

KLIMOV, N.I., kand.tekhn.nauk; KRAMAR', V.G., inzh.

A 12 x 1.5 m. slab with laterally drawn out reinforcement.  
Trudy NIIZHB no.27:213-220 '62. (MIRA 15:9)  
(Prestressed concrete)

Number, P. 1.

KLIMOV, N. I. - "Some problems in the additive theory of numbers." Saratov, 1955.  
Saratov State U. Inst. N. G. Chernyshevskiy. (Dissertation for degree of  
Candidate of Physicomathematical Sciences.)

SO: Knizhnaya letopis', No 18. 26 November 1955. Moscow.

KLIMOV, N. I.

SUBJECT USSR/MATHEMATICS/Number theory CARD 1/2 PG - 628  
 AUTHOR KLIMOV N. I.  
 TITLE Upper estimations of some number theoretical functions.  
 PERIODICAL Doklady Akad. Nauk 111, 16-18 (1956)  
 reviewed 2/1957

By combination of the elementary method of Selberg with the usual analytic method the author obtains some partially new, partially improved estimations, e.g.:

1. Let  $Z_h(k, u_1, x)$  be the number of those prime numbers in the interval  $(h, h+x)$  which belong to the series  $kn+1$ ,  $(1, k) = 1$ , and possess the property that also the numbers  $|p+u_1|, \dots, |p+u_{n-1}|$  are prime numbers. Then for  $n \geq 2$ ,  $k = O(x^\delta)$ ,  $\ln u_i = O(\ln^0 x)$  ( $i=1, 2, \dots, n-1$ ) the estimation

$$Z_h(k, u_1, x) \leq \frac{nx}{k \ln^{\frac{n}{k}} \frac{x}{k}} \prod_p \frac{1 - \omega(p)}{p} \left(1 + O\left(\frac{\ln \ln x}{\ln x}\right)\right) \left(1 - \frac{1}{p}\right)^n$$

is valid, where  $\omega(p)$  is the number of solutions (with respect to  $n$ ) of the congruence

AUTHOR: Klimov, N. I. SOV, LMO 58-2-13/20

TITLE: Isolated Prime Numbers on an Interval (Isolirovannyye prostyye chisla na intervale)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy Ministerstva vysshego obrazovaniya SSSR, Matematika, 1958, Nr 2, pp 154-162 (USSR)

ABSTRACT: Theorem: Let  $x \geq 2$ ,  $0 \leq H \leq x^{1/\theta}$ ,  $\theta = \frac{4\theta}{77} + \varepsilon$ ,  $\varepsilon > 0$  arbitrarily small,  $1 \leq k = O(\ln^C x)$ ,  $C = \text{const}$ ,  $y = y(k, x) = \frac{\varphi(k)}{k} \frac{\ln x}{\omega(x)}$ , where  $\omega(x) \rightarrow \infty$  for  $x \rightarrow \infty$ . Let  $S_1(H, x; k, l, y)$  denote the number of prime numbers of the series  $kn + l$ ,  $(l, k) = 1$ , on the interval  $(H, H+x)$  being  $y$ -isolated ( $p$  is  $y$ -isolated if  $|p-q| > y$  for all other prime numbers  $q \neq p$ ). It holds

$$S_1 = \frac{x}{\varphi(k) \ln(H+x)} + O\left(\frac{x}{\varphi(k) \ln(H+x)}\right).$$

Theorem: to every  $m$  there exists an  $x$  so large that in the interval  $(H, H+x)$ ,  $0 \leq H \leq x^{1/\theta}$ , of the series  $kn + l$ ,  $(l, k) = 1$ ,  $k = O(\ln^C x)$  there appear  $m$  prime numbers one after another, being  $y$ -isolated, where  $y = \frac{\varphi(k)}{k} \frac{\ln x}{\omega(x)}$ , where  $\omega(x) \rightarrow \infty$  for  $x \rightarrow \infty$ .

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Isolated Prime Numbers on an Interval

SOV/240-58-2-13/20

These two theorems and a further one are still further generalised by the introduction of the notions of the  $(h,y)$ -distant isolated prime numbers. Definition: Let  $E_1$  and  $E_2$  be sets of prime numbers.  $p^{(1)} \in E_1$  is called  $(h,y)$ -distant isolated with respect to  $E_2$  if there exists no  $p^{(2)} \in E_2$  for which  $h < |p^{(1)} - p^{(2)}| \leq h+y$ .

There are 12 references, 5 of which are Soviet, 1 French, 3 German, 2 Italian, and 1 Dutch.

ASSOCIATION: Saratovskiy gosudarstvennyy pedagogicheskiy institut (Saratov State Pedagogical Institute)

SUBMITTED: October 14, 1957

Card 2/2

AUTHOR: Klimov, N.I. SOV/42-13-3-3/41

TITLE: Combination of the Elementary and the Analytical Method in the Theory of Numbers (Kombinirovaniye elementarnogo i analiticheskogo metodov v teorii chisel)

PERIODICAL: Uspekhi Matematicheskikh Nauk, 1958, Vol 13, Nr 3, pp 145-164 (USSR)

ABSTRACT: The present paper contains the proofs for the author's announcement [Ref 21] published in 1956, a short introductory chapter with much historical data and an extended list of references.  
There are 29 references, 16 of which are Soviet, 5 German, 5 English, 1 Italian, 1 French and 1 Norwegian.

Card 1/1

KLIMOV, N.I.

Almost prime numbers. Usp.mat.nauk 16 no.3:181-188 My-Je '61.  
(MIRA 14:8)

(Numbers, Prime)

KLIMOV, N.I.

Prospecting for anthophyllite- asbestos in northern Karelia.  
Mat. po geol. i pol'zop. Sev.-Zap. RSFSR no. 2:184-194 '62.  
(MCRA 17:12)



I 6373-66

ACC NR: AP5028773

SOURCE CODE: UR/0286/65/000/017/0055/0056

AUTHOR: Klimov, N. I.; Degtyarev, G. A.; Leonov, V. S.

ORG: none

TITLE: An artificial leg. Class 30, No. 174322

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 55-56

TOPIC TAGS: prosthetics, prosthesis, artificial limb

ABSTRACT: This Author's Certificate introduces an artificial leg which contains a thigh casing, a tubular shin casing, ankle and foot. The mechanism is covered with an elastic material. The ankle is made in the form of two specially geared sections fixed with respect to one another by a tie bolt so that the foot can be adjusted to heels of varying height. The foot is equipped with an elastic toe section and has a hinged plate with a notch which takes the cylindrical head of a screw fastened into the insole.

UDC: 615.477.22

Card 1/2

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OTH REF: 000

Card 2/2

KLIMOV, N. F.

3380. K Fiziologii Zheludochnogo Pishchevareniya Severnogo Oleniya. Sov. Zootekhnika, 1949, No. 6. c. 32-36.

50. Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1949

KLIMOV, N. M.

36801. Khloralhidratnyy Narkoz Ilye Severnykh Oleney. Veterinaya, 1949, No. 12,  
c. 34-36

SO: Letopis' Zhurnal'nykh Statey, Vol. 50, Moskva, 1949

KLIMOV, N. M.

Osnovy anatomii i fiziologii sel'skokhozyaystvennykh zhivotnykh  
(Principles of Anatomy and Physiology of Farm Animals). Kemerovo. 1951.  
40 pages. Also in the Latvian language.

U-5235

KLIMOV, N. M.

KLIMOV, N. M.: Fundamentals of anatomy and physiology of agricultural animals. Frunze. Kirgiz State Publishing House, 1952. 68 pages with illustrations. Price 90 kopeks. 3,070 copies. In Kirgizian Language.

SO: Veterinariya; 30; (3); March 1953; Uncl. TABCON

KLIMOV, N.M.

"Method of Recording Kymograms and the Procedure for their Reproduction,"

SO: Trud VIEV, Vol 19, No 2, 1952.

KLIMOV, N. M.

KLIMOV, N. M. Fundamental of anatomy and physiology of agricultural animals. Yskutsk, Yskutsk State Publishing House, 1953. 72 pages with illustrations; price 80 kopeks; 4,000 copies. In iskutsk language (Yskutsk USSR Ministry of Agriculture, Administration of Agricultural Propaganda, Three-Year zootechnical courses, freshman year of <sup>INSTRUMENT</sup> nutrition.)

So: Veterinariya; 30; 11; November 1953; Uncl.

TABCON

MOS

KLIMOV, H.M.

Seasonal peculiarities of secretory and motor functions of the stomach in reindeers. *Fiziol. zh. SSSR* 39 no.4:460-467 July-Aug 1953. (OIML 25:1)

1. Department of Physiology of the All-Union Institute of Experimental Veterinary Studies, Moscow.



KLIMOV, N.M., doktor biologicheskikh nauk.

Treatment of gastrointestinal diseases in newborn calves.  
Veterinaria 32 no.7:86-89 Jl '55. (MIRA 8:9)  
(ALIMENTARY CANAL--DISEASES) (CALVES--DISEASES)

USSR/Farm Animals - Cattle

Q

Abs Jour : Ref Zhur - Biol., No 15, 1958, 69274

Author : Kudryavtsev, A.A., Klinov, N.M.

