On the problem of taking ...

b) $$\frac{M_{1is}}{M_{1isB}} = \left[\sin^2\alpha_{1B} + \frac{\cos^2\alpha_{1B}}{\frac{2\varphi^2}{r_B K_T}} \right]^{\frac{1}{2}} \qquad (10)$$

c) $$\frac{c_{1z}}{c_{1zB}} = \frac{c_{1u}\, r}{c_{1uB} r_B} = \left[\sin^2\alpha_{1B} + \frac{\cos^2\alpha_{1B}}{r_B^2} \right] \left(\frac{\varphi^2}{K_T} - 1 \right) \cdot \frac{1}{2} \qquad (11)$$

The variation of the outlet angle for these cases is compared graphically for $\alpha_{1B} = 20^\circ$; $\varphi = 0.96$ and $K = 1.33$. The discrepancy in the

Card 3/5

On the problem of taking ...

value of M_1 is at $r_B = 2$ and is highest for case (a). It amounts to 9% and results in 5 to 6% loss of reaction. A comparison of flow with losses to the ideal flow is made in

$$\sin\alpha_1 = \frac{K_T}{\varphi} \sin\alpha_{1is}$$

Thus, knowing angle α_1 for the ideal flow, angle α_1 for the flow with losses can be found. To find the variation of velocity in the clearance it is then sufficient to solve Eq. (4). A similar problem arises when a blade is designed with angles different from the theoretical ones. The solution of Eq. (4) is then reduced to finding

$$F(x) = \int_a^x f(x)dx$$

Card 4/5

On the problem of taking ...

with f(x) given in tabular or graphical form. This method enables radial variations of φ and K_T to be taken into account without extra complication. The effect of nozzle losses on the flow parameters in the clearance is also given graphically for $\alpha_{1B} = 20^\circ$, $\varphi = 0.96$ and K = 1.33. There are 5 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

Card 5/5

S/096/61/000/004/003/007
E194/E255

AUTHORS: Fedorov, M. F., Candidate of Technical Sciences and Garkusha, A. V., Engineer

TITLE: The Influence of Guide Blade Width on the Characteristics of Turbine Stages

PERIODICAL: Teploenergetika, 1961, No. 4, pp. 37-41

TEXT: Diaphragms with narrow guide vanes are widely used in turbines although little work has been published to confirm their advantages. The possibility of improving the turbine efficiency by using this kind of diaphragm is generally based on considerations applicable to individual blades, usually without allowing for factors that alter the structure of the dynamics of the flow in the gap between the rims when the width of the guide vanes is reduced. In the Turbine Laboratory of the Khar'kov Polytechnical Institute an investigation was made of various stages having a constant ratio of mean diameter $D = 475$ mm to height ℓ of guide vanes $D/\ell = 19$. The guide vanes were of three widths, B, and the length-to-breadth ratios were 0.305; 0.61 and 1.22. Profile type C-1 (S-1) was used. All the guide vanes were made up with the same nominal flow area

Card 1/5

S/096/61/000/004/003/007
E194/E255

The Influence of Guide Blade Width on the Characteristics of Turbine Stages

reckoned from the dimensions of the channels between blades at the narrowest sections. Each set of guide vanes was tested with three runners of different flow area, which was achieved by altering the angle of installation of the blades and keeping their number the same. The runner blade profiles were Type T-1-25-21, the relative pitch was 0.664 and the blade height 28.5 mm. The ratio of the flow area of the runner blades to that of the nozzles for runners Nos. 1, 2 and 3 was 1.48, 1.76 and 2.04, the values being chosen to obtain positive, mixed and negative stage reaction over the height of the blades. The tests were made on an air turbine illustrated schematically in Fig. 1. The discs contained no pressure-equalizing apertures. Further details are given about the experimental conditions. Fig. 2 is a typical curve of test results of stage efficiency (allowing the discharge velocity energy to be dissipated). The efficiency is plotted against the velocity ratio for runner No. 1 with three different sets of guide vanes whose length-to-breadth ratios were 1 = 1.22; 2 = 0.61; and 3 = 0.305. It is

Card 2/5

S/096/61/000/004/003/007
E194/E255

The Influence of Guide Blade Width on the Characteristics of Turbine Stages

seen that as the blade width is reduced the efficiency is increased, but the amount of increase depends on the blade breadth and on the velocity ratio. The increase in efficiency that results from making the blades narrower also depends very much on the values of the clearance. Wheel No. 2 which has a greater ratio of area of runner blade to that of nozzle blade. In this wheel there is zero reaction at the mean section only when the guide vanes are relatively broad. As the breadth was reduced, the degree of reaction became negative over the whole height of the blade. With a runner of this kind it should be borne in mind that with broad and medium blades the stage works with leaks under the shrouding, and if the blade is narrow air may be drawn into the gap between the rims from the space beyond the wheel at the blade periphery. In the case of runner No. 3 the relative areas of runner blades and nozzles were such that the runner always worked with negative reaction over the blade height. In this case the efficiency with wide blades is higher than for runner No. 2 and there are indications that the use of still more negative reaction would invert

Card 3/5

S/096/61/000/004/003/007
E194/E255

The Influence of Guide Blade Width on the Characteristics of Turbine Stages

the previous influence of blade width on stage efficiency. The results of the efficiency investigations show that for a stage with small positive reaction at the blade roots the nozzle blade length-to-breadth ratio should be increased to 0.6-0.8. The efficiency is thereby raised by 1.5-2% and reaches its highest value. If the reaction is mixed over the height of the blade narrower blades may be used. The test results also show that whilst on transition from wide to narrow blades the reaction at the periphery diminishes considerably, that at the blade roots alters comparatively little. Thus, the main cause of the change in reaction at the periphery is the influence of the breadth on the radial pressure gradient. There are 9 figures and 4 Soviet references.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut
(Khar'kov Polytechnical Institute)

Card 4/5

S/096/61/000/004/003/007
E194/E255

The Influence of Guide Blade Width on the Characteristics of Turbine Stages

Fig. 1

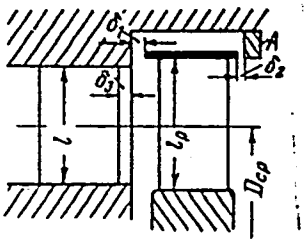


Рис. 1. Схема проточной части ступени.

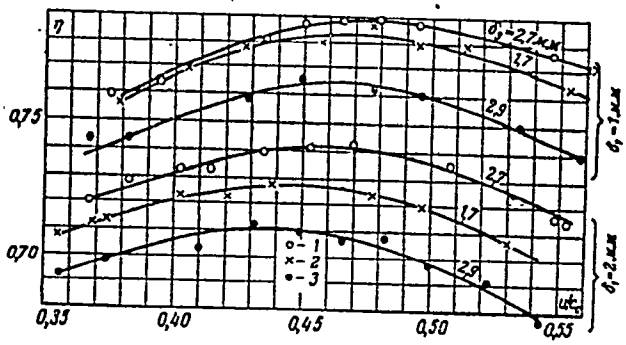


Рис. 2. Изменение к. п. д. ступени в зависимости от u/c_0 при различных удлинениях направляющих лопаток для колеса № 1.
1 — $l/b = 1{,}22$; 2 — 0,61; 3 — 0,305.

Card 5/5

1976
S/262/62/000/017/001/003
I007/I207

AUTHORS: Fedorov, M.F., and Garkusha, A.V.

TITLE: Investigation of the flow pattern in the gap between the blade rows, and energy losses in the turbine stage nozzles at varying chord sizes of stator blades

PERIODICAL: Referativny zhurnal, otdel'nyy vypusk. 42. Silovyye ustanovki, no. 17, 1962, 23, abstract 4217161 ("Tr. Khar'kovsk. politekhn. in-ta" 1961, 180-191)

TEXT: Investigations were carried out on a single stage air-turbine with a rotor diameter D_{mean} = 475 mm, nozzle blade length l = 25 mm and with the following stage parameters: l/b = 1.2; 1.22 ; 0.61 and 0.305; t/b = 0.758; α_1 = 11°11'; F_{bl}/F_{noz} = 1.48 and 1.78 with M_{cs} = 0.36 and Re = bc_1/ν = 5.8; 2.9 and 1.45. 10^5. Here

S/262/62/000/017/001/003
I007/I207

Investigation of the flow pattern...

b and t = chord and pitch of stator blades; α_1 = flow divergence-angle; F = area of blade and nozzle opening cross-section. The magnitude $\bar{\delta}_3 = \delta_3/b$ of the closed section of the gap between the blade rows, was also changed during the investigations. The profile of nozzle (stator) blades was C-1, of rotor blades T-1-25-21. The ratio u/c_0 (peripheral to isentropic velocity) corresponded to the maximum stage-efficiency. As shown by the investigation results, the static pressure p_1 at the external radius of each chord, somewhat increases with the increase of δ_3. ⟵⟶ . The curves $\Delta p = \int \frac{c_{1u}^2}{r} dr$ calculated according to the actual values of $\bar{c}_{1u}$ and ρ only slightly depend on b ⟵⟶ and δ_3. The pressure gradient, measured along the radius increases with the chord size, and with 1/b = 0.305 approaches $\int \frac{c_{1u}^2}{r} \rho d r$. The discrepancy

Card 2/5

Investigation of the flow pattern...

between the predicted and measured values of the pressure gradient may be explained by the appearance of radial acceleration due to flow twisting. The magnitude of ρ_1 at the blade root almost does not depend on the value of b. The degree of peripheric reaction in the stages with narrow stator blades is smaller than in the case of broad blades. The flow divergence angle α_1 in the flow core and at all values of l/b, ξ_3 and F_{bl}/F_{noz} is close to 11° which is in good agreement with data on flow about a flat cascade. At the disc periphery and with a stage with l/b = 1.22, the angle α_1 decreases by 2-3° whereas with a l/b ratio = 0.305, it increases by 1-1.5°. At a l/b ratio = 0.61, the angle α_1 appears to be distributed over the radius as in the case of straight-blade cascades. In all cases, the value α_1 sharply drops at the surfaces that

Card 3/5

Investigation of the flow pattern...

limit the flow. The axial component C_{1z} decreases almost over the whole blade length with the increase in δ_3, and particularly sharp at all values of l/b and δ_3 for cylindrical walls. Despite the favorable cascade geometry for the stall from the stator-blade roots, the flow about them turned out to be laminar. The graphs for the square of velocity coefficient $\varphi^2 = f(r)$ are asymmetrical, and almost do not depend on the degree of reaction and stage sealing. The nozzle efficiency φ^2_{av} ⟷ calculated with due account of the discharge velocity component, decreases with the increase in δ_3, ⟷ the more, the greater is the chord size. With $\delta_3 = 0.05$, and l/b = 1.22 the nozzle efficiency is smaller by 4.5% than the cascade efficiency, and with a l/b ratio = 0.305 it is smaller by 3%. The function $\varphi^2_{av} = f(b/l)$ has a maximum at

Card 4/5

S/262/62/000/017/001/003
I007/I207

Investigation of the flow pattern...

b/l = 1.5 for δ_3 = 0.05 to 0.10. With the increase in δ_3 the magnitude of the maximum φ_{av} drops and shifts toward smaller values of b/l. The decrease of the chord size does not lead to a continuous increase of the nozzle efficiency. The chord size of stator blades affects the stage efficiency by reducing the nozzle efficiency and the degree of peripheric reaction. There are 9 figures and 5 references.

[Abstracter's note: Complete translation.]

Card 5/5

43149
S/124/62/000/008/014/030
I006/I242

16.2120

AUTHORS: Fedorov, M.F. and Garkusha, A.V.

