SMETNEV, S.I., akademik

Problems in speeding up the production of poultry meat. Zhivotnovodstvo 21 no.6:3-8 Je '59. (MIRA 12:8)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk im. Lenina.
(Poultry)

SMETNEV, Sergey Ivanovich

[Increasing the production of poultry and eggs]Uvelichenie proizvodstva miasa ptitsy i iaits. Moskva, Mosk.rabochii, 1960. 62 p. (MIRA 15:8)
(Poultry breeding) (Eggs—Production)

SMETNEV, S.I., akademik, red.; FEDOROVSKIY, N.P., kand.biolog.nauk, red.; KARTASHEVA, N.M., red.; ANTONOVA, N.M., khud.-tekhn.red.

[Efficient feeding and maintenance of poultry] Voprosy ratsional'nogo kormleniia i soderzhaniia ptitsy. Pod obshchei red. S.I.Smetneva i N.P.Fedorovskogo. Moskva, Izd-vo M-va sel'.khoz. SSSR, 1960. 163 p. (MIRA 14:1)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I. Lenina. Otdeleniye zhivotnovodstva. 2. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk im. V.I.Lenina i Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A.Timiryazeva (for Smetnev).
(Poulty--Feeding and feeds)

SMETNEV, S. I.

"Methods of Training Students in Poultry Husbandry in the USSR"

Report submitted for the Twelfth World's Poultry Congress, Sydney, Australia 10-18 Aug 1962

SMETNEV, Sergey Ivanovich, prof.; BYRDINA, A.S., red.; PEVZNER, V.I., tekhn. red.; BALLOD, A.I., tekhn. red.

[Poultry farming]Ptitsevodstvo. Izd.4., perer. Moskva, Sel'khozizdat, 1962. 335 p. (MIRA 16:1)

1. Deystvitel'nyy chlen Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Smetnev).
(Poultry)

GOLUBNICHAYA, V.Ya., aspirant; SMETNEV, S.I., akademik.

Raising chicks for meat in cages and on deep litter by feeding them dry feeds [with summary in English]. Izv. TSKHA no.1:167-172 '62. (MIRA 15:6)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni Lenina (for Smetnev).

(Poultry)

SMETNEV, S.I., akademik

Intensive raising of chickens for meat broilers.
Izv. TSKHA no.2:68-77 '62. (MIRA 15:9)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni Lenina.
(Broilers (Poultry))

SMETNEV, S.I., akademik, kand. sel'skokhozyaystvennykh nauk;
PEL'TTSER, S.O.

Importance of the development of poultry husbandry for the increase of the supply of food products. Biol. v shkole no.5:73-81 S-O '62. (MIRA 16:2)

1. Moskovskaya sel'skokhozyaystvennaya akademiya imeni K.A. Timiryazeva. 2. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni Lenina (for Smetnev).
(Poultry)

ZHIDKIKH, Zoya Aleksandrovna; SMETNEV, Sergey Ivanovich; BYRDINA, A.S., red.; GUREVICH, M.M., tekhn. red.; OKOLELOVA, Z.P., tekhn. red.

[Laboratory and practical lessons in poultry raising] Laboratorno-prakticheskie zaniatiia po ptitsevodstvu. Izd.2., perer. Moskva, Sel'khozizdat, 1963. 183 p. (MIRA 17:1)
(Poultry)

NIKULITSKIY, Ivan Vladimirovich, zasl. zootekhnik RSFSR; SMETNEV, S.I., akademik, retsenzent; BOGATAYA, L.M., red.

[Metropolitan poultry plant] Stolichnaia ptitsefabrika. Moskva, Pishchevaia promyshlennost'. 1964. 79 p. (MIRA 18:1)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Smetnev).

[redacted], d.s., akademik

Increasing the egg productivity of dual-purpose breeds and the production of broilers. Ptitsevodstvo no.4:3-4 Ap '62. (MIRA 17:12)

1. Kafedra ptitsevodstva Moskovskoy ordena Lenina sel'skokhozyaystvennoy akademii imeni K.A. Timiryazeva i Vsesoyuznaya akademiya sel'skogo khozyaystva imeni V.I. Lenina.

SMETNEV, S.I., akademik

Working out the technology for the commercial production of broiler meat and eggs. Izv. TSKHA no.5:197-211 '64.
(MIRA 18:5)

1. Kafedra ptitsevodstva Moskovskoy ordena Lenina sel'skokhozyaystvennoy akademii imeni Timiryazeva i Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni Lenina.

TELENGA, N.A., doktor biolog. nauk; SIKURA, A.I., kand. biolog. nauk; DULO, V.Yu.; SMETNIK, A.I.

Using beauverin with DDT for controlling the Colorado beetle. Zashch. rast. ot vred. i bol. 8 no.4:48-49 Ap '63. (MIRA 16:10)

1. Nachal'nik Zakarpatskoy karantinnoy inspektsii (for Dulo). 2. Direktor Zakarpatskoy oblastnoy karantinnoy laboratorii (for Smetnik).

(Ukraine--Potato beetle--Biological control)
(Beauveria) (DDT (Insecticide))

ROZANOVA, M.A.; DULO, V.Yu.; SMETNIK, A.I.

Disinfecting fruit against American fall webworm. Zashch. rast. ot vred. i bol. 9 no.8:43-44 '64. (MIRA 17:12)

1. Starshiy toksikolog TSentral'noy karantinnoy laboratorii (for Rozanova). 2. Direktor Zakarpatskoy karantinnoy laboratorii (for Smetnik).

FASULATI, K.K.; SMETNIK, A.I.

Ecologic characteristics of dendrophilous plant lice (Aphidodea) of Transcarpathia. Nauch. dokl. vys. shkoly; biol. nauki no.1: 21-23 '64. (MIRA 17:4)

1. Rekomendovana kafedroy zoologii Uzhgorodskogo gosudarstvennogo universiteta.

DULO, V.Yu.; SMETNIK, A.I.

In the Transcarpathian Laboratory. Zashch. rast. ot vred. i bol. 9 no. 4:44-45 '64. (MIRA 17:5)

1. Nachal'nik Zakarpatskoy karantinnoy inspektsii (for Dulo).
2. Direktor Zakarpatskoy laboratorii karantinnoy laboratorii (for Smetnik).

SHEFSKAYA, L. S.

SHEFSKAYA, L. S. "An investigation and the principles of the theory of vibrating sieves", (with a foreword by L. B. Levenson), Shornik nauch. trudov Mosk. gornogo in-ta im. Stalina, Issue 7, 1948, p. 148-81.

SO: U-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey', No. 22, 1949).

LEVITAN, Kh.N., prof.; SMETSKAYA, N.P., ordinator

Treatment of gastric and duodenal ulcer. Sbor. trud. Kursk. gos. med. inst. no.13:369-372 '58. (MIRA 14:3)

1. Iz kliniki fakul'tetskoy terapii (zav. - prof. Kh.N.Levitan) Kurskogo gosudarstvennogo meditsinskogo instituta.
(PEPTIC ULCER)

GORYACHIY, Ya.V.; SMETSKIY, M.K.

Some advices for the maintenance of the 407 "Moskvich" car engine.
Avtomobilist 1:100-107 '61. (MIRA 15:1)
(Automobiles--Engines)

GORBUNOV, I.P.; GLUKHOV, V.P.; KOTLUKOV, K.G.; MOSKALEV, V.D.; SIPAYLOV, Yu.A.; SMBYAN, N.K.; SHUTOV, M.I.; BYKOV, S.G., red.; KANEVSKAYA, M.D., red.; BLAZHENKOVA, G.I., tekhn.red.

[Training methods for members of civil air defense groups] Metodika podgotovki lichnogo sostava grupp samozashchity. Moskva, Izd-vo DOSAAF, 1959. 165 p. (MIRA 13:3)

1. Vsesoyuznoye dobrovol'noye obshchestvo sodeystviya armii, aviatsii i flotu.
(Air defenses)

SMEYAN, N. K.

Work of the population in conducting emergency rescue operations.
Voen. znan. 36 no.9:29-30 S '60. (MIRA 13:9)
(Civil defense)

SMEYKAL, Karel

"Heat-resisting materials for glass melting furnaces" by N.V. Solomin. Reviewed by Karel Smeykal. Sklar a keramik 12 no.10:319 O '62.

16(1) P. 5 PHASE I BOOK EXPLOITATION SOV/2445

Akademiya nauk SSSR. Vychislitel'nyy tsentr

Vychislitel'naya matematika (Computational Mathematics) Moscow, Izd-vo AN SSSR, 1959. 183 p. (Series: Its: Sbornik, 4) Errata slip inserted. 5,000 copies printed.

Resp. Ed.: V. A. Ditkin, Professor; Ed.: M. V. Yakovkin; Tech. Ed.: I. N. Guseva.

PURPOSE: This book is intended for applied mathematicians, scientists, and engineers.

COVERAGE: This book contains seven articles concerning the development of new methods of constructing nomograms of practical value in computations. The first two articles, which make up the largest part of the book, deal with various aspects of practical nomography. Much attention is paid to the nomograms with movable scales and to the nomographing of canonical forms. Projective transformations of alignment nomograms, design of nomograms on high speed computers, nomograms of polynomials, elements of the theory of nets and their application to nomography are also discussed

Card 1/8

AVAILABLE: Library of Congress

IK/mg
10-30-59

Smeyle, A. A.

