STAROBOGATOV, Ya.I.

Structure of the copulative apparatus of Hippeutis complanatus L. (Gastropoda, Planorbidae) [with summary in English]. Zool. zhur. 37 no.11:1743-1744 N '58. (MIRA 11:12)

1.Kafedra zoologii bespozvonochnykh Moskovskogo gosudarstvennogo universiteta.

(Gastropoda) (Penis)

STAROBOGATOV, Ya.I.

System and phylogeny of Planorbidea (gastropoda Pulmonata) [with summary in English]. Biul.MOIP. Otd.biol. 63. no.6:37-53 N-D '58 (MIRA 12:1)

(PULMONATA)

TIKHOMIROV, V.N.; ZAGORODNYYA, G.Yu.; STAROBOGATOV, Ya.I.; SHVEDCHIKOVA, N.K.

Juncus macer S.F. Gray in Moscow Province. Nauch.dokl.vys.shkoly; biol.nauki no.2:121-124 '60. (MIRA 13:4)

1. Rekomendovana biologicheskoy laboratoriyey Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.
(MOSCOW PROVINCE--SEDGES)

MEDNIKOV, B.M.; STAROBOGATOV, Ya.I.

Random cell for counting small biological objects. Trudy Gidrobiol. ob-va 11:426-428 '61. (MIRA 15:1)

1. Kafedra zoologii bespozvonochnykh Moskovskogo gosudarstvennogo universiteta, Moskva.
(Plankton research)

MURINA, V.V.; STAROBOGATOV, Ya.I.

Systematics and zoogeography of priapulids. Trudy Inst.okean. 46:179-200 '61. (MIRA 14:6)

(Gephyrea)

DEVYATKIN, Ye.V.; STAROBOGATOV, Ya.I.

Fauna of fresh-water mollusks in Eopleistocene deposits of the Gornyy Altai. Dokl. AN SSSR 141 no.5:1179-1182 D '61. (MIRA 14:12)

1. Geologicheskiy institut AN SSSR i Moskovskiy gosudarstvennyy universitet im.M.V. Lomonosova. Predstavleno akademikom V.N. Sukachevym.
(Chuya Valley--Paleontology, Stratigraphic)

NESIS, K.N.; STAROBOGATOV, Ya.I.

"Diving saucer." Priroda 51 no.4:109 Ap '62. (MIRA 15:4)

1. Zoologicheskiy institut AN SSSR, Leningrad.
(Oceanographic research)

LOGVINENKO, B.M.; STAROBOGATOV, Ya.I.

Mollusks of the Caspian Sea and their zoogeographic relations. Biul. MOIP. Otd. biol. 67 no.1:153-154 Ja-F '62. (MIRA 15:3)
(CASPIAN SEA--MOLLUSKS)

STAROBOGATOV, Ya.I.

Study of the mollusks from the underground waters of the Caucasus.
Biul. MOIP. Otd. biol. 67 no.6:42-54 N-D'62 (MIRA 17:7)

STAROBOGATOV, Ya.I.

Conference on the joint studies of fauna and flora. Okeanologiia 3 no.5:938-940 '63. (MIRA 16:11)

NESIS, K.N.; STAROBOGATOV, Ya.I.

Characteristics of fish behavior. Priroda 52 no.9:114-115 '63.
(MIRA 16:11)

1. Zoologicheskiy institut AN SSSR, Leningrad.

GOLIKOV, A.N.; STAROBOGATOV, Ya.I.

Which Rapana has settled in the Black Sea? Zool. zhur. 43 no.9: 1397-1400 '64. (MIRA 17:11)

1. Zoologicheskiy institut AN SSSR, Leningrad.

STAROBOGATOV, Ya.I.

Zoogeographical regionalization of continental bodies of water in the Palaearctic region. Dokl. AN SSSR 158 no.5:1223-1226 O '64.
(MIRA 17:10)

1. Zoologicheskiy institut AN SSSR. Predstavleno akademikom Ye.N. Pavlovskim.

STAROBOVA, Marie

Heavy minerals of the Magura Flysch of eastern Slovakia and of the Inner Cliff. Geol prace 63:47-52 '62.

1. Ceskoslovenske naftove doly, Hodonin.

STAROBOYTOV, A.Ye.

Improving the productivity of cooking boilers. Bum.prom. 29 no.10:24 O '54. (MLRA 7:11)

1. Starshiy inzhener otdela truda i zarplaty Glavsakhalinbumproma.
(Papermaking machinery)

STARODANOVA, L.; ANTUSHEVA, P., bukhgalter

Our customers are workers of the Ural Electric Apparatus Factory. Obshchestv. pit. no.9:8-9 S '58. (MIRA 11:10)

1. Direktor stolovoy No.40 Vtorogo Sverdlovskogo tresta (for Starodanova).
(Sverdlovsk--Restaurants, lunchrooms, etc.)

STARODINSKIY, D.Z.

GIL'SHTEYN, P.M., inzhener; STARODINSKIY, D.Z., inzhener.

New brush and bog plows. Sel'khozmashina no.4:5-6 Ap '57. (MLRA 10:4)
(Plows)

GIL'SHTEYN, P.M., inzh.; STARODINSKIY, D.Z., inzh.

Automatic equipment for mounting machines on tractors. Trakt. i sel'khozmash. no.11:13-16 N '58. (MIRA 11:11)
(Agricultural machinery)

GIL'SHTEYN, P.M., inzh.; STARODINSKIY, D.Z., inzh.

The FBN-2-60 mounted brush-breaker and bog plow. Trakt. i sel'khozmash. no.1:38-39 Ja '59. (MIRA 12:1)
(Plows)

GIL'SHTEYN, P.M.; STARODINSKIY, D.Z.

Brush-breaker plow. Trakt.i sel'khozmash. no.7:33-34 Jl '59. (MIRA 12:11)

1. Spetsial'noye konstruktorskoye byuro zavoda imeni Oktyabr'skoy revolyutsii.

(Plows)

GIL'SHTEYN, P.M., inzh.; STARODINSKIY, D.Z., inzh.

Mounted scarifier for cultivating soil before deep plowing. Trakt.i sel'khozmash. no.10:30 O '59. (MIRA 13:2)

1. Spetsial'noye konstruktorskoye byuro zavoda im. Oktyabr'skoy revolyutsii.
(Agricultural machinery)

GIL'SHTEYN, P.M., [Hil'shtein, P.M.]; STARODINSKIY, D.Z. [Starodyns'kyi, D.Z.], inzh.

Mounted two-bottom brush-breaker plow. Mekh.sil'.hosp. 10 no.12:24-25 D '59. (MIRA 13:3)
(Plows)

GIL'SHTEYN, P.M., STARODINSKIY, D.Z

Mounted cultivator and scarifier for stony soils. Trakt. i sel'khozmash. 30 no.8:37 Ag '60. (MIRA 13:8)
(Cultivators)

GIL'SHTEYN, P.M.; STARODINSKIY, D.Z.

Increase in the traction indices of a wheel-type tractor operating with a mounted plow. Trakt.i sel'khozmash. 32 no.9:16-18 S '62. (MIRA 15:12)

1. Spetsial'noye konstruktorskoye byuro zavoda imeni Oktyabr'skoy revolyutsii.
(Tractors) (Plowing)

GIL'SHTEYN, P.M.; STARODINSKIY, D.Z.

Single-frame plows for brush and swamp lands. Trakt. i sel'khozmash. 31 [i.e.32] no.11:33-34 N '62. (MIRA 15:12)

1. Spetsial'noye konstruktorskoye byuro zavoda imeni Oktyabr'skoy revolyutsii.

(Plows)

GIL'SHTEYN, P.M.; STARODINSKIY, D.Z.; TSIMMERMAN, M.Z.;
DOGANOVSKIY, M.G., kand. sel'khoz. nauk, retsenzent;
BUD'KO, V.A., inzh., red.

[Tillage machines for special purposes; their design and calculation] Pochvoobrabatyvaiushchie mashiny spetsial'nogo naznacheniia; proektirovanie i raschet. Moskva, Izd-vo "Mashinostroenie," 1964. 139 p. (MIRA 17:11)

1. Vedushchiy konstruktor Spetsial'nogo konstruktorskogo byuro zavoda sel'skokhozyaystvennogo mashinostroyeniya im. Oktyabr'skoy revolyutsii (for Gil'shteyn, Starodinskiy, TSimmerman).

STARODONOVA, A.

137-1958-1-98

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 16 (USSR)

AUTHOR: Starodonova, A.

TITLE: Prepare Greater Skills for the New Washing Season (Kvalifitsirovannyye metody - k novomu promyvochnomu sezonu)

PERIODICAL: Kolyma, 1957, Nr 4, p 39

ABSTRACT: The training of personnel at the Chkalov placer of the Western Mining Administration is described. A. Sh.

1. Mining personnel—Study and teaching 2. Mining industry —USSR

Card 1/1

VASIL'YEV, L. (g. Tyumen'); CHICHKO (g. Kiyev); STARODUB, D. (g. Kiyev); KALUZHSKIY, G. (g. L'vov); SMIRNOV, V.; EREMIN, A.; ORLOV, I.; FERUK, V. (Kuybyshev); BYCHININ, I. (Kuybyshev); BASHKO, V.; SHEVKUN, Yu. (Khar'kov); ISTYUFEYEV, V. (Leningrad); GATSANYUK, P. (Chernigovskaya obl.); SKURKO, L.; BABYUK, M.; GUBANOV, L. (Krasnodar); TISHCHENKO, D. (st. V. Sadovaya); YEFIMOV, M.S. (Leningrad); FEDOROV, V.; SUKHOV, A.; TIMOSHENKO, I. (Omskaya oblast'); KRIVTSUN, B. (Khar'kov); BARANTSEV, N. (Fedosiya).

Exchange of experience. Radio no.1:31,32,35,39,40. Ja '59.. (MIRA 12:3)

(Radio)

SOV/107-59-1-26/51

AUTHOR: Starodub, D. (Kiyev)

TITLE: The Balancing of the Output Stage of a Transmitter (Simmetrirovaniye vykhodnogo kaskada peredatchika)

PERIODICAL: Radio, 1959, Nr 1, p 32 (USSR)

ABSTRACT: The author describes a simple method of balancing the output stage of push-pull type ultrashort-wave and short-wave transmitters with the use of two coupling coils. There are 4 circuits and one sketch.

Card 1/1

STARODUB, D., inzh.

Time relay for photographic printing. Znan. ta pratsia no. 12:22 D '60. (MIRA 14:4)
(Photography—Apparatus and supplies)

STARODUB, D., inzh.

Homemade photographic lamps. Znan. ta pratsia no. 4:23-24 Ap '61. (MIRA 14:5)

(Photography, Flash-light)

STARODUB, D. (Kiyev)

Indreasing the flashlight brightness. Sov.foto 22 no.1:32 Ja '62. (MIRA 15:1)

(Photography, Flashlight)

STARODUB, D., inzh.

Homemade telephoto lens. Znan. ta pratsia no.3:32 Mr '63. (MIRA 16:10)

STARODUB, D., inzh.

Homemade telephoto lens. Nauka i zhyttia 12 no.2:62 F '63. (MIRA 16:4)

(Telephotography--Equipment and supplies)
(Lens, Photographic)

STARODUB, D., inzh.

News in photographic chemistry. Nauka i zhyttia 12 no.3:63 Mr '63. (MIRA 16:11)

STARODUB, D.

Signal generator. Radio no.1:53-55 Ja '64. (MIRA 17:8)

NEKRASOVA, V.A.; STARODUB, N.P.

Chlorination of n-hexane on mixed catalysts and alloys of metal salts. Azerb.khim.zhur. no.2:93-98 '60. (MIRA 14:8)
(Hexane) (Chlorination) (Catalysts)

STARODUB, N.P.

Turret head for a bench lathe. Mashinostroitel' no.1:25 Ja '62. (MIRA 15:1)
(Lathes--Attachments)

STARODUB, N.P.

Universal block for molds. Mashinostroitel' no.2:25 F '62. (MIRA 15:2)

(Die casting--Equipment and supplies)

STARODUB, N.P.

Universal dividing head. Mashinostroitel' no.4:21 Ap '63. (MIRA 16:5)

(Milling machines—Attachments)

REZNIK, B.Ya.; BRYUM, R.M.; STARODUB, N.S.; MANOLOVA, E.P.; IVANOVA, S.S.

Schick's reaction in Stalino children vaccinated against diphtheria; author's abstract. Zhur.mikrobiol.epid.i immun. 31 no.8:142 Ag '60. (MIRA 14:6)

1. Iz Stalinskogo meditsinskogo instituta.
(STALINO--DIPHTHERIA)

UGLOV, F.G.,(Leningrad); MIKHAYLOV, S.S.,(Leningrad); STARODUB, V.I., (Leningrad)

70th anniversary of the first Russian surgical journal "Khirurgicheskii vestnik". Vest. khir. 77 no.1:126-138 Ja '56 (MLRA 9:5)

(PERIODICALS, hist.
Khirurgicheskii vestnik)

MIKHAYLOV, A.A. (Leningrad); STUKKEY, A.L. (Leningrad); STARODUB, V.I. (Leningrad)

History of the Pirogov Surgical Society; 75th anniversary of its foundation. Vest.khir. 77 no.11:9-25 N '56. (MLRA 10:1)

(SOCIETIES, MEDICAL, hist.
Pirogov's surg. soc. in Russia)
(SURGERY, hist.
same)

J-5

USSR/Soil Science. Tillage. Land Reclamation. Erosion.

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24814.

Author : Koshkin, N.A ; Starodubets, A.V.
Inst :
Title : Experiment on Ploughing Virgin Land Long-Fallow and with Ploughs With Helical Mold-Boards.

Orig Pub: Biul. nauchno-issled. i opytn. rabot. Ubinsk. opytn. melior. st., 1957, No 2, 59-61.