TITLE: The flow structure in inter-ring clearance and the energy losses in stage nozzles of turbines at various settings of the guide blades

PERIODICAL: Referativnyy zhurnal, Mekhanika, no.8, 1962, 45, abstract 8B301. (Tr. Khar'kovsk. politekhn. in-ta, v.36, 1961, 180-191)

TEXT: An experimental investigation is undertaken of a single-stage gas turbine with short blades, $D_{av}/l = 19$, in order to determine the influence of lengthening of guide vanes, for which $l/b = 1.22$, 0.61, and 0.305, on the efficiency of the guiding system and of the stage as a whole. The investigation showed that, in contrast to straight cascades, where losses decrease monotonically with increasing vane length, for ring-cascades a clearly defined maximum is observed in the $\varphi = (b/l)$ curves at approximately $b/l = 1$. More-

Card 1/3

S/124/62/000/008/014/030
I006/I242

The flow structure in inter-ring....

over, the absolute value of losses in ring-cascades is remarkably higher than in straight cascades. The authors see the main reason for these differences in the fact that in experiments with straight cascades the boundary layer at the intake is cut out with the aid of plates. This procedure, naturally did not take place in the stage test. Measurement of flow parameters inter-ring clearance has shown that the static pressure on the periphery decreases for narrow guide vanes, and the measured pressure gradient in radial direction does not correspond to the value determined by numerical integration of the differential equation of radial equilibrium which takes into account the actual variation of peripheral velocity component and the density along the radius but neglects radial velocities. The construction of meridional streamlines has shown that with narrow blades a considerable deflection of streamlines towards the root section takes place. This permits equalization of the pressure gradient along the radius and a decrease of the degree of

Card 2/3

S/114/63/000/004/002/005
A004/A127

AUTHORS: Shnee, Ya.I., Doctor of Technical Sciences, Federov, M.F., Candidate of Technical Sciences, Garkusha, A.V., Engineer

TITLE: Selecting the closed axial clearance in the bandaged turbine stage

PERIODICAL: Energomashinostroyeniye, no. 4, 1963, 18 - 22

TEXT: The authors present a generalized analysis on the various factors to be considered in the closed axial clearance in bandaged turbine stages, based on tests with an experimental air turbine at the KhPI laboratory and on the generalized test results of some other organizations. Nine stages with bandaged runners with different guide blade extensions were tested. A detailed table of the main design and test data of the ХПИ (KhPI), БИТМ (BITM) and ЦКТИ (TsKTI) turbine stages is given. The authors present recommendations on the optimum clearance and state that, based on investigations carried out, it can be said that for stages with a small relative extension of the guide blades it is expedient, from the efficiency of the stages viewpoint, to choose minimum closed clearances. There are 5 figs, 1 table.

Card 1/1

L 39497-65 EWP(f)/EPR/T-2/EWP(bb)-2

ACCESSION NR: AP5011718 UR/0096/64/000/011/0031/0034

AUTHOR: Garkusha, A. Y. (Candidate of technical sciences); Fedorov, M. F. (Candidate of technical sciences) 18 B

TITLE: Comparision of the efficiency of a turbine stage with different methods of variation of the top overlap

SOURCE: Teploenergetika, no. 11, 1964, 31-34

TOPIC TAGS: turbine stage, turbine design 93

ABSTRACT: On the basis of experimental data obtained in the Turbine Laboratory of the Kharkov Polytechnic Institute from model stages with various rated values of the ratio of the pass-through area of the impeller to the area of the nozzles, but with a constant ratio of the average diameter to the height of the baldes ($D_{cp}/l_0 = 19$), there is presented a comparison of three methods of variation of top overlap: $\beta_2 = const$, $\bar{F} = const$ and $\rho = const$.
Orig. art. has: 6 graphs.

Card 1/2

L 39497-65

ACCESSION NR: AP5011718

0

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut (Khar'kov Politechnical Institute)

SUBMITTED: 00	ENCL: 00	SUB CODE: PR
NO REF SOV: 006	OTHER: 000	JPRS

Card 1/2 kzo

ACC NR: AP6029862 (N) SOURCE CODE: UR/0096/66/000/009/0071/0074

AUTHOR: Sinee, Ya. I. (Doctor of technical sciences; Professor); Ponomarev, V. N. (Engineer; Dissertant); Garkusha, A. V. (Candidate of technical sciences)

ORG: Kharkov Polytechnical Institute im. V. I. Lenin (Kharkovskiy politekhnicheskiy institut)

TITLE: On raising the efficiency of the after stages of turbines

SOURCE: Teploenergetika, no. 9, 1966, 71-74

TOPIC TAGS: turbine, gas turbine, turbine nozzle, turbine nozzle assembly, nozzle assembly, conic nozzle, ~~assembly,~~ turbine stage

ABSTRACT: An investigation of the conical stages of a turbine, including stages with a nozzle assembly of new design, shaped according to the conical surfaces is described. On the basis of the experimental results, the following conclusions were made: a) the flow stream in the nozzle assembly of the conical stage sharply differs from that in the cylindrical stage. b) As a result of sharp difference of the really streamlined sections in the peripheral zone of the nozzle assembly geometry from the geometry of reference sections designed in conformance to the coaxial cylinder surface, the flow in such stages is converging-diffusing, and in separate zones it is diffusing, which causes increased losses in the nozzle assembly. c) the reprofiling of the nozzle assembly in accordance with the conical surfaces approxi-

UDC: 621.165.003.1.001.5

Card 1/2

ACC NR: AP6029862

mately replacing the flow surface, sharply decreases the energy losses in nozzle assembly, some what decreases the losses in the rotor, and significantly increases the efficiency of the whole stage. d) The proposed method of increasing the efficiency by reprofiling the nozzle assembly in accordance with flow surface is useful for stages with sudden opening of the flow area and any form of peripherally limiting surface. Orig. art. has: 6 figures and 2 formulas.

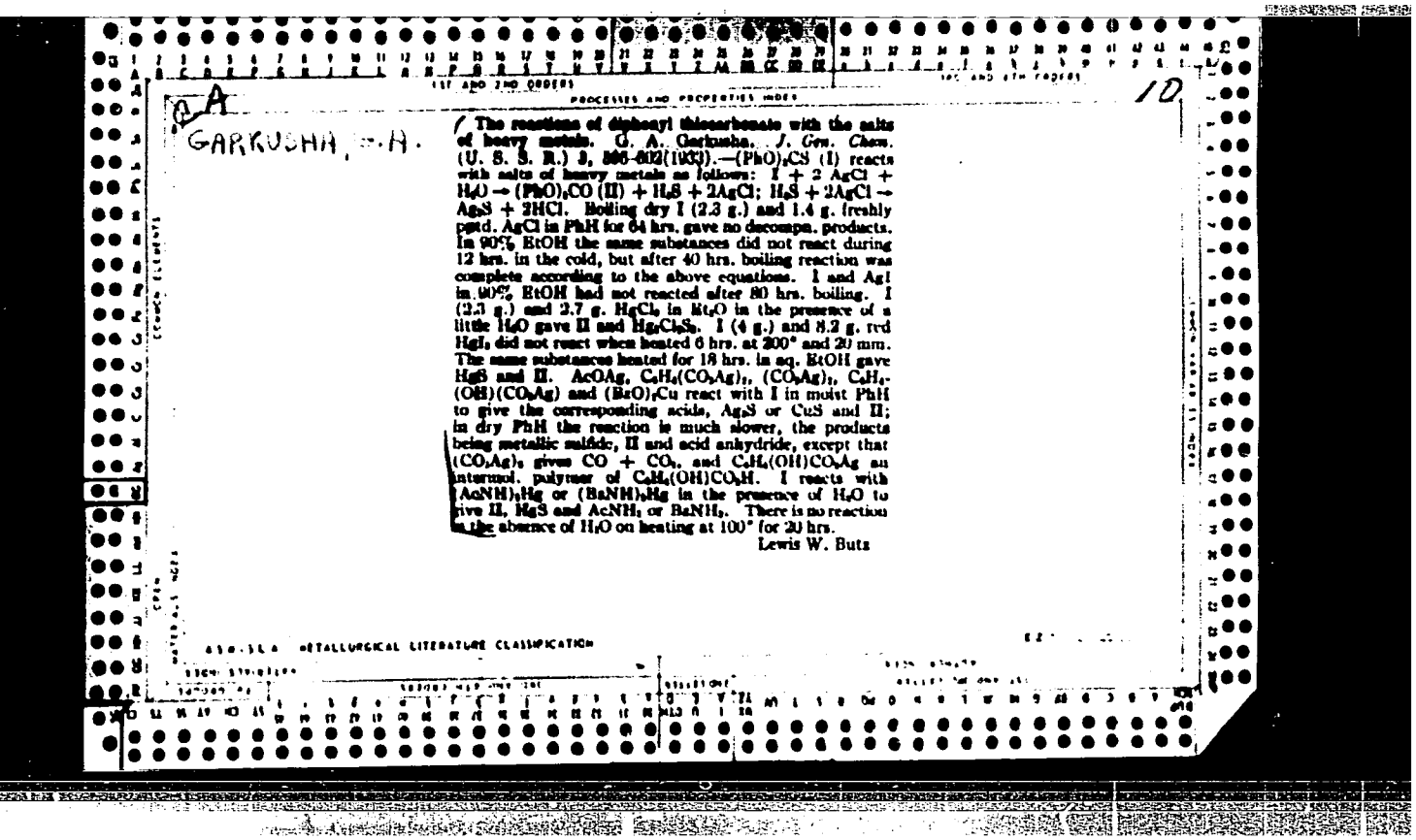
SUB CODE: 21/ SUBM DATE: none/ ORIG REF: 003

Card 2/2

GARKUSHA, F.V., otvetstvennyy za vypusk; MAL'KOVA, N.V., tekhnicheskiy redaktor

[Standard designs for construction of automobile roads] Tipovye proekty sooruzhenii na avtomobil'nykh dorogakh. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry. No.7. [Reinforced concrete pipe culverts with diametrs of 0.5; 0175; 1.0; 1.25 and 1.5 m. Load: N-13 and NG-60; N-18 and NK-80] Kruglye zhelezobetonnye truby otverstiem 0.5; 0,75; 1.0; 1.25 i 1.5 m. Nagruzki N-13 i NG-60; N-18 i NK-80. 1954. 55 p. [Microfilm] (MLRA 9:7)

1. Moscow. Gosudarstvennyy institut po proyektirovaniyu i izyskaniyu avtomobil'nykh dorog
(Culverts)



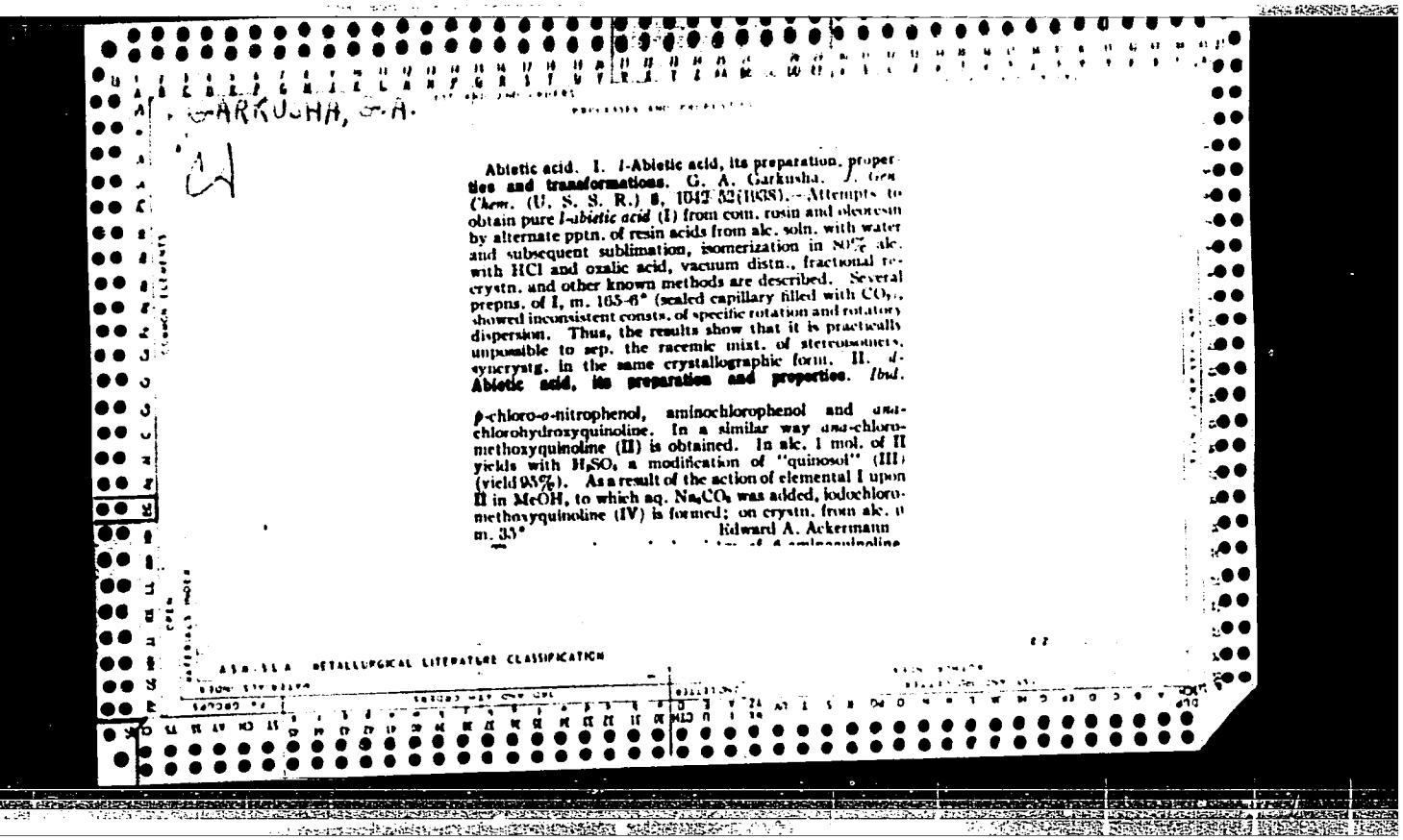
PROCESSES AND PROPERTIES INDEX

10

GARKUSHA, G.A.