USSR/Analytical Chemistry - General Questions C-1

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 8406

Author : Smeyle, A. A.
Inst : Academy of Sciences USSR
Title : Latest Advances in Radiometric Analysis

Orig Pub : Sb.: Primenenie radioaktivnykh izotopov v prom-sti, meditsine i s.kh. [Symposium on the Application of Radioactive Isotopes in Industry, Medicine and Agriculture], Moscow, AN, SSSR, 1956, pp 153-165

Abstract : A survey. For the determination of trace amounts of Ca in the presence of Fe, the author irradiated a ~ 1 gm sample for 2-10 weeks. For the separation of Ca^{45} and ($T_{\frac{1}{2}}$ 152 days) the main mass of the Fe is extracted with ether, and the residual Fe is precipitated together with Mn with NH_4OH; the Ca is separated in the form of CaC_2O_4. In the measurement of the β-activity of Ca^{45} a correction is made for self-absorption.

Card 1/1

34997
S/190/62/004/003/017/023
B124/B101

15.8070

AUTHORS: Smoytek, P., Frenkel', S. Ya.

TITLE: Selective interactions in polymer chains. II. Effect of hydrogen bonds on the copolymerization kinetics of methyl methacrylate and methacrylic acid

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 3, 1962, 429-432

TEXT: The benzoyl-peroxide-initiated photopolymerization of a 10:1 mixture of methyl methacrylate (MMA) and methacrylic acid (MA) was studied in bulk and in benzene using varying concentrations of the monomer components. Each experiment was performed twice: with the pure components and with 5 - 20% dimethyl formamide (DMF) added. A [illegible]-250 (SVDSh-250) mercury lamp was used as the light source. The course of the polymerization was determined by measuring the dielectric losses by a method described in Vysokomolek. soyed. 4, 419. 1962 and, simultaneously, the free-radical concentration was measured with an epm spectrometer. When the mixture with DMF is bulk-polymerized, the gel effect is retarded and captured free radicals are recorded but at the end of the process. Without DMF, viscosity

Card 1/3

bond formation yielding heterogeneous systems. DMF transforms the system into another consisting of homogeneous phases cleaving the hydrogen bonds and ionizing the carboxylic groups. The overall rate of polymerization falls due to the enhanced mobility of the free radicals. The heterogeneous character of the ionizing system in the absence of DMF may be the cause of the increase in MA content in the heavy fractions of the copolymer. There are 4 figures and 5 references: 4 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: R. J. Abraham, H. W. Melville, D. W. Ovenall, D. H. Whiffen, Trans. Faraday Soc., 54, 1133, 1958.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: March 3, 1961

Card 3/3

Macroradicals in solid polymers

$K_{II} = 10^{18}\exp\left(\frac{-24000\pm2000}{RT}\right)$ cm^3/mole·sec; $K_{III} = 10^{7}\exp\left(\frac{-23000\pm2000}{RT}\right)$ cm^3/mole·sec;

takes several hours. The macroradical separation is due to disruption of hydrogen molecules from the polymer chains; a migration mechanism is assumed for the radical state being effective from chain to chain. The macroradical disrupture is strongly stimulated by oxygen due to radical oxidation. The destruction process by O_2 is accelerated to about 100 times the rate under normal conditions. The kinetic constants of the macroradical disrupture in the presence of oxygen were measured and their temperature dependence was determined. If the oxygen is eliminated from the ampoules after complete radical oxidation (only ROO· present) the rate of macroradical destruction is decreased by a factor of 5 to 10. Also this effect speaks in favor of the hydrogen migration suggested. The regeneration of the initial carbon radicals of polymethyl methacrylate from the hydroxides on oxygen evacuation occurs more rapidly at 0°C and leads to a 50% restoration. It proved impossible to explain radical destruction by diffusion processes; the only mechanism possible seems to be the radical state migration through subsequent disrupture of hydrogen atoms by the polymer chain radicals. There are 4 figures.

Card 2/3

SOLOMKO, V.P.; SMEYUN, S.M. [Smiium, S.M.]

Investigation of the viscosity of the ternary system water - ethanol - benzene in the critical region. Dop.AN URSR no.5:649-651 '61. (MIRA 14:6)

1. Kiyevskiy gosudarstvennyy universitet. Predstavleno akademikom AN USSR Yu. K. Delimarskim [Delimars'kyi, IU.K.].

(Viscosity)
(Ethyl alcohol)
(Benzene)

SMIALKOWNA, H.

SCIENCE

Periodical: KOSMOS. SERIA A: BIOLOGIA. Vol. 8, no. 2, 1957. In French.

SMIALKOWNA, H. Certain conditions necessary and sufficient for holomorphic functions being one-valued and bounded within the unity circle. p. 1.

Monthly List of East European Acessions (EEAI), LC, Vol. 8, No. 3, May 1959
Unclass.

L 03779-67 EWP(j) RM

ACC NR: AP6031702 (N) SOURCE CODE: PO/0099/66/040/003/0487/0488

43
B

AUTHOR: Hurwic, Jozef; Smialek-Kazmierowska, Sonia; Maliszewski, Bogdan

ORG: Department of Physics, Chemical Faculty, Institute of Technology, Warsaw (Katedra Fizyki na Wydziale Chemicznym Politechniki)

TITLE: Dipole moments of some phosphoroorganic compounds with sulphur and selenium

SOURCE: Roczniki chemii-annales societatis chimicae polonorum, v. 40, no. 3, 1966, 487-488

TOPIC TAGS: organic phosphorus compound, dipole moment, sulfur, selenium

ABSTRACT: Dipole moments of 6 phosphoorganic compounds with sulfur and selenium were determined by the dilute solution method (in dry benzene) with an accuracy of $\Delta\mu = \pm 0.1D$. Orig. art. has: 1 table. [JPRS: 36,002]

SUB CODE: 07 / SUBM DATE: 19Oct65 / ORIG REF: 001 / SOV REF: 001
OTH REF: 002

Card 1/1

~~SMIALKOWSKI, M.~~ → Smialkowski, M.

Passivity of metals in theory and practice. M. Smialkowski. *Przemysł Chem.* 6, 70–7(1950).—The various theories are reviewed and some of the more important phenomena are described. Frank Gonet

D/NIOT

SMOLINSKI, A.; KACZKOWSKI, Z.; SMIALKOWSKI, T.

Measuring system for highly selective filters using a Neuman type recording device. Archiw elektrotech 12 no. 4: 768-772 '63.

1. Zaklad Magnetykow, Instytut Podstawowych Problemow Techniki, Polska Akademia Nauk, Warszawa.

SMOLINSKI, A.; KACZKOWSKI, Z.; SMIALKOWSKI, T.

Influence of the tuning and tracing rate on the recording fidelity of filter characteristics taken up by a Neuman type recording device. Archiw elektrotech 12 no. 4: 772-779 '63.

1. Zaklad Magnetykow, Instytut Podstawowych Problemow Techniki, Polska Akademia Nauk, Warszawa, i Katedra Magnetykow i Dielektrykow, Politechnika, Warszawa.

SMIALKOWSKI, Teodor, mgr inz.

Ceramic ladder filters for radiocommunication receivers.
Prace inst teletechn 8 no.2:132-135 '64

SMIALOWSKA, M.

SMIALOWSKA, M. For the consideration of people going into the Tatra Mountains. p. 22. An important regulation. p. 22.

Vol. 2, No. 4, April, 1955
TURYSTA.
Warszawa, Poland
GEOGRAPHY & GEOLOGY

So: East Europeon Accessions, Vol. 5, No. 5, May 1956

SMIALOWSKA-KEDZIOWA, Krystyna

Curare in the treatment of peripheral vascular diseases. Polski przegl. chir. 28 no.7:663-668 July 56.

1. Z III Kliniki Chirurgicznej A.M. w Lodzi Kierownik: prof. dr. med. W. Tomaszewicz, Lodz, III Klinika Chirurgiczna A.M.
(VASCULAR DISEASES, PERIPHERAL, therapy,
curare (Pol))
(CURARE, therapeutic use,
vasc. dis., peripheral (Pol))

SMIALOWSKA-KEDZIOWA, Krystyna; PIOTROWICZ-KASPRZAKOWA, Krystyna; KEDZIA, Tytus

Conservative therapy of peripheral vascular diseases based on observations of the outpatient clinic of peripheral vascular diseases at the 3rd Surgical Clinic, Medical Academy in Lodz. Polskie arch.med. wewn. 28 no.5:779-782 1958.

1. Z III Kliniki Chirurgicznej A.M. w Lodzi Kierownik: prof. dr med W. Tomaszewicz. Adres autora: Lodzi, III Klinika Chirurgiczna A.M., ul. Kopcinskiego 22.

(VASCULAR DISEASES, PERIPHERAL, ther.
drug ther., hosp. report (Pol))

SMIALOWSKA-KEDZIOWA, Krystyna

Thrombophelbitis migrans of superficial veins during thrombengiitis obliterans. Polskie arch.med. wewn. 28 no.5:839-840 1958.

1. Z III Kliniki Chirurgicznej A.M. w Lodzi Kierownik: prof. dr med. W. Tomaszewicz.

(THROMBANGIITIS OBLITERANS, compl.
thrombophlebitis migrans (Pol))
(THROMBOPHLEBITIS, etiol. & pathogen.
migrans, caused by thromboangiitis obliterans (Pol))

SMIALOWSKA-KEDZIOWA, Krystyna; PIOTROWICZ-KASPRZAKOWA, Krystyna

Results of the treatment of obliterative peripheral diseases by means of excision of the sympathetic ganglia and adrenalectomy. Polski przegl.chir. 31 no.12:1323-1335 D '59.

1. Z III Kliniki Chirurgicznej A. M. w Lodzi Kierownik: prof. dr W. Tomaszewicz.
(VASCULAR DISEASES PERIPHERAL surg)
(ADRENALECTOMY)
(SYMPATHECTOMY)

PIOTROWICZ-KASPRZAKOWA, Krystyna; SMIALOWSKA-KEDZIOWA, Krystyna.

Evaluation of the results following adrenalectomy in the treatment of obliterating diseases of peripheral vessels. Polski przegl. chir. 35 no.9:985-988 '63.

