

Influence of a magnetic field on ...

S/054/62/000/002/002/012
B163/B138

the absorption begins at the frequency $\omega = \omega_0 + 2\Omega f - \Omega \Delta m/M$, and the frequency dependence of the absorption coefficient for perpendicular polarization has the shape of a step of width $2\Omega \Delta m/M$. In these expressions ω_0 is the frequency corresponding to the forbidden interval,

Ω is the cyclotron frequency, $f = \left[\frac{\mu}{M} + \left(\frac{\Delta m}{M} \right)^2 \right]^{1/2}$, $\mu = \frac{m_e m_h}{m_e + m_h}$,

$\Delta m = m_e - m_h$, $M = m_e + m_h$; m_e and m_h are the effective masses of electrons and holes, respectively. There is also a slight anisotropy in absorption. Radiation polarized parallel to the field is absorbed about twice as strongly as in the case of perpendicular polarization.

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SUBMITTED: January 30, 1962

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S/054/62/000/003/003/010
B102/B18620 47
AUTHOR:

Starostin, N. V.

TITLE:

Quadrupole absorption of light in a cuprous oxide crystal.
The many-electron wave functions of a Frenkel exciton

PERIODICAL:

Leningrad. Universitet. Vestnik. Seriya fiziki i khimii,
no. 3, 1962, 40-46

TEXT: The wave functions of the ground and excited states in strong-coupling approximation are calculated for Cu_2O (symmetry group O_h^4) using the results of Hellwege (Zs. f. Phys. 129, 626, 1951), A. G. Zhilich (Vestnik LGU, 22, 1957 and 22, 1959) and S. A. Moskalenko (ZhOS, 9, no. 3, 1960). The wave functions

$$U_{\vec{\sigma}, j}^{r_{25}}(\vec{\rho}) = \Psi_{\vec{\sigma}}(\vec{q}_a, j0; \vec{\rho}) + \tilde{\Psi}_{\vec{\sigma}}(\vec{q}_b, j0; \vec{\rho}). \quad (14)$$

$$U_{\vec{\sigma}, j}^{r_{15}}(\vec{\rho}) = \Psi_{\vec{\sigma}}(\vec{q}_a, j0; \vec{\rho}) - \tilde{\Psi}_{\vec{\sigma}}(\vec{q}_b, j0; \vec{\rho}). \quad (15)$$

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are obtained, where the symbols U are the bases of the even irreducible representation Γ_{25} and of the odd irreducible representation Γ_{15} respectively. $\Gamma = \Gamma_{25} + \Gamma_{15}$. For the light absorption coefficient in the case of a quadrupole transition between two states of equal parity holds:

$$\alpha_{fi} = \frac{2\pi^3 e^2 \omega^3}{hc^3} \frac{1}{V} \left| \left\langle f \left| \sum_{k=1}^M (\vec{q} \cdot \vec{r}_k) (\vec{e} \cdot \vec{r}_k) \right| i \right\rangle \right|^2, \quad (16) \text{ or}$$

$$\alpha_{fi} = \frac{2\pi^3 e^2 \omega^3}{hc^3} \frac{1}{V} \sum_f \left| \int \dot{U}_{0,f}^{\Gamma_{25}}(\vec{\rho}) \sum_{\alpha, \beta=x, y, z} q_\alpha e_\beta T_{\alpha\beta} U_0^{\Gamma_{15}}(\vec{\rho}) d\tau \right|^2. \quad (17),$$

where \vec{q} is the unit wave vector, \vec{e} the polarization vector, v the volume of the crystal, \vec{r}_k the radius vector of the k -th electron in the xyz-system; $U_0 = \Psi_0 + \tilde{\Psi}_0$ is the wave function of the ground state of the crystal. Considering the transformation properties of $T_{\alpha\beta}$ and U

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$$\alpha_{fi} = \frac{2\pi^3 e^2 \omega^3}{hc^3} \frac{1}{V} S \Delta^2, \quad (18) \text{ and}$$

$$\Delta = \int U_{0,1}^{i,25} T_{xy} U_0^i d\tau = \int U_{0,2}^{i,25} T_{xz} U_0^i d\tau = \int U_{0,3}^{i,25} T_{yz} U_0^i d\tau, \quad (19)$$

is obtained, where S is an angular function characterizing anisotropy and polarization. This leads to:

$$\Delta = \frac{1}{\sqrt{1-S_{\text{dep}}}} \left[\int f(\vec{r}) x y p_z(\vec{r}) d\mathbf{v} - I \right] (2N)^{\frac{1}{2}}, \quad (22), \quad \checkmark$$

$$S_{\text{dep}} = \frac{\sum_{\vec{a}} \sum_s \sum_l \left| \int \varphi_{\vec{a}}^0(\vec{r}) \varphi_{\vec{a}s}^l(\vec{r}) d\mathbf{v} \right|^2}{\dots} \quad (22a)$$

and

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$$\begin{aligned}
 I = & 8 \left[\sum_i \int d_i(\vec{r}_b) x_a y_a p_z(\vec{r}_a) dv \cdot \int s(\vec{r}_a) p_i(\vec{r}_b) dv - \right. \\
 & - \sum_i \int p_i(\vec{r}_b) x_a y_a p_z(\vec{r}_a) dv \cdot \int f(\vec{r}_a) p_i(\vec{r}_b) dv + \\
 & + \sum_i \int d_i(\vec{r}_b) x_a y_a d_{xy}(\vec{r}_a) dv \cdot \int s(\vec{r}_a) d_i(\vec{r}_b) dv - \\
 & \left. - \sum_i \int p_i(\vec{r}_b) x_a y_a d_{xy}(\vec{r}_a) dv \cdot \int f(\vec{r}_a) d_i(\vec{r}_b) dv \right] + R.
 \end{aligned}
 \tag{225}$$

For the absorption coefficient in a crystal during the formation of excitons with small radius

$$\alpha_{fi} = \frac{2\pi^3 e^2 \omega^3}{hc^3} \frac{1}{V} \frac{|\int f(\vec{r}) x y p_z(\vec{r}) dv - I|^2}{1 - S_{nep}} S(2N).
 \tag{23}$$

is obtained. There is 1 figure.

SUBMITTED: April 11, 1962

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STAROSTIN, N.V.

Effect of a magnetic field on the shape of the edge of the main
absorption band in crystals. Vest.LGU 17 no.10:17-20 '62.

(MIRA 15:5)

(Magnetic fields) (Wave mechanics) (Crystals)

STAROSTIN, N.V.