The reactions of diphenyl thiocarbonate with the salts of heavy metals. G. A. Garkusha. *J. Gen. Chem.* (U. S. S. R.) 3, 806-812(1933).—$(PhO)_2CS$ (I) reacts with salts of heavy metals as follows: $I + 2\ AgCl + H_2O \rightarrow (PhO)_2CO$ (II) $+ H_2S + 2AgCl$; $H_2S + 2AgCl \rightarrow Ag_2S + 2HCl$. Boiling dry I (2.3 g.) and 1.4 g. freshly ppted. AgCl in PhH for 64 hrs. gave no decompn. products. In 90% EtOH the same substances did not react during 12 hrs. in the cold, but after 40 hrs. boiling reaction was complete according to the above equations. I and AgI in 90% EtOH had not reacted after 80 hrs. boiling. I (2.3 g.) and 2.7 g. $HgCl_2$ in Me_2O in the presence of a little H_2O gave II and Hg_2Cl_2S. I (4 g.) and 8.2 g. red HgI_2 did not react when heated 6 hrs. at 200° and 20 mm. The same substances heated for 18 hrs. in aq. EtOH gave HgS and II. AcOAg, $C_6H_4(CO_2Ag)_2$, $(CO_2Ag)_2$, $C_6H_3(OH)(CO_2Ag)$ and $(BzO)_2Cu$ react with I in moist PhH to give the corresponding acids, Ag_2S or CuS and II; in dry PhH the reaction is much slower, the products being metallic sulfide, II and acid anhydride, except that $(CO_2Ag)_2$ gives CO + CO_2, and $C_6H_3(OH)CO_2Ag$ an intermol. polymer of $C_6H_3(OH)CO_2H$. I reacts with $(AcNH)_2Hg$ or $(BzNH)_2Hg$ in the presence of H_2O to give II, HgS and $AcNH_2$ or $BzNH_2$. There is no reaction in the absence of H_2O on heating at 100° for 20 hrs.

Lewis W. Butz

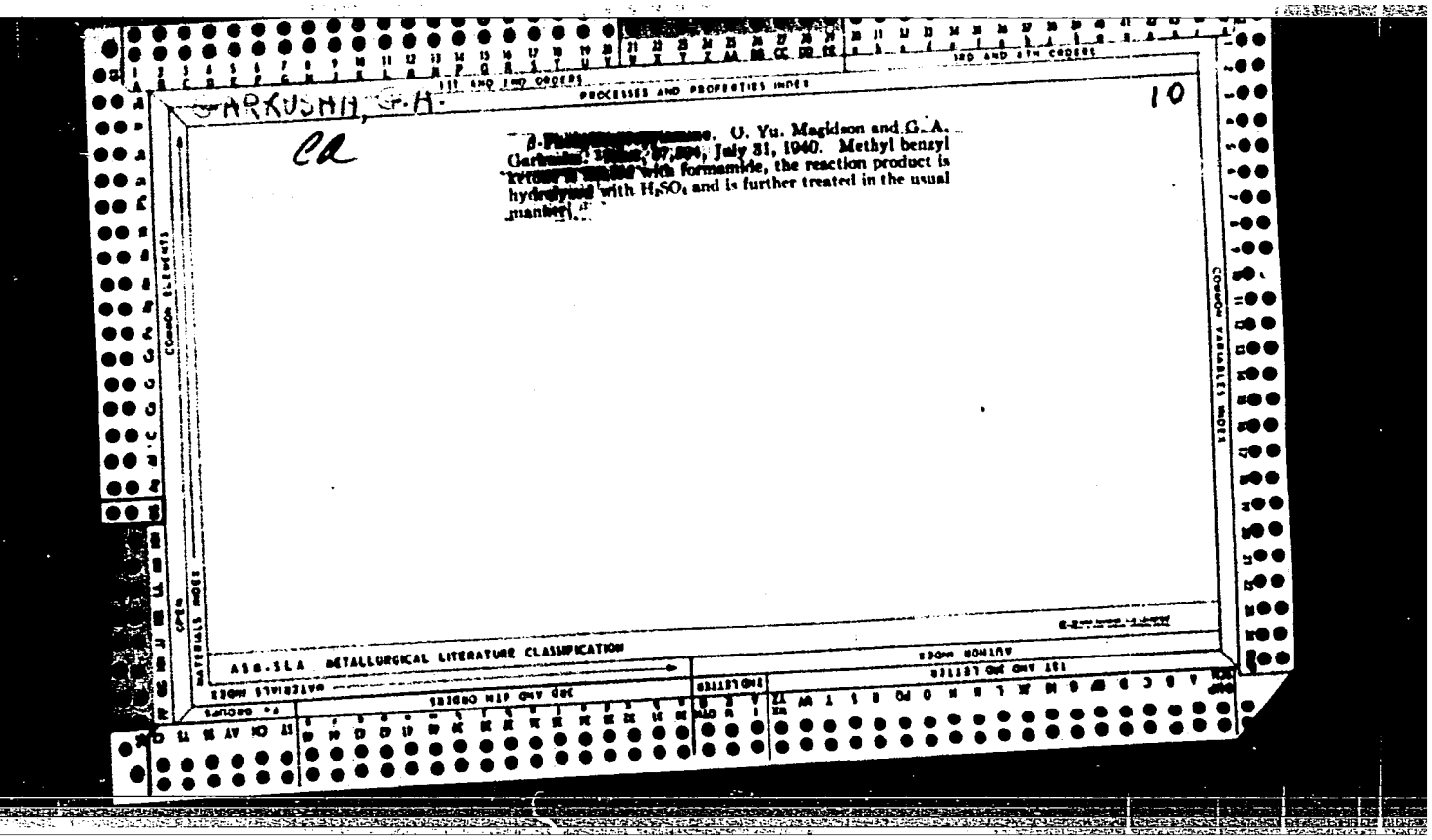


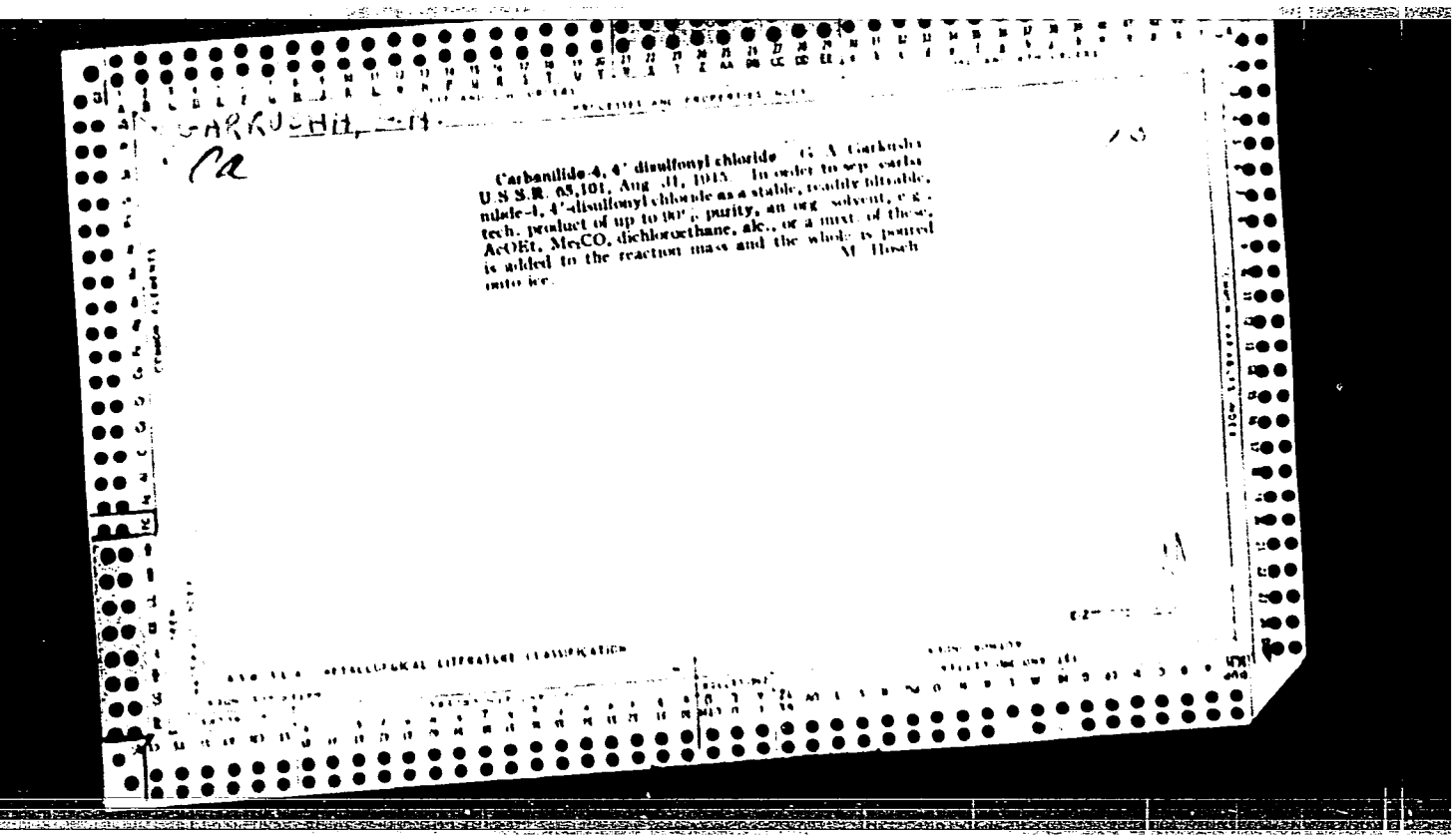
GARKUSHA, G. A.

Abietic acid. I. *l*-Abietic acid, its preparation, properties and transformations. G. A. Garkusha. *J. Gen. Chem.* (U. S. S. R.) 8, 1042-52(1938).—Attempts to obtain pure *l-abietic acid* (I) from com. rosin and oleoresin by alternate pptn. of resin acids from alc. soln. with water and subsequent sublimation, isomerization in 80% alc. with HCl and oxalic acid, vacuum distn., fractional recrystn. and other known methods are described. Several prepns. of I, m. 165-6° (sealed capillary filled with CO_2), showed inconsistent consts. of specific rotation and rotatory dispersion. Thus, the results show that it is practically impossible to sep. the racemic mixt. of stereoisomers, synecryst. in the same crystallographic form. II. ***d*-Abietic acid, its preparation and properties.** *Ibid.*

