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 is the frequency corresponding to the forbidden interval,

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

 Δ 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.

SUBMITTED: January 30, 1962

Card 2/2

1,1108 \$/054/62/000/003/003/010 B102/B186

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 Cu₂O (symmetry group O_h⁴) 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

$$U_{\vec{0},j}^{\Gamma_{25}}(\vec{\rho}) = \Psi_{\vec{0}}(\vec{q}_a, j0; \vec{\rho}) + \widetilde{\Psi}_{\vec{0}}(q_b, j0; \vec{\rho}),$$

(14),

$$U_{\overrightarrow{a}_{l}}^{\Gamma_{15}}(\overrightarrow{\rho}) = \Psi_{\overrightarrow{0}}(\overrightarrow{q}_{u}, j_{0}; \overrightarrow{\rho}) - \widetilde{\Psi}_{\overrightarrow{0}}(\overrightarrow{q}_{b}, j_{0}; \overrightarrow{\rho}).$$

(15)

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S/054/62/000/003/003/010 B102/B186

Quadrupole absorption of light ...

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. $\Gamma = \Gamma_{25}^{1} + \Gamma_{15}^{1}$. For the light absorption coefficient in the case of a quadrupole transition between two states of equal parity holds:

$$\alpha_{fl} = \frac{2\pi^3 e^2 w^3}{\hbar e^3} \frac{1}{V} \left| \left\langle f \left| \sum_{k=1}^{M} \left(\overrightarrow{q} r_k \right) \left(\overrightarrow{e} r_k \right) \right| i \right\rangle \right|^3, \tag{16}$$

$$\overline{a_{fi} = \frac{2\pi^{3}e^{2}\omega^{3}}{\hbar c^{3}} \frac{1}{V} \sum_{j} \left| \int \dot{U}_{0,j}^{r_{25}} \left(\stackrel{\leftarrow}{\rho}\right) \sum_{a,\beta=x,y,z} q_{\alpha}e_{\beta}T_{\alpha\beta}U_{0}^{\Gamma_{1}} \left(\stackrel{\leftarrow}{\rho}\right) d\tau \right|^{2}.$$
 (17),

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

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S/054/62/000/003/003/010 B102/B186

Quadrupole absorption of light ...

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

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

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

$$\Delta = \frac{1}{\sqrt{1 - S_{\text{nep}}}} \left[\int f(\vec{r}) x y p_z(\vec{r}) dv - I \right] (2N)^{\frac{1}{2}}, \qquad (22),$$

$$S_{\text{nep.}} = \sum_{\substack{r \ n}} \sum_{s} \left| \int \varphi_{a}^{0} \left(\overrightarrow{r} \right) \varphi_{a}^{i} \left(\overrightarrow{r} \right) dv \right|^{2}; \tag{22a}$$

and Card 3/4

Quadrupole absorption of light ...

S/054/62/000/003/003/010 B102/B186

$$I = 8 \left[\sum_{i} \int d_{i}(\vec{r}_{b}) x_{a} y_{a} p_{z}(\vec{r}_{a}) dv \cdot \int s(\vec{r}_{a}) p_{i}(\vec{r}_{b}) dv - \right]$$

$$- \sum_{i} \int p_{i}(\vec{r}_{b}) x_{a} y_{a} p_{z}(\vec{r}_{a}) dv \cdot \int f(\vec{r}_{a}) p_{i}(\vec{r}_{b}) dv +$$

$$+ \sum_{i} \int d_{i}(\vec{r}_{b}) x_{a} y_{a} d_{xy}(\vec{r}_{a}) dv \cdot \int s(\vec{r}_{a}) d_{i}(\vec{r}_{b}) dv -$$

$$- \sum_{i} \int p_{i}(\vec{r}_{b}) x_{a} y_{a} d_{xy}(\vec{r}_{a}) dv \cdot \int f(\vec{r}_{a}) di(\vec{r}_{b}) dv +$$

$$- \sum_{i} \int p_{i}(\vec{r}_{b}) x_{a} y_{a} d_{xy}(\vec{r}_{a}) dv \cdot \int f(\vec{r}_{a}) di(\vec{r}_{b}) dv +$$