Quadrupole absorption of light in a copper oxide crystal. Many-electron wave functions of Frenkel's exciton. Vest. LGU 17 no.16:40-46 '62. (MIRA 15:9)
(Copper oxide crystals--Optical properties)
(Wave mechanics)

STAROSTIN, N.V.

Comparison of the Bloch and Heitler-London methods in their
application to the ground state of Cu_2O type crystals. Vest.
LGU 17 no.22:19-22 '62. (MIRA 15:12)
(Copper oxide crystals) (Electrons)

S/054/63/004/001/003/022
B102/B186

AUTHOR: Starostin, N. V.

TITLE: Frenkel' excitons in cuprous-oxide crystals

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii,
no. 1, 1963, 20-33

TEXT: The Frenkel' excitons in cuprous oxide are related with an excitation of one of the outer electrons of the O^{2-} ion (p-shell). The exciton states with $\vec{K} = 0$ are classified according to the irreducible representation of the cubic group (Phys.Rev.50,58,1936). The absorption parameters are calculated for direct optical transitions to other excited states. It is found that only two quadrupole transitions have considerable intensities, i.e. only two types of Frenkel' excitons contribute to the spectrum with greater effect. These two types belong to the Γ_{25} symmetry ($\Gamma_{25}^{(1/2)}$, $\Gamma_{25}^{(3/2)}$). The results are in close agreement with the experiment. The present paper represents an improvement of a similar earlier study (Vestnik LGU, no.16,1962) since here spin-orbital

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interaction is taken into account. This enables conclusions to be drawn as to the fine structure of the exciton absorption lines. The energy difference between the exciton states $\Gamma_{25}^{\uparrow}(1/2)$ and $\Gamma_{25}^{\uparrow}(3/2)$ determined by the p-shell splitting due to spin-orbital interaction amounts to 160cm^{-1} (cf. Bacher, Goudsmit, Atomic energy levels, N.Y. 1932).

SUBMITTED: October 20, 1962

Card 2/2

L 11399-63

EWT(m)/BDS/ES(w)-2 AFFTC/ASD/SSD Pab-lj
S/120/63/000/002/003/041

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AUTHOR: Venikov, N. I. and Starostin, N. V.

TITLE: The influence of contamination on the output of He⁺²
ions in cyclotron sources

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PERIODICAL: Pribory i tekhnika eksperimenta, March-April 1963, v. 8, no. 2, 25

TEXT: The results of experimental investigation of the effects of different gas contaminants on the output of doubly charged helium ions in cyclotron-type ion sources may be summarized by the following graph: (See card 2).

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S/051/63/014/004/025/026
E039/E420

AUTHOR: Starostin, N.V.

TITLE: The origin of new lines in the spectrum of the cuprous oxide crystal

PERIODICAL: Optika i spektroskopiya, v.14, no.4, 1963, 585-586

TEXT: The properties of these so-called new lines can be explained on the basis of optical transitions from the ground state to the exciton state for crystals at $K=0$, connected with the excitation of one electron from the full 3d shell of the ion to the 4s state. In the free Cu^{+} ion ten wave functions of the 3d shell form two rotational groups $D_{3/2}$ and $D_{5/2}$. For a crystalline field with D_{3d} symmetry is obtained the expansion

$$D_{3/2} + D_{5/2} = 2E'_{1g} + 3E'_{2g} \tag{1}$$

The 4s state wave function taking spin into account is represented by E'_{2g} . From considerations of the structure of the face centered cubic lattice it can be shown that

$$E'_{2g} \times E'_{2g} = A_{1g} + A_{2g} + E_g, \quad E'_{2g} \times E'_{1g} = 2E_g \tag{2}$$

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Hence from Eq.(1) it follows that it is possible to have three exciton states of A_{1g} type symmetry, three of A_{2g} and seven E_g . By combining the wave functions the following relations are obtained

$$A_{1g} \rightarrow \Gamma_1 + \Gamma'_{25}, \quad A_{2g} \rightarrow \Gamma_2 + \Gamma'_{15}, \quad E_g \rightarrow \Gamma_{12} + \Gamma'_{15} + \Gamma'_{25} \quad (3)$$

Consequently, the mechanism of excitation of Cu ions for $3d^{10} - 3d^9 4s$ taking into account spin orbital interactions and the influence of the crystal field leads to the possible existence of 27 exciton states, 7 with Γ_{12} symmetry, 10 with Γ'_{15} and 10 with Γ'_{25} . Optical transitions in the Γ'_{25} and Γ_{12} states are quadrupolar and the absorption of light is anisotropic. Magnetic dipole exciton lines (transition $\Gamma_1 \rightarrow \Gamma'_{15}$) are fully isotropic; both with regard to the direction of the propagated beam and to the state of polarization of the incident light. All the transitions found have a small probability, which is in agreement with the small intensity of the new lines. The effect of an electric field is to increase the strength of these lines. For the final elucidation of the nature
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of new lines in the cuprous oxide spectrum more experiments and a more detailed theoretical investigation are required. In particular, on the question of the 27 possibilities for optical transitions in this model only 14 have been observed at 1.5°K. This may be explained only on the basis of the calculated probability of these transitions.

SUBMITTED: October 31, 1962

[Abstracter's note: Abridged translation.]

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STAROSTIN, N.V.

Frenkel excitons in the copper oxide crystal. Vest. LGU 18
no.4:20-33 '63.

(Excitons) (Copper oxide crystals) (MIRA 16:3)

STAROSTIN, N.V.

Origin of new lines in the absorption spectrum of copper oxide
crystals. Vest. LGU. 18 no.16:38-40 '63. (MIRA 16:11)

PREYDENBERG, Rol'f [Freudenberg, Rolf], doktor (Germanskaya
Demokraticeskaya Respublika); STAROSTIN, H.V. [translator]

New preparations for the diagnosis and therapy of mastitis
in cattle. Veterinariia 42 no.9:107-108 S '65. (MIRA 18:11)

I. 12800-66 EWT(1)

ACC NR: AP5026617

SOURCE CODE: UR/0056/65/049/004/1228/1236

AUTHOR: Starostin, N. V.