Abstract: No abstract.

Card : 1/1

STARODUBETS, N.A., inzh.

Methodology for determining the tensions and deformations in the sleeves of the SMD-14 diesel engine. Trakt. i sel'khozmash. no.11:9-11 N '65. (MIRA 18:12)

1. Moskovskiy avtomekhanicheskiy institut.

STARODUBOV, I. P.

109-3-17/23

AUTHORS: Nikonov, B.P. and Starodubov, I.P.

TITLE: Evaporation of Calcium from the Core into the Oxide Layer (Ispareniye kal'tsiya iz kerna v oksidnyy sloy)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, No.3, pp. 430 - 431 (USSR).

ABSTRACT: The investigation described was carried out by a method analogous to that used by Ptushinskiy (Ref.1). A nickel cathode containing 0.05% Ca was used in the investigation. The cathode was in the form of a cup whose top wall was coated with the double carbonate to a thickness of 140 - 150 μ. The cathodes were de-gassed at a low temperature and then kept in vacuum at a temperature of 1 000 °C. The experimental tubes were then dismantled and the oxide coating was cut into slices of 10 μ thickness. The amount of calcium evaporated into the oxide layer as a function of the heating time at 1 000 °C is shown in Fig.1. From this, it is seen that the amount of calcium is a logarithmic function of time; this is also confirmed by plotting the curve of Fig.1 to the logarithmic scale as shown in Fig.2. The penetration of calcium into the barium layer is illustrated by the curve of Fig.3, from which it follows that nearly all the evaporated calcium is concentrated in the layer nearest to the core; this layer has a thickness of about 10 μ.

Cardl/2

109-3-17/23

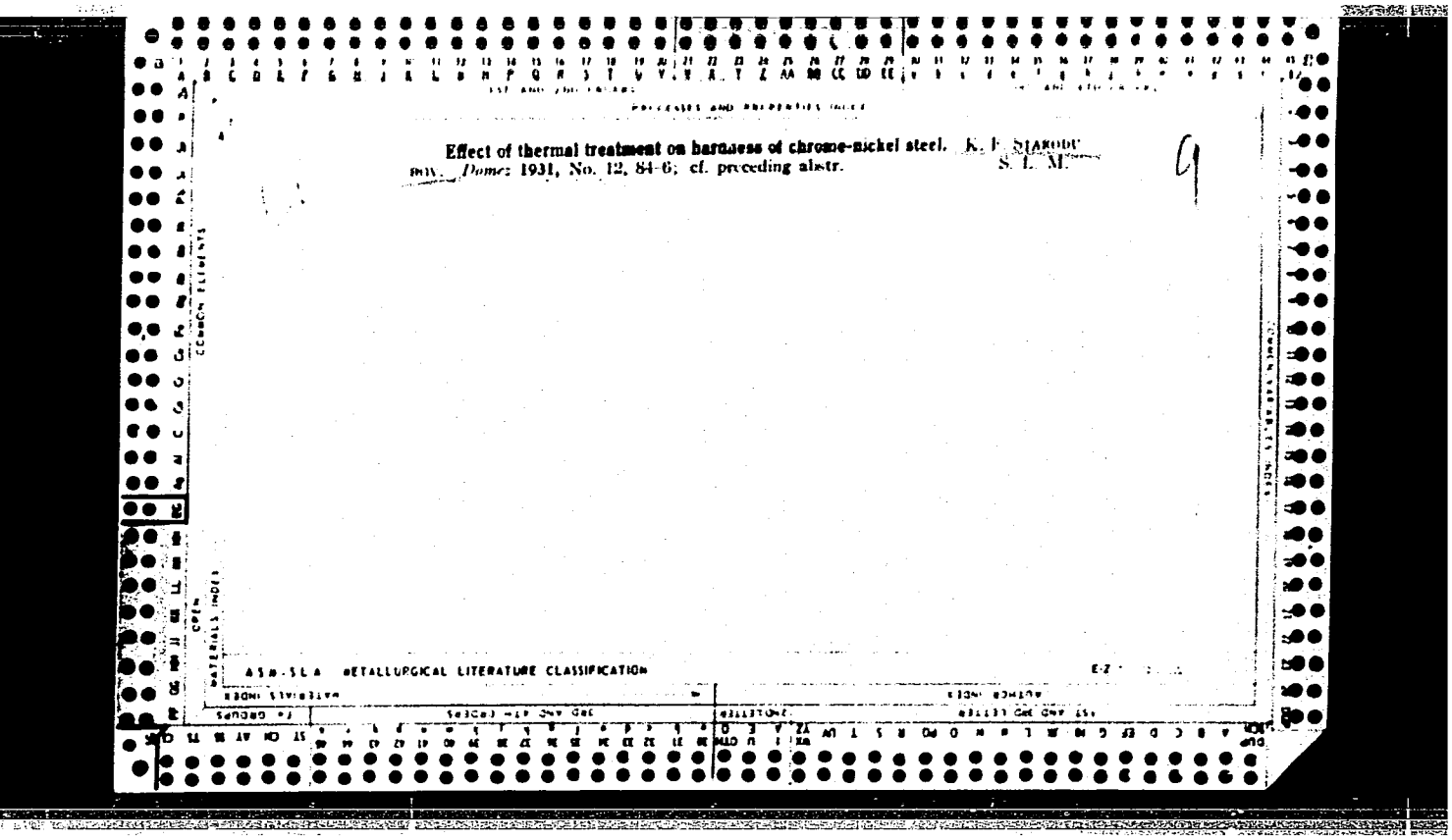
Evaporation of Calcium from the Core into the Oxide Layer

At a distance of 40 to 50 μ from the core, the relative amount of calcium is only 1 to 2%.
There are 3 figures, 1 table and 1 Russian reference.

SUBMITTED: May 31, 1957.

AVAILABLE: Library of Congress

Card 2/2



Effect of thermal treatment on hardness of chrome-nickel steel. K. I. STARODU
S. L. M.
Metallurg (Moscow) 1931, No. 12, 84-6; cf. preceding abstr.

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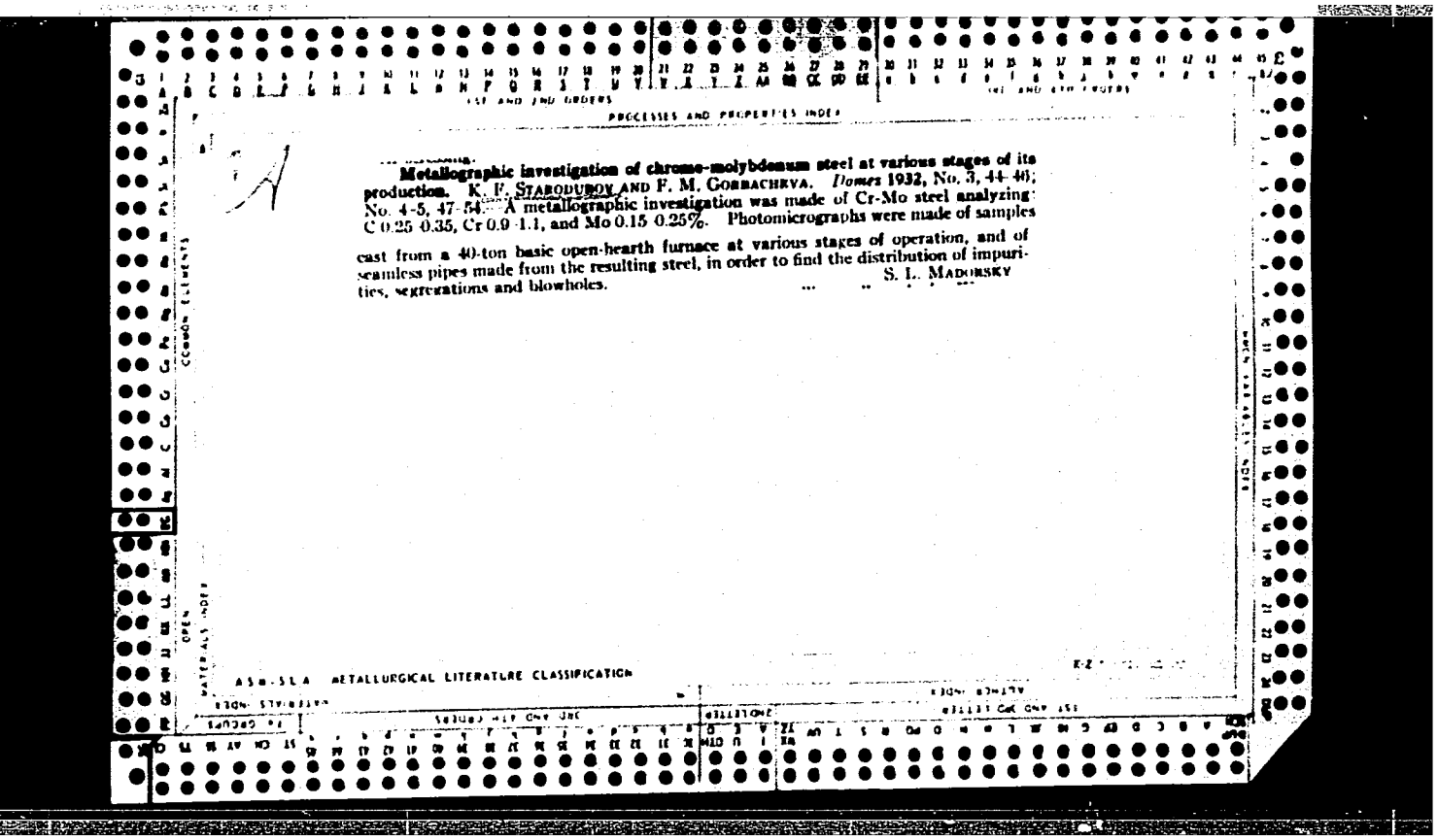
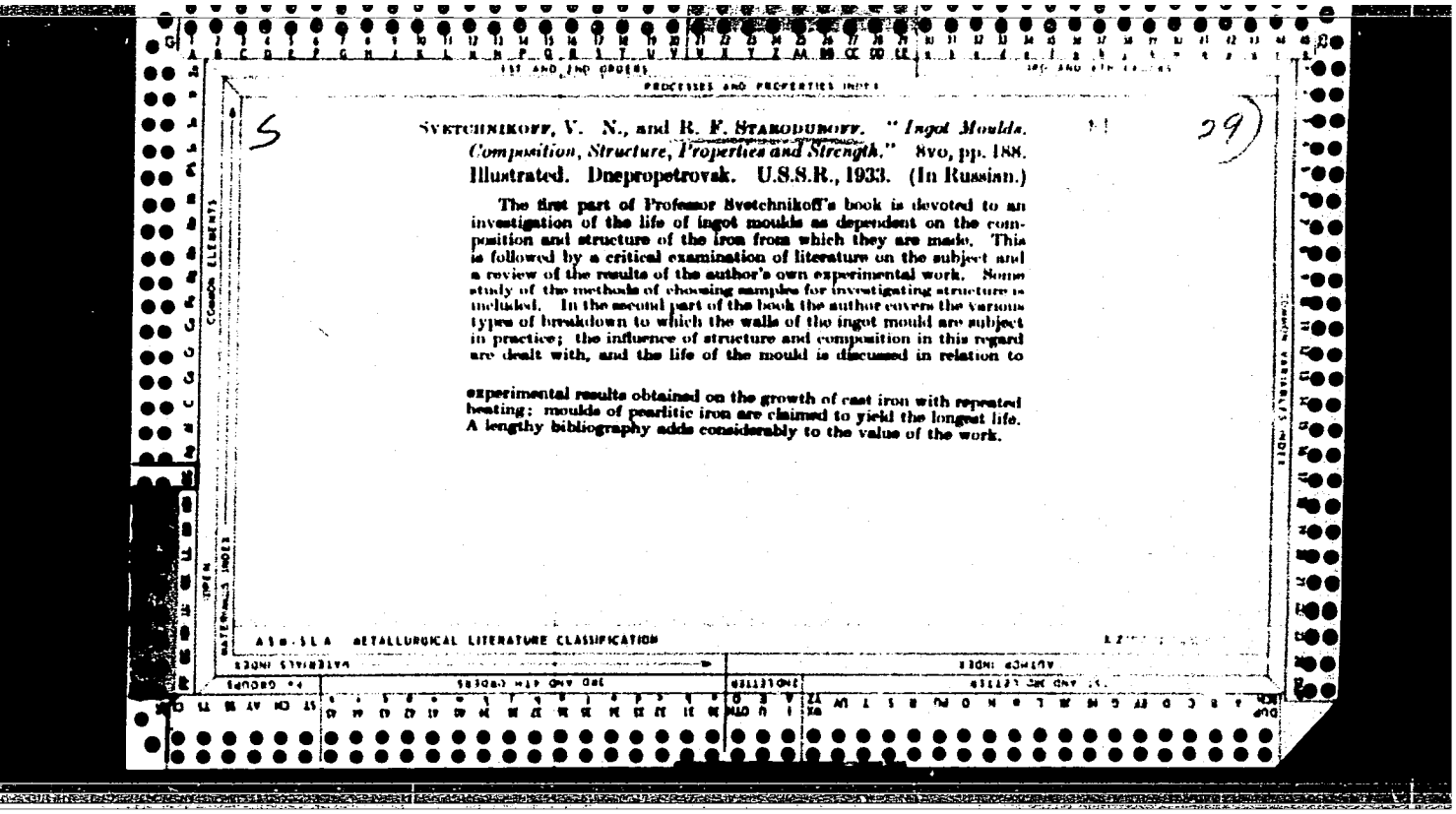
A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION



Metallographic investigation of chrome-molybdenum steel at various stages of its production. K. F. STAROUDUBOV AND F. M. GORBACHEVA. *Domez* **1932**, No. 3, 44-46; No. 4-5, 47-54. A metallographic investigation was made of Cr-Mo steel analyzing: C 0.25-0.35, Cr 0.9-1.1, and Mo 0.15-0.25%. Photomicrographs were made of samples cast from a 40-ton basic open-hearth furnace at various stages of operation, and of seamless pipes made from the resulting steel, in order to find the distribution of impurities, segregations and blowholes. S. L. MADORSKY

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



S

SVETCHNIKOFF, V. N., and R. F. STARODUBOFF. "*Ingot Moulds. Composition, Structure, Properties and Strength.*" 8vo, pp. 188. Illustrated. Dnepropetrovsk. U.S.S.R., 1933. (In Russian.)