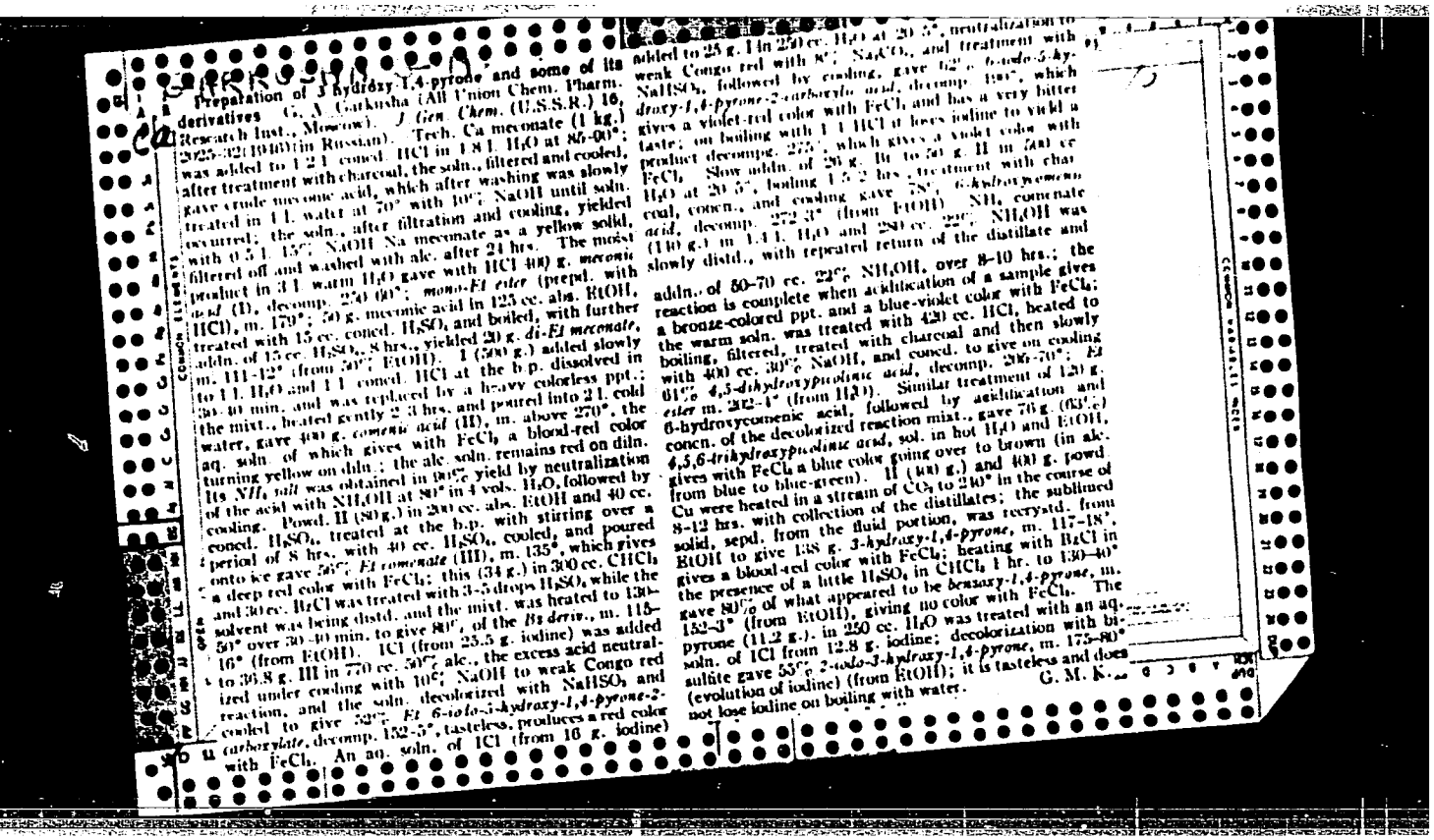
p-chloro-*o*-nitrophenol, aminochlorophenol and *ana*-chlorohydroxyquinoline. In a similar way *ana*-chloromethoxyquinoline (II) is obtained. In alc. 1 mol. of II yields with H_2SO_4 a modification of "quinosol" (III) (yield 95%). As a result of the action of elemental I upon II in MeOH, to which aq. Na_2CO_3 was added, iodochloromethoxyquinoline (IV) is formed; on crystn. from alc. m. 33°

Edward A. Ackermann





Carbanilide-4, 4' disulfonyl chloride G. A. Garbuzov
U.S.S.R. 65,101, Aug. 31, 1945. In order to sep. carbanilide-4, 4'-disulfonyl chloride as a stable, readily hydrolyzable, tech. product of up to 80% purity, an org. solvent, e.g., AcOEt, Me_2CO, dichloroethane, etc., or a mixt. of these, is added to the reaction mass and the whole is poured into ice.
M. Hosch



Preparation of 3 hydroxy-1,4-pyrone and some of its derivatives. G. A. Garkusha (All Union Chem. Pharm. Research Inst., Moscow). *J. Gen. Chem.* (U.S.S.R.) 16, 2025-32 (1946) (in Russian). Tech. Ca meconate (1 kg.) was added to 1.2 l. concd. HCl in 1.8 l. H_2O at 85–90°; after treatment with charcoal, the soln., filtered and cooled, gave crude meconic acid, which after washing was slowly treated in 1 l. water at 70° with 10% NaOH until soln. occurred; the soln., after filtration and cooling, yielded with 0.5 l. 15% NaOH Na meconate as a yellow solid, filtered off and washed with alc. after 24 hrs. The moist product in 3 l. warm H_2O gave with HCl 400 g. *meconic acid* (I), decomp. 250–60°; *mono-Et ester* (prepd. with HCl), m. 179°; 50 g. meconic acid in 125 cc. abs. EtOH, treated with 15 cc. concd. H_2SO_4 and boiled, with further addn. of 15 cc. H_2SO_4, 8 hrs., yielded 20 g. *di-Et meconate*, m. 111–12° (from 50% EtOH). I (500 g.) added slowly to 1 l. H_2O and 1 l. concd. HCl at the b.p. dissolved in 30–40 min. and was replaced by a heavy colorless ppt.; the mixt., heated gently 2–3 hrs. and poured into 2 l. cold water, gave 400 g. *comenic acid* (II), m. above 270°, the aq. soln. of which gives with $FeCl_3$ a blood-red color turning yellow on dilu.; the alc. soln. remains red on dilu. Its *NH₃ salt* was obtained in 90% yield by neutralization of the acid with NH_4OH at 80° in 4 vols. H_2O, followed by cooling. Powd. II (80 g.) in 200 cc. abs. EtOH and 40 cc. concd. H_2SO_4, treated at the b.p. with stirring over a period of 8 hrs. with 40 cc. H_2SO_4, cooled, and poured onto ice gave 50% *Et comenate* (III), m. 135°, which gives a deep red color with $FeCl_3$; this (34 g.) in 300 cc. $CHCl_3$ and 30 cc. BrCl was treated with 3–5 drops H_2SO_4 while the solvent was being distd. and the mixt. was heated to 130–50° over 30–40 min. to give 80% of the *Br deriv.*, m. 115–16° (from EtOH). ICl (from 25.5 g. iodine) was added to 39.8 g. III in 770 cc. 50% alc., the excess acid neutralized under cooling with 10% NaOH to weak Congo red reaction, and the soln. decolorized with $NaHSO_3$ and cooled to give 52% *Et 6-iodo-3-hydroxy-1,4-pyrone-2-carboxylate*, decomp. 152–5°, tasteless, produces a red color with $FeCl_3$. An aq. soln. of ICl (from 16 g. iodine) added to 25 g. I in 250 cc. H_2O at 20–5°, neutralization to weak Congo red with 8% Na_2CO_3, and treatment with $NaHSO_3$, followed by cooling, gave 52% *6-iodo-5-hydroxy-1,4-pyrone-2-carboxylic acid*, decomp. 190°, which gives a violet-red color with $FeCl_3$ and has a very bitter taste; on boiling with 1:1 HCl it loses iodine to yield a product decomp. 275°, which gives a violet color with $FeCl_3$. Slow addn. of 20 g. Br to 50 g. II in 500 cc. H_2O at 20–5°, boiling 1.5–2 hrs., treatment with charcoal, concn., and cooling gave 78% *6-hydroxycomenic acid*, decomp. 272–3° (from EtOH). NH_4 comenate (140 g.) in 1.4 l. H_2O and 280 cc. 22% NH_4OH was slowly distd., with repeated return of the distillate and addn. of 50–70 cc. 22% NH_4OH, over 8–10 hrs.; the reaction is complete when acidification of a sample gives a bronze-colored ppt. and a blue-violet color with $FeCl_3$; the warm soln. was treated with charcoal and then slowly boiling, filtered, treated with charcoal and then slowly with 400 cc. 30% NaOH, and concd. to give on cooling 61% *4,5-dihydroxypicolinic acid*, decomp. 286–70°; *Et ester* m. 202–4° (from H_2O). Similar treatment of 120 g. 6-hydroxycomenic acid, followed by acidification and concn. of the decolorized reaction mixt., gave 76 g. (63%) *4,5,6-trihydroxypicolinic acid*, sol. in hot H_2O and EtOH, gives with $FeCl_3$ a blue color going over to brown (in alc. from blue to blue-green). II (400 g.) and 400 g. powd. Cu were heated in a stream of CO_2 to 240° in the course of 8–12 hrs. with collection of the distillates; the sublimed solid, sepd. from the fluid portion, was recryst. from EtOH to give 138 g. *3-hydroxy-1,4-pyrone*, m. 117–18°, gives a blood-red color with $FeCl_3$; heating with BzCl in the presence of a little H_2SO_4 in $CHCl_3$ 1 hr. to 130–40° gave 80% of what appeared to be *benzoxy-1,4-pyrone*, m. 152–3° (from EtOH), giving no color with $FeCl_3$. The pyrone (11.2 g.) in 250 cc. H_2O was treated with an aq. soln. of ICl from 12.8 g. iodine; decolorization with bisulfite gave 55% *2-iodo-3-hydroxy-1,4-pyrone*, m. 175–80° (evolution of iodine) (from EtOH); it is tasteless and does not lose iodine on boiling with water.

G. M. K.

Chemistry GA.

USSR

Preparation, properties, and composition of sodium thiosulfatoargentates. G. A. Garkusha. *Sbornik Statei po Obshchei Khim., Akad. Nauk S.S.S.R.* 2, 1060-73(1953).—$NaAgS_2O_3.H_2O$ (I) is obtained by treating aq. $Na_2S_2O_3$ at 40° with equimol. amts. of AgCl, or in 90% yield from an NH_4OH soln. of $AgNO_3$ treated above 35° with an equimol. amt. of $Na_2S_2O_3$. I is salted out with $NaNO_3$. Similar results are obtained by treating an NH_4OH soln. of $Na_3Ag(S_2O_3)_2$ (II) or $Na_5Ag_3(S_2O_3)_4$ (III) with $AgNO_3$. II and III are prepd. in 80-90% yields from NH_4OH solns. of $AgNO_3$ and $Na_2S_2O_3$ in mole ratios 1:2 or 2:3, resp., and pptg. with $NaNO_3$ and EtOH. If EtOH is not used, pure compds. are not obtained. II is the most stable of the salts. Satd. solns. of III form I and II on standing. II and III can be prepd. by using the proper mole ratios of AgCNS or of I with $Na_2S_2O_3$ in the presence of NH_4OH. When 0.33 mole II and 0.1 mole $Na_2S_2O_3$ are mixed at 50° and evapd. to a paste at 40-60° crystals are obtained which, after washing with EtOH, analyze for a 75% yield of $Na_3Ag(S_2O_3)_2$.

H. M. Leicester

MT WS

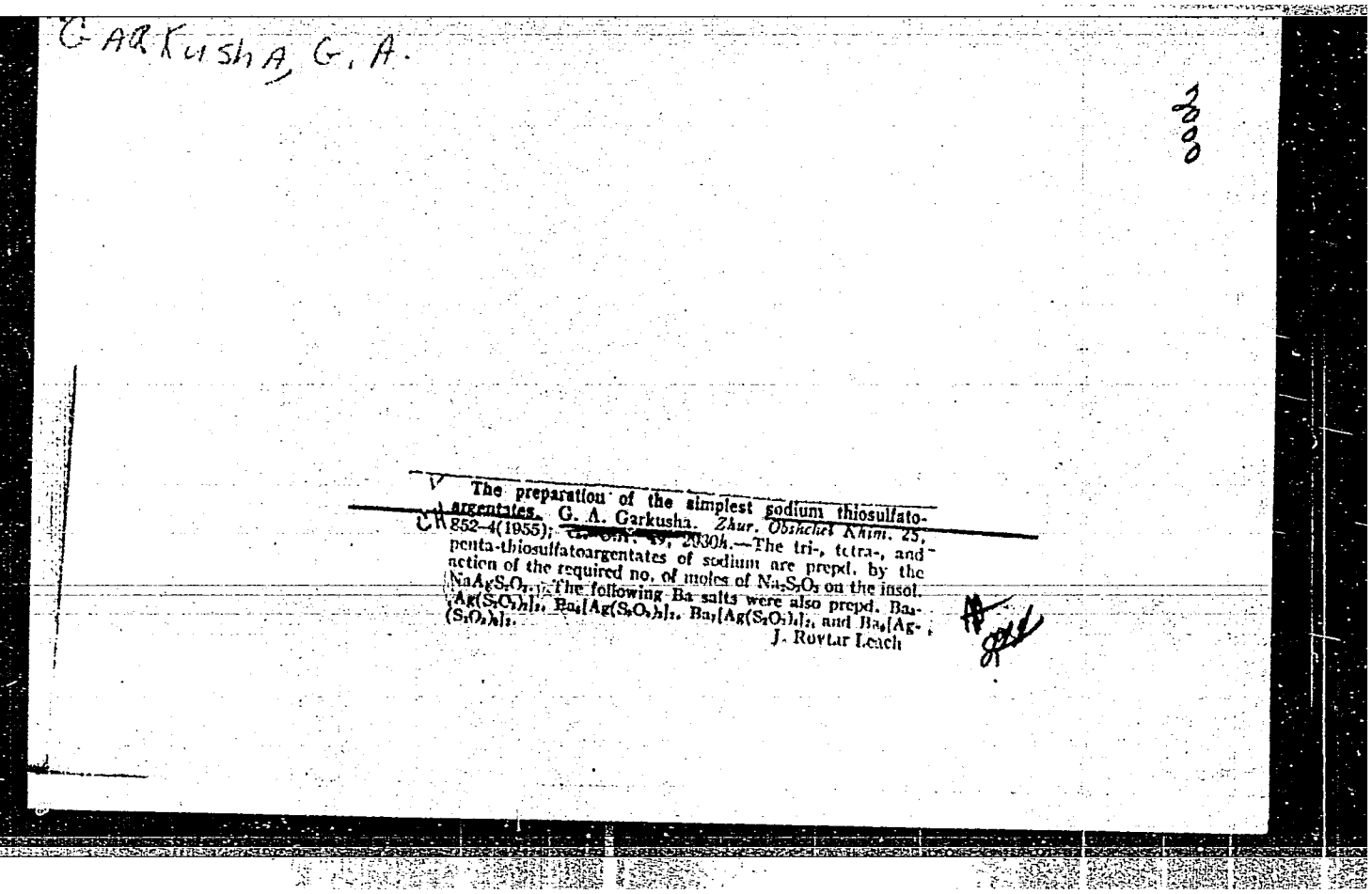
GARKUSHA, G.A.

