84833

On the Solidification by Vibration in Powder Metallurgy

S/020/60/134/005/021/023
B016/B054

for other mixtures. By the methods described, it was possible to eliminate, to a great extent, the difficulties and defects of pressed pieces mentioned at the beginning. The authors thank N. V. Mikhaylov, Doctor of Technical Sciences, for assisting in the work. There are 4 figures and 2 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: June 8, 1960

Card 3/3

34542
S/659/61/007/000/030/044
D217/D303

1.1800

AUTHORS: Gorbunov, N.S., Kovalev, Ye.A., and Latukhova, A.G.

TITLE: Investigating diffusion coatings resistant to media containing vanadium pentoxide

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam, v. 7, 1961, 263 - 270

TEXT: In this investigation, in which the service conditions of gas transport turbines were simulated, the excess pressure of the working process and the speed of gas flow were not allowed for. The work was carried out at the Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR) and at the Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta (All Union Scientific Research Institute of Railway Transportation) in association with the Kolomenskiy teplovozostroitel'nyy zavod im. Kuybyshev (Kolomensk Internal Combustion Works im. Kuybyshev). Diffusion coatings were produced on the surface of the austenitic class chromium-nickel steel ЭИ 417 (EI417), from which flat speci-

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mens, 15 x 10 x 6 mm were made. Silicide diffusion coatings were produced at 1000, 1020 and 1050°C by soaking for 2 - 6 hours. Aluminizing was carried out at 1000 and 1100°C, soaking for 4 - 6 hours and chromiding in vacuum at 1000°C for 4 - 6 hours. 730°C was selected as the temperature for corrosion testing, this being the maximum service temperature for guide vanes of a gas turbine. To select the mode of application of the corrosive mixture to the specimens, at which the rate of corrosion of the specimens at elevated temperatures should approach the intensity of destruction of the alloys in the course of service of the gas turbine plant, two methods were investigated: Immersion of the specimens in molten cinder and application of a suspension to the specimens at room temperatures (painting). On testing the above coatings in an atmosphere of air in contact with cinder (10 and 41.6 % V_2O_5) at 730°C, silicided specimens exhibited the greatest resistance against corrosion by vanadium pentoxide. The resistance of aluminized and aluminosilicided specimens was lower. All coatings, apart from silicided ones, failed on testing for 500 hours in contact with cinder at 730°C. The corrosive medium diffused through the coating to the me-

Investigating diffusion coatings ...

tal, oxidizing the latter at the boundary line of diffusion. The thickness of a silicided layer under similar conditions decreased somewhat and pitting corrosion appeared on the surface; however, molten cinder did not penetrate to the metal and the latter did not corrode. In the presence of SiO_2 in air atmosphere, the rate of corrosion of alumino-silicided and aluminized specimens is the same as the rate of corrosion in pure air. Chromided and silicided specimens exhibit high stability under these conditions. A combination cementation coating (Si and Al) gave less protection to the steel EI417 against vanadium pentoxide than a coating consisting of one of the individual elements. On periodically cooling the specimens (cooling 40 times from 730 to 20°C within 15-20 minutes), no exfoliation and destruction of the protective layer of chromided and silicided specimens occurred. No cracks or ruptures in the diffusion layer were observed on water quenching silicided specimens from 1150°C and the adhesion of the coating to the base metal remained unimpaired. Siliciding and chromiding are recommended for protection of gas vanes of gas turbine plants against corrosion during combustion of sulphur-containing petroleum residues of high

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Investigating diffusion coatings ... S/659/61/007/000/030/044
D217/D303

vanadium content. There are 5 figures, 2 tables and 11 references: 3 Soviet-bloc and 8 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: Corrosion, 11 no. 1, p. 35, 1955; Iron and Steel Inst., 179, no. 4, p. 342, 1955; Corrosion, 12, no. 9, pp. 49-54, 1956; Iron and Steel Inst., 182, no. 2, p. 195, 1956.

Card 4/4

29525
S/062/61/000/011/012/012
B103/B147

15.2240

AUTHORS: Gorbunov, N. S., Shishakov, N. A., Sadikov, G. G., and Babad-Zakhryapin, A. A.

TITLE: Neutron-diffraction study of titanium carbide and nitride

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1961, 2093 - 2095

TEXT: The composition of (a) titanium carbide, and (b) titanium nitride was studied at the beginning and the end of their homogeneity ranges. The neutron-diffraction pictures were taken with a remote-control neutron diffractometer (R. P. Ozerov, S. V. Kiselev et al. Kristallografiya 5, No. 2 (1960)). It was positioned on one of the horizontal channels of the ИРТ-1000 (IRT-1000) reactor of the Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy of the Academy of Sciences USSR). The wavelength of the neutrons which were monochromatized by reflection from the (111) plane of a lead single crystal, was 1.06 Å. The neutrons scattered by the specimen were recorded automatically by means of an ЭПП-09 (EPP-09) in dependence on the dispersion angle. The relation of

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Neutron-diffraction study of...

the intensities of the individual reflexes (Table) was determined from the relation of the areas below the integral curve of the count intensity with deduction of the background. Fig. 1 shows the neutron-diffraction pictures. They show only the reflexes satisfying the extinction condition for a face-centered cubic lattice. In such a way, the x-ray data on the symmetry of the unit cell of the compounds studied were confirmed by neutron-diffraction data. The absence of superstructure reflexes proves that the nonmetal atoms are distributed statistically in these compounds. The calculated intensity values were found on the basis of the equation: $I_{calc} \approx F^2 p(1/\sin^2\vartheta\cos\vartheta)A(\vartheta)$, where F is a structure factor; p is the recurrence factor; and $A(\vartheta)$ is the absorption factor. In the present case, $A(\vartheta)$ depends only slightly on the angle ϑ and was thus not taken into account. It has been found that the calculated intensity values of TiC, $TiC_{0.25}$, and $Ti_{0.85}N$ are in good agreement with the experimental data. In $TiC_{0.25}$ the composition of which is almost stoichiometric, the Ti atoms occupy all possible vacancies. Actually, the nonmetal atoms are in titanium carbide and

Neutron-diffraction study of...

nitride in the octahedral holes. These holes are occupied statistically in titanium carbide which shows a deficiency of carbon. In titanium nitride, the lattice is deficient as to titanium. There are 1 figure, 1 table, and 8 references: 4 Soviet and 4 non-Soviet. The two references to English-language publications read as follows: J. Bacon, Difraktsiya neytronov (Neutron diffraction), IL, M., 1957. Tekhnika vysokikh temperatur (High-temperature Engineering), edited by I. E. Campbell, IL, M., 1959.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

SUBMITTED: May 25, 1961

Table Experimental and calculated reflex intensities for titanium carbide and nitride.
Legend: (1) titanium nitride; (2) titanium carbide; (3) I_{exp}; (4) I_{calc} for $Ti_{0.85}N$; (5) I_{calc} for TiC.

Card 3/[illegible] 3

89933

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S/170/61/004/003/012/013
B108/B209

AUTHORS: Izvekov, V. I., Gorbunov, N. S., and Babad-Zakhryapin, A. A.

TITLE: The diffusion of iron into titanium dioxide

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 3, 1961, 119-122

TEXT: In the present paper the authors give an experimental report on the diffusion of iron into titanium dioxide. Titanium dioxide powder was pressed to tablets under 150 atm and sintered in a quartz tube (air atmosphere) for 50 hr at 1100°C. Sample temperature was measured by means of a platino-platinic thermojunction, the furnace temperature was controlled by a ЭРМ-47 (ERM-47)-type three-way thermostat. After polishing the surface flat, the samples were homogenized for 25 hr. Density was between 3.27 and 3.43 g/cm^3. The phase composition of the samples was determined radiographically. In a vacuum of 10^{-5} mm Hg, the samples were coated with an Fe^{59} tracer which was evaporated from a tungsten heater. During 1-2 minutes of annealing between 950°C and 1050°C in an air atmosphere in quartz tubes placed in a furnace the radioactive layer (some tenths of a micron thick) became com-

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The diffusion of...

pletely oxidized. The temperature of the furnace was kept constant to an accuracy of $\pm 0.5^{\circ}C$. The diffusion coefficients were determined by successively taking down layers and determining the activity of the sample every time after one layer was removed. The thickness of the layers was found with an accuracy of 2μ. Fik's relation (1) which connects concentration C of diffused substance at a depth x, initial concentration C_o, diffusion coefficient D, and time t permits calculating D from the experimental curve activity versus sample thickness. Taking C proportional to the activity N, the authors calculated D from the graphs log N versus x^2 by means of the formula $D = 0.1086/t \cdot tg\alpha$, where α denotes the angle of inclination of the straight lines in the graphs $\log N = f(x^2)$. The results obtained for the 11 samples investigated are given in Table 2. From a log D versus 1/T curve (A), the relation $D = 2.04 \cdot 10^{-2} \exp(-33.4/RT)$ for Fe diffusion into TiO_2 was obtained. The obtained data point to diffusion of iron into TiO_2 and along its grain boundary. The value of the activation energy ($Q = 33.4$ kcal/g. mole) as determined by the authors of the present paper from (A) is slightly lower than that of other publications ($Q = 34$ and 34.7 kcal/g. mole) which is probably due to the conditions of sample prepara-

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89933

The diffusion of ... S/170/61/004/003/012/013
B108/B209

tion. Microscopical investigation pointed to a loose structure of the samples employed here. There are 3 figures, 2 tables, and 6 references: 3 Soviet-bloc.

ASSOCIATION: Institut fizicheskoy khimii, g. Moskva (Institute of Physical Chemistry, Moscow)

SUBMITTED: June 27, 1960

Card 3/5

BABAD-ZAKHRYAPIN, A.A.; GORBUNOV, N.S.; IZBEKOV, V.I.

Calculation of X-ray patterns of flat specimens. Zav.lab. 27 no.9:1116 '61. (MIRA 14:9)

1. Institut fizicheskoy khimii AN SSSR.
(Radiography)

39643
S/137/62/000/007/021/072
A052/A101

1.1600

AUTHORS: Gorbunov, N. S., Shatalova, I. G., Likhtman, V. I., Mikhaylov, N. V., ~~Rebinder, P. A.~~

TITLE: On the vibration method of compression in powder metallurgy

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 47, abstract 70325 ("Poroshk. metallurgiya", no. 6, 1961, 10 - 16; English summary)

TEXT: The effect of working pressure on the change of density at a static and vibration (vibrator with a vibration frequency of 14,000 per minute) pressing of powders of Ti, Mo, SiC, B_4C, TiC and WC hard-alloy mixtures was studied. Vibration pressing is especially advantageous for unmoldable powders of refractory compounds. When a vibrator is used the working pressure reduces approximately by two orders of magnitude, which is connected with a better packing of powders. The effect of the time factor and of the height of briquets on the change of density was also studied.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

GORBUNOV, N.S.; SHATALOVA, I.G.; LIKHTMAN, V.I.; REBINDER, P.A.

Investigating regularities in the vibration pressing of powder metals and their compounds. Issl.po zharopr.splav. 8:103-110 '62. (MIRA 16:6)

(Powder metallurgy)

IMBAD-ZAKHRYAPIN, A.A.; GORBUNOV, N.S.

Structure of 12-silicontungstate and 12-phosphomolybdate anions in saturated aqueous solutions. Izv. AN SSSR.Otd.khim.nauk no.10: 1870-1871 O '62. (MIRA 15:10)

1. Institut fizicheskoy khimii AN SSSR.
(Silicontungstic acid) (Phosphomolybdic acid)

S/126/62/014/002/005/018
E071/E435

AUTHORS: Izvekov, V.I., Gorbunov, N.S., Babad-Zakhryapin, A.A.

TITLE: Diffusion of iron in hematite

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.2, 1962, 195-198

TEXT: The diffusion of Fe^{59} in hematite was investigated using cylindrical specimens (10 mm diameter, 5 mm in height) made by pressing (4000 to 5000 kg/cm^2) and sintering (1100 to 1200°C for 50 hours) a fine hematite powder. A layer of radioactive iron was deposited either by evaporation and condensation of the radioactive vapour in a vacuo or by electrodeposition. Annealing and diffusion heating of the specimens was done in hermetically sealed ampules so that experiments could be carried out in any desired atmosphere or in vacuo (actually the experiments were done in air). The accuracy of the temperature control varied from ± 0.5 to ± 5°C. The coefficients of diffusion were determined by the removal of successive layers. The temperature dependence of the diffusion coefficient of iron in hematite for the temperature range 950 to 1050°C was found as $d = 1.3 \times 10^6 \exp$

Diffusion of iron in hematite

S/126/62/014/002/005/018
E071/E435

(-100200/RT). The results obtained are in reasonably good agreement with literature data. There are 4 figures and 2 tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR
(Institute of Physical Chemistry AS USSR)

SUBMITTED: August 1, 1961 (initially)
October 31, 1962 (after revision)

Card 2/2

S/053/62/077/004/006/006
B102/B104

AUTHORS: Babad-Zakhryapin, A. A., Gorbunov, N. S., Izvekov, V. I.

