

Linear Accelerators; (Cont.)

SOV/2003

linear electron accelerator. The method was suggested by O. A. Val'dner. It is shown that the use of this method for accelerators of over 3-5 Mev may by three times the nonuniformity of energy of the output beam. The authors discuss ways of applying this method practically and show that by using this method the longitudinal stability of particles is not disturbed. There are 6 references: 3 Soviet and 3 English.

Tragov, A. G. Phase Shifter With Two Dielectric Plates

91

The author discusses a phase shifter in which phase shifting is accomplished by moving two dielectric plates in the cross-section of a rectangular waveguide. It is shown that the use of two plates instead of one makes it possible to increase the phase shift and decrease the size of the phase shifter by one and a half times. Results of theoretical and experimental calculations are presented. There are 2 references, both Soviet.

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S/120/61/000/004/001/034
E032/E514

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AUTHORS: Val'dner, O.A. and Vitenberg, I.M.

TITLE: An electrical model of a linear accelerator

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.4, pp.25-26

TEXT: In view of the increasing number of electron accelerators which are either being built or are being designed, it is desirable to evolve methods for the preliminary calculation of the beam parameters. From this point of view the machines can be divided into two groups, namely, those with a working energy of less than 30 MeV and those above this energy. Design calculations carried out at МИФИ (MIFI) showed that in order to ensure the necessary beam parameters all the accelerators belonging to the second group can be discussed in terms of the same solution describing the electron dynamics during the acceleration process. The situation is different in the case of the first group, i.e. in the case of low energies. The electron dynamics in linear accelerators of this type can be described by the following equations:

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An electrical model of a linear ...

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$$\frac{dy}{d\xi} = A(\xi) \sin \varphi, \quad (1)$$

$$\frac{d\varphi}{d\xi} = 2\pi \left[\frac{1}{\beta_B(\xi)} - \frac{1}{\beta_0} \right],$$

$$\gamma = (1 - \beta_0^2)^{-1/2},$$

where φ is the phase angle of the particle relative to the wave and γ , ξ , A , β_B and β_0 are the dimensionless energy, linear coordinate, electric field amplitude, wave velocity and electron velocity, respectively. This equation can only be solved by numerical integration. It is, therefore, interesting to produce an electrical model for this set of equations. A model is particularly useful if the electron energy is to be adjustable. The search for acceptable solutions can be reduced to the selection of functions describing changes in the accelerating wave amplitude

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An electrical model of a linear ... S/120/61/000/004/001/034
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and the phase velocity along the accelerator. The present authors have developed special apparatus which can be used to investigate phase oscillations and the output beam parameters for different forms of A and β_B , the stability of the beam parameters and the capture into the acceleration process under different working conditions. The figure shows the circuit employed. In electrical modelling the integration time represents the dimensionless accelerator length. The functions $\alpha_B = \beta_B^{-1}(\xi)$ and $\alpha_1 = \beta_1^{-1}(\gamma)$ are generated by the non-linear units $\text{BH}2$ (BN2) and $\text{BH}3$ (BN3). A detailed description of this circuit is not given except that $\text{SY}1$ (SU1) is an adding amplifier and $\text{U}13$ (IUZ) is an integrating amplifier. The phase trajectories obtained with this apparatus can be inspected visually on the screen of a CRO or photographed. Acknowledgments are expressed to A. V. Shal'nov, I. K. Ogorodova and Yu. V. Ogorodov. There is 1 figure. H

SUBMITTED: December 13, 1960

Card 3/1 3

VAL'DNER, O.A.; GLAZKOV, A.A.

Linear electron accelerator to 3 Mev energy. Prib.i tekhn.eksp.
6 no.5:26-28 S-0 '61. (MIRA 14:10)

1. Moskovskiy inzhenerno-fizicheskoy institut.
(Particle accelerators)

TYAGUNOV, Georgiy Aleksandrovich. Prinsipialni uchastnye: ZHIGAREV, A.A.,
kand. tekhn. nauk; VAL'DNER, O.A., kand. tekhn. nauk;
SHAL'NOV, A.V., kand. tekhn. nauk; CHISTYAKOV, P.N., kand.
tekhn. nauk; YUDINSKAYA, I.V., starshiy prepodavatel';
FRIDKIN, A.M., tekhn. red.

[Electron-tube and transistor devices (physics, fundamental
theory, and principal designs)] Elektrovakuumnye i poluprovod-
nikovye pribory (fizika, elementarnaya teoriya, osnovnye kon-
struktsii). Moskba, Gos. energ. izd-vo, 1962. 398 p.
(MIRA 15:4)

(Electron tubes) (Transistors)

S/759/62/000/003/001/021

AUTHOR: Val'dner, O. A.

TITLE: Commercial linear electron accelerators developed at the Moscow Engineering Physics Institute

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Uskoriteli. N. 3. 1962. 5-17.

TEXT: Two series of linear electron accelerators have been developed and are ready for commercial production, one rated 3 MeV and the other 5 MeV. In addition, experimental models of seven accelerators rated from 2 to 7 MeV have been built and investigated. Along with the development work, theoretical studies of particle dynamics and of the high-frequency processes have been carried out at the Institute (by S. P. Lomnev, G. A. Tyagunov, A. G. Tragov, and A. V. Shal'nov). The calculations have been compared with experiment by Ye. G. Pyatnov. The staff of the microwave laboratory, headed by N. P. Sobenin, plotted more exact parametric curves for the diaphragmed waveguide and made other investigation. A special study of the matching of the generators with the accelerator was made by O. S. Milovanov. The assembly, adjustment, and startup were under the leadership of A. A. Glazkov, and work on the design of accelerators and separate units is carried out in a design bureau headed by D. M. Zorin. The characteristics and

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Commercial linear electron accelerators...

S/759/62/000/003/001/021

design and operating features of the two commercial accelerators, U-10 (3 MeV) and U-12 (5 MeV) are described in some detail. There are fourteen figures.

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S/759/62/000/003/012/021

AUTHORS: Val'dner, O. A., Pyatnov. Ye. G.

TITLE: Comparison of experimental and theoretical characteristics of waveguide buncher for 3 MeV

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Uskoriteli. no.3. 1962. 121-135

TEXT: A special test setup, U-1-M, constructed for a study of the experimental characteristics of bunchers and to ascertain the agreement between the theoretical and experimental data, is described and the main experimental results obtained are presented. The setup comprises a 3 MeV linear accelerator with housing of adjustable length to accommodate bunchers of different sizes, and with exciting coils so arranged as to produce a magnetic field of variable length. The relative phase velocity and field intensity were such as to produce a narrow phase bunch (6° at half-height of the phase spectrum and 25° at the base) containing 905 of the electrons, at a load current of 100 mA. The waveguide was of the loaded type assembled of individual rings and diaphragms on stainless steel dowels. The theoretical and experimental distributions of the phase velocity along the buncher were in good agreement, but there was a

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Comparison of experimental...

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disparity between the theoretical and experimental attenuations along the buncher. The behavior of the frequency, power, and current characteristics is analyzed and explained from the point of view of the phase stability principle. The experimental characteristics were found to agree within 3-4% with the results of the theory developed at the Moscow Engineering-Physics Institute at low values of power. A similar agreement is found with respect to the width and form of the energy spectrum, indicating that the numerical integration of the equations of motion of a single electron (the "single-electron theory, with no account taken of the space charge of the accelerated bunch, lateral motion of the electrons, etc.) is applicable at least for pulsed currents up to 300 mA. It is pointed out that in the design of special accelerators with narrow phase or energy spectra it is necessary to analyze thoroughly beforehand the data governing the choice of the operating region of input parameters (frequency and high-frequency power of the generator) such as to attain the required stability of the accelerated beam. There are 8 formulas and 11 figures.

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S/759/62/000/003/018/021

AUTHORS: Val'dner, O. A., Sinitsyna E. A., Sobenin, N. P., Shchedrin, I. S.

TITLE: Parametrization of group velocity

Source: Moscow. Inzhenerno-fizicheskiy institut. Uskoriteli. no.3.1962. 185-191

TEXT: It is shown that the dependence of the group velocity in a linear electron accelerator on the geometric dimensions and phase velocity of the wave can be represented for an iris waveguide in parametric form. Parametric curves are plotted for $\pi/2$ modes from the results of experimental data. The parameters involved are k_a (where $k_n = 2\pi/\lambda_n$ is the wave number of the n-th mode with wavelength λ_n and $2a$ is the diameter of the iris opening), k_b (where $2b$ is the inside diameter of the waveguide proper), β_n (the phase velocity), and n (the relative thickness of the diaphragm). The experimental curves are plotted for the following parameter ranges: B - from 0.4 to 1, λ - from 10 to 11 cm, a/b - from 0.2 to 0.5, a/λ - from 0.08 to 0.2, and iris thickness 0.4 cm. The group velocity is then readily obtainable from an approximate formula. The errors of the method are analyzed. There are two figures and two tables.

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S/759/62/000/004/001/016
D207/D308

AUTHORS: Val'dner, O. A., Koroza, V. I. and Shal'nov, A. V.
TITLE: On the problem of the possibility of wide-range energy regulation in linear electron accelerators - bunchers
SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Uskoriteli, no. 4, 1962, 3-6

TEXT: An accelerator with continuous output energy variation is required for some applications in physics and chemistry. For a short accelerator such an energy variation is best obtained by varying the frequency of the microwave power supply. To vary the energy of a pulsed 200 mA electron beam with the range 1 - 2 MeV it is necessary to: (1) select the accelerating system so that it gives the required energy variation within a specified frequency range without too much broadening of the energy spectrum; (2) ensure satisfactory working of the microwave source within the specified frequency range. The present paper deals only with the first

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On the problem of ...

