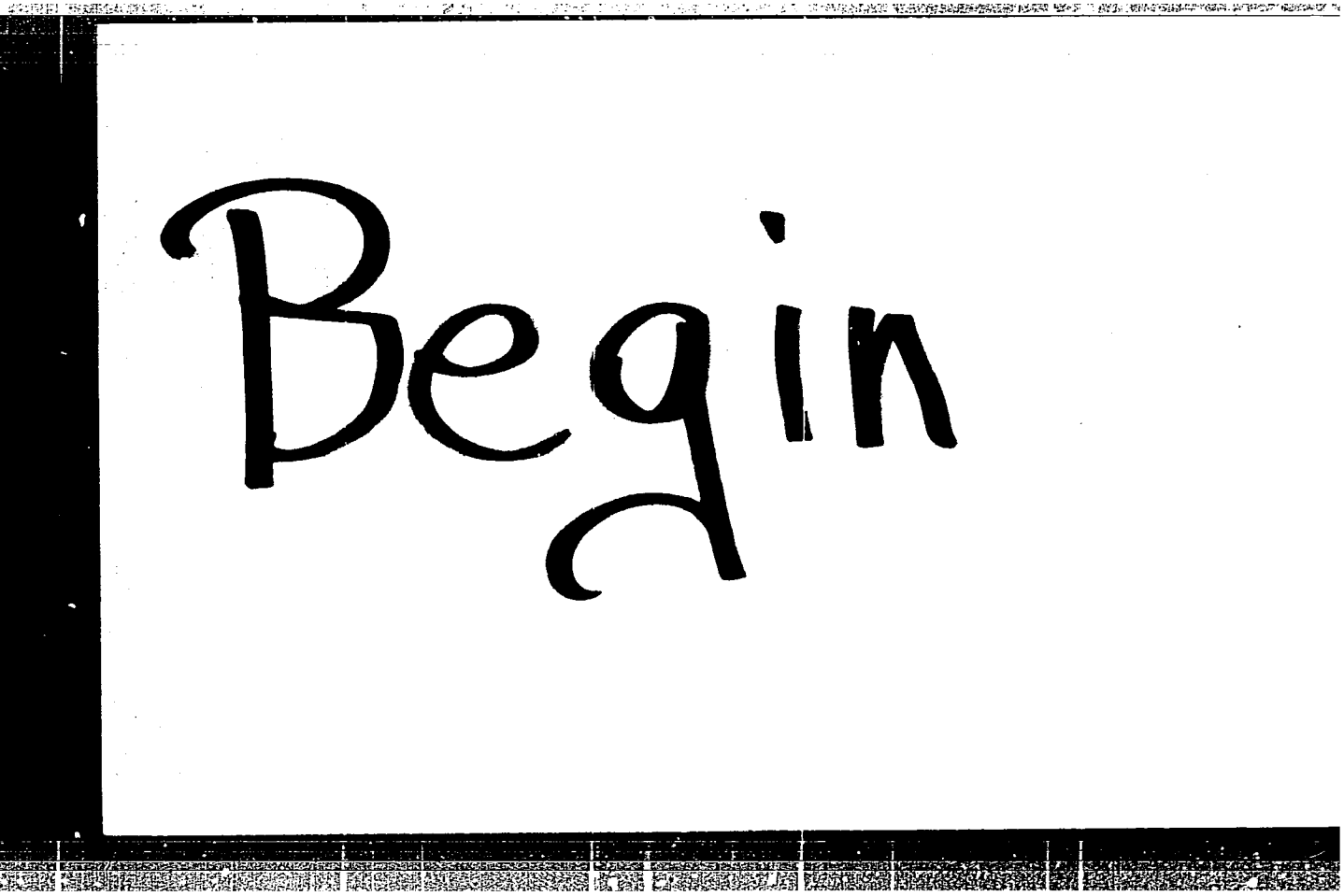
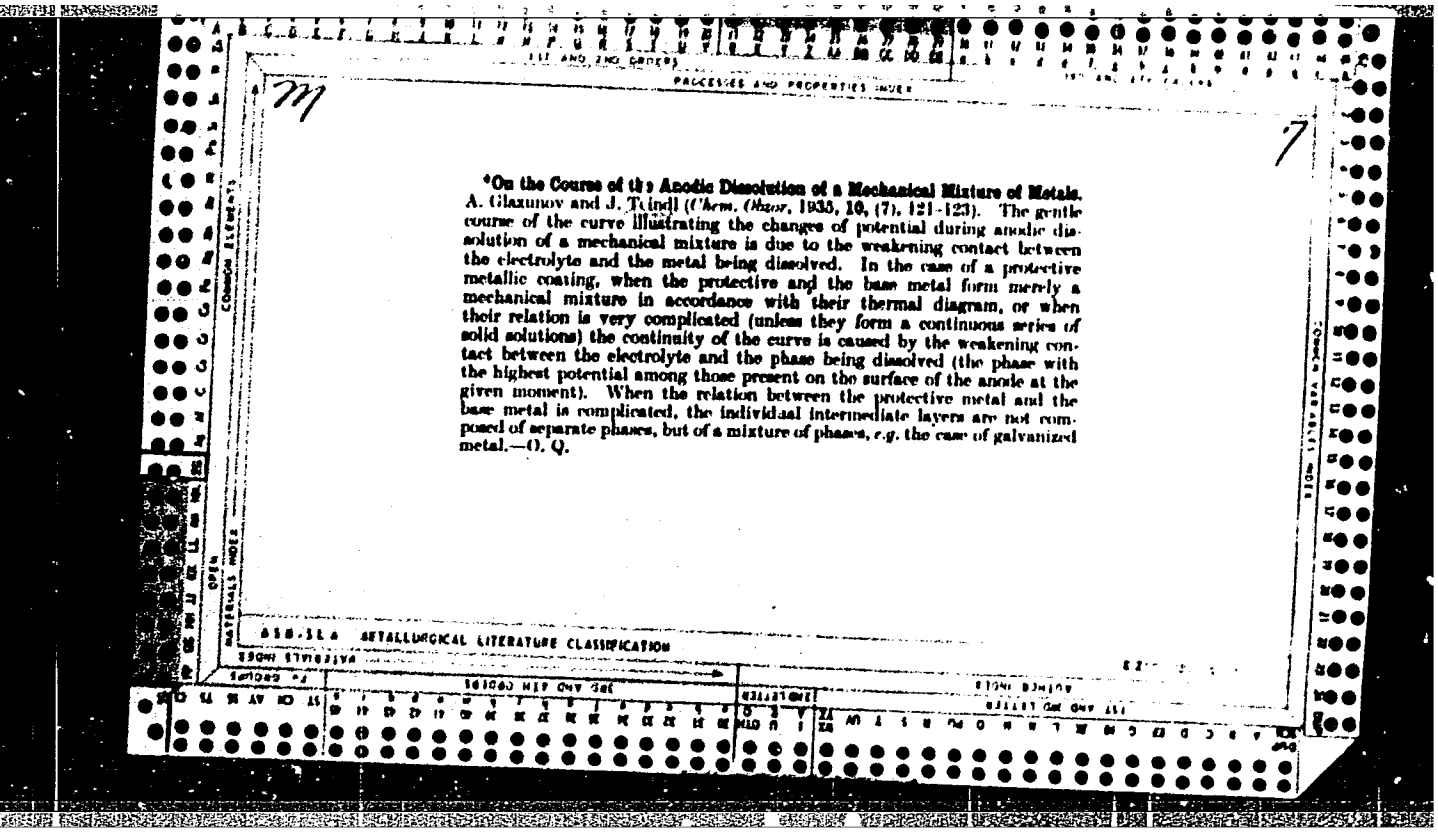


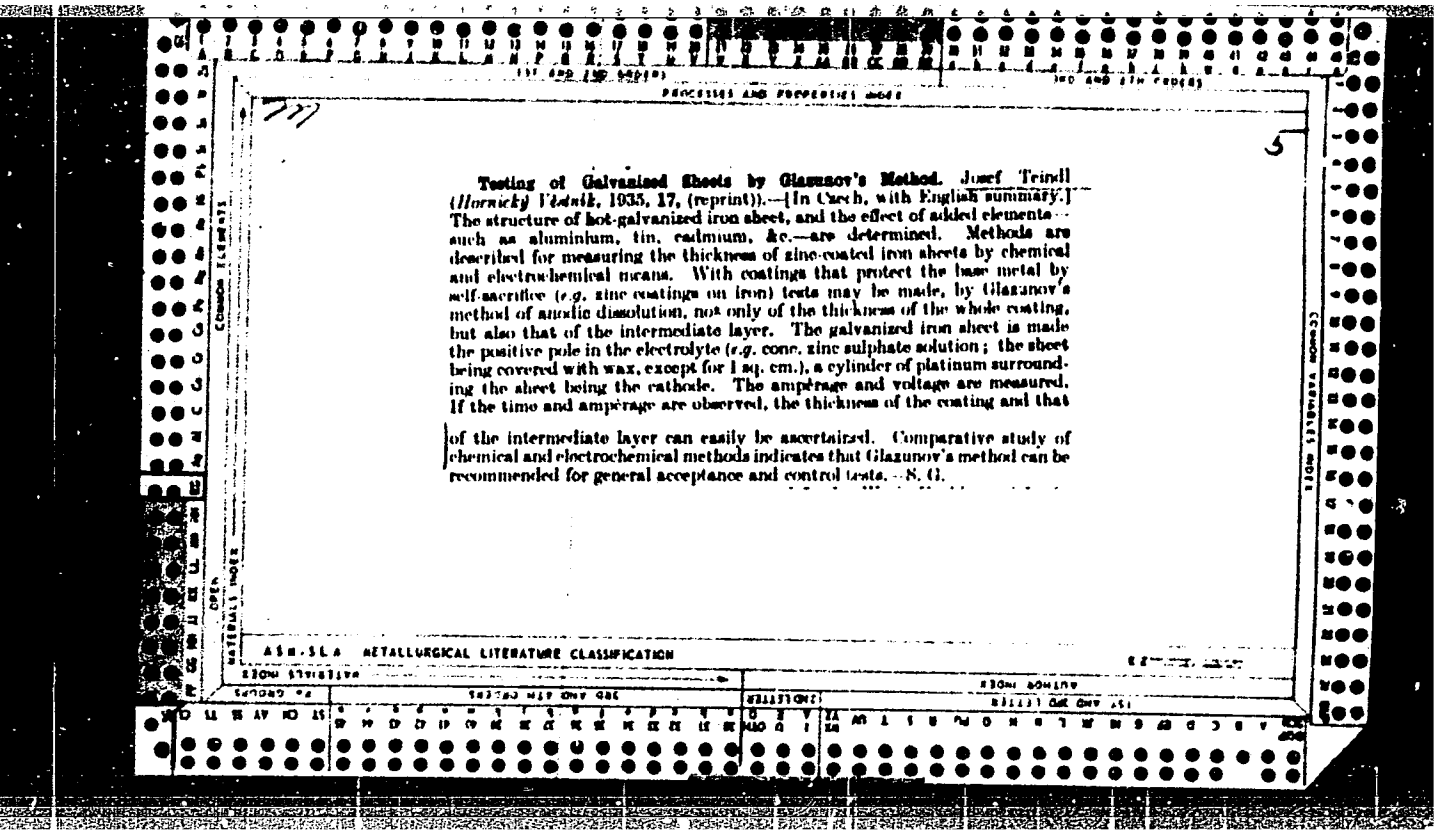
#605

Teindel, J.

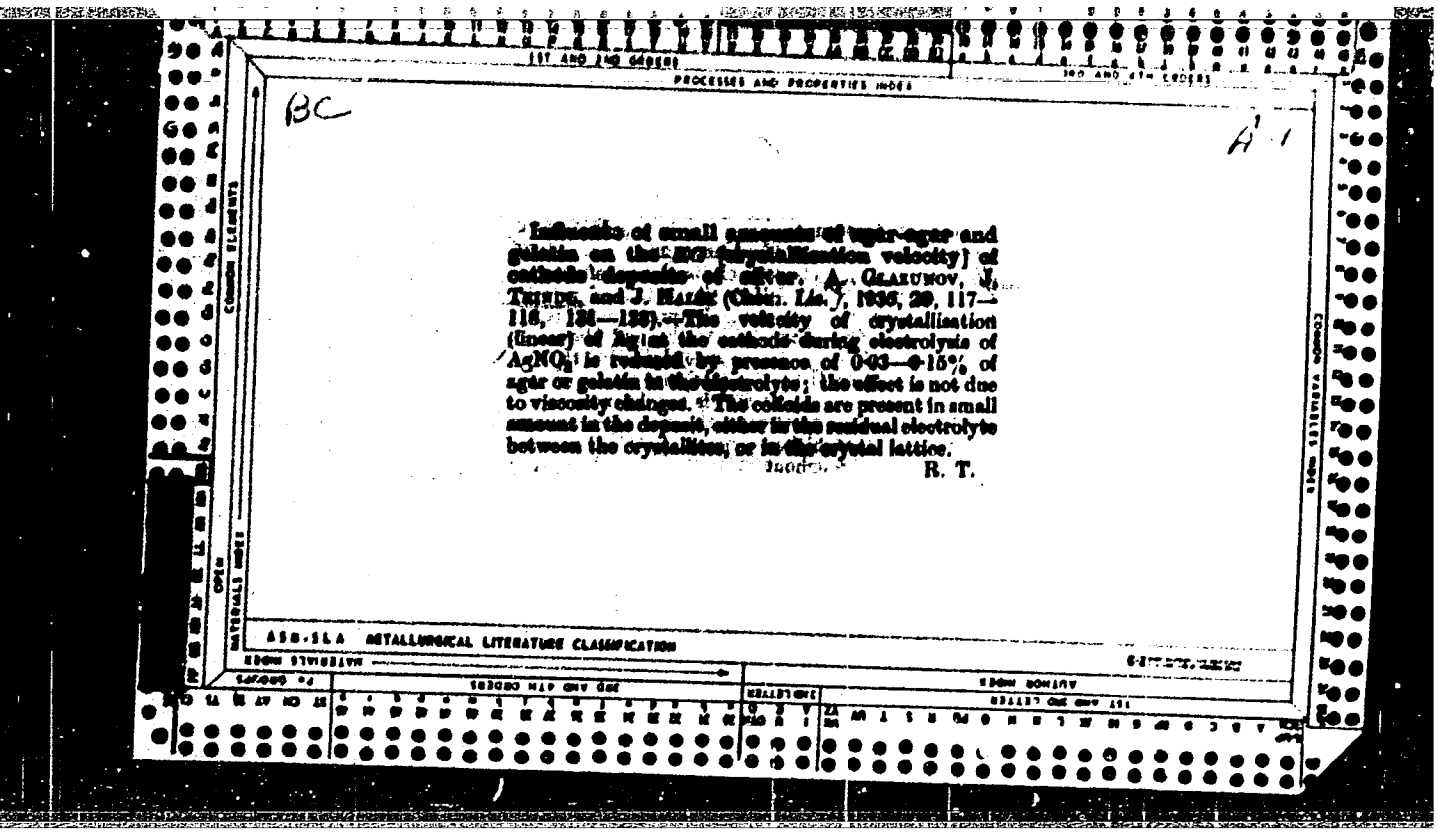
TO



***On the Course of the Anodic Dissolution of a Mechanical Mixture of Metals.** A. Glazunov and J. Tcindl (*Chem. Obzor*, 1935, **10**, (7), 121-123). The gentle course of the curve illustrating the changes of potential during anodic dissolution of a mechanical mixture is due to the weakening contact between the electrolyte and the metal being dissolved. In the case of a protective metallic coating, when the protective and the base metal form merely a mechanical mixture in accordance with their thermal diagram, or when their relation is very complicated (unless they form a continuous series of solid solutions) the continuity of the curve is caused by the weakening contact between the electrolyte and the phase being dissolved (the phase with the highest potential among those present on the surface of the anode at the given moment). When the relation between the protective metal and the base metal is complicated, the individual intermediate layers are not composed of separate phases, but of a mixture of phases, *e.g.* the case of galvanized metal.—O. Q.



Testing of Galvanised Sheets by Glazunov's Method. Josef Teindl (*Hornicky Vestnik*, 1935, 17, (reprint)).—[In Czech, with English summary.] The structure of hot-galvanized iron sheet, and the effect of added elements—such as aluminium, tin, cadmium, &c.—are determined. Methods are described for measuring the thickness of zinc-coated iron sheets by chemical and electrochemical means. With coatings that protect the base metal by self-sacrifice (*e.g.* zinc coatings on iron) tests may be made, by Glazunov's method of anodic dissolution, not only of the thickness of the whole coating, but also that of the intermediate layer. The galvanized iron sheet is made the positive pole in the electrolyte (*e.g.* conc. zinc sulphate solution; the sheet being covered with wax, except for 1 sq. cm.), a cylinder of platinum surrounding the sheet being the cathode. The ampérage and voltage are measured. If the time and ampérage are observed, the thickness of the coating and that of the intermediate layer can easily be ascertained. Comparative study of chemical and electrochemical methods indicates that Glazunov's method can be recommended for general acceptance and control tests.—S. G.