The first part of Professor Svetchnikoff's book is devoted to an investigation of the life of ingot moulds as dependent on the composition and structure of the iron from which they are made. This is followed by a critical examination of literature on the subject and a review of the results of the author's own experimental work. Some study of the methods of choosing samples for investigating structure is included. In the second part of the book the author covers the various types of breakdown to which the walls of the ingot mould are subject in practice; the influence of structure and composition in this regard are dealt with, and the life of the mould is discussed in relation to

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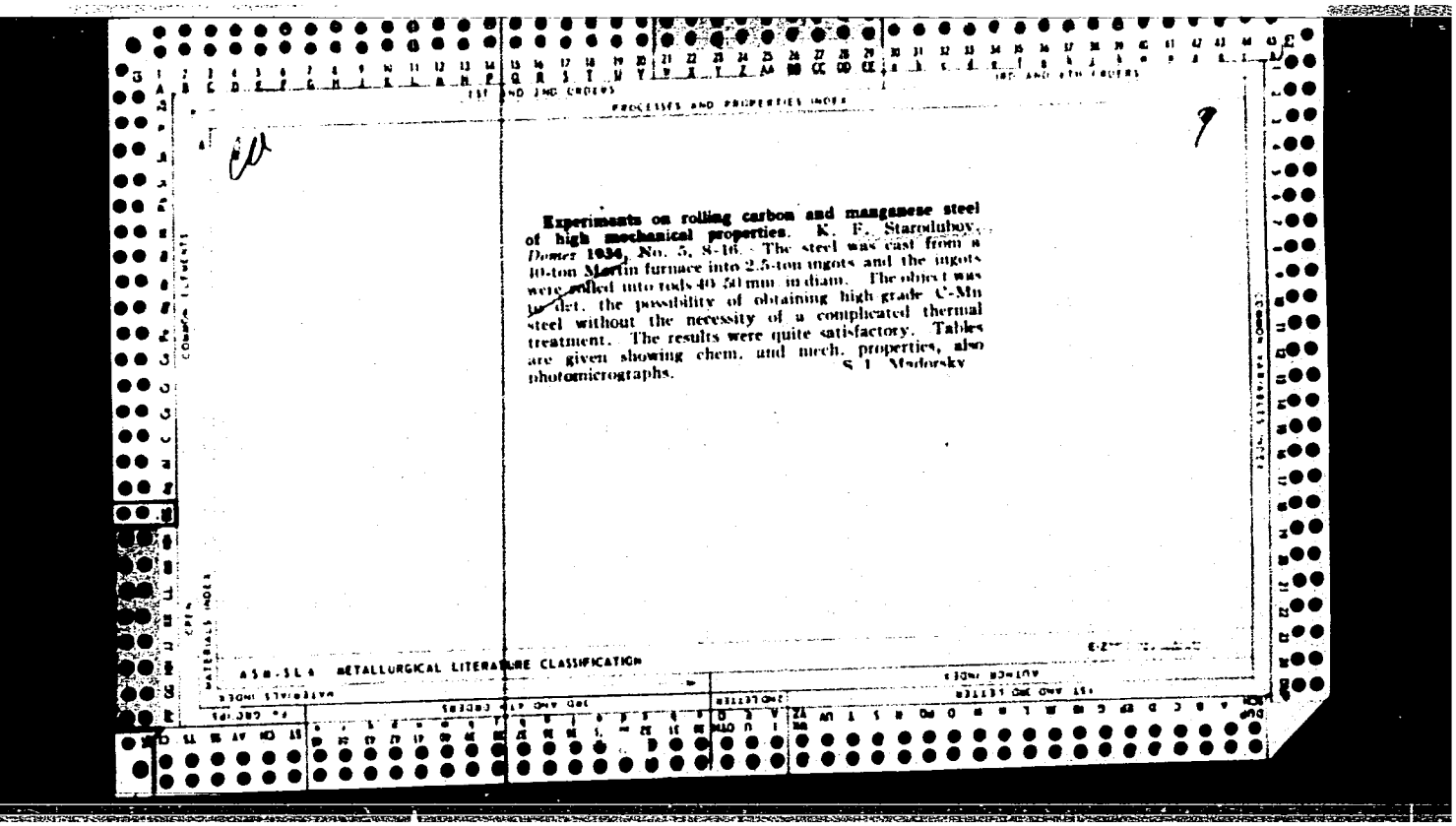
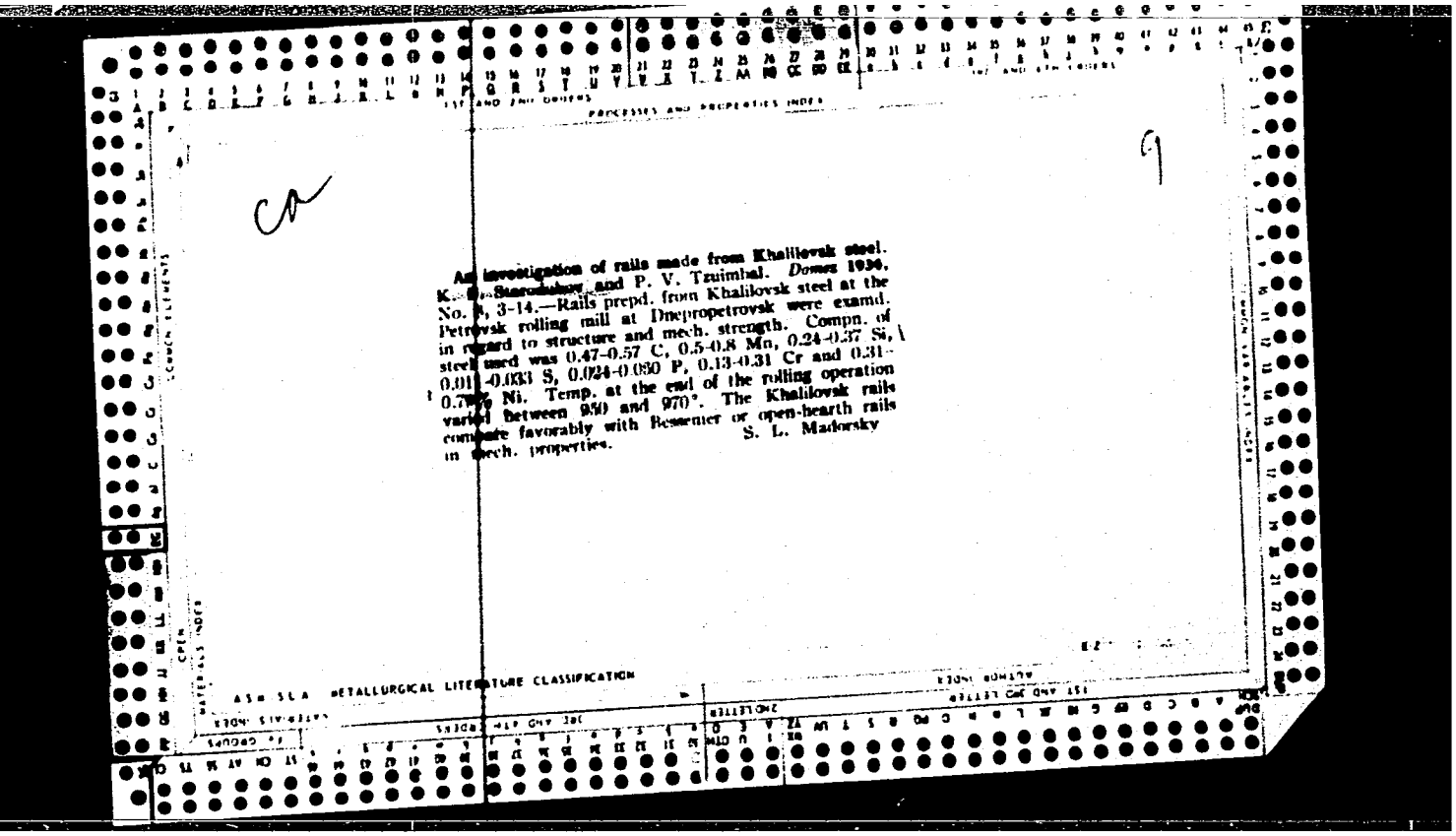
experimental results obtained on the growth of cast iron with repeated heating: moulds of pearlitic iron are claimed to yield the longest life. A lengthy bibliography adds considerably to the value of the work.

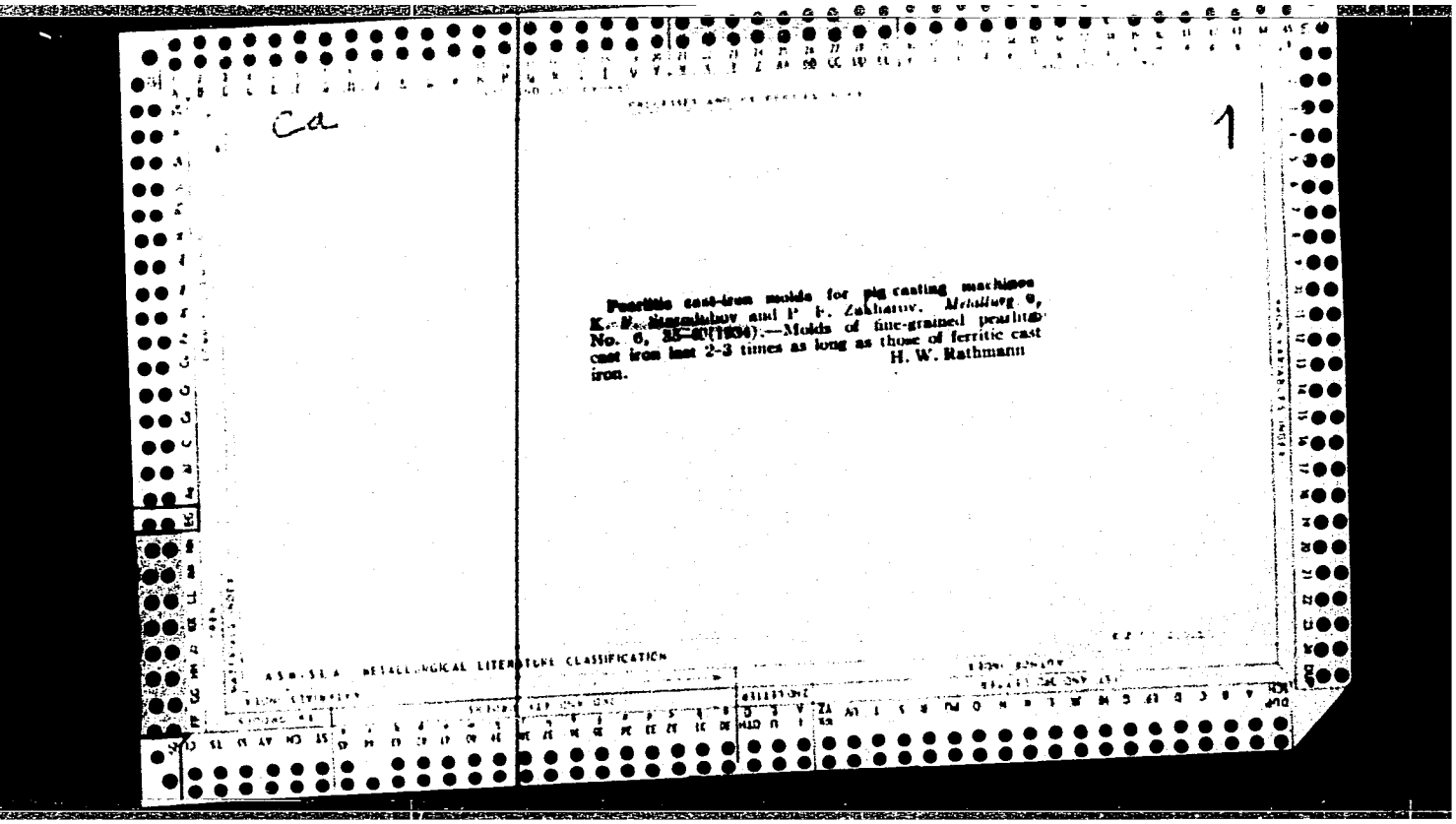


Experiments on rolling carbon and manganese steel of high mechanical properties. K. F. Stardubov. *Domez* **1936**, No. 5, 8-16. The steel was cast from a 10-ton Martin furnace into 2.5-ton ingots and the ingots were rolled into rods 40-50 mm in diam. The object was to det. the possibility of obtaining high grade C-Mn steel without the necessity of a complicated thermal treatment. The results were quite satisfactory. Tables are given showing chem. and mech. properties, also photomicrographs.
S. I. Madorsky



An investigation of rails made from Khalilovsk steel. K. [illegible] Starodubov and P. V. Tzuimbal. *Domez* 1936, No. [illegible], 3-14.—Rails prepd. from Khalilovsk steel at the Petrovsk rolling mill at Dnepropetrovsk were examd. in regard to structure and mech. strength. Compn. of steel used was 0.47-0.57 C, 0.5-0.8 Mn, 0.24-0.37 Si, 0.01-0.033 S, 0.024-0.030 P, 0.13-0.31 Cr and 0.31-0.7[illegible]% Ni. Temp. at the end of the rolling operation varied between 950 and 970°. The Khalilovsk rails compare favorably with Bessemer or open-hearth rails in mech. properties.