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point. It is shown that using a $\lambda = 10.5$ cm 1.5 MW source of micro-wave pulses an energy variation from 1.3 to 2.1 MeV may be obtained by varying the source frequency by 10 Mc/s; the width of the energy spectrum under these conditions does not exceed 18%. There are 3 figures.

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S/759/62/000/004/002/016
D207/D308

AUTHORS: Val'dner, O. A., Koroza, V. I. and Shal'nov, A. V.

TITLE: Use of untunable magnetrons for power supplies of linear electron accelerators

SOURCE: Inzhenerno-fizicheskiy institut. Uskoriteli, no. 4, 1962, 7-11, Moscow

TEXT: The use of untunable magnetrons in power supplies of linear electron accelerators gives the advantages of lower cost, longer service life and higher available power, compared with tunable magnetrons. The present paper deals with problems caused by frequency deviations from the nominal value in mass-produced untunable magnetrons. A corrugated waveguide used in conjunction with a magnetron should be designed so that the frequency deviation in the latter does not greatly affect the energy and spectrum of the accelerated electrons. Design calculations are given for the following accelerator model, called ψ -20 (U-20): a circular waveguide with a parameter $a/\lambda = 0.3$, accelerator length 2 m; here a is the

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Use of untunable ...

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D207/D308

radius of apertures in the diaphragms of the corrugated waveguide and λ is the working wavelength. The calculations were carried out on an analog computer and they showed that, under certain specified conditions, a satisfactory electron-energy peak is obtained at 5 MeV. The authors consider also the frequency dependence of the electron energy for an accelerator of γ -12 (U-12) and show that its large microwave power margin (only 25% of the power is used for electron acceleration) can be used to increase the beam current. There are 6 figures.

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VAL'DNER, O. A.

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

AUTHORS: G. T. and M. R.

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

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

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

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Nauchnaya konferentsiya...

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design of 30-Mev electron linear accelerator; Ye. G. Pyatnov, A. A. Glaskov, V. G. Lopato, A. I. Finogenov, G. N. Skepskiy, V. D. Seleznev, experimental characteristics of low-energy electron linear accelerators; G. A. Zeytlenk, V. M. Levin, S. I. Piskunov, V. L. Smirnov, V. K. Khokhlov, radio-circuit parameters of СВЧ (LUE)-type accelerators; G. A. Tyagunov, G. A. Val'dner, B. M. Gokhberg, S. I. Korshunov, V. I. Kotov, Ye. M. Moroz, accelerator classification and terminology; O. S. Milovanov, V. B. Varaksin, P. R. Zenkevich, theoretical analysis of magnetron operation; A. G. Tragov, P. R. Zenkevich, calculation of attenuation in a diaphragmated waveguide; Yu. P. Lazarenko, A. V. Ryabtsev, optimum attenuation length for linear accelerator; A. A. Zhigarev, R. Ye. Yeliseyev, review on trajectographs; I. G. Morosova, G. A. Tyagunov, review on more than 500 ion sources; M. A. Abroyan, Y. L. Komarov, duoplasmatron-type source; V. S. Kuznetsov, A. I. Solnyshkov, calculation and production of intense ion beams; V. M. Rybin (Ye. V. Arsenkiy), inductive current transmitters of high sensitivity; V. I. Korosa, G. A. Tyagunov, kinetic description of linear acceleration of relativistic electrons; A. D. Vlasov, phase oscillations in linear accelerators; E. L. Burshteyn, G. V. Voskresenskiy, beam field effects in the waveguide of an electron linear accelerator; R. S. Bobovikov,

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VAL'DNER, Oleg Anatol'evich; SHAL'NOV, Aleksandr Vsevolodovich;
MEL'NIKOVA, A.I., red.; VLASOVA, N.A., tekhn. red.

[Electromagnetic fields in septate wave guides of electron
accelerators] Elektromagnitnye polia v diafragmirovannykh
volnovodakh lineinykh elektronnykh uskoritelei. Moskva,
Gosatomizdat, 1963. 65 p. (MIRA 17:1)

ACCESSION NR: AT4019725

S/2759/63/000/005/0096/0107

AUTHOR: Val'dner, O. A.; Glazkov, A. A.; Pyatnov, Ye. G.; Seleznev, V. D.

TITLE: Experimental study of the Y-10 linear accelerator. I. Preparation for operation and measurement techniques

SOURCE: Moscow. [Inzhenerno-fizicheskiy institut. Uskoriteli (Accelerators), no. 5, 1963, 96-107

TOPIC TAGS: accelerator, linear accelerator, beam stability, reliability

ABSTRACT: The aim of the paper is to make a detailed test of the type Y-10 linear accelerator in the following respects: 1) correspondence between the obtained beam parameters and the calculated data, and the verification of the assumptions made in the design; 2) determination of operational characteristics of the accelerator which are important in estimating the stability of its operation and which describe the beam reaction to variations in the feed conditions; 3) verification of the operational reliability of the accelerator for a long duty-cycle. Orig. art. has: 7 figures and 10 equations.

ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow (Engineering-Physics Institute)

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BR

ACCESSION NR: AT4019726

S/2759/63/000/005/0108/0124

AUTHOR: Val'dner, O. A.; Glazkov, A. A.; Pyatnov, Ye. G.; Seleznev, V. D.

TITLE: Experimental study of the Y-10 linear accelerator

SOURCE: Moscow. Inzhenerno-fizicheskiy Institut. Uskoritoli (Accelerators), no. 5, 1963, 108-124

TOPIC TAGS: accelerator, linear accelerator, particle accelerator, electron accelerator, linear electron accelerator

ABSTRACT: The first part of this paper appears as the preceding paper in the same issue. This second part describes the energy spectra of the particles, the frequency characteristics, the power and current characteristics, and the beam-power and high-frequency efficiency. Orig. art. has: 12 figures and 5 formulas.

ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow (Engineering-Physics Institute)

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EPF(n)-2/BDS/EWT(1)/EWT(m)/ES(w)-2--AFFTC/ASD/SSD--Pu-4/

Pab-4--IJP(C)/AR

ACCESSION NR: AP3002715

S/0120/63/000/003/0029/0032

AUTHOR: Val'dner, O. A.; Glazkov, A. A.; Finogenov, A. I. 69TITLE: Linear accelerator for 5-Mev energy (Model U-12)SOURCE: Pribory i tekhnika eksperimenta, ¹⁹no. 3, 1963, 29-32

TOPIC TAGS: linear accelerator, Gamma radiation, electron accelerator

ABSTRACT: The performance of a linear electron accelerator recently developed at the Moskovskiy inzhenerno-fizicheskiy institut (Moscow Engineering-Physics Institute) is described. This unit has a diaphragmed accelerating waveguide consisting of a first (buncher) section 122 cm in length, containing 54 segments of varying cross section, and a second section 78 cm in length containing 30 segments of constant cross section. Over the entire length the phase velocity rises from 0.436 to 1.00 and the voltage gradient from 17.4 to 26 kv/cm. The power source is an S-band magnetron of 1.5-megawatt peak power, working at 400 cps with pulses of 2.5 microsec. This yields a beam of 70-microamp average current and a 4--5 Mev energy, with an energy spectrum of approximately 5% and an average beam power of 300 watts. With optimum decelerating target, a Gamma radiation level of

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600 r/min is attainable at a one-meter distance normal to the target. Accelerator characteristic curves are given as measured over the magnetron frequency range of 6.79--6.85 Mc. Tests show that accelerator efficiency, defined as the fraction of h-f pulse energy transferred to the beam, can attain 25%. To arrive at this the beam energy was determined from its absorption in aluminum foil layers. The main operation difficulties cited are in obtaining the optimum match of the waveguide to the magnetron and in getting axial symmetry of the magnetic focussing field in order to prevent beam losses in the guide. This model is an improvement over an earlier version in its maximum beam energy and radiation produced, as well as in construction and reliability. Several units are in current operation. Orig. art. has: 6 figures.

ASSOCIATION: Moskovskiy inzhenerno-fizicheskiy institut (Moscow Engineering-Physics Institute)

SUBMITTED: 12Jul62 DATE ACQ: 12Jul63 ENCL: 00
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Card *2/2*

S/089/63/014/002/017/019
B102/B186

AUTHORS: Val'dner, O. A., Glazkov, A. A.
TITLE: Development of commercial linear accelerators
PERIODICAL: Atomnaya energiya, v. 14, no. 2, 1963, 224-226

TEXT: The authors report on the design and construction work carried out at the Moskovskiy inzhenerno-fizicheskiy institut (Moscow Institute of Physical Engineering) which led to the series production of four types of electron linear accelerators: γ -10 (U-10), γ -12 (U-12), γ -13 (U-13) and γ -16 (U-16). U-10: Total electron energy 3 Mev, mean current 200 μ a (can be raised to 600 μ a), γ -ray intensity 260 r/min; waveguide length 122 cm (54 cells). The phase velocity of the β_v -wave lies between 0.436 and 0.987, the mean load parameter $a/\lambda = 0.16$, the amplitude of the E-field is 17.4-30.0 kv/cm. U-12: electron energy 5 Mev, mean current 100 μ a, γ -ray intensity 600 r/min; waveguide length 200 cm (84 cells), the last 78 cm (30 cells) are equal. $\beta_v = 1.00$; $a/\lambda = 0.155$, E drops from 30 to 26 kv/cm. U-13: 10 Mev, 70 μ a,

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Development of commercial ...