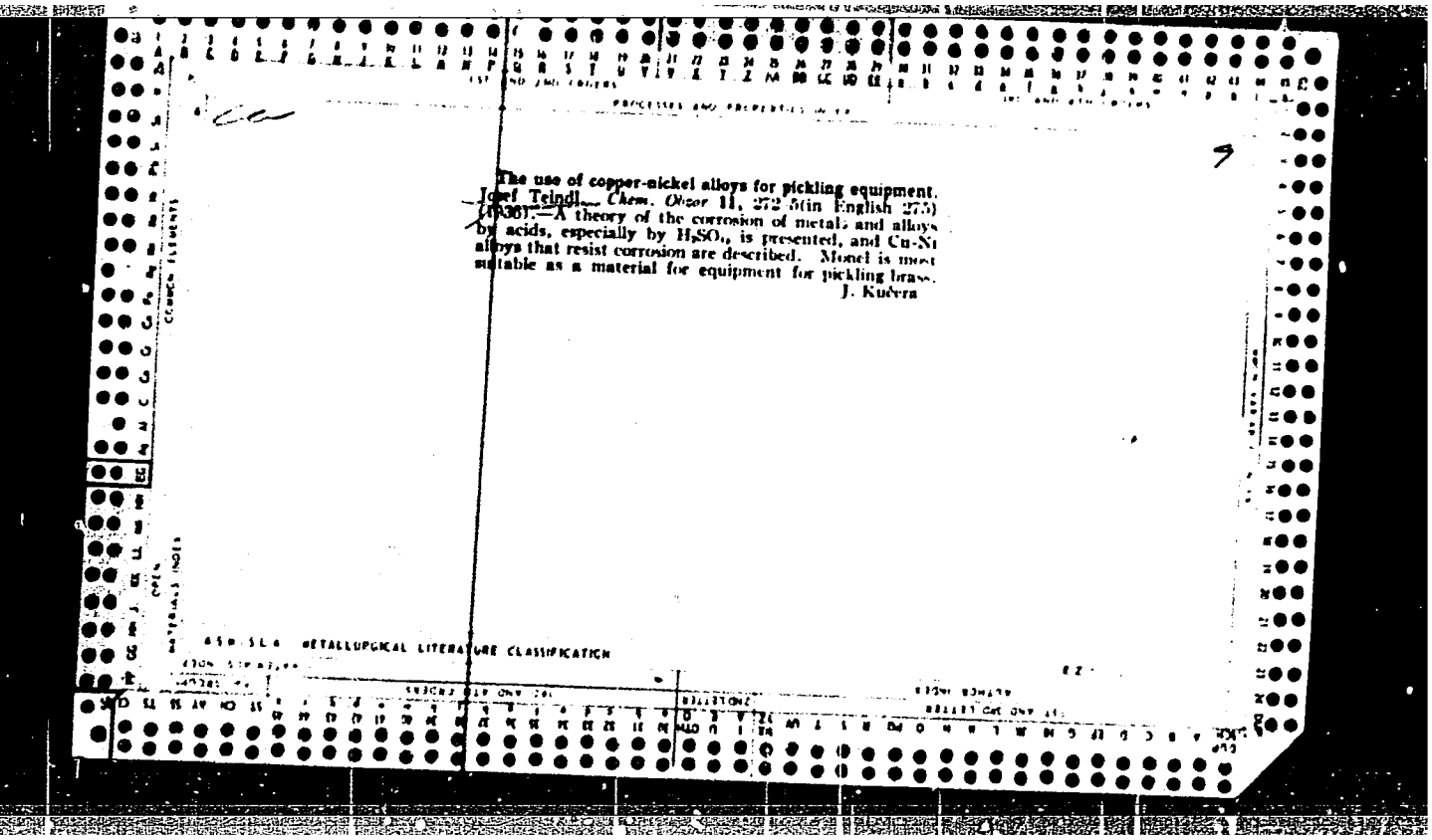


BC

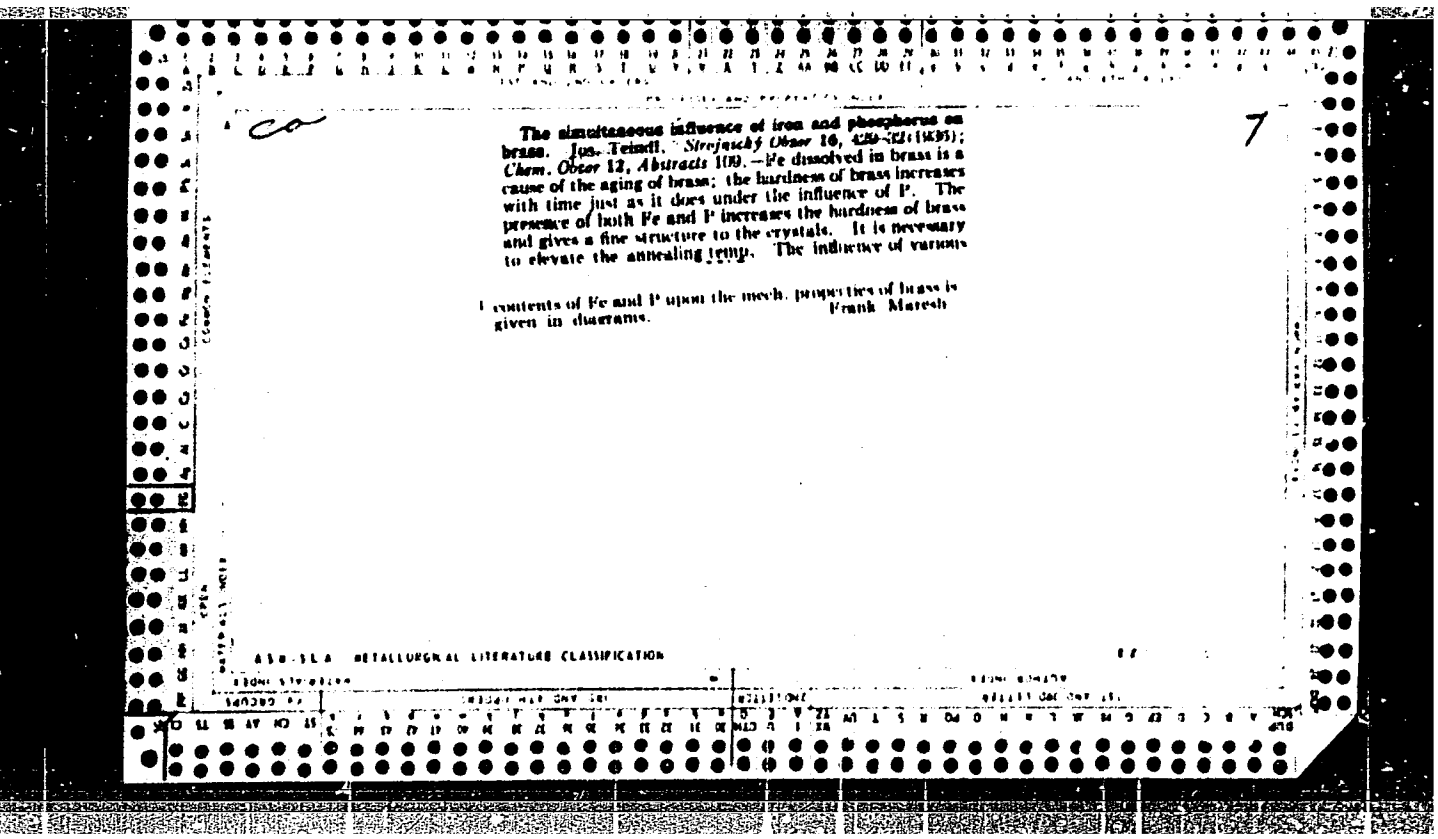
A' 1

Influence of small amounts of agar-agar and gelatin on the [H] crystallisation velocity] of cathodic deposits of silver. A. GLAZUNOV, J. TRTIK, and J. HLADÍK (Chim. Ind., 1936, 29, 117—118, 131—139).—The velocity of crystallisation (linear) of layers at the cathode during electrolysis of $AgNO_3$ is reduced by presence of 0·03—0·15% of agar or gelatin in the electrolyte; the effect is not due to viscosity changes. The colloids are present in small amount in the deposit, either in the residual electrolyte between the crystallites, or in the crystal lattice.

R. T.



The use of copper-nickel alloys for pickling equipment. Josef Teindl. *Chem. Obzor* 11, 272-5(in English 275) (1936).—A theory of the corrosion of metals and alloys by acids, especially by H_2SO_4, is presented, and Cu-Ni alloys that resist corrosion are described. Monel is most suitable as a material for equipment for pickling brass.
J. Kučera

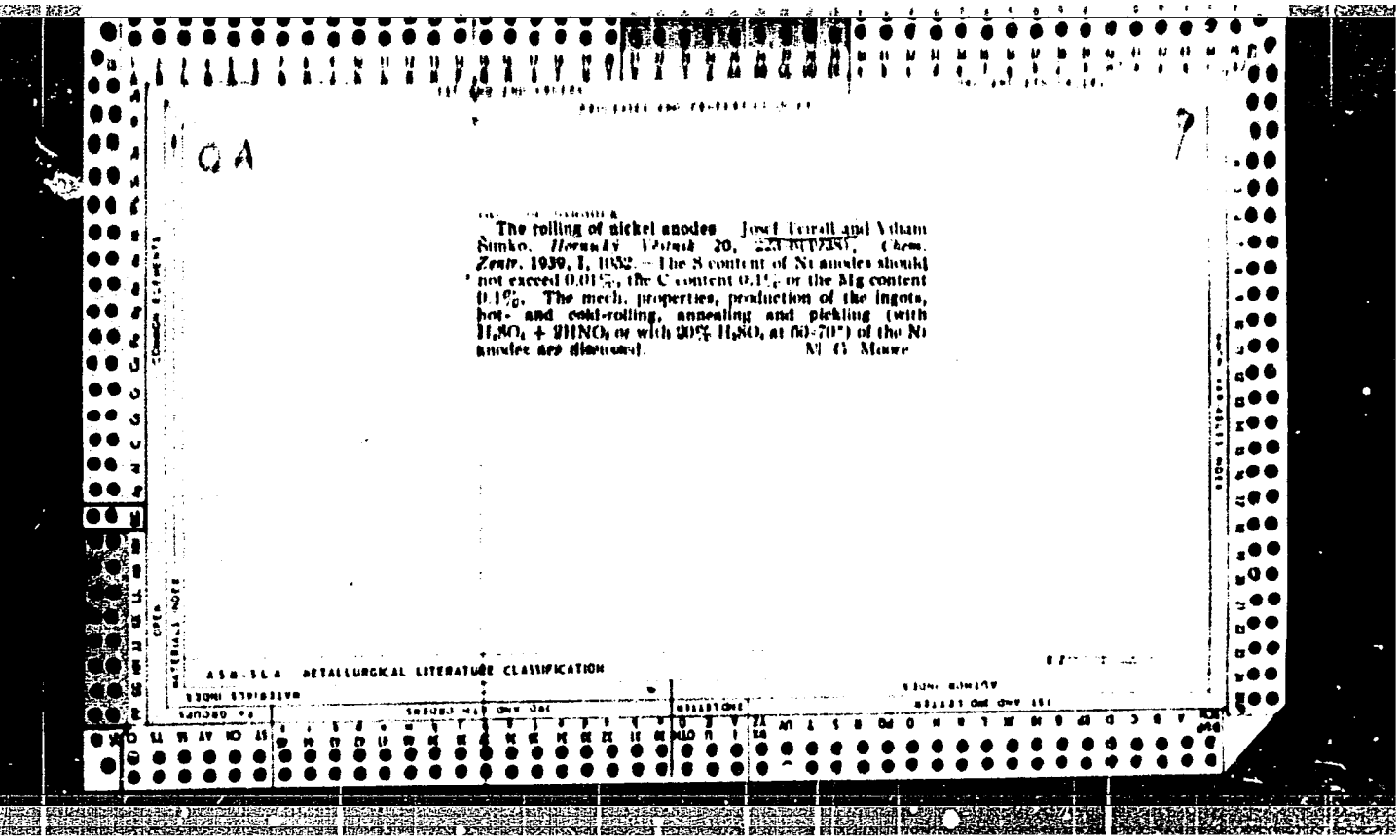


The simultaneous influence of iron and phosphorus on brass. Jos. Teindl. *Strojnický Obzor* 16, [illegible] (1939); *Chem. Obzor* 12, *Abstracts* 109.—Fe dissolved in brass is a cause of the aging of brass; the hardness of brass increases with time just as it does under the influence of P. The presence of both Fe and P increases the hardness of brass and gives a fine structure to the crystals. It is necessary to elevate the annealing temp. The influence of various contents of Fe and P upon the mech. properties of brass is given in diagrams.

Frank Marsh

7

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

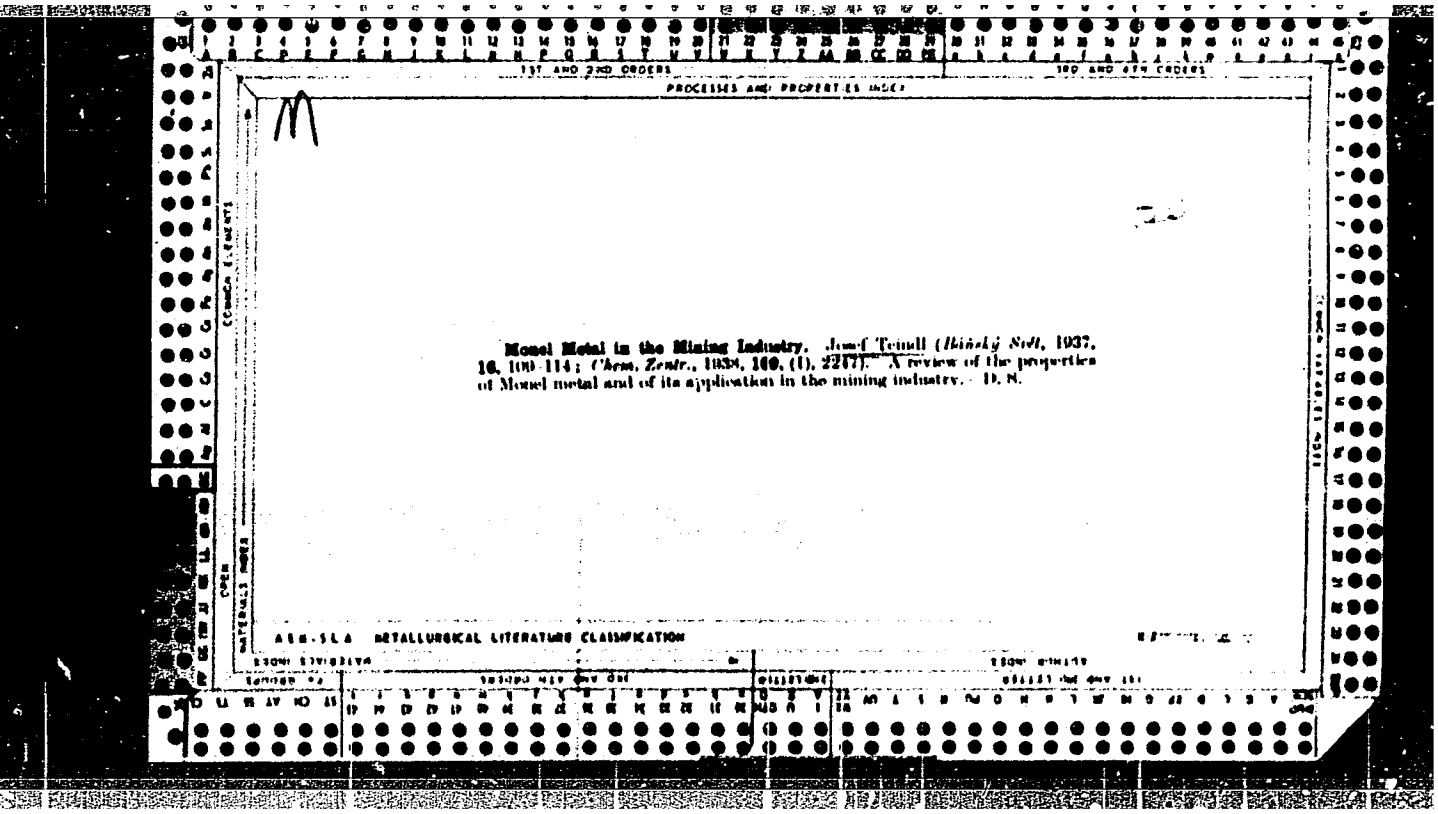


CA

7

The rolling of nickel anodes Josef Ferell and Viliam Sinko. *Hutnícke Listy* 20, [illegible], *Chem. Zentr.* 1939, I, 1052.—The S content of Ni anodes should not exceed 0.01%, the C content 0.1% or the Mg content 0.1%. The mech. properties, production of the ingots, hot- and cold-rolling, annealing and pickling (with H_2SO_4 + HNO_3 or with 30% H_2SO_4 at 60–70°) of the Ni anodes are discussed. M. G. Mauve