Inst : All-Union Institute of Experimental Veterinary Medicine

Title : 24-Hourly and Seasonal Rhythmicity of Certain Physiological Functions of High-Producing Cows of the Kostroma Breed

Orig Pub : Tr. Vses. in-ta eksperim. veterinarii, 1957, 20, 238-250

Abstract : On the basis of experiments carried out at the breeding farm Karavayeva, it was established that the average 24-hourly quantity of rations consumed by a cow fluctuated within the limits of 60 to 102 kg., the amount of water intake from 106 to 111 kg, the quantity of excreted feces from 18 to 46 kg, with a frequency of defecation from 13 to 19, and the amount of urine from 13.5 to 27 liters,

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KLIMOV, N.M. doktor biologicheskikh nauk; MALAKHOV, A.O., kand.veterinarnykh nauk

Purification of foot-and-mouth disease virus by means of electrophoresis. Trudy VIV 22:189-194 '59; (MIRA 13:10)  
(Foot-and-mouth disease) (Electrophoresis)

KLIMOV, N.M., doktor biologicheskikh nauk; MALAKHOV, A.G., kand.veterinarnykh nauk; ISAYENKO, Ye.P., mladshiy nauchnyy sotrudnik

Purification of hog cholera virus by means of electrophoresis.  
Trudy VIV 22:195-201 '59. (MIRA 13:10)  
(Hog cholera) (Electrophoresis)

KLIMOV, N.M., doktor biologicheskikh nauk

Importance of biochemistry in the development of veterinary science.  
Trudy VIEV 23:114-123 '59. (MIRA 13:10)

1. Vsesoyuznyy institut eksperimental'noy veterinarii.  
(Biochemistry) (Veterinary medicine)

KLIMOV, N.M.; BUTRIMENKO, V.P.; VSYAKIKH, A.S., prof.; LITOVCHENKO,  
G.H.; KOLOBOV, G.M.; KOZHEVNIKOV, Ye.V.; ALIKAYEV, V.A.;  
KRASHOV, V.S.; MAKAROV, A.P.; GRIGOR'YEV, Ye.P., red.;  
ROZIN, M.A., red.; GUREVICH, M.M., tekhn. red.

[Animal husbandry] Zhivotnovodstvo. Moskva, Sel'khozgiz,  
1959. 477 p. (MIRA 16:3)  
(Stock and stockbreeding)

GORN, V.M., insh.; KLIMOV, M.M., insh.; DANILOV, V.I., insh.;  
KHATSKHELVICH, M.M., insh.

Reply to the inquiries of our readers. Elek. i topl. tiaga 4  
no. 9;44 8 '60. (MIRA 13:12)  
(Railroads--Signaling) (Diesel locomotives)

GRINIO, V.A., inzh.; KLIMOV, N.N., inzh.

Blocking device of the brake system of locomotives. Elek. i tepl.  
tiaga 6 no.11:25-27 N '62. (MIRA 16:1)  
(Locomotives) (Railroads--Brakes)



GRINIO, V.A., inzh.; KLIMOV, N.N., inzh.

Improvement in the design of No.222 engineer's brake  
valve. Elek. i topl. tiaga 6 no.10:6-7 0 '62. (MIRA 15:11)  
(Railroads--Brakes)

KOVRIZHKIN, N.P.; SHOVSKIY, Yu.V., insh., retsenzent; KLIMOV, N.N.,  
insh., retsenzent; MEL'NIKOV, V.Ye., red.; USENKO, L.A.,  
tekhn. red.

[Analysis of the work performed by the locomotive engineer  
based on the recordings of the speed counter tapes] Kontrol'  
raboty mashinista lokomotiva po skorostemernym lentam. Mo-  
skva, Transzheldorizdat, 1963. 128 p. (MIRA 16:7)  
(Locomotives—Brakes) (Recording instruments)

GRINIO, V.A., inzh.; KLIMOV, N.N., inzh.

Device for signaling the braking operation of a stop-valve and  
faulty performance in the brake system of a train. Klak, i topl.  
tiaga 7 no.1:13-14 ža '63. (MIRA 16:2)  
(Railroads--Brakes)

KLIMOV, N.M., inzh.; GORN, V.N., inzh.; SEMENOV, N.S., mashinist-instruktor;  
BUD'KO, G.F.; MURZIN, L.G.; REMENNIKOV, S.S.; KESAREV, A.P.

Answering readers' queries. Elek. i tepl. tiaga 7 no.9:44-45  
S '63. (MIRA 16:10)

1. Depo Lobnya Moskovskoy dorogi (for Semenov). 2. Zamestitel'  
glavnogo revisora po bezopasnosti dvizheniya Ministerstva putey  
soobshcheniya (for Bud'ko). 3. Nachal'nik otdela teplotekhniki  
Glavnogo upravleniya lokomotivnogo khozyaystva Ministerstva putey  
soobshcheniya (for Murzin). 4. Nachal'nik otdela truda i  
zarabotnoy platy Glavnogo upravleniya lokomotivnogo khozyaystva  
Ministerstva putey soobshcheniya (for Kesarev).

TEREKHOV, V.M., inzh.; MURZHIN, I.I., inzh.; LEVITSKIY, A.L., inzh.;  
retsenzent; MOISEYEV, G.A., inzh., retsenzent;  
NOVOBEL'SKIY, B.S., inzh., retsenzent; DENISOVA, T.V.,  
inzh., retsenzent; YEREMEYEV, A.S., inzh., retsenzent;  
DZHAVAKHYAN, T.V., inzh., retsenzent; BOL'SHAKOV, A.S.,  
inzh., retsenzent; SHCHERBACHEVICH, G.S., inzh.,  
retsenzent; KLIMOV, N.N., inzh., retsenzent; KHARLAMOV,  
P.G., inzh., retsenzent; VIL'CHINSKIY, V.L., inzh.,  
retsenzent; KONOVALOV, S.Ye., inzh., retsenzent; MAMCHENKO,  
V.P., inzh., retsenzent; YURCHENKO, I.F., inzh., retsenzent;  
POLEKHA, A.M., inzh., red.; MEL'NIKOV, V.Ye., inzh., red.;  
KHITROVA, N.A., tekhn. red.

[Handbook for the diesel locomotive operator] Spravochnik ma-  
shinista teplovoza. Izd.2., ispr. i dop. Moskva, Transzhel-  
dorizdat, 1963. 479 p. (MIRA 17:1)

KLIMOV, N.N., insh.; ZAV'YALOV, G.N.; MURZIN, L.G.

Answering readers' queries. Elek. i tepl.tiaga no.8:40 Ag '63.  
(MIRA 16:9)

1. Glavnyy tekhnolog po avtotormozam Glavnogo upravleniya lokomotivnogo khozyaystva Ministerstva puty soobshchaniya (for Zav'yalov).
  2. Nachal'nik otdela teplotekhniki Glavnogo upravleniya lokomotivnogo khozyaystva Ministerstva puty soobshchaniya (for Murzin).
- (No subject headings)

GRINIO, V.A., inzh.; KLIMOV, V.N., inzh.

Rubber packing cup for conditional No.222 brake valve. Elek. 1 topl.  
tiaga no.7:6 JI '63. (MIRA 16:9)  
(Locomotives--Brakes)

*KLIMOV, N. P.*

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

Abs Jour: Ref Zhur-Biologiya, No 16, 1958, 74195

Author : Klimov, N. P.

Inst : Scientific-Research Institute of Agriculture of the Far North

Title : Treatment of Necrobacillosis in Northern Deer with Maximum Doses of Sulfanilamide Drugs

Orig Pub: Byul. nauchno-tekhn. inform. N.-1. in-t s.kh. Krayn. Severa, 1957, No 3, 28-29

Abstract: With the use of sulfadine, streptocid album, phthalazole, and sulfantrol in doses of 0.15 to 0.17 grams per kilogram, good results were obtained. In the beginning stage of necrobacillosis,

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*KLINOV, N.S.*

Category : USSR/General Problems - Problems of Teaching

A-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 68

Author : Klinov, N.S.

Title : Experience in the Organization of Production Field Trips for  
Physics Students.

Orig Pub : V sb.: V pomoshch' uchitelyu. No 2. Kudymkar, 1956, 4-11

Abstract : No abstract

Card : 1/1

*KLIMOV, NIKOLAY* ~~SECRET~~  
PHASE I BOOK EXPLOITATION

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Koshelev, Fedor Fedorovich, and Klimov, Nikolay Sergeevich

Obshchaya tekhnologiya reziny (General Technology of Rubber) Moscow, Goskhimizdat, 1958. 480 p. 8,000 copies printed.

Ed.: Yevstratov, V. F.; Tech. Ed.: Lur'ye, M. S.

**PURPOSE:** The book is a text-book for students of higher chemical and technical schools (vuzes) and can be used by engineers and technicians working in the rubber and allied industries. This book is the second edition of the text-book "Technology of Rubber" (revised and supplemented). It consists of 4 parts.