TITLE: Experimental methods for slow electron diffraction studies

PERIODICAL: Uspekhi fizicheskikh nauk, v. 77, no. 4, 1962, 727 - 748

TEXT: The principle underlying slow electron diffraction studies and their present state of development are surveyed as was done for Russian works in 1949. Modern experimental technique (up to 1961) and the problems it raises are discussed, disregarding elementary matters such as, e. g., the working of a diffraction chamber. The survey has the following sections: Introduction. I. Experimental methods for observing slow electron diffraction. a) use of diffraction chamber; b) gas injection systems; c) the vacuum system; d) the crystal holder; e) methods for recording the diffraction picture; f) diffraction chamber with photographic recording of the diffraction picture. II. Peculiarities of the slow electron diffraction method. a) Peculiarities of the diffraction effects; b) purification of the surfaces to be investigated; c) structure of the residual gas layers on metallic surfaces; d) dependence of the type of

Card 1/2

Experimental methods for slow electron...

diffraction picture on conditions and geometry of exposure. III. Some applications of the method. a) Determining the internal potential of a crystal lattice, b) gas adsorption. Concluding remarks. There are 19 figures, 2 tables, and 42 references.

Card 2/2

BABAD-ZAKHRYAPIN, A.A.; GORBUNOV, N.S.; IZVEKOV, V.I.

Estimation of the error in the values of interatomic distances obtained by the radial distribution method. Izv.AN SSSR.Otd.khim.nauk no.9: 1673-1674 S '62. (MIRA 15:10)

1. Institut fizicheskoy khimii AN SSSR.
(X rays—Diffraction) (Chemical structure)

BABAD-ZAKHRYAPIN, A. A.; GORBUNOV, N. S.

Structure of the calcination products of some 12-heteropoly-acids. Izv. AN SSSR. Otd. khim. nauk no.1:14-16 '63. (MIRA 16:1)

1. Institut fizicheskoy khimii AN SSSR.

(Phosphotungstic acids)

IZVEKOV, V.I.; GORBUNOV, N.S.

Determination of the adsorption coefficient during a study of diffusion in metallic oxides. Izv.AN SSSR.Otd.khim.nauk no.3:450-454 Mr '63. (MIRA 16:4)

1. Institut fizicheskoy khimii AN SSSR.
(Metallic oxides) (Diffusion) (Adsorption)

GORBUNOV, N.S.; IZVEKOV, V.I.

Use of radioisotopes in studying diffusion in metal oxides. Usp. fiz. nauk 77 no.2:273-306 O '60. (MIRA 16:8)
(Radioisotopes) (Diffusion)

ACCESSION NR: AT4013968 S/2659/63/010/000/0295/0300

AUTHOR: Gorbunov, N. S.; Shatalova, I. G.; Likhtman, V. I.

TITLE: The influence of several factors on the density of packing of powder particles under the influence of vibration

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochny*m splavam, no. 10, 1963, 295-300

TOPIC TAGS: powder metallurgy, powder metal density, packing density, vibrations, magnetic material, chemical stability

ABSTRACT: One of the most important technological operations in powder metallurgy is the pressing of powder into parts. It is very difficult, however, to obtain high density pressed parts from hard and brittle powder materials. The present investigation on the density of packing of powder particles under vibration was based on the theories of Academician P. A. Rebinder. The investigation showed that parts with a density up to 90% may be obtained when powders are vibrated. The following conditions must be observed: Two or three fractions of powder of optimal size should be used. The powder particles should be able to be compacted and should be of relatively simple shape. There should be no significant roughness on the particle boundaries. The duration of vibration should be limited by the time required for final placing of the particles, especially for

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ACCESSION NR: AT4013968

particles of brittle, non-plastic materials. Table 1 of the Enclosure shows the change in powder density with the course of time of vibration. Orig. art. has: 1 figure and 4 tables.

ASSOCIATION: Institut metallurgii AN SSSR (Institute of Metallurgy AN SSSR)

SUBMITTED: 00 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: MM NO REF SOV: 002 OTHER: 000

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ACCESSION NR: AT4013968 TABLE 1 ENCLOSURE: 01

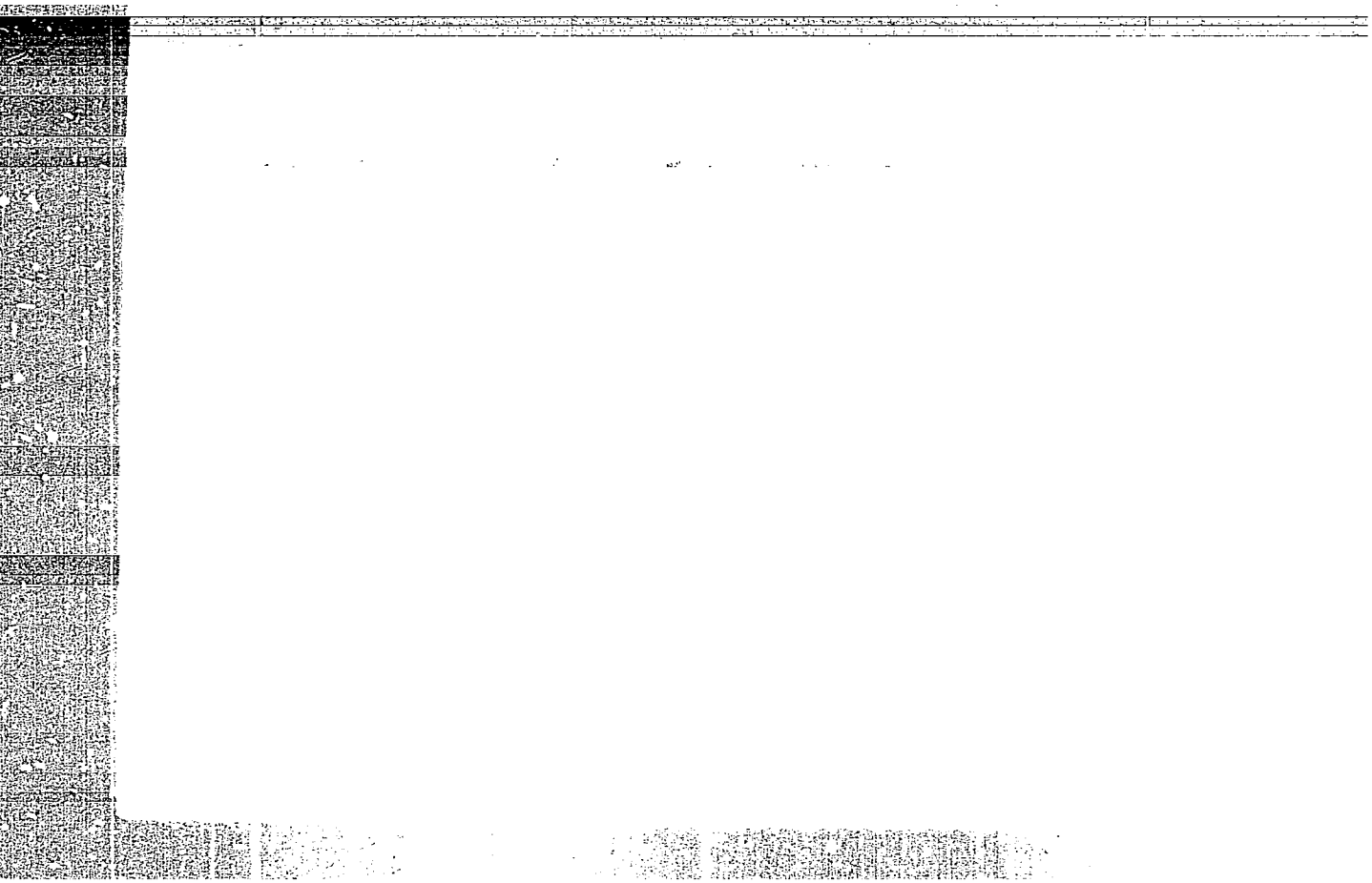
The change in packing density of powders with the course of time of vibration

Material of the powder	Parameters of vibration			Density (at equal length of vibration in sec.), g/cm^3								
	frequency, vibr./min	amplitude, microns	specific pressure kg/cm^2	3	6	9	12	15	18	21	24	30
Chromium	14 000	20	18.2	4.14	4.29	--	4.36	--	4.40	--	4.46	4.46
	10 000	65	18.2	4.43	4.56	--	4.67	--	4.72	--	4.72	--
Molybdenum boride	14 000	14	18.2	2.44	2.62	2.67	--	2.71	--	2.76	--	2.78
	10 000	75	17.6	3.12	3.30	--	3.38	--	3.52	--	3.52	--
Carborundum	14 000	15	21.2	2.02	2.06	2.09	2.12	2.12	--	--	--	--
	10 000	90	24.3	2.22	2.27	--	2.27	--	--	--	--	--

Card 3/3

BABAD-ZAHREAPIN, A.A. [Babad-Zakhryapin, A.A.];GORBUNOV, N.S.;
IZVEKOV, V.I.

Experimental methods of the study of slow electron diffraction.
Analele mat 17 no. 3:117-141 Jl-S '63.



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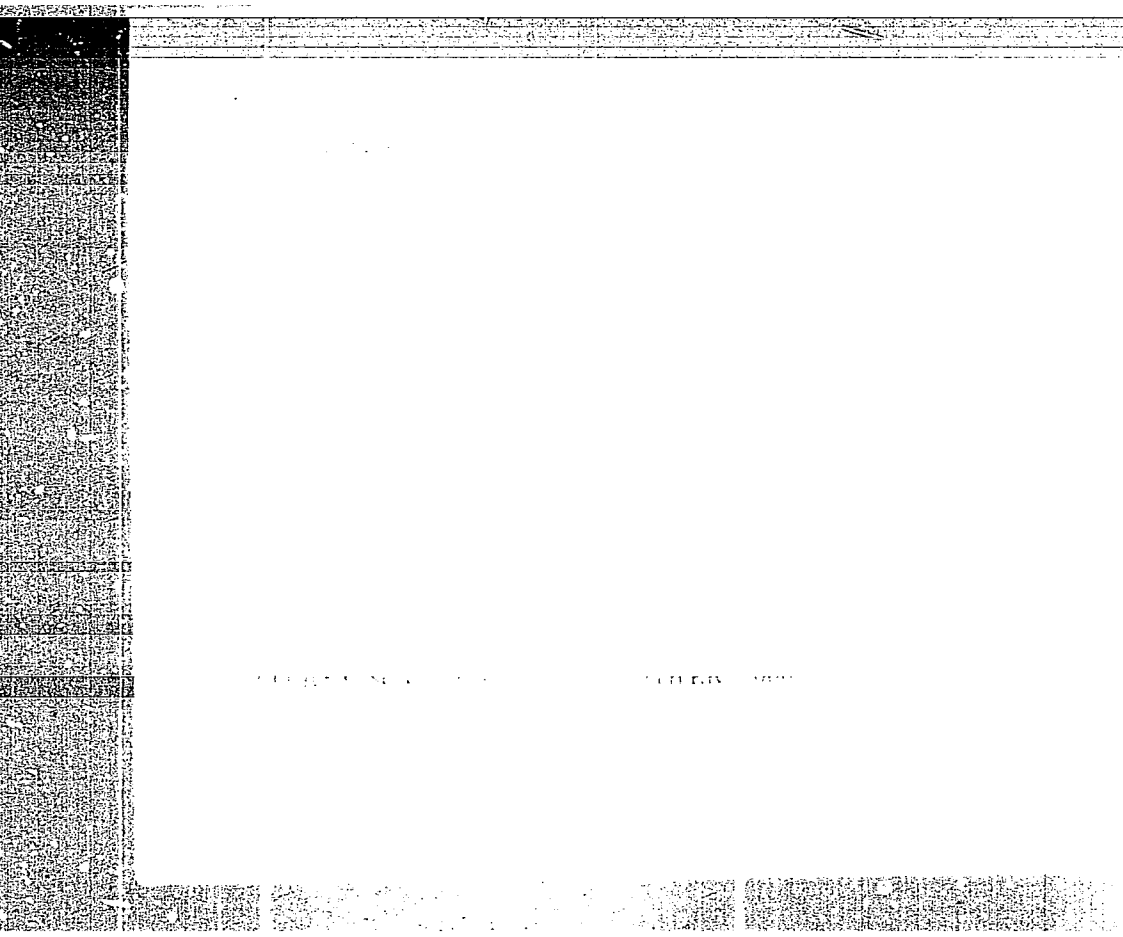