1. Z III Kliniki Chirurgicznej AM w Lodzi (kierownik: prof. dr. W.Tomaszewicz, obecnie: doc.dr. A.Alichniewicz) oraz z Poradni Chorob Naczyn Obwodowych przy Wojewodzkiej Przychodni Specjalistycznej dla m.Lodzi.

*

SMIT[illegible]WSKI, Antoni

Amygdaloid complex of the macaque. Acta biol. exp. (Warsz) 25 no.2 277-89 '65

1. Department of Comparative Neuroanatomy, Jagiellonian University, Krakow, Poland.

SMIALOWSKI, E.

Warsaw, Przeglad Geodezyjny, Vol XXXIII, No 5, May 1962.

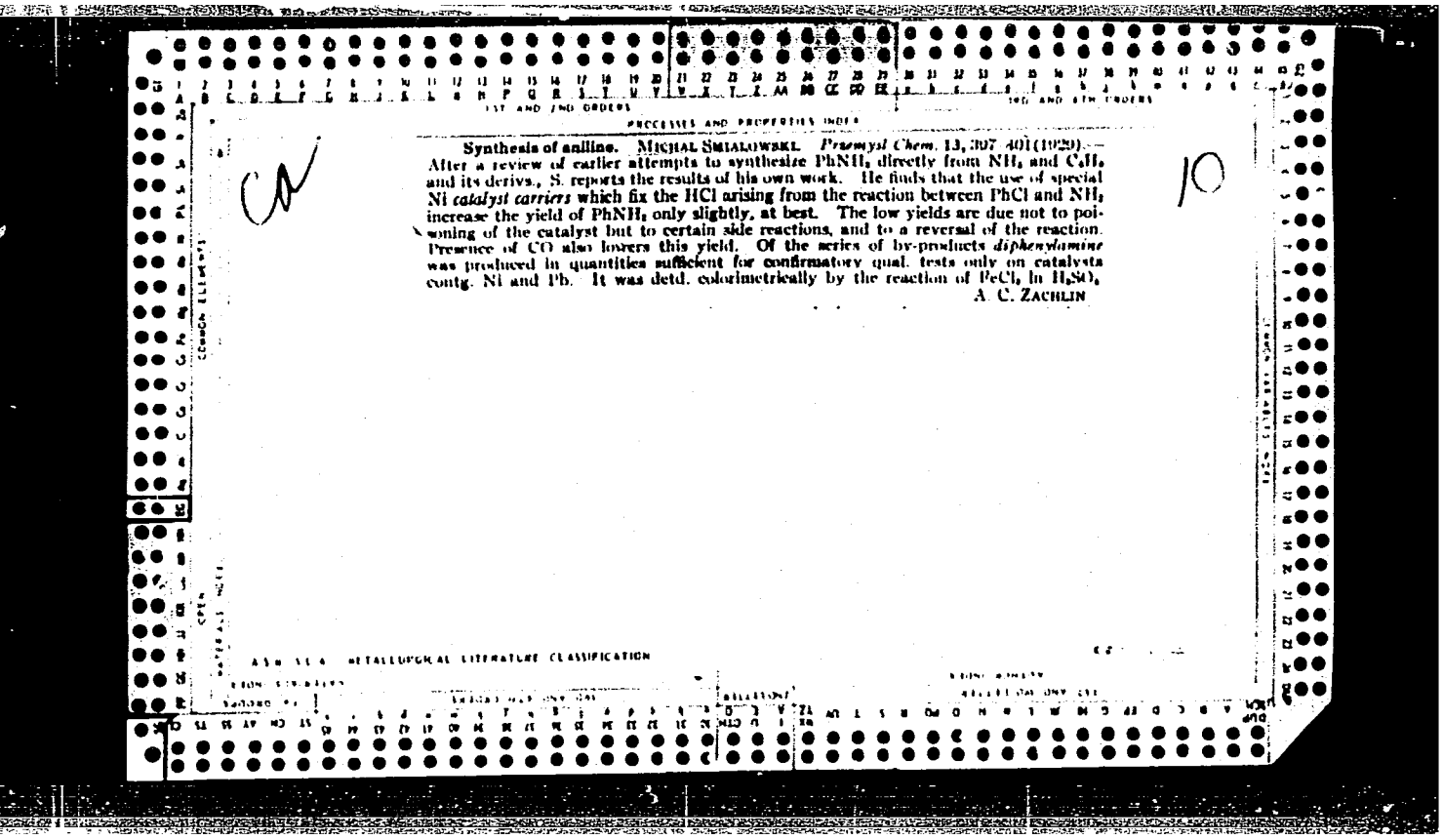
12. "The Sixth Session of the Council on Geodesy and Cartography," W. Baranski; pp. 226-227.
13. "On Satisfying the Daily Needs of Geodetic Cells in the Powiats and Cities," Edward GRZESZCZAK; p. 227.
14. "Cumulation of Geodetic Poles," E. Smialowski; pp. 227-228.
15. "Rose Sunday," [poet] Andrzej Ryszard KOZLOWSKI; p. 228.
16. "The Thousandth Graduate of the Correspondence Construction Technical School in Warsaw," signed blj; p. 229.
17. "Book Review: Catalogue of Maps of the Wielkopolska Towns and Villages," St. Janusz TYCZYNSKI, master of engineering; pp. 229-230.
18. "Second International Distance Measurement Course in Warsaw," Wojciech ENZENBERG; pp. 231-232.
19. "Meeting of the Scientific Council of the Institute of Geodesy and Cartography (Rada Naukowa Instytutu Geodezji i Kartografii); signed S.D.; p. 232.
20. "Review of Directives on Geodetic Law," W. Baranski, master of engineering; p. 233.

- 9/2 -

SMIAŁOWSKI, J.

Building materials in architecture. p. 218.
Vol 10, no. 8, Aug. 1955. MATERIAŁY BUDOWLANE. Warsaw, Poland.

So: Eastern European Accession. Vol 5, no.4, April 1956



PROCESSES AND PROPERTIES INDEX

Synthesis of aniline. MICHAL SMIALOWSKI. *Przemysl Chem.* 13, 397–401 (1929).—After a review of earlier attempts to synthesize $PhNH_2$ directly from NH_3 and C_6H_6 and its derivs., S. reports the results of his own work. He finds that the use of special Ni *catalyst carriers* which fix the HCl arising from the reaction between PhCl and NH_3 increase the yield of $PhNH_2$ only slightly, at best. The low yields are due not to poisoning of the catalyst but to certain side reactions, and to a reversal of the reaction. Presence of CO also lowers this yield. Of the series of by-products *diphenylamine* was produced in quantities sufficient for confirmatory qual. tests only on catalysts contg. Ni and Pb. It was detd. colorimetrically by the reaction of $FeCl_3$ in H_2SO_4.

