1/2   025   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--CHANGES IN THE LEVEL AND METABOLISM OF ASCORBIC ACID IN TISSUES OF
   GUINEA PIGS UNDER THE EFFECT OF HYDROCORTISONE -U-
AUTHOR-(02)-SMIRNOV, M.I., SHUVALOVA, T.I.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY PITANIYA, 1970, NP 3, PP 43-45

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ASCORBIC ACID, METABOLISM, HYDROCORTISONE, ADRENAL GLAND,
   HEART, URINE, KIDNEY, LIVER, GUINEA PIG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0007   STEP NO--UR/0244/70/000/003/0043/0045

CIRC ACCESSION NO--AP0120707
                         UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120707

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OBJECT OF SUTDIES WAS THE ASCORBIC ACID CUNTENT AND ITS METABOLISM IN THE TISSUES OF GUINEA PIGS RECEIVING HYDROCORTISONE INTRAMUSCULARLY, 15 MG PER DAY FOR THE DURATION OF 10 DAYS. UNDER THE EFFECT OF PROTRACTED INTRODUCTION OF HYDROCORTISONE THE ASCORBIC ACID CONTENT DECLINED IN THE SUPRARENALS, HEART AND URINE, BUT REMAINED STABLE IN THE KIDNEYS AND LIVER. HYDROCORTISONE ALSO FAILED TO AFFECT THE LEVEL OF DEHYDROASCORBIC AND DIKETOGULONIC ACIDS IN THE TISSUES AND URINE.   FACILITY: LABORATORIYA BIOKHIMII VITAMINOV VSES. N-I INSTITUTA VITAMINOLOGII MINISTERSTVA ZDRAVOOKHRANENIYA SSSR, MOSCOW.

UNCLASSIFIED

88113j Vitamin B_6 metabolism studied at various stages in
the development of experimental diabetes. Shuvalova, L. L.;
Smirnov, M. I. (Vses. Nauch.-Issled. Inst. Vit. Min. Zdra-
vookhz., Moscow, USSR). *Probl. Endokrinol.* 1970, 16(1),
79-81 (Russ). Vitamin B_6 had almost no effect on the content
of xanthurenic acid in the urine or of sugar in the blood, but in-
creased the excretion of 4-pyridoxinic acid from 140 to 310 μg/
day, indicating increased accumulation of vitamin B_6. The
appearance of B_6-avitaminosis during pyridoxine diabetes in
rabbits is a unique form of endogenous vitamin deficiency.
Metabolic changes during alloxan diabetes evidently involved
disruption of conversion of pyridoxine and pyridoxal phosphate
and incorporation of the latter into the enzymic system, resulting
in development of disrupted tryptophan metabolism and in-
creased formation and release of xanthurenic acid.   BJIR

LD

REEL/FRAME
19761299

2

SHUVALOVA, V.N.

Acc. Nr: AP0049966 — Abstracting Service: Ref. Code: UR0251
CHEMICAL ABST. 5/70

95176k Lasing and spectral characteristics of some poly-
methine dyes. Bonch-Bruevich, A. M.; Zatsepina, N. N.;
Razumova, T. K.; Rubanova, G. M.; Tupitsin, I. F.; Shuva-
lova, V. N. (USSR). Opt. Spektrosk. 1970, 28(1), 100-4 (Russ).
Lasing was followed for a series of polymethine dyes on excita-
tion by a ruby laser. The absorption and fluorescence band posi-
tions, stability, and the relative transformation coeffs. of the
pumping energy are tabulated. For cryptocyanine (I), dicar-
bocyanine (II), and tricarbocyanine, the lasing characteristics are
given. The quantum yields and fluorescence spectra are almost
independent of the dielec. const. of the solvent; the quantum
yields increase with the solvent viscosity. The transformation co-
effs. of I and II in EtOH decrease with the no. of the excitation
pulse, when the laser emits several pulses in a flash, proceeding
in ~100 μsec. The degree of the decrease depends on the excess
of the excitation power of the laser over the threshold of the gen-
eration excitation of the dye.   P. Adamek

I3

REEL/FRAME
19801904

Instruments and Measurements   UDC 621.317.78:621.385.6

USSR

ANTROPOV, B. A., ANTROPOVA, L. KH., MORGACHEVA, G. A., KOTOSONOV, N. V.,
SHUVAYEV, A. G., Voronezh State University, Gomel' State University

"Problem of Utilizing the Reluctance Effect to Measure Microwave Transmitting
Power"

Abstract: The possibility of using reluctance sensors to measure the micro-
wave transmitting power is discussed, and experimental results are presented
for the voltage caused by the reluctance effect as a function of the trans-
mitting power on a frequency of 9,870 megahertz. The reluctance sensor, just
as the Hall sensor is an indicator of the microwave power flux density and is
a transmitting power meter. There is a good linear relation between the out-
put voltage taken from the sensor and the magnitude of the transmitting power
and the readings from a specimen depend on its position relative to the open
end of the wave guide which defines the point nature of the specimen, that is
characterizes the dependence of its readings on the microwave power distri-
bution and the low distortion introduced by the specimen into the microwave
power distribution. Both the theoretical and experimental studies indicate
the possibility of creating wattmeters based on reluctance sensors with the

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following advantages over the power meters used at the present time: 1) low inertia connected with the fact that the relaxation time of the current carriers is $\sim 10^{-12}$ seconds as a result of which it is possible to use these devices to measure the pulse power; 2) low dissipated power in the sensor operating in the transmitting power mode which makes it possible to measure high power levels; 3) simplicity of the measuring circuit.

rL·

2/2

Acc. Nr.: AM0044315

Ref. Code: UR OOOO

Shuvayev, G. V.

Measurement of Three-Dimensional Radiation Patterns of Ultra-Short-Wave and Short-Wave Antennas by Means of a Sounding Balloon (Izmereniye prostranstvennykh diagramm napravlennosti ukv i kv antenn pri pomoshchi shara-zonda)

Moscow,   Svyaz', 1970, 55 pp. (SL:1948)

TABLE OF CONTENTS:

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Reel/Frame
19770884

AM0044315

2/3   19770885

AM0044315

The book deals with a new method and system for measurements of radiation patterns of transmitting and receiving ultra-short-wave and short-wave antennas in various planes by means of a sounding balloon...

The booklet will be of interest to engineers and technicians working on problems of tuning and measurement of antennas.

3/3

19770886

USSR

UDO 621.391.2

KONSTANTINOVSKIY, A.G., SHUVAYEV, V.A.

"On The Physical Realization Of A Rectangular Radio Pulse With Quadrature Phase Modulation"

Abstract: Finite values of the functions of phase (frequency) modulation at the boundaries of a pulse are necessary for practical realization of quadrature phase modulation. The concept of a limitation parameter is introduced for analytical determination of these values. The interconnection of the limitation parameter with the modulation index and the degree of suppression of one side band of the signal spectrum are shown, and relations calculated on an electronic computer are presented. An amplitude spectogram of a rectangular radio pulse with a suppressed lower side band is shown. 3 fig. 2 ref. Received by editors, 28 April 1971.

1/1

TITLE--SQUARE PULSE SPECTRUM IN QUADRATURE PHASE MODULATION -U-

AUTHOR--SHUVAYEV, V.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 5, 1970, PP 967-969

DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PHASE MODULATION, PULSE AMPLITUDE, AMPLITUDE MODULATION, PULSE
   MODULATION, COMPUTER PROGRAMMING, FREQUENCY BAND, SIGNAL TRANSMISSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0579   STEP NO--UR/0109/70/000/005/0967/0969

CIRC ACCESSION NO--AP0132749
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0132749
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANALYSIS IS MADE OF THE FORM OF
THE AMPLITUDE SPECTRUM FOR A RECTANGULAR PULSE WITH INTRA PULSE
MODULATION IN ACCORDANCE WITH THE THEORY OF QUADRATURE PHASE MODULATION.
A FORMULA IS OBTAINED FOR THE SPECTRAL DENSITY OF THE SIGNAL IN TERMS
OF THE EVEN FUNCTION OF THE AMPLITUDE MODULATION AND THE PHASE
MODULATION INDEX. IN QUADRATURE PHASE MODULATION, THIS FUNCTION IS THE
HILBERT TRANSFORMATION OF THE MODULATED SIGNAL AMPLITUDE. BECAUSE OF
THE DIFFICULTY OF COMPUTING THE SPECTRAL DENSITY OF PULSE SIGNALS WITH
NONLINEAR FREQUENCY MODULATION, AN ELECTRONIC COMPUTER HAD TO BE USED.
INSTRUCTIONS ARE GIVEN FOR PROGRAMMING THE MACHINE. THE SPECTRAL PLOT
MADE FROM THE COMPUTED DATA IS SHOWN. THIS SPECTRUM HAS A DEFORMATION
CAUSING AN ENERGY REDISTRIBUTION WITH AN INCREASE IN THE PEAKS AT ONE
SIDE OF THE CARRIER FREQUENCY AND SUPPRESSION OF THE PEAKS AT THE OTHER.
FOR A MODULATION INDEX CLOSE TO OPTIMAL, ALL THE PEAKS AT ONE SIDE OF
THE CARRIER ARE SUPPRESSED WITH VERY LITTLE DEFORMATION OF THE MAIN
PEAK. EXPERIMENTS PERFORMED WITH THIS TYPE OF SIGNAL YIELD A SPECTRUM
WHICH AGREES CLOSELY WITH THE THEORETICAL COMPUTATIONS. THE CONCLUSION
IS DRAWN THAT PULSES WITH AN ASYMMETRICAL SPECTRUM CAN BE USED TO NARROW
THE OVERALL FREQUENCY BAND OCCUPIED BY THE TRANSMISSION OF THE SIGNALS.

UNCLASSIFIED

USSR $\mathcal{S}$ UDC: 621.391.2.018.756

SHUVAYEV, V. A.

"Square Pulse Spectrum in Quadrature Phase Modulation"

Moscow, Radiotekhnika i Elektronika, No 5, 1970, pp 967-969

Abstract: An analysis is made of the form of the amplitude spec-
trum for a rectangular pulse with intra-pulse modulation in ac-
cordance with the theory of quadrature phase modulation. A
formula is obtained for the spectral density of the signal in
terms of the even function of the amplitude modulation and the
phase modulation index. In quadrature phase modulation, this
function is the Hilbert transformation of the modulated signal
amplitude. Because of the difficulty of computing the spectral
density of pulse signals with nonlinear frequency modulation, an
electronic computer had to be used. Instructions are given for
programming the machine. The spectral plot made from the compu-
ted data is shown. This spectrum has a deformation causing an
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USSR

SHUVAYEV, V. A., Radiotekhnika i Elektronika, No 5, 1970, pp 967-969

energy redistribution with an increase in the peaks at one side of the carrier frequency and suppression of the peaks at the other. For a modulation index close to optimal, all the peaks at one side of the carrier are suppressed with very little deformation of the main peak. Experiments performed with this type of signal yield a spectrum which agrees closely with the theoretical computations. The conclusion is drawn that pulses with an asymmetrical spectrum can be used to narrow the overall frequency band occupied by the transmission of the signals.