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2500 r/min. The waveguide consists of two sections each 200 cm long; the first equals that of the U-12, the second one has constant structure. U-13 permits smooth variation of the electron energy from 5 to 10 Mev by means of modifying the phase shifter. U-16: 1-2 Mev, 200 μ a; energy variation is possible with constant current. Waveguide length 100 cm (52 cells), a/λ drops linearly from 0.18 to 0.12, E increases from 9.9 to 38.9 kv/cm. The electron energy drops linearly from 2.1 to 1.0 Mev when the frequency rises from its nominal value to 8 Mc. The spectrum broadens from 7 to only 9.5% without current losses. These four types are to be produced in more than 15 variants, almost half of which has already been tested. There are 2 figures.

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VALIDNER, O.A.

Capture and injection of electrons in a linear accelerator.
Uskoriteli no.6:5-16 '64. (MIPA 18:2)

ACCESSION NO: APOC1411

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AUTHOR: Val'dner, O. A.; Shchedrin, I. S.

TITLE: Method of detection and compensation for small inhomogeneities in diaphragmed waveguides 31

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Uskoriteli, no. 6, 1964, 29-35

TOPIC TAGS: periodic waveguide, diaphragmed waveguide, inhomogeneity detection, inhomogeneity compensation

ABSTRACT: In view of the fact that experiments have disclosed the presence of reflections in diaphragmed waveguides, due to imperfections in the interior surface finish, the authors propose a method for the detection and correction of small inhomogeneities. The method is based on detection of the pass characteristics of the diaphragmed waveguide with the aid of the equipment shown in Fig. 1 of the enclosure, and eliminating the presence of small inhomogeneities of the pass-band characteristic. To facilitate application of the method, an automatic total-impedance meter can be incorporated in the system. The method

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is based essentially on determining the reflections from the irregularities as an absorbing load is moved along the diaphragmed waveguide. This method was tried several times and used both to measure the inhomogeneities in a diaphragmed waveguide consisting of a cylindrical section with constant dimensions, and to correct for these inhomogeneities in a section of a diaphragmed waveguide. The feasibility of compensating for the inhomogeneities is demonstrated. The authors thank docent M. P. Sobenin for a discussion of the experimental results. Orig. art. has: 5 figures and 3 formulas .

ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow (Engineering Physics Institute)

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ENCL: 01

SUB CODE: EC, GP

NR REF SOV: 009

OTHER: 000

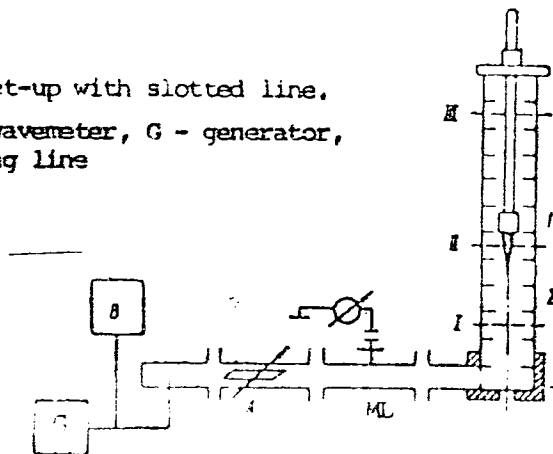
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FIG. 2. Diagram of set-up with slotted line.
A - Attenuator, B - wavemeter, G - generator,
ML - slotted measuring line



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ACCESSION NR: AR4049411 S/0275/64/000/009/A059/A059
621.384.6

From: Ref. zh. Elektronika i yeye primeneniye. Svednyy tom, Abs. 9A396

AUTHOR: Amenskiy, Ye. V.; Val'dner, G. A.

TITLE: Problems of automation and stabilization of linear accelerator of electrons

CITED SOURCE: So. Elektron. uskoriteli. M., Vyssh.shkola, 1964, 40-47

TOPIC TAGS: electron accelerator, linear electron accelerator, automatic control, stabilized accelerator

TRANSLATION: Possible ways are considered for (a) increasing the stability of accelerator parameters by providing stabilizing and automatic devices and (b) ...

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system which would also result in reduced expenditures.

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L 23137-66 EWT(m)/T
ACC NR: AP6001566 (A) SOURCE CODE: UR/0120/65/000/006/0027/0037

AUTHOR: Val'dner, O. A.; Glazkov, A. A.

ORG: Moscow Engineering and Physics Institute (Moskovskiy inzhenerno-fizicheskiy institut)

TITLE: Calculation of the dynamics of particles in waveguide-type separators

SOURCE: Pribory i tekhnika eksperimenta, no. 6, 1965, 27-37

TOPIC TAGS: particle separator, waveguide particle separator, particle motion, waveguide, particle beam, nuclear physics apparatus

ABSTRACT: The displacement and deviation of particles in a TW separator are calculated as functions of their rest energies on the basis of particle-motion equations. The principles of selection of wave phase velocity and other separator parameters for optimal isolation of certain particles from a single-impulse beam are discussed. The effects of nonmonochromaticity and divergence of the beam are allowed for. The design of the longitudinal separator, which uses standard TM mode, is simpler thanks to the great deal of experience accumulated in the development of linear electron accelerators. However, this separator requires either

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unwieldy static magnets or longer sections and higher SHF power than those needed for a lateral-type separator. Also, the longitudinal type is more sensitive to particle-pulse spread. The lateral type has a larger aperture, does not require additional magnets, but uses the HEM₁₁-mode whose properties are complex and little known. Separator-parameter tolerances are considered. Superhigh-impulse-particle separation is analyzed. The theory is illustrated by an example of isolating K-mesons and anti-protons, having momenta of 5 and 21 Gev/c, in a separator at a wavelength of 10 cm. Orig. art. has: 10 figures, 25 formulas, and 5 tables.

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I 43804-66 EMP(1)/EMP(2) IIP(a)
ACC NR: AT6017506 (N) SOURCE CODE: UR/2759/65/000/007/0039/0047

AUTHOR: Val'dner, O. A. (Candidate of technical sciences); Seleznev, V. D. 5/6
B-1

ORG: none

TITLE: RF power supply for linear accelerators 19

SOURCE: Moscow. Inzhenerno-fizicheskiy institut, Uskoriteli, no. 7, 1965, 39-47

TOPIC TAGS: linear accelerator, waveguide, magnetron, klystron, RF power generator

ABSTRACT: A compromise is sought to achieve the most efficient design for the radio frequency power supply for a linear accelerator. The discussion is based upon the fact that the shunt impedance of a diaphragm waveguide varies proportional to $1/\lambda^{1/2}$. On the other hand, the RF power which can be achieved with present generators may be considered as directly proportional to wavelength. The present state of high frequency power generators leads to the choice of the 10-20 cm (1500-3000 Mhz band). The power attained in this band is of the order of 10 Mw and, in some new generators, up to 100 Mw and more. A graph comparing magnetrons and klystrons is shown. The authors conclude that $a/\lambda=0.22$ represents the optimum choice for the most efficient operation. Orig. art. has: 5 figures, 15 formulas.

SUB CODE: 20/0/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001

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L 06421-67 EWT(m) IJP(c)

ACC NR: AT6017504

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SOURCE CODE: UR/2759/65/000/007/0005/0028

AUTHOR: Val'dner, O. A. (Candidate of technical sciences) 18

ORG: none

TITLE: Design of bunchers for linear electron accelerators 11SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Uskoriteli, no. 7, 1965, 5-28

TOPIC TAGS: particle accelerator component, electron accelerator, linear accelerator

ABSTRACT: The problem of electron bunching in a traveling wave linear accelerator is investigated using a simplified method. Electron bunching in an accelerator arises in the process of phase variation. If the equilibrium is equal to zero, then the relation between the phase and velocity of the particle is expressed as

$$H = \frac{1 - \beta_e \beta_w}{\sqrt{1 - \beta_e^2}} - \frac{A \beta_e}{2\pi} \cos \phi$$

where H is some constant, β_e and β_w are the relative velocities of the electron and wave expressed as a fraction of the speed of light, A is the electric field intensity parameter equal to $eE\lambda/m_0c^2$, and ϕ is the phase of the particles relative to zero field of the wave. The reduction of the phase range of electron bunches subjected to

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L 06421-67

ACC NR: AT6017504

further acceleration can be accomplished by means of a resonator. This method of bunching is based on klystron theory. In the majority of cases, bunching requires total capture of electrons at the input and a narrow energy spectrum and particle phase at the exit. For total trapping of electrons, it is necessary that the initial wave velocity be equal to the velocity of the injected electrons, that their derivative $\xi = 0$, and that the final value of the intensity parameter be less than the limiting value. The dependence of the intensity of the accelerated wave upon the coordinates can be expressed by

$$A = k_s - k_s \cos \left[\frac{\pi}{k_s} \xi \right]; \quad 0 < \xi < k_s$$

$$A = A_m; \quad \xi \geq k_s$$

for cosine dependence at the start of bunching and constant dependence over the remaining length. In these equations $k_{3,4} = 0.5A_M \pm 0.15\sqrt{A_M}$ and $k_5 = 1/1.25\sqrt{A_M}$

where A_m is the value of the intensity parameter in uniform section. The value of the phase velocity can be found using the relation

$$\beta_w = \frac{2}{\pi} (1 - \beta_e(\text{initial})) \text{arc tg } (k_1 \xi^{k_2}) + \beta_e(\text{initial})$$

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where $k_1 = 3.8 \cdot 10^{-3} (10.8^A m^{-1})$ and $k_2 = 1.25A_m + 2.25$. These semiempirical formulas were verified for variation of A from 0.1 to 4, values of β_e initial from 0.3 to 0.55 for the three basic bands L , S , and X . With the use of these formulas it is possible to obtain bunching with practically complete capture, with a coefficient of bunching not lower than 4 and phase of the center of cluster at exit about 80° . Orig. art. has: 13 figures, 24 formulas.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 008/ OTH REF: 002

Card 3/3

VAL'DNER, S. S.