**COVERAGE:** Part I deals with colloidal, chemical, physical, and technological properties of rubbers and rubberlike polymers used in manufacture of rubber. Part II describes the basic ingredients of rubber mixtures, and discusses present-day theories on the effect of vulcanization accelerators and masticators, and the reinforcing and aging of rubber. Part III contains a description of the basic technological processes of rubber production: preparation of natural rubber and of ingredients of rubber mixtures, mastication of rubber, preparation of rubber mixtures, methods of molding, vulcanization of rubber products.

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## General Technology of Rubber

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Considerable attention is devoted to recent technological methods of rubber manufacturing, mechanization and automation of manufacturing processes, assembly of equipment and use of continuous processes. Part IV. describes the basic principles for compounding rubber mixtures used in manufacturing various articles. Parts I, II and IV are written by F. F. Koshelev. Part III is written by F. F. Koshelev in collaboration with N. S. Klimov. The authors thank the following scientists for their assistance: S. V. Burov, V. F. Yevstratov and the staff of scientific research institutes of rubber and tire industries and A. B. Kusov, Docent of the Leningrad Institute of Technology (Leningradskiy tekhnologicheskiy institut) and also the faculty members of the rubber technology department at the Moscow Institute of Fine Chemical Technology (Moskovskiy institut tonkoy khimicheskoy tekhnologii). There are 226 references, 88 of which are Soviet (including 11 translations), 121 English, and 17 German.

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SOV/138-58-8-11/11

**AUTHORS:** Koshelev, P. F. and Klimov, M. S.

**TITLE:** General Rubber Technology (Obshchaya tekhnologiya)

**PERIODICAL:** Kauchuk i Resina, 1958, Nr 8, pp 39 - 40 (USSR)

**ABSTRACT:** This is the second edition of a text book first published in 1951, favourably reviewed by A. B. Kusov. Publishers: Goskhimizdat, 1957.

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KLIMOV, N.S., kand. tekhn. nauk.

Outlook for arc rectifiers and mechanical rectifiers. *Elektrichestvo*  
no.12:5-9 D '56. (MIRA 11:3)

1. Vsesoyuznyy elektrotekhnicheskii institut im. Lenina.  
(Electric current rectifiers)

110-9-3/23

**AUTHOR:** Butayev, F.I., Klimov, N.S., Sakovich, A.A. and Stepanov, M.P.,  
Candidates of Technical Sciences.

**TITLE:** High-voltage Rectifiers/Inverters for Direct Current Power  
Transmission. (Vysokovol'tnyye preobrazovateli dlya pere-  
dachi energii postoyannym tokom)

**PERIODICAL:** Vestnik Elektromyashlenosti, 1957, Vol. 28, No. 9,  
pp. 8 - 14 (USSR)

**ABSTRACT:** Brief reviews of the main stages of development of high-  
power, high-voltage mercury valves at the All-Union Thermo-  
technical Institute. The first stage concerns the Kashira-  
Moscow experimental transmission line. The second stage includes  
high-voltage valves of intermediate power and the production of  
single experimental installations. The third stage concerns  
high-power, high-voltage valves suitable for practical high-  
voltage d.c. transmission systems. High-voltage rectifiers  
have been under development at the All-Union Thermo-technical  
Institute since 1935. A number of the principles then evolved,  
including single-anode construction, a sectionalised anode system,  
and oil-cooling, are still used. German experience with d.c.  
transmission was notable for the fruitful work, directed by  
G. Dobke, on the development of mercury-arc rectifiers for 150 A  
max. and 120 kV max. Joint work with the Scientific Research  
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High-voltage Rectifiers/Inverters for Direct Current Power Transmission.

Institute for Direct Current (NIPT) using the Kashira-Moscow experimental transmission line, showed that equipment for d.c. power transmission should be considered as a complex whole. In this experimental system, great difficulties were encountered as a result of instability of valve characteristics and a number of specific properties of high-power, high-voltage, rectifier circuits. The valves are subject to back-fire, break-down, loss of control action of the grids, loss of excitation, flashover of anode insulators, and over-voltages on the auxiliary electrodes. There were also difficulties arising from system disturbances such as over-voltages, high-frequency oscillations and current surges. For example on the Stalingrad-Donbas line, where the normal voltage on a valve should be 65 kV, calculations show that during over-voltages it may reach 250 kV. Considerable difficulties arose as a result of free oscillations which appeared in the circuit during ignition and extinction of a valve. High-frequency oscillations, which caused severe radio-interference and damage to the anodes were suppressed by special reactors. Low-frequency oscillations were more difficult to suppress, and damper circuits consisting of capacitance and resistance are being used for this purpose. At first, the Kashira-Moscow line operated with one bridge having three series valves in each arm

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High-voltage Rectifiers/Inverters for Direct Current Power Transmission.

and later with two bridge circuits connected in series, one having one valve per arm and the other two. In designing the Stalin-grad-Donbas line, it is proposed to use a sub-station circuit consisting of eight bridge circuits in series, each for a voltage of 100 kV and a current of 900 A. In all, there will be 192 valves working as converters and 32 "shunting" valves. At full load, each valve will handle a power of 7.5 MW. A serious problem was the control of individual circuits from the auxiliary supply panel which was solved under the guidance of Candidate of Technical Sciences I.L. Rubinshteyn. Control is effected by means of a light ray acting on photo-resistance cells which operate relays. For development work, the All-Union Electro-technical Institute (VEI) has constructed equipment for making static tests at up to 200 kV r.m.s., surge generators and a high-power equivalent for testing valves under rated conditions. A large test installation with a transformer group of 120 MW has been constructed at one sub-station. Questions of valve design are then discussed. A sectional drawing of a high-voltage valve is shown in Fig.1. The distinctive feature of high-voltage valves is the anode system and different methods of sectionalising the anodes are shown in Fig.2. It is usually advisable to extend anode sectionalisation to the discharge space, and different types of screens are shown

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## High-voltage Rectifiers/Inverters for Direct Current Power Transmission.

in Fig.3. Other anode constructions are shown in Fig.4; Fig.4zh shows an anode design developed by V.D. Andreyev. Several types of valves developed in the All-Union Electro-technical Institute are illustrated in Fig.5 (photos). The main relationships of voltage division between the intermediate electrodes of the anode assembly were established during the investigations of high-voltage valves. When the valve works as a rectifier, the negative voltage drop occurs mainly in the gap between the anode and the first anode insert. When working as an inverter the positive blocking voltage lies very largely in the space between the insert furthest from the anode and the upper grid. Development of rectifiers proceeded alongside theoretical and physical investigations, of valve strength, current distribution in the anode, and voltage distribution in the anode assembly, ignition effects, effects during failure of operation and during heavy overloads. In the investigation of physical effects, probe methods of vapour density measurement were very useful. Graphs of the probability of back-fire for the valves BP-1 and BP-3 as functions of cooling temperature are shown in Fig.6. Laboratory results have been confirmed by data of 12 000 hours tests on valve type BP-3 in the experimental transmission line.

Card4/5 Valves type BP-4/2 and BP-9/3 are intended for the Stalingrad-

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**High-Voltage Rectifiers/Inverters for Direct Current Power Transmission.**

Donbas transmission line and have passed a wide variety of laboratory tests and the results of the first high-power tests confirm the satisfactory operation of the valves in approximately their normal working conditions. In the light of the experience gained, development is likely to comprise: valves of greater power for higher voltages and currents, which will be combined with improvement in manufacture to improve reliability; valve designs which will ensure great vacuum-tightness, enabling the manufacture of pumpless valves or, if necessary, to provide internal devices to maintain and restore vacuum. Two new types of pumpless valve are shown in Fig.7, one for 150 A max. and the other for 900 A max. with reverse voltages of the order of 100 - 120 kV max. There are 7 figures and 5 Slavic references.

**ASSOCIATION:** All-Union Electrotechnical Institute (VEI)

**SUBMITTED:** April 23, 1957.

**AVAILABLE:** Library of Congress.

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*KLIMOV, N. S.*

**AUTHORS:**

Butayev, P. I., Candidate of Technical Sciences, *105-58-5-1/28*  
*Klimov, N. S.*, Candidate of Technical Sciences,  
Kostrov, M. P., Candidate of Technical Sciences,  
Sakovich, A. A., Candidate of Technical Sciences

**TITLE:**

A High-Power High-Voltage Valve (Moshchnyy vysokovol'tnyy ventil')

**PERIODICAL:**

Elektrichestvo, 1958, Nr 5, pp. 1-7 (USSR)

**ABSTRACT:**

At first a survey of the development of the high-voltage valves abroad and at home is given. In the USSR such works were carried out in the laboratories of the VRI (A. N. Larionov, S. V. Krauz 1937, N. S. Klimov 1938 - 1939, M. I. Gal'din 1940). After the war high-voltage valves and control boxes for the first test-d.-o.-trunk line from the hydroelectric plant Kashira to Moscow were elaborated. These works were mainly performed in the Scientific Engineering Office of the former Ministry for Electrical Industry under participation of important German specialists, as G. Dobke, R. Khel'ters, and others. 30 valves of the type VR-1 were produced by this office and partly by the

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A High-Power High-Voltage Valve

105-58-5-1/28

test works of the VEI during the second half of 1950. 1950 - 1951 12 valves of the type VR 3 for a maximum of 300 A and 130 kV were produced in the VEI. Since 1952 works were started on a valve for a maximum of 900 A and 130 kV. These works are shortly described here.