ORG: State Optical Institute (Gosudarstvennyy opticheskiy institut)

TITLE: The problem of the non-orthogonality of atomic orbitals in the application of the Heitler-London method to crystals

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 4, 1965, 1228-1236

TOPIC TAGS: atomic spectroscopy, orthogonal function

ABSTRACT: The non-orthogonality of the atomic orbitals in the Heitler-London method is considered for the case in which the state of the system is described by a linear combination of Slater determinants that differ both in their spin and in their orbital configurations. An approach is developed even in the zero-order approximation which allows explicitly for the most important overlap integrals that cannot be regarded as small. Conditions for the applicability of this approach, which are generalizations of the relations found by Y. Mizuno and T. Izuyama (Progr. Theor. Phys. v. 22, 344, 1959), are formulated. The method amounts basically to neglecting in the zeroth approximation the

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21, 411, 55

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ACC NR: AP5026617

large number of small overlap integrals which do not contain excited atomic states. The case of crystals of noble gases is discussed as an example. Author thanks P. P. Pavinskiy and A. G. Vlasov for a discussion and valuable remarks. Orig. art. has 35 formulas. 2

SUB CODE: 20/ SUBM DATE: 28Apr65/ NR REF SOV: 001/ OTH REF: 015

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L 41585-36 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NRI: AF6018553

SOURCE CODE: UR/0181/66/008/006/1878/1883

AUTHOR: Starostin, N. V.

60
B

ORG: none

27 27 18

TITLE: Theory of Frenkel' excitons in a cuprous oxide crystal

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1878-1883

TOPIC TAGS: cuprous oxide, exciton, cubic crystal, crystal unit cell, Coulomb interaction, wave function, dielectric constant, exciton absorption 2/

ABSTRACT: The author constructs a variant of the Frenkel' exciton theory for cubic crystals with complex unit cell such as possessed by cuprous oxide. The wave functions used for the calculations were derived by the author earlier (Opt. i spektr. v. 20, No. 5, 1966). These are used to calculate the Hamiltonian and to investigate in detail the properties of the individual Frenkel' exciton band spectrum in the vicinity of small values of K, corresponding to excitation of the external shells of the O²⁻ ions. It is shown that allowance for the Coulomb interaction leads in this type of lattice to the appearance of energy terms proportional to K², so that as K approaches zero the energy limit does not depend on the direction of K. The wave functions are then used to calculate the dielectric tensor in the region of quadrupole absorption of the Cu₂O crystal. It is shown that the individual absorbing centers in the lattice have a sufficiently high local symmetry so that the tensor can be reduced to two scalar functions of the frequency, and the characteristic anisotropy of the

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L 41585-66

ACC NR: AF6018553

dispersion and absorption in the crystal can be determined directly. Inclusion of higher-order terms would lead to additional weak anisotropy in the dispersion and the absorption. Orig. art. has: 25 formulas.

SUB CODE: 20/ SUBM DATE: 27Nov65/ ORIG REF: 010/ OTH REF: 004

Card 2/2

L 36433-66 EWT(1)/EWT(m)/T/EWP(e)/EWP(t)/ETI IJP(c) AT/WH/JD/JG

ACC NR: AP6015424

SOURCE CODE: UR/0051/66/020/005/0823/0827

AUTHOR: Starostin, N. V.

ORG: none

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B

TITLE: Wave functions of Frenkel excitons in the Cu₂O crystal. Part 1

SOURCE: Optika i spektroskopiya, v. 20, no. 5, 1966, 823-827

TOPIC TAGS: cuprous oxide, exciton, wave function, Schroedinger equation

ABSTRACT: Wave functions of Frenkel excitons are constructed on normalized and non-orthogonal bases, and are classified in terms of irreducible representations of the group of local and crystal symmetry. A method is presented for studying the band structure of Frenkel excitons in Cu₂O-type crystals, taking the overlap of one-electron functions into account. Exciton bands which correspond to the lowest excitation energy and can be described by using the concept of a small-radius Frenkel exciton were investigated. The properties of these bands determine the longest-wave structure of the absorption spectrum in the Cu₂O crystal. In the latter, the exciton transition is forbidden in the dipole approximation and allowed in the quadrupole approximation. In the derivation of wave functions of local excited states in Cu₂O, only those exciton states are considered which are related to the excitation of oxygen ions O⁻. The problem solved in the article consisted in finding solutions of the Schroedinger equa-

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UDC: 548.0:620.192.001.1

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tion for the crystal

$$H\psi_i = E_i\psi_i.$$

which correspond to the propagation of excitation waves over the part of the crystal lattice formed by oxygen ions O^{2-} . The wave functions found will later be used for concrete calculations of exciton bands in the Cu_2O crystal. Orig. art. has: 18 formulas.

SUB CODE: 20/ SUBM DATE: 09Mar65/ ORIG REF: 009/ OTH REF: 009

Card

2/2 *JS*

VINOGRADOV, Valentin Ivanovich, dotsent; SERGEYEV, M.P., prof.; STAROSTIN,
N.Ye., dotsent; BANNIKOV, S.A., red.; PEVZNER, V.I., tekhn.red.

[Utilization of tractors and machinery] Eksploatatsiia mashinne-
traktornogo parka. Pod red. M.P.Sergeeva. Moskva, Gos.izd-vo
sel'khoz.lit-ry, 1959. 403 p. (MIRA 13:6)
(Agricultural machinery)

PUTYATIN, Mikhail Dmitriyevich; STAROSTIN, Nikolay Yemel'yanovich; ROZIN,
M.A., red.; PROKOP'YEVA, L.N., tekhn. red.

[Technical maintenance of machines and tractors] Tekhnicheskoe ob-
sluzhivanie mashinno-traktornogo parka. Moskva, Izd-vo sel'khoz.
lit-ry, zhurnalov i plakatov, 1961. 423 p. (MIRA 14:11)
(Agricultural machinery--Maintenance and repair)

PUTYATIN, M.D.; STAROSTIN, N.Ye.; ROZIN, M.A., red.; DEYEVA, V.M.,
tekhn. red.

[Technical maintenance of machines and tractors] Tekhnicheskoe obsluzhivanie mashinno-traktornogo parka. Izd.2., ispr. i dop. Moskva, Sel'khozizdat, 1963. 478 p. (MIRA 17:3)

STAROSTIN, N.Ye.; ASTAKHOV, V.S.; LEINEV, B.Ya., red.

[Practical manual on the use of machines and tractors]
Praktikum po ekspluatatsii mashinno-traktornogo parka.
Izd.2., perer. i dop. Moskva, Izd-vo "Kolos," 1964.
214 p. (MIRA 18:3)

STA

...
... marching in front. Kryl. rod. 16 no.8:15-16 Ag '65.
(MIRA 18:8)

STAIR, I. I. [unclear]

Act. for himself and for his comrades. Kryl. red. 15 no.2:4-5
P 164. (MIRA 18:7)

LAVRENT'YEV, V.I. Prinimali uchastiye: POL'SHINSKIY, V.V., starshiy nauchnyy sotrudnik; AKOPOVA, A.A., starshiy nauchnyy sotrudnik; SHAYKHUTDINOVA, L.K.; inzh.; SHAGEYEVA, L.A.; inzh.; TUMANOVA, A.M., preparator; STAROSTIN, P.A., inzh.; BALAKHONOV, A.P., motorist; ARTEM'YEV, V.G., motorist.