S. L. Madorsky

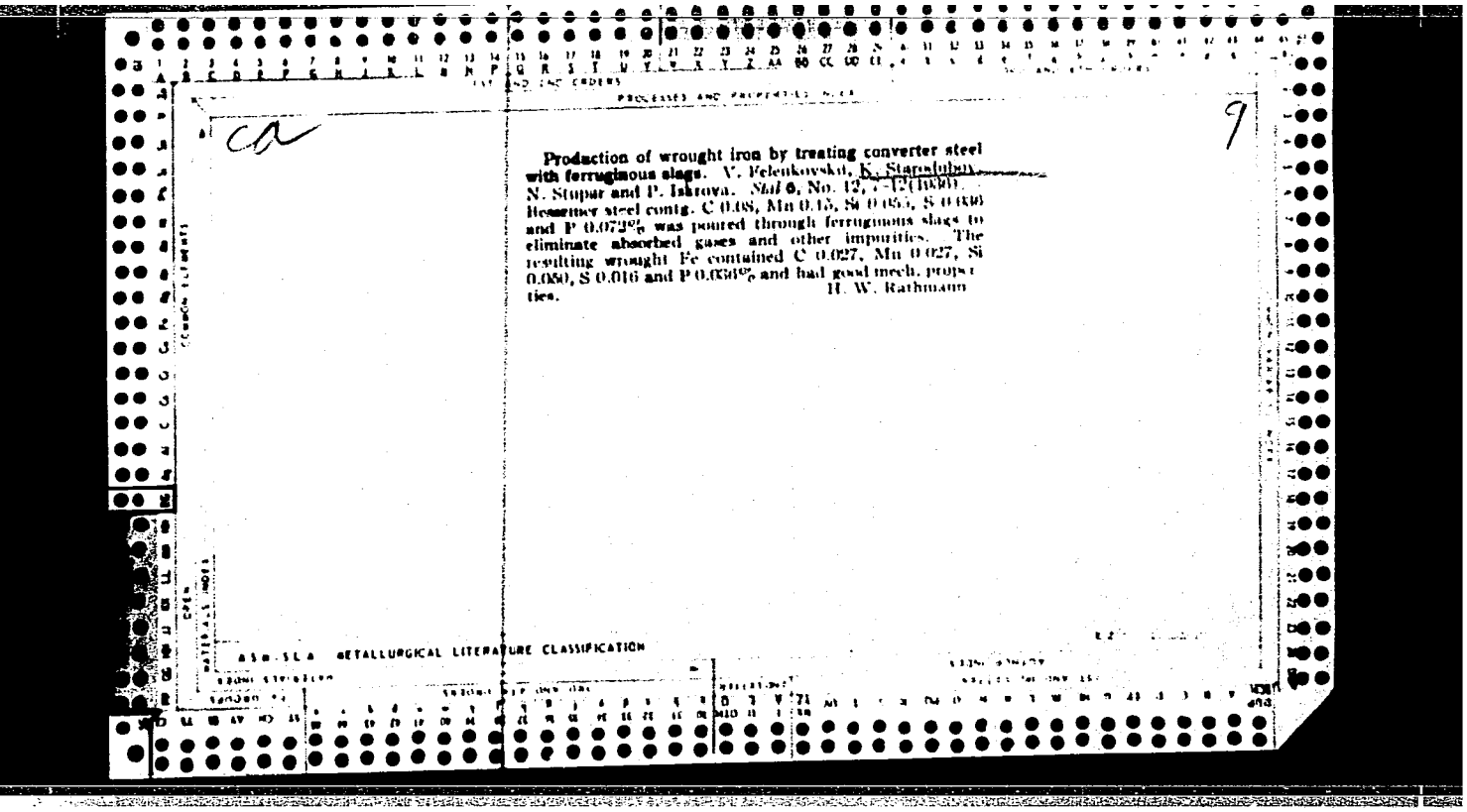


Cd

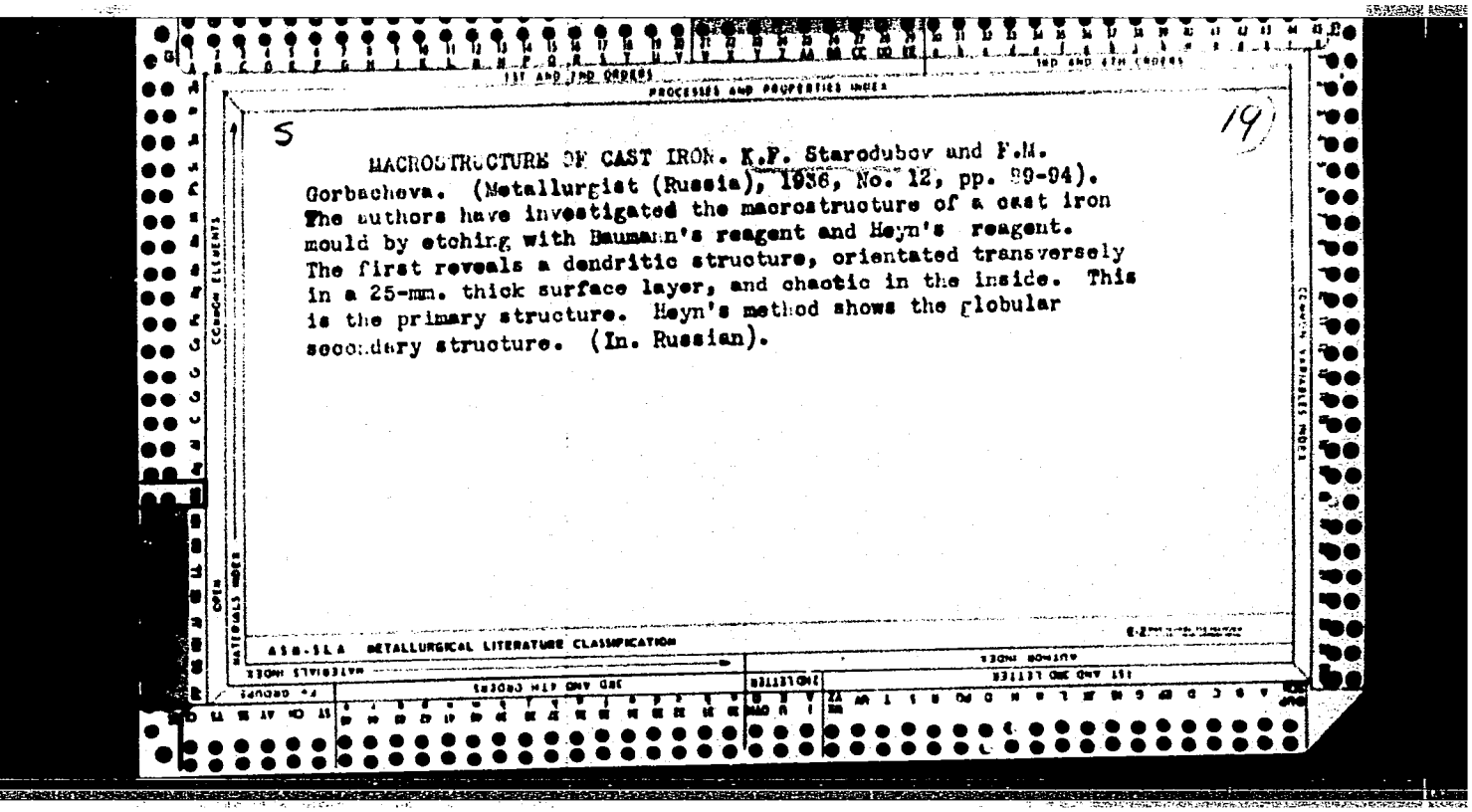
1

Pearlitic cast-iron molds for pig casting machines. K. N. Stanislavov and P. F. Zakharov. *Metallurg* 9, No. 6, 35–40(1934).—Molds of fine-grained pearlitic cast iron last 2-3 times as long as those of ferritic cast iron.
H. W. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Production of wrought iron by treating converter steel with ferruginous slags. V. Felenkovskii, K. Starosluber, N. Stupar and P. Iskrova. *Stal* 6, No. 12, 1-12 (1940). Bessemer steel contg. C 0.08, Mn 0.15, Si 0.05, S 0.030 and P 0.075% was poured through ferruginous slags to eliminate absorbed gases and other impurities. The resulting wrought Fe contained C 0.027, Mn 0.027, Si 0.050, S 0.016 and P 0.030% and had good mech. properties.
H. W. Rathmann



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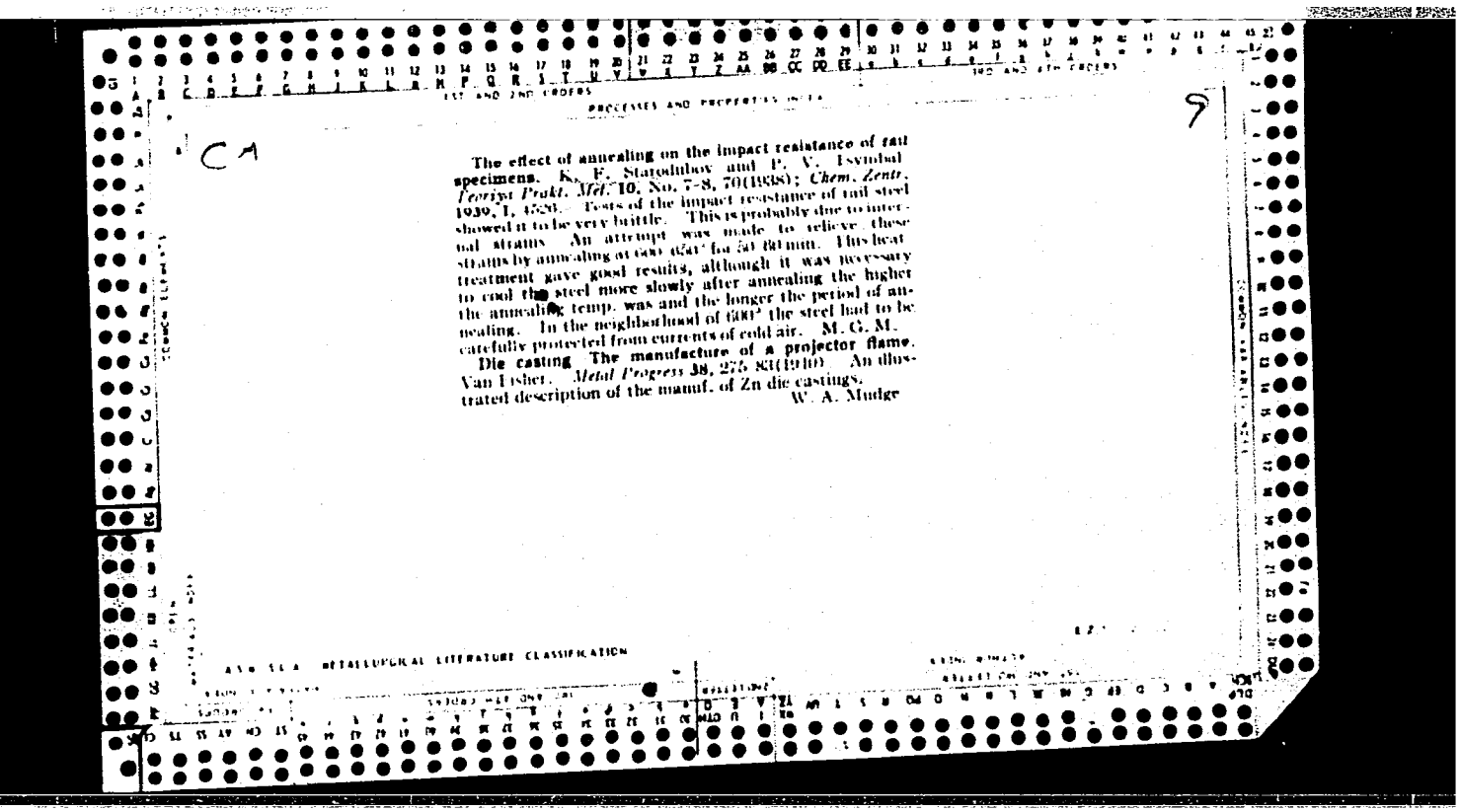
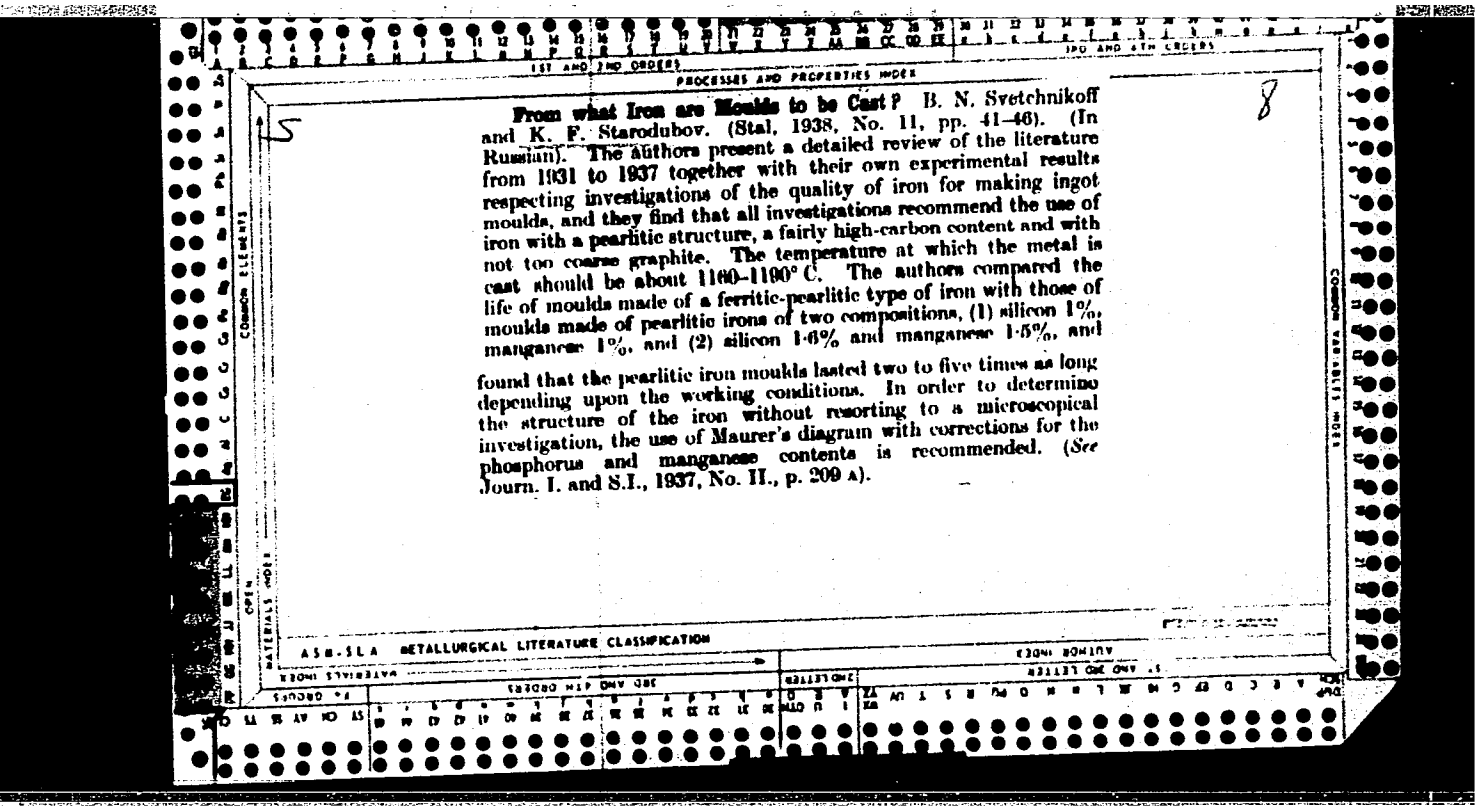
MACROSTRUCTURE OF CAST IRON. K.P. Starodubov and F.M. Gorbacheva. (Metallurgist (Russia), 1936, No. 12, pp. 89-94). The authors have investigated the macrostructure of a cast iron mould by etching with Baumann's reagent and Heyn's reagent. The first reveals a dendritic structure, orientated transversely in a 25-mm. thick surface layer, and chaotic in the inside. This is the primary structure. Heyn's method shows the globular secondary structure. (In. Russian).