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



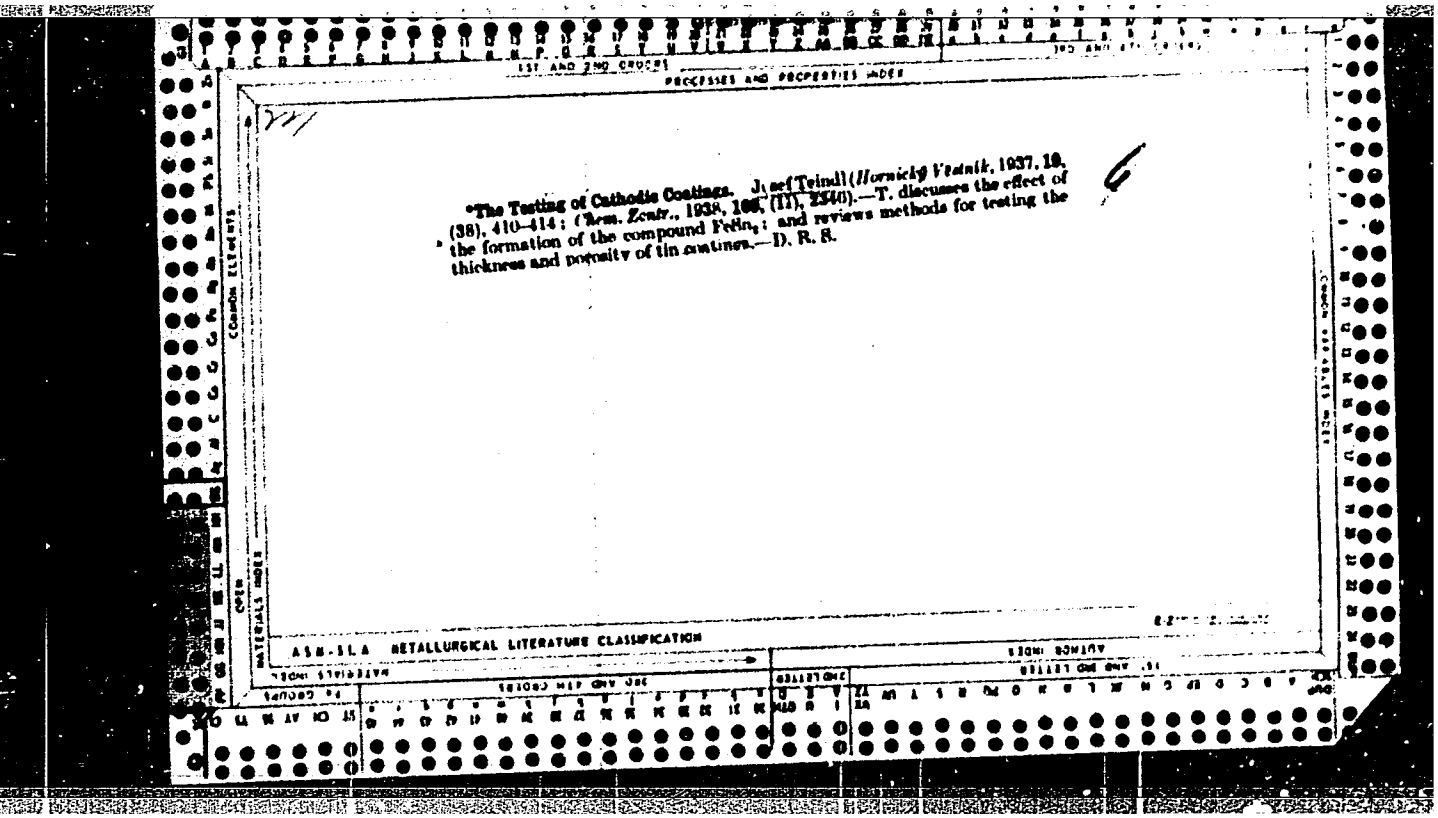
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Monel Metal in the Mining Industry. Josef Trinull (*Bánýský Sbír.*, 1937, **16**, 109–114; *Chem. Zentr.*, 1938, **109**, (1), 2287). A review of the properties of Monel metal and of its application in the mining industry. — D. R.

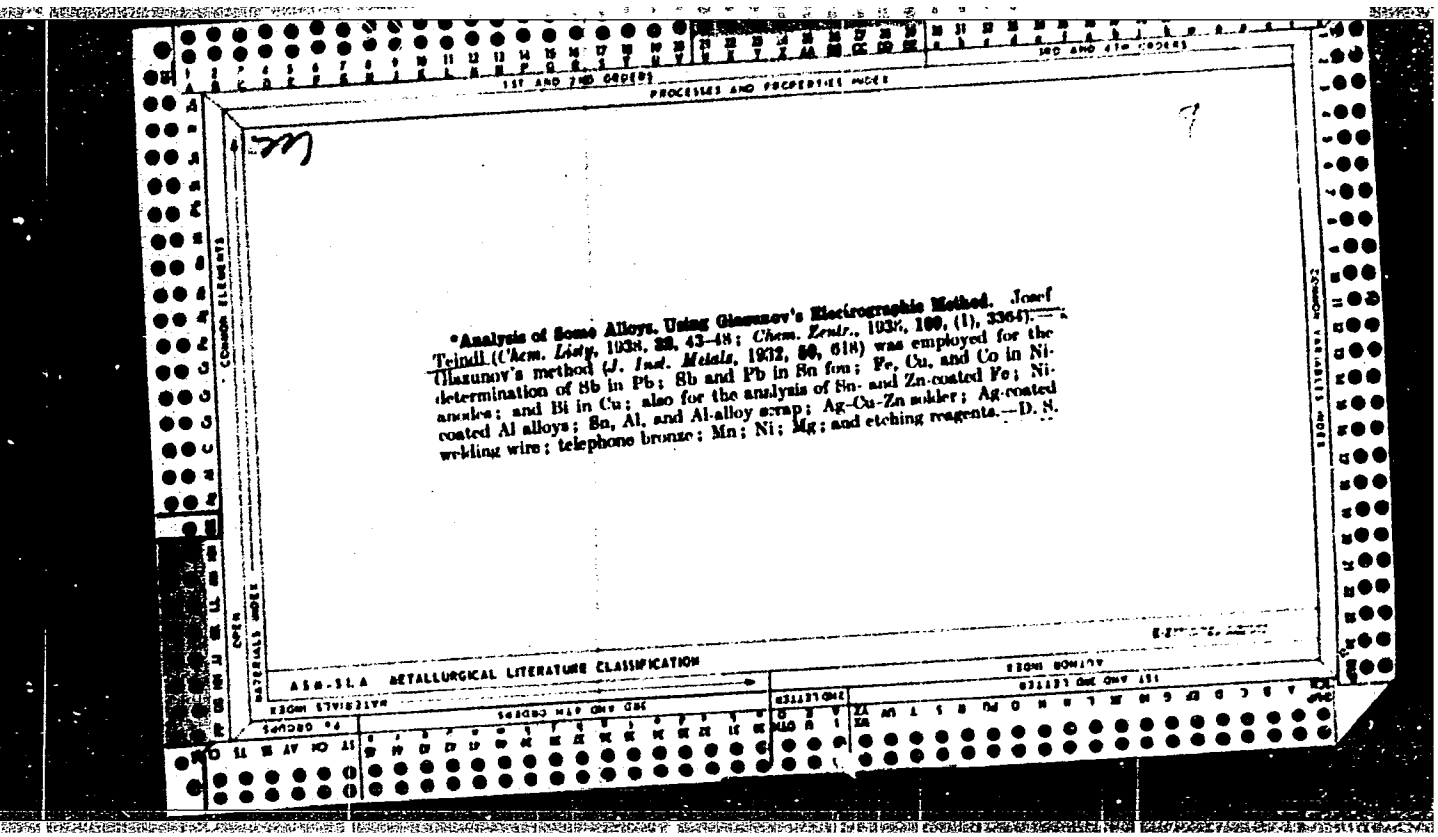
ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION



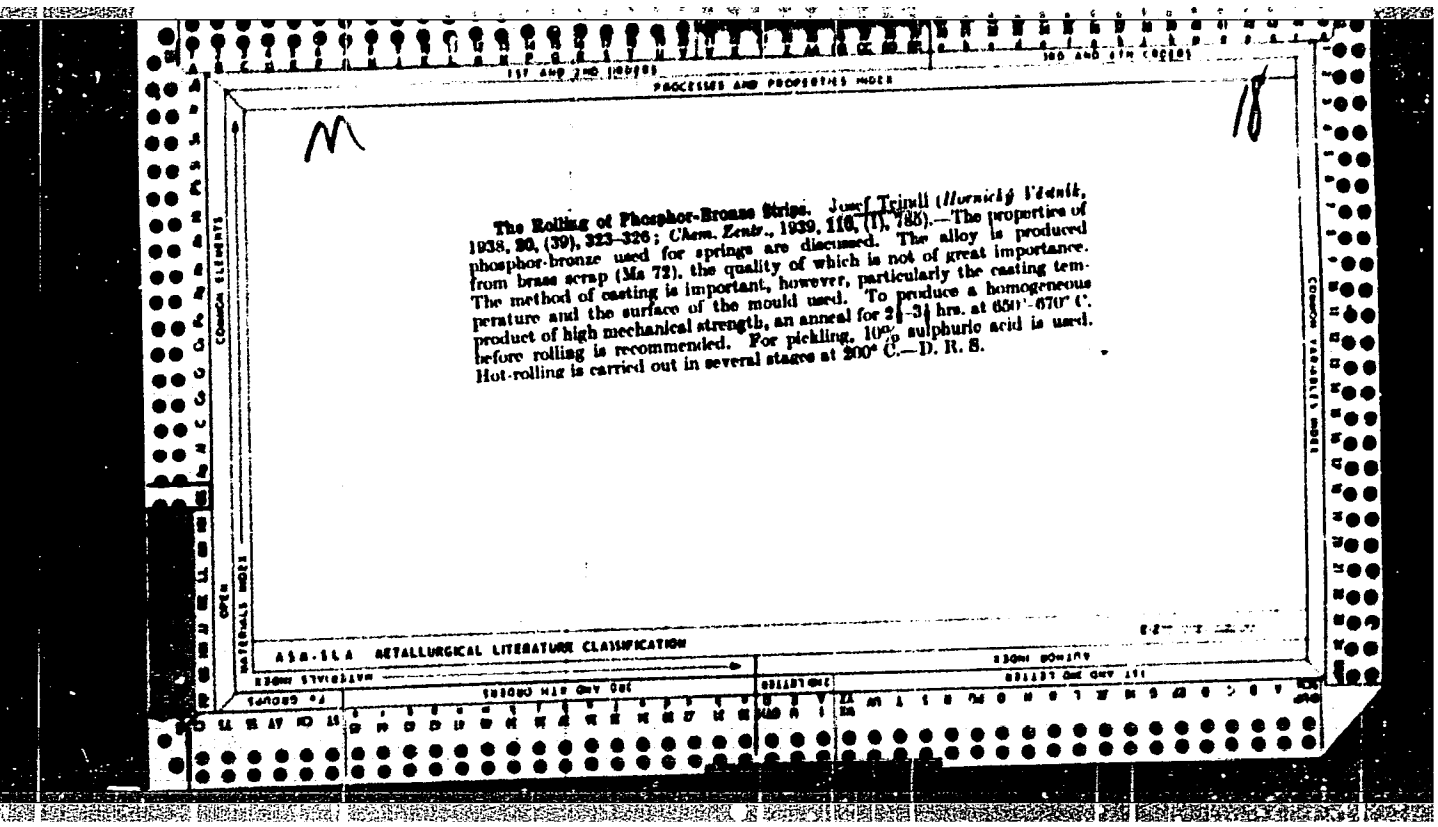
PROCESSES AND PROPERTIES INDEX

"The Testing of Cathodic Coatings. J. [illegible] (Tsindl) (*Hornický Věstník*, 1937, 18, (38), 410–414; (*Chem. Zentr.*, 1938, 109, (II), 2540).—T. discusses the effect of the formation of the compound $FeSn_2$ and reviews methods for testing the thickness and porosity of tin coatings.—D. R. S.

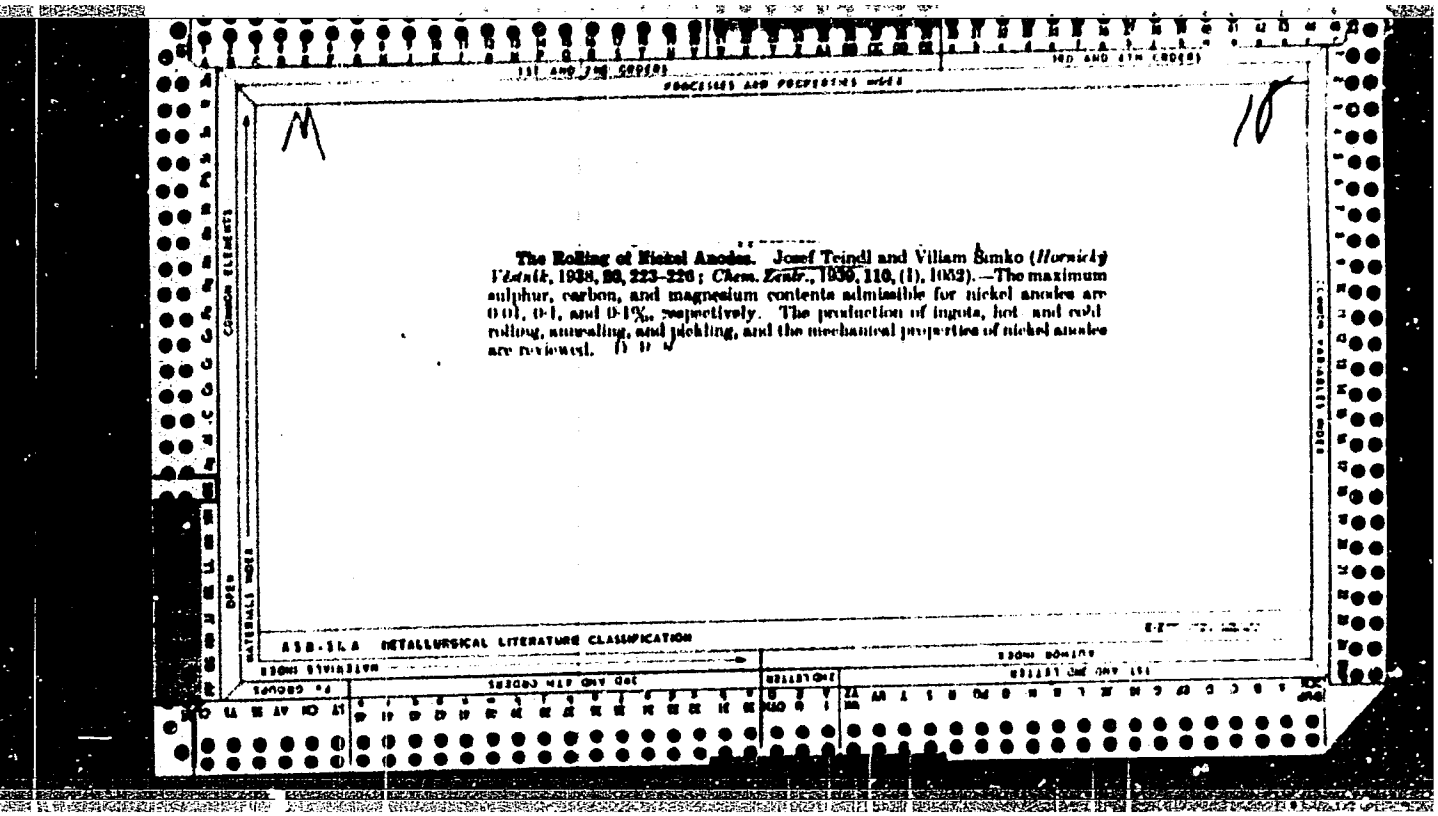
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



•**Analysis of Some Alloys, Using Glazunov's Electrographic Method.** Josef Trindl (*Chem. Listy*, 1938, **32**, 43–48; *Chem. Zentr.*, 1938, **109**, (1), 3364).—A Glazunov's method (*J. Inst. Metals*, 1912, **80**, 618) was employed for the determination of Sb in Pb; Sb and Pb in Sn foil; Fe, Cu, and Co in Ni-anodes; and Bi in Cu; also for the analysis of Sn- and Zn-coated Fe; Ni-coated Al alloys; Sn, Al, and Al-alloy scrap; Ag–Cu–Zn solder; Ag-coated welding wire; telephone bronze; Mn; Ni; Mg; and etching reagents.—D. S.



The Rolling of Phosphor-Bronze Strips. Josef Trinkl (*Hutnický Věstník*, 1938, **20**, (39), 323–326; *Chem. Zentr.*, 1939, **110**, (1), 785).—The properties of phosphor-bronze used for springs are discussed. The alloy is produced from brass scrap (Ma 72), the quality of which is not of great importance. The method of casting is important, however, particularly the casting temperature and the surface of the mould used. To produce a homogeneous product of high mechanical strength, an anneal for 2½–3½ hrs. at 650°–670° C. before rolling is recommended. For pickling, 10% sulphuric acid is used. Hot-rolling is carried out in several stages at 200° C.—D. R. S.



The Rolling of Nickel Anodes. Josef Teindl and Viliam Šimko (*Hornický Věstník*, 1938, **20**, 223–226; *Chem. Zentr.*, 1939, **110**, (I), 1062).—The maximum sulphur, carbon, and magnesium contents admissible for nickel anodes are 0·01, 0·1, and 0·1%, respectively. The production of ingots, hot and cold rolling, annealing, and pickling, and the mechanical properties of nickel anodes are reviewed. D. W.

MA

13

Important Factors in the Casting of Non-Ferrous Ingots. Josef Tenzl. (*Hutnické Listy*, 1940, **22**, (41), 113-116; *Chem. Zentr.*, 1940, **111**, (II), 3093).—T. investigated the effects of the composition of the charge, method of melting, temperature, furnace atmosphere, deoxidation, fluxes, method of pouring, cooling of the ingots, the coating of the mould, and of the mould itself.

1943

MA

1

Drawing of Resistance Wires. Josef Tuinář (*Hutnické Listy*, 1939, 21, (40), 342-345; *Chem. Zentr.*, 1940, 111, (1), 743).—T. presents data on the composition and electrical properties of Alpaca A, B, Elektelin, Constantan, Rheotan, &c., and discusses methods for the right pre-treatment of each of these alloys. Special reference is made to heat-treatment furnaces and temperatures, drawing machines, and acid-treatment in drawing of Constantan and Manganin wires.