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USSR

UDC 621.374

SHUVAYEV, V.D., and OREKHOV, V. A.

"Unit to Convert Current Strength Variations to Pulse Frequency"

USSR Authors' Certificate No 293293, Cl. H 03 k 3/16, filed 25 Aug 69, pub-
lished 2 Mar 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika
No 1, Jan 72, Abstract No 1A364P)

Translation: A unit is suggested for converting current strength variations to
pulse frequency, using a collector-emitter-coupled blocking oscillator contain-
ing a transistorized current-stabilizing stage and a charging capacitor in
the emitter circuit of the blocking oscillator's transistor. So that the
frequency of the generated pulses can be made dependent on variations in the
difference pulse control current, the charging capacitor has connected to it
in parallel a resistor and capacitor which are connected in series, with their
common outlet connected through a diode to the collector of the subtraction
stage transistor, the conductance of which is the reverse of the current-
stabilizing stage conductance. 1 illustration.

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USSR

UDC: 621.317:621.385.6

SHUVAYEV, Yu. T.

"On the Theory of the Method of Partial Takeoff of the Power of Spurious
Emissions from SHF Electronic Vacuum Devices"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology.
Scientific and Technical Collection. SHF Electronics), 1970, vyp. No 10,
pp 3-14 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A336)

Translation: The author discusses a power meter for spurious emissions from
SHF electronic vacuum devices which consists of a system of multiple-mode
waveguide T's with a series of auxiliary waveguides. An expression is
derived for the total energy flux tapped out to the auxiliary waveguides
through the coupling apertures. Examples are given of quantitative evalu-
ation of the effect which wave interference has on the error of measuring
the power of spurious emissions. Some methods are discussed for reducing
the measurement error due to the wave interference in a multiple-mode
waveguide. Resumé.

1/1

UNCLASSIFIED
TITLE--BLOOD GROUPS AND SENSITIZATION TO THE RHESUS FACTOR -U-   PROCESSING DATE--16OCT70

AUTHOR-(02)-SHUVAYEVA, B.A., IVANOV, L.V.

COUNTRY OF INFO--USSR

SOURCE--SOV MED 33(1): 68-71. 1970

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BLOOD TYPE, EMBRYOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0176

STEP NO--UR/0399/70/033/001/0068/0071

CIRC ACCESSION NO--AP0120876
UNCLASSIFIED

CIRC ACCESSION NO--AP0120876
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SENSITIZATION OF WOMEN TO THE
RHESUS FACTOR MAY BE RELATED TO THE GROUP OF THE MATERNAL AND FETAL
(HUSBAND) BLOOD. THE RHESUS SENSITIZATION DEVELOPS MOST OFTEN IN WOMEN
BELONGING TO THE GROUP AB(IV); IT IS LEAST FREQUENT IN WOMEN OF BLOOD
GROUP O(I). THE INCIDENCE OF SENSITIZATION TO THE RHESUS FACTOR AMONG
WOMEN, DEPENDING UPON THEIR GROUP AFFILIATION, DEVELOPS IN THE FOLLOWING
DESCENDING ORDER: AB(IV), A(II), B(III) AND O(I).   AMONG RHESUS
SENSITIZED FEMALES THE AB(IV) BLOOD GROUP IS ENCOUNTERED 5.1PERCENT MORE
OFTEN AND THE O(I) GROUP 5.1PERCENT LESS THAN USUAL.   FACILITY:
BELORUSS, RES. INST. BLOOD TRANSFUS., MINSK. USSR.

UNCLASSIFIED

1/2   015
UNCLASSIFIED
TITLE--SYNTHESIS AND X RAY STRUCTURAL STUDY OF THE PEROVSKITES BAPBO SUB3
AND SRPBO SUB3 --U--

PROCESSING DATE--20NOV7C

AUTHOR-(02)-SHUVAYEVA, YE.T., FESENKO, YE.G.

CCUNTRY CF INFC--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 379-80

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, CHEMISTRY

TCPIC TAGS--MINERAL, LEAD OXIDE, X RAY STUDY, BARIUM COMPOUND, STRONTIUM
COMPOUND

CCNTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0900

STEP NO--UR/0070/70/015/002/0379/0380

CIRC ACCESSION NO--AP0116410
UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--20NOV70
CIRC ACCESSICN NO--AP0116410
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TEST SPECIMENS OF BAPBO SUB3 WERE
OBTAINED FRCM PURE PBO SUB2 AND BAO SUB2 BY THE USUAL CERAMIC PROCEDURE
IN AN OXIDIZING ATM. (DECOMPN. OF BAO SUB2) AT 800DEGREES. THE
SPECIMENS OF SRPBO SUB3 WERE PREPD. FROM PBO SUB2 AND SRCO SUB3 IN AN O
ATM. (2-2.5 ATM O PRESSURE) AT 750 AND 800DEGREES (2ND FIRING). THE
DEBYE CRYSTALLOGRAMS OF THE COMPDS. SHOW THAT BOTH COMPDS. HAVE A SINGLE
PHASE PEROVSKITE STRUCTURE WITH MONOCLINIC LATTICE DISTORTION: BAPBO
SUB3: A EQUALS C EQUALS 4.24 SUB6 ANGSTROM, B EQUALS 4.22 SUB7
ANGSTROM; BETA EQUALS 90DEGREES 19 PRIME; SRPBO SUB3: A EQUALS C EQUALS
4.17 SUB6 ANGSTROM, B EQUALS 4.16 SUB6 ANGSTROM; BETA EQUALS 90DEGREES
53 PRIME. THE TEMP. DEPENDENCE CURVE OF THE LATTICE PARAMETERS OF SRPBO
SUB3 SHOWS THAT THE TRANSITION INTO THE CUBIC PHASE TAKES PLACE AT
SIMILAR TO 800DEGREES. THE TRANSITION OF BAPBO SUB3 INTO THE CUBIC
PHASE TAKES PLACE AT SIMILAR TO 400DEGREES.   FACILITY: ROSTOV.
GCS. UNIV., ROSTOV, USSR.

UNCLASSIFIED

USSR

KORYACHKO, V. P., SHUVIKOV, V. I.

"Optimization of Programs for Digital Machines"

Ob Optimizatsii Programm Tsifrovykh Mashin. [English Version Above], Riga, 1972, 7 pages (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V692 DEP, by the authors).

Translation: In development of programs for digital computers and planning of microprogram control automata, one of the most important problems is separation of repeating portions of programs (subroutines) in order to minimize program length. It is suggested that this problem be solved by a heuristic iterative algorithm, one step of which involved synthesis of the next subroutine S_k by combination of elements (instructions) from the main program or earlier formulated subroutines and subdivision of subroutines, the application of which becomes unsuitable after separation of S_k. The algorithm is presented in the form of a series of successive transforms of a certain matrix. Formal rules are presented for changing the elements of the matrix with each transform. The conditions of suitability of separation of

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USSR

Koryachko, V. P., Shuvikov, V. I.

Ob Optimizatsii Programm Tsifrovykh Mashin., Riga, 1972, 7 pages.

subroutine S_k, consisting of several subroutines, are defined. A step-by-step description of the algorithm is presented.

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USSR   UDC: 8.74

KORYACHKO, V. P., MAMATOV, Yu. A., SHUVIKOV, V. I.

"Agreement of Job Algorithm and Structure of Operational Automaton of Oriented
Machine"

Kibern. Tekhn. [Cybernetics Equipment--Collection of Works], Kiev, 1971, pp 45-
53 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract
No 11V572, by V. Mikheyev)

Translation: The following related problems are discussed: 1) define the
algorithm, structure of operational automaton for an oriented digital machine
(OA ODM) and schedule of operation of each section to minimize error proba-
bility and hold OA ODM cost below a fixed level; 2) define the algorithm,
structure of OA ODM and operating schedule of each section such that the cost
of the OA ODM is minimal and the probability of a failure is not over a fixed
level. The tasks are presented as mathematical programming tasks in which both
the goal function and the limitations are linear.

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USSR

KORYACHKO, V. P., MAMATOV, Yu. A., SHUVIKOV, V. I.

"Selection of the Optimal Structure of Operational Automata of Control Machines"

Translation: Problems of selection of a structure of an operational auto-maton (OA) for an oriented digital control machine (ODCM) and the speed of each of the units are studied. It is shown that the task of selection of the optimal structure for the OA of an ODCM is equivalent to the problem of linear programming.

1/1

TITLE--A COMPOSITE RESONATOR FOR SEMICONDUCTOR LASERS -U-

AUTHOR-(02)-POPOV, YU.M., SHUYKIN, N.N.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA I TEKHNIKA POLUPROVODNIKOV, VOL. 4, JAN. 1970, P. 45-50

DATE PUBLISHED----JAN70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SEMICONDUCTOR LASER, RESONATOR, LASER POWER OUTPUT, LASER
    EXCITATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1447   STEP NO--UR/0449/70/004/000/0045/0050

CIRC ACCESSION NO--AP0112441
                      UNCLASSIFIED

CIRC ACCESSION NO--AP0112441
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. CONSIDERATION OF THE CONDITIONS OF
   EXCITATION OF AXIAL MODES IN A COMPOSITE SEMICONDUCTOR LASER RESONATOR
   FOR THE PURPOSE OF INCREASING SINGLE MODE POWER GENERATION. A SIMPLE
   EXPRESSION IS OBTAINED WHICH RELATES THE OPTIMAL LENGTH OF THE PASSIVE
   PART O THE RESONATOR TO THE PARAMETERS OF THE INITIAL SEMICONDUCTOR
   LASER. IT IS SHOWN BY CALCULATIONS THAT WITH THE AID OF A COMPOSITE
   RESONATOR IT IS POSSIBLE TO INCREASE THE SINGLE MODE POWER GENERATION OF
   A SEMICONDUCTOR LASER BY A FACTOR OF 10 TO 50 WHEN THE LENGTH OF THE
   ACTIVE PART OF THE RESONATOR RANGES FROM 50 TO 500 MICRONS.
   FACILITY: AKADEMIIA NAUK SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

                         UNCLASSIFIED

USSR

UDC 616.993.162-022.39-084.47-036.8

SERGIYEV, P. G., BEYSLEKHEM, R. I., MOSHKOVSKIY, Sh. D., DEMINA, N. A.,
KELLINA, O. I., SHUYKINA, E. Ye., SERGIYEV, V. P., DUKHANINA, N. N., TRIYERS,
I. I., SHCHERBAKOV, V. A., TAIRKHAMEDOV, M. A., USKOV, N. Ye., LOSIKOV, I. N.,
and NEDOSPELOVA, Ye. I., Institute of Medical Parasitology and Tropical Medicine
imeni Ye I. Martsinovskiy, Ministry of Health USSR, Moscow

"Results of Mass Vaccinations against Zoonotic Cutaneous Leishmaniasis"

Abstract: Preventive mass vaccinations with a virulent strain of Leishmania
tropica major were found to give reliable protection against cutaneous leish-
maniasis. Only virulent strains can be used for vaccination. The degree of
inoculation with such strains is almost 100%, the inoculative process having,
as a rule, a favorable effect. The maximum size of the vaccination lesion does
not exceed 2 cm in diameter in 3/4 of the subjects vaccinated. In practically
all cases, the process does not last more than 5-6 months. Morbidity occurred
in the group vaccinated with the low-virulence strain, among those without
lesions, and among those whose lesions were less than 0.5 cm in diameter.