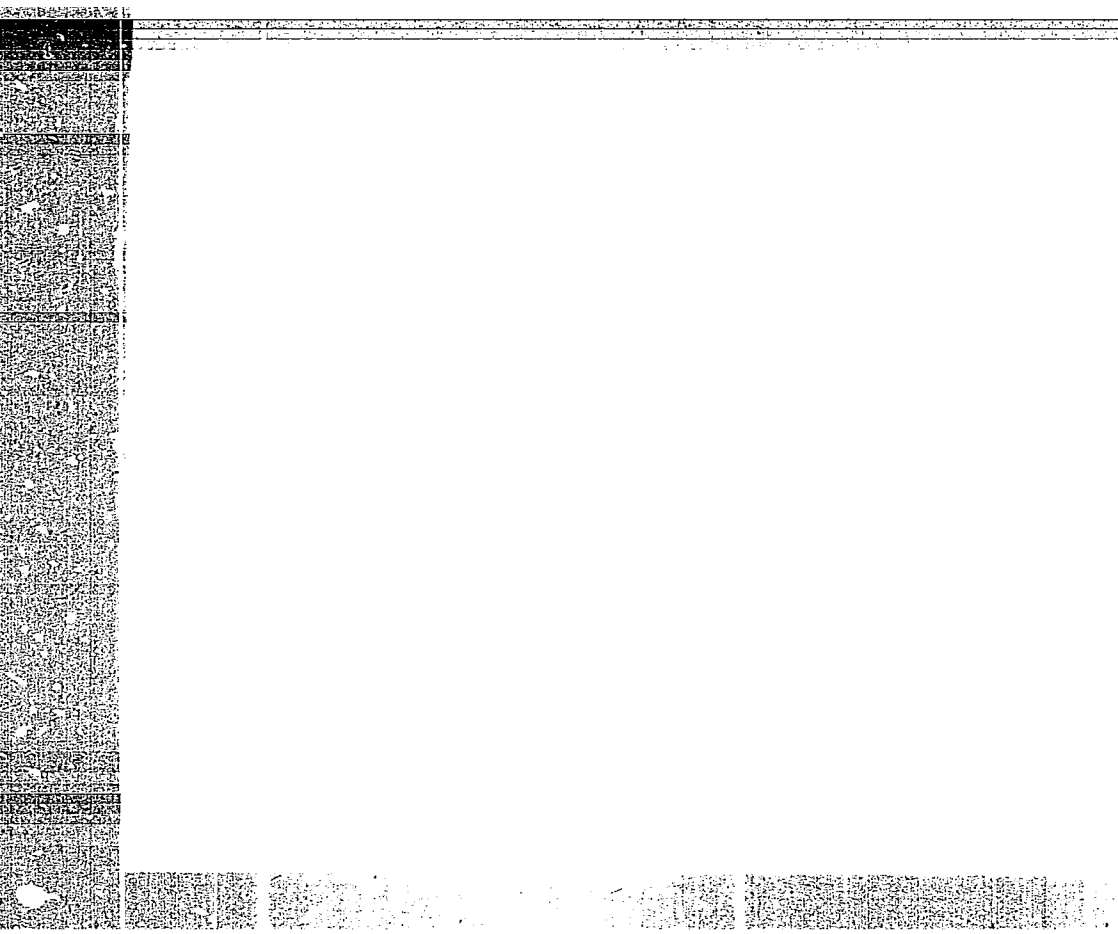

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SHATALOVA, Irina Georgiyevna, kand. tekhn. nauk; GORBUNOV, Nikolay Stepanovich, prof., doktor khim. nauk; LIKHTMAN, Vladimir Iosifovich, prof. doktor fiz.-matem. nauk; REBINDER, P.A., akademik, otv. red.; CHERNYAK, A.L., red.

[Physicochemical principles of the vibrational compression of powdered materials] Fiziko-khimicheskie osnovy vibratsionnogo uplotneniia poroshkovykh materialov. Moskva, Nauka, 1965. 162 p. (MIRA 18:3)

1. Rukovoditel' Instituta fizicheskoy khimii AN SSSR (for Rebinder).

BORISENKO, A.I., doktor tekhn. nauk, otv. red.; TOROPOV, N.A., red.; IVANOV, V.Ye., red.; APPEN, A.A., doktor khim. nauk, red.; GORBUNOV, N.S., doktor khim. nauk, red.; KLEVTSUR, S.A., doktor tekhn. nauk, red.; NECHIPORENKO, Ye.P., doktor tekhn. nauk, red.

[Heat-resistant coatings; transactions] Zharostoikie pokrytiia; trudy. Leningrad, Nauka, 1965. 233 p. (MIRA 18:9)

1. Seminar po zharostoykim pokrytiyam, Leningrad, 1964.
2. Chlen-korrespondent AN SSSR (for Toropov, Ivanov).

GORBUNOV, N.S.; ZHOLUDEV, M.D.; PROSKURKIN, Ye.V.

Zinc diffusion coatings. Zashch. met. 1 no.3:314-318 My-Je '65.
(MIRA 18:8)

1. Institut fizicheskoy khimii AN SSSR i Ukrainskiy nauchno-issledovatel'skiy trubnyy institut.

L 1[illegible] EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/GS

ACC NR: AT5027957 SOURCE CODE: UR/0000/65/000/000/0216/0218

AUTHOR: Gorbunov, N. S. (Doctor of chemical sciences); Latukhova, A. G.; Klevtsur, S. A.; Pavlova, V. A.

ORG: none

TITLE: Diffusion of silicon coatings on copper

SOURCE: Seminar po zharostoykim pokrytiyam. Leningrad, 1964. Zharostoykiye pokrytiya (Heat-resistant coatings); trudy seminara. Leningrad, Izd-vo Nauka, 1965, 216-218

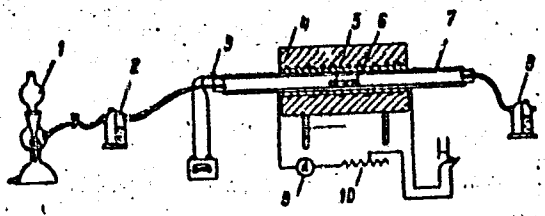
TOPIC TAGS: electrolyte, copper, silicon, internal stress, crystal lattice structure

ABSTRACT: Electrolytically applied coatings on copper suffered large internal stresses during abrupt variations of temperature. This resulted in the cracking and pealing off of the coatings. Experiments on the diffusion coating of copper disk samples were made in the flow of dried hydrogen in an apparatus (see fig.) consisting of a Kipp generator 1 for the production of H by the reaction of

1/2

L 15752-66

ACC NR: AT5027957



metallic zinc with H_2SO_4; Tishchenko flasks 2 and 8, containing H_2SO_4; a Pt-PtRh thermocouple 3 with a galvanometer; a tubular electric resistance furnace 4; a container 5 with samples 6; a metallic tube 7; an amperometer 9; and a rheostat 10. Ground ferrosilicide with an addition of 1-5% ammonium chloride was used for coating the copper samples. The silicon coatings obtained were dense, had a silver mat surface, and their thickness depended on the time and temperature of coating ($\sim$200 and 400 μ after coating for 4 hr at 700 C and 750 C, respectively). An X-ray diffraction study showed that the diffusion layer consisted entirely of the Cu_5Si phase, having a cubic structure with a lattice parameter of a = 6.30 A. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11,20/ SUBM DATE: 20Jul65/ NR REF SOV: 000/ OTHER: 000

2/2 Sm

L 31044-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/GS

ACC NR: AT5027954 SOURCE CODE: UR/0000/65/000/000/0180/0186

AUTHOR: Gorbunov, N. S. (Doctor of chemical sciences); Lavrenko, N. A.; Pilipenko, N. I.

ORG: none

TITLE: Chromium diffusion coatings on tubes

SOURCE: Seminar po zharostoykim pokrytiyam. Leningrad, 1964. Zharostoykiye pokrytiya (Heat-resistant coatings); trudy seminara. Leningrad, Izd-vo Nauka, 1965, 180-186

TOPIC TAGS: steel, carbon steel, steel tube, tube coating, diffusion coating, chromium coating, steel tube diffusion coating, coating property

ABSTRACT: Experiments have been made to improve technology developed at the All-Union Scientific Research Institute of Pipes (VNITI) for vacuum diffusion coating of carbon-steel tubes with chromium. St. 10 steel tubes 18--25 mm in diameter and 500--3000 mm long with a wall thickness of 1.5--2 mm were packed in chromium powder of 1--2 mm particle size and held at 1100, 1120, and 1150C for 2, 4, 6, or 8 hr in a vacuum of $5 \cdot 10^{-1}$—$5 \cdot 10^{-6}$ mm Hg. The thickness of the chromized layer increased linearly with increasing exposure time and was 0.085, 0.160, 0.240, and 0.310 mm after exposures of 2, 4, 6, and 8 hr, respectively. With an identical exposure time, the thickness of the coating on 0.10% steel was four times that on 0.20% steel. The chromium concentration decreased from 84.5 to 33.6% as the depth of the chromized

Card 1/2 UDC: UR/0000/65/000/000/0180/0186

L 31044-66

ACC NR: AT5027954 O

layer increased from 5 to 61 μm. The coated tubes 25 x 1.8 mm were cold drawn to 20.5 x 2 mm. No cracking or peeling of the chromized layer was observed. The thickness of the chromized layer increased, compared to the initial thickness, in proportion to the increase in the thickness of the tube wall. The chromized tubes were satisfactorily joined by expansion, thread, and flange joints, and also by gas and electric arc welding. Orig. art. has: 8 figures and 2 tables. [MS]

SUB CODE: 11, 13/ SUBM DATE: 20Jul65/ ORIG REF: 006/ OTH REF: 002/ ATD PRESS: 4178

Card 2/2 LC

ACC NR: AM5015045 BOOK EXPLOITATION UR/

Shatalova, Irina Georgiyevna (Candidate of Technical Sciences); Gorbunov, Nikolay Stepanovich (Professor, Doctor of Chemical Sciences); Likhtman, Vladimir Iosifovich (Professor; Doctor of Physical-Mathematical Sciences)

Physical-chemical principles of vibration compacting of powdered materials (Fiziko-khimicheskiye osnovy vibratsionnogo uplotneniya poroshkovykh materialov) Moscow, Izd-vo "Nauka", 1965. 162 p. illus., biblio. Errata printed inside back cover. 2500 copies printed. (At head of title: Akademiya nauk SSSR. Institut fizicheskoy khimii) Editor: A. L. Chernyak; Technical editors: O. G. Ul'yanova, O. M. Gus'kova; Managing editor: Academician P. A. Rebinder

TOPIC TAGS: ceramic processing, ceramic technology, cermet, powdered material, powder metal compaction, powder metal molding, powdered glass, vibration compacting, vibration packing

PURPOSE AND COVERAGE: This monograph was intended for a wide circle of engineers and personnel in the plant laboratories in all branches of metallurgy, the construction and silicate industries, and production of fine ceramics and refractories, and also instructors, aspirants and students in higher educational institutions connected with the indicated fields of technology, as well as scientific personnel in the corresponding research institutes. The authors describe the new, extremely valuable method,

UDC: 66.08/.09:66.099.5:621.929.7

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ACC NR: AM5015045

developed by them, for pressing powder materials by applying vibration packing. The technological and economic advantages of this method are tremendous, especially for powders of very hard, strong materials, such as carbides, borides, metals, ceramics, ferrites, etc.. The authors present a detailed and systematic description of investigations on the process of packing various powdered materials, depending on numerous physical-chemical factors: frequency and amplitude of vibration, granulometric composition of the powder, additions of surface-active lubricants, etc. This new demarcation in knowledge has been developed principally in the Institute of Physical Chemistry of the Academy of Sciences of the USSR, in the Section of Dispersed Systems (Otdel dispersnykh sistem), under the over-all direction of Academician P. A. Rebinder.

TABLE OF CONTENTS (ABRIDGED):

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ACC.NR: AM5015045

Literature - - 156

SUB CODE: 11,13 /SUBM DATE: 23Jan65 /ORIG REF: 115 /OTH REF: 061

Card 3/3

ACC NR: AR6028414 SOURCE CODE: UR/0196/66/000/005/B002/B002

AUTHOR: Gorbunov, N. V.; Kugayevskiy, A. F.; Petrov, V. P.

TITLE: Chambers for testing ferromagnetic materials at low temperatures

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 5B4

REF SOURCE: Tr. in-tov Gos. kom-ta standartov, mer i izmerit. priborov SSSR, vyp. 79(139), 1965, 93-97

TOPIC TAGS: ferromagnetic material, dielectric material, ferrite, ~~low-temperature~~ cryogenic research

ABSTRACT: Construction of two thermo-chambers are described: With a carbon-dioxide cooling (-60C) and with liquid nitrogen (-180C). The uniformity of cooling and low inertia are the principal advantages of these chambers. The time of reaching the lowest temperature in the first chamber amounts to a few minutes; in the second, 20--25 min. The results are presented of investigations of the effect of temperatures (293--93K) on the magnetic permeability, dielectric constant, magnetic-loss angle, and dielectric-loss angle of some ferrites and dielectrics at high and superhigh frequencies; these tests were conducted in the above chambers. Six figures. Two tables. Bibliography of 3 titles. [Novosibirsk State Institute of Measures and Measuring Instruments] I. Shcherbinin [Translation of abstract]

SUB CODE: 13, 09 / 11

UDC: 621.318.13

Card 1/1

L 08371-67 EWT(1) IJP(c) WW/GG

ACC NR: AR6028146 SOURCE CODE: UR/0058/66/000/005/E113/E113

70

AUTHOR: Gorbunov, N. V.; Kugayevskiy, A. F.; Petrov, V. P.

TITLE: Chambers for the investigation of ferromagnetic materials at reduced temperatures

SOURCE: Ref. zh. Fizika, Abs. 5E862

REF. SOURCE: Tr. in-tov Gos. kom-ta standartov. mer i izmerit. priborov SSSR, vyp. 79(139), 1965, 93-97

TOPIC TAGS: ferromagnetic material, dielectric material, magnetic property, dielectric constant, low temperature research, ferrite, test chamber

ABSTRACT: Constructions are described of two thermal test chambers for measurement of the properties of ferromagnets at low temperatures: one cooled with carbon dioxide (-60C) and one cooled with liquid nitrogen (-180C). Their main advantages are homogeneity of cooling and small time delay. The time necessary to lower the temperature to the minimum is several minutes in the first chamber and 20 -- 25 minutes in the second. Results are presented of the measurements of the magnetic and dielectric constants and of the angles of the magnetic and dielectric losses of certain ferrites and dielectrics, as functions of the temperature at high and microwave frequencies in the temperature range 293 -- 93K, carried out with the proposed test chambers. I. Shcherbinin. [Translation of abstract]

Card 1/1 nst SUB CODE: 20

GORBUNOV, N.Ya.