Using the heavy residual fractions of Tatar sour crude as a fuel for gas turbines. Nefreper. i neftekhim. no. 4:27-34 '63
(MIRA 17:7)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut.

STAROSTIN, Petr Fedorovich; NOVIKOV, I.I., red.

[Selecting optimum structures of rubber sealings] Vybór
optimal'nykh konstruktsii rezinovykh uplotnenii. Lenin-
grad, 1964. 13 p. (MIRA 18:4)

S/114/60/000/010/011/011/XX
E194/E155

AUTHOR: Starostin, P.I., Engineer

TITLE: A method of designing steam-jet compressors

PERIODICAL: Energomashinostroyeniye, 1960, No.10, pp. 40-47

TEXT: Steam-jet compressors cannot be designed by theory alone; empirical experience is also required. On the basis of investigations at the TsKTI (Central Boiler and Turbine Institute) typical designs have been developed for various compression ratios and operating conditions and a design procedure has been formulated. This problem is important because of the difficulties in standardising steam turbines. The difficulties arise from the variety of steam conditions required from the industrial steam pass-outs of pass-out turbines. The notation used in this article is given in Fig.1, where: p - pressure; t - temperature; i - enthalpy; C - speed; f - sectional area; G - flow by weight; k - compression ratio. The working steam enters the nozzle at a rate G_1 and after adiabatic expansion passes through section f_2 at a supersonic speed of c_0 into the mixing chamber. Low-pressure steam is delivered to the primary chamber and is entrained

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by the main jet. Nozzles of steam-jet compressors usually operate with a pressure ratio p_0/p_e below the critical and so are made expanding. Standard formulae are given for the expansion of steam in the nozzle and for other factors. Calculation of the process of ejection in the mixing chamber is then considered. On entering the mixing chamber the low-pressure steam expands adiabatically. Steam-jet compressors may be made more efficient by using higher inlet speed c_2 , as this reduces the difference $c_0 - c_2$, and also reduces the impact losses. In the method of calculation proposed, the optimum speed c_2 is determined as a function of the speed of flow of the working substance, introducing the dimensionless parameter:

$$\alpha = \frac{c_2}{c_0} \quad (1)$$

Using well-known formulae for c_0 and c_2 , the following expression is obtained:

$$h_2 = \alpha^2 \left(\frac{\varphi_1}{\varphi_2} \right)^2 h_e \quad (2)$$

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Calculation of the process of mixing of two flows of different speeds is then considered. Selection of mixing-chamber length tends to be empirical. Provided that the compression ratio is sub-critical and that the speed of flow of the mixture is subsonic, it is permissible to assume that the two flows mix at constant speed and that the mixing is completed in the narrow part of the mixing chamber. Then the mixture speed may be determined from the well-known impulse law. By equating the momentum before and after mixing, the following expression may be obtained:

$$\frac{c_1}{c_0} = \sqrt{1 + \frac{\alpha^2}{1+m} \left(\frac{\varphi_1}{\varphi_2}\right)^2} \quad (4)$$

It is thus shown that on the *is*-diagram (enthalpy-entropy) (Fig.2), the condition of the mixture on entering the diffuser corresponds to the point D. Calculation of the process of pressure increase in the diffuser is then considered. With adiabatic conditions compression would take place to point E, but because of losses the actual point is E'. Calculation of the injection coefficient $u = G_2/G_1$ is then considered.

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The following expression is derived on the basis of the law of conservation of mass:

$$u = \frac{\frac{c_1}{c_0} - \sqrt{\frac{1}{\eta\phi_1^2} \left[\frac{h_k}{h_e} + \alpha^2 \left(\frac{\phi_1}{\phi_2} \right)^2 \right] + \tau^2}}{\sqrt{\frac{1}{\eta\phi_1^2} \left[\frac{h_k}{h_e} + \alpha^2 \left(\frac{\phi_1}{\phi_2} \right)^2 \right] + \tau^2 - \alpha}} \quad (10)$$

If the expression within the root sign in the numerator and denominator is denoted by w , this becomes:

$$u = \frac{\frac{c_1}{c_0} - w}{w - \alpha} \quad (11)$$

This is the starting equation for practical calculations on equipment of this type. To determine the final point of the compression process, M , the enthalpy of the mixture is determined

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at the end of the diffuser and the point E' on the is-diagram is established. A theoretical expression is then derived for the narrowest section of the mixing chamber, and as it is known that the practical section must be made 30-50% greater, the following expression is obtained for the sectional area:

$$F_m = (1.3 \text{ to } 1.5) F'_m \quad (16)$$

This formula does not give satisfactory results for critical and super-critical compression ratios and Professor A.N. Lozhkin has proposed the following formula for determining the diameter in such cases:

$$D_m = 1.92 \sqrt{G_k v_0} \sqrt[4]{\frac{\eta_c + u}{\eta_c h_e}}, \text{ mm} \quad (17)$$

The efficiency of a steam-jet compressor is then considered and the following expression is derived:

$$\eta_c = \frac{uh_k}{h_\alpha} \quad (19)$$

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A test rig was built to test steam-jet compressors; the steam supply arrangements and instrumentation are described. Previous investigations have shown that losses in the nozzle and diffuser are generally small and that the mixing chamber governs the efficiency of the equipment as a whole. As no clear indications have yet been published about the optimum shape and size of mixing chambers, the investigations at the TsKTI were undertaken to study the special features of the process. The influence of alteration in pressure in the mixing chamber was determined, also the influence of the flow rate c_2 (or α) on the efficiency u (as defined above) and the compression ratio. The steam-jet compressors were tested with two types of mixing chamber, and with various nozzles. Using the notation of Fig.1 the chambers were of the following dimensions: Chamber type A: $D_e = 70$ mm; $D_m = 46$ mm; $D_k = 125$ mm; $l_k = 290$ mm; $l_{yz} = 90$ mm; $l_n = 350$ mm; $l_k/D_m = 6.3$. For chamber type B: $D_e = 100$ mm; $D_m = 41$ mm; $D_k = 125$ mm; $l_k = 310$ mm; $l_{yz} = 82$ mm; $l_n = 488$ mm; $l_k/D_m = 7.56$. The diffuser expansion angle was 10° . With the various chambers and nozzles, at the narrowest section of the mixing chamber the speed of the mixture ranged from subsonic to supersonic, and the