1) The problem whether the valve is to be constructed as single-anode- or multi-anode-valve, was solved in favor of the single-anode type. It was shown that the difficulties in connection with the discharge concentration on a small cross section can be overcome. 2) The number of the insets was selected in a way that the advantages are relatively great and the disadvantages are as small as possible. The tests were carried out with 15 (valve by Kesayev), 5, 4, 3, 2 and 1 insets (construction by Andreyev). 3) The problem of size and density of these insets is finally to be cleared in the plant. 4) The materials were investigated, 1951 - 1952 a special vacuum-technological equipment was put into operation, solitary test stands were established (up to 1000 A and 160 kV, pulse circuit up to 350 kV). The construction of the valve essentially differs from those used in industry. Then

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A High-Power High-Voltage Valve

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follows a description of such a valve of the type VR 9/3 for 900 A and 130 kV. In 1952 25 samples of different power and different types were produced. The electric strength of the valve is high. In static tests it stands 140 - 160 kV without an exterior divider. The investigations of the mercury vapor took place according to the probe methods, which had been elaborated in the Laboratory for gas discharge devices at the VEI. The electrical tests at full amperage and voltage were carried out with the equivalent scheme constructed in the VEI for maxinally 1000 A and 160 kV, and valuable data were obtained. An extraordinary phenomenon was determined: At positive anode-voltage and normal operation of all excitation anodes and nets no lighting of the principal anode took place at high voltage. At low voltage this phenomenon was not observed. This fact is explained by the occurrence of negative potentials. In investigating the overload capacity it was found that also at 15 000 A within the range of working temperatures an interruption of the current does not occur. Then the voltage in the

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A High-Power High-Voltage Valve

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arc drops to 700 - 800 V. For the purpose of energy investigations a test stand for 120 MVA was built at the Moscow Institute for D. C. The results of the first test series showed that 900 A and a countervoltage jump of 50 kV no disturbances occurred at the valves. At 900 A and 90 kV countervoltage jump the valves do not lead to an extinction of the excitation arc. For the transmission line from the Stalingrad hydroelectric plant to Donbass (the voltage between the poles amounts to 800 kV and the amperage in the line to 900 A) the VEI proposed an eight-bridge-scheme. The voltage of each bridge amounts to 100 kV. The scheme was accepted by the expert commission. Here two valves are connected in series into the bridge arm: maximum countervoltage 61 kV, countervoltage jump 34 kV, maximum amperage 900 A. - The work for the valve was performed at the Laboratory for High-Voltage Rectifiers at the VEI under participation of the Laboratory for Gas Discharge Devices, and of the Laboratory for Physical Investigations at the institute. The samples of the valves were produced by the electromechanical test plant of the VEI. The porcelain- and ceramic products were produced by the

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A High-Power High-Voltage Valve

105-58-5-1/28

"Isolyator" porcelain plant and by the Institute of the GIEKI. N. P. Stepanov, N. P. Savin, N. M. Maslennikov, I. D. Shkolin, A. A. Pertsev, V. S. Grigor'yev, A. A. Timofeyev, R. I. Grigor'yeva, V. V. Bazhenov, I. V. Blond, A. A. Ivanov, Ye. P. Shmarina and others directly and actively participated in the work. there are 12 figures.

**ASSOCIATION:** Vsesoyuznyy elektrotekhnicheskiy institut im. Lenina (VEI)  
( All-Union Institute for Electrical Engineering imeni Lenin)

**SUBMITTED:** November 5, 1957

**AVAILABLE:** Library of Congress

1. Electron tubes--Development
2. Electron tubes--USSR
3. Electron tubes--Test results
4. Electron tubes--Applications
5. Transmission lines--Equipment

Card 5/5

*Klimov, N.S.*

**AUTHORS:** Shekhtman, M.G., Candidate of Technical Sciences, 105-58-5-20/28  
Aksel'rod, M.M., Engineer, Butayev, P.I., Candidate  
of Technical Sciences, ~~Klimov, N.S., Candidate of~~  
Technical Sciences, Levitskiy, K.K., Engineer

**TITLE:** On the Prospects of Employing D.C. Transmission in the USSR  
(O perspektivakh primeneniya elektroperedach postoyannogo toka  
v Sovetskom Soyuze)

**PERIODICAL:** Elektrichestvo, 1958, Nr 5, pp. 81-83 (USSR)

**ABSTRACT:** Comments on the article by N.M.Mel'gunov, Elektrichestvo, 1957,  
Nr 2:  
1.) This is a comment on the article by I.P.Polovoy in  
Elektrichestvo, 1957, Nr 5. A number of errors is criticized. The  
ratio between the costs of an A.C. substation and a D.C. sub-  
station are assumed by Polovoy as amounting to 0.5. According to  
data published by Teploelektroproyekt it is 0.557-0.580 and ac-  
cording to those given by the Institute for Direct Current it is  
0.76 (taking account of the fact that valves are produced in the  
factory). Doubts expressed with respect to the possibility of

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On the Prospects of Employing D.C. Transmission  
in the USSR

105-58-5-20/28

covering reactive (idle) power are unfounded because the rectifier plant has a  $\cos \varphi = 0.90 - 0.95$ . Polovoy does not take power losses in compensation devices into account. He assumes the specific costs of the transformer plant of D.C. substations to amount to 36% of the substation costs. According to Teploelectroproyekt they amount to 26%, and according to the Institute for Direct Current and the All-Union Institute for Electrical Engineering - 17%. According to experience gathered in connection with the line Kashira hydraulic station - Moscow, and according to technical conditions the life of valves between two repairs amounts to 15 000 hours or two years and not one year.

2.) Criticism of the article by Mel'gunov. It is wrong to declare that the costs of D.C. - and A.C. substations including devices for the increase of stability are the same already at the present stage of transformer-engineering, that in the case of long-distance transmission no intermediate output is necessary, that by means of the mercury valve grids the intermediate substations can be reliably disconnected from the long distance line. Advantages and disadvantages of a D.C. line are enumerated.

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On the Prospects of Employing D.C. Transmission  
in the USSR

105-58-5-20/28

The atomic electric power plants will only supplement existing power systems, and hydraulic power still remains the most inexpensive type of energy. The large valves for 130 kV and 300 A developed at the All-Union Institute for Electric Engineering will render D.C. transmission more economical. For high power transmissions of from 0.75 to 6 million kW over distances of 900 km and more direct current offers great advantages.

There is 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy institut postoyannogo toka (Scientific Research Institute for Direct Current)  
Vsesoyuznyy elektrotekhnicheskiy institut im. Lenina (All-Union Institute for Electric Engineering imeni Lenin)  
Teploelektrproyekt

AVAILABLE: Library of Congress

Card 3/3

1. Direct currents--Transmission--USSR
2. Electric power plants
- Substations--Effectiveness
3. Atomic power plants--Applications
4. Power plants--Economic aspects

**AUTHOR:** Klimov, N. S., Candidate of Technical Sciences 80V/105-58-8-10/21

**TITLE:** Trends in the Design of Multiphase Transformers and Generator Transformers (Puti sozdaniya mnogofaznykh transformatorov i generator-transformatorov)

**PERIODICAL:** Elektrichestvo, 1958, Nr 8, pp. 50-54 (USSR)

**ABSTRACT:** Three methods, by which a multiphase transformer can be produced, are described. 1) If in a three-phase transformer with two identical secondary windings the input terminals of one group of phases is connected with the output terminals of the other group, six voltages are obtained, with a phase shift of  $60^\circ$  from one to another. If six phases of the secondary windings are connected as shown by figure 2, a six-phase transformer with a closed winding is obtained. In order to produce a twelve-phase transformer, two such three-phase transformers each having two secondary windings are required. A six-phase transformer is recommended in cases, where it is necessary to reduce the jump in back voltage. The use of multiphase transformers offers considerable advantages in large-scale plants, as it is possible to reduce

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Trends in the Design of Multiphase Transformers and Generator Transformers SOV/105-58-8-10/21

the number of transformers. 2) This method is also based upon the six-phase transformer. In order to obtain a 12-, 24- and 48-phase transformer each phase of the secondary winding is divided into 2, 4 and 8 parts, respectively. If, for example, a 48-phase polygon is desired, a supplementary winding is connected in series, with each phase of the secondary winding. This winding is mounted on the core of the supplementary transformer, the primary voltage of which is shifted by  $90^\circ$  with respect to the voltage of the main transformer. Three single-phase transformers are required to form a 48-phase transformer. A multiphase transformer connected according to this method can be recommended for special plants with small and medium power, if a great number of phases is desired from a three-phase supply. 3) This method is based upon a new principle. Normal single-phase and three-phase transformers are used. They are fed immediately from the stator windings of the hydro- or turbogenerators, the EMF of which have a phase shift with respect to each other. The secondary windings of the transformer are connected to form a closed multiphase winding. Multiphase transformers of this type can

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Trends in the Design of Multiphase Transformers and Generator Transformers

be used in cases, where the consumer is fed by individual generators and where it is necessary to have small pulsations of the rectified voltage and an almost sinusoidal current in the supply line. By employing an odd number of phases (9, 15, 21) a number of important advantages and in particular a reduction of the pulsations of the rectified voltage can be achieved. This is most easily obtained by a transformer designed according to the third method. Transformers produced according to the second method have a consumption of copper and steel, which is higher by about 5 - 10 % than that of transformers produced according to the first or third method. The principle employed in the third method can be made use of in the production of high-power turbogenerators. The principle of a multiphase transformer was proposed by the author in 1940 (Ref 6) and described in the dissertation (Ref 5) in 1951-1952. The patent K-847 was submitted on March 3<sup>rd</sup>, 1954. There are 11 figures and 6 references, 3 of which are Soviet.