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USSR

SERGIYEV, P. G., et al., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni,
Vol 39, No 5, Sep/Oct 70, pp 541-551

Secondary pyococcal infections represented the only complications observed;
allergic exanthem was noted occassionally. In order to prevent local and
general allergic reactions after vaccination, it is necessary to exclude per-
sons who have had cutaneous leishmaniasis. If past disease cannot be revealed
by means of anamnesis or medical examination, the intracutaneous leishmanin test
is recommended. The level of the virulence in inoculative strains should be
periodically tested, since insignificant initial virulence or its weakening
during culturing make a given strain unfit for preparation of inoculum.

2/2

1/2   027
UNCLASSIFIED
TITLE--RED AURORAE AT MIDDLE LATITUDES -U-   PROCESSING DATE--02OCT70

AUTHOR--SHUYSKAYA, F.K.

COUNTRY OF INFO--USSR

SOURCE--RAZDEL IV, POLYARNYYE SIYANIYA I SVECHENIYE NOCHNOGO NEBA, 1970,
NR 18, PP 97-103
DATE PUBLISHED------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--AURORA, GEOGRAPHIC LATITUDE, PHOTOELECTRIC DETECTION,
SPECTRUM, INTERNATIONAL GEOPHYSICAL YEAR, INTERNATIONAL QUIET SUN YEAR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0058   STEP NO--UR/3307/70/000/018/0097/0103

CIRC ACCESSION NO--AP0114454
                            UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0114454   PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACCORDING TO THE DATA OF PHOTOELECTRIC AND SPECTRAL OBSERVATIONS CARRIED OUT BY A NUMBER OF STATIONS DURING INTERNATIONAL GEOPHYSICAL YEAR AND INTERNATIONAL QUIET SUN YEAR AN ANALYSIS OF PROPERTIES OF MEAN LATITUDE AURORAE WAS DONE. THE AURORAE OCCURRING TO THE SOUTH OF THE POLAR AURORA ZONE ARE AS A RULE "RED AURORAE". THE RED EMISSION IS VERY SENSITIVE TO AN INCREASE IN MAGNETIC ACTIVITY WHEREAS THE GREEN EMISSION INCREASES TO A MUCH LESSER DEGREE. NO DEFINITE INDICATIONS OF RED AURORAE HAVE BEEN DETECTED DURING THE MINIMUM OF SOLAR ACTIVITY.

UNCLASSIFIED

F.K. SHUYSKAYA

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Acc. Nr.: AP0042567

Measurements of Intermediate- and High-Energy Particles

(Abstract: "Measurements of Charged Particles of Intermediate and High
Energies," by A. D. Bolyunova, A. D. Verevkin, Yu. I. Gal'perin, L. S.
Gorn, L. S. Zhurina, I. D. Ivanov, R. N. Isayeva, I. P. Karpinsky, R. A.
Kovrazhkin, V. V. Temnyy, B. I. Khazanov, A. V. Shifrin and F. K. Shuyskaya;
Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 123-135)

[Note: This is part of a sectionalized article "Study of Geoactive Cor-
puscles and Photoelectrons on the Satellite 'Kosmos-261'," Kosmicheskiye
Issledovaniya, Vol VIII, No 1, 1970, pp 104-136]
      This article describes the RIE-205 scintillation spectrometer for
electrons of intermediate energies, the RIP-802 scintillation spectrometer
for protons and the RIG-III lead-shielded Geiger counter. The RIE-205
instrument measured electrons in the ranges 20-45, 45-85, 85-120 and 120-
150 keV and the total intensity of electrons with an energy greater than
150 keV (geometry factor 2·10⁻³cm².sterad). The RIP-802 instrument measured
protons in the ranges 0.30-0.45, 0.45-0.70, 0.70-0.95 and 0.95-9 MeV with
a geometry factor of 1.5·10⁻².sterad. The RIG-111 instrument measured

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AP0042567

protons with $E > 50$ MeV and hard electrons. In the radiation belts and auroral zones the instruments measured the fluxes and energy spectra of electrons and protons, their distribution by pitch angles and spatial-temporal characteristics. It was possible to determine the latitude variation of the intensity of injected electrons, the pitch distribution of intensity for auroral zone electrons and the differential electron spectra. For example, the electron fluxes measured with the RIE-205 spectrometer can be assigned to the following groups: a) trapped electrons in the inner zone ($L \leq 2.5$) were registered for the most part in the region near the Brazilian anomaly; their flux for an energy $E > 150$ keV attained 108 particles/cm^2·sec. and was highly dependent on pitch angle; a pronounced maximum was observed for pitch angles 90°; b) trapped electrons in the outer zone $2.5 \leq L \leq 7$, also with a maximum intensity for pitch angles of 90°; in many cases quasitrapped particles were registered in the region of in-variant coordinates $h_{min} \leq 100$ km with intensities up to $2 \cdot 10^6$ particles/cm^2·sec·sterad; c) sporadic hard electrons injected into the atmosphere in the middle latitudes; in these cases the mean energy was usually ~ 100 keV and the particle flux attained 10^5 particles/cm^2·sec; d) electrons of in-termediate and high energies injected into the atmosphere in the high latitudes; they are frequently observed near the auroral zone.

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SHUYSKAYA F.K.

Measurement of Low-Energy Electrons

(Abstract: "Measurement of Low-Energy Electrons," by Yu. I. Gal'perin,
N. V. Dzhordzhio, I. D. Ivanov, L. P. Karpinskiy, E. L. Lein, T. M.
Mulyarchik, B. V. Polenov, V. V. Temnyy, N. I. Fedorova, B. I. Khazanov,
A. V. Shifrin and F. K. Shuyskaya; Moscow, Kosmicheskiye Issledovaniya,
Vol VIII, No 1, 1970, pp 108-119)
[Note: This is part of a sectionalized article "Study of Geoactive Cor-
puscles and Photoelectrons on the Satellite 'Kosmos-261'," Kosmicheskiye
Issledovaniya, Vol VIII, No 1, 1970, pp 104-136]
    A spectrometer for low-energy electrons, operating in the energy
range 30 eV-15 keV, is described. Electrons undergo energy selection in
a cylindrical capacitor and then are accelerated to 17 keV and are regis-
tered by a scintillation counter with two photomultipliers operating in
a coincidence circuit. The instrument field of view is circular, the
aperture angle is ±3.5°, the geometry factor is 2·10⁻³ cm²·sterad and the
energy resolution is ΔE/E = 0.19. In the first range (30-150 eV) energy
scanning is done smoothly by applying a sawtooth voltage; in the second
analysis it is done smoothly at three fixed energies -- 1, 4.5 and 15 keV.
The instrument can be switched from one regime to another by command from
                            Reel/Frame
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the earth. The paper gives the first results of measurements on the "Kos-mos-261" satellite. The instruments measured the equilibrium energy spec-trum of fresh photoelectrons at different latitudes for different pitch angles. Soft auroral electrons with energies from 30 eV to approximately 1 keV were registered both in the "second" zone of auroras and in the main zone of auroras in which electrons with energies 4.5 and 15 keV were also very intensive even during magnetically quiet times. On many revolutions of the satellite about the earth, passing approximately along the auroral oval, with transition from the midnight to the morning sectors there is a structureless "background" of electrons with an almost constant intensity and slowly changing angular distribution. The energy flux of these elec-trons is approximately 1 erg/cm^2·sec. Near the midnight sector and with transition from the midnight to evening sector the fluxes of auroral elec-trons are far more irregular, with strong peaks, particularly at about 4.5 keV. No measureable electron intensities were discovered in the middle and low latitudes in the keV range. The upper limit of the energy flux in the quiet atmosphere is approximately $<1.5 \cdot 10^{-2}$ erg/cm^2·sec. An ex-ception is the equatorial region of the ionospheric anomaly, where as earlier (on the "Kosmos-5" satellite) there was sporadic registry of soft electrons.

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F. K. SHUYSKAYA

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Acc. Nr.: AP0042570

Ref. Code: UR 0293
JPRS 53162

Study of Geoactive Corpuscles and Photoelectrons

(Abstract: "Study of Geoactive Corpuscles and Photoelectrons on the 'Kosmos-261' Satellite," by A. D. Bolyunova, M. L. Bragin, Yu. I. Gal'-perin, V. A. Gladyshev, N. V. Dzhordzhio, G. N. Zlotin, I. N. Kiknadze, R. A. Kovrazhkin, T. M. Mulyarchik, Yu. N. Ponomarev, V. V. Temnyy, N. I. Fedorova, Yu. P. Shilyayev, F. K. Shuyskaya and R. V. Shulenina; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 104-136)

The artificial earth satellite "Kosmos-261" was used in a study of low-energy geoactive corpuscles and fresh photoelectrons and their inter-action with the earth's upper atmosphere. The satellite was launched on 20 December 1968. Orbital inclination to the equator was 71°, so that for a relatively long time it moved almost along a tangent along the auroral zone over the Soviet Far North, making it possible to increase the volume of simultaneous measurements from the satellite and from ground observa-tories. The storage regime made it possible to extend continuous measure-ments for periods of several revolutions, including passes over the auroral zones in the Arctic and Antarctic and over the polar caps as far as in-variant geomagnetic latitudes 82-85°. During the initial period the satellite apogee was at 670 km and perigee was at 217 km, but it finally

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burnt up upon entering into the dense layers of the atmosphere on 12 Feb-
ruary 1969 after making 857 revolutions of the earth. The experiment
lasted 53 days. The orbit was such that in the northern hemisphere middle
and high latitudes the satellite moved below or close to the maximum of
the Foregion so that ionospheric electron density along its trajectory
and its variations could be determined in a number of regions on the basis
of measurements by ground ionospheric stations. The period of the experi-
ment included both quiet periods and those with strong disturbances. The
experiment was conducted under the "Program of Cooperation Among Socialist
Countries in the Field of Space Research and Peaceful Use of Space."
Ground measurements were made in Bulgaria, Hungary, East Germany, Poland,
Rumania, USSR and Czechoslovakia. Observatories and special expeditionary
stations in the USSR participated: in Yakutia, the Far North, Siberia and
middle latitudes. The article cited below is divided into four parts: 1)
Description of Experiment; 2) Measurement of Low-Energy Electrons; 3) Mea-
surement of Low -Energy Ions; 4) Measurements of Charged Particles with
Intermediate and High Energies. Parts 2)-4) are essentially independent
articles and are abstracted separately.

19760552

SOME FEATURES OF THE MODERN DEVELOPMENT
OF THE NORTHWESTERN BLACK SEA SHORES

Shuyskiy, Yu. D.