Device for fixing the cutting tool in woodworking machines. Rats. i izobr. predl. v stroi. no.116:15-16 '55. (MLRA 9:7)
(Woodworking machinery--Attachments)

GORBUNOV, MM.

MURZIN, G.A.; GORBUNOV, M.M.; UDACHIN, I.V.

Efficient method of lowering long timber into mines. Biul.TSIIN tavet.met. no.18:7-9 '57. (MIRA 11:5)
(Mine timbering) (Material handling)

GORBUNOV, N. N.

GORBUNOV, N. N. -- "INVESTIGATION OF THE TECHNOLOGICAL FEATURES OF THE PROCESS OF BENDING WITH PERMANENT DEFORMATION." SUB 26 MAR 52, SCI RES INST OF TECHNOLOGY AND ORGANIZATION OF PRODUCTION (NIIAT) (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

GORBUNOV, M.N., kandidat tekhnicheskikh nauk, dotsent; POPOV, O.V., kandidat tekhnicheskikh nauk; KATKOV, V.F., kandidat tekhnicheskikh nauk.

Preheated deep drawing of sheet metals. Trudy MATI no.29:5-27 '56.
(Deep drawing (Metalwork)) (MLRA 9:12)

KLYUCHAREV, N.A., inzhener; GORBUNOV, M.N., kandidat tekhnicheskikh nauk.

Deep drawing of low-carbon sheet steel and brass employing flange preheating. Trudy MATI no.29:28-37 '56. (MLRA 9:12)
(Deep drawing (Metalwork))

GORBUNOV, M.N.

Determining technological parameters for the process of bending with elongation. Trudy MATI no.29:112-142 '56. (MLRA 9:12)
(Drawing (Metalwork))

GORBUNOV, M.N.

POPOV, O.V., kandidat tekhnicheskikh nauk; GORBUNOV, M.N., kandidat tekhnicheskikh nauk; KATKOV, V.F., kandidat tekhnicheskikh nauk.

Deep drawing of hollow objects with preheating. [Izd.] LONITOMASH vol.40:97-113 '56. (MLRA 10:4)
(Deep drawing (Metalwork))

Gorbunov, M.N.

AUTHOR: Górbunov, M.N., Candidate of Technical Sciences 117-2-9/29

TITLE: Turning Out and Widening of Pipes (Vyvorot i razdacha trub)

PERIODICAL: Mashinostroitel', 1958, # 2, pp 20-23 (USSR)

ABSTRACT: Experiments were performed with turning aluminium and steel pipe ends out and in, as well as expanding pipe ends. The metal was not torn, nor was the wall thickness unduly increased. The investigated process could replace the multi-operational drawing in production of double-walled parts.

The method consists of the use of special electrically-heated dies. The drawing process is described in detail and operational recommendations are given, including equations for calculating the tensile strength for any circular section and, by the tensile strength, the necessary heating temperature.

There are 4 diagrams and 2 photographs.

AVAILABLE: Library of Congress

Card 1/1

GORBUNOV, M.N.

"Sheet stamping" by V.T.Meshcherin. Reviewed by M.N.Gorbunov.
Kuz.-shtam.proizv. 1 no.5:46 My '59. (MIRA 12:10)
(Sheet-metal work) (Meshcherin, V.T.)

25(2,5) PHASE I BOOK EXPLOITATION SOV/2294

Moscow. Dom nauchno-tekhnicheskoy propagandy imeni F.E. Dzerzhinskogo

Novoye v tekhnologii vysokoproizvoditel'nogo listovogo shtampovki: sbornik trudov konferentsii (New Features in the Methods of High-productivity Sheet Metal Stamping: Collection of Conference Transactions) Moscow, Mashgiz, 1959. 228 p. 8,000 copies printed.

Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh nauchnykh znaniy RSFSR.

Resp. Ed.: V.T. Meshcherin, Doctor of Technical Sciences, Professor; Eds.: V.D. Golovlev, Candidate of Technical Sciences, Docent, and Yu.N. Lanskov, Candidate of Technical Science, Docent; Ed. of Publishing House: O.N. Sokolova; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Heavy Machine Building (Mashgiz): S.Ya. Golovin, Engineer.

PURPOSE: This collection of papers is intended for engineers and technicians in sheet metal stamping. It may also be useful to students of vuzes and tekhnikums.

COVERAGE: This collection deals with the design and features of some current problems in sheet metal stamping. Also discussed are processing methods still in the experimental stage. Several articles deal with the mechanization and automation of stamping processes and describe recently developed methods, such as explosion forming, the use of automatic rotary transfer lines, and press blocking with the use of radioactive isotopes. No personalities are mentioned. References follow several of the articles.

PHASE I BOOK EXPLOITATION SOV/5434

Gorbunov, Mikhail Nikolayevich, Candidate of Technical Sciences

Shtampovka detaley iz trubchatykh zagotovok (Forming Parts From Tubular Blanks) Moscow, Mashgiz, 1960. Errata slip inserted. 3,000 copies printed. 189 pp.

Reviewer: V.T. Meshcherin, Doctor of Technical Sciences, Professor; Ed. of Publishing House: A.I. Sirotin; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on Hot-Processed Metals: S.Ya. Golovin, Engineer.

PURPOSE: This book is intended for technical and scientific personnel in the field of cold metal forming; it may also be used by students in mechanical-engineering institutes.

COVERAGE: Basic operations (reduction, expansion, metal gathering, bending, etc.) in forming parts from tubular blanks are reviewed. Elements of the theory of these operations are stated for the purpose of establishing analytical equations for calculating the pressure and deformation parameters. Data for equipment design are presented, and principles of operation of this equipment are discussed. No personalities are mentioned. There are 35 references: 30 Soviet; 3 English, and 2 German.

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Forming Parts From Tubular Blanks SOV/5434

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Forming Parts From Tubular Blanks SOV/5434

AVAILABLE: Library of Congress (TS280.G63)

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VK/wrc/gmp
7-29-61

GROSHIKOV, Nikolay Iosifovich, inzh.; ZASLAVSKIY, Yuriy L'vovich, inzh.; GORBENKO, Nikolay Iosifovich, inzh.; GORBUNOV, M.N., kand. tekhn. nauk, dotsent, retsenzent; SHEKHTER, V.Ya., kand. tekhn. nauk, red.; MOROZOVA, P.B., red. izd-va; ROZHIN, V.P., tekhn. red.

[Preparing and stamping operations in the manufacture of airplanes] Zagotovitel'no-shtampovochnye raboty v samoletostroenii. Moskva, Gos. nauchno-tekhn. izd-vo Oborongiz, 1961. 555 p. (MIRA 14:10)
(Sheet-metal work) (Airplane industry)

1.1210

45241

S/771/61/000/000/002/006

AUTHOR: Gorbunov, M.N., Candidate of Technical Sciences.

TITLE: The press drawing and forming of sheet metal.

SOURCE: Sostoyaniye kuznechno-shtampovochnoko proizvodstva. Ed. by V.T. Meshcherin. Moscow, VINITI, 1961, 98-131.

TEXT: The paper surveys the state of the art defined in the title. The technology had its inception in spinning on the lathe and in shell-and-cartridge manufacture, but has now entered mass-production and small-batch production of precision parts in which efficient utilization of the material is essential. Two major trends are distinguishable: (1) Improvement of existing technological processes (greater deformation (D) per operation, greater rate of D, improved equipment, process mechanization and automatization, etc.); (2) search for new technological processes and a broader range of products. Leading Soviet scientists and engineers in this field are: A.A. Il'yushin, V.V. Sokolovskiy, G.D. Smirnov-Alyayev, S.I. Gubkin, A.D. Tomlenov, Ye.P. Unksov. Axially-symmetrical deformation. The theoretical problem is the establishment of the stress and strain distribution in the various zones of the billet at the moment of the operation. Factors under consideration include the shape of the billet, hardening, friction, change in thickness, inflection points, etc.. Most existing studies concentrate on one specific operation (a tabulated classification of elementary operations is shown). Bibliography on the principal

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The press drawing and forming of sheet metal. S/771/61/000/000/002/006

geometric configurations (planar, conical, cylindrical, etc.) is provided. The beading of apertures is briefly analyzed. The theory of the determination of the stress distribution by means of the simultaneous solution of the equation of equilibrium and the equation of plasticity is summarized. Ye.A.Popov's generalization of the specialized theoretical approaches of USSR and foreign scientists is evolved in some mathematical detail. The theory of forming is briefly outlined, with reference to recent (1955) work by V.I.Goryaynov. The theory and anticipated future development of sheet-metal drawing (particularly for aircraft-skin shaping) are outlined. Current theory is primarily concerned with radial stresses; yet, failure of billets usually occurs in the sense of peripheral stresses, both by tensile fracture and by compressive fold formation (buckling). Deformation without axial symmetry. No general theory of the deformation has yet been developed for this case. Axially-symmetrical solutions are usually applied as approximations. Only a few theoretical studies on the simplest problems, primarily on rectangular and square pieces, exist. The typical approach to the stress distribution in a flange attached to a rectangularly shaped piece is described, and Soviet bibliography is cited. The promise and the limitations (due to complexity) of the method of characteristics are mentioned. A.A.Bugrova's work on the theory of the beading of nonaxially-symmetrical parts is summarized. Intensification of forming processes. Since the intensity of any process is limited by local failure or buckling, an "unloading" in the critical sections permits more extensive deformation elsewhere; methods therefor fall into

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Crank-driven equipment.

S/771/61/000/000/005/006

driveshaft. The transmission from the EM to the flywheel is by V-belt and via an idler shaft to the crankshaft with double-acting drive. The throw (inter-die distance) is controlled by means of a separate EM. A pneumatic pusher is provided on the press table. The height of the press is 7,855 mm, its stroke 100 mm, the number of strokes is 20 per minute. There are 51 figures, 3 tables, and 72 references (18 Russian-language Soviet, 8 German, and 46 English-language publications and catalogs).

ASSOCIATION: None given.

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Card 3/3

TITLE: Hydraulic presses.

SOURCE: Sostoyaniye kuznechno-shtampovochnogo proizvodstva. Ed. by V.T.Meshcherin. Moscow, VINITI, 1961, 293-322.

TEXT: The paper provides a state-of-the-art report on metal-forming hydraulic presses (HP) which have afforded increased competition to drop-forging hammers. The present abstract is focused primarily on Soviet data. The advantages of HP over hammers are briefly described. Recent advances are shown to be in the development of specialized HP and increasing power. A cross-sectional view shows the 9,600-ton HP with rubber backing produced by the Kolomenskoye plant for heavy mill and HP equipment. USSR and USA have recently produced powerful HP for the forging of Dural and Mg-alloy parts for aircraft. In 1955-56 the USA produced 2 HP with a force of 31,500 t and two of 45,000 t; Uralmashzavod built a 30,000-t HP. The problems encountered in the construction of such large presses (casting of large steel parts, welding of thick metals, heat treatment of weldments, etc.) are summarized. Experience of TsNIITMash (Central Scientific Research Institute of Machine Technology) confirms that actual stresses in the

Card 1/4

GOLUBUNOV, M.N.; TAN YUN-SI [T'ang Yung-hsi]

Drawing of double-wall parts. Kuz.-shtam. proizv. 3 no.1:5-8 Ja '61. (MIRA 14:1)

(Deep drawing (Metalwork))

BERG, A.I., akademik; GORBUNOV, M.N., doktor tekhn. nauk, prof.; VLASOV, B.V., doktor ekonomicheskikh nauk, prof.

"Mechanization and automation in small-lot production" by V.V. Boitsov. Reviewed by A.I. Berg, M.N. Gorbunov, B.V. Vlasov. Vest. mashinostr. 44 no.10:86 O '64. (MIRA 17:11)

GROSHIKOV, Aleksandr Ivanovich; GORBUNOV, M.N., doktor tekhn. nauk, retsenzent; NOZDRIN, A.M., inzh., retsenzent; KOLOSOV, M.A., inzh., red.

[Fundamentals of the mechanization and automation of technological processes in the manufacture of airplanes] Osnovy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov v samoletostroenii. Moskva, Mashinostroenie, 1965. 347 p. (MIRA 18:6)

GORBUNOV, M.N.; PASHKEVICH, A.G.

Tube swaging with an axial backer. Kuz.-shtam. proizv. 7 no.8: 14-18 Ag '65. (MIRA 18:9)

GORBUNOV, M.N., doktor tekhn.nauk, prof.

Combining reducing and upsetting operations. Vest.mashinostr. 45 no.9:56-59 S '65. (MIRA 18:10)

KUZ'MIN, V.V.; ZONSHAYN, S.I.; doktor tekhn. nauk, prof.; GORBUNOV, M.N., doktor tekhn. nauk, prof.

Book reviews and bibliography. Mashinostroitel' no. 1:37-48 Ja '66. (MIRA 19:1)

1. Nachal'nik upravleniya mashinostroyeniya Gosudarstvennogo komiteta standartov, mer i izmeritel'nykh priborov SSSR (for Kuz'min).

GORBUNOV, M. S.

Mechanization and electrification of livestock farms; practical work Moskva, Gos. izd-vo sel.'khoz. lit-ry, 1953. 200 p. (54-44181)

S675.G6

GORBUNOV, M.S.; D'YAKOVA, A.M.; KOZLOV, P.D.; KOCHUROV, N.I.; MYADELETS, O.V., TSVETNIKOV, V.I.; LUR'E, A.B., redaktor; CHAPSKIY, O.U., redaktor; VODOLAGINA, S.D., tekhnicheskiy redaktor.