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A method of designing steam-jet S/114/60/000/010/011/011/XX
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compression ratio k from subcritical to supercritical, depending upon the nozzle size used. By changing the nozzles it was also possible to alter the main parameters of the operating process. The principal results are plotted in Figs. 5 and 6. Fig. 5 shows the relationships between α and the injection coefficient of Chamber A for various compression ratios k . Fig. 6 shows the efficiency as a function of α for various values of compression ratio k . In both diagrams the following notation is used: squares relate to a nozzle of 19.2/29.3 mm diameter; $k = 1.93-2.08$; $M = 1.24-1.45$; triangles relate to a nozzle of 17/23 mm diameter; $k = 1.58-2.01$; $M = 1.03-1.31$; + signs relate to a nozzle of 11/19.6 mm diameter; $k = 1.26-1.4$; $M = 0.27-0.86$. On these graphs the bold lines are plotted according to Eqs. (11) and (19) for the following conditions: $p_e = 11$ atm; $p_0 = 1.2$ atm; $\varphi_1 = 0.97$; $\varphi_2 = 0.92$; $\eta = 0.75$ for various compression ratios. It will be seen that there is satisfactory agreement between experimental and calculated values. Pressure distribution curves over the length of chamber A when mixing two flows at different speeds are plotted in Fig. 7 as functions of the compression ratio A with the following nozzles: $a = 11/19.6$ mm diameter;

Card 7/12

A method of designing steam-jet S/114/60/000/010/011/011/XX
E194/E155

$\delta = 17/23$ mm diameter; $\epsilon = 19.2/29.3$ mm diameter. In the curves of Fig.7a critical compression ratio was not achieved and mixing takes place at constant pressure or with slight pressure increase. The curves of Fig.76 and 78 show the marked increase in pressure in the mixing chamber as the compression ratio k is increased and u is reduced. Further results show that critical and supercritical compression ratios can be reached only with supersonic mixture speeds. On the basis of tests carried out at TsKTI and published data, three classes of mixing of two flows in the chamber may be distinguished: 1) when $c_m < c_{crit}$ and when $k = p_k/p_0 < 1.73-1.83$, the mixing process can take place without pressure increase in the chamber ($p_m = p_0$), as indicated by Fig.7a, curve 1. 2) When $c_m > c_{crit}$ and $k = p_k/p_0 < 1.73-1.83$ the mixing process takes place without pressure increase in the chamber as shown in Fig.76. 3) When $c_m > c_{crit}$ and $k = p_k/p_0 > 1.73-1.83$ the mixing process takes place with a pressure increase in the mixing chamber, see Fig.78 (there is a sharper pressure increase, $p_m \leq p_k$). Here $k_{crit} = 1.73$ for saturated steam and $k_{crit} = 1.83$ for superheated steam. There are 8 figures and 5 references (3 Soviet and 2 German).
Card 8/12

STAROSTIN, P., polkovnik zapasa

Aircraft carriers are a weapon of aggressors. Kryl. rod. 14
no.5:37-39 My '63. (MIRA 16:7)

(Airplane carriers)

Starostin, S.
USSR/ Miscellaneous
Card 1/1 Pub. 80 - 8/30
Authors : Starostin, S.
Title : Radio amateurs of the people's Hungary
Periodical : Radio 1, 14 - 15, Jan 56
Abstract : The interest of the young people of Hungary in the practice of radio transmitting and receiving as a sport is described, particularly with reference to the role of the Union for the Defense of the Hungarian People's Republic, under which such activity is carried on and the pre- dominance of women amateurs in this sport. Illustrations.
Institution :
Submitted :

STAROSTIN

85-58-3-20/26

AUTHOR: Starostin, S.

TITLE: On the Eve of the World-Wide Gliding Competition (Pered mirovym pervenstvom po planerizmu)

PERIODICAL: Krl'ya rodiny, 1958, Nr 3, pp 23-24 (USSR)

ABSTRACT: The author describes in detail the latest national gliding competitions held in the USA, Britain, and the German Federated Republic. Their national champions will now compete in the world-wide competitions to be held at Leszno, Poland, in June, 1958. Soviet glider champions will participate in the world-wide competitions for the first time. There is one drawing.

AVAILABLE: Library of Congress

Card 1/1

STAROSTIN, S., kand.sel'skokhoz.nauk

Chemistry against field pests. Grazhd.av. 20 no.12:12-13 D '63.
(MIRA 17:2)

STAROSTIN, S., kand. tekhn. nauk, obshchestvennyy inspektor po okhrane
truda (Voronezh)

Public seminar on industrial hygiene. Okhr. truda i sots.
strakh. 6 no.6:15 Je '63. (MIRA 16:8)

STAROSTIN, S., kapitan 1 ranga

In great sailing. Voen. znan. 41 no.6:18-19 Je '65. (MIRA 18:5)

STAROSTIN, S G

USSR / General and Specialized Zoology. Insects. P
Insect and Mite Pests.

Abs Jour : Ref Zhur - Biol., No 10, 1958, No 44810

Authors : Zhuravskaya, S. A.; Starostin, S. G.

Inst : Zoological Institute, AS UzbSSR

Title : The Results of the Use of Systemic Poisons on Cotton.

Orig Pub : Zashchita rast. ot vredit. i bolozney, 1957, No. 3, 33-34.

Abstract : Experiments made at the Zoological Institute of the AS UzbSSR showed that even when the application rates of acaricide and active liquid were decreased, octamethyl (1.7 kg/ha and 100 litres/ha) mercaptophos and M-74 (from each 1 kg/ha and 50 litres/ha) protected cotton from spider mites for 30 days. Mercaptophos is the best and most

Card 1/2

USSR / General and Specialized Zoology. Insects. P
Insect and Mite Pests.

Abs Jour : Ref Zhur - Biol., No 10, 1958, No 44810

economical preparation for the control of the mites. Aerial spraying of mercaptophos in the above dose was 2 - 3 times cheaper than repeated treatments with sulfur preparations, the technical effect of which was lower. -- A. P. Adrianov.

Card 2/2

COUNTRY : USSR P
 CATEGORY : GENERAL & SPEC. ZOOLOGY, INSECTS Harmful Insects and
 Mites.
 ABS. JOUR : Ref Zhur - Biologiya, No. 2, 1959, No. 6982
 AUTHOR : Petrushova, N.I.; Starostin, S.G.; Maksimov, F.N
 INST. : Not given
 TITLE : The Experiment in the Aerial Spraying of Mercaptophos.
 ORIG. PUB.: Vinogradarstvo i sadovostvo Kryma, 1958, No. 1, 28-30
 ABSTRACT : No abstract

CARD: 1/1
 Inst : ov, F. N.
 Title : Control of Fruit Mites.