$$+ R.$$

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

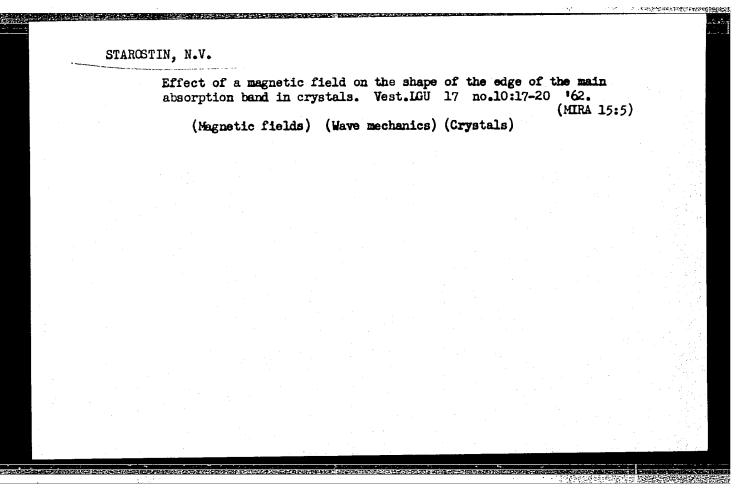
$$\alpha_{fi} = \frac{2\pi^{3}e^{2}\omega^{3}}{hc^{3}} \frac{1}{V} \frac{\left| \int f(\vec{r}) xyp_{z}(\vec{r}) dv - I \right|^{3}}{1 - S_{nep}} S(2N). \tag{23}$$

is obtained. There is 1 figure.

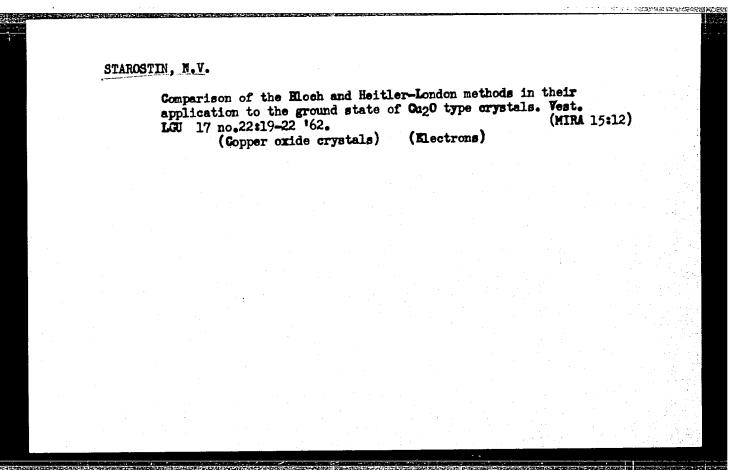
SUBMITTED:

April 11, 1962

Card 4/4



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



8/054/63/004/001/003/022 B102/B186

AUTHOR:

Starostin, N. V.

Frenkel' excitons in cuprous-oxide crystals

TITLE:

Leningrad. Universitet. Vestnik. Seriya fiziki i khimii,

PERIODICAL: 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 02-ion (p-shell). exciton states with $\overrightarrow{K} = 0$ 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 (Γ_{25}^{\prime}) , Γ_{25}^{\prime} , (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

Frenkel' excitons in cuprous-oxide ... S/054/63/00L/001/003/022
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 \(\frac{1}{2} \) (1/2) and \(\frac{1}{2} \) determined by the p-shell splitting due to spin-orbital interaction amounts to 160cm⁻¹ (of Bacher, Goudsmit, Atomic energy levels, N.Y.1932).

SUBMITTED: October 20, 1962

L 11399-63

EWI(m)/BDS/ES(w)-2

AFFTC/ASD/SSD Pab-4 S/120/63/000/002/003/041

58

AUTHOR:

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

TITLE:

The influence of contamination on the output of He⁺²

ions in cyclotron sources

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).

Card 1/2,

5/051/63/014/004/025/026 E039/E420 The origin of new lines in the spectrum of the cuprous PERIODICAL: Optika i spektroskopiya, v.14, no.4, 1963, 585-586 AUTHOR: The properties of these so-called new lines can be 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 crystale at K = 0 connected with the TITLE: to the exciton of one electron from the full 3d shell of the ion to to the exciton state for crystals at K=0, connected with the to the excitation of one electron from the full 3d shell of the 3d shell excitation of one electron ten wave functions of the 3d shell line list state. In the free Cu ton ten wave functions of the 3d shell form two rotational groups $D\sqrt{3}/2$ field with D3d symmetry is obtained the expansion The is state wave function taking spin into account is represented From considerations of the structure of the face centered $E_{2g} \times E_{1g} = {}^{2E}g$ by E2g rrom considerations that cubic lattice it can be shown that $E_{2g}' \times E_{2g}' = A_{1g}$ cubic card 1/3

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

The origin of new ...

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

$$\begin{array}{c} \text{y combining the wave} \\ \text{A}_{1g} \rightarrow \Gamma_1 + \Gamma'_{25}, \quad \text{A}_{2g} \rightarrow \Gamma_2 + \Gamma'_{15}, \quad \text{E}_g \rightarrow \Gamma_{12} + \Gamma'_{15} + \Gamma'_{25} \end{array} \tag{3}$$