Derivation, properties, and structure of comenic acid (5-oxy-6-pyrone-2-carboxylic). Zhur.ob.khim. 23 no.9:1578-1583 S '53. (MLRA 6:10)
(Comenic acid)

GARKUSHA, G.A.

USSR

Preparation of complex cuprothiosulfates of sodium. G. A. Garkusha. *Zhur. Obshchel Khim.* 24, 1103–13(1954); cf. Spacu, *C. al.*, *C.A.* 24, 4230.—$Na_3CuS_2O_3$ (I) and $Na_2[Cu(S_2O_3)_2]$ (II) were prepd. by improved methods; $Na_2[Cu(S_2O_3)_3]$ (III), $Na_3[Cu(S_2O_3)_4]$ (IV), $Na_5[Cu(S_2O_3)_5]$ (V), and the corresponding Ba salts were prepd. for the first time. I was prepd. by the addn. of 20 g. (in 10 ml. H_2O) $Na_2S_2O_3.5H_2O$ to 10 g. (in 50 ml. H_2O) $CuSO_4.5H_2O$ followed by 1 ml. 20% $CuSO_4$ as soon as the blue soln. turned green. The yellow crystals were washed with dild. (1:1) filtrate, 3 times with a min. of H_2O, 5 times with 50% EtOH, and 5 times with EtOH. Air-dried crystals, stable (4 months) at 0–2°, decompd. at 50–60° in 30–40 min.; yield was 89%. II was prepd. by the addn. of $CuSO_4.5H_2O$ (5 g. in 20 ml. H_2O) to $Na_2S_2O_3.5H_2O$ (15 g. in 10 ml. H_2O); 7 g. $NaNO_3$ was dissolved in the filtered soln. and some EtOH added. The snow-white ppt. was sepd. and allowed to stand with 70% EtOH; the total EtOH should not be more than 60 ml. The crystals were washed with 70% EtOH till free of NO_3^- (diphenylamine) and dried in air and then heated gradually from 50 to 90–5°. The yield was 66.5%. III, IV, and V were prepd. by the addn. of 10.8, 3.24, and 3.24 g. I to $Na_2S_2O_3.5H_2O$ (25 g. in 15 ml. H_2O, 11.25 g. in 6 ml. H_2O, and 15 g. in 7 ml. H_2O). The crystals were washed and dried as in the prepn. of II. The yields were 90, 80, and 94.5%, resp. The corresponding Ba salts were prepd. from solns. of II, III, IV, and V with 5% $BaCl_2$. The ppts. were washed till free of Cl^- and dried to



GARKUSHA, G. A.

200

The preparation of the simplest sodium thiosulfatoargentates. G. A. Garkusha. *Zhur. Obshchei Khim.* 25, 852–4(1955); CA 50, 2030h.—The tri-, tetra-, and penta-thiosulfatoargentates of sodium are prepd. by the action of the required no. of moles of $Na_2S_2O_3$ on the insol. $NaAgS_2O_3$. The following Ba salts were also prepd. $Ba_3[Ag(S_2O_3)_2]_2$, $Ba_4[Ag(S_2O_3)_3]_2$, $Ba_7[Ag(S_2O_3)_4]_2$, and $Ba_5[Ag(S_2O_3)_3]$.

J. Rovtar Leach

Garkusha, O.A.

Synthesis of some mercapto derivatives of purine. O. A. Garkusha. *Zhur. Obshchei Khim.* 27, 1712–17(1957).—Treatment of 60 g. K urate with 60 ml. $POCl_3$ gave 25% 2,6-dichloro-8-hydroxypurine, according to Fischer [*Ber.* 31, 431(1898)]. This (5 g.) treated with 50 ml. *N* KSH and heated to 80° was treated over 3–4 hrs. with 100 ml. *N* KSH and heating was continued until the product was halogen-free; after filtration, acidification with dil. H_2SO_4, and salting-out, the crude product was treated at 50° with 4% $Ba(OH)_2$, filtered, acidified with HCl, and repptd. as above yielding 5 g. *2,6-dimercapto-8-hydroxypurine*, does not m. 350°. Heating 24.5 g. dry NH_4 salt of 8-chloroxanthine, 240 ml. $POCl_3$, and 35 ml. $PhNMe_2$ 6 hrs. at 110°, distg. $POCl_3$ *in vacuo*, and pouring the residue on ice gave a ppt. which after soln. in EtOH was concd., taken up in Et_2O, filtered, evapd., and treated with excess 5% NH_4OH at reflux yielding 40.6% *2,6,8-trichloropurine* as *NH_4 salt*, which with HCl gave the *free base*, m. 177–80°. This with KSH as above in 10 hrs. at 100° gave 51% *2,6,8-trimercaptopurine*, does not m. 360°, purified by pptn. with H_2SO_4 from soln. in aq. Na_2CO_3. To 60 ml. HI (d. 1.7) and 20 g. iodine was gradually added 5 g. red P and the mixt. warmed to 60° until free iodine was absent (test with C_6H_6 should not give violet color); after cooling to 0° this was treated with 10 g. 2,6,8-trichloropurine and shaken 6–8 hrs. at −3°, then treated with ice followed by 12% NH_4OH below 15° until alk.; red P was immediately sepd. and the ppt. washed with 12% NH_4OH; the combined filtrates on acidification with HCl gave after repptn. from Na_2CO_3 with HCl 12.5 g. *2,6-diiodopurine*, decomp. 205–8°. This with

G. A. Garkusha

2

NaSH after 1 hr. on a steam bath gave *2,6-dimercaptopurine*, does not m. 350°, purified by pptn. with HCl from Na_2CO_3 soln. Treatment of 18 g. 2,6-diiodopurine with 54 ml. 10% Na_2CO_3 and 10 ml. *N* KSH followed at 50-5° over 2 hrs. by 74 ml. *N* KSH gave after repeated acid-base repptn. the crude product of mercaptylation, decomp. above 350°; this treated with MeI in *N* NaOH gave the *Me deriv.*, m. 229-30°. The mercapto deriv. (21.5 g.) added to soln. of 72 ml. HI (d. 1.7) and 12 g. red P, and shaken to form a homogeneous mass, then heated to 50° 0.5 hr., cooled, treated with ice and 200 ml. 14% NH_4OH, filtered and acidified gave 3.3 g. *6-mercaptopurine*, decomp. 310-14°, after several acid-base repptns. To 5.5 g. dry 2,6,8-trichloropurine in 10 ml. H_2O was added 40 ml. *N* KSH, followed after heating to 55° 20 min. by 15 ml. *N* KSH; after 1.5 hrs. the mixt. was filtered and acidified with aq. H_2SO_4; the yellow ppt. was repptd. twice as above yielding 3 g. mercaptylation product (methylation of this with MeI gave the Me deriv., m. 249-50°); this treated with HI-red P as above gave 0.5 g. *6-mercaptopurine*, m. 310-14°, after several acid-base repptns. This (0.5 g.) in 6 ml. H_2O and 5.8 ml. *N* NaOH treated with 0.85 g. MeI and shaken ½ hr. and acidified with 80% AcOH yielded *6-methylmercaptopurine*, m. 217-18° (H_2O). G. M. Kosolapoff

1/2

Inst. eksperimental'noy patologii i terapii raka Akademii med. nauk SSSR

5 (3)

AUTHORS: Garkusha, G. A., Ginsburg, A. N. SOV/79-29-5-33/75

TITLE: Production of Some 2,4-Dinitro-phenyl Derivatives of Lysine and of Intermediate Products of Its Synthesis (Polucheniye nekotorykh 2,4-dinitrofenil'nykh proizvodnykh lizina i poluproduktov sinteza yego)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1554-1558 (USSR)

ABSTRACT: At present a considerable number of 2,4-dinitro-phenyl derivatives of amino acids is synthesized, but the data published on some of them are contradictory. This holds also for the lysine derivatives (Refs 2-9). ε-N-2,4-dinitro-phenyl and the ε-N-benzoyl derivative of lysine were obtained from the solution of the copper complex salt of lysine. For its production not the basic copper carbonate was used but the copper nitrate which is well soluble both in water and alcohol. The removal of copper from the reaction product was carried out (in the benzoyl derivative) by hydrochloric acid or (in the case of the dinitro-phenyl derivative) by hydrochloric acid and subsequent treatment with hydrogen

Card 1/3

sulfide. Thus, the difficulties in the purification which had been reported by R. Porter and F. Sanger (Ref 4) were avoided. ε-N-2,4-dinitro-phenyl lysine which is difficultly soluble in water as well as its easily soluble monochlorine hydrate were formed. The monochlorine hydrate contains no crystal water so that the melting points given by other authors (Refs 4, 5, 6) can be explained by insufficient purity. Further, the authors prepared the following compounds: α-N-benzoyl-ε-N-2,4-dinitro-phenyl lysine by benzoylation of the above-mentioned monochlorine hydrate, and α-N-2,4-dinitro-phenyl-ε-N-benzoyl lysine by dinitro-phenylation of ε-N-benzoyl lysine. The latter was obtained both from the copper complex salt of lysine and benzoyl chloride and likewise from ε-caprolactam by a new method. Therefrom the chloride of ε-amino caproic acid can easily be formed in good yield. It is brominated with red phosphorus and bromine, and offers a good yield of ε-amino-α-bromo caproic acid. Thereon the dinitro-phenylation of ε-amino-caproic acid meets with no difficulties the preparation of the reaction product of the dinitro-phenylation of ε-amino-α-bromocaproic acid in pure

Production of Some 2,4-Dinitro-phenyl Derivatives of Lysine and of Intermediate Products of Its Synthesis SOV/79-29-5-33/75

state was difficult. In the experimental part directions are given for the formation of: (1) ε-N-benzoyl lysine, (2) chlorine hydrate of ε-amino-caproic acid, (3) ε-amino-α-bromo-caproic acid, (4) the dinitro-phenyl derivative of 2, (5) the dinitro-phenyl derivative of 3, (6) ε-N-2,4-dinitro-phenyl lysine, (7) ε-N-2,4-dinitro-phenyl-α-N-benzoyl lysine, and (8) ε-N-benzoyl-α-N-2,4-dinitro-phenyl lysine. The microanalysis of the substances was carried out by V. D. Zolotnikova. There are 10 references.

SUBMITTED: April 27, 1958

Card 3/3

KHOMUTOV, B.I.; GARKUSHA, G.A.

Use of 2-thiobarbituric acid for the detection of oxidized lipids.
Vop.med.khim. 6 no.4:431-434 Jl-Ag '60. (MIRA 14:3)

1. Laboratory of the U.S.S.R. Ministry of Public Health, Moscow.
(LIPIDS) (BARBITURATES)

GARKUSHA, G.A.; KHUTORNENKO, G.A.

Synthesis of 5-hydroxy-γ-pyrone-2-carboxylic acid and 3-hydroxy-γ-pyrone. Zhur. ob. khim. 31 no.1:123-126 Ja '61. (MIRA 14:1)
(Pyranone) (Pyrancarboxylic acid)

GARKUSHA, G.A.; KHUTORNENKO, G.A.

Hydroxy derivatives of γ-pyrone. Part 4: Production of esters of 5-hydroxy-γ-pyran-2-carboxylic (comenic) acid. Zhur.ob. khim. 31 no.8:2573-2577 Ag '61. (MIRA 14:8)
(Pyrancarboxylic acid)

GARKUSHA, G.A.

Color reactions of 3-hydroxy-γ-pyrone derivatives with ferric chloride. Zhur.prikl.khim. 38 no.3:700-702 Mr '65.
(MIRA 18:11)

1. Submitted May 3, 1963.

(A) L 11979-66

ACC NR: AP6000687 SOURCE CODE: UR/0080/65/038/009/2096/2099

AUTHOR: Garkusha, G. A.