1943

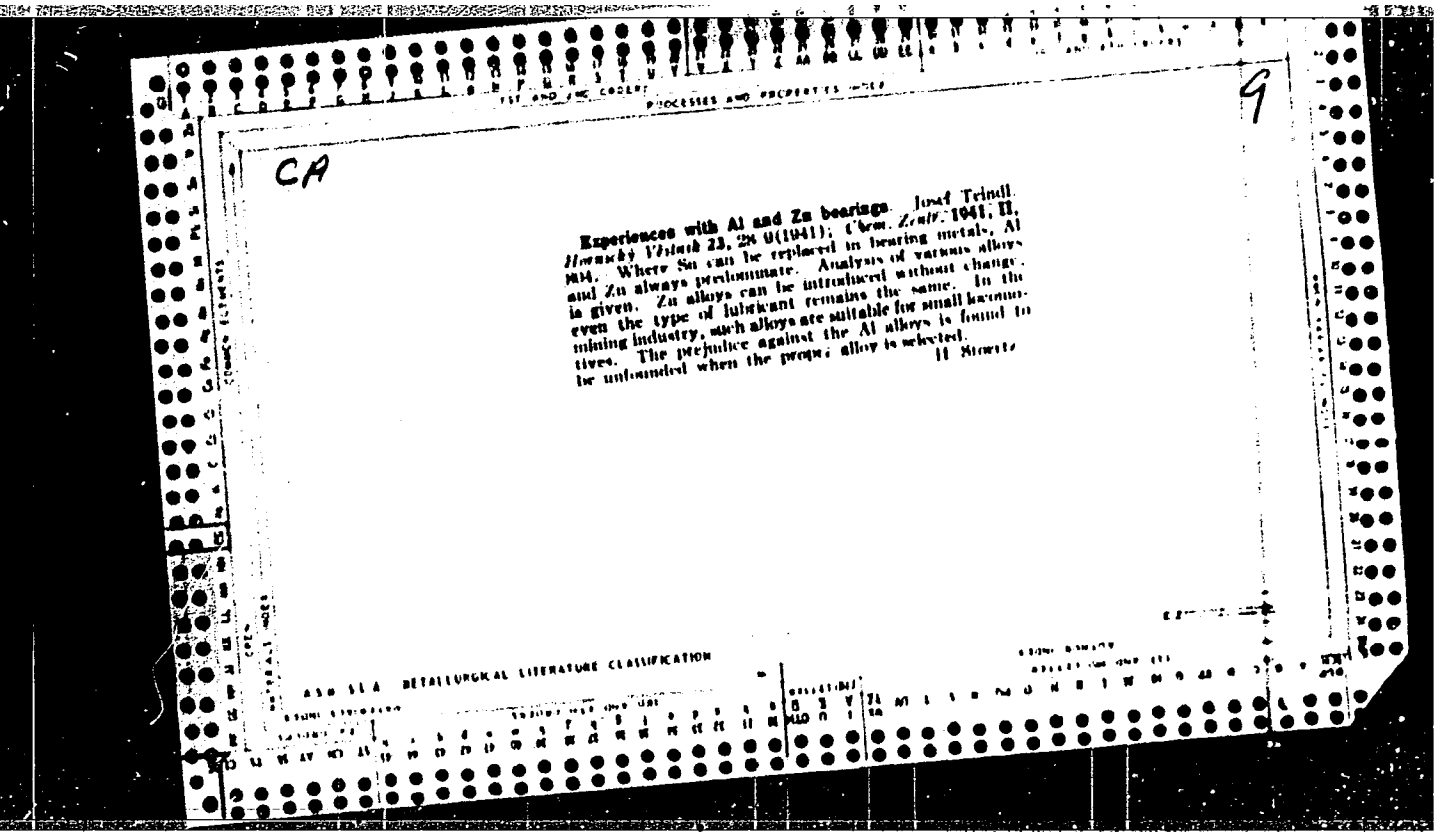
Up-to-Date Hot-Tinning of Sheets. J. T[illegible] *Chemist & Metal.*, 1939, 21, (10), 253–257; *Chem. Zentr.*, 1940, 111, (1), 937.—After an historical survey of hot tinning since the year 1240, the modern methods of pickling, polishing, and packing of tin sheets, and the tinning and cleaning plant, are reviewed.

MA

15

The Anisotropy of Sheets. Josef Teindl (*Hornický Věstník*, 1940, 22, (41), 37–40; *Chem. Zentr.*, 1940, 111, (I), 3447).—General discussion on the mechanical anisotropy caused by rolling and its elimination.

1943

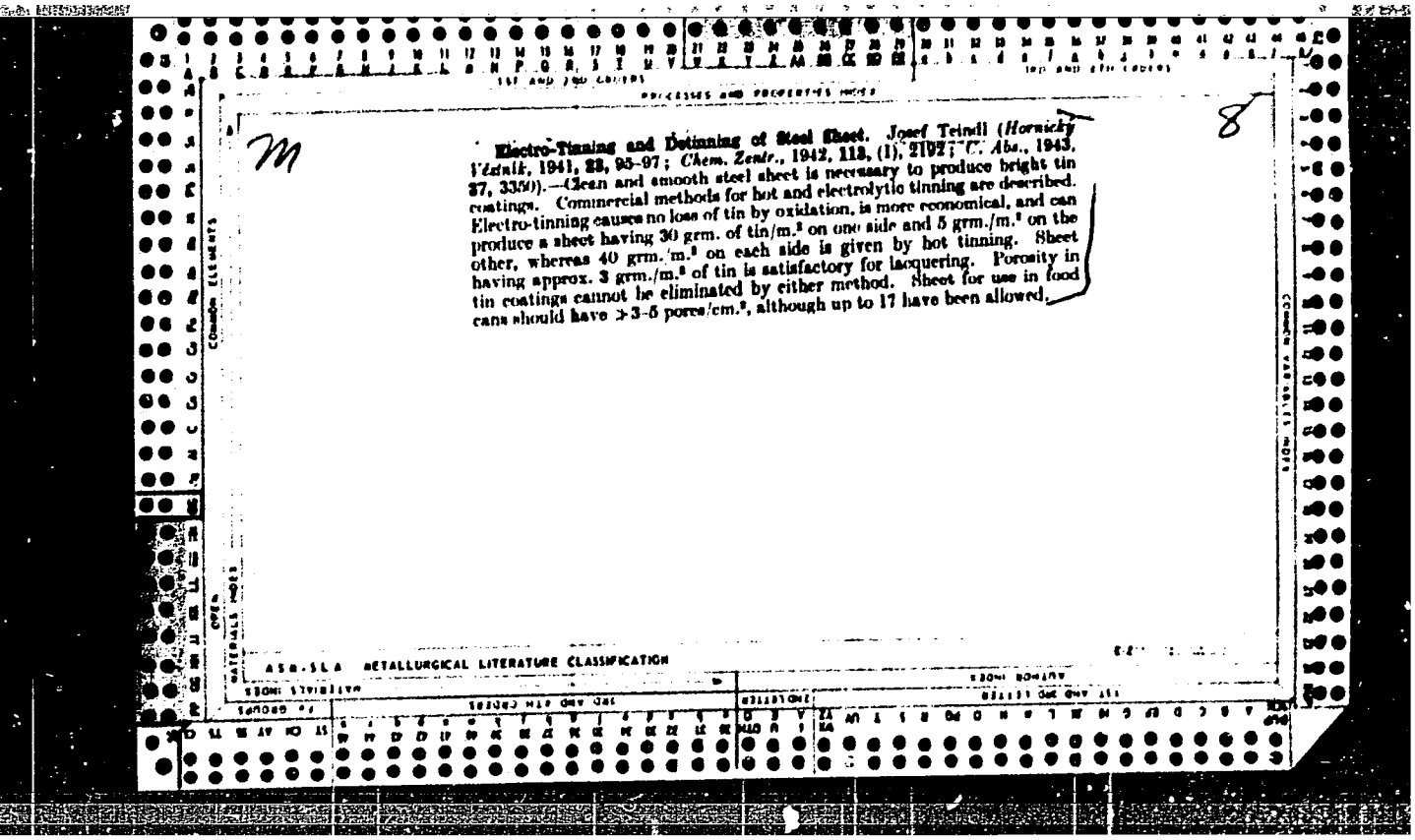


CA

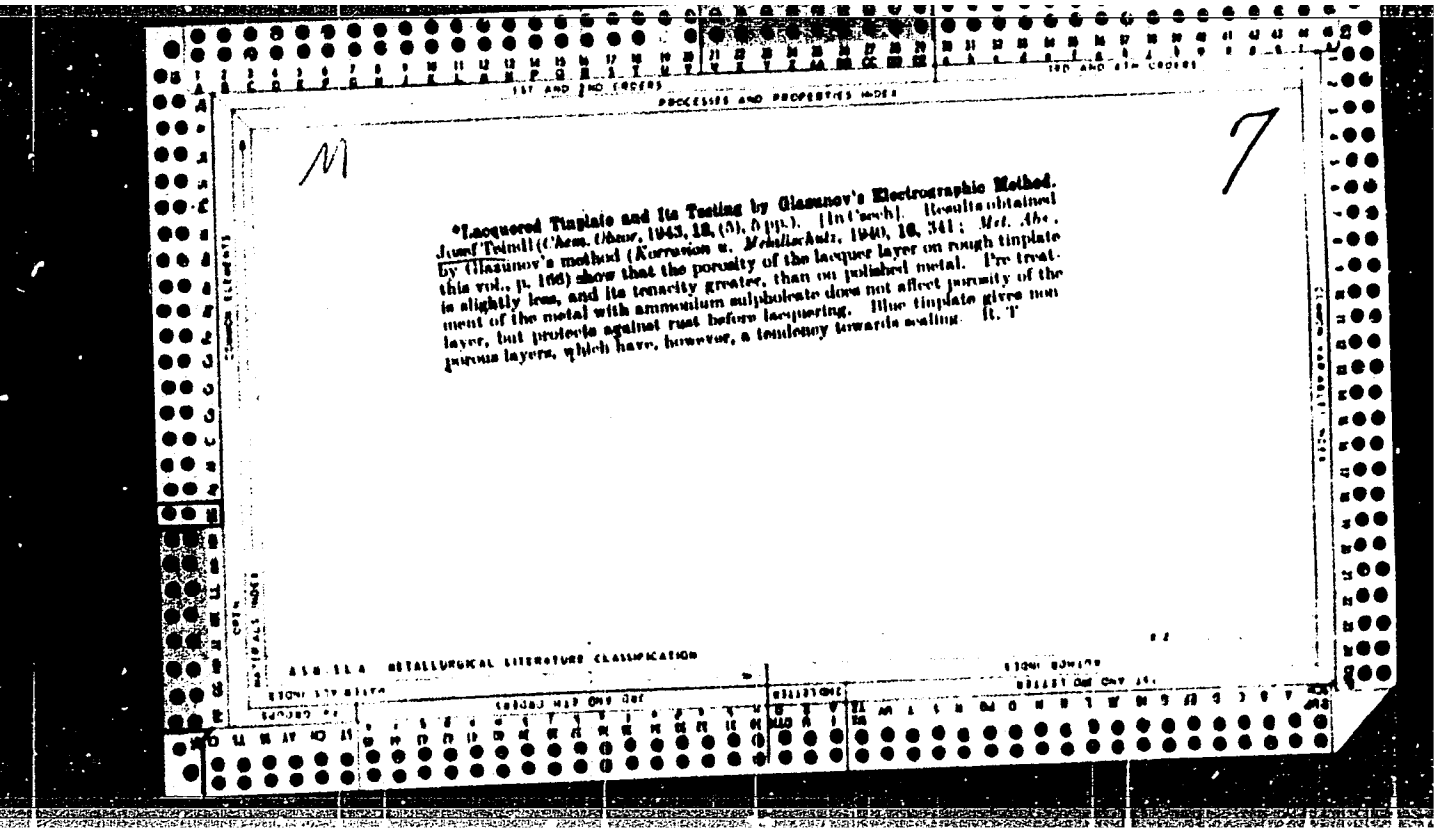
9

Experiences with Al and Zn bearings. Josef Trinil. *Hutnický Věstník* 23, 28-9 (1941); *Chem. Zentr.* 1941, II, 1614. Where Sn can be replaced in bearing metals, Al and Zn always predominate. Analyses of various alloys is given. Zn alloys can be introduced without change, even the type of lubricant remains the same. In the mining industry, such alloys are suitable for small bearings. The prejudice against the Al alloys is found to be unfounded when the proper alloy is selected.
H Stwertka

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



Electro-Tinning and Detinning of Steel Sheet. *Josef Teindl* (*Hornický Věstník*, 1941, **23**, 95–97; *Chem. Zentr.*, 1942, **113**, (I), 2192; *C. Abs.*, 1943, **37**, 3350).—Clean and smooth steel sheet is necessary to produce bright tin coatings. Commercial methods for hot and electrolytic tinning are described. Electro-tinning causes no loss of tin by oxidation, is more economical, and can produce a sheet having 30 grm. of tin/m.^{2} on one side and 5 grm./m.^{2} on the other, whereas 40 grm./m.^{2} on each side is given by hot tinning. Sheet having approx. 3 grm./m.^{2} of tin is satisfactory for lacquering. Porosity in tin coatings cannot be eliminated by either method. Sheet for use in food cans should have >3–5 pores/cm.^{2}, although up to 17 have been allowed.



PROCESSES AND PROPERTIES INDEX

M

7

*Lacquered Tinplate and its Testing by Glasunov's Electrographic Method. Josef Teindl (Chem. Obzor, 1943, 18, (5), 5 pp.). [In Czech]. Results obtained by Glasunov's method (Korrosion u. Metallschutz, 1940, 16, 341; Met. Abs., this vol., p. 166) show that the porosity of the lacquer layer on rough tinplate is slightly less, and its tenacity greater, than on polished metal. Pre-treatment of the metal with ammonium sulphobrate does not affect porosity of the layer, but protects against rust before lacquering. Blue tinplate gives more porous layers, which have, however, a tendency towards scaling. R. T.

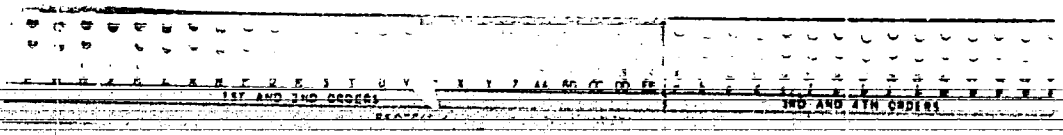
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TELNDA J.

V

Using Cast Iron and Mild Steel as a Material for Roll Bearings in Rolling Mills. J. Telndl. (Hutnické Listy, 1950, vol. 5, Mar., pp. 97-101). [In Czech] Cast iron and mild steel bearings were used experimentally in mill stands at several [illegible] The [illegible] and stands. The [illegible] steel bearings and their microstructures are also illustrated. These materials can be used in stands for hot-rolling thin strip cast iron being suitable in the top and sides of the bearings. Mild steel is applicable in stands with roll [illegible] exceeding 600 mm. The type of stand and [illegible]

T-4



S

16

Fundamentals of Tinning Practice. J. Teindl. (*Hutnik.* (Prague), 1951, 1, No. 2, 37–39). [In Czech]. Methods of tinning sheet iron, faults arising during and before rolling of the sheet, and in preparing and tinning it are discussed, and some remedies considered. The qualities, dimensions, and uses of tinplate are mentioned.—F. F.

BTR

2

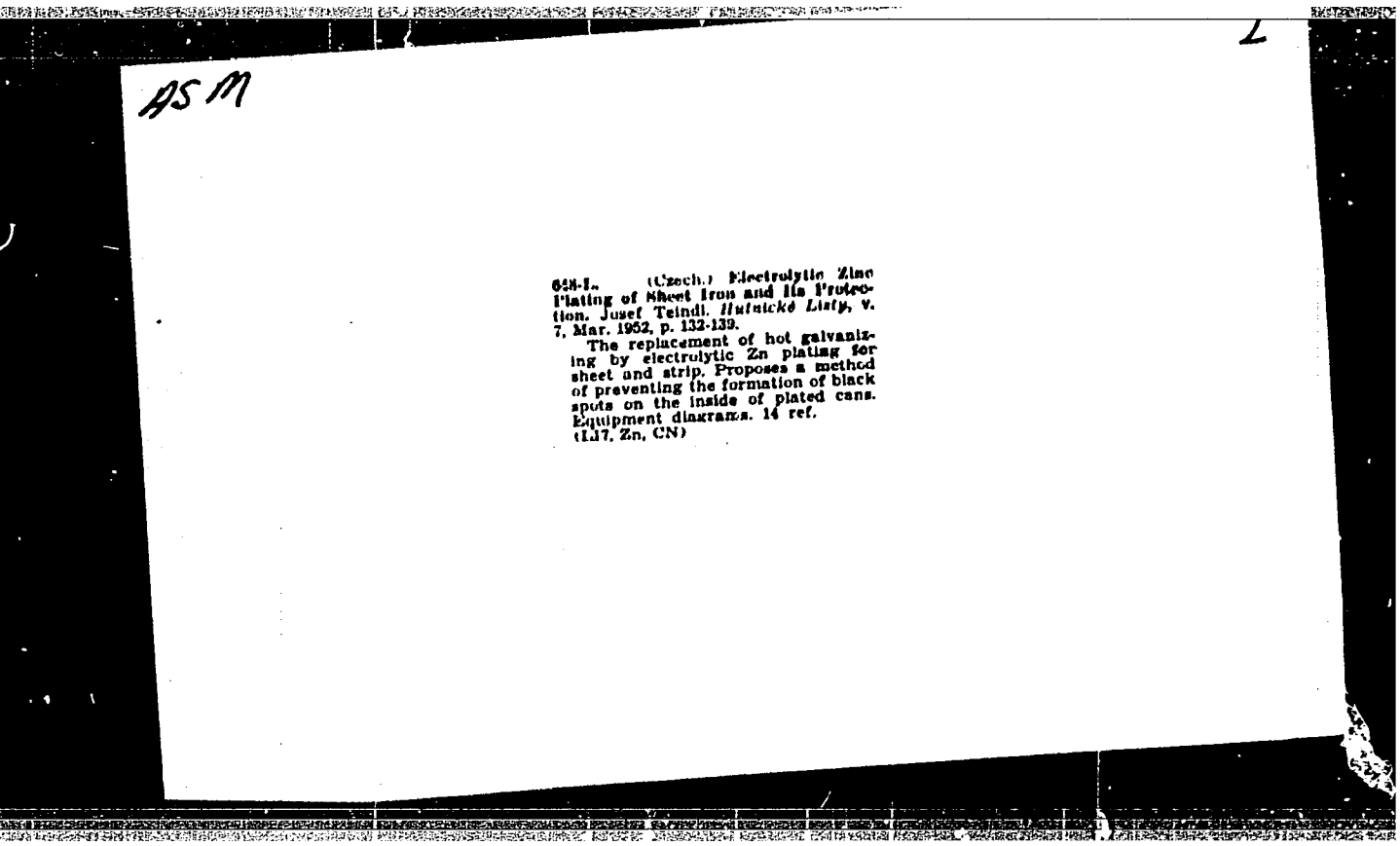
3814* **Phosphorus in Tin Plate in Soviet Practice.** (In Czech.) Josef Tejndl. *Hutnické Listy*, v. 6, Nov. 1951, p. 546-549.