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 exciton states, 7 with $\lceil 12 \rceil$ symmetry, 10 with $\lceil 15 \rceil$ and 27 exciton states, 7 with $\lceil 12 \rceil$ symmetry, 10 with $\lceil 15 \rceil$ and 112 states 10 with $\lceil 25 \rceil$. Optical transitions in the $\lceil 25 \rceil$ and $\lceil 12 \rceil$ states are quadrupolar and the absorption of light is anisotropic. The are fully Magnetic dipole exciton lines (transition $\lceil 1 \rceil \rightarrow \lceil 15 \rceil$) are fully isotropic; both with regard to the direction of the propagated isotropic; both with regard to the direction of the propagated beam and to the state of polarization of the incident light. The transitions found have a small probability, which is all the transitions found have a small probability, which is in agreement with the small intensity of the new lines. In the effect of an electric field is to increase the strength of these lines. For the final elucidation of the nature Card 2/3

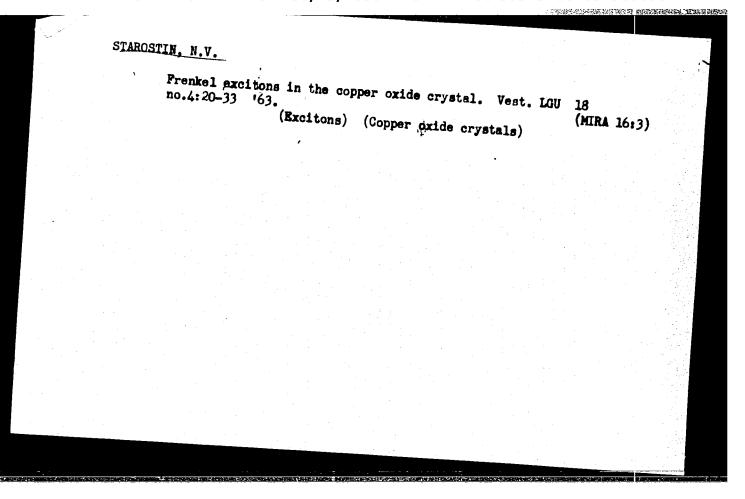
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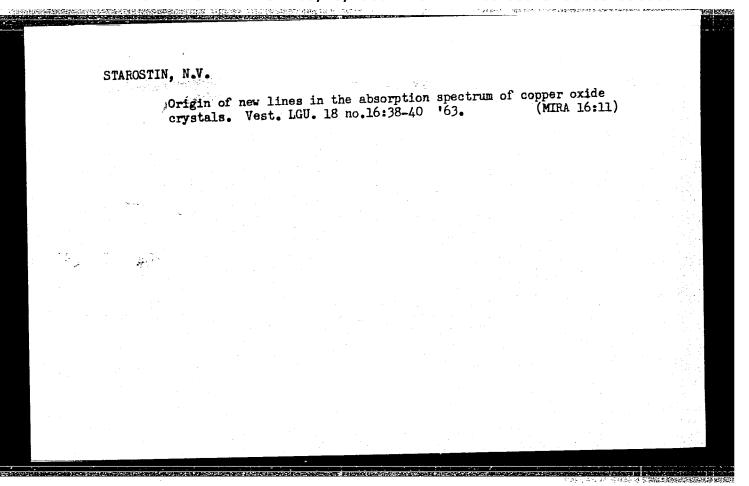
The origin of new ... E059/E420

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.]





FREYDERRERG, Rol'f [Freudenberg, Rolf], doktor (Germanskaya Demokraticheskaya Respublika); STAROSTH, H.V. [translator]

How preparations for the diagnosis and therapy of mastitis in cattle. Veterinariia 42 no.9:107-108 S *65.

(MIRA 18:11)

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J. 12800-66 EWT(1)		
ACC NR: AP5026617	SOURCE CODE: UR/0056/65/049/004/1228	3/1236
AUTHOR: Starostin, N. V.		37
ORG: State Optical Institu	te (Gosudarstvennyy opticheskiy institu	1t) 35
TITLE: The problem of the	non-orthogonality of atomic orbitals in-London method to crystals	n the
SOURCE: Zhurnal eksperimen 1965, 1228-1236	ntal*noy i teoreticheskoy fiziki, v. 49	, no. 4,
TOPIC TAGS: atomic spectro	oscopy, orthogonal function	
ABSTRACT: The non-orthogonal London method is considered system is described by a lidiffer both in their spin a proach is developed even in explicitly for the most imparted as small. Condition which are generalizations of Izuyama (Progr. Theor. Physical London Progr. Theor. Physical London Progr. Theor. Physical London Progr. Theor. Physical London Progr. Theor. Physical London Physical London Progr. Theor. Physical London Progr. Theor. Physical London Physical Phy	ality of the atomic orbitals in the Heid for the case in which the state of the inear combination of Slater determinant and in their orbital configurations. An another than the zero-order approximation which also contant overlap integrals that cannot be as for the applicability of this approach of the relations found by Y. Mizuno and S. v. 22, 344, 1959), are formulated.	e s that n ap- lows e re- ch, T.
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cample. Au	ithor thanks F	. P. Pavinskiy rig. art. has	and A. G.	Vlasov for	a discussion	
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JD IJP(c) EWT(1)/EWT(m)/T/EWP(t)/ETI SOURCE CODE: UR/0181/66/008/006/1878/188 ACE NR. AP6018553 AUTHOR: Starostin, N. V. ORG: none TITIE: 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 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 02- 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 Card 1/2

dispersion and higher-order te the absorption.	Orig. art. h	as: 25 for	rmulas.	-zpoot obly	in the di	Inclusion spersion s	of and	
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<u>L 36 μ 33-66 EWT(1)/EWT(m)/T/EWP(e)/EWP(t)/ETI IJP(c) AT/WH/JD/JG</u>

ACC NR: AP6015424

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

AUTHOR: Starostin, N. V.