[Tractors] Traktory. Moskva, Ges.izd-vo sel'khoz.lit-ry, 1956.307 p. (Tractors) (MLRA 9:6)

GORBUNOV, N.; VOLKOV, G.; CHAYKA, Z.

Increasing labor productivity in open-cut coal mines. Biul.nauch. inform.:trud i zar.plata 3 no.9:3-7 '60. (MIRA 13:9)
(Strip mining--Labor productivity)

GORBUNOV, N.; CHAYKA, Z.

After the reorganization. Mast.ugl. 9 no.10:8 O'60.
(MIRA 13:10)

(Ukraine--Strip mining)

GORBUNOV, N. A.

"Rooting Apple Shoots," Est. v Shkole, No.2, 1952

GORBUNOV, N.A.

USSR/General Division. Problems of Teaching. A-7

Abs Jour : Ref Zhur-Biologiya, No 20, 1957, 85121

Author : N. A. Gorbunov
Inst :
Title : Extracurricular Reading in Biology

Orig Pub : Yestestvozn. v shkole, 1956, No 5, 93-96

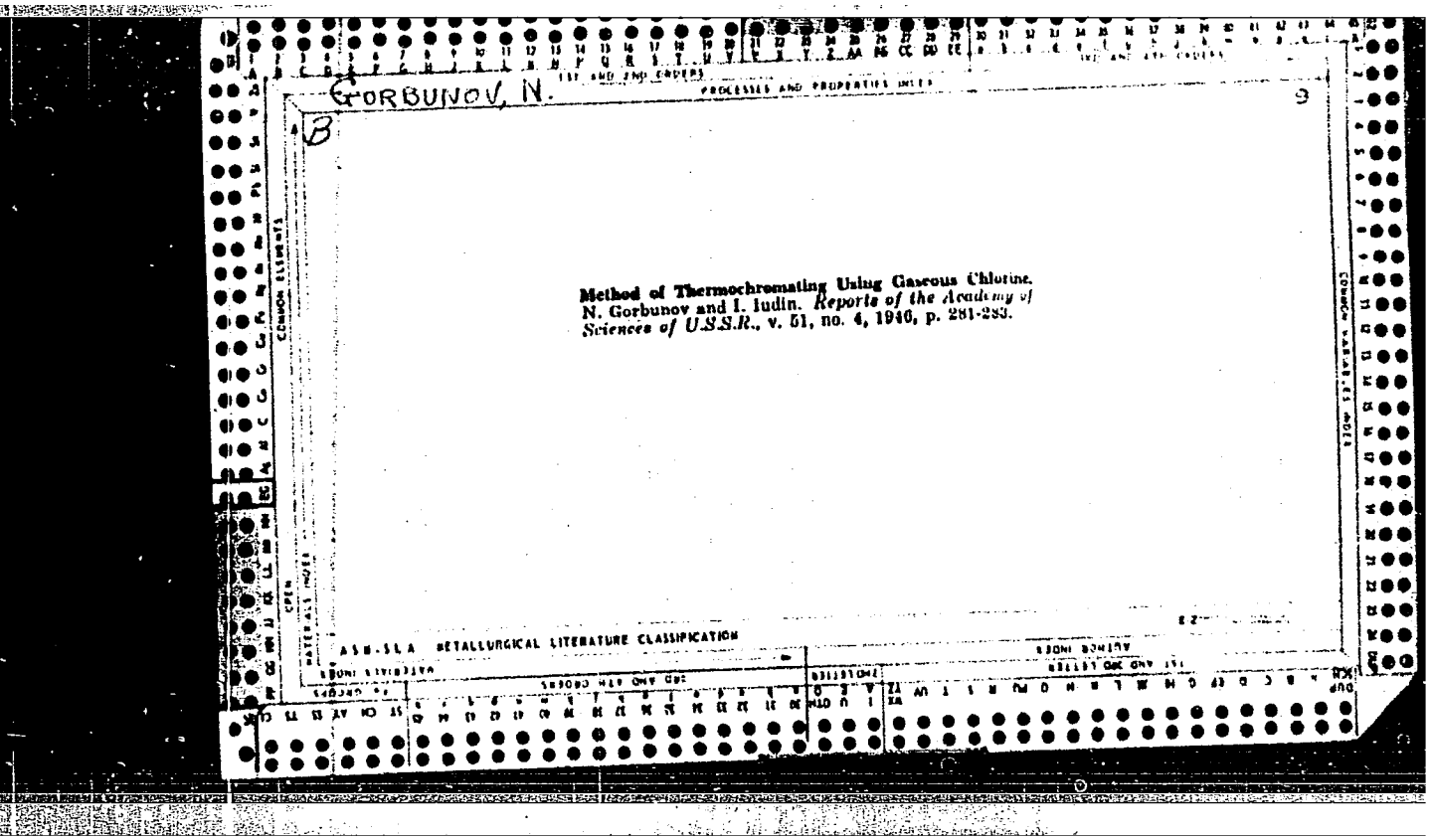
Abstract : No abstract.

Card 1/1

[illegible]VANOV, G.A., kand. tekhn. nauk; GORBUNOV, N.A., gornyy inzh.

Improving apatite-nepheline ore dressing at the "Apatit" Combine.
Gor. zhur. no.10:26-28 O '65. (MIRA 18:11)

1. Gornokhimicheskiy ordena Lenina kombinat "Apatit" im. S.M. Kirova.


GORBUNOV, N.

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Method of Thermochromating Using Gaseous Chlorine. N. Gorbunov and I. Iudin. *Reports of the Academy of Sciences of U.S.S.R.*, v. 51, no. 4, 1946, p. 281-283.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GORBUNOV, N.A.

Gorbunov, N.A., and Dzalayev, M.I., "Improvement of the Operation of Electro-mechanical Auto-regulators of the TsKTI System," Elektrichiskiye Stantsii, 1953, Pages 55-56, 2 figures.

GORBUNOV, N.A., inzhener; DSALAYEV, M.I., inzhener.

Improving the work of electromechanical automatic regulators model TsKTI
Elek.sta. 24 no.4:55-56 Ap '53. (MLRA 6:5)
(Electric relays)

GORBUNOV, N. A.

AID P - 694

Subject : USSR/Electricity

Card 1/1 Pub. 29 - 5/18

Authors : Gorbunov, N. A., Eng. and Dzalayev, M. I., Eng.

Title : Automatic control of water heaters for district heating

Periodical : Energetik, 8, 13-15, Ag 1954

Abstract : The author gives a brief description of the control equipment with an explanation of the functioning of the whole installation. One diagram.

Institution : None

Submitted : No date

GORBUNOV, N.A., inzhener; DZALAYEV, M.I., inzhener.

Level regulator in a turbine condenser. Elek.sta. 25 no.7:55-56 Jl '54. (MLRA 7:8)
(Condensers(Steam))

GORBUNOV, N. A.

AID P - 2417

Subject : USSR/Electricity

Card 1/1 Pub. 26 - 16/33

Authors : Gorbunov, N. A. and Dzalayev, M. I.

Title : Simplification and increase in the reliability of automatic equipment controlling heat processes

Periodical : Elek sta 5, 48-49, My 1955

Abstract : The article describes the operation of 220 v reversible switches, which after a re-winding of the coil worked for a 380 v a-c current. One photo, two diagrams.

Institution: None

Submitted : No date

ALEYNIKOV, N.A.; GORBUNOV, N.A.; ALEYNIKOVA, N.S.

Using oxyethylated carboxylic acids in the flotation of non-sulfide ores. Biul.tekh.-ekon.inform. no.2:5-7 '62.
(MIRA 15:3)
(Flotation)

GORBUNOV, N. F., Cand Tech Sci -- (diss) "Study of methods of the opening and ~~mining~~ excavation of the formation of steeply ~~dipping~~ dropping coal seams by the open-~~mine~~ cut method in the Kuznetsk Basin." Dnepropetrovsk, 1958. 18 pp with ills (Min of Higher Education USSR, Dnepropetrovsk Order of Labor Red Banner Mining Inst im Artem), 150 copies (KL, 35-58, 107)

GORBUNOV, N.F., inzh.

Baring and development operations in horizon mining of steeply pitching coal seams by the open cut method in Kuznetsk Basin. Izv.vys.ucheb.zav.; gor.zhur. no.9:13-21 '58. (MIRA 12:6)

1. Dneproteprovskiy gornyy institut.
(Kuznetsk Basin--Coal mines and mining)
(Strip mining)

GORBUNOV, Nikolay Filippovich; NURMUKHAMEDOVA, V.F., red.izd-va; LAVRENT'YEVA, L.G., tekhn. red.

[Working strata of pitching seams by the open-cut method] Razrabotka svity krutopadaiushchikh plastov otkrytym sposobom. Moskva, Gosgortekhizdat, 1963. 117 p. (MIRA 16:7)

(Kuznetsk Basin--Coal mines and mining)

GORBUNOV, N.F.

Outlook for mining coking coals and potentials for increasing labor productivity in sections of the Kuznetsk Basin. Gor. i ekon. vop. razrab. ugol'. i rud. mest. no.1:146-155 '62.
(MIRA 16:7)
(Kuznetsk Basin--Coal mines and mining--Labor productivity)

AKSMAN, N.M.; VILENSKIY, L.I.; GORBUNOV, N.G.; GUBSKIY, V.N.; GURVICH, M.D.; LATYSHEV, Yu.M.; LEVONTIN, L.I.; LIVSHITS, T.G.; LOGINOVA, M.K.; LUR'YE, D.A.; LYANDRES, G.D.; MIROSHNICHENKO, G.K.; MOGILEVSKIY, B.Ya.; NEMKOVSKIY, M.I.; ORLEANSKIY, Ya.P.; SAVITSKIY, A.N.; SIMMA, S.F.; SURKOV, G.Z.; SHMYGUL', B.P.; SHUBIN, V.P.; DONSKOY, Ye.Ye., red.izd-va; KAL'NITSKIY, R.Ya., red.izd-va; ZAMAKHOVSKIY, L.S., tekhn.red.

[Mechanization and automation in the machinery industry] Mekhanizatsiia i avtomatizatsiia v stankostroenii. Khar'kov, Khar'kovskoe obl.izd-vo, 1958. 119 p. (MIRA 13:2)

1. Kharkov. Institut "Giprostanok." 2. Direktor instituta "Giprostanok" (for Orleanskiy).
(Machinery industry--Technological innovations)
(Automation)

GORBUNOV, N.G.

Automatic shakeout of two-size molds. Lit. proizv. no. 8:21 Ag '60. (MIRA 14:2)

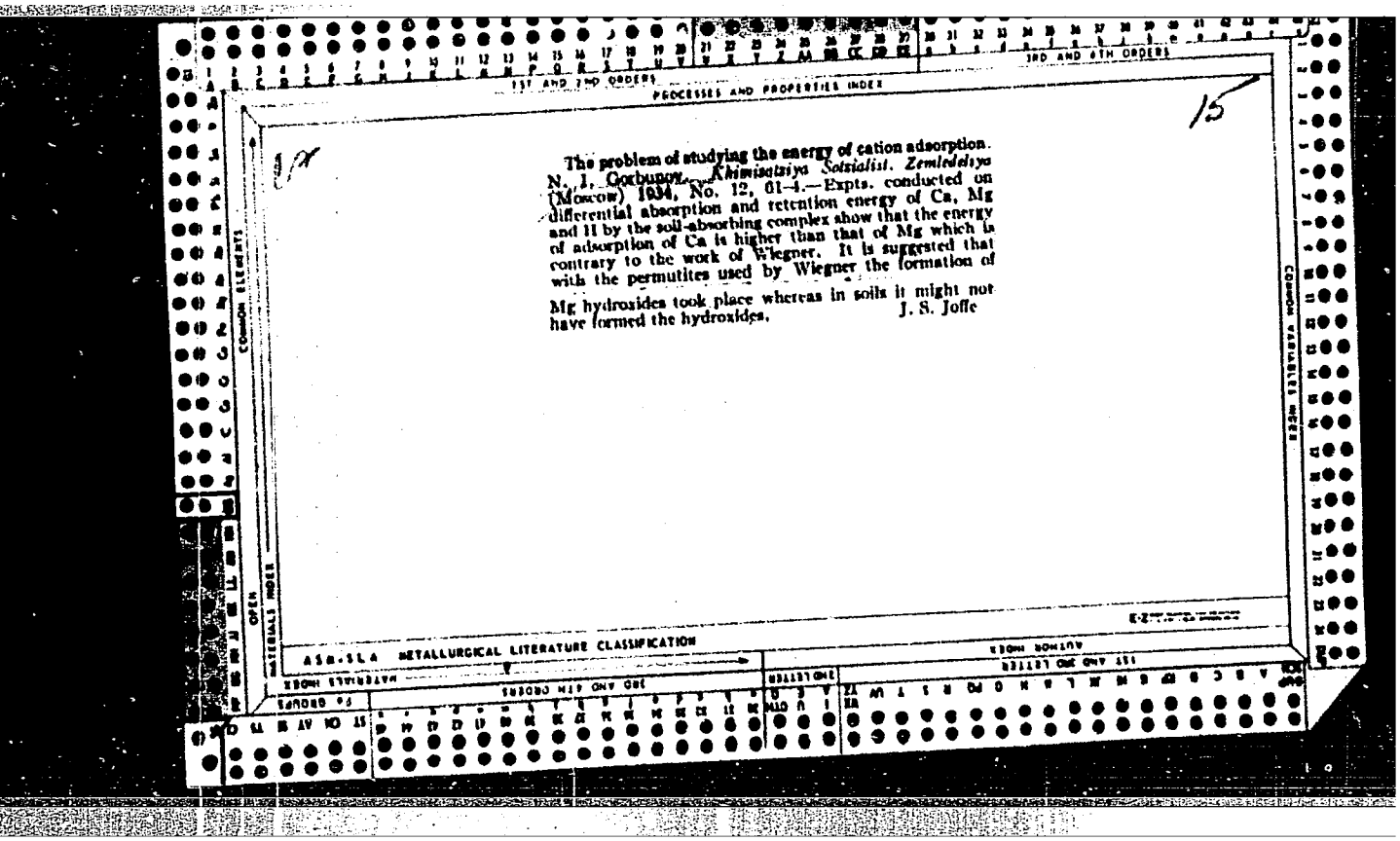
(Molding (Founding))

SERGEYEV, V.Ye.; TROPMAN, A.G.; GORBUNOV, N.I.; SLOBODKIN, L.V.