The effect of annealing on the impact resistance of rail specimens. K. F. Stavrolubov and P. V. Tsvirbal *Teoriya Prakt. Met.* **10**, No. 7-8, 70(1938); *Chem. Zentr.* 1939, I, 4529. Tests of the impact resistance of rail steel showed it to be very brittle. This is probably due to internal strains. An attempt was made to relieve these strains by annealing at 600° for 5½ hrs. This heat treatment gave good results, although it was necessary to cool the steel more slowly after annealing the higher the annealing temp. was and the longer the period of annealing. In the neighborhood of 600° the steel had to be carefully protected from currents of cold air. M. G. M.

Die casting. The manufacture of a projector flame. Van Fisher. *Metal Progress* **38**, 275-83(1940). An illustrated description of the manuf. of Zn die castings.

W. A. Mudge



PROCESSES AND PROPERTIES INDEX

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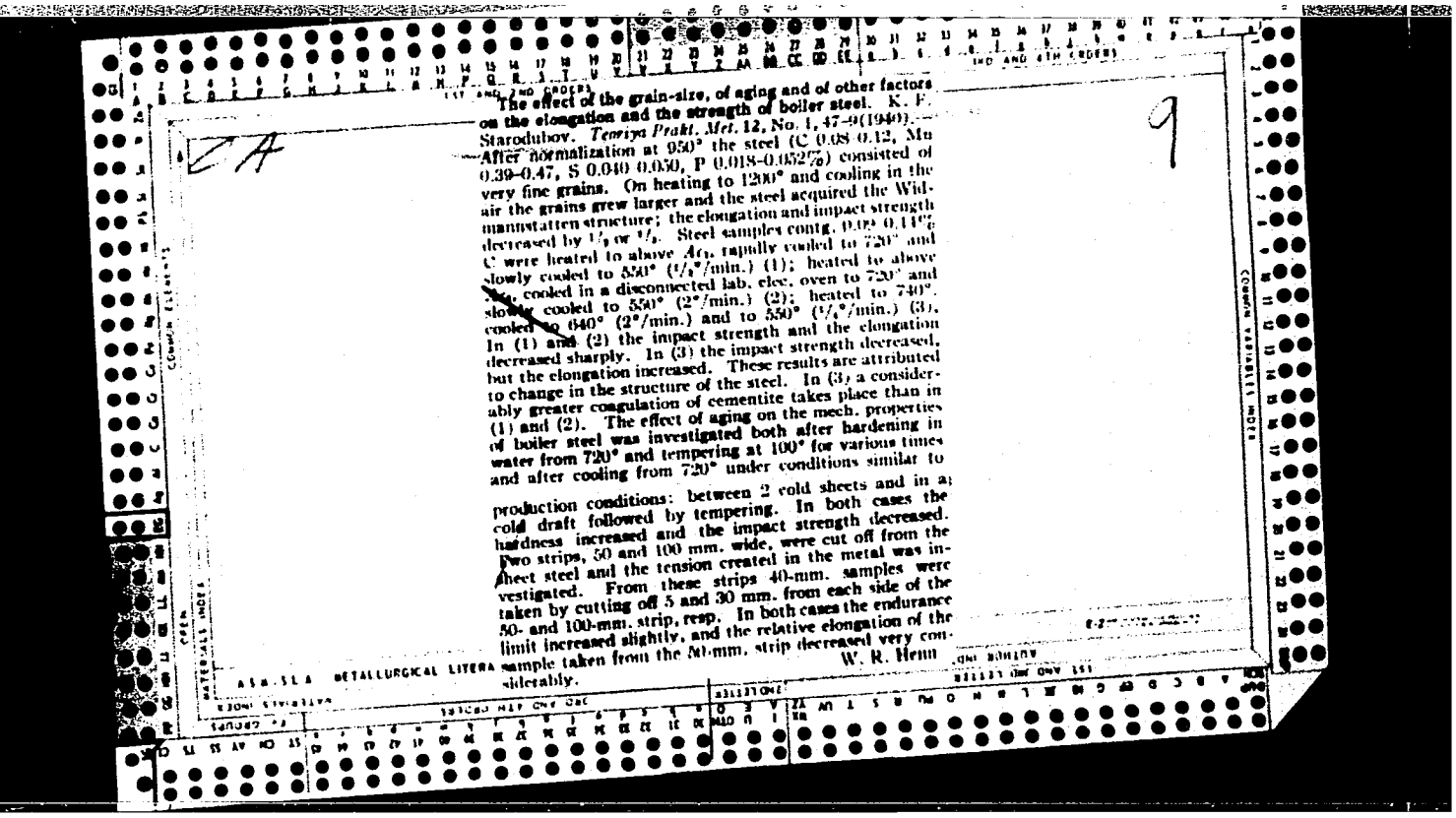
8

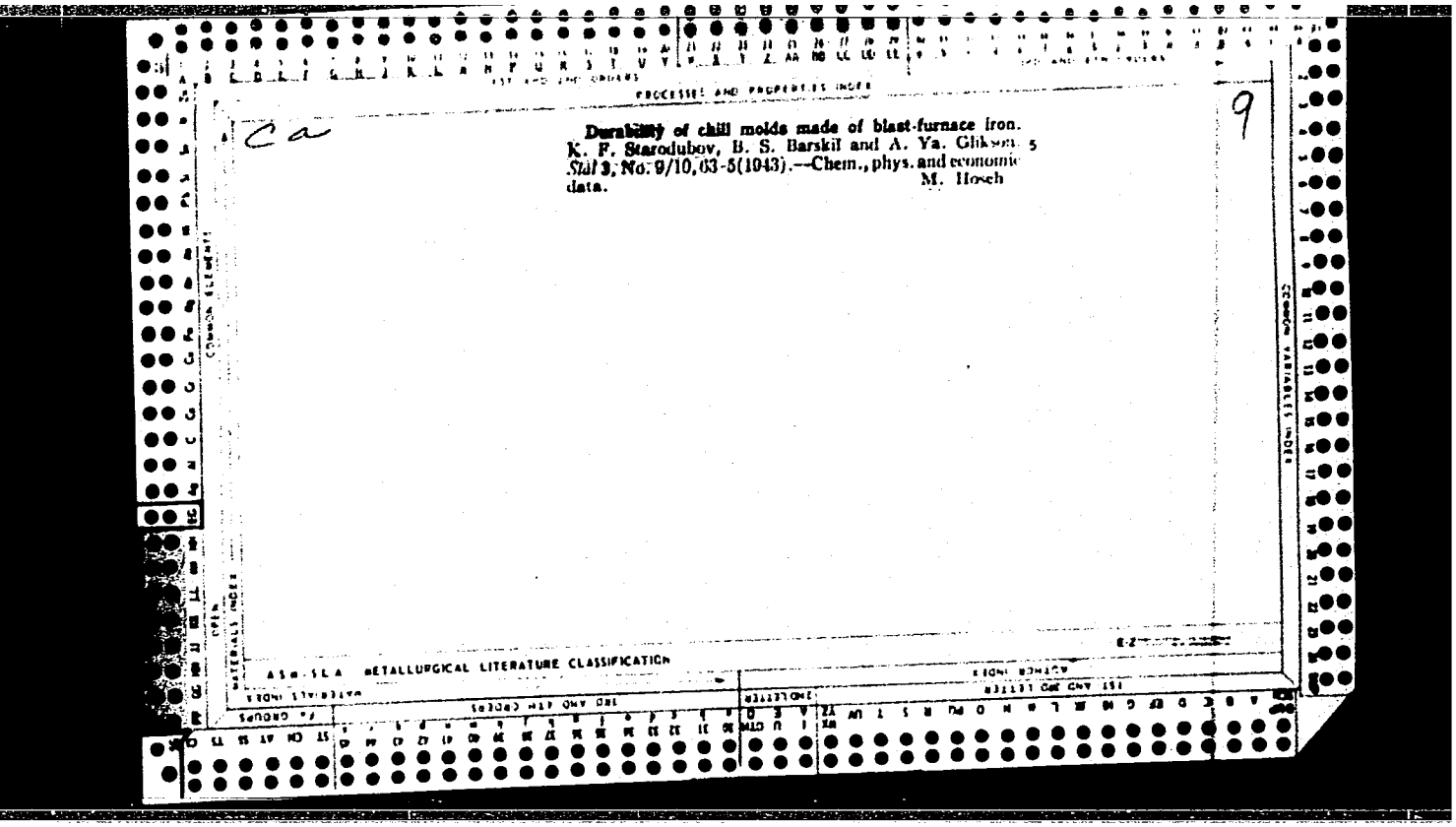
From what Iron are Moulds to be Cast? B. N. Svetchnikoff and K. F. Starodubov. (Stal, 1938, No. 11, pp. 41–46). (In Russian). The authors present a detailed review of the literature from 1931 to 1937 together with their own experimental results respecting investigations of the quality of iron for making ingot moulds, and they find that all investigations recommend the use of iron with a pearlitic structure, a fairly high-carbon content and with not too coarse graphite. The temperature at which the metal is cast should be about 1160–1190° C. The authors compared the life of moulds made of a ferritic-pearlitic type of iron with those of moulds made of pearlitic irons of two compositions, (1) silicon 1%, manganese 1%, and (2) silicon 1·6% and manganese 1·5%, and found that the pearlitic iron moulds lasted two to five times as long depending upon the working conditions. In order to determine the structure of the iron without resorting to a microscopical investigation, the use of Maurer's diagram with corrections for the phosphorus and manganese contents is recommended. (*See* Journ. I. and S.I., 1937, No. II., p. 209 A).

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



The effect of the grain-size, of aging and of other factors on the elongation and the strength of boiler steel. K. F. Starodubov. *Tsentr. Prakt. Met.* 12, No. 1, 47–9(1940).—After normalization at 950° the steel (C 0.08–0.12, Mn 0.39–0.47, S 0.040–0.050, P 0.018–0.052%) consisted of very fine grains. On heating to 1200° and cooling in the air the grains grew larger and the steel acquired the Widmanstatten structure; the elongation and impact strength decreased by 1/3 or 1/2. Steel samples contg. 0.09–0.14% C were heated to above Ac_3, rapidly cooled to 720° and slowly cooled to 550° (1/4°/min.) (1); heated to above Ac_3, cooled in a disconnected lab. elec. oven to 720° and slowly cooled to 550° (2°/min.) (2); heated to 740°, cooled to 640° (2°/min.) and to 550° (1/4°/min.) (3). In (1) and (2) the impact strength and the elongation decreased sharply. In (3) the impact strength decreased, but the elongation increased. These results are attributed to change in the structure of the steel. In (3) a considerably greater coagulation of cementite takes place than in (1) and (2). The effect of aging on the mech. properties of boiler steel was investigated both after hardening in water from 720° and tempering at 100° for various times and after cooling from 720° under conditions similar to production conditions: between 2 cold sheets and in a cold draft followed by tempering. In both cases the hardness increased and the impact strength decreased. Two strips, 50 and 100 mm. wide, were cut off from the sheet steel and the tension created in the metal was investigated. From these strips 40-mm. samples were taken by cutting off 5 and 30 mm. from each side of the 50- and 100-mm. strip, resp. In both cases the endurance limit increased slightly, and the relative elongation of the sample taken from the 50-mm. strip decreased very considerably.