ORG: none

27 27

TITIE: Wave functions of Frenkel excitons in the Cu20 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 nonorthogonal 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-

Card 1/2

UDC: 548.0:620.192.001.1

L 36433-66 ACC NR: AP6015424 tion for the crystal	$\hat{H}\psi_i = E_i \Psi_i$,	
concrete calculations	he propagation of excitation waves over the part of the crystal gen ions O. The wave functions found will later be used for of exciton bands in the Cu ₂ O crystal. Orig. art. has: 18 for DATE: 09Mar65/ ORIG REF: 009/ OTH REF: 009	
Card 2/2 9%		

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

[Utilization of tractors and machinery] Ekspluatatasis mashinnetraktornoge parkà. Ped red. M.P.Sergeeva. Moskva. Gos.izd-ve
sel'khoz.lit-ry,11959. 403 p.

(Agricultural machinery)

(Agricultural machinery)

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

[Technical maintenance of machines and tractors] Tekhnicheskoe obsluzhivanie mashinno-traktornogo parka. Moskva, Izd-vo sel'khoz.

lit-ry, zhurnalov i plakatov, 1961. 423 p. (MIRA 14:11)

(Agricultural machinery--Maintenance and repair)

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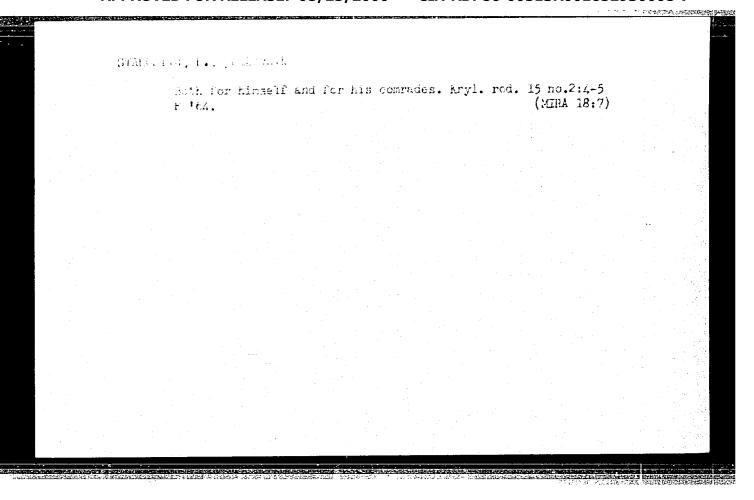
PUTYATIN, M.D.; STAROSTIN, N.Ye.; ROZIN, M.A., red.; DEYEVA, V.M., tekhn. red.

[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.; LETNEV, 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)

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



LAVRENT'YEV, V.I. Prinimal: 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.

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

[Selecting optimum structures of rubber sealings] Vybor optimal'nykh konstruktsii rezinovykh uplotnenii. Leningrad, 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

Steam-jet compressors cannot be designed by theory TEXT: 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 G₁ and after adiabatic expansion passes through section f₂ at a supersonic speed of co into the mixing chamber. Lowpressure steam is delivered to the primary chamber and is entrained Card 1/ 12

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

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:

$$\alpha = \frac{c_2}{c_0} \tag{1}$$

Using well-known formulae for co and c2, the following expression is obtained:

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

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A method of designing steam-jet \$\frac{\\$5/114/60/000/010/011/\\$XX}{\\$E194/\\$E155}\$

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 subcritical 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:

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

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 $u = \frac{G_2}{G_1}$ is then considered. Card 3/12

A method of designing steam-jet ... 5/114/60/000/010/011/011/XX E194/E155

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

$$u = \frac{\frac{c_1}{c_0} - \sqrt{\frac{1}{\eta \varphi_1^2} \left[\frac{h_k}{h_e} + \alpha^2 \left(\frac{\varphi_1}{\varphi_2} \right)^2 \right] + \tau^2}}{\sqrt{\frac{1}{\eta \varphi_1^2} \left[\frac{h_k}{h_e} + \alpha^2 \left(\frac{\varphi_1}{\varphi_2} \right)^2 \right] + \tau^2 - \alpha}}$$
(10)