Industrial testing of the R30A vibrating conveyer. TSvet. met. 34 no.12:38-43 D '61. (MIRA 14:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnykh metallov (for Sergeyev, Tropman). 2. Ust'-Kamenogorskiy svintsovo-tsinkovyy kombinat imeni V.I. Lening (for Gorbunov, Slobodkin).

(Conveying machinery—Testing)



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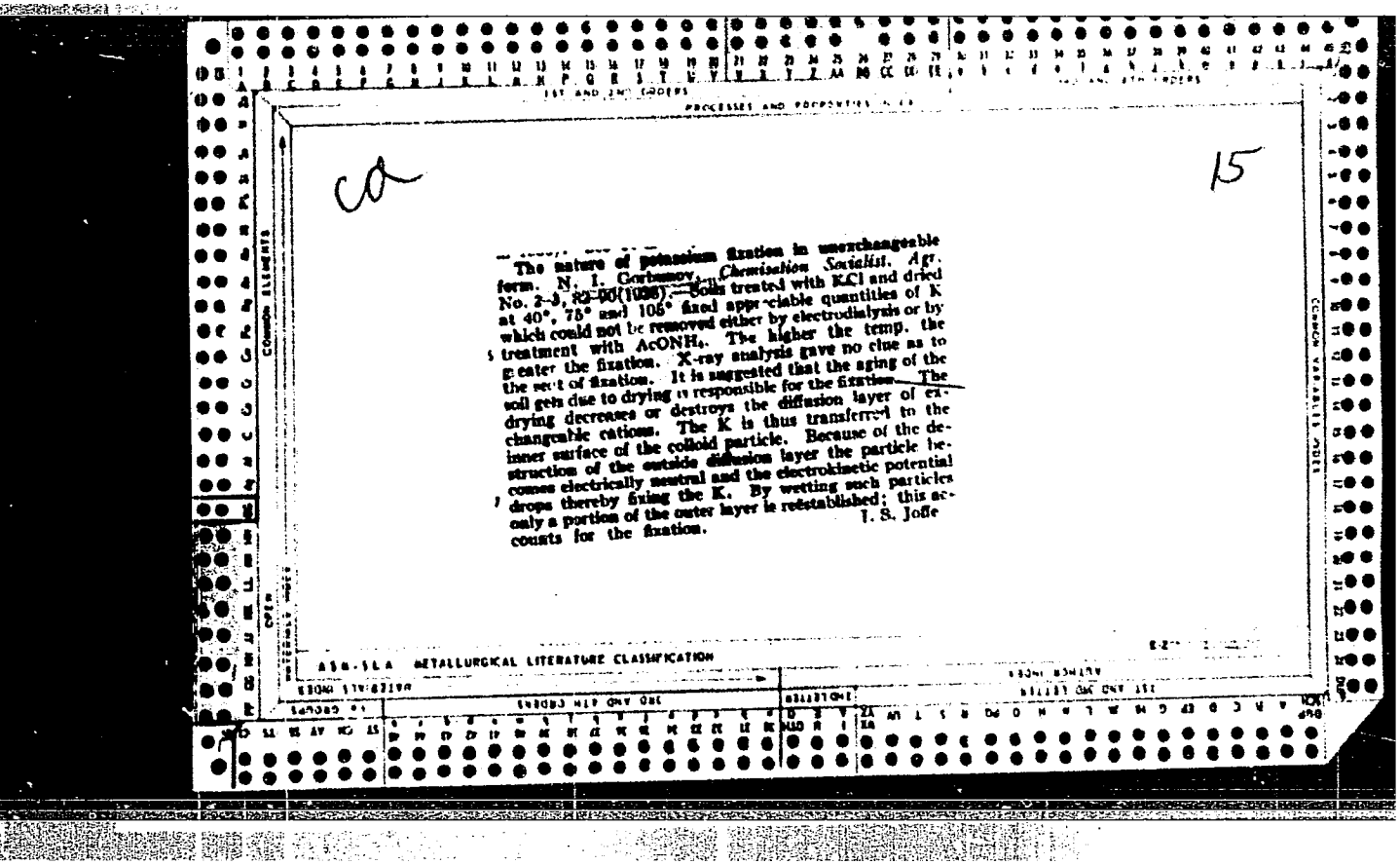
The problem of studying the energy of cation adsorption. N. I. Gorbunov. *Khimizatsiya Sotsialist. Zemledeliya* (Moscow) 1934, No. 12, 61–4.—Expts. conducted on differential absorption and retention energy of Ca, Mg and H by the soil-absorbing complex show that the energy of adsorption of Ca is higher than that of Mg which is contrary to the work of Wiegner. It is suggested that with the permutites used by Wiegner the formation of Mg hydroxides took place whereas in soils it might not have formed the hydroxides. J. S. Joffe

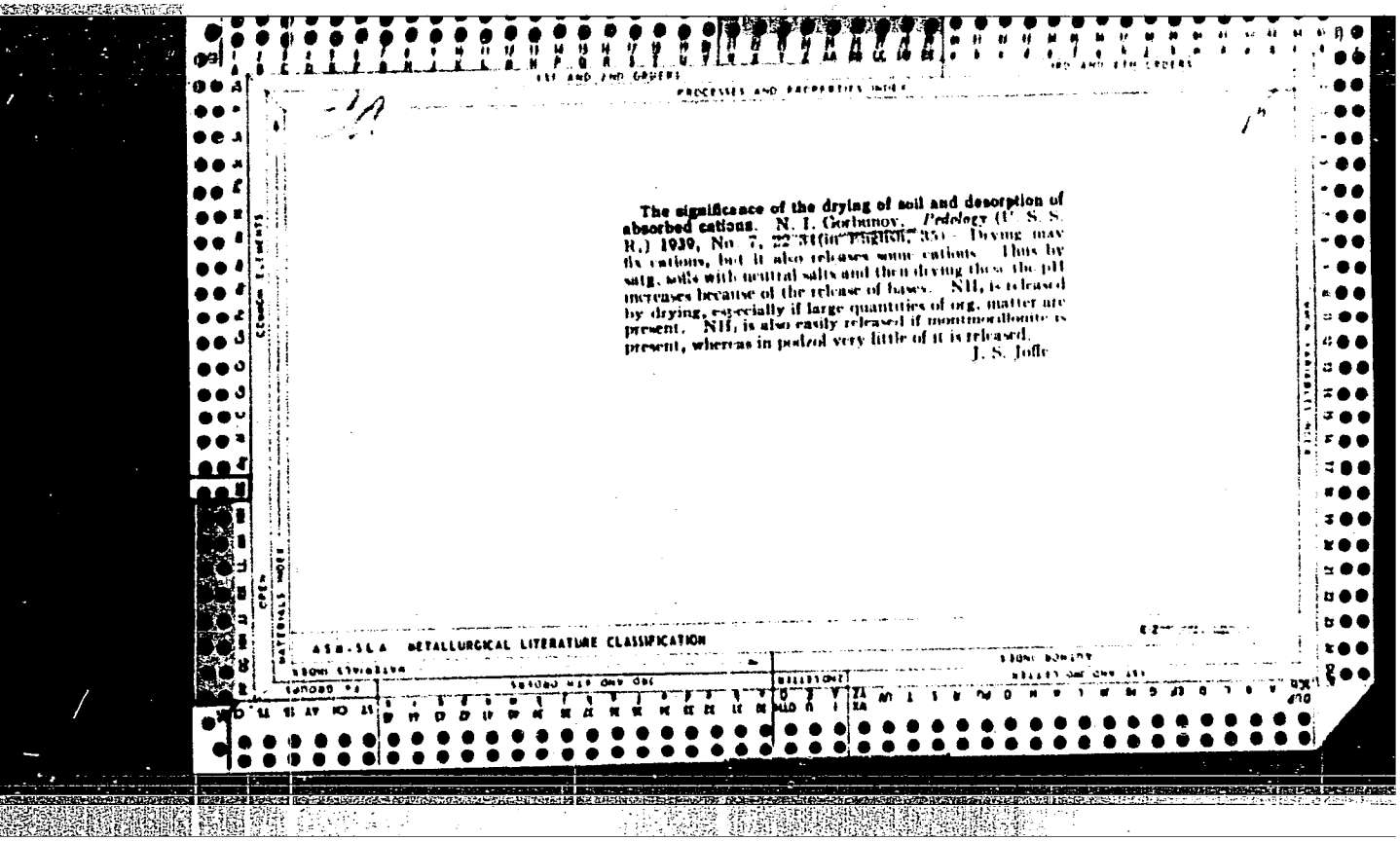


15

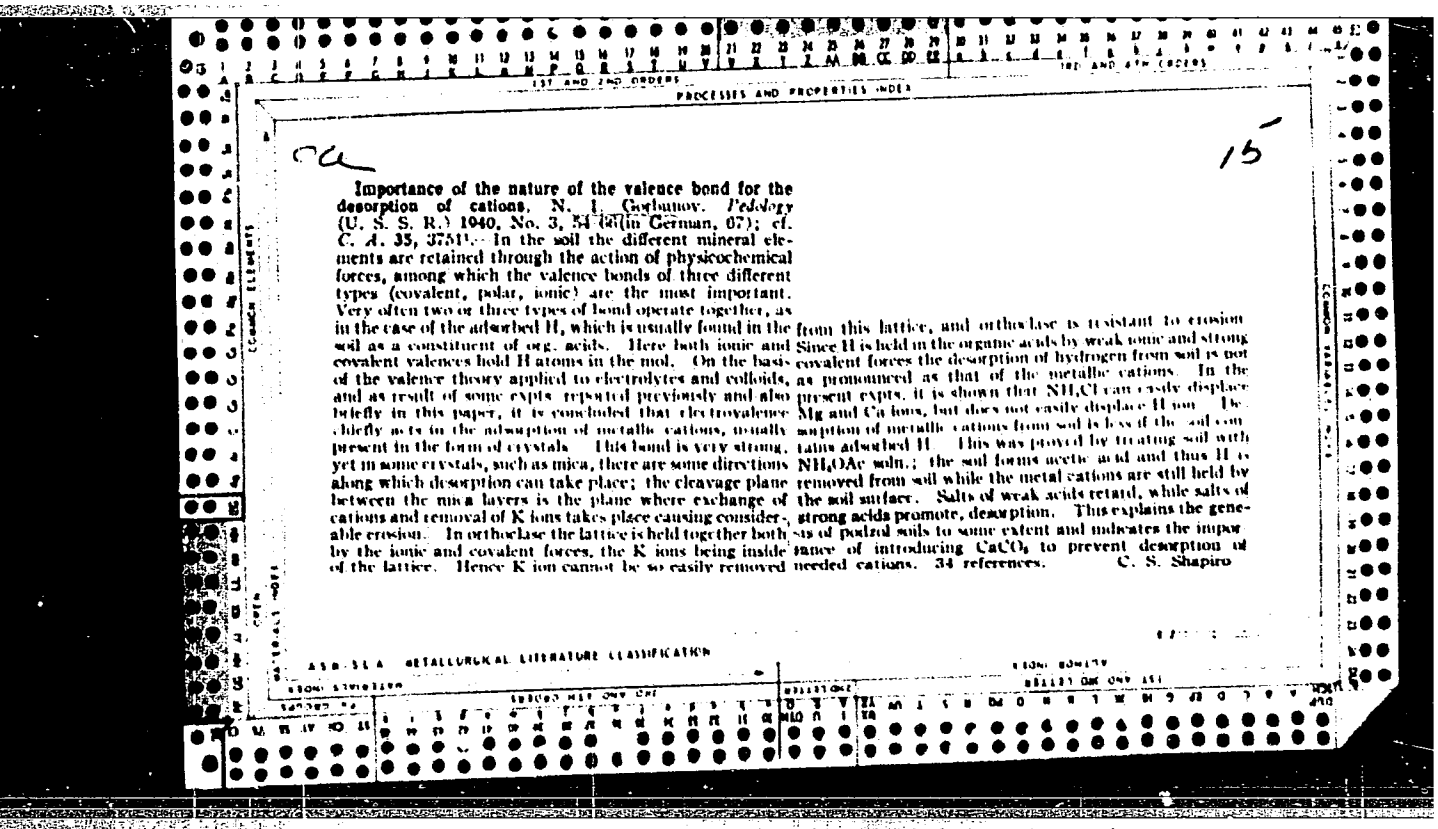
The nature of potassium fixation in unexchangeable form. N. I. Gorbunov. *Chemisation Socialist. Agr.* No. 2-3, 82-90(1936).—Soils treated with KCl and dried at 40°, 75° and 105° fixed appreciable quantities of K which could not be removed either by electrodialysis or by treatment with $AcONH_4$. The higher the temp. the greater the fixation. X-ray analysis gave no clue as to the seat of fixation. It is suggested that the aging of the soil gels due to drying is responsible for the fixation. The drying decreases or destroys the diffusion layer of exchangeable cations. The K is thus transferred to the inner surface of the colloid particle. Because of the destruction of the outside diffusion layer the particle becomes electrically neutral and the electrokinetic potential drops thereby fixing the K. By wetting such particles only a portion of the outer layer is reestablished; this accounts for the fixation.

