α, and give a complete list. Graphs are given for $\beta = 1$, 2, 4, 10 and various values of γ, with discussion. The intensity of the neutrons is larger in the case of two-rotor chopper, the background and time resolution being about the same as in single-rotor choppers. Phase displacement must be maintained with high accuracy. There are 12 fig-

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