ORG: None

TITLE: Preparation of the 2- and 3- isomers of tertiary butyl-4-methoxyphenols

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 9, 1965, 2-96-2099

TOPIC TAGS: organic synthetic process, phenol, alkaryl ether

ABSTRACT: The synthesis of 2- and 3-tertiary butyl-4-methoxyphenols, used as antioxidants in food products, was investigated. Conditions for the syntheses from isobutylene and the monomethyl ether of hydroquinone were established. The 3-isomer was obtained in 50% yield under mild conditions at 48-50° with orthophosphoric acid as the catalyst. The 2,5-ditertiary buryl-4-methoxyphenol (A) was obtained with either phosphoric or sulfuric acid or a mixture of the two. A mixture of A and the 2-isomer was obtained when equivalent amounts of sulfuric and phosphoric acids were used, especially when the reaction temperature was reduced to below 48° by using benzene in combination with or instead of ligroin as the solvent. The experimental work was conducted with the assistance

Card 1/2 UDC: 547.562.4'261

ACC NR: AP6000687

of N. A. Ivanchenko. Orig. art. has: none.

SUB CODE: 07/ SUBM DATE: 05Jul63/ ORIG REF: 000/ OTH REF: 006

HW

Card 2/2

GARKUSHA, G.A.

Derivatives of γ-pyrone. Part 7: Lactam of N-(β-aminoethyl) chelidamic acid. Zhur. org. khim. 1 no. 12:2222-2225 D '65
(MIRA 19:1)

1. Submitted May 11, 1964.

ACHAPIN, A.F., starshiy inzh.; GARKUSHA, G.D., inzh.

The efficiency exports have improved the drives of mast-type electric cutouts. Elek. i tepl. tiaga no.6:22 Je '62. (MIRA 15:7)

1. Irkutskiy uchastok energosnabzheniya (for Achapin).
(Electric cutouts)

GARKUSHA, G.D., inzh.

A machine for cutting "atseid." Elek.i tepl.tiaga 7 no.1:19 Ja '63. (MIRA 16:2)
(Cutting machines)

GAR'KUSHA, G. N.

A guide to the loco-mobile P-25 (4LPP-20), its care and servicing 2. izd. Moskva, Gos. nauch.-tekhn. izd-vo mashinostroit. lit-ry, 1948. 80 p. (50-22994)

TJ710.G3 1948

GAR'KUSHA, G. N.

Theory, design and computation of locomobiles. Moskva, Gos. nauchno-tekhn izd-vo mashinostroit. lit-ry, 1952. 602 p. (53-19523)

TJ700.G37

GAR'KUSHA, G.N., inzhener.

The PE-25 mobile steam-powered dynamo. Vest.mash. 33 no.9:31-33 S '53.
(MLRA 6:10)
(Steam-power plants) (Dynamos)

GARKUSHA, G.V. [Harkusha, H.V.]

Harvesting hay in two stages. Mekh. sil' hosp. 10 no.4:31 Ap '59.
(MIRA 12:6)

1.Glavnyy mekhanik sovkhoza "Peremozhets'," Zaporozhskoy oblasti.
(Hay--Harvesting)

GARZUSHA, G.Z.; KHUTORNENKO, G.A.

Derivatives of γ-pyrone. Part 6: Esters of γ-pyr[illegible] acids and their hydrolysis. Zhur. ob. khim. 35 no.1:133-137 Ja '65.

(MIRA 18:1)

IL'INSKIY, I.V.; GARKUSHA, I.D.

Experimental determination of the local values of heat transfer coefficients in turbines. Inzh.-fiz. zhur. 6 no.11:3-8 N '63. (MIRA 16:11)

L 12893-63 BDS

ACCESSION NR: AP3000681 S/0096/63/000/006/0053/0057

AUTHOR: Il'inskiy, I. V.(Dr. of technical sciences); Garkusha, I. D.(Engineer)

TITLE: Temperature range in an air-cooled casing of a model for a 50,000-kwt KhTGZ gas turbine

SOURCE: Teploenergetika, no. 6, 1963, 53-57

TOPIC TAGS: temperature field, gas turbine, cooled casing, computer

ABSTRACT: A half-scale model gas turbine EGT-2 designed at the Khar'kovskiy turbogeneratorny*y zavod (Khar'kov Turbogenerator Plant) was used in studies of an experimental turbine GTU-50-800. The turbine EGT-2 had the following characteristics: gas temperature at front of turbine 800C; air pressure behind compressor 1.2-3.8 abs. atm.; rotary speed 2,500-11,200 rpm; diameter of turbine rotor 726 mm; length of turbine vane 122 mm. The temperatures at various points on the model casing were measured by thermocouples (see enclosures) and the field was calculated by computing equipment. Figure 2 (see enclosure) represents the temperature field with numbers at various points showing actual temperatures measured. It is concluded that an approximate analog of the temperature field of turbine walls may be obtained without maintaining the same value for R sub e (Reynolds number) in both

Card 1/4

GARKUSHA, I.F.; SHEMPEL', V.I., otvet. red.; MEYTIN, M.B., tekhn. red.

[Life and work of Vasilii Robertovich Vil'iams] Vasilii Robertovich Vil'iams; ego zhizn' i deiatel'nost'. Gory-Gorki, Izd-vo Belorusskoi S.Kh.Akad.BSSR, 1949. 20 p. (MIRA 14:8)

1. Chlen-korrespondent AN BSSR (for Shempel')
(Vil'iams, Vasilii Robertovich, 1863-1939)

GARKUSHA, I. F.

Field study of soils.
Moskva, Gos. izd-vo sel'khoz. lit-ry, 1952. 81 p. (54-22017)

S593.G33

GARKUSHA, I.F.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr. 1954)

Name	Title of Work	Nominated by
Garkusha, I.F.	"Soil Science" (3d edition)	Belorussian Agricultural Academy

SO: W-30604, 7 July 1954

GARKUSHA, I. F.

Soil science Pochvovedenie 4. ispr. i dop. izd. Moskva, Gos. izd-vo selkhoz, lit-ry, 1954. 423 p.

1. Soil research.
2. Soils - Russia.

Garkusha, I. F.

Changes in bog soils under the influence of cultivation. I. F. Garkusha. *Trudy Beloruss. Sel'skokhoz. Akad.* 20, 14–27(1954)(in Russian).—Various types of pyrite cinders must be added to peat soils of drained bogs to obtain high crop yields. In newly drained peat soils the ash content was 10.17–10.34%, whereas in the cultivated soils it was 13.83–14.10%. With increase in ash, the various mineral salts also increased and the pH rose from 4.95 in fresh peat to 5.15–5.23 in newly cultivated peat and 5.87–6.02 in old cultivated peat. The α and β humus and nitrate content also increased, with cultivation. J. S. Joffe

Agri 1

GARKUSHA, I.F., professor; BULGAKAY, N., redaktor; IVANOU, V., redaktor; STSYAPANOVA, N., tekhnicheskiy redaktor

[Soil science] Hlebaznaustva. Minsk, Dziarzh. vyd-va BSSR, 1955. 417 p. (MLRA 10:2)
(Soils)

GARKUSHA, I. F.

Changes in sod-podzolized soils as a result of cropping. I. F. Garkusha. *Pochvovedenie* 1955, No. 1, 33-47.--Soils under pine forests (I) were compared with cultivated (II) areas adjoining the forests. The org. matter content of the plowed layer was lower than in the *A* horizon of I. In II an increase in exchange Ca and Mg was noted and a decrease in exchange Al and H, and mobile Al and Fe. J. S. Joffe

AG

GARKUSHA, I.P.

[Soil cultivation as the present stage of soil formation]
Okul'turivanie pochv kak sovremennyi etap pochvoobrazovaniia.
Gorki, Belorusskaia ordena Trudovogo krasnogo znameni sel'khoz.
akad., 1956. 201 p. (MIRA 12:11)
(Soils)

GARKUSHA, I.F., prof.; TRIMA, N.K., otv. za vypusk; PAVLOVSKAYA, Ye.M., tekhn. red.

[Bog soils; lectures for students of the agricultural faculty] Bolotnye pochvy; lektsiia dlia studentov agronomicheskogo fakul'teta. Gorki, Belorusskaia sel'khoz. biblioteka, 1957. 31 p. (MIRA 14:8)

(Soils) (Swamps)

GARKUSHA, I.F., prof.; TRIMA, N.K., otvet. za vypusk; MEYTIN, M.B., tekhn. red.

[Soils of the turf-Podzolic type; lectures for students of the Agronomy Department] Pochvy dernovo-podzolistogo tipa; lektsiia dlia studentov Agronomicheskogo fakul'teta. Gorki, Belorusskaia sel'khoz. akad., 1957. 55 p. (MIRA 14:10)
(Podzol)

GARKUSHA I F

3-3-24/40

AUTHOR: Garkusha, I.F., Professor, Doctor of Agricultural Sciences Rector of the Belorussian Agricultural Academy

TITLE: Advanced Agricultural School in Italy (Vysshaya sel'skokhozyaystvennaya shkola Italii)

PERIODICAL: Vestnik vysshey shkoly. March 1957, No. 3, pp. 82-83 (USSR)

ABSTRACT: The article states that the best land, situated in the valleys, is in the hands of Italian landowners or large-scale farmers, while the poor peasants have only the ravines and slopes of the mountains, and that although machine construction is well developed, there are more work horses and oxen in use than tractors or combines. He points out the backwardness of Italy in agriculture and the want of specialists which he had observed when attending the 5th International Congress of Agricultural Education in Rome. He then speaks of this Congress at which the Soviet Delegation opposed the unification of specialities, i.e. the introduction of identical faculties in the agricultural institutions of all countries. The author then sets forth the observations he made on higher agricultural education in Italy when visiting universities in Rome, Pisa and Naples. The tiny training farm of

Card 1/2

Advanced Agricultural School in Italy 3-3-24/40

the Agricultural Faculty at Naples comprises only 50 hectares. It has only one tractor and a few trailers, but agriculture is of a high standard. The Faculty is attended by 450 students.

ASSOCIATION: Belorussian Agricultural Academy (Belorusskaya sel'skokhozyaystvennaya akademiya)

AVAILABLE: Library of Congress

Card 2/2

GARKUSHA, I.F.

[Soils of river flood lands; lecture for students in the Department of Agronomy) Pochvy rechnykh poim. Lektsiia dlia studentov Agronomicheskogo fakul'teta. Gorki, BSSR, 1958. 20 p. (MIRA 12:11)

1.Belorusskaia ordena Trudovogo Krasnogo znameni sel'skokhoziaistvennaia akademiia.
(White Russia--Alluvial lands)

GARKUSHA, I.F., prof.; TRIMA, N.K., otvet. za vypusk

[Introduction to the course in soil science] Vvedenie k kursu pochvovedeniia; lektsiia dlia studentov agronomicheskogo fakul'teta. Gor'ki, Belorusskaia sel'khoz. akad., 1958. 32 p. (MIRA 14:10)
(Soil science—Study and teaching)

GARKUSHA, I.F.

[Methods of field research on soils; lecture for students in the Agronomy Faculty] Metodika polevogo issledovaniia pochv; lektsiia dlia studentov Agronomicheskogo fakul'teta. Gorki, 1958. 61 p. (MIRA 13:3)

(Soils--Analysis)

GORSHENIN, Konstantin Pavlovich, prof., laureat Leninskoy premii; ALEKSANDROVA, Lyudmila Nikolayevna; ANTIPOV-KARATAYEV, Ivan Nikolayevich; GARKUSHA, Ivan Fedoseyevich; SOBOLEV, Sergey Stepanovich; PLESHKOV, B.I., red.; SOKOLOVA, N.N., tekhn.red.

[Soil science] Pochvovedenie. Pod obshchei red. K.P.Gorshenina. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1958. 438 p. (MIRA 12:8)

1. Omskiy sel'skokhoz.institut (for Gorshenin). 2. Leningradskiy sel'skokhoz.institut (for Aleksandrova). 3. Pochvennyy institut Akademii nauk SSSR (for Antipov-Karatayev, Sobolev). 4. Belorusskaya sel'skokhoz.akademiya (for Garkusha).
(Soils)

GARKUSHA, I.F., akademik; TRIMA, N.K., otvet. za vypusk

[Soils of the tundra zone; lectures for students of the department of agriculture] Pochvy tundrovoi zony; lektsiia dlia studentov agronomicheskogo fakul'teta. Gorki, M-vo sel'khoz. SSSR, 1959. 12 p. (MIRA 14:8)

1. Akademiya sel'skokhozyaystvennykh nauk BSSR (for Garkusha)
(Russia, Northern—Soils)

GARKUSHA, I.F., akademik; TRIMA, N.K., otvet. za vypusk

[Soil structure; lectures for students of the department of agriculture] Pochvennaia struktura; lektsiia dlia studentov agronomicheskogo fakul'tega. Gorki, M-vo sel'khoz. BSSR, 1959. 13 p.
(MIRA 14:8)

1. Akademiiya sel'skokhozyaystvennykh nauk BSSR (for Garkusha)
(Soil physics)

LOBANOV, P.; LOZA, G.; CHIZHEVSKIY, M.; VOROB'YEV, S.; VIL'YAMS, V.; SOBOLEV, S.; PAVLOV, G.; GARKUSHA, I.; FRANTSESSON, V.; MERSHIN, A.; PERSHINA, M.