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Trends in the Design of Multiphase Transformers and Generator Transformers

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

SUBMITTED: September 12, 1957

1. Transformers--Design      2. Transformers--Operation      3. Transformers  
--Physical properties

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**AUTHOR:** Klimev, N.S. (Cand.Tech.Sci.) SOV/ 110-58-10-2/24

**TITLE:** A multi-phase rectifier with mercury valves. (Mnogofaznyy preebrasovatel's rtatnymi ventilyami)

**PERIODICAL:** Vestnik Elektromyashlenosti, 1958, No.10. pp. 4-11 (USSR)

**ABSTRACT:** The use of high-voltage d.c. transmission necessitates the development of high-voltage rectifiers and inverters. So far, three-phase bridge-circuit rectifiers employing high-voltage mercury valves have been developed with this application in mind. However, such rectifiers have some fundamental defects: during current commutation two of the three transformer phases are shorted; under certain conditions, extinction of the exciting arc can reverse the operation of an inverter; there are various troubles with current and voltage wave-shapes. The reasons for the increased probability of back-fires in high-voltage mercury valves are not fully understood, but a mechanism is suggested. This article considers multi-phase rectifiers operating in combination with high-voltage mercury valves, and with their transformer windings connected in a closed ring (similar to the windings of a d.c. machine). If the windings are connected so that the vector diagram is a closed hexagon, as shown in Fig.1., then at any instant the sum of the e.m.f's. in the circuit is zero; thus current can flow via two symmetrical parallel branches, as in a d.c. machine armature. The number of phases can easily be increased to

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A multi-phase rectifier with mercury valves.

SOV/ 110-58-10-2/24

twelve. A schematic circuit of a six-phase rectifier is given in Fig.2., and the corresponding vector diagram in Fig.3. This circuit offers advantages for use with high-voltage mercury valves in 6 and 12-phase variants. During current commutation only a small proportion of the winding is shorted. The reverse voltage under normal operation is much reduced and the operating conditions for the high-voltage mercury valve are considerably easier than in the normal three-phase bridge circuit. By way of example, calculations are then made of the leading data for a twelve-phase, 100 kV, 900 A rectifier. In particular, calculations are made of the angle of overlap, and of the power factor, also of the voltages on the valves under rectifier and inverter conditions, and so on. Rectifiers employing the proposed six- and twelve-phase systems, are then compared to a three-phase bridge-circuit rectifier. Formulae are given for the phase voltages in the three cases. In the three-phase case the rectified voltage is about the same as the phase voltage; in the six-phase case it is about double, and in the twelve-phase case, four times the maximum phase voltage. It is shown that twice as many valves are required for a six-phase rectifier as for a three-phase bridge rectifier, having one valve in each arm. However, the valve current is halved, and so is the reverse voltage applied to the valve. If in the three-phase circuit the voltage on each valve is halved by always using two in series, the current through

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A multi-phase rectifier with mercury valves.

SOV/110-58-10-2/24

them is not halved. The twelve-phase rectifier required 24 valves rated at 75 A and a maximum back voltage of 101 kV. It then gives 900 A output. For the same output, the three-phase bridge circuit uses 12 valves rated at 300 A, and a back voltage of 105 kV. When a high power-output is required, the construction is simpler with a twelve-phase circuit. With the six-and-twelve-phase circuits, unlike the three-phase circuit, extinction of the excitation arc does not reverse the inverter conditions. The problem of high-frequency oscillatory processes is much less in the six-phase circuit than in the three-phase, and in the twelve-phase circuit there is hardly any problem. The voltage wave-form in transformers and generators is much better with multi-phase systems. Other advantages of the multi-phase rectifier are described. It is concluded that although multi-phase rectifier circuits are very promising in high-voltage d.c. transmission, practical trials are still necessary before final conclusions can be reached. Multi-phase rectifiers may also prove

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A multi-phase rectifier with mercury valves.

SOV/110-58-10-2/24

useful for medium-and low-voltage applications, particularly when a large number of valves is convenient. There are 6 figures and 3 literature references (Soviet)

SUBMITTED: January, 13, 1958.

1. Rectifiers--Performance
2. Inverted rectifiers--Performance
3. Electric circuits--Performance
4. Thyratrons--Performance
5. Electrical networks--Equipment

Card 4/4

SOV/110-59-4-3/23

**AUTHORS:** Vol'nov, Yu.F. (Engineer), Klimov, N.S. (Candidate of Technical Sciences) and Tofgovkin, Yu.P. (Engineer).

**TITLE:** The Probability of Back-Fires in High-Voltage Mercury Valves (O veroyatnosti obratnykh zazhiganiy vysokovol'tnykh statnykh ventiley)

**PERIODICAL:** Vestnik Elektromyshlennosti, 1959, Nr 4, pp 6-12(USBR)

**ABSTRACT:** This article describes investigations on high-voltage mercury valves with various types of anode construction in order to study the influence of the reverse voltage and rate of fall of anode current on the probability of back-fires. The tests were made using the impulse circuit shown in Fig 1 and the advantages and disadvantages of this circuit are briefly discussed. The cause of back-firing is not yet fully understood but the most acceptable theory is that which attributes formation of a cathode spot on the anode to auto-electronic emission from the anode surface. Various explanations are offered about the processes that occur during back-firing and the three different types of anode construction that were used in the valves tested reflect this difference of opinion. Valve VR-3 has four intermediate electrodes in the form of truncated cones. Valve VEO-15 has fifteen intermediate

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SOV/110-59-4-3/23

The Probability of Back-Fires in High-Voltage Mercury Valves electrodes made in the form of discs with coaxial apertures, the three upper electrodes have terminals brought out through insulators. Valve VR-3a has only one intermediate electrode. The construction of valve VEO-15 was suggested by I.G.Kesayev and the construction of valve VR-3a was suggested by V.O.Gramovskiy and V.D. Andreyev. All the valves are designed for a back-voltage of the order of 100 - 130 kV, a mean current of 100 A, and are intended for series-connection of two or three valves in the arm of a bridge circuit. The valves were described in detail in Vestnik Elektropromyshlennosti, 1957, Nr 9. The test procedure is described. With the impulse circuit the anode current decay time can be varied by altering the amount of inductance in the circuit. Since the valves do not get hot during impulse tests it is necessary to heat them first. The instrumentation is described. Measurements of the distribution of back voltage between the intermediate electrodes were made with a back voltage of 110 kV and a decay rate of  $1.8 \times 10^6$  A/sec., the voltage distribution curves are given in Fig 3. On valve VEO-15 nearly 70% of the back voltage drop occurs on the first three intermediate

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SOV/110-59-4-3/23

**The Probability of Back-Fires in High-Voltage Mercury Valves**

electrodes. On Valve VR-3 the measurements were made with three rates of current decay; the distribution of back voltage between the intermediate electrodes is very uneven and 85% of the back voltage falls on the gap between the anode and the first intermediate electrode. The reasons for the unevenness of voltage distribution are briefly discussed. In valve VR-3a about half the back voltage drop occurs between the anode and the intermediate electrode. The probability of back firing was then studied. Two factors govern the probability of back firing; the magnitude of the back voltage and the anode current decay rate. The anode current decay rate was controlled by varying the circuit inductance for different values of back voltage. During the tests the rate of rise of back voltage was 300 .. 500 kV/degree with an inductance of 65 mH. It would take too long to obtain back-fire statistics with normal loadings on the valve and therefore, appreciable overloads were used. The back-fire probability test results for valve VEO-15 are given in Fig 4. An explanation of the shape of the curves is offered. A back-fire probability curve for valve VEO-15 as a function

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SOV/110-59-4-3/23

The Probability of Back-Fires in High-Voltage Mercury Valves of back voltage for high anode-current decay rate is given in Fig 5. Similar results were also obtained on valves VR-3 and VR-3a. The test results were used to derive an empirical formula for the influence of the back voltage and of the rate of current decay on the probability of back firing for a constant value of mercury vapour pressure. The expression is in good agreement with practice for cooling water temperatures of 20 and 24°C but at 26°C the back voltage has more effect. Under practical operating conditions the mercury vapour pressure corresponds to the temperature of 20 - 22°C. Special tests and calculations established that when the voltage drop on valve VEO-15 is increased from 90 - 150 kV the probability of back-firing is increased by the power of 11 and when the current decay rate is increased from  $2.6 \times 10^6$  to  $13 \times 10^6$  A/sec the probability of back firing is increased by the fourth power. Thus the back voltage has a much greater effect than the rate of anode current decay even when this latter is high. Current oscillograms taken during back-fires are given in Fig 6. It is claimed that the anode current decay rate has little influence on