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

$$u = \frac{\frac{c_1}{c_0} - w}{w - \alpha} \tag{11}$$

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 Card 4/12

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

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;

$$F_{\rm m} = (1.3 \stackrel{\circ}{\sim} 1.5) F_{\rm m}^{\dagger}$$
 (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;

$$D_{\rm m} = 1.92 \sqrt{G_{\rm k} v_0} \sqrt{\frac{4}{\eta_{\rm c} + u}}, \quad mm$$
 (17)

The efficiency of a steam-jet compressor is then considered and the following expression is derived: $\eta_{c} = \frac{uh_{k}}{h_{\alpha}}$

$$\eta_{c} = \frac{uh_{k}}{h_{c}} \tag{19}$$

Card 5/12

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

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 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.l the chambers were of the following dimensions: Chamber type A: $D_e = 70 \text{ mm}$; $D_m = 46 \text{ mm}$; $D_k = 125 \text{ mm}$; $U_k = 290 \text{ mm}$; $U_{k} = 90 \text{ mm}$; $U_{k} = 350 \text{ mm}$; $U_{k} = 6.3$. For chamber type B: $U_{k} = 100 \text{ mm}$; $U_{k} = 125 \text{ mm}$; $U_{k} = 125 \text{ mm}$; $U_{k} = 310 \text{ mm}$; $U_{k} = 82 \text{ mm}$; $U_{k} = 488 \text{ mm}$; $U_{k}/D_{m} = 7.56$. The diffuser expansion angle was 100, 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 Card 6/12

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

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 a 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; φ_1 = 0.97; φ_2 = 0.92; η = 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

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652930008-7"

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

6 = 17/23 mm diameter; 6 = 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. 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 1) when $c_m < c_{crit}$ and when $k = p_k/p_0 < 1.73-1.83$, distinguished: 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 $k = p_k/p_0 \le 1.73-1.83$ the mixing process takes place without pressure increase in the chamber as shown in Fig. 76. 3) When $c_m > c_{c,it}$ 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. 76 (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 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)

(Airplame 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

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:

Abstract

Submitted :

85-58-3-20/26

AUTHOR: Starostin, S.

STAREST 11 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

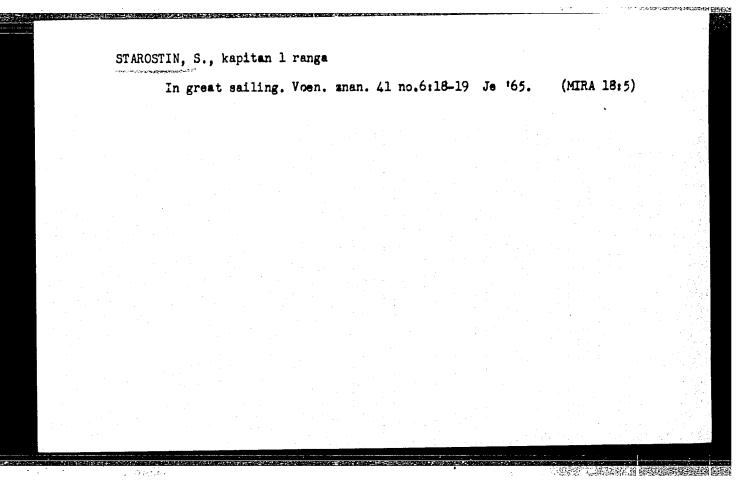
STAROSTIN, S., kand.sel'skokhoz.nauk

Chemistry against field pests. Grazhd.av. 20 no.12:12-13 D '63.

(MIRA 17:2)

STARCETIN, 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 6

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

P

Abs Jour

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

Authors

: Zhuravskaya, S. A.; Starostin, S. G. : Zoological Institute, AS UzbSSR

Inst Title

: Zoological institute, As uzbask : 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) nercaptophos 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

29

USSR / General and Specialized Zoology. Insects.
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

CCOME : 0358

CATEGORY : GENERAL & SPEC. ZOOLOGY . INSECTS

Mites.
ASE Zour -Biologiya, No. 2 , 1959, No. 6982

ACTION : Petrushova, N. I.; Starostin, S. G.; Maksimov, F. N. 1971. : Not given

LITLE : The Experiment in the Aerial Spraying of Mercaptophos.

Okio. 202: Vinogradarstvo i sadovostvo Kryma, 1958,

. TOWERED.

ov, F. N.

Inst : Not givon.

Title : Control of Fruit Mites.

No.1, 28-30

No abstract

APPRQYED TOR BELEASE: 08725/2500 No CIA-RDP86-00513R001652930008-7"

Abstract: The sovkhoz 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

Card 1/3

P

USSR / General and Special Zoology. Insects. Harmful Insects and Mites. Fruit and Berry Crop Pests.

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-Ap '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 ky-Je '59.