The northwestern Black Sea shores are a classical type of the shore-lines of sub-emergence. The modern development of limans is strongly dependent on the types of sediment supply, on the capacity of the longshore drifts, on the exposition of the shore with respect to the prevailing winds and waves. It does not depend, however, on the rate of the relative sea-level oscillations. Five dynamic areas can be distinguished. Within each of them, the peculiar features of the development of the longshore drifts leave their imprint on the outward appearance of the barriers. The values of the drift capacities and the share of each source of supply are presented.

REEL/FRAME
19721275

Biochemistry

UDC 547.964.4+577.17

USSR

SHVACHKIN, YU. P., VDOVINA, R. G., POZHYAK, M. G., VOLUYSKAYA, YE. N., RYABTSEV, M. N., KRIVTSOV, V. F., GRACHEVA, A. K., KRASHOSHCHERKOV, S. P., NOVOSELOV, V. A., GRUZDEV, V. S., OLEYNIK, A. M., KALINKINA, Z. B., FEDOTOV, V. P., IVANOV, A. I., YUDAYEV, N. A.

"New Synthesis of Human Insulin"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 216-217

Abstract: Human insulin was synthesized on the basis of obtaining A and B chains by the solid phase method [R. B. Merrifield, J. Am. Chem. Soc., No 85, 2149, 1963; J. Stuart, et al., Tverdofazny sintez peptidov, Moscow, Mir, 1971] and subsequently combining the synthetic chains into the complete mole- cule of the biologically active hormone. Here, a new version of the synthesis is realized which permits exclusion of treatment of the chains with sodium in liquid ammonia which eliminates the danger of undesirable side reactions caused by this reagent [A. Marglin, et al., J. Am. Chem. Soc., No 88, 5051, 1966]. The A and B chains of human insulin were synthesized on an automated device using a spherical chloromethylated copolymer of styrene with 1% divinyl benzene as the insoluble carrier. All operations were performed in a nitrogen atmosphere. The derivatives of the L-amino acids used in the synthesis of the A and B chains are listed. The fluorohydrates of the chains were con-

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• USSR

SHVACHKIN, YU. P., et al., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1,
1973, pp 216-217

verted into S-sulfonates which exhibited no differences from the S-sulfonates
of the corresponding natural chains of bull insulin. The synthetic A and B
chains were recombined both with the corresponding natural chains and among
each other. The resultant compounds had specific insulin activity of com-
parable magnitude to the previously synthesized insulin compounds
/ K. Lubke, et al., Adv. Enzymol., No 33, 445, 1970/.

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UDC 577.17

USSR

YUDAYEV, N. A., SHVACHKIN, Yu. P., et al., Institute of Experimental
Endocrinology and Hormone Chemistry, Academy of Medical Sciences USSR, Moscow

"A New Laboratory Synthesis of Human Insulin"

Moscow, Biokhimiya, No 1, 1973, pp 221-223

Abstract: Description of a complete laboratory synthesis of human insulin
based on obtaining A and B chains by a solid phase method and subsequently
combining the synthetic chains into the whole molecule of the biologically
active hormone. Upon completion of the solid-phase synthesis, the polypeptide
chains are separated from the polymer-carrier by treatment with anhydrous liquid
hydrogen fluoride. Using a combination of protective groups makes it possible
to combine in a single working stage the separation of the chains from the
insoluble polymer-carrier and their complete release. The procedure eliminates
the need to treat the chains with sodium in liquid ammonia, thereby preventing
the dangerous side effects caused by this reagent. The purified A and B syn-
thetic chains are then recombined both with natural chains and with one another.
The preparations obtained as a result of the recombination reaction exhibit
specific insulin activity.

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UNCLASSIFIED

PROCESSING DATE---20NOV70

1/2   040
TITLE--APPLICATION OF THE METHOD OF SECONDARY ION ION EMISSION TO THE
STUDY OF PROCESSES OCCURRING DURING THE INITIAL STAGES OF TITANIUM
AUTHOR-(04)-ABRAMENKOV, A.D., AZHAZHA, V.M., FOGEL, YA.M., SHVACHKO, V.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, MAR. 1970, P. 519-523

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--TITANIUM, MOLYBDENUM ALLOY, METAL VAPOR DEPOSITION,
BIBLIOGRAPHY, METAL COATING, INTERMETALLIC COMPOUND, REFRACTORY METAL,
METAL DIFFUSION, SPECTROGRAPHIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0069

STEP NO--UR/0126/70/029/000/0519/0523

CIRC ACCESSION NO--AP0125904

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2   040
CIRC ACCESSION NO--AP0125904
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE INITIAL STAGES IN THE
FORMATION OF A VAPORIZATION COATING OF TITANIUM ON MOLYBDENUM, USING
SECONDARY ION ION EMISSION AND MASS SPECTRAL ANALYSIS. IT IS
DEMONSTRATED THAT DURING COATING FORMATION, MOLYBDENUM ATOMS DIFFUSE
FROM THE SUBSTRATE INTO THE COATING. THESE ATOMS DO NOT FORM
INTERMETALLIC COMPOUNDS WITH TITANIUM.   FACILITY: AKADEMIYA NAUK
UKRAINSKOI SSR, FIZIKO-TEKHNICHESKII INSTITUT, KHARKOV, UKRAINIAN SSR.

UNCLASSIFIED

UDC 621.377.622.322.5-434.1

USSR

SHVALEV, Yu. V.

"Ferrite Cylindrical Film Memory Element"

Elektron. tekhnka. Nauch.-tekhn. sb. Mikroelektronika (Electronic Engineering.
Scientific and Technical Collection. Microelectronics), 1970, vyp. 5 (26),
pp 84-89 (from RZh-Avtomatika,Telemekhanika i Vychislitel'naya Tekhnika, No 6,
Jun 71, Abstract No 6 B306)

Translation: The structural design of the memory element constructed from a
cylindrical ferrite film applied to a metal wire is described. The experimental
characteristics of the memory element reflecting the dependence of the read sig-
nal amplitude on the magnitude of the number and bit current and the region of
its stable operation in the temperature range from $-60°C$ to $+125°C$ are presented.
The optimal distance between adjacent number windings permitting maximum data
storage density to be obtained is determined experimentally. High-temperature
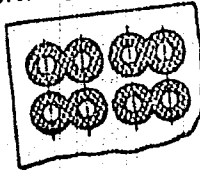stability of the investigated memory elements is noted. There are 7 illustra-
tions.

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UDC: 681.327.66

USSR

BEKKER, YA. M., BERG, I. V., KUZNETSOV, V. YA., LASHEVSKIY, R. A., SHVALEY, YU. V.

"A Memory Plate"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, 1970, P 36, patent No 262175, filed 3 Oct 68

Abstract: This Author's Certificate introduces a memory plate based on a ceramic slab with apertures. As a distinguishing feature of the patent, manufacture of the plates is simplified and their properties are improved by applying a ferrite film on both sides of the slab covering the apertures by pairs.

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TITLE--FORMATION OF BLUE MOLYBDOPHOSPHORIC ACID IN THE ABSENCE OF A
   REDUCING AGENT -U-
AUTHOR-(03)-BARKOVSKIY, V.F., ALIKINA, N.A., SHVAREV, V.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 341-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHORIC ACID, MOLYBDENUM COMPOUND, METAL COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1944   STEP NO--UR/0075/70/025/002/0341/0345

CIRC ACCESSION NO--AP0115752
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0115752
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING THE REACTION OF NA
  PHOSPHATE, AMMONIUM MOLYBDATE, AND MO(V) AT A TOTAL COMPD. CONCN. OF N
  TIMES 10 PRIME NEGATIVE3 M A BLUE MOLYBDOPHOSPHORIC ACID (I) IS FORMED
  AT A VARIABLE MO(VI):MO(V) RATIO.   AT A MOLYBDATE CONCN. OF N TIMES 10
  PRIME NEGATIVE4 M THE REGION OF MAX. COLOR DEVELOPMENT IS AT PH 1.6-2.3
  AND AT A CONCN. OF MOLYBDATE N TIMES PRIME NEGATIVE3 M THE RANGE IS PH
  0.65-0.9.   IN THE LATTER CASE MOLYBDATE CONCN. IS INSUFFICIENT TO FORM A
  HETEROPOLY COMPLEX.   THREE TYPES OF I ARE FORMED: THE 1ST WITH A P
  TOTAL MO RATIO OF 1:6 AT THE TOTAL SUM OF COMPONENTS OF 2 TIMES 10 PRIME
  NEGATIVE3 M, THE 2ND WITH A 1:9 RATIO AND COMPONENT CONCN. 4.0 TIMES 10
  PRIME NEGATIVE3 M, AND THE 3RD WITH A 1:13 RATIO AND THE TOTAL COMPONENT
  CONCN. OF 4.8 TIMES 10 PRIME NEGATIVE3 M.   THE AV. VALENCE OF MO DURING
  I FORMATION IS 5.84 WHICH REPRESENTS A MO(VI)-MO(V) RATIO OF 10:2.   ALL
  SOLNS. HAVE MAX. ABSORBANCE IN THE 830 NM REGION.   FACILITY:
  URAL STATE UNIV., SVERDLOVSK, USSR.

UNCLASSIFIED

Construction

UDC 624.131.43:531.5

USSR

CHERKASOV, I. I., MIKHEEV, V. V., PETRUKHIN, V. P., PAKULIN, V. A., SNARSKII, A.S., and SHVAREV, V. V.

"Effect of Gravity on Mechanical Properties of Soils"

Moscow, Osnovaniya, fundamenty i mekhanika gruntov. No 1, 1970, pp 14-18

Abstract: Results are given of an experimental investigation of the effect of gravity on mechanical properties of soils, conducted in an aircraft and in a centrifuge. The first series of experiments were conducted in a specially equipped TU-104 aircraft flying along a specific trajectory. Along a section of this trajectory the soils were subjected to an acceleration $a = 1.62 \text{m/sec}^2$ for 8 seconds, i.e. 1/6 g at ground level. The second series were conducted on a centrifuge, on which soils were subjected to 55.1, 98.1 and 196.2m/sec^2 acceleration, i.e. 5.6,10, and 20 g. Both series of tests contained controlled tests in motionless aircraft and centrifuge. The over-load coefficient $h = a/g$ varied from 0,165 to 20. Experimental setups and techniques for both the aircraft and centrifuge tests are described in detail. A photograph of the airborne equipment and a schematic drawing of the centrifuge are presented. Four types of soils were tested, whose physico-mechanical properties are given in a table. They are: 1)silica sand;

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CHERKASOV, I.I., et al., Osnovaniya, fundamenty i mekhanika gruntov. No 1,
1970, pp 14-18

2) agloporite gravel with negligible bond and of low specific weight; 3) keramsit
gravel, loose material with rounded granules; 4) soft plastic clay of great
specific weight, with strong bond and small internal friction angle. The
results are presented in graphs and tables. They show that at 6g the angle
of rest in agloporite and keramsit gravels decreases while it remains nearly
constant in the silica sand. An analysis of motion picture records shows
that a certain reduction in angle of rest is related to the aircraft vibration.
Thus, it is considered that the variation of gravity has no effect on the angle
of rest of loose granular soils. A specially adapted H-700 oscillograph was
used for recording experiments in the centrifuge. The deformation aptitude
of both type of soils was determined, taking the sag of the pressing stamp
under $1kg/cm^2$ pressure on the base, as a comparability criterion.