In Soviet practice, it was found that a phosphorus content of 0.08-0.10% is the best for preventing sticking of sheets. It is necessary to melt phosphorus steel in an openhearth furnace with a basic slag in order to retain the special properties desired.

TEINDL, J.

"Fighting corrosion on the inside of containers." p. 184. (Chemie. Vol. 7, no. 10, Oct. 1951. Praha.)

SO: Monthly List of East European Accessions, Vol. 3, no. 6, Library of Congress, June 1954. Uncl.



ASM

L

638-L (Czech.) Electrolytic Zinc Plating of Sheet Iron and Its Protection. Josef Teindl. *Hutnické Listy*, v. 7, Mar. 1952, p. 132-139.

The replacement of hot galvanizing by electrolytic Zn plating for sheet and strip. Proposes a method of preventing the formation of black spots on the inside of plated cans. Equipment diagrams. 14 ref.
(LJ7, Zn, CN)

TEINDL, J.

Journal of the Iron and Steel Inst.
June 1954
Protective Coatings

The Formation of White Spots on High-Gloss Tinned Sheet. J. Teindl. (*Hutnické Listy*, 1953, 8, (4), 179–182). [In Czech]. The occurrence of grey patches and white spots was observed on large tinned sheets (99–126 g. tin per sq. m.), all of which had been hot-rolled. The primary cause of the formation of white spots was the presence of oily films and reaction products formed during bright-annealing. Clean surfaces and constant control of the tinning process are necessary to reduce the rejects thus caused.— P. F.

TEINDL, J.

Dependence of Pickling Losses on the Method of Rolling Thin Steel Sheet. J. Teindl. *Hutnické Listy*, 1953, 8, 2, 129-134. [In Czech.] The theory of the pickling of steel sheet is explained and the influence of sheet thickness, surface films, method of rolling, and annealing furnaces atmosphere is considered on the basis of the author's and other workers' experimental material. The method of rolling and the furnace atmosphere are of primary importance owing to their influence on the nature of the steel surface.—V. F.

J. Iron & Steel Institute
V175 part 2 - Oct 1953
Searching for Iron & Steel Plant

Tsinker, J.

"Founding with scrap metal or new metal?" p. 123 (Hutnik Vol. 3, no. 6, June 1953 Praha)

SO: Monthly List of East European Accessions, Vol. 3, No. 2, Library of Congress, Feb. 1954, Uncl.

J. TEINDL

Journal of the Iron and
Steel Institute
July 1954
Rolling-Mill Practice

(2)

Comparative Tests on Strip Rolled by the Sendzimir Method. J. Teindl and A. Havlík. (*Hutnické Listy*, 1953, 8, (12), 633). [In Czech]. The principle of the semi-continuous Sendzimir type strip mill, widely used in Poland, is explained. An account is given of a strip tinning plant utilizing the oxidation-reduction principle for the preparation of sheet surfaces before they enter the bath of molten tin. Comparative measurements of the sheet and coating thicknesses, as well as corrosion, microscopical, and chemical studies on sheet prepared by the Sendzimir method and tinned, and on similar sheet made by other methods are presented.—P. F.

TEINZI

Theory of Hot-Galvanized Metal Coatings. Josef Teingl
(*Hutnické Listy*, 1954, 9, 731–735; *C. Abs.*, 1955, 49, 9474).
MG (In Czech). Some questions are considered concerning hot-galvanized metal coatings, especially fluxes and their effect on quality of metal coatings on galvanized and tinplated sheets. The structure of these coatings, the effect of additions to the steel and to the molten metal bath, and especially the effect of Al in hot-galvanizing, are examined.

Teindl, J.

Production and use of thin steel plate. p. 206. HUTNIK. (Ministerstvo hutniho prumyslu a rudnych dolu) Praha. Vol. 4, no. 7, July 1954.

Source: EEAL LC Vol. 5, No. 10 Oct. 1956

TEINDL, T.

"Selection of Designs." p. 39, (ODZIEZ, Vol. 5, No. 2, Feb. 1954. Lodz, Poland.)

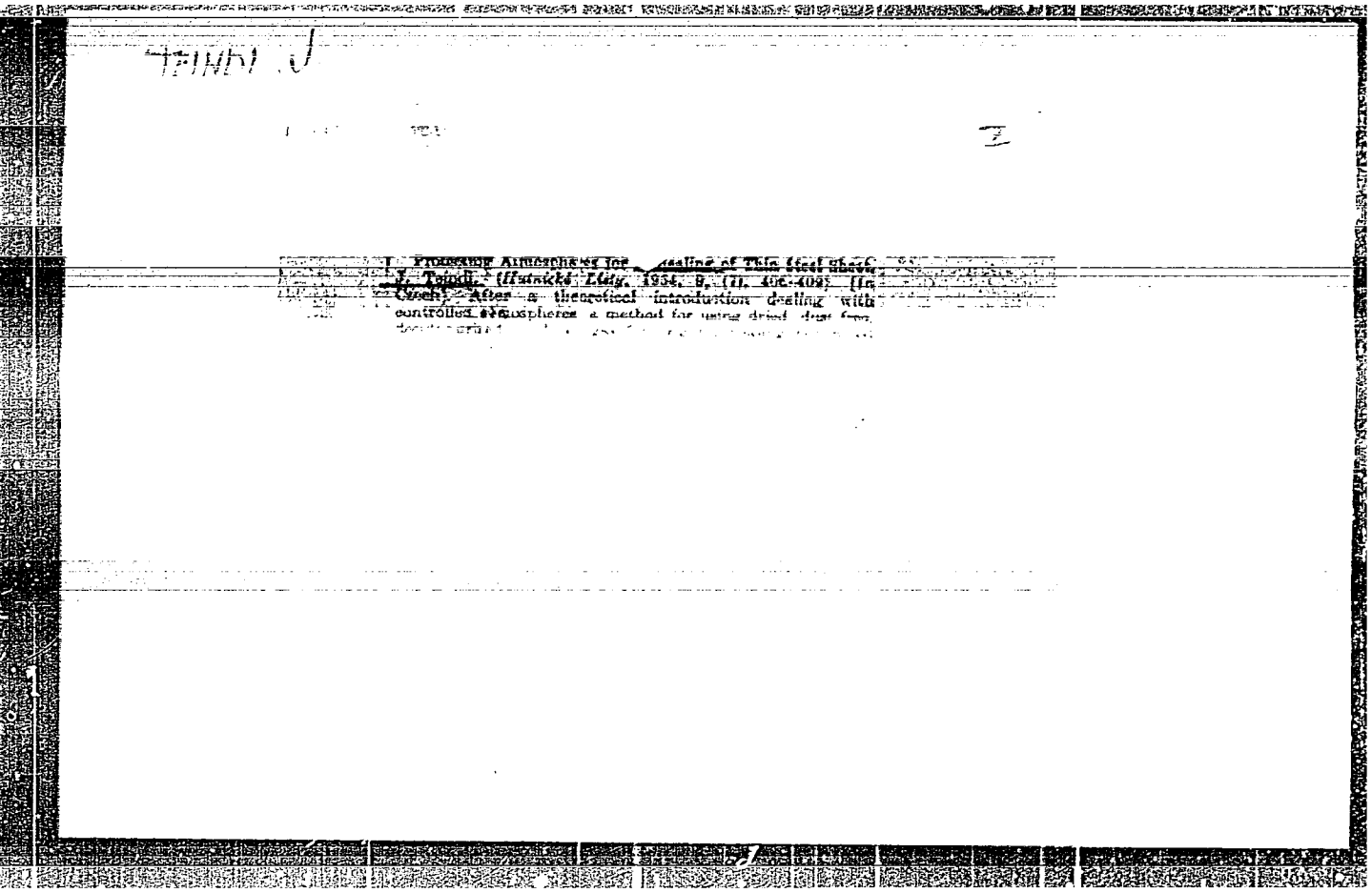
SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 3, No. 12, Dec. 1954, Uncl.

TEINDL, Josef

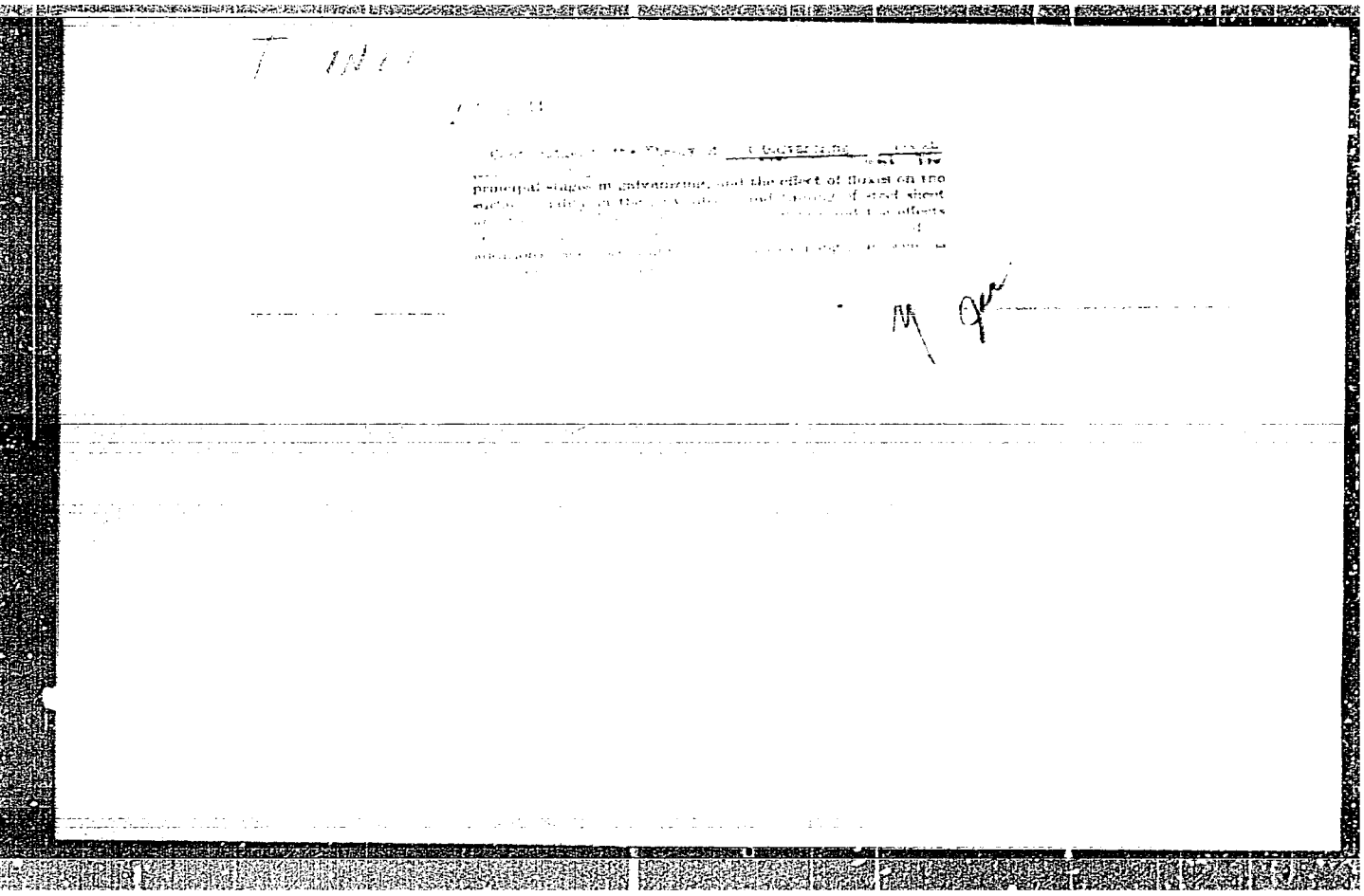
B. T. R.
June 1954
Coatings

7,80* Metallography of Tin, Tin Alloys, and Tin Coating on Steel. (Czech.) Josef Teindl. *Hutnicke Listy*, v. 9, no. 2, Feb. 1954. p. 95-98.

New ways of cleaning, coating, polishing, and etching. Methods for metallographic research of tin layers on steel. Micrographs, diagrams. 14 ref.



[illegible] Protective Atmospheres for [illegible] dealing of Thin Steel Sheet.
[illegible] Tajmir. (Hutnické Listy, 1954, 9, (1), 406-409) [In Czech]. After a theoretical introduction dealing with controlled atmospheres a method for using dried dust from [illegible]



vání ocelových plechů nerezavějícími ocelemi (Czech.) Josef Teindl. *Hutnik*, v. 5, no. 7, July 1955, p. 204-205.

To economize on Ni and Cr, C steel sheet is clad with stainless steel. Heating, rolling and welding stress in cladding. Tables.

TEINDL, J.

Votypka, K. Czechoslovak and foreign tinned sheet metal. p. 355.
HUTNICKE LISTY, Brno, Vol. 10, no. 4, Apr. 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955, Uncl.

TEINDL, J.

Use of stainless steel for plating sheet metal. p. 294.
(HUTNIK, vol. 5, no. 7, July 1955, Praha)

SO: Monthly List of East European Accession,(EEAL), LC, Vol. 4, No. 11, Nov. 1955, Uncl.

TEINDL, J.:

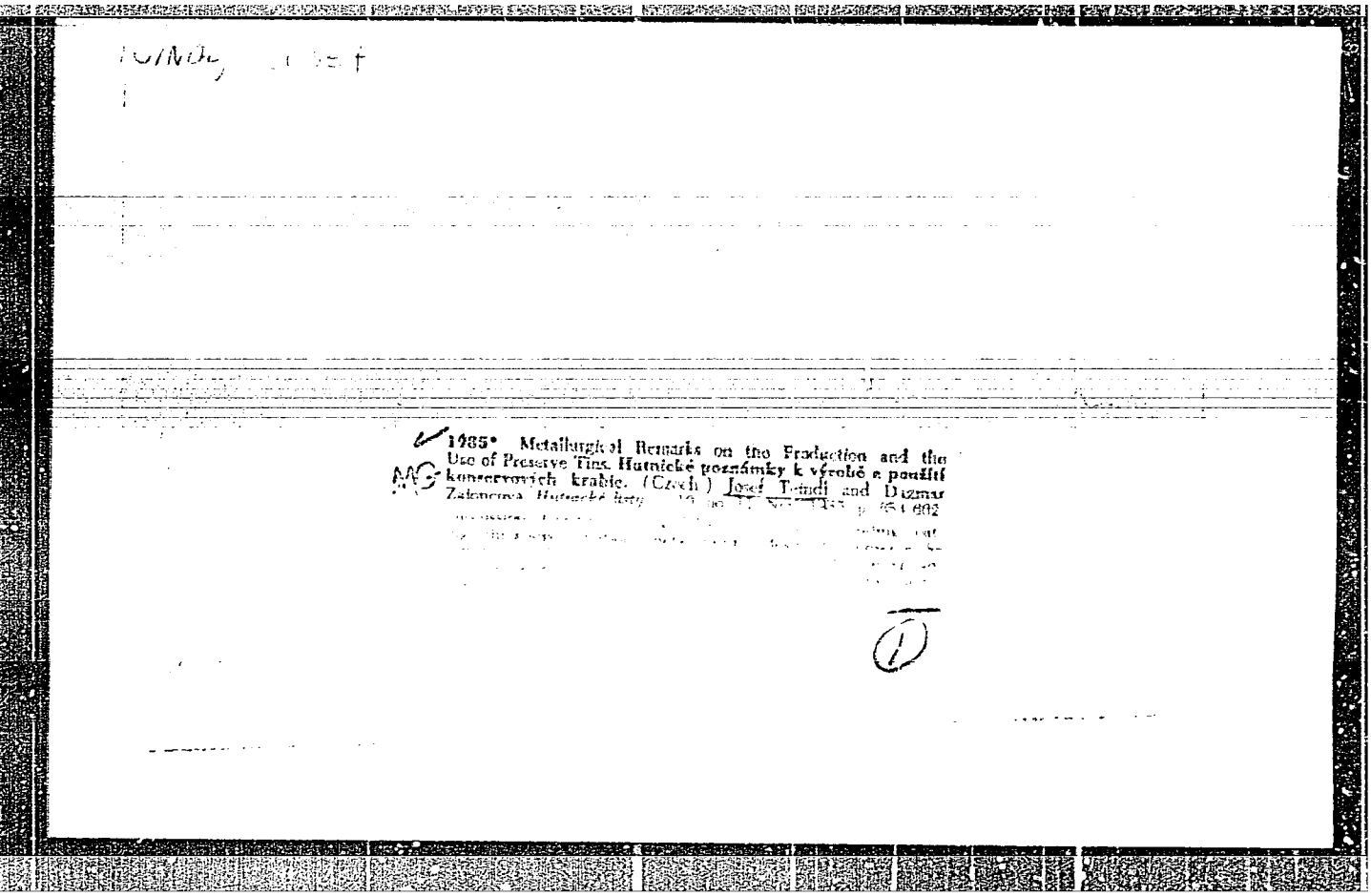
Teindl, J.; Votypka, K. Czechoslovak and foreign tinned sheet metal. p. 355.
HUTNICKE LISTY. Brno. Vol. 10, no. 6, June 1955.