A. C. ZACHLIN

METALLURGICAL LITERATURE CLASSIFICATION

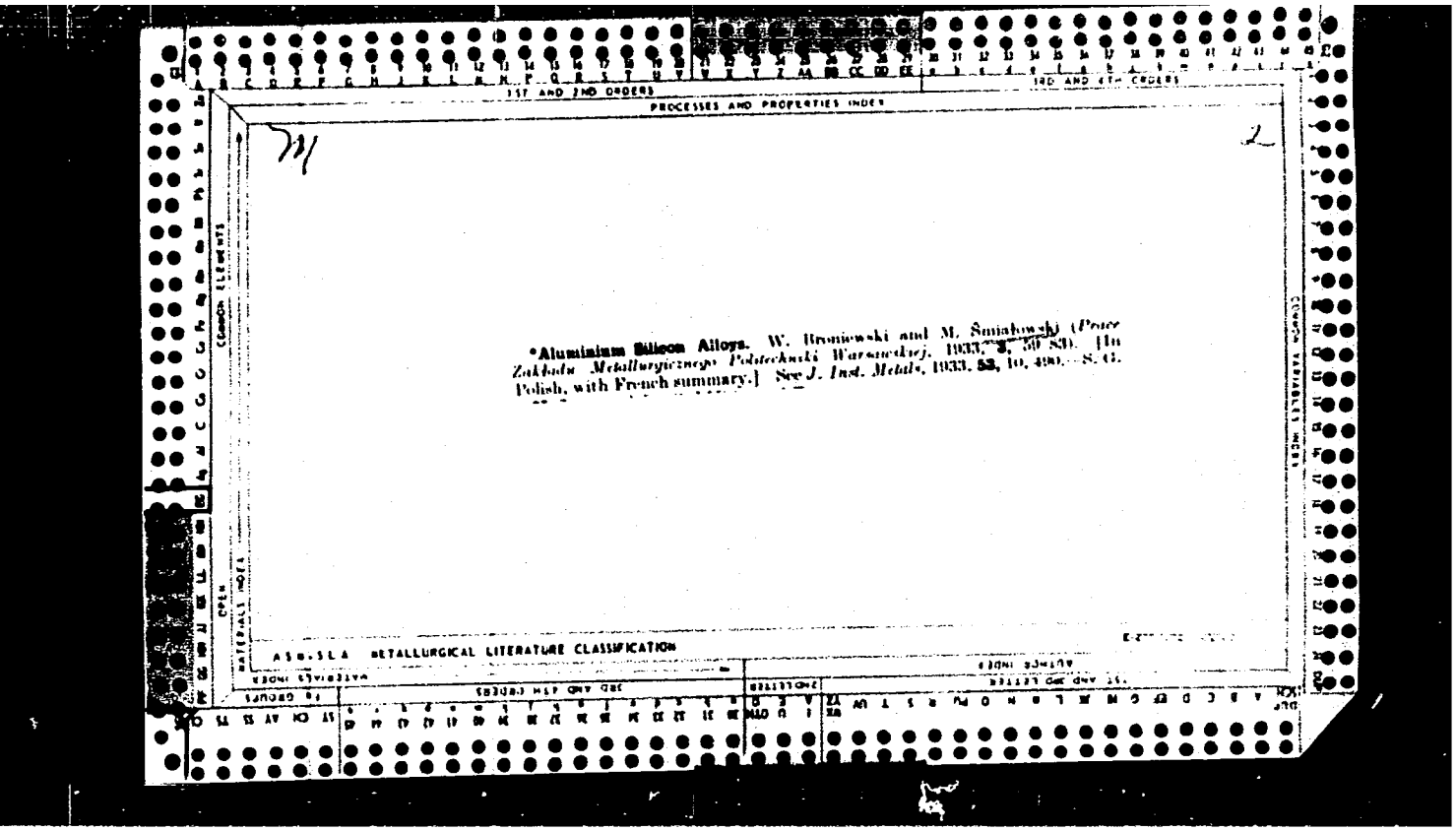
PROCESSES AND PROPERTIES INDEX

A-1

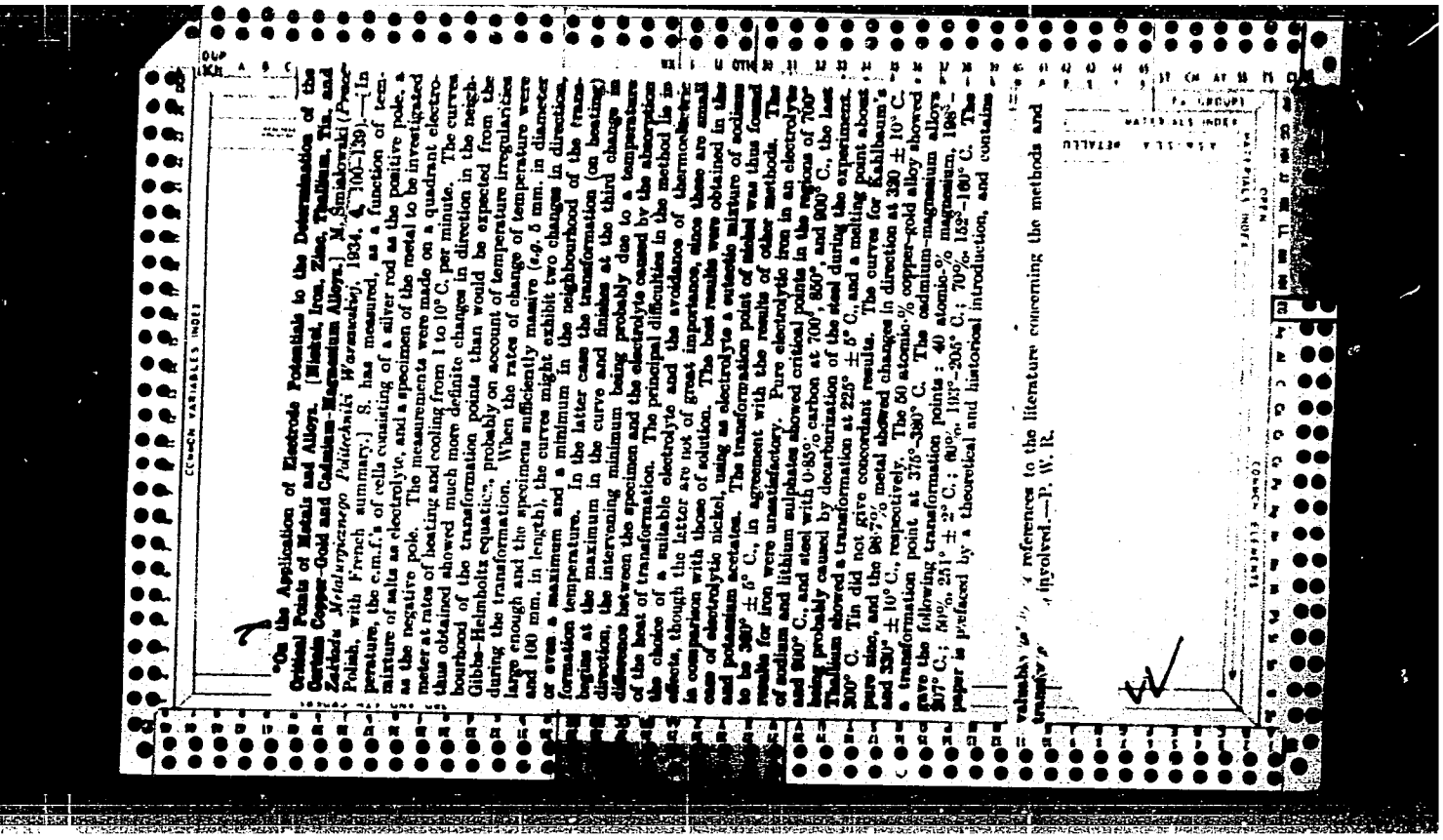
Corrosion of metals. T. [illegible] and H. Baranowski (Przemysl Chem., 1931, [illegible]).—Dufek's method (Korrosion u. Metallschutz, [illegible]) whereby the resistance to corrosion of a metal is measured as a function of the P.D. between the metal and a mercury electrode immersed in the same solution, does not yield good results. Tödt's method (Korrosion u. Metallschutz, 1929, 5, 169), depending on the measurement of the current flowing between the metal and a platinum electrode, gives better results, which are not, however, entirely trustworthy in every case. The most important factors in the corrosion of metals immersed in alkali chloride solution are the velocity of diffusion of oxygen to the cathodic parts of the metal surface, and the catalytic properties of these surfaces, depending on their ability to activate oxygen; platinum surfaces activated oxygen to a smaller extent than other metals examined, with the exception of tin. The quantity of current flowing between the metal and the platinum electrode was unaffected by the presence of quinoline, brucine, mannitol, and sodium arsenite in the solution, whilst 0·5% potassium cyanide considerably reduced the current, acting probably as an anticatalyst. Measurements of the current flowing between a carbon cathode and a metal anode in alkali chloride solution under various conditions show that the deviations found from Ohm's law diminish with increasing density of current, and are ascribed to the resistance due to the formation of deposits on the anode. The velocity of dissolution of metals connected with a non-polarising cathode is expressed by $I = \chi(E'_a - E_a)/C + X$, where I represents density of current in amp., χ is the conductivity of the electrolyte, E'_a and E_a are the *P.D.* at the anode during the passage of the current and with the circuit open, X is the additional resistance due to the deposit on the anode, and C is the resistance capacity of the cell.

R. Truszkowski.

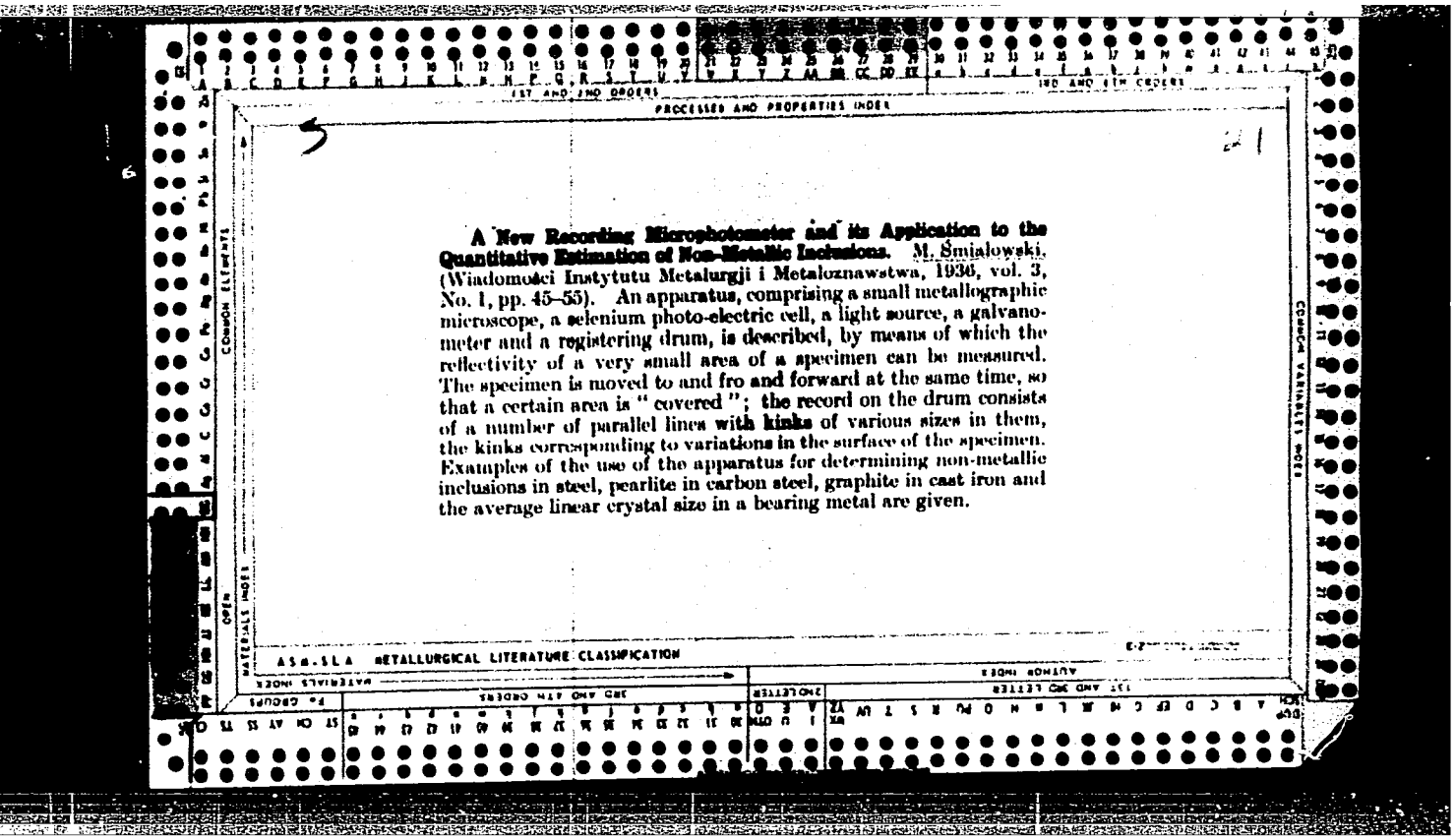
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



•**Aluminium Silicon Alloys.** W. Broniewski and M. Smiałowski. (*Prace Zakładu Metallurgicznego Politechniki Warszawskiej*. 1933, **3**, 59–89. [In Polish, with French summary.] See *J. Inst. Metals*, 1933, **53**, 10, 480. S. G.