Agropoezd i ego znachenie v reshenii problemy sverkhskorostnogo transporta.
[Aero-train and its importance in the solution of the problem of extra fast
transportation]. (Transportnoe stroitel'stvo, 1934, no. 1, p. 13-15, illus.)
DLC: TFl.R5

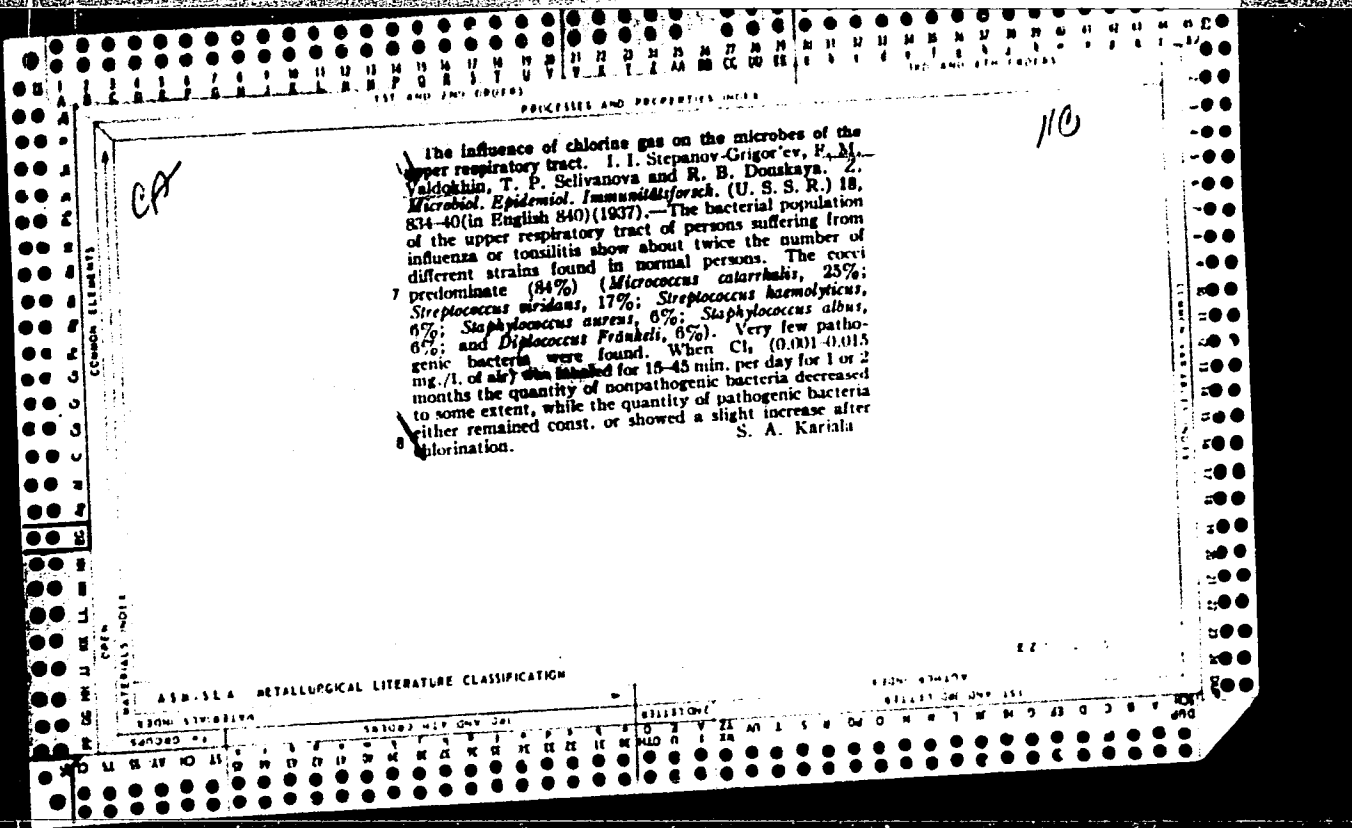
SO: Soviet Transportation and Communications, A Bibliography, Library of Congress,
Reference Department, Washington, 1952, Unclassified.

VAL'DNER, Vladimir Aleksandrovich; GREPACHEVSKIY, Aleksandr Grigor'yevich;
YEGOZOV, V.P.,redaktor; MAL'KOVA, N.V.,tekhnicheskiiy redaktor

[Manual for excavator machinists] Pamiatka dlia mashinista
ekskavatora. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry,
1957. 27 p. (Tekhnika bezopasnosti na dorozhnykh rabotakh)
(Excavating machinery)

VAL'DNER, Vladimir Aleksandrovich; GREPACHEVSKIY, Aleksandr Grigor'yevich;
YAGOSOV, V.P., red.; MAL'KOVA, N.B., tekhn. red.

[Handbook for workers in quarries] Pamiatka dlia rabochikh na kar'-
ernykh rabotakh. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry,
1957. 27 p. (MIRA 11:7)
(Quarries and quarrying--Safety measures)



USSR/Microbiology. Microbes Pathogenic for Man and
Animals

F

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57734

Author ; Razumova Z. V., Valdokhin F. M.
Inst : Ufa Scientific-Research Institute of Vaccines
and Sera

Title : Immunogenesis of Enteral Dysentery Vaccines
When Determined at Different Stages of Pro-
duction

Orig Pub : Tr. Ufimsk. n.-i. in-ta vaktsin i syvorotok,
1957, vyp. 4, 61-68

Abstract : No abstract

Card 1/1

USSR/Microbiology. Microbes Pathogenic for Man and
Animals

F

Abs Jour : Ref Zhur-Bibl., No 13, 1958, 57763

Author ; Matveyev N. A., Valdokhina I. F., Shuvatova T. F.
Inst : Ufa Scientific-Research Institute of Vaccines
and Sera

Title : On the Dependence of Immunogenesis of the Diph-
theria Antitoxin on the Periods of Toxin For-
mation

Orig Pub : Tr. Ufimsk. n.-i in-ta vaktsin i syvorotok,
1957, vyp. 4, 149-161

Card 1/1

VALDONI, Pietro (Rzym)

Notes on the problem of hypertension in portal system. Polski
przegl. chir. 33 no. 9:961-965 '61.
(HYPERTENSION PORTAL)

MOGILEVSKIY, M.A.; VELLER, A.Ye.; VAL'D-PERLOV, V.M.

Determination of local magnetic fields on the sun by means of
modulated photoelectric spectrophotometer. Dokl.AN SSSR 95 no.5:
957-959 Ap '54. (MLRA 7:4)

1. Nauchno-issledovatel'skiy institut zemnogo magnetizma.
Predstavleno akademikom G.A.Shaynom.
(Solar radiation) (Photometry, Astronomical) (Spectrophotometer)

8/2857/64/000/011/0059/0070

ACCESSION NR: AT4040777

AUTHOR: Val'd-Perlov, V. M.

TITLE: Analysis of a frequency multiplier with nonlinear capacitance

SOURCE: Popuprovodnikovyye pribory* i ikh primeniye; sbornik statey, no. 11, 1964, 59-70

TOPIC TAGS: frequency multiplier, nonlinear capacitance, semiconductor device, harmonic generator, diode, semiconductor diode

ABSTRACT: The author notes that recently there has been much discussion in the technical literature of the use of nonlinear capacitances for frequency multiplication. The thorough analysis of the operation of a harmonic generator given by D. B. Leeson and S. Weinreb (Proc. IRE, 1959, v. 47, No. 12, p. 2076) suffers, in the author's opinion, from an essential shortcoming: it deals with a case in which the variable components of the voltage on the capacitance are small in comparison with the bias voltage. In the present article, therefore, an engineering calculation of a harmonic generator is given, which is free of this defect. The author considers the operation of two versions of a twin-circuit frequency multiplier employing nonlinear capacitance of the diode: the series and the

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ACCESSION NR: AT4040777

parallel types. A comparison of these circuits is made, taking into consideration the parameters of the diode housing. There is a detailed study of the problem of frequency doubling by means of a nonlinear capacitance on the assumption that a diode with a sharp junction is employed as this capacitance, and it is proven that with the help of such diodes the generation of the upper harmonics in a two-circuit arrangement of the parallel type is impossible. The operation of a second-harmonic generator is considered in detail and an analysis of impedance and transmission factor as functions of circuit and diode parameters is given. Orig. art. has: 10 figures and 28 formulas.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: EC

NO REF SOV: 001

OTHER: 001

Card 2/2

ACC NR: AP6036371

SOURCE CODE: UR/0109/66/011/011/2008/2023

AUTHOR: Val'd-Perlov, V. M.; Krasilov, A. V.; Tager, A. S.

ORG: none

TITLE: The avalanche-transit diode: a new microwave semiconductor device 75

SOURCE: Radiotekhnika i elektronika, v.11, no. 11, 1966, 2008-2023

TOPIC GAGS: microwave oscillator, transistorized oscillator, semiconductor diode, avalanche diode

ABSTRACT: A successful technique has been announced for fabricating an avalanche-transit diode (LPD) as a microwave oscillator which operates in the manner first proposed by Read (BSTJ, v. 37, I, 1958). In contrast to the Read diode, which requires a complex $n^+ - p - i - p^+$ structure to sustain oscillation, the authors have obtained the same effect with an ordinary p-n junction of germanium or other semiconducting material where the junction is sufficiently uniform for the avalanche to develop evenly and simultaneously over the entire area. A portion of the junction's barrier layer serves as the transit region. An analysis of the processes which take place is followed by a brief description of the following successfully LPD devices: a) wideband and narrowband oscillators in the centimeter wavelengths, giving c-w outputs of 5-50 mw at 3-7% efficiencies, and using both electrical and mechanical tuning; b) cascaded LPD's which operate on higher harmonics to yield

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ACC NR: AP6036371

millimeter band oscillation on the order of a few mw; c) frequency multipliers based on an LPD externally synchronized by a subharmonic; d) regenerative amplifiers, e.g., a single-stage 3-cm LPD which has 20—25 db gain at a 50-mc bandwidth, and is linear for inputs down to 1 μ v; e) stable white-noise generators covering the decimeter and centimeter bands, with effective noise temperatures in the 10^5 — 10^7 K range. Advantages of the LPD over existing equivalents such as the klystron and the varactor are low cost, small size, simplicity, and high temperature stability. A disadvantage is the relatively high noise level, compared to that of a good klystron. The authors predict improvements in the efficiency and power output of LPD's which will make them dependable and useful microwave elements. Orig. art. has: 18 figures and 8 formulas.