SO: Monthly List of the East European Accession, (EEAL), LC. Vol. 4, no. 10, Oct. 1955. Uncl.

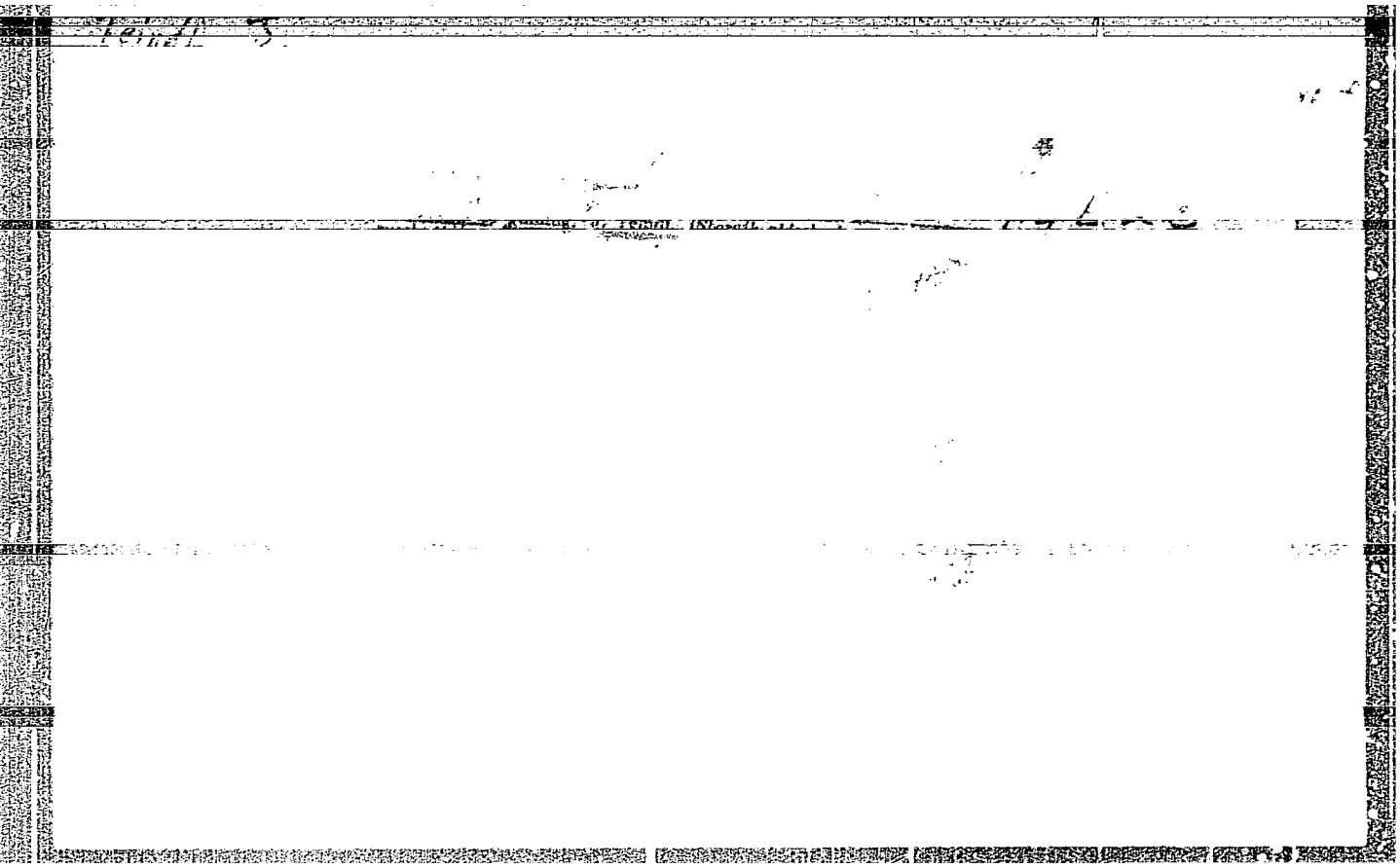
TEINDL, J.

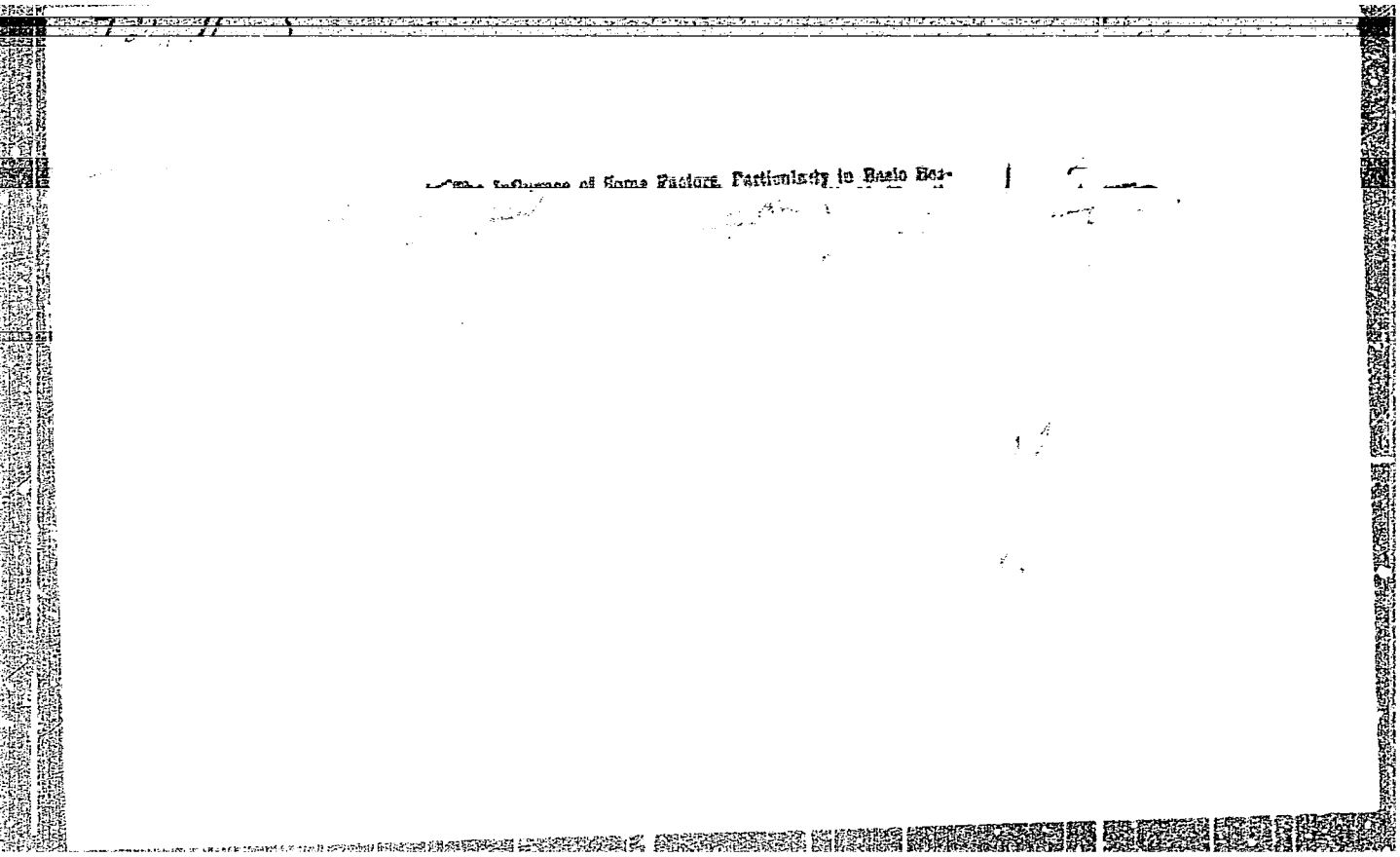
First sheet-metal rolling mill in Bohemia. p. 422. HUTNICKE LISTY. Brno. Vol. 10, no. 7, July 1955.

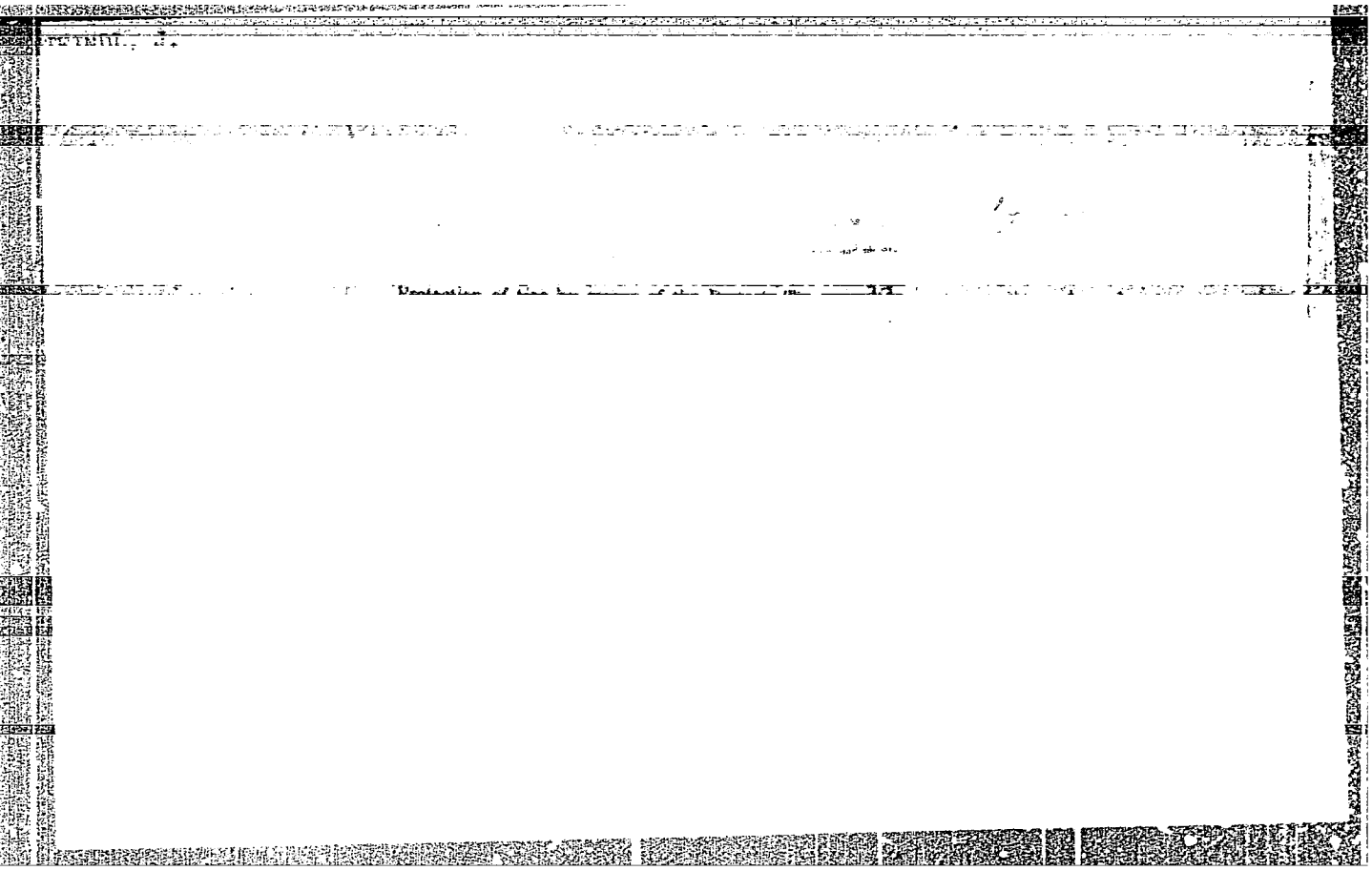
SOURCE: East European Accessions List (EEAL), LC, Vol. 5, no. 3, March 1956,

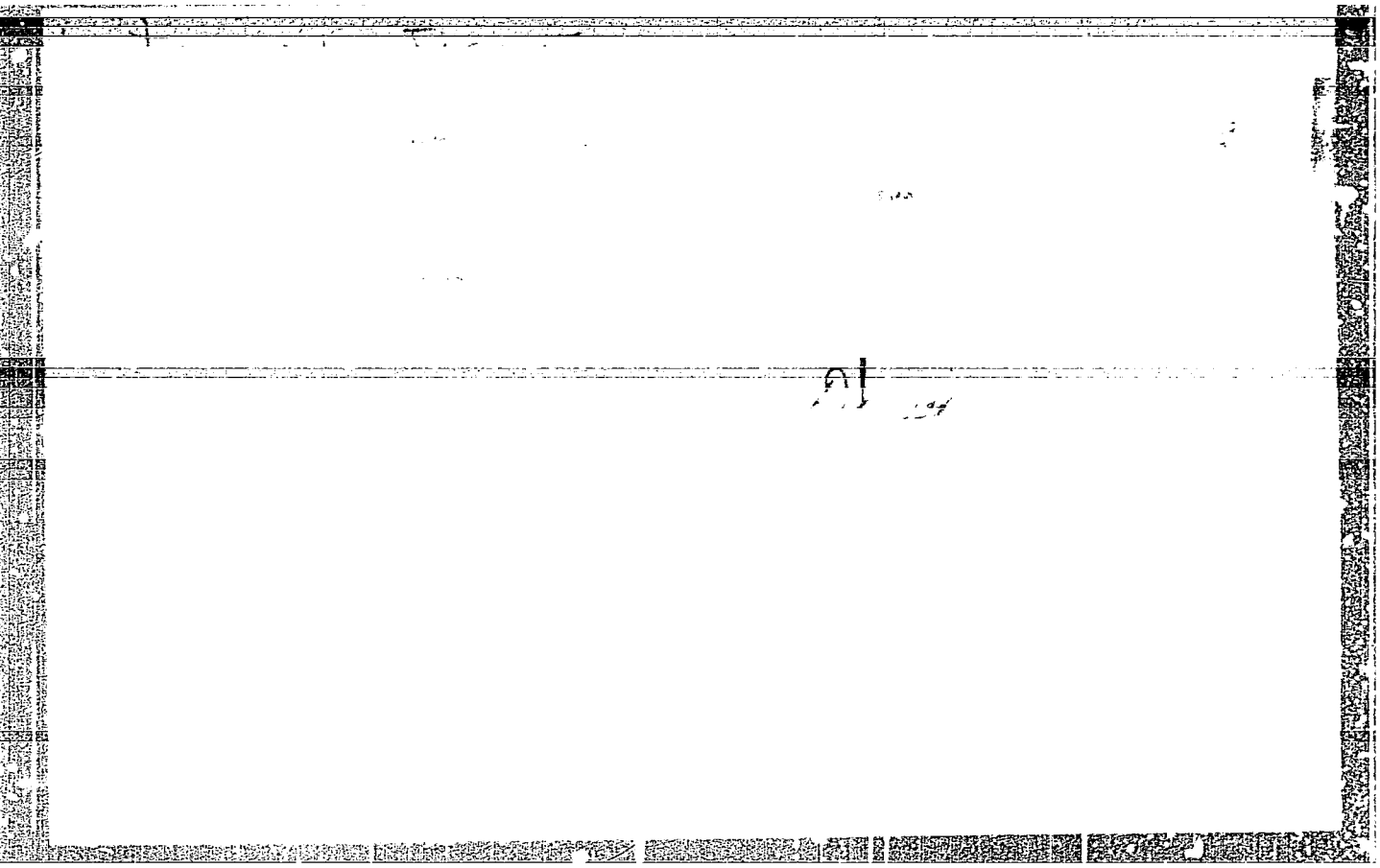


1985* Metallurgical Remarks on the Production and the Use of Preserve Tins. Hutnické poznámky k výrobě a použití konservových krabic. (Czech) Josef Trindl and Dizmar Zalesnerova Hutnické listy









CZECHOSLOVAKIA/Corrosion - Protection From Corrosion. J.

Abs Jour : Ref Zhur - Khimiya, No 2, 1957, 6867

Author : Teindl Josef, Hila Emil
Inst :
Title : Corrosion of Mine Cables and Its Causes

Orig Pub : Hutnicke listy, 1956, 11, No 2, 77-86

Abstract : On the basis of literature data the following questions were considered: effect of the surface condition of the wire on fatigue corrosion arising on variable stresses; mechanism of formation and growth of microfissures in the metal; significance of lubrication, zinc coating and polishing, as concerns protection of the wire; effect of treatment processes, structure and coppering on corrosion of the cable. Investigated was the rate of corrosion of two cables, one of which had not been in use and the other used for 3 months.