A comparison with theoretical data for carrying power shows that:
1) the gravity variation in accorda . with the theory of limit equilibrium,
substantially affects the carrying power of sand and weakly affects that of
plastic clay; 2) in contrast to the theory of limit equilibrium the carrying
power of sand varies a little less than in direct proportion to gravity. The
carrying power of clay does not remain constant, but increases slightly with
gravity. The causes of these discrepancies are discussed and tentatively
explained. Orig. art. has: 6 figures, 7 tables.

"The Functional State of the Hypothalamus-Hypophysis Complex Upon Immunization"

Abstract: Rats were immunized with daily intraperitoneal injections of adsorbed tetravaccine (containing the antigens of typhoid, paratyphoid A and B and also tetanus toxoid) in the amount of 0.5 ml/kg. The animals were sacrificed on the 7th, 10th, and 30th day after the first administration of the vaccine. The effects of immunization on the hypothalamus-hypophysis system were studied by histochemical determinations of neurosecretion in the supraoptic nucleus and both parts of the neurohypophysis and by determination of glucoproteins in the anterior hypophysis. The number of basophils in sections of the middle part of the anterior hypophysis was counted. On the 7th day after immunization, the neurosecretion of neurocytes of the supraoptic nucleus increased. On the 10th day the adenohypophysis was involved in the response to immunization; the number of basophils in it increased considerably. On the 30th day the synthesis

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of neurosecreted substance returned to normal, while dysfunction phenomena
remained in the adenohypophysis. Correlation of the data obtained with
earlier results on the effect of immunization on the thyroid gland, in
which hyperplasia was produced, indicated that the neurosecretion of the
supraoptic nucleus participated in altering the functioning of the thyroid
gland in immunization, and that the effect of the neurosecretion was
transmitted over the adenohypophysis.

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USSR

UDC: 533.9...15

SHVAROV, I. K., IVANCHINOV-MARINSKIY, N. N., POPOV, V. A.

"A Method of Measuring the Density and Frequency of Electron Collisions of an Isotropic, Weakly Ionized Plasma"

USSR Author's Certificate No 347954, Division H, filed 3 Jul 70, published 4 Sep 72 (from RZh-Fizika, No 6, Jun 73, abstract No 6Gi34 P)

Translation: A method is described for measuring the density and frequency of electron collisions of an isotropic, weakly ionized plasma. The attenuation constants of a counterclockwise polarized microwave are measured at two magnetic field strengths for a volume of plasma contained in the magnetic field created by a solenoid. The plasma parameters are determined from the known relationships of each of the two attenuation constants to the concentration and frequency of electron collisions for the given volume of plasma.

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USSR

UDC: 621.372.822:621.317.023(088.8)

SHVAROV, I. K., IVANCHINOV-MARINSKIY, N. N., RYAZANOV, Yu. A.

"An Installation for Adiabatic Compression"

USSR Author's Certificate No 277889, filed 5 Jun 69, published 17 Nov 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A309 P)

Translation: This Author's Certificate introduces an installation for
adiabatic compression which contains a high-pressure tank and a tube. As
a distinguishing feature of the patent, the unit is designed to provide
matching of a microwave channel to the tube without disrupting its working
mode. A knife-like string is installed along the diameter of the tube,
ending on one side in a coaxial short-circuiting piston, and on the other
in a coaxial plug. In the tube between the high-pressure tank and the
knife-like string is an outside jumper which passes the working gas.

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UDC: 681.332.6

USSR

GUREVICH, Kh. G., SEMENOVA, Z. A., SHVARTS, A. G.

"The 'Polimer-2' Computer and Experience in Using It in Solving Convex Programming Problems"

Analogo-vychisl. tekhnika v organizatsii proiz-va i issled. bol'shikh sistem (Analog Computers in Organization of Production and Investigation of Large Systems), Moscow, 1970, pp 89-97 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 70, Abstract No 6B86)

Translation: This article contains a description of a specialized semiconductor analog computer of the "Polimer-2" type which simulates a system of 10 second-order polynomials and permits statement and solution of problems of nonlinear programming with a 5 x 10 matrix. The computer, constructed from U-6 type dc amplifiers, includes a system for assigning components and nonlinear combinations of them, a system of 10 voltage generators corresponding to the physical and mathematical properties of the problem, a commutation system, a system for assigning restrictions, and a signalling system. There are seven illustrations and one table.

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1/2   018   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--USE OF ALKYLPHENOL DISULFIDE FORMALDEHYDE RESIN PHENOPHOR BS-6 FOR
VULCANIZING GENERAL PURPOSE RUBBERS -U-
AUTHOR-(02)-SHVARTS, A.G., EITINGON, I.I.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(3), 4-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PHENOL FORMALDEHYDE RESIN, VULCANIZATION, SULFUR, MECHANICAL
STRENGTH, SYNTHETIC RUBBER/(U)SKD RUBBER, (U)SKI3 RUBBER, (U)EUROPRENE
RUBBER, (U)PHENOPHOR B PHENOLIC RESIN, (U)PHENOPHOR BS6 PHENOLIC RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0451   STEP NO--UR/0138/70/029/003/0004/0007

CIRC ACCESSION NO--AP0119387
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0119387

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VULCANIZATION OF SYNTHETIC
RESINS (SKD, SKI-3, EUROPRENE) WITH PHENOPHOR BS-6 (I), INSTEAD OF S OR
COM. P,ALKYL,PHENOL,HCLHO RESIN PHENOPHOR B, GAVE VULCANIZATES OF
IMPROVED MECH. STRENGTH, MECH. STABILITY, AND RESISTANCE TOWARDS THERMAL
OXION. THE GREATEST STRENGTHENING EFFECT OF I WAS OBSD. FOR 1:1 SKD-BSK
RUBBER MIXES. THE RUBBER CONTG. I CAN BE BONDED TO S VULCANIZATES.
FACILITY: NAUCH.-ISSLED. INST. SHINNOI PROM., MOSCOW, USSR.

UNCLASSIFIED

TITLE--EFFECT OF THE TYPE OF ADHESIVE AND THE MODIFICATION OF RUBBERS ON
THE BONDING STRENGTH OF RUBBER CORD SYSTEMS -U-
AUTHOR-(05)-DOSTYAN, M.S., UZINA, R.V., SHVARTS, A.G., TURANOVA, A.I.,
FROLIKOVA, V.G.

5

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(2), 29031

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ADHESIVE, BONDING STRENGTH, METHACRYLIC ACID, RESORCINOL,
FORMALDEHYDE, CARBOXYLATE RUBBER, PYRIDINE, LATEX, CORDAGE, MOTOR
VEHICLE TIRE, STATISTIC ANALYSIS/(U)FR12 RESORCINOL FORMALDEHYDE,
(U)SKD1 CARBOXYLATE RUBBER, (U)DSVP15 VINYLPYRIDINE LATEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0388   STEP NO--UR/0138/70/029/002/0029/0031

CIRC ACCESSION NO--AP0113306
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0113306
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPUTER ASSISTED STATISTICAL
ANAL. OF A SET OF PLANNED EXPTS. GAVE THE OPTIMUM AMTS. OF MODIFIER
RU-1, METHACRYLIC ACID (I), AND FR-12 (RESORCINOL HCHO RESIN) IN
CARBOXYLIC LATEX SKD-1 AND LATEX DSVP-15 CONTG. VINYLPYRIDINE GROUP.
THE OPTIMUM FILLER AMTS. GIVE THE HIGHEST BONDING STRENGTH BETWEEN THESE
LATEXES (WHEN CURED) AND THE TIRE CARCASS CORDS.   THE RESULTS ARE
PRESENTED IN THE FORM OF THE REGRESSION EQUATIONS AND GRAPHS.
FACILITY: NAUCH.-ISSLED. INST. SHINNOI PROM., MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:
AP0049805 Abstracting Service:
          CHEMICAL ABST. 5-7

Ref. Code:
UR0135

101609x Properties of rubbers from SKMS-30 ARKM-15 modified with plastic materials. Tyurina, V. S.; Shvarts, A. G.; Eitingon, I. I. (Nauch.-Issled. Inst. Shin. Prom., Moscow, USSR). Kauch. Rezina 1970, 29(1), 8-10 (Russ). The physicomech. properties of SKMS-30 ARKM-15 (I) vulcanizates contg. 3-12% butadiene-styrene copolymer (Marbon 8000A), high-pressure polyethylene, low-pressure polyethylene (II), ethylene-propylene copolymer (III), isotactic polypropylene (IV), polyamide copolymer 548 (V), and poly(vinyl chloride) and the processability of carbon black-filled I mixts. were studied. Introduction of II, IV, and V to carbon black-filled I mixts. brought about a substantial increase in viscosity, tear strength, and 100% modulus, and reduced creep at high temps. III increased the values of all these properties. The reinforcing effect of II and IV in unfilled rubber depended on the m.p. of the cryst. phase and the vulcanization temp. Elastomers obtained at a temp. below the m.p. of the plastics exhibited superior 100% modulus, tensile strength, and tear strength.

CKJR

jk.

1/1

REEL/FRAME
19801727

7

USSR

SHVARTS, A. S.

UDC 517.948+513.88:530.145.6

"Formulation of Problems in Statistical Physics"

Translation: The formulation of problems in statistical physics is considered to be within the frame of reference of a new formulation of quantum theory suggested by the author of the article (Referativnyy Zhurnal -- Fizika, 1967, Abstract No 8B200). It is shown that in this new formalism the problem of finding the equilibrium state at temperatures $T = \beta^{-1}$ can be posed directly in an infinite volume (while in the ordinary formalism, the Gibbs density matrix $\exp(-\beta H)/Sp \exp(-\beta H)$ defining the equilibrium state is meaningful only in a finite volume). Given certain conditions, it is proven that this formulation of the problem is equivalent to the usual one (theorem 4). The new approach is applied also to such models (the Bardin-Cooper-Schriffer model and the model of a gas with weak long-range attraction) for which this theorem is inapplicable; here the results obtained agree with those known earlier. Though the principal results are proven

1/2

USSR

SHVÀRTS, A. S., Tr. Mosk. mat. o-va (Transactions of the Moscow Mathematics Society), No 22, 1970, pp 127-160 (from Referativnyy Zhurnal -- Matematika, No 7, July 71, Abstract No 7B900, by G. Litvinov)

for the case of lattice models, there are indications made concerning the extension of the article's results to the case of a continuum. The study was preceded by a short publication (Referativnyy Zhurnal -- Matematika, 1968, Abstract No 12B472).
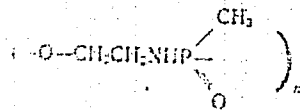
2/2

- 25 -

USSR

KHARIT, Ya. A., ZAVLIN, P. M., SHVARTS, A. S., ANDROSOV, V. F., ZAMORA, V. A., KOROTKAYA, L. I., Leningrad Institute of the Textile Industry and Light Industry imeni S. M. Kirov

"A Method of Producing Polyphosphonates"

Abstract: This Author's Certificate introduces: 1. A method of producing polyphosphonates of the formula

$$\left(-O-CH_2CH_2NHP\diagup^{CH_3}_{\diagdown O} \right)_n$$

where n ≈ 6. As a distinguishing feature of the patent, diethylamidoanilide of methylphosphonic acid is interacted with ethanolamine in the presence of heat with subsequent isolation of the goal product by conventional methods. 2. A modification of the method distinguished by the fact that the process is carried out at a temperature of 150°C.