Vladimir Petrovich Bushinskii. Zemledelie 8 no.7:94-95 Jl '60. (MIRA 13:9)

(Bushinskii, Vladimir Petrovich, 1885-1960)

GARKUSHA, I.F.

[Soil science]Pochvovedenie. 5., ispr. izd. Leningrad, Izd-vo sel'khoz.lit-ry, zhurnalov i plakatov, 1961. 351 p.
(MIRA 15:10)

(Soils)

GARKUSHA, Ivan Fedoseyevich, akademik; ALEKSEYEV, Yu.V., red.; BARANOVA, L.G., tekhn. red.

[Soil science]Pochvovedenie, Leningrad, Sel'khozizdat, 1962. 447 p. (MIRA 16:1)

1. Akademiya nauk Belorusskoy SSR (for Garkusha).
(Soil science)

GARKUSHA, Ivan Fedoseyevich; ALEKSEYEV, Yu.V., red.; BARANOVA, L.G., tekhn. red.

[Soil science and the fundamentals of geology] Pochvovedenie s osnovami geologii. Moskva, Sel'khozizdat, 1963. 258 p. (MIRA 16:12)

(Soil science) (Geology)

GARKUSHA, I.F., akademik

Classification and basic characteristics of soils. Zemledelie 26 no. 3:61-71 Mr '64. (MIRA 17:4)

1. Akademiya nauk Belorusskoy SSR.

GARKUSHA, I.F., akademik

Eighth International Congress of Soil Scientists. Zemledelie 26 no. 12:82-83 D '64. (MIRA 18:4)

1. Akademiya AN BSSR.

GARKUSHA, I.F.

Evolution of peat-bog soils of the lowland type as affected by cultivation. Dokl. AN BSSR 9 no.12:842-845 D '65.
(MIRA 19:1)

1. Belorusskaya sel'skokhozyaystvennaya akademiya.

GARKUSHA, I.F.

Evolution of turf-Podzolic soils under cultivation. Dokl. AN BSSR 9 no.10:686-689 O '65. (MIRA 18:12)

1. Belorusskaya sel'skokhozyaystvennaya akademiya. Submitted May 29, 1965.

18,9000

S/126/62/013/002/001/019
E039/E135

AUTHORS: Garkusha, I.P., and Lyubov, B.Ya.

TITLE: Calculations on the speed of growth of spherical centres of new phases, limited by diffusion through the interstitial region

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962, 161-165

TEXT: This is one of the basic problems in the theory of phase transformation limited by diffusion. Such calculations are based on the assumption of an infinite medium surrounding the centre through which the diffusion proceeds. However, in reality it appears that the diffusion region has a radius of the order of half the average distance between centres. Consequently, the growth of these centres cannot be examined independently and the problem is essentially complex. Diffusion through the interstitial regions must be taken into account. A general solution is obtained for the case when the concentration of dissolved material inside the diffusion zone satisfies the non-stationary equation of diffusion. These calculations reduce to a system of

Card 1/3

Calculations on the speed of growth...

transcendental equations for two parameters β_1 and β_2 which define the rate of growth of the centres. The solutions of these equations are expressed graphically. As an illustration the case of spherical centres of graphite grown in a mixture of austenite and cementite, with cementite particles distributed uniformly, is examined. Growth is produced by diffusion of carbon through the interstitial and the subsequent diffusion of carbon through the spherical layer of austenite surrounding the centres. The values of the growth constant calculated for stationary and non-stationary processes are compared with known experimental data. The results based on stationary processes are ~15-20% greater than those based on non-stationary, and both exceed the experimental results by a factor of about 5. The question of the width of the diffusion cone surrounding the growth centre of a new phase is examined and calculations for the case of the growth of ferrite centres in supercooled austenite are made. The solution of this problem can be used in the analysis of physico-chemical processes accompanying the growth of crystals from solution.

Card 2/3

Calculations on the speed of growth.. S/126/62/013/002/001/019
E039/E135

There are 4 figures and 1 table.

ASSOCIATION: Dnepropetrovskiy gosudarstvennyy universitet
(Dnepropetrovsk State University,
Institut metallovedeniya i fiziki metallov
TsNIIChM
(Institute of Science of Metals and Physics of
Metals TsNIIChM)

SUBMITTED: April 21, 1961

Card 3/3

38103
S/020/62/144/002/011/028
B104/B102

24.7000

AUTHORS: Garkusha, I. P., Lyubov, B. Ya.

TITLE: The mechanism of growth of a ferrite nucleus during isothermal austenite decomposition

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 2, 1962, 318-321

TEXT: Diffusion processes accompanying the growth of ferrite nuclei, and the factors bearing on them, were studied in quantitative approximation. Such growth is considered to be similar to that of the center of a new phase during polymorphic transformation. For small nuclei, the carbon distribution in austenite can be described by a Laplace equation. The following relation is derived for the growth rate:

$$\frac{d\rho}{dt} = \frac{k_1 [\Delta F_0^{Fe}/RT - (C_0 - C_1^p) - 2\sigma V_{Fe}/RT\rho]}{(\Delta F_0^{Fe}/RT - 2\sigma V_{Fe}/RT\rho)\, k_1\rho/D_1 + 1}$$

The carbon concentration on the surface of the ferrite nucleus is:

$$C_s = C_1 - (1/k_1)\, d\rho/dt + \Delta F_0^{Fe}/RT - 2\sigma V_{Fe}/RT\rho.$$

Card 1/2

Here C_1 denotes the carbon concentration inside the ferrite nucleus, ΔF is the total change of free energy as a unit volume of a new phase is formed, and D_2 is the coefficient of carbon diffusion in austenite. Calculations using these formulas reveal that the rate essentially depends at first on the transition of Fe atoms through the interface and later on the diffusion of C into the austenite volume. There are 2 figures.

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii im. I. P. Bardina (Institute of Metal Science and Physics of Metals of the Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin).
Dnepropetrovskiy gosudarstvennyy universitet im. 300-letiya vossoyedineniya Ukrainy s Rossiyev (Dnepropetrovsk State University imeni 300 Years of Reunion of the Ukraine with Russia)

[illegible]: December 28, 1961, by G. V. Kurdyumov, Academician

[illegible]: December 25, 1961

ACCESSION NR: AP4043836 S/0020/64/157/005/1100/1102

AUTHORS: Garkusha, I. P.; Lyubov, B. Ya.

TITLE: Calculation of the diffusion-governed kinetics of dissolution of a spherical inclusion

SOURCE: AN SSSR. Doklady*, v. 157, no. 5, 1964, 1100-1102

TOPIC TAGS: dissolution, diffusion boundary layer, lead, tin, metal hydropermeability, solution kinetics

ABSTRACT: The authors analyze quantitatively the rate at which a spherical particle situated in an unbounded medium decreases in size, under the condition that the concentration on its surface remains at the equilibrium value for the given temperature, and the rate of the process is determined by diffusion in the surrounding medium. A theoretical analysis of this problem is desirable, because the rate of diffusion cannot be determined experimentally directly and must

Card 1/3

be estimated by indirect measurements. The problem is solved by expressing the diffusion equations in a form that takes into account the spherical symmetry of the problem and by expanding the unknown dimension and mass in a series in fractional powers. A numerical example for a lead sphere of approximately 0.1 mm in diameter in liquid tin yields at T = 250° a time 2 seconds for the linear dimensions to decrease by one-half, and 5 seconds for complete dissolution; for T = 320° the respective times are 0.7 and 1 second. This report presented by G. V. Kudryumov. Orig. art. has: 3 figures and 11 formulas.

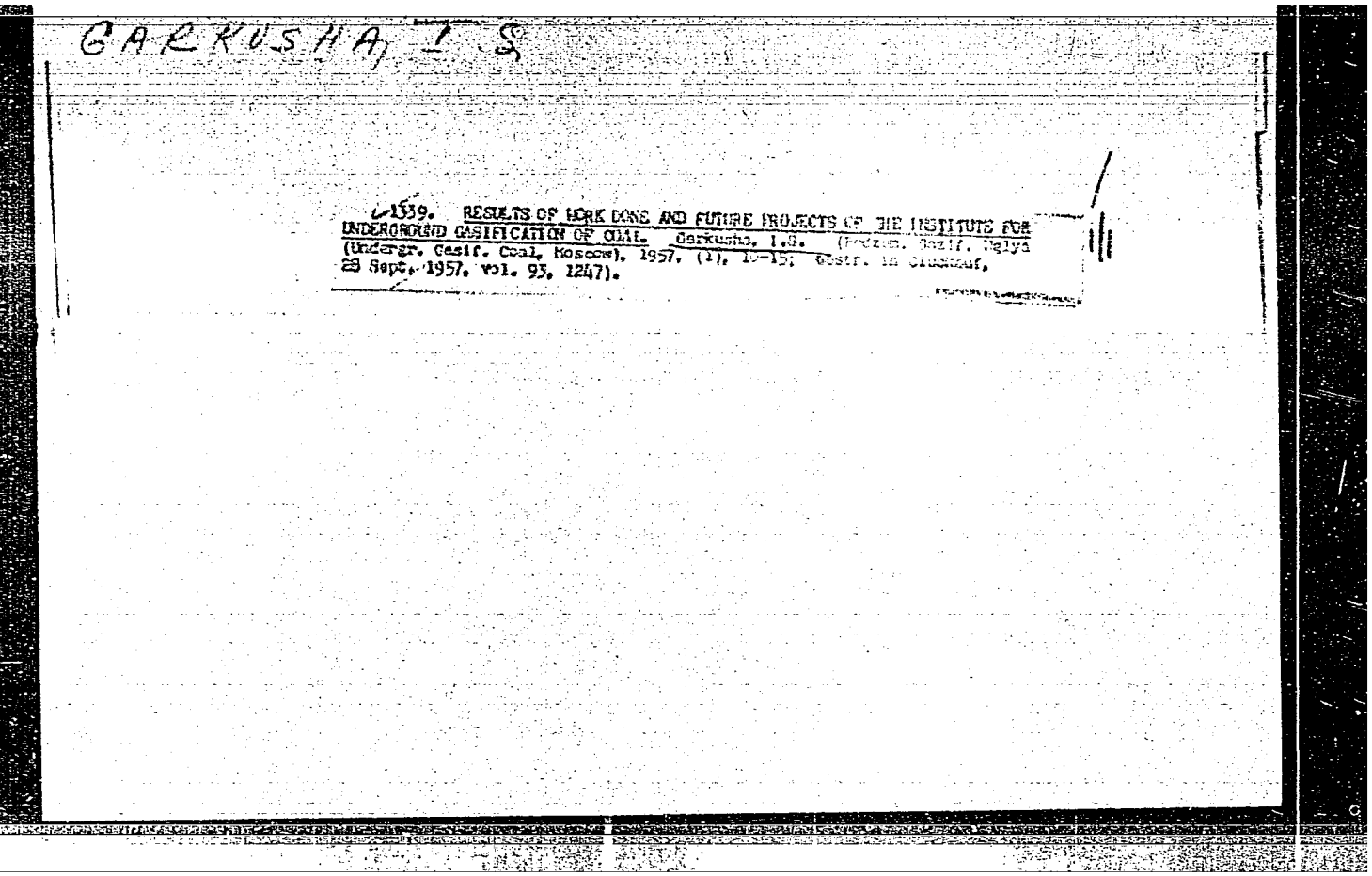
ASSOCIATION: Dnepropetrovskiy gorny*y institut im. Artema (Dnepropetrovsk Mining Institute); Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii im. I. P. Bardina (Institute of Metal Research and Metal Physics, Central Scientific Research Institute for Ferrous Metallurgy)

ACCESSION NR: AP4043836

SUBMITTED: 19Mar64 ENCL: 00

SUB CODE: MM NR REF SOV: 004 OTHER: 003

Card 3/3



GARKUSHA, I. S.

1539. RESULTS OF WORK DONE AND FUTURE PROJECTS OF THE INSTITUTE FOR UNDERGROUND GASIFICATION OF COAL. Garkusha, I.S. (Podzem. Gazif. Uglya (Underger. Gasif. Coal, Moscow), 1957, (2), 10-15; Abstr. in Chemical, 28 Sept., 1957, vol. 93, 12471).

PHASE I BOOK EXPLOITATION SOV/5494

Vasil'yev, Mikhail Vasil'yevich, and Sergey Zakharovich Gushchev

Reportazh iz XXI veka; my zapisali rasskazy dvadtsati devyati sovetskikh uchenykh o nauke i tekhnike budushchego (Reports From the Twenty-First Century; Stories of Twenty-Nine Soviet Scientists on Science and Engineering of the Future) [Moscow] Izd-vo Sovetskaya Rossiya, 1958. 243 p. 50,000 copies printed.