W. R. Heim

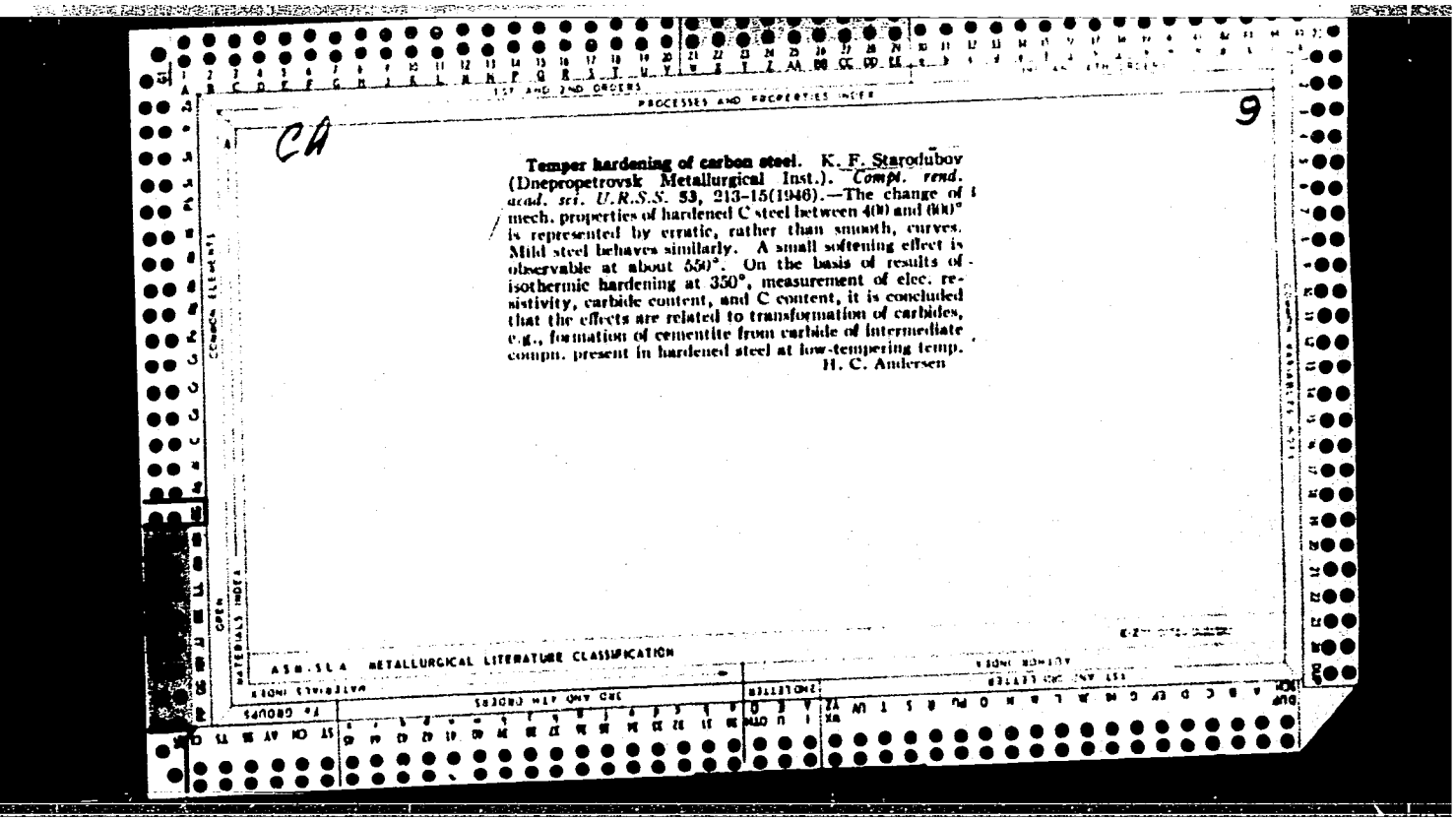


Ca

9

Durability of chill molds made of blast-furnace iron. K. F. Starodubov, B. S. Barskiĭ and A. Ya. Glikson. 5
Stal' 3, No. 9/10, 63-5(1943).—Chem., phys. and economic data.
M. Hoseh

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA 9

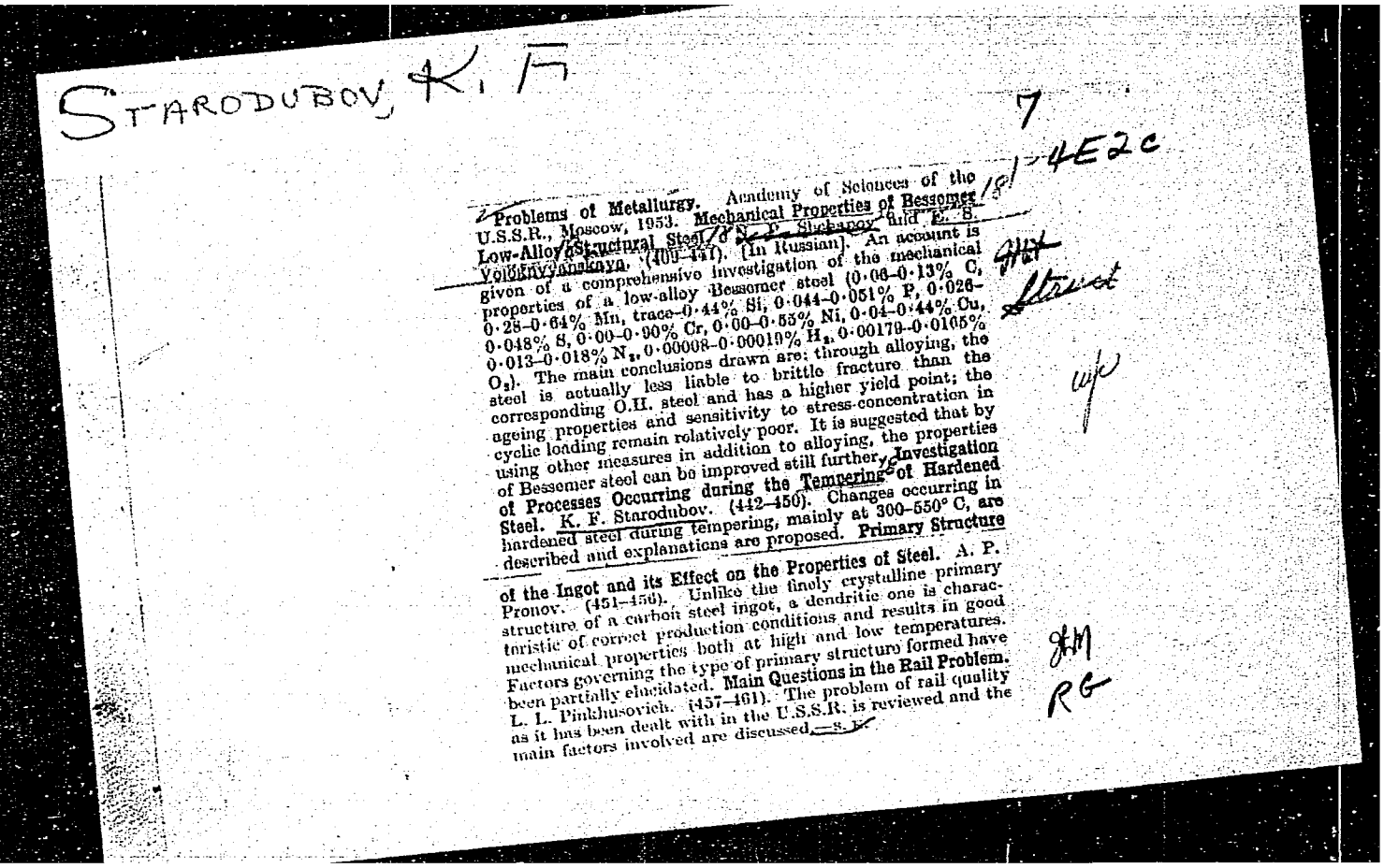
Temper hardening of carbon steel. K. F. Starodubov (Dnepropetrovsk Metallurgical Inst.). *Compt. rend. acad. sci. U.R.S.S.* 53, 213–15(1946).—The change of mech. properties of hardened C steel between 400 and 600° is represented by erratic, rather than smooth, curves. Mild steel behaves similarly. A small softening effect is observable at about 550°. On the basis of results of isothermic hardening at 350°, measurement of elec. resistivity, carbide content, and C content, it is concluded that the effects are related to transformation of carbides, e.g., formation of cementite from carbide of intermediate compn. present in hardened steel at low-tempering temp.
H. C. Andersen

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

STAROUBOV, K. F.

Oborudovanie termicheskikh cekhov metallurgicheskikh i mashinostroitel'nykh zavodov (Equipment of heat treatment shops in metallurgical and engineering works).

Moscow 1948.



STARODUBOV, K. F.

7

1-4E2c

Problems of Metallurgy. Academy of Sciences of the U.S.S.R., Moscow, 1953. **Mechanical Properties of Bessemer Low-Alloy Structural Steel.** S. P. Sukharov and K. F. Starodubov. (409–441). [In Russian]. An account is given of a comprehensive investigation of the mechanical properties of a low-alloy Bessemer steel (0·06–0·13% C, 0·28–0·64% Mn, trace–0·44% Si, 0·044–0·051% P, 0·026–0·048% S, 0·00–0·90% Cr, 0·00–0·55% Ni, 0·04–0·44% Cu, 0·013–0·018% N_2, 0·00008–0·00019% H_2, 0·00179–0·0105% O_2). The main conclusions drawn are: through alloying, the steel is actually less liable to brittle fracture than the corresponding O.H. steel and has a higher yield point; the ageing properties and sensitivity to stress-concentration in cyclic loading remain relatively poor. It is suggested that by using other measures in addition to alloying, the properties of Bessemer steel can be improved still further. **Investigation of Processes Occurring during the Tempering of Hardened Steel.** K. F. Starodubov. (442–450). Changes occurring in hardened steel during tempering, mainly at 300–550° C, are described and explanations are proposed. **Primary Structure of the Ingot and its Effect on the Properties of Steel.** A. P. Pronov. (451–456). Unlike the finely crystalline primary structure of a carbon steel ingot, a dendritic one is characteristic of correct production conditions and results in good mechanical properties both at high and low temperatures. Factors governing the type of primary structure formed have been partially elucidated. **Main Questions in the Rail Problem.** L. L. Pinkhusovich. (457–461). The problem of rail quality as it has been dealt with in the U.S.S.R. is reviewed and the main factors involved are discussed.—S. K.

STARODUBOV, K.F.

On the origin of Damascus steel patterns. Trudy po ist. tekh. no.5:30-38 '54. (MLRA 8:1)
(Damascening)

Starodubov, K.F.

USSR/Transformation in Solid Bodies. E-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11766

Author : Starodubov, K.F., Kossaya, I.I.
Inst : -
Title : On the Role of Gases During the Process of Aging of Steel

Orig Pub : Nauch. tr. Dnepropetr. metallurg. in-ta, 1955, vyp. 33, 332-344

Abstract : No abstract.

Card 1/1

STARODUBOV, K.F., redaktor; SAMOKHVALOV, Ya.A. redaktor izdatel'stva; ROZENTSVEYG, Ye.N., tekhnicheskiy redaktor

[Heat treatment of seamless-rolled railroad car wheels] Termicheskaia obrabotka zheleznodorozhnykh tsel'nokatanykh koles. Pod red. K.F. Starodubova. Kiev, 1956. 179 p. (MLRA 10:4)

1. Akademiya nauk URSR, Kiev, Instytut chernoy metalurgii.
2. Chlen-korrespondent AN USSR (for Starodubov)
(Car wheels)

STARUDUBOV, K. F.

Phase compositions of the surfaces of various metals in the shape of electrodes after the passing of electric sparks. K. F. Starodubov and B. P. Kolesnik. *Dopovidi Akad. Nauk Ukr. R.S.R.* 1956, 630–41.—Sparks were caused to pass from cathodes of Al, V, Mn, Fe, Ni, Cu, Zn, Zr, Nb, Cd, Sn, Pb, and Bi to anodes of graphite (I), Al, V, Mn, Fe, Ni, Cu, Zn, Zr, Nb, Cd, Sn, Pb, and Bi. The surface layers obtained were then analyzed by the aid of x-ray diagrams and the microhardnesses. The results are presented in 3 comprehensive tables. Examples: between an anode of Fe and a cathode of V one will observe the formation of α_1-, α_2-, and β-V_2O_5 and Fe_2O_3; between an anode of Mn and a cathode of Sn only Sn and SnO_2 will be formed on the surfaces; between a cathode of Nb and an anode of Cu, λ CuO and NbO_2 will be formed. Special attention was paid to Fe cathodes; if these were opposed to various anodes and the surface layer obtained was tempered afterwards by 3 short treatments *in vacuo* at 600°, it became possible to subdivide all the anode materials used into 3 groups. The 1st group comprises V, Zr, Nb, and I, which show no phase changes after such treatment. The 2nd group comprises Ni and Al, which show slight changes, and the 3rd group, Mn, Fe, and Cu, show large phase changes after such treatment.

Werner Jacobson

RMMT

STARODUBOV, K.F.; CHERNYAVSKAYA, S. G.

Changing the corrosion resistance of hardened steel during tempering. Dop. AN URSR no.2:140-143 '56. (MLRA 9:12)

1. Chlen-korrespondent Akademii nauk USSR (for Starodubov). 2. Institut chornoi metalurgii Akademii nauk URSR (for Starodubov and Chernyavskaya). (Steel--Corrosion)

STARODUBOV, K.F.

137-58-5-10014

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 161 (USSR)

AUTHOR: Starodubov, K. F.