172   020   UNCLASSIFIED
TITLE--SYNTHESIS OF RESINS BASED ON SULFANILAMIDE AND VARIOUS ALDEHYDES   PROCESSING DATE--13NOV70
-U-
AUTHOR-(04)-KOROTKAYA, L.I., KHARIT, YA.A., SHVARTS, A.S., MELNIKOVA,
YE.P.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. LEGK. PROM. 1970, (1), 59-63

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--SULFANILAMIDE, FURFURAL, ALDEHYDE, SCHIFF BASE, RESIN,
ACRYLATE, ADHESIVE, THERMAL SHOCK

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1106   STEP NO--UR/0323/70/000/001/0059/0063

CIRC ACCESSION NO--AT0134792
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0134792
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ARYLSULFAMIDE RESINS WERE
SYNTHESIZED FROM SULFANILAMIDE, FURFURAL, AND PARALDEHYDE VIA THE
INTERMEDIATE SCHIFF BASES. RESINS OBTAINED BY THIS METHOD DEMONSTRATED
BETTER THERMAL SHOCK RESISTANCE THAN THOSE OBTAINED BY THE DIRECT
CONDENSATION OF SULFANILAMIDE AND FURFURAL OR PARALDEHYDE. SOLNS. OF
THESE RESINS IN NH SUB4 OH WERE COMPATIBLE WITH ACRYLIC EMULSIONS,
SUGGESTING APPLICATIONS AS COMPONENTS IN ACRYLIC COATINGS AND ADHESIVES
OF INCREASED THERMAL SHOCK RESISTANCE.   FACILITY: LENINGRAD.
INST. TEKST. LEGK. PROM. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2   019   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--THE ADIABATIC S MATRIX AND THE QUASIPARTICLES --U-

AUTHOR-(03)-LIKHACHEV, V.N., TYUPKIN, YU.S., SHVARTS, A.S.

COUNTRY OF INFO--USSR

SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 2, NR 1, PP
3-29
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--S MATRIX, HAMILTONIAN, IDEAL GAS, FERMI STATISTICAL THEORY,
EXCITED STATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1978/1230   STEP NO--UR/0646/70/002/001/0003/0029

CIRC ACCESSION NO--AP0046153
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0046153

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADIABATIC S MATRIX S SUBALPHA
FOR NORMAL FERMI SYSTEMS IS STUDIED. THE EXPRESSIONS ARE OBTAINED FOR
ITS ELEMENTS WITH SMALL VALUES OF ALPHA. THE CONNECTION IS ESTABLISHED
BETWEEN THE OPERATORS S SUBALPHA AND THE SCATTERING MATRIX FOR PHYSICAL
QUASI PARTICLES. THE UNITARY OPERATOR IS CONSTRUCTED WITH TRANSFORMS
THE HAMILTONIAN UNDER CONSIDERATION INTO THE HAMILTONIAN OF IDEAL GAS
WITH ACCURACY UP TO MEMBERS WHICH ARE NOT ESSENTIAL WHEN WE ANALYZE THE
WEAKLY EXCITED STATES.

UNCLASSIFIED

172   020   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--LIQUID LIQUID GAS EQUILIBRIUM DIAGRAM IN AN ETHANE N EICOSANE N
HEXADECANE SYSTEM -U-

AUTHOR-(02)-YEFREMOVA, G.C., SHVARTS, A.V.

CCUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 837

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE EQUILIBRIUM, EQUILIBRIUM DIAGRAM, ETHANE, ALKANE,
PRESSURE, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0005   STEP NO--UR/0076/70/044/003/0837/0837

CIRC ACCESSION NO--AP0132305
                        UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0132305

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPN., PRESSURE, AND VOL. OF THE TITLE SYSTEM APPROACHED THOSE OF THE INDIVIDUAL COMPONENTS UNDER INCREASING TEMP. THE HIGH ORDER CRIT. PHENOMENA APPEARED AT 40.7DEGREES, AND 55.5 ATM.

UNCLASSIFIED

USSR

SHVARTS, B. A.

UDC: 621.396.674.1

"Determining the Effect of the Ground on the Active Component of Loop Antenna Input Impedances"

Moscow, Radiotekhnika, No 11, 1972, pp 92-93

Abstract: In inductive communication, the input impedance of a horizontal loop antenna is principally determined by the effect of the absorbing medium over which the communication is realized. The theoretical explanation of this effect on the active component of the loop antenna's input impedance is given in this brief communication. For this explanation, the author uses formulas derived in an earlier paper for the case of inductive communication (Vogler, L. E., et al, Curves of Input Impedance Change Due to Ground for Dipole Antennas, NBS Monograph 72, US Government Printing Office, Washington, D. C., 1964). An example of the methods developed by the author, for inductive communication at a frequency of 40-150 kHz with the loop antenna no higher than 16 m off the ground, is given. He expresses his gratitude to L. S. Tartakovskiy for his comments.
1/1

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USSR

VIL'DGRUBE, V.B., SHVARTS, E.G.

UDC 621.385.032.21(088.8)

"Direct-Heated Wire Cathode"

USSR Author's Certificate No 268552, filed 6 May 68, published 25 May 71
(from RZh:Elektronika i yeye primeneniye, No 1, Jan 72, Abstract No 1A85P)

Translation: The proposed cathode differs from known direct-heated wire cathodes of the head-on [tortsevyy] type in the fact that it is made in the form of a calcium array, the mesh of which is formed by curved wires fastened one with another at the points of intersection and at the edges of the array, which increases the emitting surface and increases the mechanical stability. The crossings of the ends of the filaments are strengthened at the outer and inner supports of the cathode. The size and form of the mesh are changed according to the radius of the array. As the edges of the array are approached, the sides of the mesh converge one to another, increasing the temperature of the edges of the array. In this manner uniform distribution of the temperature with respect to the surface of the cathode is assured. It is possible to use the proposed construction as the grid or heaters of the cathodes of electron devices. A.F.

1/1

USSR

SHVARTS, G.

"Effect of a Magnetic Field on a Plasma Created by Laser Emission in a Solid Target"

Translation: An experimental study was made of the effect of a constant magnetic field ($H = 0$-3,000 gauss) on a plasma formed by a ruby laser beam (power 0-30 megawatts) directed along the magnetic field. An increase in energy ε of the thermal ions with the field was detected which for all values of the laser power is subordinate to the ratio $\varepsilon^3 \Delta\varepsilon / H^4 = 6 \cdot 10^{-11}$ (electron volts/gauss)^4 where $\Delta\varepsilon$ is the ion energy increment. For values of $H > 2,000$ gauss, the curves $\Delta\varepsilon(H)$ emerge to saturation. The theoretical basis is presented for the effect in the approximation of a continuous homogeneous plasma. There are 3 illustrations, 1 table and a 3-entry bibliography.

1/1

SHVARTS, G.M.

XII-5. MECHANISMS OF THE PROCESS OF LOCAL PICKLING OF SILICON SUBSTRATES
MASKED WITH SILICON OXIDE

A study was made of the process of local pickling of silicon substrates
masked with silicon oxide in a mixture of hydrogen chloride and hydrogen. It
was found that the shape of the depressions as a result of the etching depends
on the temperature and concentration of the hydrogen chloride and is determined
by two simultaneously occurring processes: between the silicon substrate, free
of the oxide mask and the H_2-HCl mixture and between the substrate and the
silicon oxide film in the presence of hydrogen.

The mechanism of local etching of the silicon substrates masked by an
oxide film is proposed, and the possible forms of the depressions are ex-
plained on the basis of this.

The quantitative relation of the normal and tangential etching rates of
the depressions is found.

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USSR

NIKITSKAYA, YE. S., ARUTYUNYAN, G. S., SHVARTS, G. YA., MASHKOVSKIY, M. D., and YAKHONTOV, L. N., All Union Scientific Chemical-Pharmaceutical Research Institute imeni S. Ordzhonikidze, Moscow

"Synthesis and Pharmacological Study of Substituted 2,2,6,6-Tetramethyl-4--aminopiperidyl-4-carboxamides"

Abstract: Derivatives of 2,2,6,6-tetramethyl-4-aminopiperidyl-4-carboxamide (I) -- analogues of the pyrithramide -- were synthesized in search for new analgesic agents. The reaction sequence was based on triacetoneamine being converted through the triacetoneaminecyanohydrine to 2,2,6,6-tetramethyl-4--(N-substituted)amino-4-cyanopiperidines which could be converted with 90% sulfuric acid at 100° to (I). Further alkylation of these carboxamides was very difficult. Pharmacological studies carried out on these products showed that steric hindrance around the cyclic nitrogen atom with methyl groups did not improve the analgesic or other pharmacological properties of the parent agents.

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USSR

UDC: 538.4

SHVARTS, I. A.

"Rolling of a Cylinder in a Magnetic Field on a Plane Covered with a Layer of Viscous, Electrically Conductive Fluid"

Riga, Magnitnaya Gidrodinamika, No 1, 1972, pp 75-80.

Abstract: The MHD problem of the rolling of a cylinder along a plane covered with a thin layer of a viscous, conductive fluid is studied. The homogeneous magnetic field is directed perpendicularly to the plane. The ordinary and magnetic Reynolds numbers are considered low. The problem is solved in two dimensions x and y. The boundary conditions are the same as in the ordinary hydrodynamic problem, the solution of which is known. Formulas are produced for the distribution of velocities in the layer of fluid beneath a cylinder, as well as an integral expression for pressure. Expressions are produced for the pressure in a layer corresponding to large and small Hartman numbers. A detailed study is presented of the case when the ratio of the thickness of the layer of fluid to the diameter of the cylinder is low. The formulas for pressure and velocity are greatly simplified in this case. It is demonstrated for this case that when the Hartman number increases, the boundaries of the area of positive pressure

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USSR

UDC: 538.4

SHVARTS, I. A., Riga, Magnitnaya Gidrodinamika, No 1, 1972, pp 75-80.

in the layer are constricted, while the maximum value of pressure increases. The coefficient of rolling friction is calculated. It is shown that the coefficient of rolling friction in a strong magnetic field is low and is independent of the viscosity of the liquid.