Ed.: V. A. Golubkova; Tech. Ed.: G. I. Kleyeva.

PURPOSE : This book is intended for the general reader.

COVERAGE: The book contains 27 articles (told reporters by Soviet scientists) dealing with probable future progress in physics, chemistry, electricity, metallurgy, engineering, mining, medicine, biology, agriculture, zoology, transportation, exploration of space, and photography. Attention is given to automation, automatic underground gasification of coal, use of new metals, modernization of oil fields, atomic electric stations, production of metal parts by the process of explosion, explosions

Card-1/7

Reports From the Twenty-First (Cont.) SOV/5494

in dam construction, cancer, internal longevity reserves, machine diagnoses of illnesses, surgery vs. treatment by ultra-sonic vibrations, mechanical heart substitutes, human body banks, "medical engineering," enriched fodder, "superfertilizers", arti-ficial snowfalls, agriculture vs. "mariculture", radiochemistry, power beam vs. wire, machines doing intellectual work, "HF auto-mobiles" (with "radio motors"), "artificial sun" (electromag-netic rays focused above a city which cause heated molecules to shine), future ocean ships, "railway dreadnoughts", Moscow of the future, moving pavements, wheelless and driverless auto-mobiles, electric cameras, the industrialization of Siberia, use of underground heat, climate control, living on the moon, antimatter, and photon jet. Names of the interviewed scientists are given. There are no references.

TABLE OF CONTENTS:

Card-2/7

Reports From the Twenty-First (Cont.) SOV/5494

Card 3/7

GARKUSHA, I. I.

18 18 18

"Desulfurization of cast iron outside of the cupola." I. I. Garkusha. *Plavka Chuguna v Vagranke* (Kiev: Gosudarst. Nauch.-Tekh. Izdatel. Mashinostroitel. Lit.). *Sbornik* 1955, 81–5; *Referat. Zhur., Met.* 1956, No. 3141.—Results are reported of lab. expts. on desulfurization of cast iron in a graphite ladle with Na_2CO_3 alone and mixed with 75% Fe-Si, and of plant expts. on desulfurization of cupola metal with Na_2CO_3 alone and mixed with calcined magnesite. It is inexpedient to desulfurize cast iron in the ladle with Na_2CO_3 alone or mixed with the other agents, because these materials are effective only at temps. so low that pouring the metal into the molds would be very difficult.

Alexis N. Pestoff

GARKUSHA. I.T.

HG Improving technological processes in the Kharkov plant. I. T. Garkusha. *Litelnoe Proizvodstvo* 1955, No. 8, 6–8.—Fe for casting is overheated to 1460–80° by blowing O_2 in the forehearth of a 30-in. cupola or in the hearth of the cupola itself. In the latter case, 3–4 cu.m. of O per ton produce fluid metal holding C at 3.4–3.5% and permitting lowering Si to 2.2–2.0% without chilling the castings. Turnings are fed continuously by a screw conveyer into the melting zone of the cupola reducing the cost of Fe during the past year and a half by 5–7%. Castings are cleaned in this plant by rotating electrodes assembled from individual steel disks on a shaft to fit the surface to be cleaned and connected to the positive pole of a generator. I. D. Gat

GARKUSHA, I. T.

Distr: 4E2c

Ways of Increasing Iron Temperature in Cupola Smelting. I. T. Garkusha. (*Liteinoe Proizvodstvo*, 1957, (3), 18–20). [In Russian]. Based on observations that cupolas at the "Krasnaya Zvezda" and Rostel'mash works, operating with open slag notches, have consistently produced iron at unusually high temperatures, the author has developed a cupola in which part of the combustion gases move downwards, leaving through the fore-hearth. The distribution of gas and charge temperatures up the cupola for ordinary and for the new operating conditions are considered. In experiments the effects of varying the proportion of gases flowing downwards were studied, and it was shown that the procedure was advantageous in the early but not in the later stages of the process. Lining wear was also studied and water cooling is recommended.—S. K.

GARKUSHA, I. T.

137-58-4-8252

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 274 (USSR)

AUTHORS: Bobro, Yu.G., Garkusha, I.T.

TITLE: High-manganese Cast Iron With Spheroidal Graphite (Vysoko-margantsovistyy chugun s sharovidnym grafitom)

PERIODICAL: Tr. Khar'kovsk. politekhn. in-ta, 1957, Vol 11, pp 149-152

ABSTRACT: The results of investigations of the mechanical properties and microstructure of high-manganese iron inoculated with Mn are presented. Iron of the following % composition was investigated: C 3.1-3.4, Mn 8.0-11.25, C(sic!)1.2-1.5, P up to 0.1, Si 4.0-4.5. Positive results were obtained only on dry sand casting. On green sand casting, Mn carbides predominate in the structure of the iron, which eliminates the possibility of machining due to high H_B, which may attain 415. Inoculation made it possible to produce spheroidal graphite while retaining the austenitic and consequently nonmagnetic structure of the iron. The σ_{bi} was increased by 50 to 100% with some reduction in bending deflection and an increase in hardness.

Yu. I.

Card 1/1

1. Cast iron--Mechanical properties--Effects of manganese
2. Iron--manganese alloys--Mechanical properties

SOV/128-59-10-20/24

25(5)

AUTHORS: Garkusha, I.T., Krongauz, A.I., and Kompaniyets, B.Ya., Engineers

TITLE: Scientific and Technical Conference on Progressive Technology of Pattern Production

PERIODICAL: Liteynoye proizvodstvo, 1959, Nr 10, pp 45-46 (USSR)

ABSTRACT: In December, 1958 a conference on progressive technology of pattern production convened in Khar'kov. The conference was organized by the section for foundry production of the district scientific and technical society for machine production, together with the Khar'kovskiy sovnarkhoz (Khar'kov Sovnarkhoz). About 300 chairmen from different technical organizations of the Khar'kov district, from Moscow, Kiyev, Kramatorsk, Zhdanov, Minsk, Dnepropetrovsk, Rostov and other places were present. Lectures were given by: V.S. Sergeyev, R.L. Kharakhash'yan, G.A. Poyedintsev (KhTZ), M.S. Shapiro ("Tsentrolit" in Tbilisi), Yu.M. Buri-Burimskiy (Minsk Tractor Factory), N.P. Kamyshan, M.K. Omel'chenko, I.I. Sychev, V.G. Kaprov, P.S. Afanas'yev (NIIDrevmash), Ya.V. Lyamin, S.N. Chashchegorov, B.A. Bychkov (KhEMZ), S.Ye.Rozenfel'd, S.F. Simma (UkrGIPROMASh) and A.A. Shturman.

Card 1/1

GARKUSHA, L. K. (Institute of technical thermal physics of Academy of Sciences of Ukrainian SSR)

"Thermodynamic diagrams of oxidizers and products of combustion, taking into account dissociation at high temperatures."

Report presented at the Section on Thermodynamics, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

GARKUSHA L.V.

ALEKSEYENKO, I.P., dots., red.; GARKUSHA, L.V., dots, red.; GURVICH, S.S., dots., red.; KOSTRYUKOVA, K.Yu., prof., doktor biol.nauk, red.; SIROTININ, N.N., prof., red.; FROL'KUS, V.V., dots., red.; TREYGERMAN, I.I., tekhn.red.

[Philosophical problems in medicine and natural sciences] Nekotorye filosofskie voprosy meditsiny i estestvoznaniia; trudy Instituta. Kiev, 1957. 172 p. (MIRA 11:6)

1. Kiyev. Meditsinskiy institut imeni A.A.Bogomol'tsa. 2. Direktor Kiyevskogo ordena Trudovogo Krasnogo znameni meditsinskogo instituta imeni akademika A.A.Bogomol'tsa (for Alekseyenko). 3. Deystvitel'nyy chlen AMN SSSR (for Sirotinin)

(MEDICINE--PHILOSOPHY)
(SCIENCE--PHILOSOPHY)

GARKUSHA, L.V., dotsent .

Against methaphysical and idealistic distortions of the correlation of necessity and chance in biology. Nek.filos.vop.med.i est. no.2:53-68 '60. (MIRA 15:7)

1. Kafedra dialekticheskogo i istoricheskogo materializma Kiyevskogo meditsinskogo instituta imeni Bogomol'tsa.
(BIOLOGY--PHILOSOPHY) (NECESSITY (PHILOSOPHY))

VLASYUK, P.A., akademik, otv. red.; GARKUSHA, M.A.[Harkusha, M.A.], red.; ZORIN, I.G.[Zorin, I.H.], red.; KOZIY, G.V.[Kozii,H.V.],prof., red.; KUKSIN, M.V., kand. sel'khoz.nauk, red.; CHERKASOVA, V.O., kand. sel'khoz.nauk, red.; YUKHIMCHUK, F.P.[IUkhymchuk, F.P.], kand., sel'khoz.nauk, red.; LISOVICHENKO, Ya.V.[Lisovychenko, IA.V.], red.; VIDGIYAK, A.P., tekhn. red.

[Increasing the productivity of natural forage lenads in the Ukrainian S.S.R.; transactions of the session of the Department of Agricultures of the Ukrainian Scientific Research Institute of Agriculture] Pidvyshchennia produktyvnosti pryrodnykh kormovykh uhid' Ukrains'koi RSR; pratsi naukovoi sesii Viddilennia zemlerobstva. Kyiv, Vydavnytstvo UASHN, 1960. 185 p. (MIRA 15:7)

1. Prezident Ukrainskoy akademii sel'skokhozyaystvennykh nauk (for Vlasyuk). 2. Sekretar Kiyevskogo oblastnogo komiteta Kommunisticheskoy Partii Ukrainy (for Garkusha). 3. Chlen-korrespondent Ukrainskoy akademii sel'skokhozyaystvennykh nauk, zamestitel' ministra sel'skogo khozyaystva USSR (for Zorin). 4. Nauchno-issledovatel'skiy institut zemledeliya i zhivotnovodstva zapadnykh rayonov USSR (for Koziy). 5. Ukrainskiy nauchno-issledovatel'skiy institut zemledeliya (for Kuksin). 6. Poltavskaya gosudarstvennaya sel'skokhozyaystvennaya issledovatel'skaya stantsiya (for Cherkasova).

(Ukraine—Pastures and meadows)

75583
SOV/130-59-10-15/20

18.5000

AUTHORS: Tsygankov, Ye. M. (Chief Engineer), Garkusha, M. S. (Senior Engineer of Furnace Laboratory)

TITLE: Improvement of Heating Furnace for Mobile Pipewelding Stand

PERIODICAL: Metallurg, 1959, Nr 10, p 29 (USSR)

ABSTRACT: As a result of research (conducted by Titov, N. A., Timofeichev, P. V., Zimin, Ya. S., Petrov, K. I., Rachkov, G. A., Golyshkov, M. S., and Vladimirov, L. M.) at Vyksa Metallurgical Plant (Vyksunskiy metallurgicheskiy zavod) satisfactory seams were obtained with welding-moment temperatures of 1370° C, i.e. melting temperature of ferrous oxide. The welding furnace was redesigned: (1) hearth width increased to 3000 mm; (2) eleven vertical 550 x 300 mm flues installed; (3) exhaust flues widened to 550 mm, facilitating gas escape and eliminating scale formation; (4) sagging of hearth beam prevented by installation of brick

Card 1/2

Improvement of Heating Furnace for Mobile Pipewelding Stand

75583
SOV/130-59-10-15/20

supports in furnace center; (5) horizontal flues connected with vertical flues and spaced at 300 mm, arranged along the entire length of the furnace for better withdrawal of coldest gas. Advantages: (1) increased production; (2) decreased percentage of rejects; (3) fuel and metal saving. Future plans: fuller utilization of hearth width, increasing length of hearth and length of heated strip. There is 1 table.

ASSOCIATION: Vyksa Metallurgical Plant (Vyksunskiy metallurgicheskiy zavod)

Card 2/2

GARKUSHA, N. F.

PA 51/49T27

USSR/Electronics Jul 49
Telemechanics

"Telemetering Units for Short Distances," N. F. Garkusha, Engr, 5 pp

"Elek Stants" No 7

Discusses advantages of rectifier and induction-rectifier telemetering circuits. Leningrad automatics and telemechanics test factory has produced much telemetering equipment in the past. Gives circuit diagrams for televoltmeters and a telemanometer.

51/49T27

GARKUSHA, N.G., Cand Tech Sci—(diss) "Study of dynamic forces in ~~strains~~ in braking of mine hoisting machines ~~elevators~~." Stalino, 1958. 17 pp with graphs (Min of Higher Education USSR, Donets Order of Labor Red Banner Industrial Inst im N.S. Khrushchev), 150 copies (KL,30-58, 126)