I. S. Joffe

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



The significance of the drying of soil and desorption of absorbed cations. N. I. Gorbunov. *Pedology* (U. S. S. R.) **1939**, No. 7, 22-31(in English, 35).—Drying may fix cations, but it also releases some cations. Thus by satg. soils with neutral salts and then drying these the pH increases because of the release of bases. NH_3 is released by drying, especially if large quantities of org. matter are present. NH_3 is also easily released if montmorillonite is present, whereas in podzol very little of it is released.
J. S. Joffe

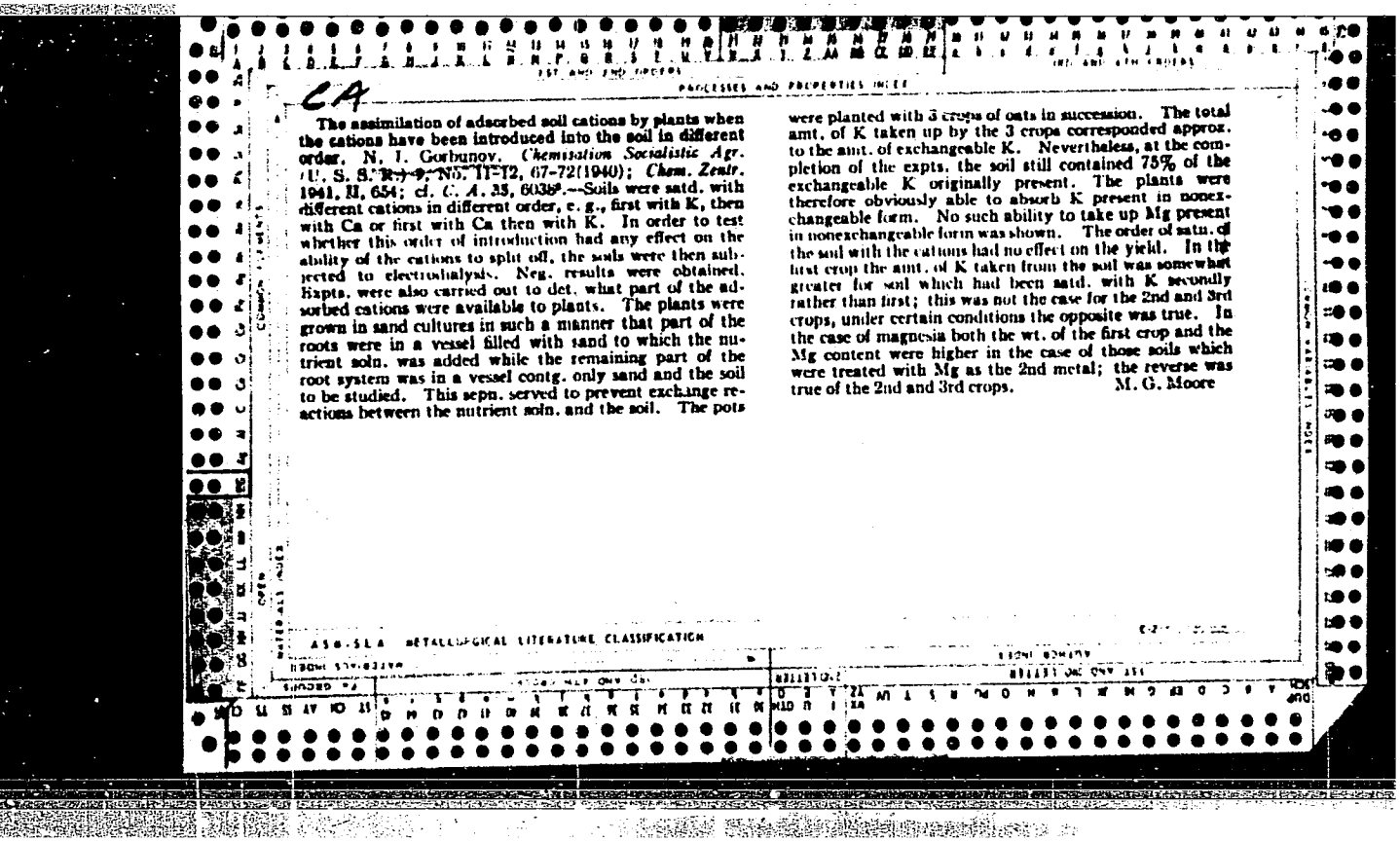


PROCESSES AND PROPERTIES INDEX

15

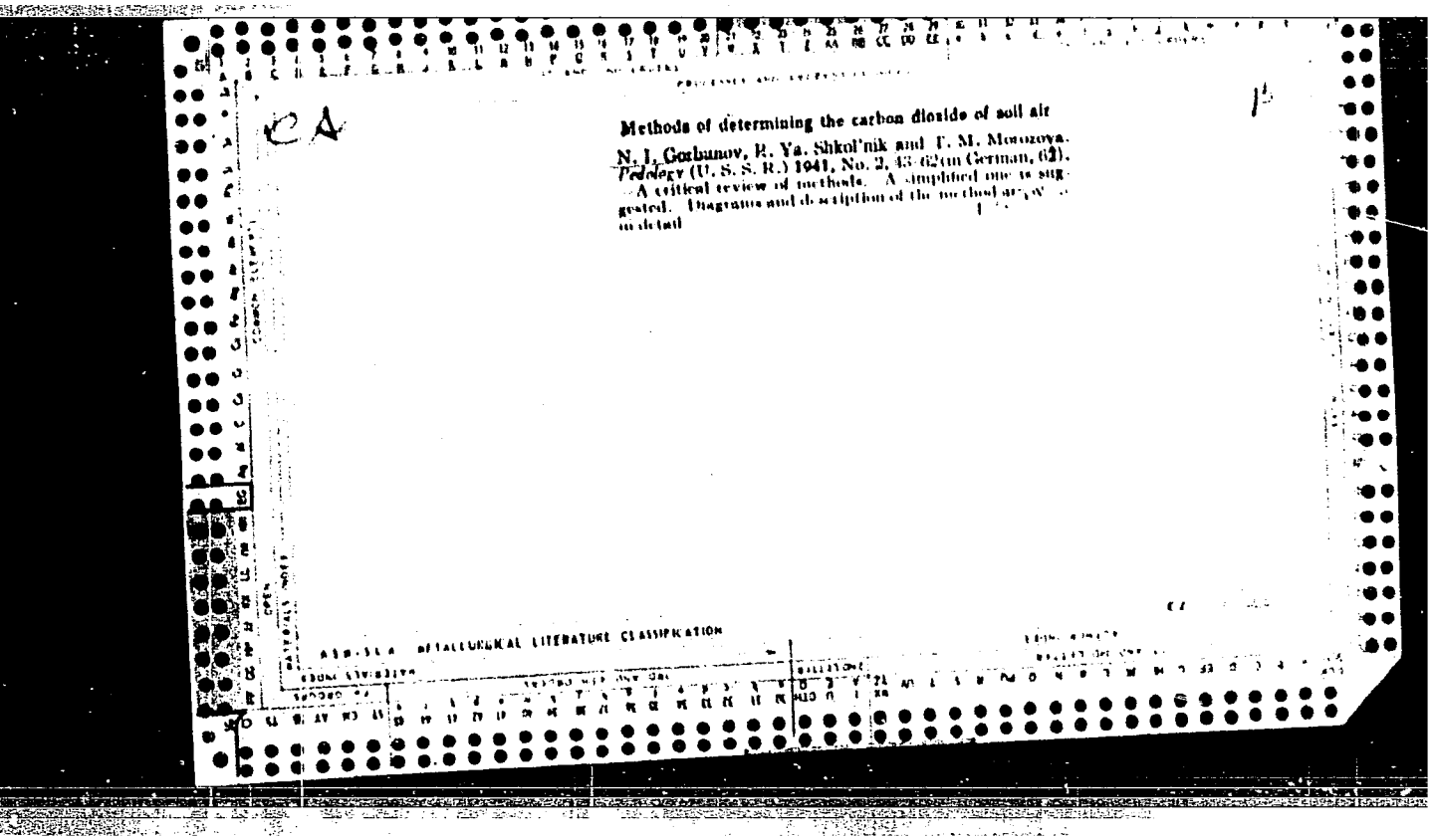
Importance of the nature of the valence bond for the desorption of cations. N. I. Gedroitsov. *Pedology* (U. S. S. R.) 1940, No. 3, 34-60 (in German, 67); cf. *C. A.* **35**, 3751.—In the soil the different mineral elements are retained through the action of physicochemical forces, among which the valence bonds of three different types (covalent, polar, ionic) are the most important. Very often two or three types of bond operate together, as in the case of the adsorbed H, which is usually found in the soil as a constituent of org. acids. Here both ionic and covalent valences hold H atoms in the mol. On the basis of the valence theory applied to electrolytes and colloids, and as result of some expts. reported previously and also briefly in this paper, it is concluded that electrovalence chiefly acts in the adsorption of metallic cations, usually present in the form of crystals. This bond is very strong, yet in some crystals, such as mica, there are some directions along which desorption can take place; the cleavage plane between the mica layers is the plane where exchange of cations and removal of K ions takes place causing considerable erosion. In orthoclase the lattice is held together both by the ionic and covalent forces, the K ions being inside of the lattice. Hence K ion cannot be so easily removed from this lattice, and orthoclase is resistant to erosion. Since H is held in the organic acids by weak ionic and strong covalent forces the desorption of hydrogen from soil is not as pronounced as that of the metallic cations. In the present expts. it is shown that NH_4Cl can easily displace Mg and Ca ions, but does not easily displace H ion. Desorption of metallic cations from soil is less if the soil contains adsorbed H. This was proved by treating soil with NH_4OAc soln.; the soil forms acetic acid and thus H is removed from soil while the metal cations are still held by the soil surface. Salts of weak acids retard, while salts of strong acids promote, desorption. This explains the genesis of podzol soils to some extent and indicates the importance of introducing $CaCO_3$ to prevent desorption of needed cations. 34 references. C. S. Shapiro