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SOV/110-59-4-3/23

The Probability of Back-Fires in High-Voltage Mercury Valves

the probability of back-fire because the mercury vapour pressure in high voltage valves is much lower than in low voltage valves. Therefore, for a given anode current decay rate the concentration of remanent charges is much lower in high-voltage valves. The applicability of the test results to normal operating conditions of high voltage valves is then considered. In the tests the rate of rise of back voltage was some 5 - 8 times higher than in practical service but the rate of influence of the various factors is probably much the same in both cases. It is concluded that empirical formulae derived from tests on low voltage valves cannot be applied to high voltage valves. Other things being equal, the probability of back-fires occurring in high voltage mercury valves depends mainly on the back voltage and to a much lesser extent on the anode current decay rate. These conclusions cannot be extended to all designs of high

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SOV/110-59-4-3/23  
The Probability of Back-Fires in High-Voltage Mercury Valves

voltage mercury valves and they are probably inapplicable to high voltage valves in which there is a large number of gaps in the anode system between which the voltage is distributed uniformly.

There are 6 figures and 6 references (1 Soviet, 1 English, & German).

SUBMITTED: September 8, 1958

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8(5)

AUTHOR:

SOV/105-59-8-18/28  
Klimov, N. S., Candidate of Technical Sciences (Moscow)

TITLE:

Means of Improving Commutation Conditions in Direct-current  
Machines

PERIODICAL:

Elektrichestvo, 1959, Nr 8, pp 78-80 (USSR)

ABSTRACT:

When improvements of commutation conditions are desired, the main problem encountered is that of eliminating sparks forming at the trailing edge of the brush. The commutation conditions of direct-current machines can be alleviated considerably, if commutation is effected by rectifiers (N. S. Klimov, *Author's certificate* Nr 54332, 1936). A number of circuit arrangements are known for this purpose, two of which are presented here: the one was suggested by Ye. L. Ettinger (Fig 1), the other has been designed for a direct-current machine with a commutator. If rectifier commutation is used, considerable overcommutation is permissible. When commutation has been completed the current is interrupted owing to the valve action of the rectifier connected with the trailing commutator segment. The circuit of the short-circuited section is interrupted by the rectifier even before it is interrupted by the moving commutator segment. If overcommutation oc-

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SOV/105-59-8-18/28

Means of Improving Commutation Conditions in Direct-current Machines

Under rated load, the machine will spark when short-circuited, but will not show flash-over. This commutation method was checked with a 15 kw, 220 v, 1,000 rpm direct-current machine, using the circuit-diagram shown by figure 1. The oscillograms recorded showed satisfactory results. This article was written under the supervision of Academician K. I. Shenfer in 1938. At that time publication appeared to be premature as no suitable rectifier equipment was available. The manufacture of semiconductor rectifiers with high operating currents offers prospects of introducing this method in the near future. There are 4 figures and 1 Soviet reference.

SUBMITTED: February 11, 1959

Card 2/2

85103

S/105/60/000/009/004/009/XX  
B012/B058

9.2540 (1020, 1159, 1048)

AUTHOR: Klimov, N. S., Candidate of Technical Sciences

TITLE: Power Converter From A.C. Into D.C.

PERIODICAL: Elektrichestvo, 1960, No. 9, pp. 29-34

TEXT: This is the description of a current converter proposed and experimentally checked in 1938-1941 (Refs. 2,3). A six-phase current converter for 10 kv with an output of 100 kw was built at that time. In the course of further development, concrete ways were shown for the building of poly-phase transformer aggregates. The difficulties in building power valves which are subjected to a preionization. In the current converter under discussion the air gaps (at 5-10 ata) are not ionized, since the corona stage of the discharge is lacking at air pressures of more than 3 ata and voltages which are lower than the discharge voltage (Ref. 1). The principal circuit of the current converter is shown in Fig. 1 and its mode of operation is explained. The current converter consists of a transformer aggregate, a commutator installation, and valves. Since 1938,

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Power Converter From A.C. Into D.C.

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B012/B058

commutator installations for 100 kv and more have been built and partially tested. Commutator installations of the collector type (Ref. 3) with rotating drum electrodes (Ref. 5) and commutator installations with a back and forth movement of electrodes are the best developed ones so far. As an example a commutator installation with back and forth moving electrodes is described (Fig. 2). It was developed by V. Kherden according to data by the author and represents a further development of the author's design previously described (Ref. 6). Advantages and shortcomings of both commutator installations are pointed out. While the insulation of current carrying parts presents difficulties in the collector type, the installation with electrodes moving back and forth requires a more complicated drive. Nevertheless, preference must be given to the second type, since the insulation of the current carrying parts can be simply solved here. Such commutator installations, built during the last years, with 8 gaps and without preionization have a break-down resistance of 300 kv. It is pointed out that commutator installations with liquid electrodes have also good prospects. The problem of the closing period of the electrodes is studied, and a circuit for increasing the closing period of the electrodes is given in Fig. 4. Sealed mercury-arc rectifiers or semiconductor

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85103

Power Converter From A.C. Into D.C.

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B012/B058

rectifiers are used as valves. Sealed mercury-arc rectifiers for 15 kv inverse voltage and a mean rectified current of 100 a (Ref. 7) are already developed at present. They may be manufactured in series. At present, such rectifiers are also developed for 15-30 kv and 200-300 a. It is pointed out that no exquisite voltage control has yet been developed as in the case of current converters with high-voltage mercury-arc rectifiers. The advantages and shortcomings of the current converter described are finally listed. The advantages are: 1) High break-down resistance, since the air gaps are not ionized; 2) no arc develops in the commutator installation at a maximum load of 150% of the rated value, since commutation is achieved by means of valves; 3) the permanent voltage applied to the valves is 6 to 12 times lower, and the voltage applied for a short time at strong regulation is 4 to 8 times lower than the rated voltage. The design of the mercury-arc rectifiers can therefore be greatly simplified and semiconductor rectifiers can be used respectively; 4) since practically no misfiring occurs in mercury-arc rectifiers of excitron design at a voltage of from 15 to 30 kv and misfiring is entirely absent in semiconductor valves, "tilting" owing to misfiring can practically not occur at all; 5) since the jumps of the inverse voltage are reduced by 4 to

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Power Converter From A.C. Into D.C.

S/105/60/000/009/004/009/XX  
B012/B058

8 times, it is not necessary to suppress high-frequency oscillations. The more complicated and expensive transformers and the existence of moving parts are mentioned as shortcomings of the current converter described. There are 6 figures and 7 Soviet references.

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

SUBMITTED: January 6, 1960

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Card 4/4

I. 23270-66 EWA(h)/EWT(1)

ACC NR: AP6015276

SOURCE CODE: UR/0292/65/000/011/0022/0024

AUTHOR: Butarev, F. I. (Candidate of technical sciences); Klimov, N. S. (Candidate of technical sciences); Pertshev, A. A. (Engineer); Stepanov, N. P. (Candidate of technical sciences)

ORG: none

TITLE: Developments in high-voltage power rectifiers 25

SOURCE: Elektrotehnika, no. 11, 1965, 22-24

TOPIC TAGS: direct current, electric power transmission, mercury rectifier

ABSTRACT: The Leningrad-Donbass transmission line is presently being put into operation. This will be the most powerful d-c transmission line in the world, sending 750 Mw of power at 800 kv over a distance of roughly 500 km. The transmission system uses a three-phase eight-bridge network with power rectifiers which operate at a maximum voltage of 130 kv and a maximum current of 900 amps. The eight-bridge system, proposed by the All-Union "Order of Lenin" Electrical Engineering Institute imeni V. I. Lenin, has the following advantages over the four-bridge circuits: 1) when individual bridges in the system fail, the transmitted power is maintained by current overload on the bridges remaining in operation; 2) the work load on the equipment is lighter in emergency conditions, and two rectifiers can be series-connected in each arm of the bridge to reduce the work load by increasing the number of rectifiers from

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B

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UDC: 621.314.65.001.8

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ACC NR: AP6015276

72 to 96; 3) when separate rectifiers fail, the voltage applied to the elements remaining in operation does not exceed the nominal value, while in the four-bridge system the voltage is twice the rated value in this type of emergency. Various foreign high-voltage d-c transmission lines now in operation and being planned are mentioned and their parameters are given. Some of the advances made in high-voltage power rectifiers since 1940 are discussed. Work was begun on the rectifier being used in the Volgograd-Donbass system in 1952 at the All-Union Electrical Engineering Institute. The various problems involved in the development and construction of this device are discussed. This single-anode pool unit, called the VR-9 Excitron, is now being mass-produced at a specially built factory in Moscow. The overall dimensions of the rectifier are 1.9 x 1.2 x 3.4 m. A comparison of the VR-9 Excitron with the Swedish-made rectifiers used in the English Channel d-c Transmission line shows that the Soviet high-power mercury rectifier is up to modern requirements with respect to electrical characteristics and construction. Orig. art. has: 2 figures. [JPBS]

SUB CODE: 10, 09 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 002

Card 2/2 JB



KLIMOV, N.V.