SUB CODE: 09/ SUBM DATE: 26May66/ ORIG REF: 009/ OTH REF: 003/ ATD PRESS: 5106

Card 2/2

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METALLURGICAL LITERATURE CLASSIFICATION
 SECTION: 1
 SUBSECTION: 1
 CLASSIFICATION: 1
 INDEX: 1

Increasing the water resistance of plywood and wood plastics. A. Kh. Yal'dshitska and I. A. Shekin. U.S. S.R. 69,480, Oct. 31, 1917. Plywood and wood plastics, made with animal or vegetable pentrinaceous adhesives, are dried to a moisture content of not over 4% and then treated for 1-2 hrs. at 115-160°, with or without pressure. M. Hosh

VAL'DSHTEYN, E. A.

"Postradiation Cysteamine Protection of Escherichia coli B/r Bacteria." pp. 14

Institute of Cytology AS USSR Laboratory of Radiation Cytology

II Nauchnaya Konferentsiya Instituta Tsitologii AN USSR. Tezisy Dokladov
(Second Scientific Conference of the Institute of Cytology of the Academy
of Sciences USSR, Abstracts of Reports), Leningrad, 1962 88 pp.

JPRS 20,634

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Abstr. 10320

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S/205/62/002/002/013/015

1020/1215

AUTHOR: Val'dshteyn, E. A.

TITLE: The effect of radiation-protection substances on *Escherichia coli* irradiated under anaerobic conditions

PERIODICAL: Radiobiologiya, v. 2, no. 2, 1962, 317-321

TEXT: The radiation-protective action of cystamine, cysteine, and sodium hydrosulfite under anaerobic conditions was examined on *Escherichia coli* B and B/r cultures. A 12 ml bacterial suspension was kept in an atmosphere of pure nitrogen or hydrogen. The examined substances were added 15-20 min prior to irradiation. The dose rate was 1400 r/min. 0.02 M of cystamine, 0.04 M $\text{Na}_2\text{S}_2\text{O}_4$, and 0.02 M cysteine were used. An increase in cystamine concentration to 0.04 M did not change the result. Under strictly anaerobic conditions cystamine had an additional protective effect on *E. coli* B and B/r strains which was not observed with the other substances. The author concluded that the mechanism of the cystamine effect could not be explained by its influence on the oxygen metabolism alone and that other protective mechanisms exist. There are 3 figures and 1 table.

ASSOCIATION: Institut tsitologii AN SSSR (Institute of Cytology, AS USSR) Leningrad

SUBMITTED: September 13, 1961.

V

Card 1/1

VAL'DSHTEYN, E.A.

Mechanism of the radiation-protective effect of cysteamine.
Sbor. rab. Inst. tsit. no.4:126-134 '63 (MIRA 17:3)

ACCESSION NR: AP4001909

S/0205/63/003/006/0809/0814

AUTHOR: Val'dshtoy, E. A.; Zhestyanikov, V. D.

TITLE: Restoration of Escherichia coli B. after irradiation under various conditions (in air, in nitrogen, and in nitrogen in the presence of cysteamine)

SOURCE: Radiobiologiya, v. 3, no. 6, 1963, 809-814

TOPIC TAGS: lethal dose curve, bacterial culture, postirradiation bacteria restoration

ABSTRACT: Escherichia coli B (E. coli B) were X-irradiated with doses ranging from 3 to 24 krad (RUM-11 unit, 200 kv, 20 ma, focal length 70 mm, no filter, 1000 rad/min) in air, nitrogen, and nitrogen in the presence of cysteamine. Then irradiated E. coli B were incubated in different culture mediums at 19°, 37°, and 45°C for 20-48 hrs. Restoration volume indicating the number of restored cells compared to the number of damaged cells served as an index for a given radiation dose. A comparison of restoration volumes for E. coli B irradiated under different conditions but cultivated in the same cultures shows that the restoration volume is lowest for E coli
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ACCESSION NR: AP4001909

B irradiated in air. Irradiation under anoxic conditions increases the restoration volume in all cases. Restoration volume increases even more when cysteamine is present during irradiation and post-radiation cultivation temperature is 45°C. Restoration volume depends first on irradiation conditions (air, nitrogen, and nitrogen in the presence of cysteamine) and secondly depends on radiation dose. "The authors express their gratitude to V. P. Paribok for valuable advice and discussion of the work." Orig. art. has: 3 figures, 3 tables.

ASSOCIATION: Institut tsitologii AN SSSR, Leningrad (Cytology Institute, AN SSSR)

SUBMITTED: 17Jan63

DATE ACQ: 13Dec63

ENCL: 00

SUB CODE: AM

NO REF SOV: 006

OTHER: 021

Card 2/2

VAL'DSHEYN, E.A.

Oxygen effect and photooxidation pathway of a bacterial cell
after X-ray treatment. *Tsvetlitsa* 5 no.4:160-461 (1978)
(M.R. 17:8)

1. Laboratoriya radiatsionnoy tsitologii Instituta tsitologii
AN SSSR, Leningrad.

TIUNOV, L.A.; VASIL'YEV, G.A.; VAL'DENBEYN, E.A.; PERIBOK, V.P.,
prof., red.

[Antiradiation substances 1964; a manual] Protivoluche-
vye sredstva 1964; sravochnik. Moskva, Nauka, 1964. 316 p.
(MIRA 17:10)

ACCESSION NR: AP4027964

s/0205/64/004/002/0186/0190

AUTHOR: Paribok, V. P.; Val'dshteyn, E. A.

TITLE: Antiradiation effect of inert gases and low molecular narcotics. 1. Absence of compressed nitrogen protective effect on irradiated Escherichia coli B/r water suspension

SOURCE: Radiobiologiya, v. 4, no. 2, 1964, 186-190

TOPIC TAGS: X-irradiation, inert gas, low molecular gas, compressed nitrogen, radioprotective action, oxygen effect, E. coli B/r water suspension, diffusion hypothesis, adsorption hypothesis, special irradiation chamber

ABSTRACT: The radioprotective action of compressed inert and low molecular gases based on oxygen effect reduction has been explained by an adsorption hypothesis and a diffusion hypothesis. In the first hypothesis, radioprotective action is attributed to inert gas molecules forcing the oxygen molecules out of cell radiosensitive structures by adsorption. In the second hypothesis, radioprotective action is attributed to the high concentration of inert gas molecules (because of increased pressure) obstructing the diffusion of oxygen in a gas

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ACCESSION NR: AP4027964

phase and thereby slowing its solution in the protoplasm. On the basis of the latter hypothesis it would follow that with an inert gas bordering a liquid, active mixing would take place to compensate for obstructed diffusion and the inert gas would not display radioprotective action. To test this hypothesis, the radioprotective effect of compressed nitrogen was investigated in an E. coli B/r water suspension X-irradiated (RUM-11 unit, 180 kv, 20 ma, 5 mm organic glass filter, 3500 r/min) in a special chamber (see enclosure 01). The E. coli B/r bacteria prepared from an 18 hr culture had a concentration of 1.10^5 cells/ml and a layer height of 2.5 mm. After irradiation the bacteria were sown on agar and the number of colonies were counted the following day. Findings show that nitrogen up to 60 atm pressure does not display radioprotective action during irradiation of E. coli B/r in the presence of 0.2, 0.01, and 0.005 oxygen atmospheres. Investigation findings support the diffusion hypothesis, but the evidence is not conclusive and other possible methods for testing the diffusion hypothesis are suggested. The authors "take the opportunity to express their gratitude to Prof. L. E. Gurevich for discussion of the study and valuable comments." Orig. art. has: 3 figures.

Cord 2/4

ACCESSION NR: AP4027964

ASSOCIATION: Institut tsitologii AN SSSR, Leningrad (Cytology
Institute AN SSSR.

SUBMITTED: 08Aug63

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Card 3/4

ENCLOSURE: 01

ACCESSION NR: AP4027964

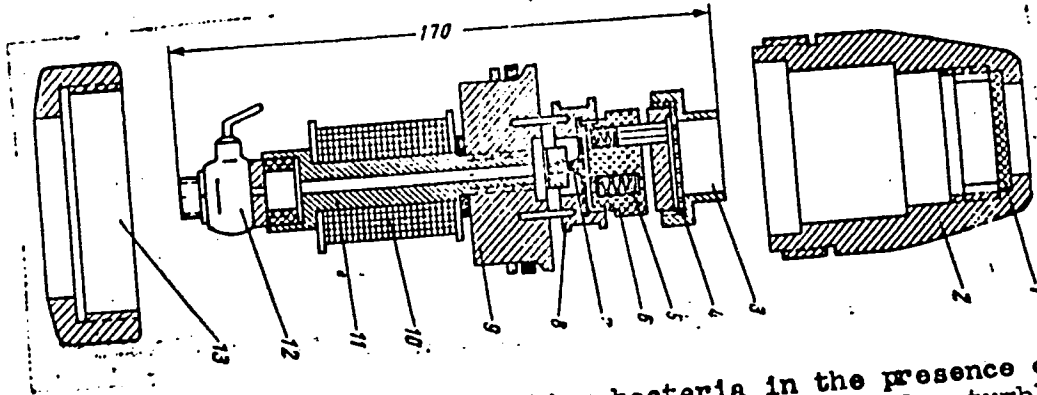


Fig. 1. Chamber for irradiating bacteria in the presence of compressed gases. 1 - opening, 2 - chamber body, 3 - tumbler for bacteria, 4 - porous glass, 5 - valves, 6 - compressor, 7 - compressor membrane, 8 - magnet armature, 9 - bottom of chamber, 10 - magnet winding, 11 - magnet core, 12 - cock, 13 - nut.