TITLE: Improving the Resistance to Wear and the Strength of Parts by Heat Treatment (Povysheniye iznosoustoychivosti i prochnosti detaley oborudovaniya putem termicheskoy obrabotki)

PERIODICAL: Tr. Nauchno-tekhn.o-va chernoy metallurgii. Ukr. resp. pravl. 1956, Vol 3, pp 19-23

ABSTRACT: Until recently, most investigators plotted the change occurring in the mechanical properties of carbon steel and of many alloy steels against the tempering (T) temperature in the form of smooth curves. Tensile and a_k testing of Bessemer rail steel of the following percentage content: C 0.58, Mn 0.70, Si 0.20, S 0.032, and P 0.057, showed that after quenching and T a sharp diminution in ψ and a noticeable reduction in δ occurred in the 450-550°C interval in this steel, while there was a very slow rise in a_k to 600°. Identical results were obtained by experiments with two other melts of analogous chemical composition. Tensile and a_k tests of spring steel 60S2, containing (in %) C 0.61, Si 1.61, Mn 0.68, S 0.027, Cr 0.06, Ni 0.05, revealed

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Improving the Resistance (cont.)

a sharp dip in the ψ curve and a very slow rise in the δ and a_k curves. The results were reproduced in their entirety in the testing of four other melts of 55S2 steel. Determination of the properties was performed after T at 25-50° intervals. X-ray analysis showed that the impairment of the plastic properties of the St is induced by breakdown of the ferrite blocks. This breakdown occurs on separation of the carbides from the ferrite, which starts at 400°. The impairment of plastic qualities had not been observed previously because the majority of investigators had determined the changes in properties on T at 100-hour intervals, with the result that this effect, which appears between 400 and 500°, escaped observation. A new technical process for the heat treatment of wheels is suggested. This process consists of 50-cps induction heating of the wheel rim with hardening to a depth of 60 mm and cooling in a special quenching machine. In the course of the hardening process, the wheel is rotated in the vertical plane and the lower portion of the rim is immersed to a depth of 60 mm in a quenching tank containing running water. Wheels are T at 450-500° instead of 550-600°. Advantages of the process are a saving of heat, reduction in heating time from 2-3 hours to 6-8 min, consistency of heat-treatment results, superior mechanical properties, simplicity of equipment, and the possibility of working it into the production process flow. The attention of metallurgical plant personnel is drawn to the need for wide

137-58-5-10014

Improving the Resistance (cont.)

dissemination of the process of gas carburizing, gas cyaniding, and needling of steel.

F.N.

1. Steels--Mechanical properties 2. Steels--Heat treatment 3. Steel--Quality control

Card 3/3

Starodubov, K.F.

E-6

USSR/Transformation in Solid Bodies.

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11765

Author : Starodubov, K.F., Chernyavs'ka, S.G.

Inst : Institute of Ferrous Metallurgy, Academy of Sciences, Ukrainian SSR.

Title : Change in the Dispersion of Carbides During the Tempering of Quenched Steel.

Orig Pub : Dopovidi AN URSR, 1956, No 3, 259-262

Abstract : Using a photocolorimetric procedure, developed by the authors, a study is made of the change in the degree of dispersion of the carbides as a function of the tempering time of quenched steel. A horizontal section in the interval from 275 to 425° and a steeply rising section in the interval of 425 -- 525° were established on the curves that show the dependence of the change in the intensity of

Card 1/2

E-6

USSR/Transformation in Solid Bodies.

Abs Jour Referat Zhur - Fizika, No 5, 1957, 11765

the color of solutions of shavings of the specimens in nitric acid on the tempering temperature. To explain the noticed effect, considerations are employed concerning the speed of diffusion during the process of carbon coagulation.

Card 2/2

SOV/137-59-1-1821

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 241 (USSR)

AUTHOR: Starodubov, K. F.

TITLE: Induction Heating for Heat Treatment of Products of the Metallurgical Industry (Primeneniye induktsionnogo nagreva dlya termicheskoy obrabotki izdeliy metallurgicheskoy promyshlennosti)

PERIODICAL: V sb.: Prom. primeneniye tokov vysokoy chastoty. Riga, 1957, pp 47-55

ABSTRACT: A description of separate examples of induction heating (IH). Hardening and self-tempering of seamless-rolled railway-car wheels (W) using residual heat left after the rolling operation. The author proposes a procedure which would double the service life of W. After being roll-forged the W is cooled to Ar_1 temperature, then heated in a furnace to Ac_3, whereupon the rim of the W is water-cooled. This ensures recrystallization and improves the metal structure. After the final machining W is induction-heated with industrial-frequency current. The W rim is heated to a depth of 60 mm in 6 min; the heating is done by a five-coil inductor with a magnetic circuit using 60 kwh. A small portion of the revolving W is immersed in water.

Card 1/2

Induction Heating for Heat Treatment of Products of the Metallurgical Industry

The austenite breaks down into troostite with lamellar carbides which are more wear-resistant than the spheroidal ones. The W is then tempered at 500°C. An automatic machine which works according to the above procedure is built for heat treating 40,000 W a year. For production of two-flange W for bridge cranes the author proposes a procedure ensuring a 25% economy of metal and better mechanical properties. A rotating press-forged blank is heated by an arc inductor to 1200-1250°. Rollers located at the ends of the inductors roll out the tread and the flanges of the W. At 850-900° a portion of the rotating W is quenched by immersion in a water tank. In order to avoid decarburization rapid IH is recommended for preheating before rolling. Heating of a 105x105x1000-mm piece of ShKh15 steel to 1130° can be achieved in 120 sec with IH. Energy consumption is 282 kwh/ /ton. In the drawing of pipes (P) 80% of the time is consumed by repeated recrystallization, annealing, and pickling. IH ensures rapid annealing and affords a 50% increase in the deformation of P in each drawing pass. Normalization of electrowelded P improves their properties. Use of IH in normalizing makes possible inclusion of that operation into the flow sheet. A single-coil inductor heats a P 6-8 m long and 50-70 mm in diameter with walls 2.5 - 3.5 mm thick at a speed of 1.4 meter/min. Energy consumption is 240-550 kwh/ton.

G. Z.

137-58-2-3437

STARODUBOV, K. F.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 166 (USSR)

AUTHORS: Starodubov, K. F., Uzlov, I. G.

TITLE: Heat Hardening of the Rolling Surfaces of Wheels (Termicheskoye uprochneniye poverkhnosti kataniya kolesnykh par)

PERIODICAL: Vestn. Vses. n.-i. in-ta zh.-d. transp., 1957, Nr 5, pp 39-41

ABSTRACT: The Institute of Iron and Steel Metallurgy of the Academy of Sciences of the Ukrainian Soviet Socialist Republic and the Dnepropetrovsk Iron and Steel Mill im. Karl Liebknecht have developed and put into operation a process of heat hardening of the rolling surface of wheels (W) consisting of induction heating of the W rim to the hardening temperature, followed by hardening and tempering. Heating was performed by an induction coil in the form of a 5-turn annular solenoid, the inside diameter of which equaled the outside diameter of the W. Heating was run for 4-6 min until the temperature at the rolling surface attained about 900° C. When heating was completed, the inductors were removed, the rate of rotation of the W was increased to 80 rpm, and hardening tanks were brought up beneath the W. Hardening lasted for 120-150 sec, after which tempering followed. An

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137-58-2-3437

Heat Hardening of the Rolling Surfaces of Wheels

investigation of the microstructure of the W rim after heat treatment revealed finely dispersed pearlite with lamellar carbide throughout its cross section. Hardness at the rolling surface (at 10 mm depth) was H_B 318 and at 25 mm depth it was H_B 295, adequate to provide high wear resistance to W and elevated resistance to crumbling-out due to fatigue. Not only the rolling surface of the rim was subjected to hardening, but its side edges as well, and this created a strengthened layer in the zones adjacent to the side edges which during service of the W would prevent formation of beads. Hardening of the W with intermittent immersion of the rim in water assures very low residual stresses, as a wheel rotating in the vertical plane is immersed in the water during hardening for 1/5 of the length of the rim, and 4/5 is in the air. Drawings and a brief description of the installation are provided.

A. M.

1. Metals—Hardening 2. Wheels—Rim hardening

Card 2/2

AUTHORS: Starodubov, K. F. and Kolesnik, B. P. 126-5-3-9/31

TITLE: X-ray Structure Studies on Metals after Electro-spark Working (Rentgenostrukturnoye issledovaniye metallov posle elektroiskrovoy obrabotki)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol V, Nr 3, pp 434-441 (USSR)

ABSTRACT: Data are given on the phase composition and micro-hardnesses of more than 100 combinations of V, Mn, Zr and Nb with graphite, Al, Fe, Ni, Cu, Zn, Cd, Sn, Pb and Bi after electro-spark working. The standard Lazarenko electro-spark hardener (Ref.1) was used, and the surface layers were studied with chromium radiation in a 114.6 mm diameter X-ray camera. The hardness tests were done at 20 g loads on a PMT-3 unit. Table 1 (pp 436-7) gives the worked metal (left column) against electrode metal (top line); the data are the phases found, the Greek letters being solid solutions and the stars denoting supersaturated solutions; the + sign means that a mechanical mixture of the electrode and base metals is formed. Table 2 (microhardness, kg/mm^2) is laid out in the same way, except that the second column on the left

Card 1/3

X-ray Structure Studies on Metals after Electro-spark Working

is the microhardness before working. The results are similar to those found for other combination. The obtained results indicate that the investigated combinations interact during electro-spark hardening in the same way as combinations of other elements investigated earlier by Palatnik (Ref.2). The polarity of the electrodes do not influence the direction of transfer of the material, which is determined by the thermal constants and to a lesser extent by the shape of the electrodes. If layers of "coating" are formed on the cathode from an anode material which does not interact with the cathode material, the adhesion of the coating will always be strong. In most cases oxides are produced. It was found that more oxides are formed from the anode than from the cathode which is attributed to the pointed shape of the anode and is also considered as being a confirmation of the thermal character of the processes between the electrodes. Nitrogen containing phases of compounds could not be detected in the surface layer for any of the investigated combinations of elements.

There are two tables and 9 references, all of which are Soviet.

Card 2/3

126-5-3-9/31

X-ray Structure Studies on Metals after Electro-spark Working

ASSOCIATION: Institut chernoy metallurgii AN Ukr. SSR
(Institute of Ferrous Metallurgy, Ac.Sc., Ukr. SSR)

SUBMITTED: June 4, 1956

1. Metals--Structural analysis 2. Metals--Surface properties
3. X-ray diffraction analysis 4. Sparks--Metallurgical effects

Card 3/3

STARODUBOV, K. F.

129-10-12/12

AUTHOR: Pogodin-Alekseyev, G.I., Starodubov, K.F. and Assonov, A.D.

TITLE: Scientific and technical conference on heat treatment of metals in Leipzig, East Germany. (Nauchno-tekhnicheskaya konferentsiya po termicheskoy obrabotke metallov v Leyptsige)

PERIODICAL: "Metallovedeniye i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.10, pp.53-63 (U.S.S.R.)

ABSTRACT: This conference was held between May 21 and 22, 1957. Over 600 people participated, including some foreign delegates. The conference papers can be classified into 4 groups dealing with heat treatment, induction heating during hardening and gas hardening, heat treatment of components of various grades of steel and theoretical problems of heat treatment. Summaries are given of some of the papers read by East German as well as by guest delegates.
There are 16 figures and graphs and 5 tables.

AVAILABLE: Library of Congress

Card 1/1

32-10-27/32

AUTHOR: Starodubov, K. F. , Member of the AS Ukrainian SSR

TITLE: Comments

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp. 1244 (USSR)

ABSTRACT: In his report delivered on the occasion of the 40th anniversary of the October revolution, the author gives a general view on the most important achievements of Soviet science in recent times. One of the most important achievements, the author states, are the scientific studies in the fields of investigation of metals and alloys in the details of the conversion of phases. The most important results for both sciences and for engineering are those of the separation-processes of the carbide phase, which were obtained by means of spectroscopic analysis. The research work on inner frictions, the application of radioactive indicators and works with electron microscopes may be considered to be of equal importance. The thermokinetic diagrams obtained by the decay of austenite under the conditions of continuous cooling down at various velocities find application in practice. Soviet manufacture of apparatus has substantielly contributed to the investigation of the conversion of phases, viz. by the building of the following equipments: For

Card 1/2

Comments

the analysis of X-ray structure "URS-50-I" and "URS-25-I" with registration of the ionization or intensity of disperse rays. Torsional - pendulum -meter for measuring inner frictions, magnetometers for the investigation of both rapid and slow conversions in ferromagnetic materials, and finally: - the universal electron microscope "УЭМ-100". The next important tasks in the investigation of the conversion of phases, the author states, will be further development of the method for the application of radioactive indicators, studies by using electron microscopes, further development of thermical methods, edition of an atlas of diagrams of isothermic conversions of austenite and thermokinetic diagrams, as well as the increase in production of apparatus for physical investigation of metals.

ASSOCIATION: Akademiya nauk USSR (Academy of Sciences Ukr SSR)

AVAILABLE: Library of Congress

1. Science-USSR-Progress 2. Electron microscopes-Application

Card 2/2

STARODUBOV, K.F.

SVECHNIKOV, V.N., akademik; STARODUBOV, K.F., akademik; DYMOV, A.M., prof.; YEL'YANOV, A.A.; CHERNIKHOV, Yu.A., prof.; SHCHAPOV, N.P., prof.; BLANTER, M.Ye., prof.

Lev Samuilovich Dlugach; obituary. Zav. lab. 23 no.12:1527-1528 '57. (MIRA 11:2)

1. AN USSR (for Svechnikov, Starodubov).
(Dlugach, Lev Samuilovich, 1887-1957)

STARODUBOV, K. F.