Card 1/1

TEINDL, JOSEF

CZECHOSLOVAKIA/Chemical Technology - Chemical Products and Their Application - Corrosion. Protection from Corrosion. H-4

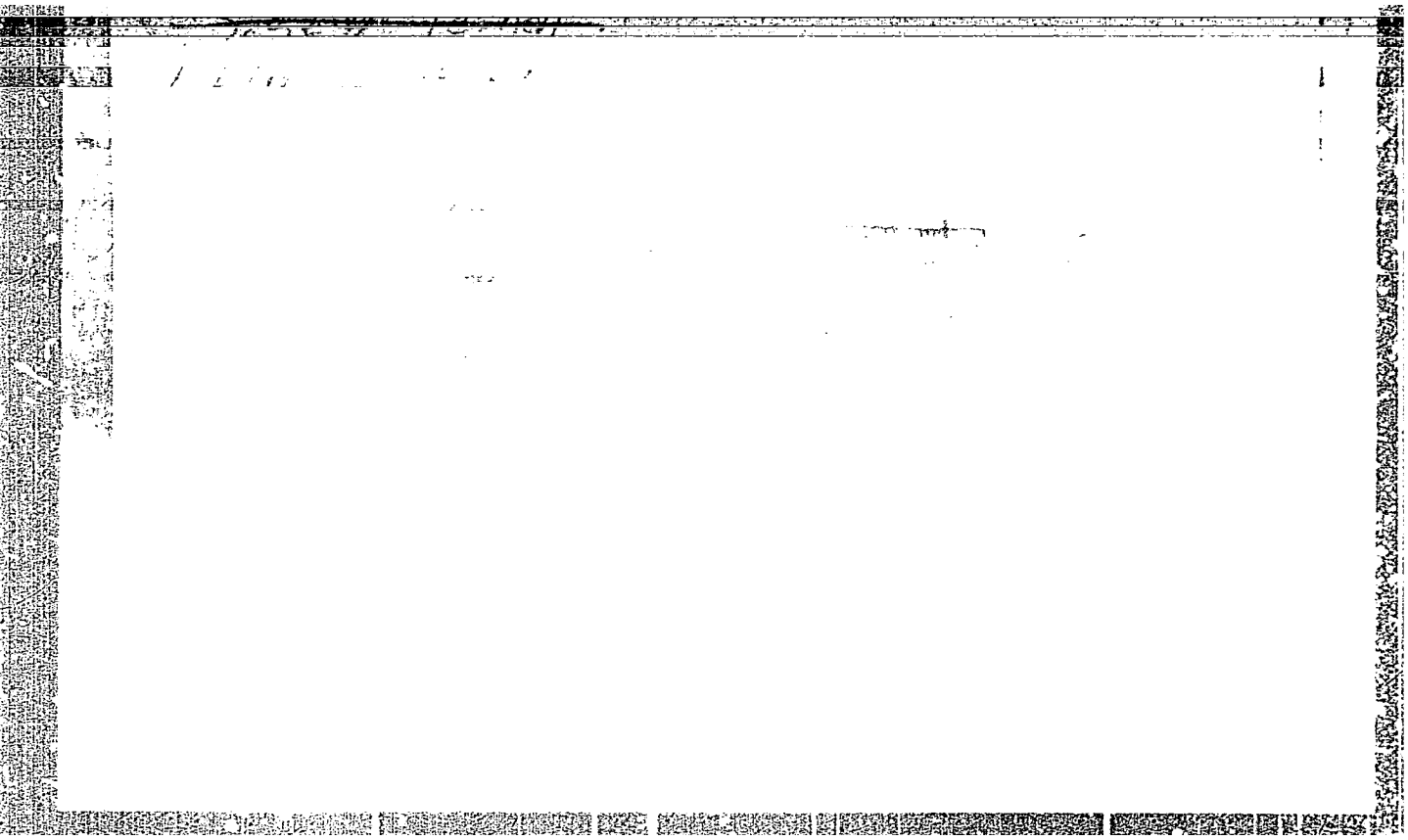
Abs Jour : Ref Zhur - Khimiya, No 3, 1958, 8385

Author : Teindl Josef, Blahoz Otakar
Inst :
Title : Corrosion of Wire Drawn After Zinc-Plating.

Orig Pub : Hutnicke listy, 1956, 11, No 2, 99-102

Abstract : The technology of drawing of zinc-plated wire (W) is considered, as well as the corrosion resistance (CR) of the wire. To enhance the CR use should be made of carbon-steel W and the hot Zn-coating conducted in pure Zn; in drawing, during the last passes, a neutral emulsion should be used. The described technology of drawing makes it possible to decrease expenditure of Zn and electric power, to enhance the mechanical characteristics of the W, extend the life of drawing machines and improve the condition of the surface of the W.

Card 1/1



Teindl, J.

From the activities of the Czechoslovak Scientific Society for Metallurgy and Founding. p. 170. HUTNICKE LISTY. (Ministerstvo hutniho prumyslu a rudnych dolu) Brno. Vol. 11, no. 3, Mar. 1956.

Source: EEAL LC Vol. 5, No. 10 Oct. 1956

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755210001-9"

TEINDL, J

TEINDL, J. - Testing bar control and ductility. p. 14
Vol. 7, No. 1, Jan. 1957
HUTNIK (Ministerstvo Hutniho prumyslu a rudnych dolu)
Praha

SOURCE: EAST EUROPEAN ACCESSIONS LIST (EEAL) VOL 6 NO 4 APRIL 1957

TEINDL, J.; BEZECNY, L.

Zinc-plated sheets and their defects.

P. 273, (Hutnik) Vol. 7, no. 8, Aug. 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

TEINDL, J.

Some remarks on the life and corrosion of mine cables.

P. 325. (UHLI.) (Praha, Czechoslovakia) Vol. 7, No. 10, Oct. 1957

SO: Monthly Index of East European Accession (EEAI) LC. Vol. 7, No. 5, 1958

TEINDL JOSEF,

Czechoslovakia /Chemical Technology. Chemical Products H-4
and Their Application
Corrosion. Protection from Corrosion.

Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1620

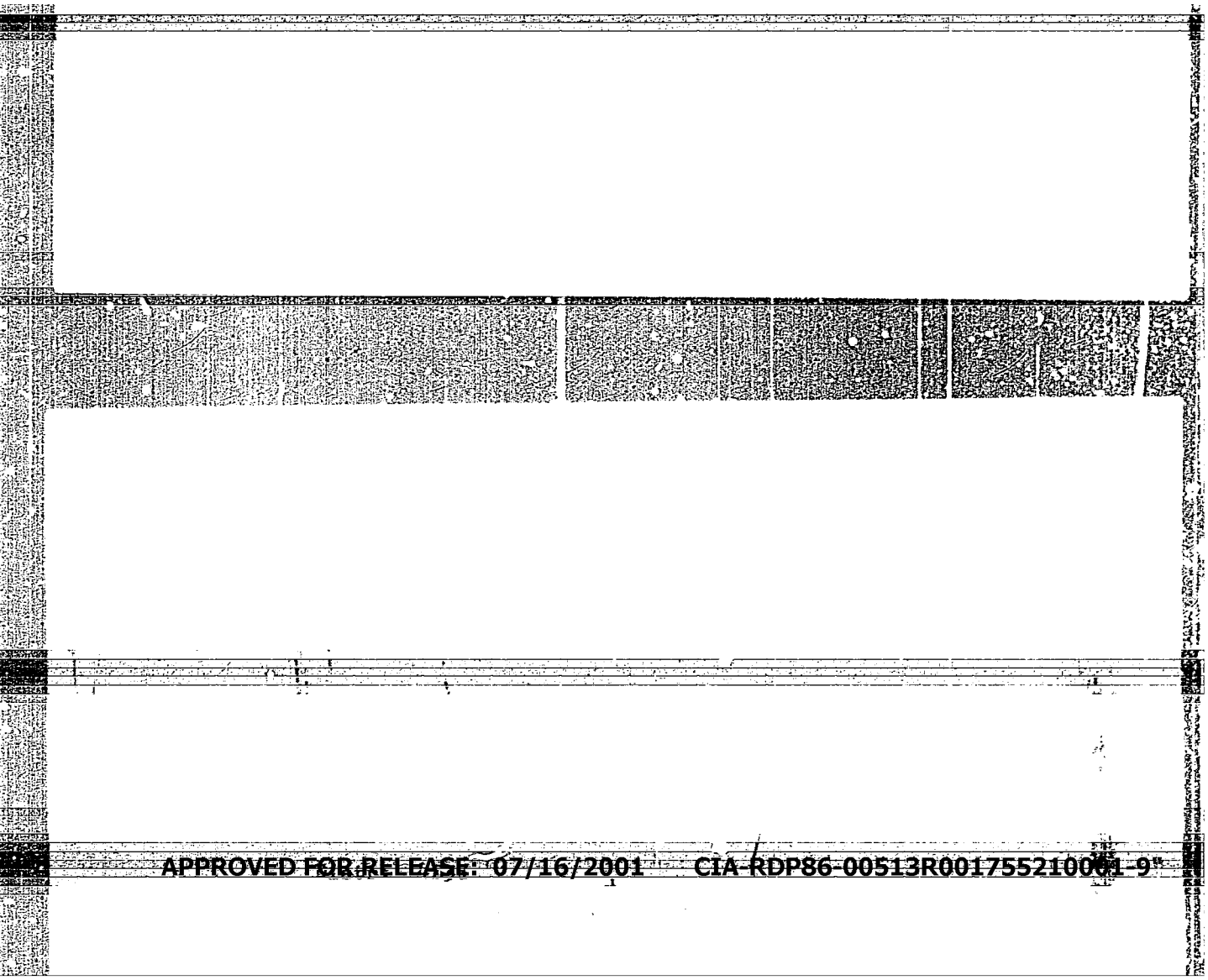
Author : Teindl Josef, Hrbek Ant.

Title : Corrosion of the Inside Surfaces of Tin Cans

Orig Pub: Prumysl potravin, 1957, 8, No 2, 68-73

Abstract: Description of the corrosion of the inside surface of tin cans, and of studies of the sulfide layer that is formed. It is proposed to treat the cans with a passivating solution of the following composition (in grams per liter): Na_3PO_4 9, $Na_2Cr_2O_7.2H_2O$ 8, NaOH 20, wetting agent (for example, alkyl sulfonate) 3.

Card 1/1



TEINDL, J.

TECHNOLOGY

Periodical: SBORNIK VEDECKYCH PRACI. Vol. 4, no. 3, 1958

TEINDL, J. Influence of some factors, especially construction factors, on the quality of tin plating. p. 233

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 3
March 1959 Unclass.

TEINDL, J.

"Effect of some factors on the quality of deep-drawn sheet metal."

SBORNIK VEDECKYCH PRACI, Ostrava, Czechoslovakia, Vol. 4, No. 5, 1958.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, No. 9, September 1959.

Unclassified.

AUTHOR: Teindl, J. CZECH/34-59-6-18/23

TITLE: Defence of Candidate Dissertations at the Mining Faculty, VŠB, Ostrava (Obhajoby kandidátských prací na hutnické fakultě VŠB v Ostravě)

PERIODICAL: Hutnické Listy, 1959, Nr 6, pp 521-522 (Czechoslovakia)

For the degree of Candidate of Technical Sciences: Ing. Milan Žídek defended his dissertation "Cladding of Steel with Stainless Steel, Copper, Brass and Nickel" in which he solved the problem of manufacture and the conditions of adhesion and properties of thick steel sheets and strips clad with stainless steel, copper, brass and nickel.
Ing. Osvald Pejčoch dealt with rolling seamless tubes from the point of view of shaping conditions and faults which may occur. It was found that the main and m o s t frequent faults occur as a result of the spiral cracks on the external surface of the hollow semi-finished product and tubes, formed during the piercing process from fine longitudinal surface cracks.
Ing. Jaroslav Koutský defended his dissertation

Card 1/2

CZECH/34-59-6-18/23

Defence of Candidate Dissertations at the Mining Faculty, VSB, Ostrava

"Contribution to the Study of Processes Occurring in 12% Cr Steel and in Some Modifications of Such Steel at the Tempering and Operating Temperatures".
Ing. Stevo Trajkov defended his paper "Diffusion of Metals in the Solid State".
Summaries of all four dissertations are given.

Card 2/2

67778

18.7500

CZECH/34-59-11-12/20

AUTHORS: Kamensky, Robert, Candidate of Technical Sciences, Engineer and Teindl, Josef, Professor Engineer Doctor of Technical Sciences

TITLE: Contribution to the Explanation of the Occurrence of an Indefinite Hardened Layer on Rolls

PERIODICAL: Hutnické listy, 1959, Nr 11, pp 971 - 977

ABSTRACT: Relatively little definite information has been published on the method of manufacture and, particularly, on the chemical composition of indefinite chill rolls. Data on the chemical composition published by Goebel (Ref 1), Wright (Ref 2), Sutherland (Ref 3) and Chubb (Ref 4) are given in Table 1, p 971. To verify the assumption that due to high affinity to carbon, most carbide-forming elements enter into the eutectic carbides and to elucidate the question as to which carbide-forming elements can have a favourable effect on the formation of an indefinite hardened layer, the authors studied the concentration of carbide-forming elements in eutectic carbides. Since information has been published only on tests made with Cr (Refs 7,8), Cr, Mn and Mo (Ref 8), in their experiments

Card 1/4

67778

CZECH/54-59-11-12/28

Contribution to the Explanation of the Occurrence of an Indefinite Hardened Layer on Rolls

of this paper
the authors isolated the individual carbides and analysed them. For the experiments white-heart cast iron was used with a high content of carbide-forming elements which were smelted in a high-frequency furnace and 12 mm rod specimens were cast into dry moulds. After grinding off the surface layer the carbides were isolated in an electrolyte. The results of the experiments are given separately for each of the individual alloying elements under investigation, i.e. Mn, Cr, Mo, W, Ta and Nb, Bo, Mg. The data relating to the chemical composition are compiled in Tables 2-9, whereby each of the tables gives the chemical composition of several melts with increasing contents of the particular alloying elements being investigated. The relations between the carbide-forming element in the cast iron and the carbide-forming element in the carbides are plotted in the graphs, Figures 5, 8-11, for Mn, Cr, Mo, W and Ti. A number of microstructure photographs are reproduced in Figures 1, 3, 7 and 12. On the basis of the obtained results it is concluded that rolls with an indefinite

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Contribution to the Explanation of the Occurrence of an Indefinite Hardened Layer on Rolls

hardened layer contain protrusions of fine graphite right up to the surface of the rolls and there is no mottled transition structure. The working layer contains intensive protrusions of dendritic carbides located in a direction perpendicular to the roll surface, as a result of which a high hardness and a high resistance to abrasion is obtained.

Formation of the indefinite hardened layer is caused by a particular mechanism of solidification of the white-heart cast iron, in the presence of carbide-forming elements. It was found that carbide-forming elements accumulated in the carbides during the solidification of the eutectic and the remaining eutectic melt will solidify grey provided it contains a sufficient quantity of graphitisation elements. The solidification is obviously influenced by the speed of cooling. Therefore, the composition of the cast iron must be so chosen that graphite separates out also at the surface of the hardened layer and that rejection of a high quantity of carbides

Contribution to the Explanation of the Occurrence of an Indefinite Hardened Layer on Rolls

in the centre of the roll is prevented. Of the carbide-forming elements, only those affect the indefinite hardened layers which are soluble in cementite and do not form special carbides. Rolls with an indefinite hardened layer are being used on a very large scale in many countries and steps should be taken to start production of these also in Czechoslovakia.

Acknowledgments are made to Engineer I.M. Tomasova for carrying out metallographic tests, to K. Kurzova for the carbide analysis carried out at the Research Institute VŽKG. There are 11 figures, 9 tables and 9 references, of which 2 are German, 2 Soviet and 5 English.

ASSOCIATIONS: Výzkumný ústav VŽKG (Research Institute VŽKG)
Vysoká škola báňská, Ostrava (Mining University, Ostrava)

SUBMITTED: September 3, 1959

TEINDL, J. [redacted]

TECHNOLOGY

periodicals: PUTNIK Vol. 9, no. 1, Jan. 1959

OTTA, B.; TEINDL, J. Remarks on pickling thin-sheet steel. p. 17

Monthly List of East European Accessions (EEAI) LC Vol. 8, no. 5
May 1959, Unclass.

TEINDL, J.

"Notes on the application of thin-tinned steel plates for manufacturing meat-product cans." P. 133.

PRUMYSL POTRAVIN. (Ministerstvo potravinarskeho prumyslu). Praha, Czechoslovakia, Vol. 10, No. 3, 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 8, August 1959.
Uncla.

Z/034/60/000/03/016/026
E073/E535

AUTHOR: Teindl, J.