Card 4/4

ACCESSION NR: AP4027968

S/0205/64/004/002/0210/0215

AUTHOR: Val'dshteyn, E. A.

TITLE: The effect of oxygen concentrations on the efficacy of mercamine in protecting Escherichia coli B/r

SOURCE: Radiobiologiya, v. 4, no. 2, 1964, 210-215

TOPIC TAGS: mercamine, tsisteamin, radioprotective action, oxygen concentration, anoxic condition, Escherichia coli B/r, survival dose curve, mercamine efficacy, oxygen dependence, mercamine radioprotective action mechanism, oxygen radiosensitizing action

ABSTRACT: Some literature studies report that the radioprotective action of mercamine is reduced in the presence of oxygen, a radiosensitizer, and others report that it is independent of oxygen concentrations. To clarify the problem, this study investigates the efficacy of mercamine in protecting Escherichia coli B/r in the presence of different oxygen concentrations during radiation. Suspensions of E. coli B/r culture in tap water (10^7 cells/ml) were X-irradiated (RUM-11, 1000 rad/min) with different doses and with

Card 1/3

ACCESSION NR: AP4027968

different oxygen concentrations (nitrogen only, 1, 2, 10, 21 and 100% oxygen). Mercamine (.02 M concentration) was added to experimental cultures 30 min before irradiation. Survival dose curves were plotted for the different oxygen concentrations. It was found that mercamine radioprotective action is effective in the presence of all the oxygen concentrations (0, 1, 2, 10, 21, and 100%), but efficacy is highest with low oxygen concentration levels (1-2%). In the presence of oxygen, a radiosensitizer, mercamine appears to eliminate not only those injuries that are independent of oxygen, but also those that are dependent. The reaction with oxygen takes place faster than the reaction with mercamine. With low oxygen concentrations mercamine eliminates a considerable part of oxygen-dependent injuries and thus blocks the sensitizing action of oxygen. But with high oxygen concentrations the oxygen-dependent injuries interact more with oxygen and limit the action of mercamine to injuries independent of oxygen. With mercamine displaying radioprotective action even under anoxic conditions, its action mechanism appears to be partially independent of oxygen. With oxygen concentrations, its action mechanism is partially dependent and partially independent of oxygen. The author expresses sincere gratitude to V. P. Paribok for

Card 2/3

ACCESSION NR: AP4027968

guidance in the study." Orig. art. has: 6 figures.

ASSOCIATION: Institut tsitologii AN SSSR, Leningrad (Cytology
Institute AN SSSR)

SUBMITTED: 12Mar63

DATE ACQ: 28Apr64

ENCL: 00

SUB CODE: AM

NO REF SOV: 006

OTHER: 012

Card 3/3

ACC NR: AP7006775

SOURCE CODE: UR/9053/67/009/001/0003/0020

AUTHOR: Val'dshteyn, E. A.; Zhestyanikov, V. D.

ORG: Laboratory of Radiation Cytology, Institute of Cytology, AN SSSR, Leningrad (Laboratoriya radiatsionnoy tsitologii Instituta tsitologii AN SSSR)

TITLE: Molecular mechanisms of cell reparation from radiation injuries

SOURCE: Tsitologiya, v. 9, no. 1, 1967, 3-20

TOPIC TAGS: radiation ~~and~~ effect, ~~UV~~ radiation biologic effect, radiation recovery, ~~dark recovery~~, ~~photoreactivation~~, *cell physiology*, UV radiation

ABSTRACT: The author reviews some contemporary concepts of the mechanisms of cellular recovery from radiation-induced injuries. This comprehensive article is divided into the following sections: 1) molecular nature of injuries caused by UV radiation; 2) photoreactivation; 3) dark recovery; 4) molecular mechanism of dark recovery; 5) specificity of the mechanism of dark recovery; 6) biological role of radiation recovery. It is felt that DNA reparation after radiation injury takes place via photoreactivation and dark recovery. During photoreactivation,

Card 1/2

UDC: 591.044.82:612.014.48

ACC NR: AP7006775

the recovery of normal DNA structure takes place by means of dimer cleavage (pyrimidines). This mechanism is very specific in that it applies only to UV radiation. Dark recovery is more complicated and occurs in several stages: dissociation of photoproducts from DNA; expansion of the lumen formed; accumulation of nucleotids in the lumen; coupling of P-O bonds; recovery of DNA structure. Dark recovery is non-specific, occurring after UV- and ionizing radiations, p³² transmutation, and exposure to many radiomimetics and chemical mutagens. The recovery of individual lesions does not require the total enzyme resources necessary for UV-induced recoveries. The process of dark recovery participates in the maintenance of natural DNA structure and is closely associated with genetic recombination and transformation. [CD]

SUB CODE: 06/ SUBM DATE: 10Jun66/ ORIG REF: 022/ OTH REF: 096
ATD PRESS: 5117

Card 2/2

KLEYNOTAS, A.A. [Kleinotas, A.], inzh.; YARULAYTIS, V.I. [Jarulaitis, V.], inzh.; VAL'DSHTEYNAS, I.Z. [Valdsteinas, I.], inzh.

Projected indices of the gas concrete products plant have been surpassed. Stroi. mat. no.11:3-4 N '65. (MIRA 18:12)

VALDTINA, V.A.

Mar. Gorkiy State University - 1947

"Influence of Photosynthesis on the Oxidation-Reduction System of the
Cells of Leaf Fibers," Dok. AN, 58, No. 7, 1947

9,4160 (3201, 2804 only)
24,3500 (1137, 1138, 1395)

20823
S/048/61/025/003/011/047
B104/B201

AUTHORS: Shvarts, K.K., and Vale, G.K.

TITLE: Sensitized luminescence of KCl-Pb, Mn phosphors

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,
v. 25, no. 3, 1961, 343 - 344

TEXT: This is a reproduction of a lecture delivered at the 9th Conference on Luminescence (Crystal Phosphors), which took place in Kiyev from June 20 to 25, 1960. In continuation of an earlier work (Ref. 1: Shvarts K.K., Zirnitis U.A., Tr. In-ta fiz. i astron. AN ESSR, No. 11, 3 (1960)), the authors of the present paper studied the migration of resonance energy in the KCl-Pb, Mn phosphor. It is pointed out in the introduction that electron transitions in Mn^{++} ions are quadrupole transitions, and practically do not appear in the absorption. The energy transfer from Pb^{++} ions to Mn^{++} ions probably takes place by dipole-quadrupole resonance. The abovementioned phosphor was examined for the absorption spectrum, the emission spectrum, and the excitation spectrum, the luminescence-quantum transition and its dependence of the frequency of exciting light and of temperature.

Card 1/5

20823

S/048/61/025/003/011/047
B104/B201

Sensitized luminescence of ...

As may be seen from Fig. 1, the excitation spectrum of manganese coincides with that of lead. This, is evidence of the fact that the energy initially absorbed by the lead ions is transferred to the manganese ions. The authors further reached the conclusion that the spectral characteristic of the lead centers is not affected by Mn in the case of low concentrations of lead (0.03 mole%) and manganese (0.3 mole%). It was further found that the luminescence-quantum yield of manganese, on an excitation in the absorption band of lead, which corresponds to the $^1S_0 \rightarrow ^3P_1$ transition in the lead ions, does not depend upon the frequency of the exciting light. This means that, as far as the sensitized luminescence of Mn^{++} is concerned, the Vavilov law is satisfied. The luminescence of manganese was found also to be excited in the shortwave absorption band of the lead centers by the $^1S_0 \rightarrow ^1P_1$ transition. It was recognized by a study of the temperature dependence of the luminescence-quantum transitions in the phosphor under consideration (Fig. 2) that radiationless transitions occur in the lead ions, and that the energy transfer from the lead ions to the manganese ions takes place after the oscillations of the excited lead centers

Card 2/5

Sensitized luminescence of ...

20823
S/048/61/025/003/011/047
B104/B201

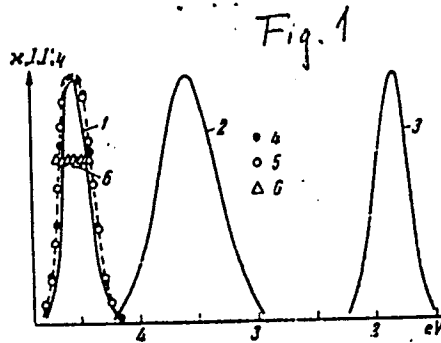
in the surrounding crystal lattice have reached a state of equilibrium. In the temperature range from 180°K to 430°K the probability of an energy transfer of Pb⁺⁺ ions to Mn⁺⁺ ions does not depend on temperature. Microscopic analyses revealed that the luminescence of Mn is particularly observable on the defects of the crystal lattice, where the lead- and manganese concentration is higher than average. This is very important for the production and the processing of good luminophores. Ch.B. Lushchik is thanked for his assistance. There are 2 figures and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to English language publications read as follows: Klick C., Schulman J., J.Opt.Soc.America, 42, 910 (1952); Dexter D., J.Chem.Phys., 21, 836 (1953) ✓

Card 3/5

20823
S/048/61/025/003/011/047
B104/B201

Sensitized luminescence of ...