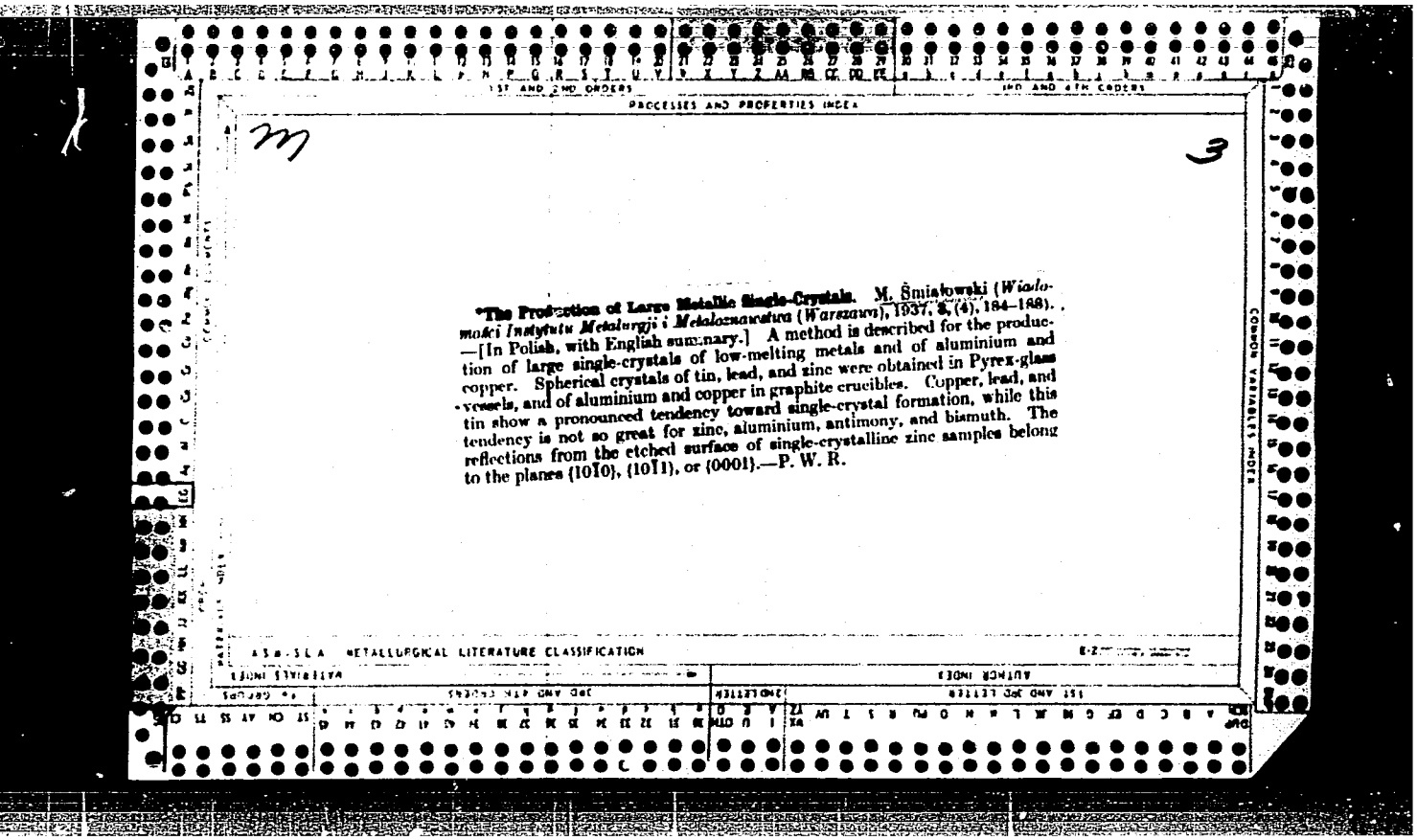
"On the Application of Electrode Potentials to the Determination of the Critical Points of Metals and Alloys. (Metal. Iron, Zinc, Thallium, Tin, and Certain Copper–Gold and Cadmium–Magnesium Alloys.) M. Smialowski (Prace Polish, with French summary.) S. has measured, as a function of temperature, the e.m.f.'s of cells consisting of a silver rod as the positive pole, a mixture of salts as electrolyte, and a specimen of the metal to be investigated as the negative pole. The measurements were made on a quadrant electrometer at rates of heating and cooling from 1 to 10° C. per minute. The curves thus obtained showed much more definite changes in direction in the neighbourhood of the transformation points than would be expected from the Gibbs–Helmholtz equation, probably on account of temperature irregularities during the transformation. When the rates of change of temperature were large enough and the specimens sufficiently massive (*e.g.* 5 mm. in diameter and 100 mm. in length), the curve might exhibit two changes in direction, or even a maximum and a minimum in the neighbourhood of the transformation temperature. In the latter case the transformation (on heating) begins at the maximum in the curve and finishes at the third change in direction, the intervening minimum being probably due to a temperature difference between the specimen and the electrolyte caused by the absorption of the heat of transformation. The principal difficulties in the method lie in the choice of a suitable electrolyte and the avoidance of thermoelectric effects, though the latter are not of great importance, since these are small in comparison with those of solution. The best results were obtained in the case of electrolytic nickel, using as electrolyte a eutectic mixture of sodium and potassium acetates. The transformation point of nickel was thus found to be 360° ± 5° C., in agreement with the results of other methods. The results for iron were unsatisfactory. Pure electrolytic iron in an electrolyte of sodium and lithium sulphates showed critical points in the regions of 700° and 800° C., and steel with 0·85% carbon at 700°, 850°, and 900° C., the last being probably caused by decarburisation of the steel during the experiment. Thallium showed a transformation at 225° ± 5° C., and a melting point about 300° C. Tin did not give concordant results. The curves for Kahlbaum's pure zinc, and the 99·7% metal showed changes in direction at 330 ± 10° C. and 330° ± 10° C., respectively. The 50 atomic-% copper–gold alloy showed a transformation point at 376°–380° C. The cadmium–magnesium alloys gave the following transformation points: 40 atomic-% magnesium, 198°–217° C.; 60% 251° ± 2° C.; 80% 192°–205° C.; 70% 152°–160° C. The paper is prefaced by a theoretical and historical introduction, and contains [illegible] references to the literature concerning the methods and [illegible] involved.—P. W. R.



PROCESSES AND PROPERTIES INDEX

A New Recording Microphotometer and its Application to the Quantitative Estimation of Non-Metallic Inclusions. M. Śmiałowski. (Wiadomości Instytutu Metalurgji i Metaloznawstwa, 1936, vol. 3, No. 1, pp. 45–55). An apparatus, comprising a small metallographic microscope, a selenium photo-electric cell, a light source, a galvanometer and a registering drum, is described, by means of which the reflectivity of a very small area of a specimen can be measured. The specimen is moved to and fro and forward at the same time, so that a certain area is "covered"; the record on the drum consists of a number of parallel lines with kinks of various sizes in them, the kinks corresponding to variations in the surface of the specimen. Examples of the use of the apparatus for determining non-metallic inclusions in steel, pearlite in carbon steel, graphite in cast iron and the average linear crystal size in a bearing metal are given.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