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USSR

MASHKOVSKIY, M. D., and SHVARTS, G. YA., Laboratory of Pharmacology, All-Union Scientific Research Chemicopharmaceutical Institute imeni S. Ordzhonikidze, Moscow

"Cholinolytic Activity of Oxymethyl Analogues of Atropine and Tropacin"

Abstract: The anticholinergic activity of oxymethylatropine (OMA) and oxymethyltropacin (OMT) was investigated in comparison with that of atropine and tropacin. Differences were observed, depending on the organs tested. Thus, OMA is less effective than atropine in inhibiting pilocarpine-induced hypersalivation (by a factor of 20), in reducing acetylcholine-induced spasm of rabbit intestine (by a factor of 10), and in causing mydriasis in mice (by a factor of 10). However, OMA is just as effective as atropine in inhibiting gastric secretion in rats and acetylcholine-induced hypertension in cats and contraction of frog abdominal rectus. The toxicity of both compounds is the same. Similar differences exist between OMT and tropacin. The findings indicate that alteration of the acidic portion of the molecule of tropinic esters can result in compounds with selective action on cholinergic systems.

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SO: JPRS 59279
14 June 73

SOME CHARACTERISTIC FEATURES OF GROWTH ON EMBOSSED SUBSTRATES

[Article by V. M. Krasovskiy, A. S. Dubrovskiy, A. A. Kraft, A. A. Novoselskaya, V. S. Dubrovskiy, A. A. Milov, K.-G. M. Shvarts, Yu. M. Vodnikov. -- Trudy. Simpozlum. Rossian, Part 2, 1969, pp 150-154]

The mastery of the epitaxial process of growing silicon is one of the technological process for making solid state circuits by the planar process for instruments purely improvement of the characteristics and fabrication process.

It is no less prospective to use the epitaxial process to create the instrument structures since in this case it is possible to vary the electro-physical properties of the layers during the growth process. Two mutually complementing paths are possible: the local growth and growth on substrates with a shaped profile.

We have investigated some of the characteristic features of epitaxial growth of n and n -conductivity layers in the same process on substrates with a shaped profile. The shaped profile was created using the ordinary methods of photolithography and deep etching of silicon through a mask of a photo-resistance. The outside view of the photographic standard is shown in photograph No 21.

Epitaxial growth was carried out at a substrate temperature of 1,200° C for an n-conductivity layer and 1,270° C for an n conductivity layer. Special attention was given to obtaining epitaxial layers with a minimum number of lattice defects.

In the case of epitaxial growth, it was found that the preliminary oxidation of the silicon places before the photolithographic processes leads to increased density of the packing defects in the epitaxial layer on all sur-faces which were not subject to chemical etching during the photolithographic process (photograph No 22) (in the intervals between the packing de-fect density is two orders less than in the macroregions, the upper plane of which was coated with SiO2).

Prolonged holding in hydrochloric acid to remove the possible residual lalots of silicon dioxide did not lead to significant variations of the packing

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Computers: Digital

USSR

UDC: None

SHVARTS, KURT, Corresponding Member of the Latvian Academy of Sciences, Doctor of Physico-Mathematical Sciences

"Optical Memory"

Riga, Nauka i Tekhnika, No 2, 1973, p 24

Translation: Nowadays, the use of magnetic elements in the memory of an electronic computer permits the introduction of some 10 million bits of information. The computer's speed is 1 bit/10^{-7} seconds. But these specifications are not enough to satisfy computer specialists, and the problem has now arisen of designing machines with a memory capacity of 10^{12} bits and capable of processing information at the rate of 1 bit per 10^{-9} seconds. Apparently, such a computer can be built by using optical memory elements through which information can be recorded and calculated by the use of light. The optical memory elements of the computer are connected with the other blocks through photo-electric sensors (photoelements) which convert the optical signal into electricity.

Optical memory elements are especially interesting, since they afford the possibility of using lenses to focus light beams on an area with a one-micron diameter. Thus, as much as 10^8 information bits can be recorded on a single

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USSR

SHVARTS, KURT, Nauka i Tekhnika, No 2, 1973, p 24

square centimeter of the optical medium. If a laser is used as the light source in the computer, the time for information recording and processing can be cut to 10^{-8}-10^{-10} sec. This explains why computer specialists have turned their attention to optics.

For optical recording of information, materials are needed whose characteristics (such as color and index of light refraction) vary under the influence of incident light. Among such materials are various organic dyes, plastics, and semiconductors; there is also a great deal of interest in inorganic compounds -- ionic crystals.

2/2

USSR

SHVARTS, K. K.

"Radiation Investigations with the Atomic Reactor at Salaspils"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, No 2(295), 1972, pp 6-9

Abstract: The following investigations were conducted in the last ten years
with the atomic reactor at Salaspils:
    1. Radiation pysics of solid bodies. The radioluminescence of alkali
metal halide crystals was investigated. Formation of colloids in these
crystals due to radiation was discovered. The effect of radiation on
ferrites was investigated, and an increase of magnetic viscosity was observed.
    2. Nuclear physics and radiation technique. Nuclear spectroscopy was
applied to the investigation of rare-element nucleus structure. Over 40
methods of detecting chemical elements by means of neutron radiation analysis
were developed. These methods are applied in chemistry, biology, and medicine.
In order to optimize the radioactive coolant loop, a liquid-metal coolant with
water, graphite, and beryllium moderators was investigated.

1/1

USSR

SHVARTS, K.K., Candidate of Physical and Mathematical Sciences

"Radioluminescence and Radiation Defects in Alkali Halide Crystals"

Riga, Izvestiya AN Latviyskoy SSR, No 5, 1971, pp 37-41

Abstract: Results accumulated since 1967 are presented from studies of radioluminescence and radiation defects in alkali halide crystals, performed in the laboratory for radiation physics of ionic crystals of the Physics Institute, Academy of Sciences, Latvian SSR. The investigations have revealed a number of regularities of the radiation processes in this class of solids. A mechanism has been established for determining the dependence of radio- luminescent yield on temperature and excitation density. A new phenomenon the interaction of unrelaxed holes with activator centers which is significant in radiation processes in the area of low temperatures has been discovered. Certain general regularities of the processes of alkali halide crystal radiolysis have also been revealed. The studies have also yielded practical results in the form of the development of new thermoluminescence dosimeters. Preliminary research has indicated that the most radical practical results can be expected from the application of the effects of radioluminescence and radiation chemical reactions in ionic crystals for the creation of new memory devices having high speed and capacity.
1/1

1/2   022
UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--ABSORPTION SPECTRA AND SIZE OF COLLODAL CENTERS IN SODIUM AND
POTASSIUM CHLORIDE CRYSTALS -U-
AUTHOR-(05)-SHVARTS, K., EKMANIS, YU.A., UDOD, V.V., LYUSHINA, A.F.,
TILIKS, YU.YE.
COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(4) 879-84

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ABSORPTION SPECTRUM, SODIUM CHLORIDE, POTASSIUM CHLORIDE,
OPTIC PROPERTY, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0580   STEP NO--UR/0181/70/012/003/0879/0884
CIRC ACCESSION NO--AP0105563
UNCLASSIFIED

CIRC ACCESSION NO--AP0105563   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   PROCESSING DATE--18SEP70

COLLOIDAL CENTERS WERE INVESTIGATED IN ELECTROLYTICALLY COLORED NACL AND KCL CRYSTALS WITH THE APPLICATION OF OPTICAL, ELECTRON MICROSCOPIC, AND CHEM. METHODS. COMPARSION OF THE EXPTL. ABSORPTION SPECTRA OF COLLOIDAL PARTICLES WITH THOSE CALCD. BY THE MIE THEORY WITH THE ACCOUNT OF EXPTL. DISTRIBUTION OF THE PARTICLES OVER DIMENSIONS FOR NACL AND KCL CRYSTALS GAVE A GOOD COINCIDENCE. THIS IS A DIRECT PROOF OF THE VALIDITY OF THE MIE THEORY FOR THE DESCRIPTION OF OPTICAL PROPERTIES OF COLLOIDAL PARTICLES IN IONIC CRYSTALS. THE COLLOIDAL CENTERS WITH RADIUS GREATER THAN 600 ANGSTROM ARE REPRESENTED WEAKLY IN THE OPTICAL SPECTRUM, THOUGH SUCH PARTICLES IN ELECTRON MICROSCOPIC INVESTIGATION WERE OBSD. IN ALL CRYSTALS. COLLOIDAL PARTICLES ARE QUITE UNIFORMLY DISTRIBUTED OVER THE CRYSTAL, AND MORE SO IN NACL THAN IN KCL CRYSTALS.

UNCLASSIFIED

USSR

SHVARTS, K. R.

"Methods of Solving Discrete Optimization Problems"

Translation: The work consists of three parts: I. A method of stages for solving linear integral problems. II. The convex expansion method for discrete optimization problems. III. An algorithm for solving mixed integral problems. In part I, a method of lexicographic partitioning is suggested for the solution of an integral linear programming (TsLP) problem on the basis of the use of its theoretical-group structure. A modification of the method applied to the problem of TsLP with Boolean variables is given. An ALGOL-60 program is supplied. It is shown that a TsLP problem with Boolean variables of dimension 10 X 20 was solved on a M-20 computer in five minutes. In part III, the method from part I is adapted for the solution of partially integral LP problems. In part II an approach to problems of discrete optimization is suggested, based on the following concepts:

Theorem. If 1) $f(x)$ is a convex function given on a n-dimensional linear space R^n,

1/2

USSR

SHVARTS, K. R., V sb. Primeneniye mat. v ekon., No 8, Leningrad, Leningrad University, 1973, pp 37 - 55

2) $\bar{x} \in R^n$, where $f(\bar{x}) \leq f(x)$ for all $x \in R^n$.   3) Q is a convex set in R^n,
4) $\bar{x} \in Q$,   5) $\Gamma(Q)$ is the boundary of Q,   6) $\bar{Q} = Q \setminus \Gamma(Q)$,   7) $\bar{y} \in \Gamma(Q)$,
8) $f(\bar{y}) \leq f(y)$ for all $y \in \Gamma(Q)$.   Then for all $z \in \bar{Q}$ we have $f(\bar{y}) \leq f(z)$.

Abstract by Yu. Finkel'shteyn.

2/2

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Circuit Theory

USSR

SHVARTS, N. Z.

UDC   621.372.831.6.001.1

"On the Theory of Transformerless High-Frequency and Superhigh-Frequency Matching Circuits"

Moscow, Radiotekhnika i Elektronika, vol 16, No 11, Nov 71, pp 2110-2119

Abstract: Expressions are given for lossless wide-band matching of passive and active elements (channels, diodes, shf transistors etc.) in radio devices. Matching circuits are synthesized for loads described by an arbitrary combination of an active and a reactive element in the Chebyshev and maximally flat approximations, where these matching circuits have an arbitrary number of elements. Four figures, one table, bibliography of eight titles.

1/1

USSR

UDC 621.375.4.029.64

BAKHTIN, N. A., SHVARTS, N. Z.