(MIRA 13:4)

(Sugar beets--Diseases and pests)

(Spraying and dusting)

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)

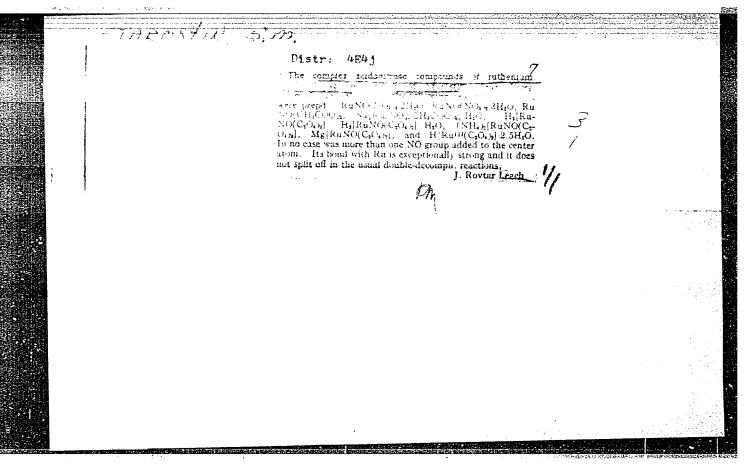
Possibilities of using helicopters in plant protection. Zashch.: rast. ot. vred. i bol. 7 no.8:17-19 Ag '62. (MIRA 15:12)

(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)



PAVLOW.P.A. (Leningrad); STAROSTIN.S.M. (Leningrad); YAGN, Yu.I. (Leningrad)

Method of stress determination used in the investigation of the

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.tekh.nauk no.10:152-156 0'55. (Columns) (Strains and stresses) (NLRA 9:1)

STAROSTIN, S.M., inzh. Using large brick blocks in the Czechoslovak Republic. Biul. stroi.tekh. 12 no.8:35-37 Ag '55. (MIRA 12:1) (Czechoslovakia-Building blocks)

CIA-RDP86-00513R001652930008-7" APPROVED FOR RELEASE: 08/25/2000

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

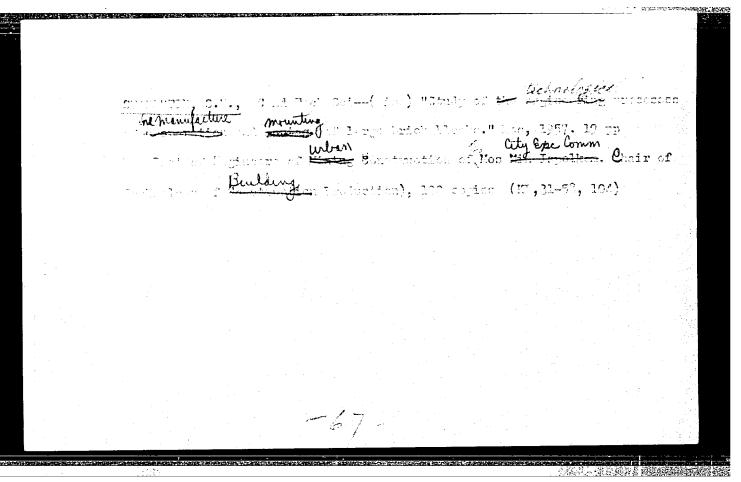
155.

(Elasticity) (Strains and stresses)

Making large blocks and copings in construction yards. Stroitel' 2.
no.9:3-4 5,'56.
(Concrete slabs)

LOGINOW, F.G.; BASEVICH, A.Z.; BELOV, A.V.; VOZNESENSKIY, A.N.; GLEBOV, P.D.;
KACHANOVSKIY, B.D.; KRAVTSOV, V.I.; LEVI, I.I.; MCROZOV, A.A.; MCSOV,
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 Je 156. (MLRA 9:9)
(Baumgart, Vladimir Sergeevich, d.-1956)



Vibrating mortars in vertical seams between brick blocks. Gor. i

with the seam of the sea

STAROSTIN, S., inzh.

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

(Bricklaying)

(MIMA 11:2)

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

SOV-98-58-2-19/21

AUTHORS:

Gleboy, 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

Pogorelov, V.I.

TITLE:

The 50th Anniversary of the Hydraulic Engineering Department of the Leningrad Polytechnical Institute imeni M.I. Kalinin (50-letiye 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 melicrative 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 auhtors 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 hydroelectric power plants.