APPROVED FOR RELEASE: 08/25/2000 No 61688 CIA-RDP86-00513R001652930008-7"

Abstract: The sovkhos orchards in Crimea were sprayed with a Mercaptophos (M) emulsion from AN-2 planes within 20 m. working area. Some orchards were sprayed prior to blooming (April 24-25) without preliminary control of the mites at rate of 0.5, 1 and 1.5 litres/ hectare of the concentrated M in 100 litres/ hectare of water and with 1.2 litres/ hectare of M in 60 litres/ hectare of

USSR / General and Special Zoology. Insects. Harm-
ful Insects and Mites. Fruit and Berry Crop
Pests.

P

Abs Jour: Ref Zhur-Biol., No 1, 1959, 2326.

Abstract: leaf remained 37 days after treatment, while
they were sprayed with 1.2 litres/ hectare of
M in 50 litres/ hectare of water only 0.8 mites
remained. A medical inspection disclosed that
the health of the workers was not affected by
the dusting. -- A. P. Adrianov.

Card 3/3

STAROSTIN, S.G., kand. sel'skokhoz. nauk; BONDIN, V.P., inzh.

Helicopters in protecting orchards and vineyards. Zashch. rast.
ot vred. i bol. 4 no.2:15-17 Mr-Apr '59. (MIRA 16:5)

(Aeronautics in agriculture)
(Spraying and dusting in agriculture)

STAROSTIN, S.G., kand.sel'skokhozyaystvennykh nauk

Aerial mist spraying applied in the control of sugar beet
weevils. Zashch.rast.ot vred.i bol. 4 no.3:19-21 My-Je '59.
(MIRA 13:4)

(Sugar beets--Diseases and pests)
(Spraying and dusting)

STAROSTIN, S. G., kand. sel'skokhoz. nauk

Aviation in plant protection. Zashch. rast. ot vred. i bol. 5
no.10:1-3 0 '60. (MIRA 16:1)

(Aeronautics in agriculture)
(Spraying and dusting in agriculture)

PAYKIN, D.M.; STAROSTIN, S.G.; MENDE, P.F.; KUZNETSOV, K.P.;
POPOVA, M.I.; PESHKOV, V.G.

Mist spraying of chlorophos against the shield bug *Eurygaster*
integriceps. Zashch. rast. ot vred. i bol. 7 no.2:20-21
F '62. (MIRA 15:12)

(Chlorophos) (Eurygasters)
(Spraying and dusting)

STAROSTIN, S.G., kand.sel'skokhoz.nauk

Possibilities of using helicopters in plant protection. **Zashch.rast.**
ot.vred. i bol.7 no.8:17-19 Ag '62. (MIRA 15:12)
(Aeronautics in agriculture) (Plants, Protection of)

ZVYAGINTSEV, O.Ye.; STAROSTIN, S.M. [deceased]

Complex ruthenium acidonitroso compounds. Zhur.neorg.khim. 6
no.6:1281-1290 Je '61. (MIRA 14:11)
(Ruthenium compounds) (Nitroso compounds)

THEORY S.M.

Distr: 484j

The complex nitrosyl compounds of ruthenium⁷

are: $RuNO(CO)_4 \cdot 2H_2O$, $RuNO(NO)_2 \cdot 3H_2O$, $RuNO(CH_3COO)_2 \cdot Na_2Ru(NO)_2(CH_3COO)_2 \cdot H_2O$, $H_2[RuNO(C_2O_4)_2]$, $H_2[RuNO(C_2O_4)_2] \cdot H_2O$, $(NH_4)_2[RuNO(C_2O_4)_2]$, $Mg[RuNO(C_2O_4)_2]$, and $H[Ru(NO)(C_2O_4)_2] \cdot 2.5H_2O$. In no case was more than one NO group added to the center atom. Its bond with Ru is exceptionally strong and it does not split off in the usual double-decomposition reactions.

J. Rovtar Leach

Dr

3

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PAVLOV, P.A. (Leningrad); STAROSTIN, S.M. (Leningrad); YAGH, Yu.I.
(Leningrad)

Method of stress determination used in the investigation of the
dependability of the pillars under the dome of St. Isaac's
Cathedral. Izv. AN SSSR. Otd. tekhn. nauk no. 10:152-156 0'55.
(Columns) (Strains and stresses) (MLRA 9:1)

STAROSTIN, S.M., inzh.

Using large brick blocks in the Czechoslovak Republic. Biul.
'stroj.tekh. 12 no.8:35-37 Ag '55. (MIRA 12:1)
(Czechoslovakia--Building blocks)

STAROSTIN, S.M.

Solution of a problem on equilibrium in a hollow cylinder under
the action of a normal load on its surface. Trudy LPI no.178:118-132
'55. (MIRA 10:11)

(Elasticity) (Strains and stresses)

STAROSHIN, S., inzhener.

Making large blocks and copings in construction yards. Stroitel' 2.
no.9:3-4 S '56. (MIRA 10:1)
(Concrete slabs)

LOGINOV, F.G.; BASEVICH, A.Z.; BELOV, A.V.; VOZNESENSKIY, A.N.; GLEBOV, P.D.;
KACHANOVSKIY, B.D.; KRAVTSOV, V.I.; LEVI, I.I.; MOROZOV, A.A.; NOSOV,
R.P.; OKOROKOV, S.D.; PROSKURYAKOV, B.V.; STAROSTIN, S.M.; URAZOV, A.A.;
CHERTOUSOV, M.D.; CHUGAYEV, R.R.; SHCHAVELEV, D.S.; YAGN, Yu.I.

V.S.Baumgart.; obituary. Gidr.stroi. 25 no.5:58 Ja '56. (MLRA 9:9)
(Baumgart, Vladimir Sergeevich, d.-1956)

... *Technological* ...
 ... *the manufacture* ... *mounting* ...
 ... *urban* ... *City Exp Comm* ...
 ... *Building* ... (17, 31-58, 104)

-67-

STAROSTIN, S., inzh.

Vibrating mortars in vertical seams between brick blocks. Gor. 1
sel'. stroi. no. 11:19-20 N '57. (MIRA 11:1)
(Vibrators) (Building blocks)

STAROSTIN, S., inzh.

Divided method of bricklaying. Stroitel' no.1:26 Ja '58.
(Bricklaying)

(MIRA 11:2)

STAROSTIN, S.M.; KONSTANTINOV, I.A.

Study of stresses in the Bratsk dam taking into consideration preliminary deformations produced during its construction.
Nauch.-tekhn.inform.biul.LPI no.1/2:26-34 '58. (MIRA 12:6)
(Bratsk Hydroelectric Power Station--Dams)
(Strains and stresses)

SOV-98-58-2-19/21

AUTHORS: Glebov, P.D., Professor, Chairman of the Anniversary Commission, and Professors: Levi, I.I.; Yagn, Yu.I.; Chugayev, R.R.; **Docents:** Starostin, S.M.; Kachanovskiy, B.D.; and Pogorelev, V.I.