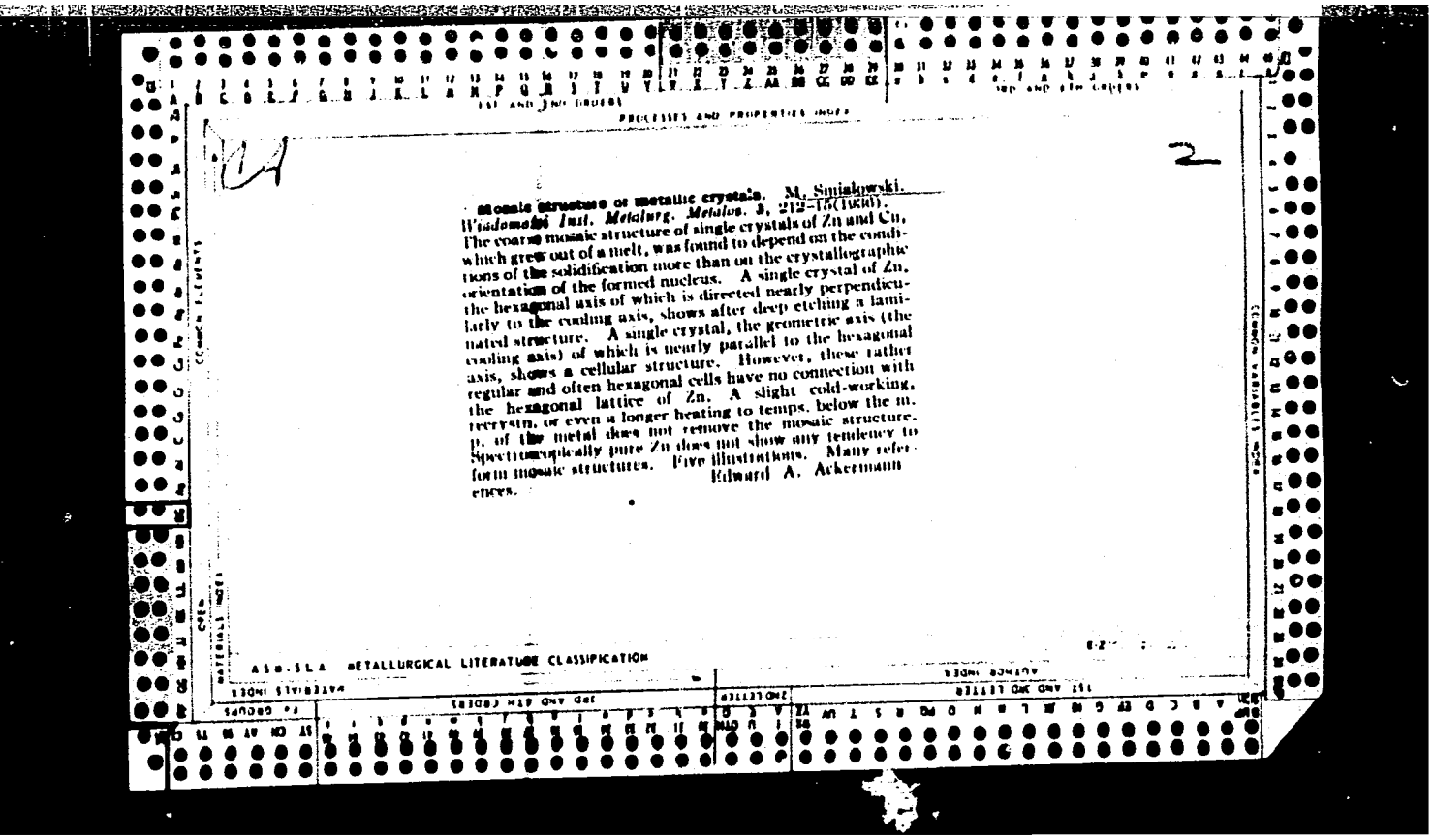


PROCESSES AND PROPERTIES INDEX

3

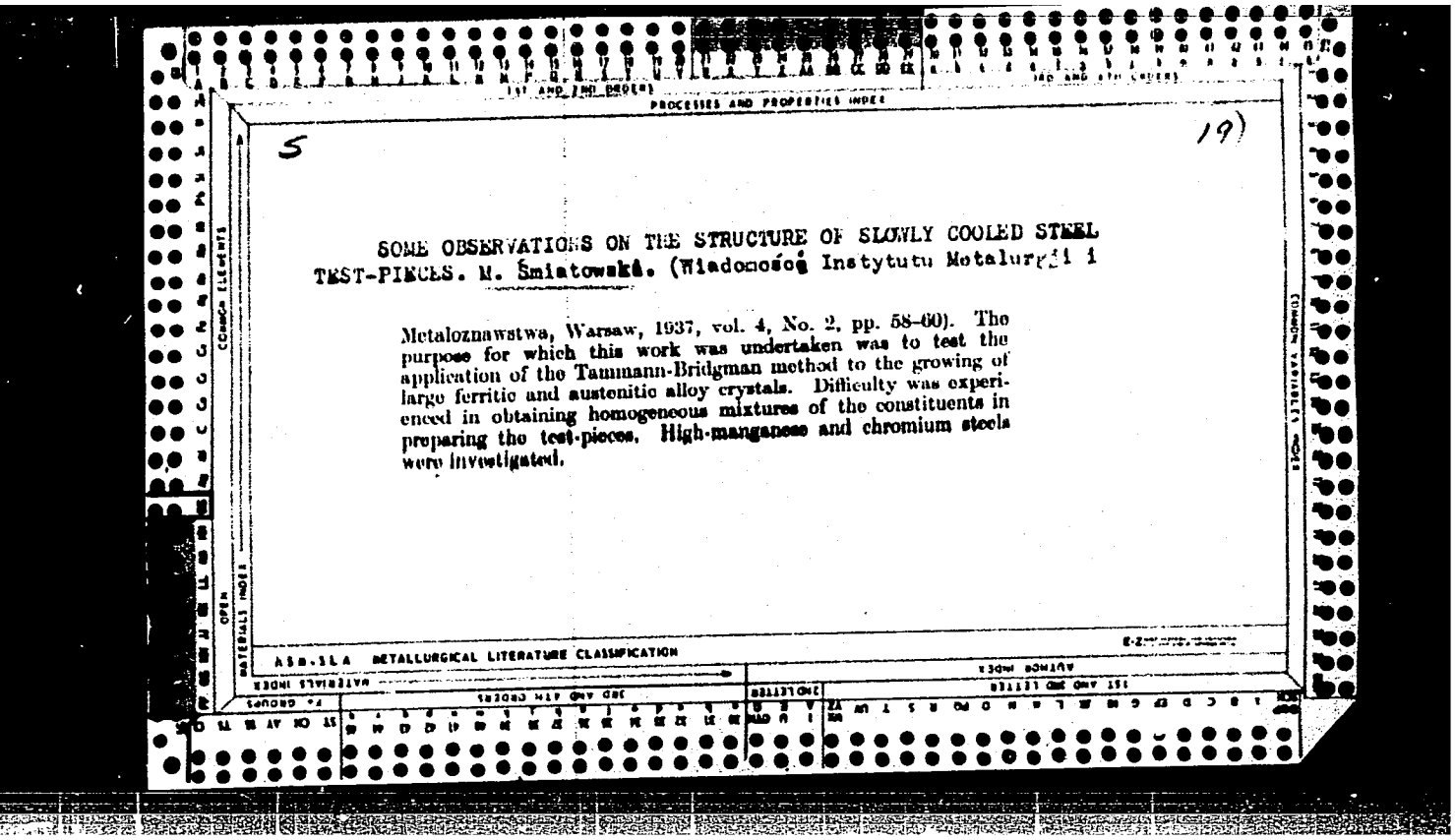
The Production of Large Metallic Single-Crystals. M. Śmiałowski (*Wiadomości Instytutu Metalurgji i Metaloznawstwa* (*Warszawa*), 1937, 8, (4), 184–188).—[In Polish, with English summary.] A method is described for the production of large single-crystals of low-melting metals and of aluminium and copper. Spherical crystals of tin, lead, and zinc were obtained in Pyrex-glass vessels, and of aluminium and copper in graphite crucibles. Copper, lead, and tin show a pronounced tendency toward single-crystal formation, while this tendency is not so great for zinc, aluminium, antimony, and bismuth. The reflections from the etched surface of single-crystalline zinc samples belong to the planes {10$\bar{1}$0}, {10$\bar{1}$1}, or {0001}.—P. W. R.

A 5 a - 5 L A METALLURGICAL LITERATURE CLASSIFICATION



Mosaic structure of metallic crystals. M. Smialowski. *Wiadomości Inst. Metalurg. Metalow.* **3**, 212–15(1950). The coarse mosaic structure of single crystals of Zn and Cu, which grew out of a melt, was found to depend on the conditions of the solidification more than on the crystallographic orientation of the formed nucleus. A single crystal of Zn, the hexagonal axis of which is directed nearly perpendicularly to the cooling axis, shows after deep etching a laminated structure. A single crystal, the geometric axis (the cooling axis) of which is nearly parallel to the hexagonal axis, shows a cellular structure. However, these rather regular and often hexagonal cells have no connection with the hexagonal lattice of Zn. A slight cold-working, recrystn. or even a longer heating to temps. below the m. p. of the metal does not remove the mosaic structure. Spectroscopically pure Zn does not show any tendency to form mosaic structures. Five illustrations. Many references.

Edward A. Ackermann



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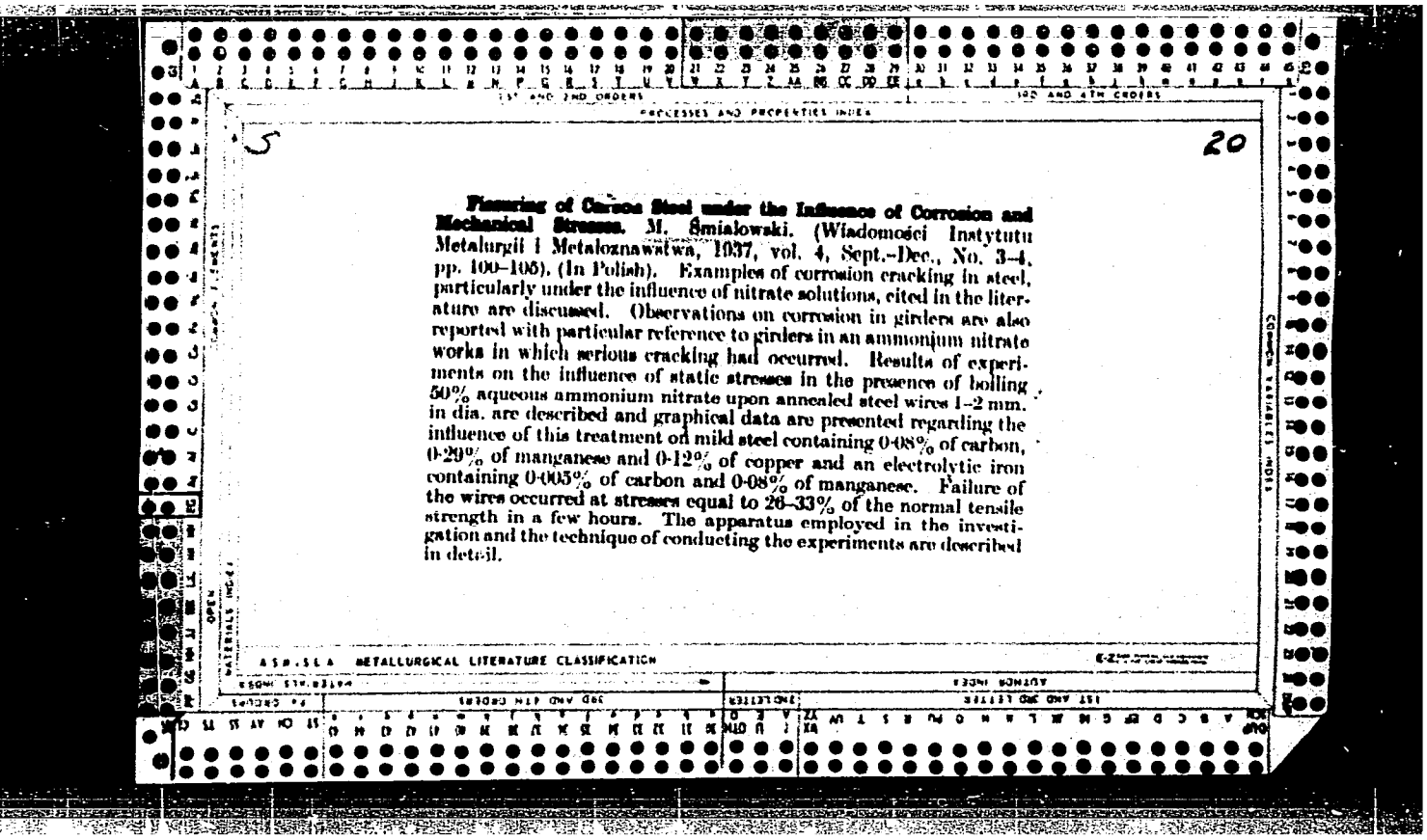
19)