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

Card 3/3

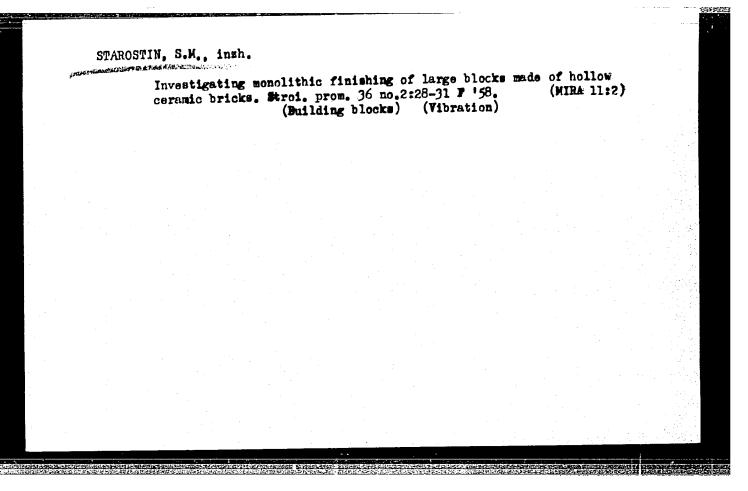
1. Po materialam Glavnossoro (Vibrators) (Building blocks)	· · · · · · · · · · · · · · · · · · ·	Using.l Suggest no.8:3	cnife v ted by . 4-36	in so	n scaling joints of briches. Reveal 1sebr. prodi			ok blocks, westroi. (MIRA 13:3)					
		1. Po 1	materia	lam Glav (Vibrat	mose cr	Oya. (Buildi	ng bloc	cks)		=			er er
								وجد دور					

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

Piftieth 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)



NEPCROZHNIY, P.S.; BELYAKOV, A.A.; VOZHESENSKIY, A.N.; GLEBOV, P.D.;
KACHANOVSKIY, B.D.; BASEVICH, A.Z.; TARTAKOVSKIY, D.M.;
VASIL'YEY, P.I.; ZARUBAYEV, N.V.; CHUGAYEV, R.R.; KCZHEWNIKOV,
M.P.; KIOROZ, V.S.; IVANOV, P.L.; SHCHAVELEY, D.S.; OKORCKOV,
S.D.; BELOV, A.V.; STAROSTIN, S.M.; YAGN, YU.I.; IZBASH, S.V.

Ivan Ivanovich Levi; on his 60th birthday. Gidr. stroi. 30
no.9:61-62 S '60.

(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)

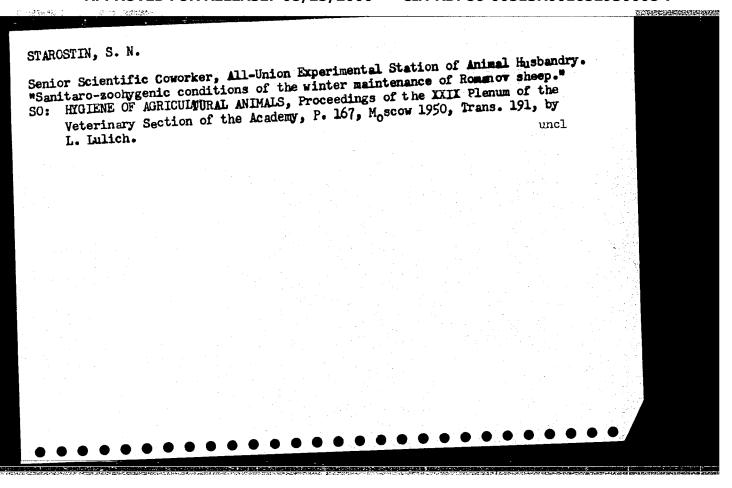
Static calculations for the Bratek Dam with the built-in hydroelectric power station. Trudy LPI no.208:223-239 '60.

(MIRA 13:9)

(Bratek Hydroelectric Power Station-Dams)

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

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



STAROSTIN, S.M., starshiy nauchnyy sotrudnik.

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

1. Vsesoyusnaya 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)

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

Disinfecting seeds with atomized suspensions. Zashch. rast. ot vred. 1 bol. 5 no.6:15-16 Je

(MIRA 16:1)

(Seeds--Disinfection)

STARCSTIN, 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.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001652930008-7"

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

STARGET'N, V., insh.-productionvolk

Engines of hypersonic airplanes. Ev. 1 (csm. 47 nc. 10:63-67 C 164.)

(MIRA 17:10)

STARCSTIN, 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, B.R. Pol'. Rats.i imobr. predl.

(MIRA 13:3) v stroi. no.11:104-106 159.

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

CIA-RDP86-00513R001652930008-7" APPROVED FOR RELEASE: 08/25/2000

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

Consideration should be given to these problems. Put' i put. khos. 7 no.3:39 163. (MIRA 16:4)

l. Zamestitel nachal nika Bashenovskoy distantsii Sverdlovskoy dorogi (for Arkhipov). 2. Starshiy inzh. Bashenovskoy distantsii Sverdlovskoy dorogi (for Starostin).