TITLE: The 50th Anniversary of the Hydraulic Engineering Department of the Leningrad Polytechnical Institute imeni M.I. Kalinin (50-letiyе gidrotekhnicheskogo fakulteta Leningradskogo politekhnicheskogo instituta imeni M.I. Kalinina)

PERIODICAL: Gidrotekhnicheskogo stroitel'stvo, 1958, Nr 2, pp 62-63 (USSR)

ABSTRACT: The authors review the establishment and purpose of the Dept. for Hydraulic Engineering, pointing out that the department has at present 8 laboratories, with a branch for meliorative soil science. The erection of 2 new laboratories began this year: Hydraulic Engineering Construction and Utilization of Water Power. The authors name 24 scientists and engineers who were working at the faculty before the revolution, and mention textbooks composed by N.N. Pavlovskiy, M.D. Chertousov, A.A. Morozov, G.K. Risenkampf, P.D. Glebov, V.A. Kind, S.D. Okorokov, O.G. Ditts and N.M. Belyayev.

Card 1/3 During the 50 years of its existence the faculty has turned

SOV-98-58-2-19/21

The 50th Anniversary of the Hydraulic Engineering Faculty of the Leningrad Polytechnical Institute imeni M.I. Kalinin

out over 3,500 engineers. Several important scientific trends have started at this institute. There is the school of Academician N.N. Pavlovskiy, with great achievements in the field of hydraulics and dam construction; the school of Academician B.G. Galerkin, who has done remarkable work in three-dimensional problems of the theory of flexibility, etc; Professor G.N. Maslov has greatly developed the theory of temperature tensions in solid concrete and reinforced concrete structures; the school of Academician G.P. Perederiy, one of the most famous Soviet bridge builders, who has created new methods of computing and constructing bridges; the school of the Honored Worker in science and engineering, A.A. Morozov has had a great influence on the development of hydroelectric power plants. The authors also point out considerable experimental and research work performed by the

Card 2/3

SOV-98-58-2-19/21

The 50th Anniversary of the Hydraulic Engineering Faculty of the Leningrad Polytechnical Institute imeni M.I. Kalinin

faculty in connection with the building of several hydro-electric power plants.

1. Water power--USSR
2. Soils--USSR
3. Engineering personnel
--USSR

Card 3/3

STAROSTIN, S.M.

Using knife vibrators in sealing joints of brick blocks,
Suggested by S.M. Starostin: ~~Tr. i. isobr. prod. v. stroi.~~
no. 8:34-36 '58. (MIRA 13:3)

1. Po materialam Glavmosstroya.
(Vibrators) (Building blocks)

STAROSTIN S.M.

GLEBOV, P.D., prof.; LEVI, I.I., prof.; YAGN, Y.I., prof.; CHUGAYEV, R.R.,
prof.; STAROSTIN, S.M., dots.; KACHANOVSKIY, B.D., dots.;
POGORELOV, V.I., dots.

Fiftieth anniversary of the hydraulic engineering faculty of
the Leningrad Polytechnic Institute. Gidr.stroi. 27 no.2:62-63
F '58. (MIRA 11:2)

(Leningrad--Technical education)

STAROSTIN, S.M., inzh.

Investigating monolithic finishing of large blocks made of hollow
ceramic bricks. Stroi. prom. 36 no.2:28-31 F '58. (MIRA 11:2)
(Building blocks) (Vibration)

NEPOROZHNIY, P.S.; BELYAKOV, A.A.; VOZNESENSKIY, A.N.; GLEBOV, P.D.;
KACHANOVSKIY, B.D.; BASEVICH, A.Z.; TARTAKOVSKIY, D.M.;
VASIL'YEV, P.I.; ZARUBAYEV, N.V.; CHUGAYEV, R.R.; KOZHEVNIKOV,
M.P.; KNOROV, V.S.; IVANOV, P.L.; SHCHAVELEV, D.S.; OKORCOV,
S.D.; BELOV, A.V.; STAROSTIN, S.M.; YAGH, Yu.I.; IZBASH, S.V.

Ivan Ivanovich Levi; on his 60th birthday. Gidr. stroi. 30
no.9:61-62 S '60. (MIRA 13:9)
(Levi, Ivan Ivanovich, 1900-)

STAROSTIN, S.M., kand.tekhn.nauk (Voronezh)

New reusable panel scaffolds for industrial buildings..
Prom.stroi. 38 no.4:57 '60. (MIRA 13:8)
(Scaffolding)

STAROSTIN, S.M.; KONSTANTINOV, I.A.

Static calculations for the Bratsk Dam with the built-in hydroelectric power station. Trudy LPI no.208:223-239 '60.

(MIRA 13:9)

(Bratsk Hydroelectric Power Station--Dam)

STAROSTIN, Sergey Matveyevich; MARTYNOV, A.P., red.

[Safety measures in enterprises of the precast concrete industry] Tekhnika bezopasnosti na predpriiatiiakh sbornogo zhelezobetona. Moskva, "Vysshiaia shkola," 1964. 223 p.
(MIRA 17:5)

STAROSTIN, S. N.

Senior Scientific Coworker, All-Union Experimental Station of Animal Husbandry.
"Sanitaro-zoohygenic conditions of the winter maintenance of Romanov sheep."

SO: HYGIENE OF AGRICULTURAL ANIMALS, Proceedings of the XXIX Plenum of the
Veterinary Section of the Academy, P. 167, Moscow 1950, Trans. 191, by
L. Lulich.

uncl

STAROSTIN, S.N., starshiy nauchnyy sotrudnik.

Effect of winter outdoor exercises upon the development and health
of Romanov breed lambs. Veterinaria 30 no.1:54-57 Ja '53.
(MLRA 6:1)

1. Vsesoyuznaya opytnaya stantsiya shivotnovodstva.

STAROSTIN, S. P., Cand. Agri. Sci. (diss) "Basis and Development of New Methods and Measures for Treating Seeds," Leningrad, 1961, 24 pp. (Leningrad Agri. Inst.) 200 copies (KL Supp 12-61, 280).

STAROSTIN, S.P., aspirant

Shortcomings of dust disinfection of seeds. Zashch.rast.ot
vred.i bol. 5 no.3:19-20 Mr '60. (MIRA 16:1)

1. Vsesoyuznyy institut zashchity rasteniy.
(Seeds---Disinfection)

CHIGAREV, G. A.; TARNOVICH, N. K.; STAROSTIN, S. P.; BONCH, E. I.