SOME OBSERVATIONS ON THE STRUCTURE OF SLOWLY COOLED STEEL TEST-PIECES. M. Śmiatowska. (Wiadomości Instytutu Metalurgii i Metaloznawstwa, Warsaw, 1937, vol. 4, No. 2, pp. 58-60). The purpose for which this work was undertaken was to test the application of the Tammann-Bridgman method to the growing of large ferritic and austenitic alloy crystals. Difficulty was experienced in obtaining homogeneous mixtures of the constituents in preparing the test-pieces. High-manganese and chromium steels were investigated.



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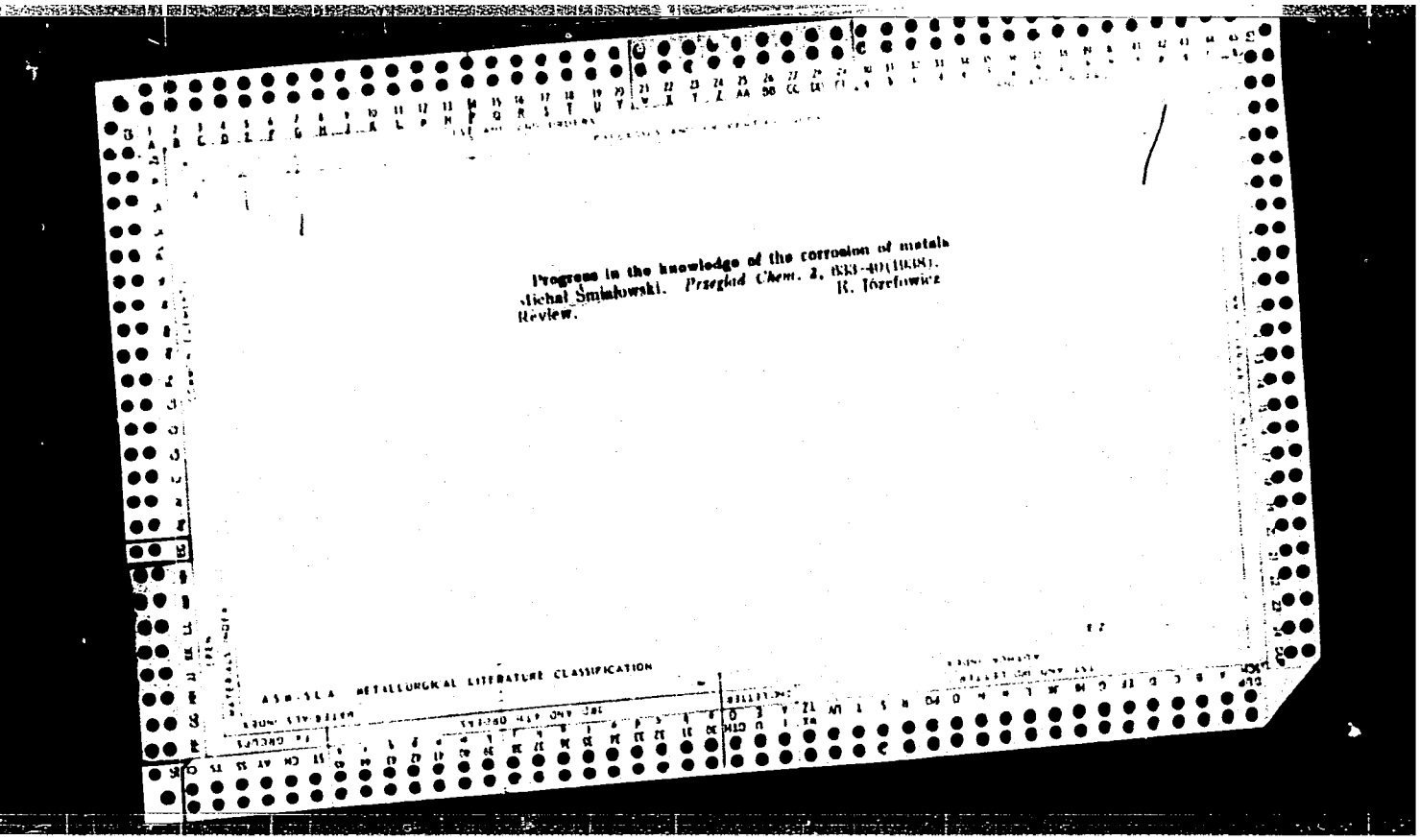
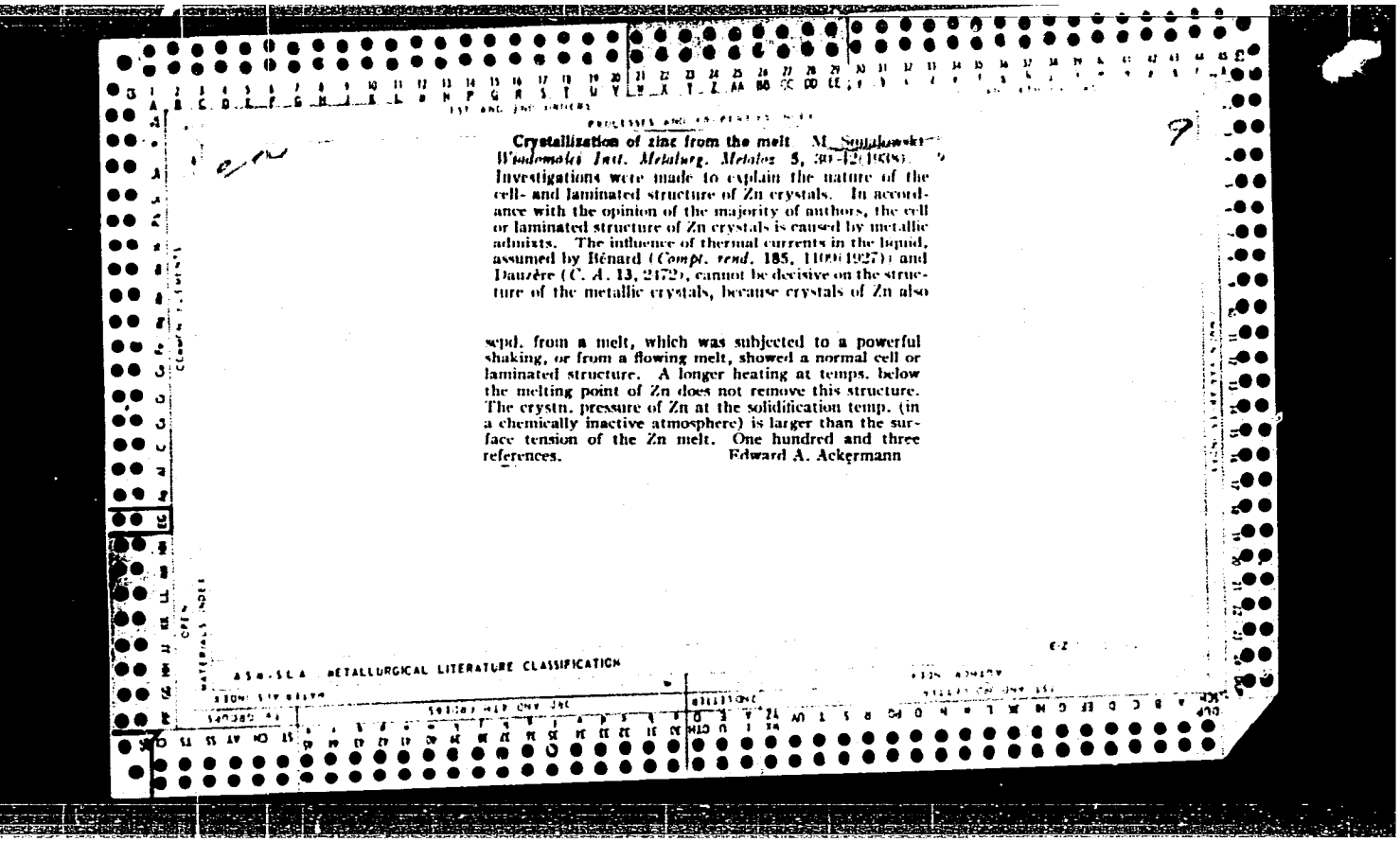
20

Fissuring of Carbon Steel under the Influence of Corrosion and Mechanical Stresses. M. Śmialowski. (Wiadomości Instytutu Metalurgii i Metaloznawstwa, 1937, vol. 4, Sept.–Dec., No. 3–4, pp. 100–105). (In Polish). Examples of corrosion cracking in steel, particularly under the influence of nitrate solutions, cited in the literature are discussed. Observations on corrosion in girders are also reported with particular reference to girders in an ammonium nitrate works in which serious cracking had occurred. Results of experiments on the influence of static stresses in the presence of boiling 50% aqueous ammonium nitrate upon annealed steel wires 1–2 mm. in dia. are described and graphical data are presented regarding the influence of this treatment on mild steel containing 0·08% of carbon, 0·29% of manganese and 0·12% of copper and an electrolytic iron containing 0·005% of carbon and 0·08% of manganese. Failure of the wires occurred at stresses equal to 26–33% of the normal tensile strength in a few hours. The apparatus employed in the investigation and the technique of conducting the experiments are described in detail.