Quartz calibrator for tuning the receiver of the ZhR-3  
transmitter-receiver set. Avtom., telem. i sviaz' 9  
no.12:35 D '65. (MIRA 19:1)

1. Starshiy radioinzhener Kaluzhskoy distantsii Moskovskoy  
dorogi.

KLIMOV, O. I.

"Errors 5 of the Astronomical Universal Instrument in Determination of Astronomical Points by Methods Based on the Principle of Measuring the Zenith Distances of Stars, and Their Investigation." Cand Tech Sci, Moscow Inst of Engineers of Geodesy, Aerial Photography and Cartography, 24 Dec 54. (VM, 14 Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)  
SO: Sum. No. 556, 24 Jun 55

КУРОВ, О. П.

1485 Общедоступный 5" астрономический университет при определении астрономических пунктов способами, основанными на принципе измерения зенитных

расстояний светил, и их исследование. М., 1954. 19 с. 20 см. (Н-70  
высш. образования СССР. Моск. ин-т инженеров геодезии, аэрофото-  
грамметрии и картографии) 100 экз. Б. тс. (54-54868)

SO: Knizhaya Letopis', Vol. 1, 1955

KLIMOV, O.D., kand.tekhn.nauk

Tables for marking circular curves. Transp.stroi. 9  
no.10:61 0 '59, (MIRA 13:2)  
(Railroads--Surveying)

KLIMOV, O.D., kand. tekhn. nauk; MOKHOV, Yu.V., aspirant

Oscillation of the axis of sight in theodolites during focusing. Trudy MIIGAIK no.36:55-62 '59. (MIRA 13:4)

1. Kafedra prikladnoy geodesii Moskovskogo instituta inzhenerov geodesii, aerofotos"yemki i kartografii.  
(Theodolites)

KUZNETSOV, Sergey Mikhaylovich; CHASTUKHIN, S.A., inzh.-geodesist, retsenz-  
sent; KLIMOV, O.D., kand.tekhn.nauk, retsenzent; MURAV'YEV, M.S.,  
dotsent, retsenzent; LNYCHUK, G.P., dotsent, kand.tekhn.nauk,  
retsenzent; LEKHDEV, M.N., dotsent, retsenzent; GLOTOV, G.F., dotsent,  
retsenzent; GRIGOR'YEV, V.M., inzh.-geodesist, retsenzent; PIMENOV,  
A.F., inzh.-geodesist, retsenzent; BMLIKOV, Ye.F., dotsent, red.;  
KHROMCHENKO, F.I., red.isd-va; ROMANOVA, V.V., tekhn.red.

[Geodetic operations in the design and construction of hydraulic  
structures] Geodesicheskie raboty pri proektirovanii i stroitel'stve  
gidrotekhnicheskikh sooruzhenii. Moskva, Isd-vo geod.lit-ry, 1960.  
173 p. (MIRA 13:9)

(Hydraulic engineering)

(Surveying)

KLIMOV, O. D., kand. tekhn. nauk

"Tables for laying out curves of narrow-gauge (750mm) railroads"  
by I.A. Shcheglov, I.A. Fedosov. Reviewed by O.D. Klimov.  
Transp. stroi. 10 no. 5: 61-62 My '60. (MIRA 13:7)  
(Railroads--Curves and turnouts) (Scheglov, I.A.)  
(Fedosov, I.A.)

KLIMOV, O.D., kand.tekhn.nauk

Precision of short-ray levelong, Trudy NIIGAik no.40:81-85  
'60. (MIRA 13:11)

1. Kafedra prikladnoy geodesii Moskovskogo instituta inzhenerov  
geodesii, aerofotos'yemki i kartografii.  
(Leveling)



KLIMOV, O.D., kand.tekhn.nauk

Enlarged sessions of the Department of Applied Geodesy of the  
Moscow Institute for Engineers in Geodesy, Aerial Photography,  
and Cartography. Trudy MIOGAIK no.41:95-96 '60. (MIRA 13:11)  
(Surveying)

S/537/60/000/041/005/005  
D034/D113

AUTHOR: Klimov, O.D., Candidate of Technical Sciences

TITLE: Enlarged sessions of the Department of Applied Geodesy of the MIIGAik

SOURCE: Moscow. Institut inzhenerov geodezii, aerofotos"yemki i kartografii. Trudy, no. 41, 1960, 95-96

TEXT: During the 1958-1959 academic year, three enlarged sessions were held at the Department of Applied Geodesy of the MIIGAik for the purpose of reading and discussing reports on the development of geodetical engineering. At the first session, held in November 1958, Docent G.P. Levchuk lectured on "Highly-accurate geodetical work during the installation and checking of extensive automatic lines". His lecture was based on scientific research completed at the Department of Applied Geodesy together with the Department of Geodesy, and conducted during the installation of the guiding rails of a conveyor for grinding and polishing glass at Gus'-Khrustal'nyy and Saratov. The lecture dealt with the checking and mounting of the guiding rails, and a ✓

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S/537/60/000/041/005/005  
D034/D113

Enlarged sessions of the ...

new type of microlevel, superior to earlier models in that it afforded better protection against temperature changes and was equipped with an indicator, etc. Data was also presented on the sinking of the conveyor foundations in both of the abovementioned towns. During the second session, engineer V.L. Starodubov, representing industry, reported on "Laying out of a structural net, using methods of short-base parallactic polygonometry and geodetic quadrilaterals without diagonals". By combining both of the above methods, the first of which was developed by Professor A.S. Filonenko, and the second by I.V. Zubritskiy, expenditure was reduced by three times. During the third session, P.I. Brayt, Senior Scientific Co-worker of the NII osnovaniy i fundamentov (NII of Substructures and Foundations) reported on "Measurements of deformations of hydropower structures in Czechoslovakia". The lecture dealt mainly with instrumentation and methods applied for detecting structural cracks and tilts. In conclusion, the author comments on the success achieved in this first attempt to combine scientific theory with industrial practice. ✓

ASSOCIATION: Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii (Moscow Institute of Geodesy, Aerial Photography and Cartography).

Card 2/2

KLIMOV, O.D., dotsent, kand.tekhn.nauk

Using the principle of autocollimation in studying astronomical  
and geodetic instruments. *Izv.vys.ucheb.sav.; geod.i aerof. no.41*  
27-37 '62. (MIRA 16:2)

1. Moskovskiy institut inzhenerov geodesii, aerofotos'yunki i  
kartografii.

(Astronomical instruments)

ACC NR. AP6035832 (A,N) SOURCE CODE: UR/0113/66/000/020/0037/0037

INVENTOR: Bliznyuk, N. K.; Klimov, O. V.; Libman, B. Ya.; Troitskiy, V. N.; Khokhlov, P. S.; Dotsev, G. V.; Kalutskiy, L. A.; Beym, A. I.; Verhsinin, P. V.; Mandel'baum, Ya. A.; Varshavskiy, S. L.; Mel'nikov, N. N.

ORQ: none

TITLE: Preparation of derivatives of tri- and tetraphosphoric acids, Class 12, No. 187019

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye snaki, no. 20, 1966, 37

TOPIC TAGS: ~~physiologically active compound~~, alkyl trithiophosphate, alkyl tetrathiophosphate, phosphate, phosphoric acid, musaplan, turkey ~~antiseptic, toxin~~

ABSTRACT: In the proposed method for the preparation of derivatives of tri- and tetrathiophosphoric acids of the general formula:



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UDC: 547.419.1.07

ACC NR: AP6035032

(where R is a lower alkyl, R' is a substituted alkyl or aryl, and X is O or S), physiologically active compounds with low toxicity to mammals are obtained by treating dialkyl trithiochlorophosphates with alcohols, mercaptans, or thiophenols in organic solvents in the presence of HCl acceptors, preferably tertiary amines. [PS]

[WA-50; CBE No. 14]

SUB CODE: 07/ SUEM DATE: 26May65

Card 2/2

GORSHKOVA, T.A.; KLIMOV, P.D.

Reducing ability in apple-pear hybrids. *Biul.nauch.-tekh.*  
inform.TSOL no.1:11-12 '56. (MIRA 12:1)  
(Reduction, Chemical) (Apple breeding) (Pear breeding)

KLIMOV P. D.

B

USSR/General Biology. Genetics

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57157

Author : Klimov P. D.

Inst : Central Genetics Laboratory imeni I. V. Michurin

Title : Winter Resistance of Some Enzymes

Orig Pub : Byul. nauchno-tokhn. inform Tsentr. onst. labor. I. V. Michurina, 1957, vyp. 3, 50-55

Abstract : The author determined the peroxidase activity in apple-pear hybrids and established that repeated crossing of the first generation of hybrids with southern pears leads to a somewhat decrease in winter resistance of the second generation, increasing at the same time peroxidase activity. The first and the vegetative generations are highly winter resistant and no difference between them may be observed

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Klimov, P.I.