Legend to Fig. 1: Spectral characteristic of KCl-Pb,Mn phosphors (0.03 mole% Pb and 0.3 mole% Mn). 1) absorption spectrum; 2) lead emission spectrum; 3) manganese emission spectrum; 4) spectrum of excitation luminescence of lead; 5) spectrum of excitation luminescence of manganese; 6) relative quantum yield of manganese luminescence.

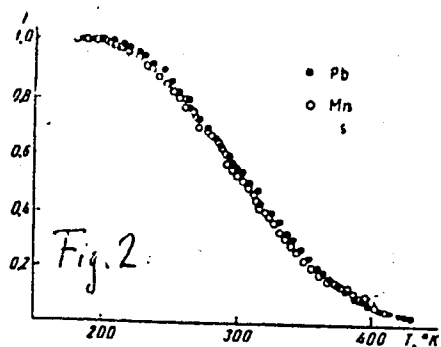


Card 4/5

Sensitized luminescence of ...

20823

S/048/61/025/003/011/047
B104/B201



Legend to Fig. 2: Temperature dependence of luminescence intensity of lead and manganese (excitation with the 265 mμ Hg line).

Card 5/5

23599

S/081/61/000/008/003/017

B110/B202

24.3500 (1137, 1138, 1395)

AUTHORS: Shvarts, K. K., Vale, G. K., Zunde, B. Ya.

TITLE: Study of non-emitting transitions in the luminescence centers of alkali halide crystal phosphors

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 8, 1961, 32, abstract 85 234 (8B234) (Tr. In-ta fiz. i astron. AN EstSSR, 1960, no. 12, 77 - 110)

TEXT: The authors studied the non-emitting transitions in the luminescence centers of the NaCl, KCl, KBr-base phosphors which had been activated by means of the ions Tl^+ , Pb^{2+} , In^+ , Sn^{2+} . The possible mechanism of thermal transitions is discussed. The analysis of the experimental results shows that the thermal transitions take place according to the concepts of J. Frenkel (Phys. Rev., 1931, 37, 17; 1276) and N. Mott (Proc. Roy. Soc., 1938, 167, 384). [Abstracter's note: Complete trans-
lation.]

Card 1/1

ACCESSION NR: AT3013094

S/2613/62/000/021/0281/0284

AUTHOR: Vale, G. K.

TITLE: On the interaction of exciton with impurity centers in the KI-Sn phosphor

SOURCE: AN EstSSR. Institut fiziki i astronomii. Trudy#, no. 21, 1962, 281-284

TOPIC TAGS: radiation defect, phosphor, crystal, activator, absorption, spectra, monochromator, exciton, impurity center

ABSTRACT: To investigate the mechanisms giving rise to radiation defects in alkali-halide phosphor crystals, a KI-Sn sample was grown in a sealed vial by the Stokbarger method. The activator concentration was 10^{-3} mol.%. The absorption and radiation spectra were obtained, together with observed change, after 40 min of ultraviolet irradiation by means of a Cu-flash focal monochromator. A decrease in activator absorption was noticed, also a lowering of luminescence intensity. To study radiation effects in detail simultaneously with the UV-radiation, the Sn^{++} ions were observed from relative intensity $\Delta I/I_0$ changes. For wave lengths over $\lambda > 220\text{m}\mu$ in spectrophotometer monochromator SF-4 a SVD-120 mercury lamp was selected. It is shown that the decrease in Sn^{++} luminescent centers in KI-Sn

Card 1/2

ACCESSION NR: AT3013094

phosphor after UV-irradiation creates exciton bands in all crystal regions. Orig. art. has: 3 formulas and 1 figure.

ASSOCIATION: AN EstSSR. Institut fiziki i astronomii (AN EstSSR. Institute of Physics and Astronomy)

SUBMITTED: 15Jun62

DATE ACQ: 11Sep63

ENCL: 00

SUB CODE: CH

NO REF SOV: 006

OTHER: 001

Card 2/2

I 50351-65
ACCESSION NR: AT5013686

AUTHOR: Vale, G. K.; Gindina, R. I.; Lushchik, Ch. B.; Elango, A. A.

TITLE: Electronic processes in ionic-crystal whiskers

SOURCE: AN EstSSR. Institut fiziki i astronomii. Trudy, no. 30, 1964. Issledovaniya po lyuminestsentsii (Research on luminescence), 3-15

TOPIC TAGS: ionic crystal, filamentary crystal, electronic process, energy migration, color center, electron vibrational process, radiation coloration

ABSTRACT: The article reports the results of comparative investigations of the optical characteristics of ordinary and whisker-type alkali-halide crystals (NaCl, KCl, KCl-Tl, and KI-Tl) and on determining the nature of the luminescence centers, energy migration from the main substance to the luminescence centers, the occurrence of scintillations induced by alpha particles, and the kinetics of production of color centers by means of x-rays. The tests were made on pure NaCl, KCl, KI, and KI whiskers and on activated KI-Ag, NaCl-Tl, NaCl-Ag, NaCl-On, and KI-I whiskers.

L 60351-65

ACCESSION NR: AT5013686

ture of the whiskers results in a decrease in the energy loss when the energy migrates to the luminescence centers. The main luminescence centers as well as the F centers and the electro-vibrational processes in the centers are practically the same in crystals and in whiskers. Another similarity to ordinary imperfect crystals is that the x-ray coloration of the whiskers occurs in two stages. This means that the dislocation mechanism is more active in the whiskers than in ordinary crystals than expected. Original name of figures.

ADDITIONAL INFORMATION

SUB CODE: D.D.

L 64737-65 EWT(1)/T IJP(c) SG
ACCESSION NR: AFR001774

AUTHOR: Vale, G. K. *44, 56*

*11
B+1*

TITLE: Concerning the x-ray coloration mechanisms of KCl-Ag crystals

SOURCE: AN Est.SSR. Institut fiziki i astronomii, *44, 56* Trudy, no. 28, 1964. Issledovaniya po lyuminestsentsii (Research on luminescence), 93-110

TOPIC TAGS: color center, x ray coloring, x ray irradiation, electron trapping

ABSTRACT: An investigation was made of the formation of color centers *44, 56* in KCl-Ag and KCl crystals by x-ray and ultraviolet irradiation. Crystal plates 0.5—1.0 mm thick were used. X-irradiation of KCl-Ag crystals at room temperature caused formation of F-, E-, and B-color centers. The generation of F- and E-centers proceeded in two stages, while that of E-centers proceeded in one stage, rapidly reaching saturation. At very low excitation intensities E-centers increased slowly and even after three hours did not reach saturation. At high excitation intensities the number of E-centers rapidly (in 20 min) reached saturation. The formation of E-centers in KCl-Ag crystals irradiated with x-rays for three hours, bleached by the light of a mercury lamp, and subjected to plastic deformation by a hydraulic press was not affected.

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L 64737-65

ACCESSION NR: AT5021778

The formation of B- and F-centers, however, was strongly affected. Below 200K, the formation of F- and B-centers "froze." The formation of E-centers in the range from 100 to 200K was virtually independent of temperature. Above 200K, the number of F-, E-, and B-centers generated during a 20-min period decreased. The formation of F-centers in KCl crystals at room temperature proceeded in two stages. In the first stage, saturation occurred very rapidly (in 20 min). In the second stage, the number of F-centers increased slowly and linearly with time. At 100K, the first stage weakened considerably. Ultraviolet irradiation of KCl-Ag crystals caused formation of E- and F-centers. The electron-hole mechanism was effective in the formation of E- and F-centers. In the case of E-centers, only electrons were effective. The generation of B-centers is analogous to that of F-centers except that the first stage for B-centers is relatively small. The concentration of electrons in the second stage of art. has 4 figures and 1 table.

ASSOCIATION: Institut fiziki i astronomii AN EstSSR (Institute of Physics and Astronomy, AN EstSSR)

SUBMITTED: 27Dec63

ENCL: 00

SUB GROUP: 36

NO REF NUM: 017

TRER: 013

ATL PRESS: 4078

Card

212

GINDINA, R.I.; VALE, G.K.; ELANGO, A.A.

Luminescence and coloration of filamentary alkali halide crystals.
Izv. AN SSSR. Ser.fiz. 29 no.3:401-403 Mr '65. (MIRA 18:4)

1. Institut fiziki i astronomii AN Estonskoy SSR.

L 28320-66 EWT(1)/T IJP(c) GG/AT

ACC NR: AP6013084

SOURCE CODE: UR/0048/66/030/004/0695/0697

AUTHOR: Vale, G.K.; Zolotarev, G.K.; Kuketayev, T.A.; Lushchik, N.Ye; Lushchik, Ch.B. 37
E

ORG: none

TITLE: ²Activator traps for electrons and holes in ionic crystals / Report, Fourteenth Conference on Luminescence held in Riga 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 695-697

TOPIC TAGS: crystal phosphor, alkali halide, recombination luminescence, ionic crystal electron trap

ABSTRACT: The stated purpose of the paper is to summarize the results obtained at Tartu (Institute of Physics and Astronomy of the Estonian SSR Academy of Sciences) in studies aimed at elucidating the role of activator ions in formation of electron and hole traps. The basic experimental data were obtained in investigating different alkali halide crystals activated by Ga^+ , In^+ , Tl^+ , Ge^{2+} , Pb^{2+} , Cu^+ and Ag^+ ions. A general discussion of the luminescence centers in such phosphors has been published elsewhere (N.E.Lushchik and Ch.B.Lushchik, Tr. In-ta fiz. i astron. AN EstSSR, No. 6, 5, 1957). It is noted that the character of traps formed by activators is determined primarily by the charge of the activator ion. For example, Bi^{3+} ions are readily reduced to Bi^{2+} and trap an electron in the process. Analogously Ge^{2+} , Sn^{2+} and Pb^{2+} ions in a KCl lattice act as effective electron traps. A number of other cases of

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L 28320-66

ACC NR: AP6013084

0

effective electron trapping are mentioned with references to the papers describing the corresponding investigations. Mention is made of decomposition of atomic centers in ionic crystals, and a table gives the values of the decomposition temperature for atomic Ag, Tl and Cu in different alkali halides. The question is then raised whether activator centers in the same systems are also capable of trapping holes. Recent electron paramagnetic resonance studies and optical experiments indicate that silver at any rate is capable of forming hole traps in alkali halide crystals. Reference is made to other studies and it is concluded that as a rule (and not as an exception) activator luminescence centers in alkali halide crystals are capable of trapping both electrons and holes, so that in many cases in alkali halide crystal phosphors luminescence of activator centers is observed as a result of both recombination of electrons with trapped holes and as a result of recombination of holes with trapped electrons. Orig. art. has: 1 table.