Disinfecting seeds with atomized suspensions. Zashch. rast.
ot vred. i bol. 5 no.6:15-16 Je '60.

(MIRA 16:1)

(Seeds--Disinfection)

STAROSTIN, S.S. (Moskva)

Resolutions dictated by life itself. Shvein. prom. no. 6:1-6
N-D '65. (MIRA 18:12)

STAROSTIN, T. P.

Engineer, Machine Tool Plant imeni Ordzhonikidze, "An Attachment for Milling
Spiral Grooves on Disc Faces," Stanki i Instrument, 10, No 1, 1939.

Report U-1505, 4 Oct 1951.

STAROSTIN, V., (Engr-Sr Lt)

"Increase the Emission of Jet / Aircraft / Materiel Textbooks" - Engr-Col M. Nemirovskiy, Engr-Lt Col T. Timofeyev, Engr-Capt V. Dolgorukov, and Engr-Sr Lt V. Starostin complain of the shortage of textbooks and manuals on jet aircraft materiel. Those textbooks which are available, in the estimation of these officers, are not satisfactory, and the good textbooks are too few in number. They state that in 1953 a group of officers from the Air Force Engineering Academy imeni Zhukovskiy prepared a textbook, but so few copies of the first part were printed that it has now become a rarity. They call on the Military Publishing House (Voyenizdat) and the State Publishing House of the Ministry of Defense USSR (Oborongiz) to rectify these shortages. (Krasnaya Zvezda, Moscow, 13 Apr 54).

SO: SUM 182, 13 August 1954

STAROSTIN, V., inzh.-podpolkovnik

Engines of hypersonic airplanes. Av. i kosm. 47 no.10:63-67 0 '64.
(MIRA 17:10)

STAROSTIN, V., inzh.-podpolkovnik

Turbofan jet engines; their present and future. Av. i
kosm. 48 no.12:65-71 D '65. (MIRA 18:11)

STAROSTIN, V.A.; KESSLER, I.N.; POL', E.R.

Tool for cleaning rolled roofing materials. Suggested by
V.A.Starostin, I.N.Kessler, E.R.Pol'. Rats.i izobr.predl.
v stroi. no.11:104-106 '59. (MIRA 13:3)

1. Rabotniki normativno-issledovatel'skoy stantsii pri
treste Bazstroy Sverdlovskogo sovmarkhoza.
(Roofing)

ARKHIPOV, M. S.; STAROSTIN, V. A.

Consideration should be given to these problems. Put' 1 put.
khoz. 7 no.3:39 '63. (MIRA 16:4)

1. Zamestitel' nachal'nika Bazhenovskoy distantzii Sverdlovskoy
dorogi (for Arkhipov). 2. Starshiy inzh. Bazhenovskoy distantzii
Sverdlovskoy dorogi (for Starostin).

(Railroads--Management)

MAYDEBOR, V.N.; LEBEDINETS, N.P.; STAROSTIN, V.I.

Preliminary results of a study of the new oil field of Zamankul.
Trudy GrozNII no. 10:43-49 '61. (MIRA 15:2)
(Zamankul region--Oil fields--Production methods)

STAROSTIN, V.I., inzh.

Method for detecting leaks in gas coolers. Energetik 10 no.1:18.
19 Ja '62. (MIRA 14:12)
(Gas-Cooling)

DEREBZOV, G.F.; STAROSTIN, V.I.

Power requirements for the disintegration of rocks by cutter
bits. Izv. vys. ucheb. zav.; neft' i gaz 7 no.9:33-38 '64.
(MIRA 17:22)

YAKOVLEV, G.F.; SARAYSKIY, G.P.; STAROSTIN, V.I.

Acid subvolcanic bodies and copper pyrite mineralization in
the Blyava region (Southern Urals). Sov. geol. 8 no.4:3-18 Ap
'65. (MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet.

STAROV, V.I.; MONICH, V.K. [deceased]; GEKHT, I.I.; KULINICH, V.B.

Potassium feldspar of some of the different age intrusions.
Trudy Inst. geol. nauk AN Kazakh. SSR 12:108-112 '65.
(MIRA 18:9)

STAROSTIN, V. I.

Lower Miocene of the northwestern chinks of the Ust-Urt.
Izv. vys. ucheb. zav.; geol. i razv. 5 no.10:37-42 0 '62.
(MIRA 16:1)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

(Ust-Urt—Geology, Stratigraphic)

STAROSTIN, V.I.

Xenoliths of pyrite ores in the dikes of diabase porphyrites
in the Gay deposit (Southern Urals). Geol. rud. mestorozh. 6
no.3:24-33 My-Je '64 (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet, Geologicheskiy fa-
kul'tet, Kafedra poleznykh iskopayemykh.

STAROSTIN, V.I., inzh.

Increase in the operational reliability of electric power plants with
system faults. Elek. sta. 35 no.9:47-50 S '64.

(MIRA 18:1)

STAROSTIN, V.I.

Structure and morphology of ore bodies in the northern part of the Gay copper porphyry deposit (Southern Urals). Geol.rud.mestorozh. 5 no.4:74-85 JI-Ag 1971 (MIRA 16:9)

1. Kafedra poleznykh iskopayemykh Geologicheskogo fakul'teta Moskovskogo gosudarstvennogo universiteta.
(Gay region (Orenburg Province)--Chalcopyrite)
(Gay region (Orenburg Province)--Geology, Structural)

STAROSTIN, V.I., inzh.

Using the EMU-10 electronic computer for the simulation of objects
with a long intrinsic delay. Priboestroenie no.9:28 S '55.

(MIRA 18:10)

STREANER . . .

Effect of the physicochemical properties of the rocks of the Blyava
ore zone on the localization of pyrite mineralization. Geol.rud.
masterozh. 7 no.4:45-56 Sl-Ag '65.

(MIRA 18:8)

1. Moskovskiy gosudarstvennyy universitet.

STAROSTIN, V.K., aspirant

Design of step-by-step drives for precision feed mechanisms
of grinding machines. Issl.v obl.metallorozn.stan. no.4:88-101
'61. (MIRA 14:12)

(Grinding machines)
(Feed mechanisms)

STAROSTIN, V. KH.

Starostin, V. Kh. --"Veins of the Thoracic Quarter of the Horse with Some Consideration of the Age Peculiarities and Structure of the Valvular Apparatus. (Anatomical Investigation." Min Higher Education, Leningrad Veterinary Inst, Lithuanian Veterinary Acad, Leningrad, 1955 (Dissertation for Degree of Candidate of Biological Sciences).

SO: Knizhnaya Letopis', No. 23, Moscow, June, 1955, pp. 87-104.