18(0) PHASE I BOOK EXPLOITATION SOV/1728

Akademiya nauk SSSR. Institut metallurgii

Sovremennyye problemy metallurgii (Modern Problems in Metallurgy) Moscow, Izd-vo AN SSSR, 1958. 640 p. 3,000 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Eds. of Publishing House: V.S. Rzhevnikov, and A.N. Dernov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This book is intended for scientific and technical personnel in the field of metallurgy.

COVERAGE: This is a collection of articles on certain aspects of Soviet metallurgy. The book is dedicated to Academician Ivan Pavlovich Bardin on the occasion of his 75th birthday. The book is divided into seven parts. The first part consists of two articles presenting a brief account of the biography and professional activity of the Soviet metallurgist. It includes an article by John Chipman, Nicholas Grant, and John Elliott (M.I.T., USA) describing their meeting with Bardin in Moscow and also his visit to the United States. The second part consists of three articles and deals with raw materials and fuels for the Soviet metallurgical industry. The third part represents the major portion of the book. It consists of 25 articles dealing with the various aspects of the metallurgy of pig iron and steel. The fourth part consists of two articles treating the metallurgy of nonferrous metals. The fifth part consists of three articles on the forming of metals. The sixth part consists of eight articles discussing certain aspects of physical metallurgy. The last part deals with general problems in the field of metallurgy. References are given after each article. No personalities are mentioned.

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Modern Problems in Metallurgy SOV/1728

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GENERAL PROBLEMS IN METALLURGY

AVAILABLE: Library of Congress

Card 12/12 GO/ad 6-19-59

9

SOV/137-58-9-19009

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 124 (USSR)

AUTHORS: Starodubov, K.F., Tregubenko, A.F., Yudovich, S.Z., Kolesnik, B.P., Lobarev, M.I.

TITLE: Combatting Decarburization by Induction Heating of Alloy-steel Billets Before Rolling (Primeneniye induktsionnogo nagreva zagotovok legirovannoy stali pered prokatkoy v tselyakh bor'by s obezuglerozhivaniyem)

PERIODICAL: V sb. Metallovedeniye i term. obrabotka. Moscow, Metallurgizdat, 1958, pp 39-49

ABSTRACT: A description is offered of experiments in induction heating in advance of rolling without decarburization of the billets (105x105x1000 mm) made of 60S2A, ShKh15 and U12A steels. It is established that two-frequency heating (50 cps up to the Curie magnetic-transformation point and then 500 cps) is optimal. Because the plant lacked a 500-cycle motor-generator set, induction heating was performed only at 50 cps, the current being taken from a 15,000-kva transformer. The design of the inductor is described. The drawings show the changes in electrical parameters and temperature in accordance with

Card 1/2

Combatting Decarburization by Induction Heating of Alloy-steel (cont.)

heating time. The time required to heat the billet to 1080°C for rolling was 170 seconds in the case of 60S2A; 250 seconds were required to heat ShKh15 steel to 1150°. Under these conditions, the temperature drop across the section of the billet came to 200 and 120°, respectively, with 188 and 282 kwh/t of electrical energy consumed. Metallographic investigation showed decarburization and oxidation on the surface of the billet to be lacking. The structure of the ShKh15 steel did not change, but grain growth occurred in the 60S2A steel (by 2 or 3 points). A design is being developed for industrial application of induction heating under which the billets will be heated to 700-800° in gas furnaces and the rest of the way by 2500-cycle high-frequency current.

F.U.

1. Induction generators--Design 2. Induction generators--Performance
3. Steel--Induction heating

AUTHOR: Staredubov, K.F. SOV/163-58-1-50/53

TITLE: On the Nature of the Processes Occurring in the Tempering of Hardened Steel Within the Temperature Range of 350 to 550° (O prirode protsessov, protekayushchikh pri otpuske zakalennoy stali v intervale temperatur 350 - 550°)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 1, pp 266 - 268 (USSR)

ABSTRACT: The factors influencing the change in the properties of steel in its tempering as well as the nature of the tempering process in the production of steel were discussed. To determine the nature of the tempering of steel alloys within the temperature range of 350 to 550° radiographic investigations were carried out. The radiographic investigations were carried out with samples of distorted lattice of second type and the α-phase of the hardened iron alloys.
Within the temperature range of 400 to 500° the sample divides into small pieces. This division in the phase is discussed and is explained as follows:
At a temperature of 400° C the carbide particles increase very rapidly and thereby the tension in the alloy increases. On this

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On the Nature of the Processes Occurring in the Tempering of Hardened Steel Within the Temperature Range of 350 to 550° SOV/163-58-1-50/53

occasion also the binding between the solid die (α-phase) and the carbide crystals is disturbed. A further increase in the α-phase with the increase in the tempering temperature is caused by the increase in the diffusion process. The division of the α-phase is probably also dependent on the plastic displacement of the boundary layer between the ferrite and carbide phases. There are 3 figures and 10 references, 10 of which are Soviet.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: October 1, 1957

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SOV/137-58-10-21510

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 149 (USSR)

AUTHORS: Starodubov, K. F., Babich, V. K.

TITLE: On the Nature of Processes Occurring in the Third Stage of Tempering (O prirode protsessov, protekayushchikh v tret'yey stadii otpuska)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya, 1958, Nr 2, pp 133-142

ABSTRACT: The process of tempering of hardened cold-worked steel containing 70% C was studied together with the process of tempering of technically pure commercial iron (0.09% C). Deformation of the steel was accomplished by means of drawing. After quench-hardening or deformation, the specimens were tempered at temperatures ranging from 20 to 675°C. Type II distortions were determined together with the dimensions of blocks, the σ_b and δ values, and the magnitude of coercive force. It was established that the δ of tempered steel is reduced and the σ_b slightly increased after the steel had been tempered at a temperature of 375-475°. It is assumed that the increase in tensile strength is attributable

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to the following factors: a) Disintegration of α-phase blocks during disruption of cohesion in lattices of carbide and α phase; b) relief of elastic stresses through secondary plastic slips; c) occurrence of an initial recrystallization stage during processing of the solid α solution. In order to exclude the effect of cohesion in the carbide and α-phase lattices, the process of tempering of a cold-worked steel wire was studied. It is established that the elastic stresses occurring during annealing may be relieved by the action of secondary plastic slips under conditions of increased plasticity at elevated temperatures. The coercive force is determined from the magnitude of the blocks and is but slightly dependent on the elastic distortions of the crystal lattice.

1. Steel--Phase studies 2. Steel--Deformation 3. Steel--Heat treatment 4. Steel--Mechanical properties

Ye. S.

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SOV/21-58-2-5/28

AUTHORS: Starodubov, K.E., Member of the AS UkrSSR, and Polyakov, S.N.

TITLE: Solubility of Carbon in Alpha Iron Alloyed by Manganese and Molybdenum and the Kinetics of Carbon Segregation from the Solution (Rastvorimost' ugleroda v α -zheleze, legirovannom margantsem i molibdenom, i kinetika vydeleniya ugleroda iz rastvora)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 2, pp 135-138 (USSR)

ABSTRACT: The authors studied the behavior of carbon in alpha iron alloyed by 0.75 % manganese and 0.40% molybdenum by the method of internal friction. The presence of these admixtures lowered the solubility of carbon in alpha iron. If, however, manganese alone is present to the amount of 0.75%, the relative quantity of segregated carbides is three times as great as in pure iron. In the case of the presence of 0.40R Mo, the relative quantity of the segregated phase is the same as in pure iron. The authors also studied the kinetics of the segregation process and established that manganese delays considerably its beginning, whereas molybdenum hardly changes its kinetics as compared with the case of pure iron. While investigating iron alloyed by molyb-

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Solubility of Carbon in Alpha Iron Alloyed by Manganese and Molybdenum and the Kinetics of Carbon Segregation from the Solution

denum it was found that on tempering at about 550 - 650°C a very stable carbide is formed, and the solubility of carbon in alpha iron almost vanishes. On the basis of the results obtained, the effect of manganese and molybdenum on the manifestation of reversible high-temperature tempering brittleness is explained. There are 3 graphs, 1 table and 9 references 6 of which are Soviet, 2 English and 1 Japanese.

ASSOCIATION: Institut chernoy metallurgii AN UkrSSR (Institute of Ferrous Metallurgy of the AS UkrSSR)

SUBMITTED: May 6, 1957

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

STARODUBOV, K.F., akad.; POLYAKOV, S.N., inzh.

Temper brittleness in carbon steel. Izv. vys. ucheb. zav.; chern. met. no.3:131-144 Mr '58. (MIRA 11:5)

1.Dnepropetrovskiy metallurgicheskiy institut.
(Steel--Brittleness)

AUTHORS: Starodubov, K. F., Tylkin, M. A. SOV/163-58-3-40/49

TITLE: The Effect of the Hardening Temperature on the Change of the Properties of Steels in Tempering (Vliyaniye temperatury zakalki na izmeneniye svoystv stali pri otpuske)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 3, pp 242-244 (USSR)

ABSTRACT: The effect of the hardening temperature on the change of the properties of the steel in tempering was investigated. A steel sample of the type U12A with 1,12% C was used for this investigation.
The results of the mechanical investigations and the determination of the coercive force of the steel hardened at temperatures below 650° were compared to the results obtained with steel samples hardened above 920°. In samples hardened at temperatures above 920° C in the curve of the coercive force a minimum may be found. In steel samples hardened below 650°C, i.e. in samples in which there do not occur a separation of the carbide phases from the α-solution and a destruction of the α-phase neither a decrease of the plastic properties nor an increase of the coercive forces was found.

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The Effect of the Hardening Temperature on the Change of the Properties of Steels in Tempering

The results obtained agree with the present concepts on the causes of the decrease of the plastic properties and the increase of the coercive force.
There are 1 figure and 5 references, which are Soviet.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: October 1, 1957

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AUTHORS: Stanodubov K. F., Tylkin, M. A. SOV/163-58-3-41/49

TITLE: The Effect of a Low Temperature Cooling of Steels Prior to Hardening on the Change of the Mechanical Properties of the Steel at an "Average" Tempering (Vliyaniye glubokogo okhlazhdeniya stali posle zakalki na izmeneniye yeye mekhanicheskikh svoystv pri "srednem" otpuske)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 3, pp 245-247 (USSR)

ABSTRACT: The effect of the residual austenite and the additional stresses on the change of the properties of hardened steels in tempering was investigated within the temperature range of 350-650°; besides, a lower cooling of the steel sample U12A with 1,12% C was carried out.
The change of the mechanical and physical properties was proved by means of the determination of the hardness and the coercive force.
The change of the hardness, the impact viscosity and the coercive force of the samples in the tempering after hardening was investigated.
The figures 1, 2, 3 and 4 show that on the curves of the specific

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The Effect of a Low Temperature Cooling of Steels Prior to Hardening on the Change of the Mechanical Properties of the Steel at an "Average" Tempering

hardness the impact viscosity has a minimum, whereas a maximum is formed on the curve of the coercive force.
In the cooling of the steel samples in liquid oxygen an insignificant increase of the strength as well as a corresponding decrease of the plastic properties of the impact viscosity occurs. After the thermal treatment of the steel samples the absolute values of the strength, the plastic properties and the impact viscosity differ only little.
The great deformation in the crystal lattice of the steel sample in the cooling in liquid oxygen also influences the diffusion processes. The insignificant change of the plastic properties in deeper cooling as compared to the tempering immediately after hardening is explained by the increase of stresses in the steel sample.
There are 4 figures and 3 references, which are Soviet.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: October 1, 1957

18(7)
AUTHORS: Starodubov, K. F., Tylkin, M. A. SOV/163-58-4-41/47

TITLE: Change in the Properties of Normalized Steel in Tempering (Izmeneniye svoystv normalizovannoy stali pri otpuske)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 4, pp 232-235 (USSR)

ABSTRACT: The influence of tempering temperature on the properties of normalized steel was investigated here. These properties are compared with those obtained after quenching and tempering. A Bessemer rail steel of two melts was investigated (0.58 - 0.60% C, 0.87 - 0.93% Mn). The experiments showed that in rail steel air-cooled from a temperature above A_3 the effect of reduction of plastic properties, which is present at the tempering of a hardened steel, is missing. In this case, the properties change monotonously at all tempering temperatures investigated. Tempering of the normalized steel reduces its properties very slightly. Due to the normalization, lamellar textures of the perlite type are immediately formed. The structural state of the normalized steel remains almost unchanged in tempering. Elongation tests show that the

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stretching - even after tempering at 550-575° - is much greater in a previously normalized steel than in a previously hardened steel. There are 4 figures and 3 Soviet references.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Institute of Metallurgy)

SUBMITTED: October 1, 1957

18(7) SOV/163-58-4-42/47

AUTHORS: Starodubov, K. F., Sazonova, A. A.

TITLE: Influence of the Method of Heat Treatment on the Damping (Vibration) Toughness of Silicon Spring Steel (Vliyaniye rezhima termcobrabotki na tsiklicheskuyu (vibratsionnuyu) vyazkost' kremnistoy pruzhinnoy stali)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 4, pp 236-239 (USSR)

ABSTRACT: The rate of damping toughness of the spring steel 55S2 was investigated by various methods of heat treatment. The following heat treatments were provided for obtaining final operation properties: quenching with tempering at different temperatures, or an isothermal austenite decomposition at temperatures above the martensite point. The apparatus of the Feppl' - Perts (Ref 2) type was used to investigate the processes taking place in the final heat treatment. The investigation showed that the most convenient heat treatment for springs is the quenching with subsequent tempering in the range of 350-450° in order to

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Influence of the Method of Heat Treatment on the Damping (Vibration) Toughness of Silicon Spring Steel SOV/163-58-4-42/47

obtain a high rate of damping toughness. There are 3 figures and 2 references, 1 of which is Soviet.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Institute of Metallurgy)

SUBMITTED: October 1, 1957

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