(Railroads-Management)

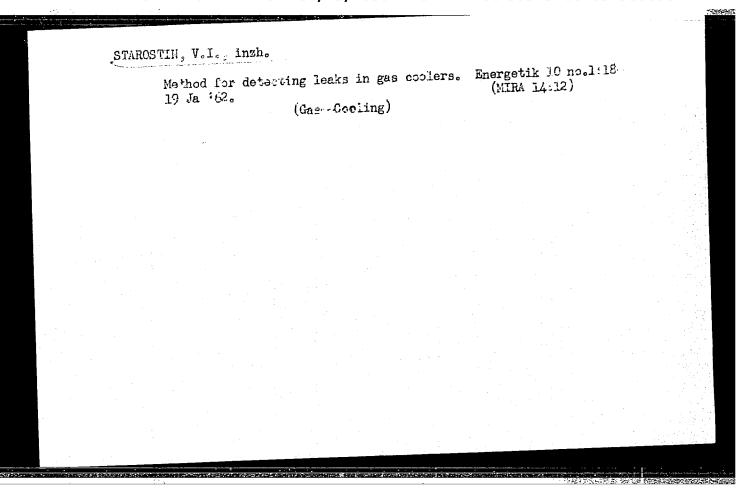
MAYDEBOR, V.N.; LEBEDINETS, N.P.; STAROSTIN, V.I.

Preliminary results of a study of the new oil field of Zamankul.

(MIRA 15:2)

Trudy GrozNII no:10:43-49 '61.

(Zamankul region—Oil fields—Production methods)



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

Power requirements for the disintegration of rocks by cutter bits. Zzv. vys. ucheb. zav.; neft! it gaz 7 no.9839-38 '64.

(NCRA 17:12)

YAKOVLEV, G.F.; CARAYSKIY, 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 Miccone 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). Gecl. rud. mestoroxh. 6 no.3824-33 My-Je *64 (MIRA 1881)

l. Moskovskiy gosudarstvennyy universitet, Geologicheskiy fa-kulitet, Kafedra poleznykh iskopayemykh.

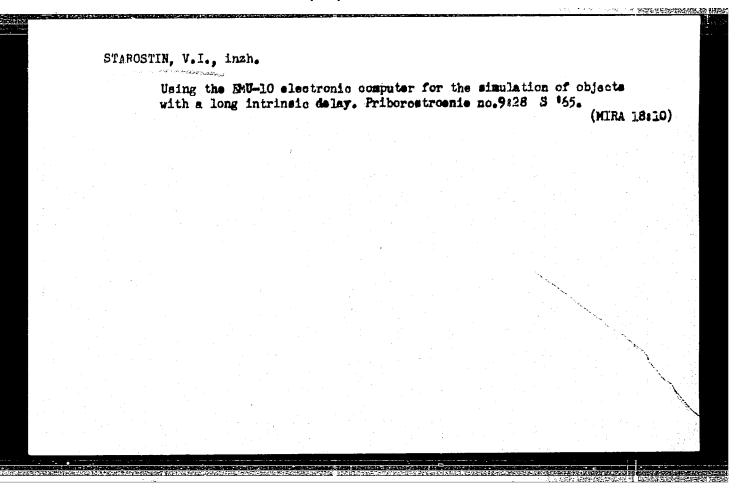
STAROSTIN, V.I., inzh.

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

(MIRA 18:1)

1200

1. Kafedra poleznykh iskopayemykh Geologicheskogo fakul'teta Moskovskogo gosudarstvennogo universiteta. (Gay region (Orenburg Province)—Chalcopyrite) (Gay region (Orenburg Province)—Geology, Structural)	Moskovskogo gosudarst	vennogo uni	rversiteta. Province)Chalcopy		
		gion (Orenot	ing Province)—Geology	, Structural)	



Affect of the physicochemical properties of the rocks of the Blyava one cane on the localization of gyrite mineralization. Geol.rud. measoroph. 7 no.4245-56 Jl-Ag '6f. (MIRA 18:8) 1. Maskovskiy gosudarstvennyy universitet.				THE PROPERTY IN MARKET	
Effect of the physicochemical properties of the rocks of the Blyava ore zone on the localization of pyrite mineralization. Geol.rud. memberozh. 7 no.4:45-56 Jl-Ag '6f. (MIRA 18:8)					
Effect of the physicochemical properties of the rocks of the Blyava ore zone on the Iccalization of pyrite mineralization. Geol.rud. mesterozh. 7 no.4:45-56 Jl-Ag '6f. (MIRA 18:8)	JF1EQ!"				
ore zone on the localization of pyrite mineralization. Geol.rud. mestorozh. 7 no.4:45-56 Jl-Ag '6f. (MIRA 18:8)		to the transfer of the contract of			
(MIRA 18:8)		ore zone on the localization of cyr	rite mineralization.	of the Blyava Geol.rud.	
1. Maskovskiy gosudarstvennyy universitet.		monatone : nestetano stare .o.) ,	(MTDA 18.0)	
		1. Moskovskiy gosudarstvennyy unive	ersitet.	(MICH 10:0)	
	:				

Design of step-by-step drives for precision feed mechanisms of grinding machines. Issl.v obl.metallorezh.stan. no.4:88-101 '61. (Grinding machines) (Feed mechanisms)

STAROSTIN, V. KH.

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