TITLE: 40th Anniversary of the Mining-Metallurgical Academy in Cracow

PERIODICAL: Hutnické listy, 1960, Nr 3, p 221

ABSTRACT: On December 12 and 13, 1959 the Mining-Metallurgical Academy in Cracow (Akademia Górniczo-Hutnicza) celebrated the 40th anniversary of its existence. The present rector is Professor Engineer F. Olszak. During the war nineteen of the professors of this Academy were imprisoned in concentration camps of whom two rectors and one professor died there and four professors died soon after their release. The number of professors and docents increased from 26 prewar to 114 at present, the number of "assistants" increased from 58 prewar to 534 at present. The number of students increased from 608 in 1939 to 4614 at present. The number of graduates increased from 66 in 1938 to 771 in 1959. Due to the fact that the Academy also acts as a research institute, there is close contact between this Institute and industry. This Academy has a number of metallurgical specializations, namely, ferrous

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Z/034/60/000/03/016/026
E073/E535

40th Anniversary of the Mining-Metallurgical Academy in Cracow

metallurgy, metallurgy of steel and electrometallurgy, metallurgy of non-ferrous metals, technology of non-ferrous metals, heat economy in metallurgical works, rolling of steel, forging and pressing of steel, heat treatment of steel. This establishment has several departments and, in addition to a metallurgical department, there is also a department for high temperature materials, a foundry department, an electrical engineering, mining and metallurgical department, a mechanical engineering, mining and metallurgical department. There are 13 chairs on metallurgy, 7 chairs on foundry, 9 chairs on electrical engineering, 8 chairs on mechanical engineering and 7 chairs on high temperature materials. The author hopes that these celebrations will contribute to closer contact between this Academy and a similar establishment in Ostrava, Czechoslovakia, since so far there has hardly been any contact between the two. The beginning of such a contact is to be made by holding a joint conference in 1960-61 on methods of testing metals by the Chair of Metal Science and the Chair of Chemistry in Ostrava and the Chair of Metallography and Chemistry in Cracow.

Card 2/2

TEIHDL, J.

Induction heating in hardening and forging shops. Hut listy 16 no.1: 64 Ja '61.

TEINDL, Josef; HAVLIK, Augustin (Mistek); ZDENEK, Zdenko, inz. (Kladno)

Experimental oxygen-converter steel for making tinplate. Hut listy 16 no.2:103-107 F '61.

1. Clen korespondent Ceskoslovenske akademie ved; Vysoka skola banska, Ostrava (for Teindl).

Z/034/61/000/002/002/006
E073/E535

AUTHORS: Koutský, Jaroslav, Candidate of Technical Sciences and Teindl, Josef, Corresponding Member of ČSAV

TITLE: Comments on the Brittleness of AK 1 (Cr 13) Steels

PERIODICAL: Hutnické listy, 1961, 16, No.2, pp.129-135

TEXT: It is known that for the steels AK 1 (ČSN 17021), containing 11.5 to 14.5% Cr and a maximum of 0.15% C, the strength, hardness and impact strength do not change appreciably in the case of tempering up to 450°C. Above this temperature there is a sharp drop in these properties. In this paper the test results are summarized which were obtained on tempered, quenched specimens and also on specimens which, after heat treatment, were annealed for durations of up to 1000 hours. In the experiments current heats of the following compositions were used:

In %

	C	Mn	Si	P	S	Cr	Ni	N
A	0.15	0.36	0.21	0.022	0.013	13.40	0.14	0.026
B	0.07	0.37	0.34	0.024	0.017	13.40	0.31	0.024

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Comments on the Brittleness of AK 1... Z/034/61/000/002/002/006
E073/E535

The specimens were produced from rolled, annealed rods 32 x 32 mm cross-section. For the steel A the highest hardness was obtained for hardening temperatures of 950 to 1000°C with soaking times of two hours. For the steel B the maximum hardness after hardening was lower and the structure contained δ-ferrite in addition to martensite. The specimens from these steels were quenched from the temperatures 900, 1000 and 1100°C and this was followed by tempering for 2 hours/air to a temperature up to 750°C. Fig.4 shows the dependence of the mec'anical properties on the temperature for specimens of the steel A, quenched from 1000°C and tempered for two hours. Fig.5 shows similar results for specimens of the same steel quenched from 900°C and tempered for two hours. Fig.9 shows the results of long run tests of up to 1000 hours duration obtained for specimens of the steel A at the temperatures 200, 450, 550, 650 and 750°C, quenched from 1000°C/2h/oil (----- hardness, ——— impact strength). The results of tests on the reversibility of the embrittlement in the temperature range 400 to 650°C are also given. Fig.10 shows the effect of the following heat treatment on specimens of the steel A: 1000°C/2h/oil - 750°C/2h/oil

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followed by tempering for 2 hours at various temperatures, temperature, °C vs. R, mkg/cm^2. Fig.11 shows the influence of notch impact strength on the impact test temperature for the steel A: curve 1 - 1000°C/oil - 750°C/2 h/air; curve 2 - 1000°C/oil - 750°C/2 h/air + 500°C/15 h/air, temperature, °C vs. R, mkg/cm^2. To determine the changes in the mechanical properties of heat treated specimens at operating temperatures, in addition to steel A, a carbon steel C of the following composition was used in the tests: 0.13% C, 0.27% Mn, 0.18% Si, 0.021% P, 0.013% S, 13.20% Cr, 0.19% Ni, 0.024% N. In addition to martensite, the structure of the quenched specimens contained individual islands of δ-ferrite. The steels were heat treated as follows:

a) 1000°C/2 hours/oil - 650°C/2 hours/air
b) 950°C/2 hours/oil - 650°C/2 hours/air
c) 1000°C/2 hours/oil - 650°C/20 hours/air
d) 1000°C/2 hours/oil - 750°C/2 hours/air

Specimens with the heat treatment (a) were subsequently annealed at 350, 450 and 550°C for durations up to 1000 hours. The specimens with the heat treatments (b) to (d) were subsequently annealed at

450°C only. The results of notch impact and hardness tests, as well as the chromium contents in the carbide phase are given in plots, Figs. 12-16 for specimens of the steels A and C. Fig.12 shows the results obtained for the steel A after heat treatment (a) followed by annealing at 350, 450, 550°C. Fig.13 gives the results obtained for the steel C. Heat treatment conditions same as in Fig.12. Fig.14 gives the results obtained for specimens with the heat treatment (b) followed by annealing at 450°C. Fig.15 gives the results obtained for specimens with the heat treatment (c) followed by annealing at 450°C. Fig.16 gives the results obtained for specimens with the heat treatment (d) followed by annealing at 450°C. Fig.17 gives the relation between embrittlement after long run annealing and after "artificial ageing", R, mkg/cm^2 vs. log of time, hours; curve A - impact strength after the heat treatment: 1000°C/oil - 650°C/4-8-25 hours; curve A' - impact strength after heat treatment followed by "artificial ageing"; curves B and B' - hardness H_B. The obtained results indicate that the range of embrittlement which arises after tempering of hardened specimens is the result of two parallel or slightly

shifted processes. The first is precipitation and correlation of carbides resulting from martensite decomposition, which influences not only the dynamic but also the static mechanical properties (hardness, strength). Its kinetics cannot differ appreciably from heat to heat, it is an irreversible process since its effects do not manifest themselves in the heat treated states: its effects in the case of tempered, quenched steels are very intensive and may frequently overshadow the effects of the second process. This second process leads to embrittlement of tempered specimens, which is characterized by the fact that its influence manifests itself only on the impact strength; this is a reversible process. Since embrittlement of heat treated specimens in the case of long run annealing at 450°C has the same characteristic, the authors believe that embrittlement is of the same nature in both cases. Of practical importance is determination of the kinetics of embrittlement of heat treated specimens at 450°C; with the exception of a single case, the impact strength in the brittle state never dropped below 4 mkg/cm^2, the value demanded by steam turbine designers. Determination of the impact strength at normal temperature gives the results under the most unfavourable conditions,

since during normal operation the material will always be at a higher temperature at which the impact strength is higher. Therefore, there is no reason to consider embrittlement of worked AK 1 steel as particularly dangerous. Since the impact strength in the brittle state is at its lowest value after long run annealing, it is advisable to temper the material so as to obtain the lowest hardness, i.e. to obtain a structure of very coarse sorbite. There are 17 figures, 2 tables and 11 references, 3 Czech and 8 non-Czech.

ASSOCIATIONS: Závody V. I. Lenina, Plzeň (V. I. Lenin Works, Pilsen) (Koutský) and VŠB, Ostrava (Teindl)

SUBMITTED: October 1, 1960

Comments on the Brittleness of AK1... Z/034/61/000/002/002/006
E073/E535

Fig.4

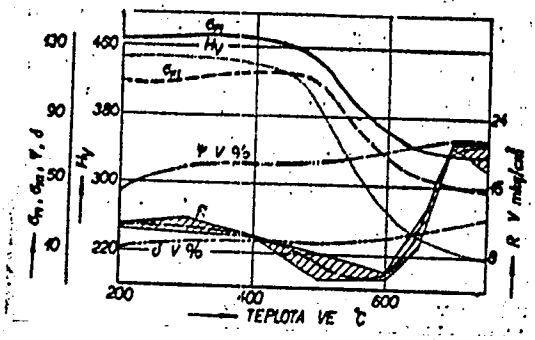
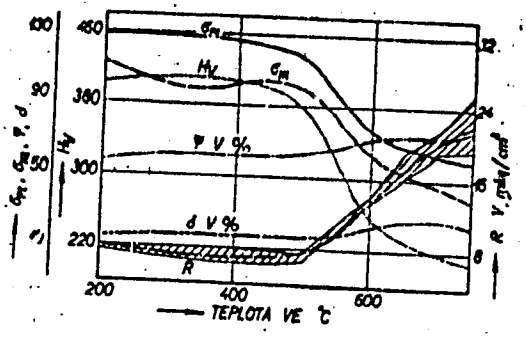


Fig.5



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Comments on the Brittleness of AK1... Z/034/61/000/002/002/006
E073/E535

Fig.9

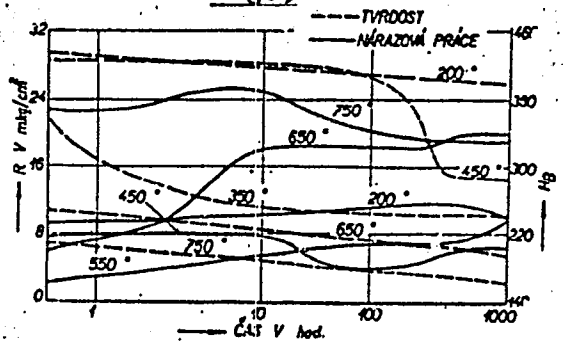


Fig.10

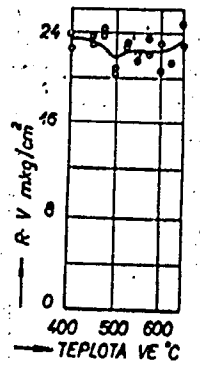
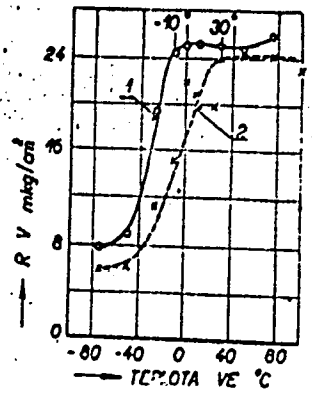


Fig.11



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Comments on the Brittleness of AKl...Z/034/61/000/002/002/006
E073/E535

Fig.12

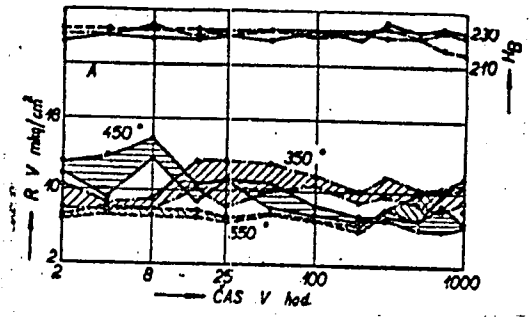

Fig.13

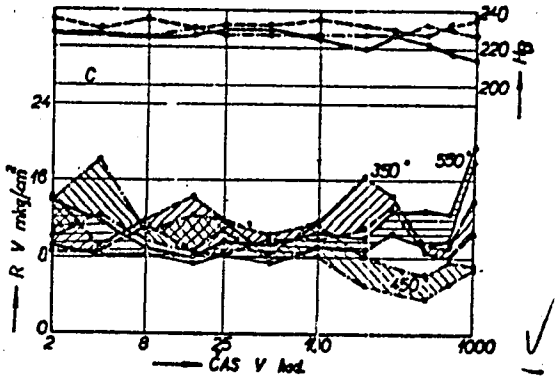

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Fig.14

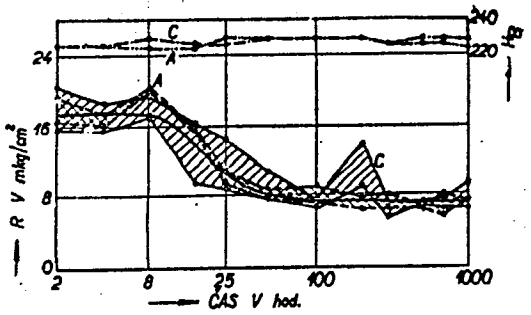
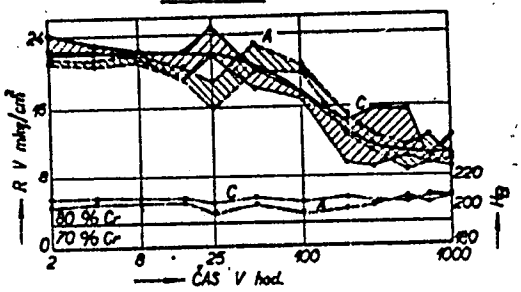


Fig.15



Comments on the Brittleness of AK1... Z/034/61/000/002/002/006
E073/E535

Fig.16

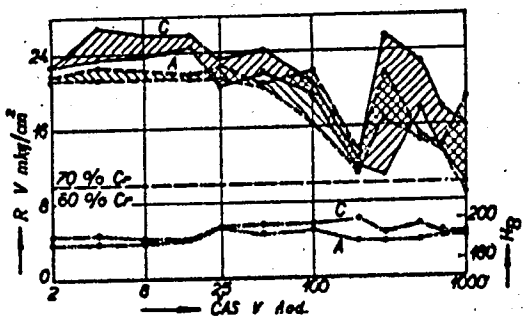
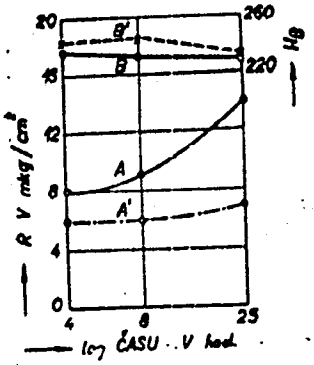


Fig.17



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TEINDL, J.

Candidate dissertations at the School of Metallurgy of the Higher Mining School in Ostrava. Hut listy 16 no.3:213-214 Mr '61.

TEINDL, J.

Professor Antonin Vach; obituary. Hut listy 16 no.5:367 My '61.

TEINDL, J.

Commemorating the 100th anniversary of the birth of Gustav Tammann. Hut listy 16 no.5:367-368 My '61.

TEINDL, J.

Steel, sheets, containers, cans. Hut listy 16 no.5:369 My '61.

TEINDL, J.

Theses for a degree presented to the School of Metallurgy of the Higher Mining School in Ostrava. Hut listy 16 no.6:442-443 Je '61.

TEINDL, J.

Conference on high-temperature materials in the Institute of Materials in Dresden. Hut listy 16 no.7:517-518 Jl '61.

TEINDL, J.

Defense of dissertations at the Higher School of Mining. Hut listy 16 no.7:518-519 Jl '61.

1. Clen korespondent Ceskoslovenske akademie ved.

PUNCOCHAR, Z.; DEDEK, Vlad., inz.; KECLIK, V., inz.; KRUMNIKL, F.; TEINDL, J.; BENDA, O.

Information on metallurgy. Hut listy 16 no.7:523-530 Jl '61.

TEINDL, J.

Physics of metals and metallography in education of metallurgists.
Hut listy 16 no.8:592-593 Ag '61.

1. Clen korespondent Ceskoslovenske akademie ved.

PUNCOCHAR, Z., inz.; BENDA, O.; CHVOJKA, Jan, inz.; CHVATAL, V.; HRBEK, A.; KRUMNIKL, P.; HOREJS, S., inz.; TEINDL, J.; SESTAK, B.

Information on metallurgy. Hut listy 16 no.8:596-605 Ag '61.

TEINDL, J.

In important candidate paper : Disulphurization in basic open-hearth furnaces with ore process. Hut listy 16 no.9:674 S '61.

TEINDL, Josef

Reconstruction of studies at the Metallurgy faculty of Mining College in Ostrava. Hut listy 16 no.12:900 D '61.

(Mining schools and education)

HAVLIK, Augustin; TEINDL, Josef, prof., inzh.dr.

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1. Trinecke zelezarny Velke rijnove socialisticke revoluce, Valcovny plechu, Frydek - Mistek (for Havlik). 2. Vysoka skola banska, Ostrava (for Teindl).

TEINDL, J.

A conference on sheet enameling. Chem prum 12 no.7:366 Jl '62.

TEINDL, J.

Corrosion fatigue of the Mn-Si steel. Hut listy 17 no.2:152 F '62.

TEINDL, J.

Professor Jindrich Sarek; an obituary. Hut listy 17 no.3-173 Mr '62.

1. Clen korespondent Ceskoslovenske akademie ved.

TEINDL, J.

In commemoration of the 60th birthday of professor Rudolf Jirkovsky. Hut listy 17 no.4:296 Ap '62.

BECVAR, J.; MRAZ, V., inz.; PANT, P., inz.; HONZIK, M., inz.; TEINDL, J.

Informations on metallurgy. Hut listy 17 no.4:298-304 Ap '62.

CHVOJKA, J., inz.; HRBEK, A.; KORECKY, Jan; ZIDEK, M.; BAUER, J., inz., dr.; TEINDL, J.

Information on metallurgy. Hut listy 17 no.5:371-380 My '62.