**AUTHORS:** Belyayevskiy, M.A., Klimov, P.I. 132-58-4-16/17

**TITLE:** Conference on the Generalization of Experiences Gained in Conducting Geological Surveying and Prospecting (Rabocheye soveshchaniye po obobshcheniyu opyta provedeniya geologicheskoy s"y@mk1 i poiskov)

**PERIODICAL:** Razvedka i Okhrana Nedr, 1958, <sup>24</sup>№ 4, pp 61-63 (USSR)

**ABSTRACT:** Called by the Ministry of Geology and Conservation of Mineral Resources, this conference was held in Leningrad from 25 February to 1 March 1958. More than 220 delegates from various organizations of the Ministry, the USSR Academy of Sciences and the vuzes took part in the conference. Approved were plans for geological surveying projects and geophysical regional works elaborated by the Ministry. The necessity of improving the qualifications of the geologists-surveyors and prospectors was brought to attention.

**ASSOCIATION:** Ministerstvo geologii i okhrany nedr SSSR (USSR Ministry of Geology and Conservation of Mineral Resources)

**AVAILABLE:** Library of Congress  
Card 1/1 1. Geological surveying-USSR 2. Geology-USSR

VERESHCHAGIN, V.N.; IVANOV, Yu.A.; BELYAYEVSKIY, N.A., glav. red.;  
ALEYNER, A.Z., red.; GRIGOR'YEV, A.V., red.; ZAYTSEV, I.K.,  
red.; KLIMOV, P.I., red.; KRASNOV, I.I., red.; LANKIN, A.A.,  
red.; MUZYLEV, S.A., red.; OGNEV, V.N., red.; TROSTNIKOVA,  
N.Ya., red. izd-va; IYERUSALIMSKAYA, Ye.S., tekhn. red.

[Instruction for compiling and preparing for publication a  
geological map at a scale of 1:50,000; supplement to the  
instruction for organising and conducting geological surveys  
at a scale of 1:50,000 and 1:25,000] Instruksiia po sostavle-  
niiu i podgotovke k izdaniiu geologicheskoi karty mashtaba  
1:50 000; dopolnenie k instruksii po organizatsii i proizvod-  
stvu geologos'emochnykh rabot mashtaba 1:50 000 i 1:25 000.  
Moskva, Gosgeoltekhizdat, 1962. 41 p. (MIRA 15:6)

1. Russia (1923- U.S.S.R.) Ministerstvo geologii i okhrany nedr.  
(Geology--Maps)

SHENGER, I.F.; KLIMOV, P.K.

Modified pulmonary circulation following the introduction of  
adrenaline and vasopressin as a factor in the development of  
pulmonary edema. Pat. fisiol. i eksp. terap. 8 no.4:19-23  
Jl-Ag '64.

(MIRA 18:2)

1. Laboratoriya fiziologii vegetativnoy nervnoy sistemy i  
nervnoy trofiki (zav.- prof. A.V. Tonkikh) i kabinet rent-  
genodiagnostiki (zav. P.K. Klimov) Instituta fiziologii  
imeni Pavlova AN SSSR, Leningrad.

POPOV, M.M.; KLIMOV, P.K.

Use of angiocardiography in physiological experiments. *Biul. eksp. biol. i med.* 50 no.12:108-110 D '60. (MIRA 14:1)

1. Iz laboratorii nefrofiziologicheskikh problem (sav. - akademik K.M.Bykov (deceased)) Instituta fiziologii imeni I.P.Pavlova Akademii nauk SSSR V.V. Parinym.

(ANGIOCARDIOGRAPHY)

GUR'YEVA, K.N.; KLIMOV, P.K., kand.med.nauk

Features of the course of pneumonia during the influenza epidemic  
of 1959. Sov. med. 24 no. 10:41-43 0 '60. (MIRA 13:12)

1. Iz terapevticheskogo i rentgenologicheskogo otdeleniya  
polikliniki I Leningradskogo meditsinskogo instituta (glavnyy  
vrach - kand.med. nauk A.M. Shukhtina, nauchnyy rukovoditel' -  
doktor med. nauk N.A. Tolubeyeva).  
(PNEUMONIA) (INFLUENZA)

KLIMOV, P.K.; POPOV, M.M.; SOLOV'YEV, N.A.

Motor function of the gall bladder in intravenous cholegraphy.  
Trudy Inst. fiziol. 9:82-86 '60. (MIRA 14:3)

1. Laboratoriya nefrofiziologicheskikh problem (zaveduyushchiy -  
K.M.Bykov [deceased]) i laboratoriya fiziologii pishchevareniya  
(zaveduyushchiy - A.V.Solov'yev) Instituta fiziologii im.I.P.Pavlova.  
(GALL BLADDER—RADIOGRAPHY)

KLIMOV, P.K., POPOV, M.M.

Motor changes in the gastrointestinal tract following traumatic damage to the osteoarticular apparatus (radiographic investigation).  
Trudy Inst. fiziol. 9:227-231 '60. (MIRA 14:3)

1. Laboratoriya nevrofiziologicheskikh problem (zaveduyushchiy -  
K.M.Bykov) Instituta fiziologii im. I.P.Pavlova.  
(EXTREMITIES (ANATOMY)—WOUNDS AND INJURIES)  
(DIGESTIVE ORGANS—RADIOGRAPHY)

KLIMOV, P.K.; POPOV, M.M.; SOLOV'YEV, N.A.

Motor function of the gall bladder in acute radiation sickness  
(radiographic investigation). Trudy Inst. fiziol. 9:232-236 '60.  
(MIRA 14:9)

1. Laboratoriya nevrofiziologicheskikh problem (zaveduyushchiy -  
K.M.Bykov [deceased]) i Laboratoriya fiziologii pishchevareniya  
(zaveduyushchiy - A.V.Solov'yev) Instituta fiziologii im. I.P.Pavlova.  
(GALL BLADDER—RADIOGRAPHY)  
(RADIATION SICKNESS)



POPOV, M.M.; KLIMOV, P.K.

X-ray kymography as a method for the physiological study of the  
gastrointestinal tract. *Biul. eksp. biol. i med.* 3[1.e.53] no.3:  
120-123 Mr '62. (MIRA 15:4)

1. Iz laboratorii neyrofiziologicheskikh problem (sav. - akademik  
K.M.Bykov [deceased]) Instituta fiziologii imeni I.P.Pavlova (dir. -  
akademik K.M.Bykov [deceased]) AN SSSR, Moskva. Predstavlena  
akademikom V.N.Chernigovskim.  
(KIMOGRAPH) (ALIMENTARY CANAL--RADIOGRAPHY)

39192

S/241/62/007/005/003/005  
1015/1215

**AUTHOR:** Klimov, P. K.

**TITLE:** Functional changes in the lymphatic system following acute radiation sickness together with osteo-articular injuries

**PERIODICAL:** Meditsinskaya radiologiya, v. 7, no. 5, 1962, 45-48

**TEXT:** Experiments were carried out in winter time on male, sexually mature rabbits weighing 2-2.5 kg. The methods of study of lymph circulation, the technique of traumatizing the tarsal bone of the posterior extremity and the dosage of irradiation are such as to show that irradiation together with osteo-articular traumata brought about marked lymphatic changes: dystonia of lymph vessels, impaired permeability, and retarded passage of contrast lymph. The disturbances in the lymph flow were also more marked in the combined lesions (radiation sickness together with trauma), than in trauma or radiation sickness alone. There is 1 figure.

**ASSOCIATION:** Laboratoriya neyrofiziologicheskikh problem (zav.-akad. K. M. Bykov (deceased) Institute fiziologii imeni I. P. Pavlova AN SSSR (Laboratory of neurophysiological problems, Dir.-Academician K. M. Bykov (deceased). Institute of Physiology imeni I. P. Pavlov, AS USSR)

**SUBMITTED:** May 5, 1961

Card 1/1

KLIMOV, P.K.

Functional changes in the lymphatic system in acute radiation sickness in combination with traumatic lesions of the osteoarticular apparatus. Med.rad. no.5:45-48 '62. (MIRA 15:8)

1. Iz laboratorii neyrofiziologicheskikh problem (sav. - akad. K.M. Bykov [deceased]) Instituta fiziologii imeni I.P. Pavlova AN SSSR.

(LYMPHATICS) (RADIATION SICKNESS)  
(BONES--WOUNDS AND INJURIES)

KLIMOV, P.K.

Functional changes in the gastrointestinal tract in patients with peptic ulcer of the stomach and duodenal bulb after ingestion of cabbage juice (X-ray study). Terap.arkh. 33 no.8:28-32 '61.

(MIRA 15:1)

1. Iz laboratorii fiziologii pishchevareniya (zav. - prof. A.V. Solov'yev) Instituta fiziologii imeni I.P. Pavlova AN SSSR i polikliniki I Leningradskogo meditsinskogo instituta.

(PEPTIC ULCER) (ALIMENTARY CANAL--RADIOGRAPHY)  
(VEGETABLE JUICES--PHYSIOLOGICAL EFFECT)