SUB CODE: 20/

SUBM DATE: 00/

ORIG REF: 017/

OTH REF: 003

Card 2/2 *cc*

ARSENESCU, Gh.; IONESCU, Val; TEODORINI, Sanda; CANTACUZINO, D.; VRINCEANU, R.;
ZLOTESCU, A.; VALEANU, Georgeta; AZIMIOARA, Yolanda.

Relations between the electric and mechnic systoles, as studied in
normal individuals during physical effort; comparative statistical
data on the Hegglin physiological and clinical syndromes. Studii cerc
fiziol 5 no.1:135-145 '60. (EEAI 9:12)

1. Institutul de fiziologie normala si patologica "Prof. Dr
D.Danielopolu" al Academiei R.P.R.
(EYE) (SHOCK THERAPY) (ACETYLCHOLINE)
(ATROPINE) (MILK)

ARSENESCU, Gh.; IONESCU, Val.; TEODORINI, Sanda; VRINCĂMANU, R.;
CANTACUZINO, D.; REPTA, V.; BOBIC, D.; VALEANU, Georgeta;
AZIMOARA, Yolanda

Studies on the adaptation of the cardiovascular apparatus
of locomotive engineers in summertime. Studii cerc fiziol
5 no. 4: 703-715 '60.

(1. Locomotive engineers 2. Cardiovascular system)

1. Institutul de fiziologie normala si patologica "Prof.
Dr. D. Danielopolu" al Academiei R.P.R. si Directia
sanitara C.F.R.
2. Membru al Comitetului de redactie "Studii si cercetari
de fiziologie" (for Arsenescu).

ARSENESCU, Gh.; IONESCU, V.; TEODORINI, Sanda; VRINCEANU, R.; CANTAGUZINO, D.;
REPTA, V.; BOBIC, D.; VALEANU, Georgeta; AZIMIOARA, Yolanda

Studies of the adaptation of the cardiovascular system in engine drivers
during summer months. Rumanian M Rev. no.1:65-73 Ja-Mr '61.
(CARDIOVASCULAR SYSTEM physiology) (EXERTION physiology)
(INDUSTRIAL MEDICINE) (HEAT)

L 13055-66 EWA(j)/T/EWA(b)-2 JK

ACC NR: AP6005734

SOURCE CODE: RU/0023/65/010/001/0083/0083

AUTHOR: Totescu, E. (Doctor); Valeanu, I. (Doctor); Moldovan, Lucia (Technician)

ORG: Hygiene Laboratory ISIPM, Sighisoara (Laboratorul de igiena ISIPM)

TITLE: Shigella bacteria isolated in 1963 in Sighisoara Region

SOURCE: Microbiologia, parazitologia, epidemiologia, v. 10, no. 1, 1965, 83

TOPIC TAGS: bacteria, antibiotic, intestinal disease, drug treatment

ABSTRACT: The authors isolated 77 strains of shigella from 154 dysentery cases occurred in 1963 in Sighisoara Region of which 48 were *S. flexneri*, 18 *S. sachs*, 8 *S. sonnei* and 3 *S. boydi*. They proved sensitive to aureomycin, chloramphenicol, erythromycin, neomycin, polymixin B, streptomycin, terramycin, tetracycline; and not sensitive to penicillin, salvoseptil and superseptil. Standard treatment in the raion consisted of 4 grams of chloramphenicol divided over 24 hours.

[JPRS]

SUB CODE: 06 / SUBM DATE: 13May64

27
B

Card 1/1 AR

UDC: 616.935:576.851.49.093.1

33523

18.3100

Z/038/62/000/001/002/003
D291/D304

AUTHOR: Valeček, Josef

TITLE: Low-temperature reduction of zirconium tetrachloride with alkali metals

PERIODICAL: Jaderná energie, ⁸no. 1, 1962, 21-22

TEXT: The article, based on dissertations submitted to the Technology and Nuclear Physics department of the ČVUT (Czech Institute of Technology) in Prague describes a novel method of zirconium tetrachloride reduction with alkali metals, namely sodium, at lower temperatures which eliminates the disadvantages of the conventional Kroll process. Larger scale $ZrCl_4$ reduction, at lower temperatures, is possible when the re-active surface of the alkali metal is continuously renewed, and the reaction temperature is dissipated during the reduction. These requirements are fulfilled by a reduction apparatus consisting of a calorimetric bomb and a pyrometric tube. The bomb, filled with steel balls, is

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Z/038/62/000/001/002/003
D291/D304

Low-temperature reduction ...

inserted into an electric stove and connected to an electromagnetic vibrator. The alkali-metal surface is continuously irritated by the vibrating balls which simultaneously serve to dissipate reaction heat. Tests have shown that the reaction temperature depends on the alkali metal used for reduction (appr. 49°C for Na, 99°C for Li, and 32°C for K), and on various other reaction parameters, namely the dimension of the steel balls and the vibration amplitude. The metallic zirconium is obtained in the form of a powder or a compact mass. In conclusion, the author summarizes the advantages of the new method as follows: (1) Energy is saved due to the low reaction temperature; (2) pressure vessels of high-grade steel can be avoided; (3) the product can be removed more easily from the reactor; (4) the reduction can be made with greater charges and requires less time. There are 1 figure and 6 references, 4 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: B. Lustmann - F. Kerze: The metallurgy of zirconium, London (1955); G.H. Miller: Zirconium - London (1954). (Technical editor: V. Rypar).

Card 2/3

33523

Low-temperature reduction ...

Z/038/62/000/001/002/003
D291/D304

ASSOCIATION: Spolek pro chemickou a hutnickou výrobu, Ústí nad Labem
(Corporation for Chemical and Metallurgical Production,
Ústí nad Labem)

X

Card 3/3

S/081/62/000/022/078/088
B166/B144

AUTHOR: Valecek, Karel

TITLE: Method of producing a sealing compound for the hermetic sealing of contacting surfaces

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1962, 548, abstract 22P437 (Czechosl. patent, cl. 47f, 23, 99302, Apr. 15, 1961)

TEXT: A mixture of 64 - 76 % tricresol formaldehyde resin in the form of resol, 17 - 29% alcohol, and 1 - 13 % modified polyamide is stirred with sawdust in a 1 : 1 volume ratio. When the sawdust has become impregnated 2 % asbestos fiber is added. The product is used for hermetically sealing gearbox covers. [Abstracter's note: Complete translation.] ✓

Card 1/1

VALECEK, R.

"The secret of driving without accidents." p. 316.

SVET MOTORU. (Svaz pro spolupraci s armadou). Praha, Czechoslovakia,
Vol. 9, No. 10, May 1955.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 8,
August 1959.
Uncla.

VALECIC, A.

Kidney tumors. Acta chir. iugosl. 1 no.3:221-241 1954.

1. Kirurska klinika Medicinskog fakulteta u Zagrebu (predstojnik
prof. dr. J.Budisavljevic.)
(KIDNEYS, neoplasms
classif.)

VALECIC, A.

Prostatitis suppurativa. Acta chir. iugosl. 1 no.1-2:158-160 1954.

1. Kirurska klinika Medicinskog fakulteta u Zagrebu. Predstojnik
Prof. Dr. J. Budisavljevic.
(PROSTATITIS,
*suppurative)

VALECIC, A.

Transvesical or extravesical prostatectomy. Acta chir. iugosl.
3 no.3:227-236 1956.

1. Kirurska klinika Medicinskog Fakulteta u Zagrebu (predstojnik
prof. Dimitrije Juzbasic).

(PROSTATE, surgery.

extravesical & transvesical approaches (Ser))

VALECIC, A.

Problem of urethral rupture. Acta chir. iugosl. 3 no.4:
352-358 1956.

1. Kirurška klinika Medicinskog Fakulteta u Zagrebu (predstojnik
prof. dr. Dimitrije Juzbasic).
(URETHRA, rupt.
surg. (Ser))

VALEOIC, A., dr.

Antibiotics in surgery. Lijec. vjes. 82 no.2:91-103 '60.

1. Iz Kirurške klinike Medicinskog fakulteta u Zagrebu.
(ANTIBIOTICS ther.)
(SURGERY OPERATIVE)

VALECIC, A.

Transurethral electro-resection of the prostate. Acta chir.iugosl.
7(8) no.2:98-107 '60.

1. Kirurska klinika Medicinskog fakulteta u Zagrebu (Predstojnik
prof. dr. D.Juzbasic)
(PROSTATE surg)