ASM-STA METALLURGICAL LITERATURE CLASSIFICATION



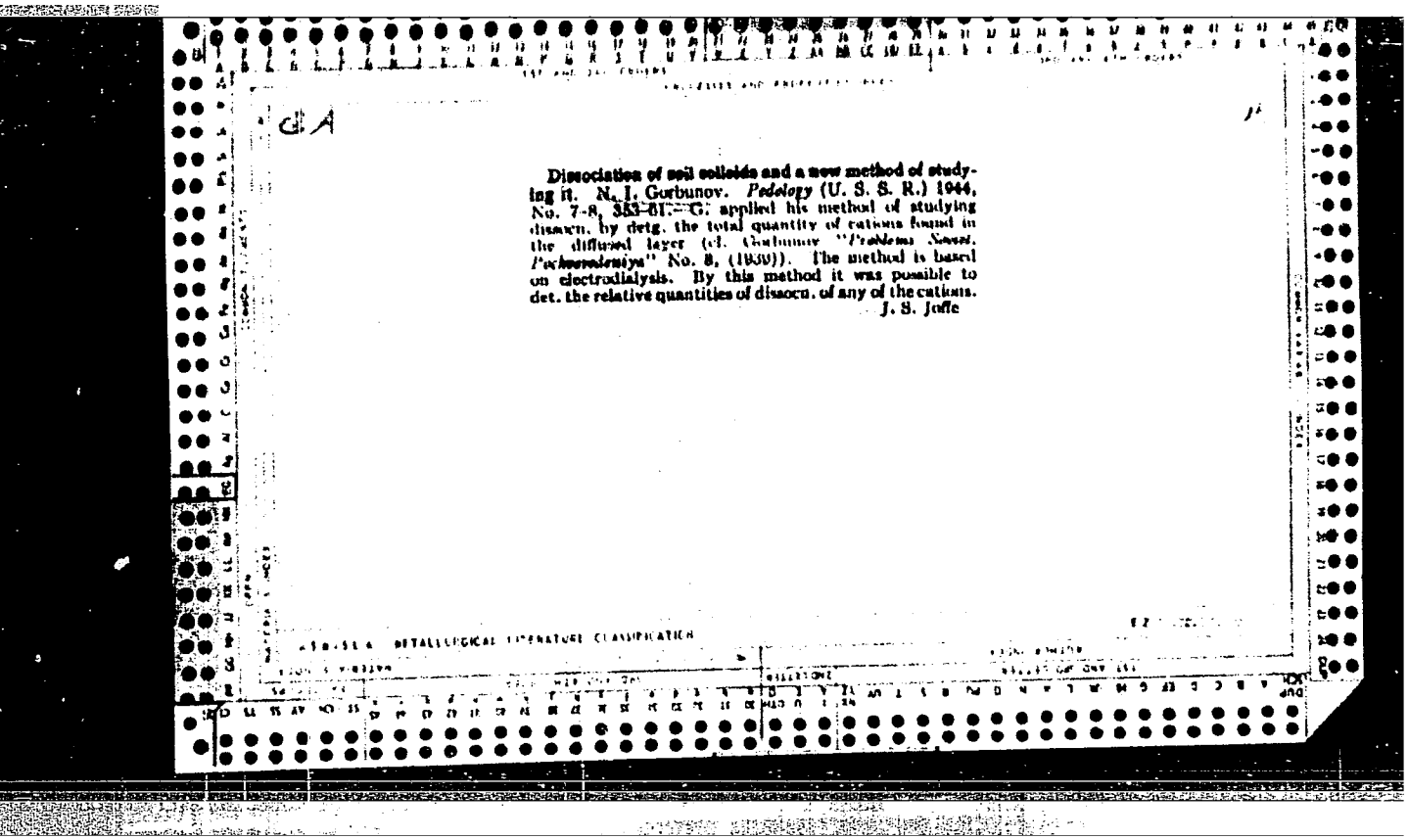
CA

The assimilation of adsorbed soil cations by plants when the cations have been introduced into the soil in different order. N. I. Gorbunov. *Chemisation Socialistic Agr.* (U. S. S. R.) 9, No. 11-12, 67-72(1940); *Chem. Zentr.* 1941, II, 654; cf. *C. A.* 35, 6038⁹.—Soils were satd. with different cations in different order, e. g., first with K, then with Ca or first with Ca then with K. In order to test whether this order of introduction had any effect on the ability of the cations to split off, the soils were then subjected to electrodialysis. Neg. results were obtained. Expts. were also carried out to det. what part of the adsorbed cations were available to plants. The plants were grown in sand cultures in such a manner that part of the roots were in a vessel filled with sand to which the nutrient soln. was added while the remaining part of the root system was in a vessel contg. only sand and the soil to be studied. This sepn. served to prevent exchange reactions between the nutrient soln. and the soil. The pots were planted with 3 crops of oats in succession. The total amt. of K taken up by the 3 crops corresponded approx. to the amt. of exchangeable K. Nevertheless, at the completion of the expts. the soil still contained 75% of the exchangeable K originally present. The plants were therefore obviously able to absorb K present in nonexchangeable form. No such ability to take up Mg present in nonexchangeable form was shown. The order of satn. of the soil with the cations had no effect on the yield. In the first crop the amt. of K taken from the soil was somewhat greater for soil which had been satd. with K secondly rather than first; this was not the case for the 2nd and 3rd crops, under certain conditions the opposite was true. In the case of magnesia both the wt. of the first crop and the Mg content were higher in the case of those soils which were treated with Mg as the 2nd metal; the reverse was true of the 2nd and 3rd crops. M. G. Moore



Methods of determining the carbon dioxide of soil air

N. I. Gorbunov, R. Ya. Shkol'nik and T. M. Morozova. *Pedology* (U. S. S. R.) 1941, No. 2, 43-62nn (German, 62). A critical review of methods. A simplified one is suggested. Diagrams and description of the method are given in detail



Dissociation of soil colloids and a new method of studying it. N. I. Gorbunov. *Pedology* (U. S. S. R.) 1944, No. 7-8, 353-61.—G. applied his method of studying dissocn. by detg. the total quantity of cations found in the diffused layer (cf. Gorbunov "Problems Sovet. Pochvovedeniya" No. 8, (1939)). The method is based on electrodialysis. By this method it was possible to det. the relative quantities of dissocn. of any of the cations.
J. S. Joffe

GORBUNOV, N. I.

V. V. Dokuchayev Inst. Soil (-1946-)

"Conceptions of the soils absorption capacity of V. V. Dokuchayev' predecessors and contemporaries"

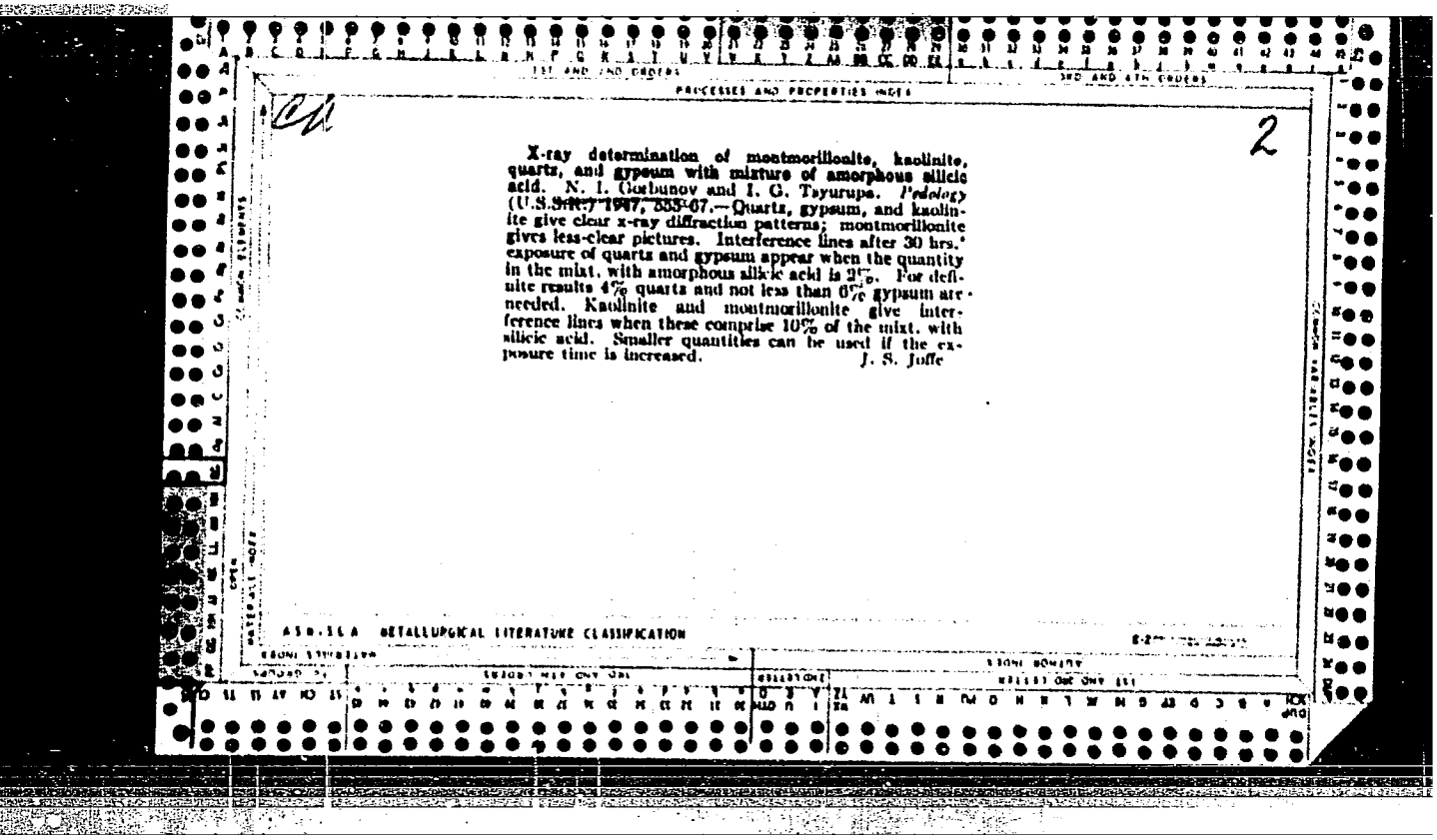
Pochvovedeniye, No. 3, 1946.

CORBUNOV, N. I.

Roentgen Lab., V. V. Dokuchayeva Soil Inst. (-1946-)

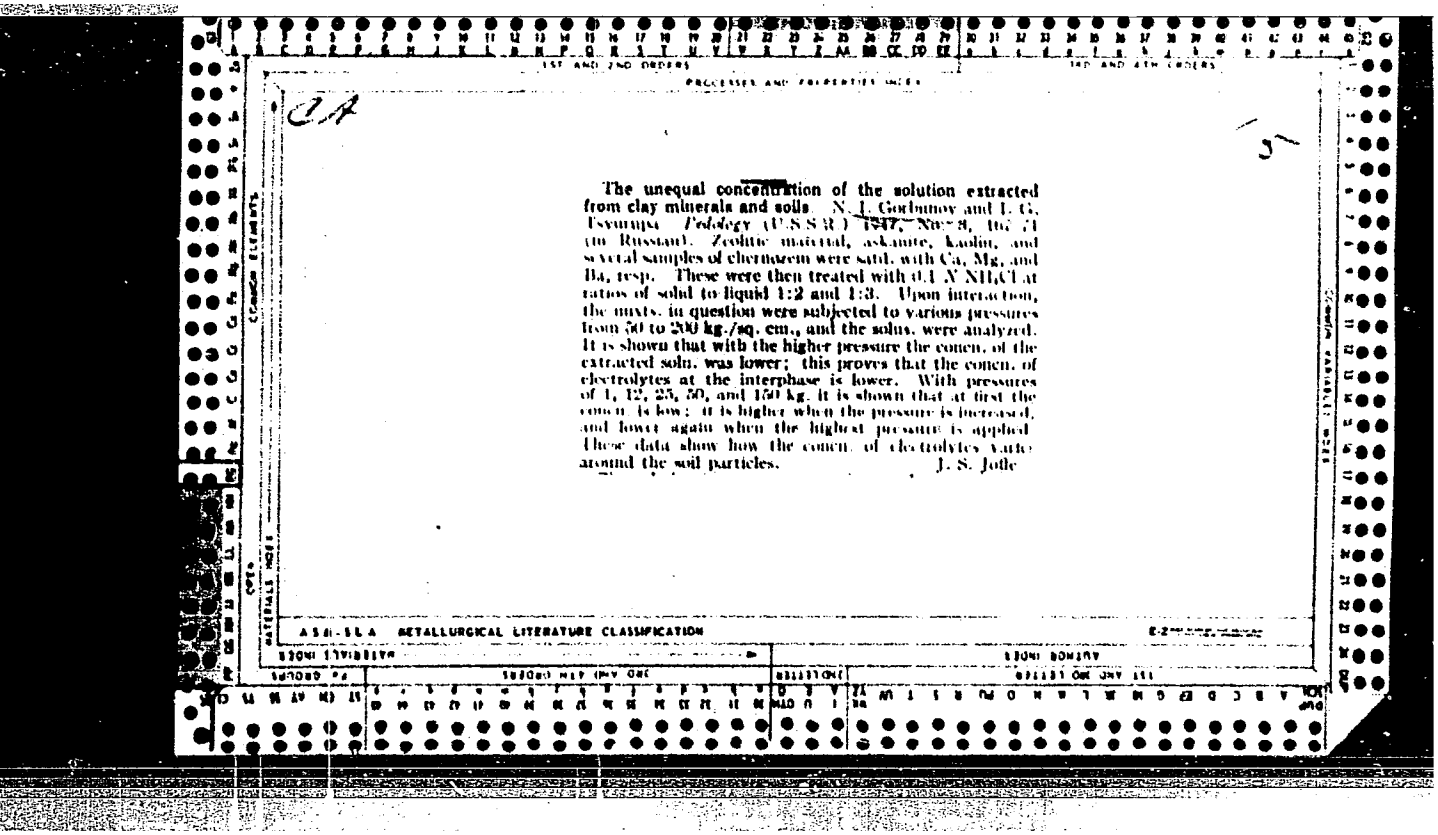
"Roentgenographic and electronographic methods in the study of colloids"

Pochvovedeniye, No. 8, 1946.



X-ray determination of montmorillonite, kaolinite, quartz, and gypsum with mixture of amorphous silicic acid. N. I. Gorbunov and I. G. Tsyurupa. *Pedology* (U.S.S.R.) 1937, 555-67.—Quartz, gypsum, and kaolinite give clear x-ray diffraction patterns; montmorillonite gives less-clear pictures. Interference lines after 30 hrs.' exposure of quartz and gypsum appear when the quantity in the mixt. with amorphous silicic acid is 2%. For definite results 4% quartz and not less than 6% gypsum are needed. Kaolinite and montmorillonite give interference lines when these comprise 10% of the mixt. with silicic acid. Smaller quantities can be used if the exposure time is increased.

J. S. Joffe



The unequal concentration of the solution extracted from clay minerals and soils. N. I. Gorbunov and I. G. Tsvetaeva. *Pedology* (U.S.S.R.) 1947, No. 8, 465-71 (in Russian). Zeolitic material, askanite, kaolin, and several samples of chernozem were satd. with Ca, Mg, and Ba, resp. These were then treated with 0.1 *N* NH_4Cl at ratios of solid to liquid 1:2 and 1:3. Upon interaction, the mixts. in question were subjected to various pressures from 50 to 200 kg./sq. cm., and the solns. were analyzed. It is shown that with the higher pressure the concn. of the extracted soln. was lower; this proves that the concn. of electrolytes at the interphase is lower. With pressures of 1, 12, 25, 50, and 150 kg. it is shown that at first the concn. is low; it is higher when the pressure is increased, and lower again when the highest pressure is applied. These data show how the concn. of electrolytes varies around the soil particles. J. S. Joffe