"Transistorized Microwave Amplifiers With Dissipative Balancing Circuits"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 8, Aug 71, pp 1401-1410

Abstract: The paper presents the approximate theory of a microwave transistor amplifier with dissipative balancing circuits. The theory includes a brief analysis of the equivalent circuit of the transistor, balancing and matching circuits, stability and noises. It is pointed out that synthesis of an amplifier does not necessarily have to include all stages analyzed in the article. However, simplifications made in "experimental synthesis" are at the expense of generality and the possibility for exhaustive analysis.

1/1

USSR

SHVARTS, N. Z., Active Member of the Scientific and Technical Society of
Radio Engineering, Electronics, and Communications

"Analysis of Ladder-Type Filters with Losses in Inductive Elements"

Abstract: A study was made of the properties of low-frequency prototypes of
filters with losses concentrated in the inductive elements. The urgency of
such filters is connected, in particular, with the problem of miniaturization
of high-frequency filters and the possibility of implementing them in the
superhigh frequency range in the form of microband integrated circuits with
concentrated inductances having losses significantly greater than the capaci-
tive elements. The proposed prototypes have maximum uniform frequency de-
pendence of the reflection coefficient. The frequency dependence of the
damping coefficient of these prototypes deviates from maximum as the losses
in the inductances increase. The prototypes can be used in cases where low
losses in the pass band and reflection coefficients are determining factors.
The equivalent diagram of a prototype with four reactive elements is pre-
sented. A table of values of the reflection and damping coefficients at
zero frequency is given, and graphs are presented for the frequency de-
pendencies of the damping coefficients of prototypes with three and four

1/2

USSR

SHVARTS, N. Z., Radiotekhnika, Vol 26, No 10, 1971, pp 87-90

reactive elements and the damping characteristics of a filter without
losses, two filters with uniform losses and two filters with losses in the
inductances. Comparison of the characteristics shows that nonuniformity
of damping of the filters with "nonuniform losses" is greater than in
filters with "uniform losses"; however, the absolute values of their
damping in the pass band are appreciably lower. The damping of the
filters with "nonuniform losses" in the suppressed band depends on the
magnitude of the capacitance: for small capacitances it is somewhat less
than in filters with "uniform losses," and for large capacitances, it is
similar to them.

2/2

ELECTRONICS

USSR
Amplifiers

BAKHTIN, N. A., SHVARTS, N. Z.

"Transistorized Microwave Amplifiers. (Problems of Theory and Design)"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Technical Electrical Communications—collection of works), Moscow, "Svyaz'", 1970, pp 6-21 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D10)

Translation: The peculiarities of transistorized microwave amplifiers are formulated on the basis of representing transistors as linear active two-terminal pairs. A notational system is presented which is convenient for describing transfer characteristics, matching and also stability of the amplifiers. Bibliography of 12 titles. Resumé.

1/1

BULATOV, M. G., SHVARTS, N. Z.,

"A Transistorized Microwave Limiter Amplifier"

Abstract: The paper presents the results of an experimental study of transistorized limiter amplifiers for the SHF band and methods of computer analysis of such amplifiers. The studies were done in the upper region of the decimeter wave band. The four units studied had initial amplifications of 27, 42, 60 and 70 dB on the linear section of the amplitude characteristic. Curves are found for the output power and the phase of the amplification factor as functions of the output power level. The change in phase of the amplification factor was no more than $40°$ throughout the entire dynamic range for any of the amplifiers studied. Two types of experimental transistors were used in the limiter amplifier: 1) a low-power "conventional" transistor designed for amplification of weak signals; 2) a transistor with low impurity concentrations in the collector region designed chiefly for operation in the direct AGC mode. This type of transistor shows a sharp reduction in gain with increasing collector current. The conventional transistors were used in the linear preamplification stages.

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and the AGC transistors were used in the final stages. The resultant [S]-matrix of a network of transistor stages is determined from the known power dependences of the S-parameters of the individual stages. The method of successive approximations is used. The authors thank G. G. Teletskiy for setting up the computer program for the calculations.

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UDC 621.382:621.317.799

BAKHTIN, N.A., SHVARTS, N.Z.

"Measurements Of The S-Parameters Of Microwave Transistors"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductors Devices And Their Application--Collection Of Works), No 23, Moscow, "Sov.radio," 1970, pp 276-284 (from RZh--Elektronika i yeye primeneniya, No 12, December 1970, Abstract No 12B487)

Translation: A method is considered for measurement of the S-parameters (parameters of the scattering matrix) of microwave transistors. The requirements for the apparatus are formed, and possible errors of measurement of the parameters are analyzed. It is shown that by small additions to standard apparatus, it is possible to produce a device for measurement of the S-parameters of transistors at frequencies of 1-4 GHz. 3 ill. 2 ref.

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UDC: 621.375.146.6

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ZHAVORONKOV, V. I., IZGAGIN, L. N., SHVARTS, Moscow State Pedagogical
Institute

"A Transistorized Microwave Amplifier With 1-1000 MHz Passband"

Moscow, Pribory i Tekhnika Eksperimenta, No 3, May/Jun 72, pp 134-135

Abstract: The article describes a transistorized microwave amplifier with
a passband of 1-1000 MHz and output amplitude of the order of several volts.
A schematic diagram of one stage is presented. The stage contains a GT612
transistor connected in a common-emitter circuit, and also an interstage
circuit for matching the low input impedance of the transistor to the rela-
tively higher output impedance, and for leveling out the amplitude-frequency
response over a broad frequency range. The SWR at input and output in-
creases with a reduction in frequency, with a value no greater than 3
throughout the passband. The gain of a four-stage amplifier is 22 dB
with nonuniformity of ±1.5dB. The amplifier has a linear amplitude charac-
teristic up to output powers of 12 mW, as well as linear phase response.
Combining the four-stage amplifier with a two-stage input amplifier in-
creases the gain to 33 ± 3 dB without narrowing the passband. The described
four-stage amplifier was used as a preamplifier for the vertical deflec-

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ZHAVORONKOV, V. I. et al., Pribory i Tekhnika Eksperimenta, No 3, May/Jun
72, pp 134-135

tion channel of a superhigh-frequency oscilloscope with 10L0101M traveling
wave CRT having a sensitivity of 0.7 V/mm in the passband of 0-1.5 GHz.
By increasing the sensitivity of the oscilloscopic unit by a factor of
12-15, this made it possible to study continuous signals with frequencies
of 1-1000 MHz and power of the order of 0.01 mW, as well as video pulses
with an amplitude as low as 0.1 V and less with a duration of 1 ns with a
rise time of 0.2-0.4 ns.

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USSR   UDC: 621.372.51

RAYEV, M. D. and SHVARTS, N. Z.

"Matching Complex Impedances in UHF Miniature Devices"

Kiev, Izvestiya VUZ SSSR—Radioelektronika, No 6, 1972, pp 728-738

Abstract: Because it is very difficult to match complex loads for
obtaining broad-band transmission, especially when using integrated
circuit techniques, this paper attempts a more complete explanation
of this matching problem than heretofore presented. Specifically,
the paper examines arbitrary, two-component complex loads in which
oscillators are a particular case; the two components may be re-
sistive and reactive. Matching in circuits with lumped components
or with distributed parameters is considered. Tables of circuits
and matching formulas are given. The circuits considered have re-
sonance characteristics for ideal matching at the central frequency
and with increased reflection coefficient for increased detuning.
Effects of the matching on the band pass of the circuits are also
analyzed.

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USSR   UDC: 621.378.385

NOVGORODOV, M. Z., SVIRIDOV, A. G., SOBOLEV, N. N., and SHVARTS, P.

"The Energy of the Electrons in a CO Laser Discharge"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 10, 1972, pp 2190-2197

Abstract: To understand and optimize the operation of CO lasers, one must know the characteristics of the plasma discharge electron component, particularly parameters like the full electron concentration and the electron energy distribution. With this assertion the authors present the results of their measurements of the distribution function of electron energies in $CO-O_2-He$ laser in terms of the discharge current, pressure, and channel. The measurement method, involving the second derivative of the plasma probe current with respect to the voltage by the so-called second-harmonic method, is basically the same as that used in an earlier paper (M. Z. Novgorodov, et al, IEEE J., QE-7, No 11, 1971, p 508). Data is given for the $CO-O_2-He$ combination in the proportions of 1:0.1:10 and 1:0.1:30, curves for the electron energy distribution are plotted, and the effects of adding Xe to the mixture are discussed. It is noted that computations of the distribution function from the
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NOVGORODOV, M. Z., et al, Zhurnal tekhnicheskoy fiziki, No 10, 1972, pp 2190-2197

UDC: 621.378.385

formula for elastic collisions give misleading results; an exact solution of the kinetic equation with the correction of all possible processes taken into account is necessary.

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Diagnosis

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UDC 616.981.51-078.73

SHLYAKHOV, E. N., SHVARTS, S. A., GRUZ, Ye. V., and KATKHANOVA, T. M., Moldavian Institute of Hygiene and Epidemiology

"Immuno-Allergic Diagnosis of Anthrax in Man with Anthraxin"

Abstract: Data from 1,152 cases were evaluated in an effort to ascertain the rate of development and duration of skin-allergic reactions, the effectiveness of anthraxin tests in comparison with bacteriological studies, and the problem of whether the indices of anthraxin tests depend on the test periods or the beginning of a specific cure. It was found that with the anthraxin skin test, a diagnosis could be reliably confirmed 2.5 times more effectively than by the bacteriological method. Anthraxin skin tests are the only method of retrospective diagnosis of anthrax. In 93% to 73% of cases, it was possible to establish anthrax many years, or sometimes even decades, after its occurrence.

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AUTHOR-(04)-SHLYAKHOV, E.N., SHVARTS, S.A., GRUZ, YE.V., KATKHANOVA, T.M.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MANY YEAR EXPERIENCE IN THE
APPLICATION OF ANTHRAXIN FOR THE DIAGNOSIS OF ANTHRAX IN THE SOVIET
UNION AND ABROAD DEMONSTRATED ITS HIGH SPECIFICITY AND EFFICACY. WITH
THE AID OF ANTHRAXIN SKIN TEST ANTHRAX DIAGNOSIS WAS RELIABLY CONFIRMED
TWO AND A HALF TIMES MORE FREQUENTLY (IN 92 PERCENT OF THE CASES) THAN BY
BACTERIOLOGICAL EXAMINATION. AT PRESENT SKIN TEST WITH ANTHRAXIN IS
THE ONLY METHOD WHICH PERMITS TO ESTABLISH RETROSPECTIVE DIAGNOSIS OF
ANTHRAX MANY YEARS AFTER AN ATTACK OF THIS DISEASE (FROM 93 TO 73 PERCENT
OF THE CASES). EARLY SPECIFIC TREATMENT OF ANTHRAX REDUCED THE INDICES
OF DAIGNOSTIC TESTS WITH ANTHRAXIN A LITTLE.   FACILITY:
MOLDAVSKIY INSTITUT GIGIYENY I EPIDEMIOLOGII.

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