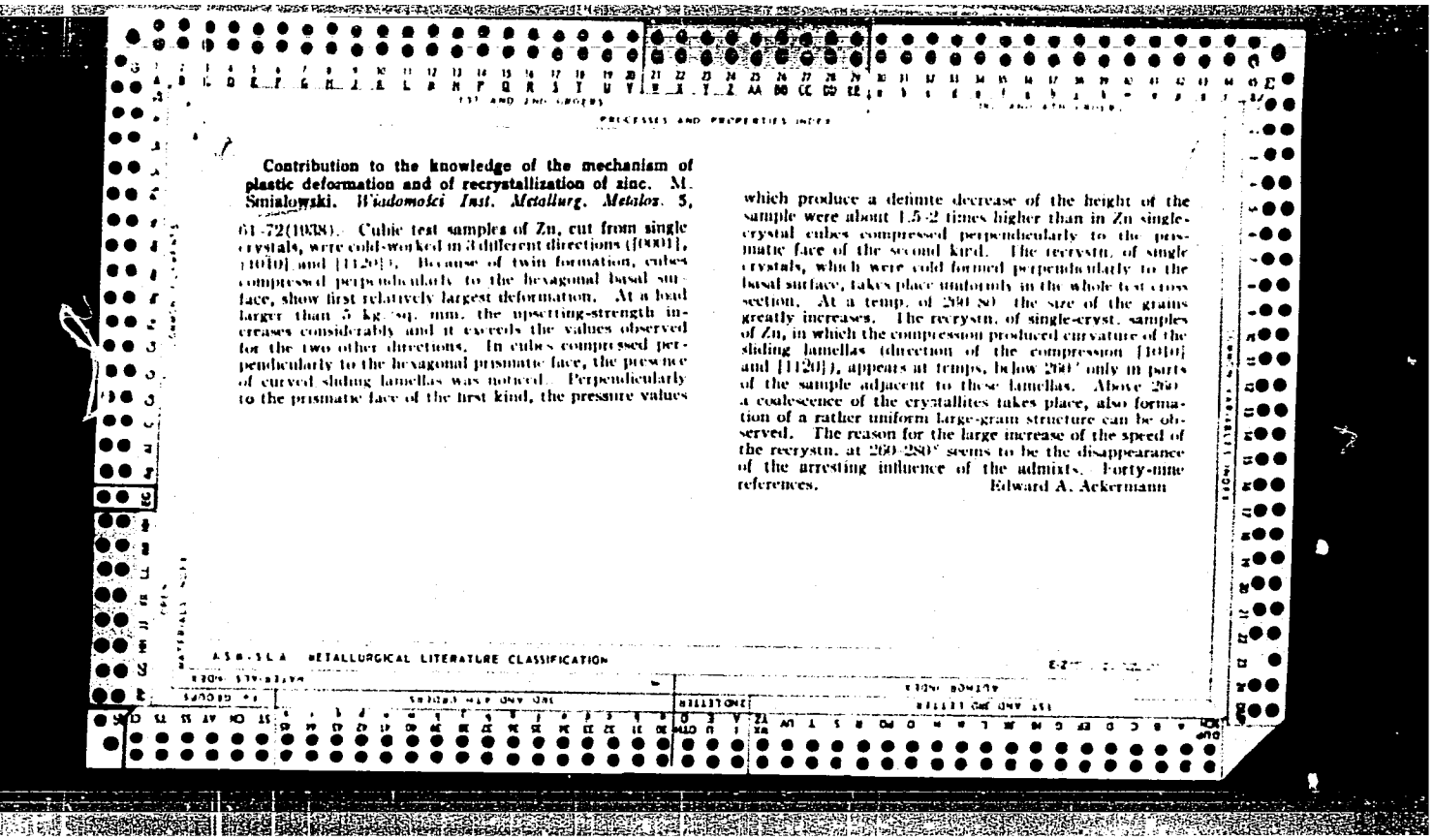


Progress in the knowledge of the corrosion of metals
Michał Smialowski. *Przegląd Chem.* 2, 633-40(1943).
Review. R. Józefowicz

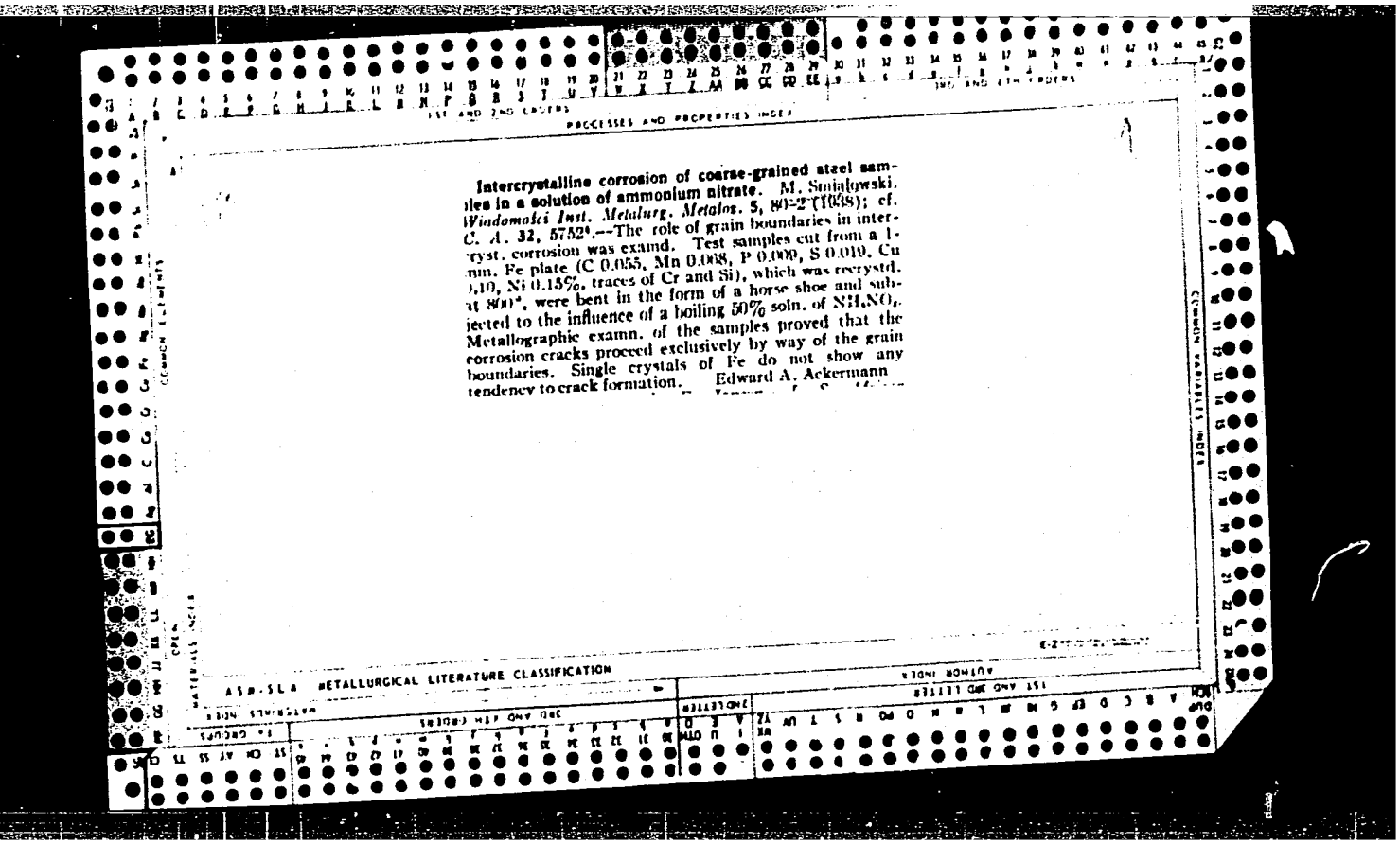
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Crystallization of zinc from the melt M. Smoluchowski. *Wiadomości Inst. Metalurg. Metaloz.* **5**, 381–4(1953). Investigations were made to explain the nature of the cell- and laminated structure of Zn crystals. In accordance with the opinion of the majority of authors, the cell or laminated structure of Zn crystals is caused by metallic admixts. The influence of thermal currents in the liquid, assumed by Bénard (*Compt. rend.* **185**, 1109(1927)) and Dauzère (*C. A.* **13**, 2172), cannot be decisive on the structure of the metallic crystals, because crystals of Zn also sepd. from a melt, which was subjected to a powerful shaking, or from a flowing melt, showed a normal cell or laminated structure. A longer heating at temps. below the melting point of Zn does not remove this structure. The crystn. pressure of Zn at the solidification temp. (in a chemically inactive atmosphere) is larger than the surface tension of the Zn melt. One hundred and three references. Edward A. Ackermann



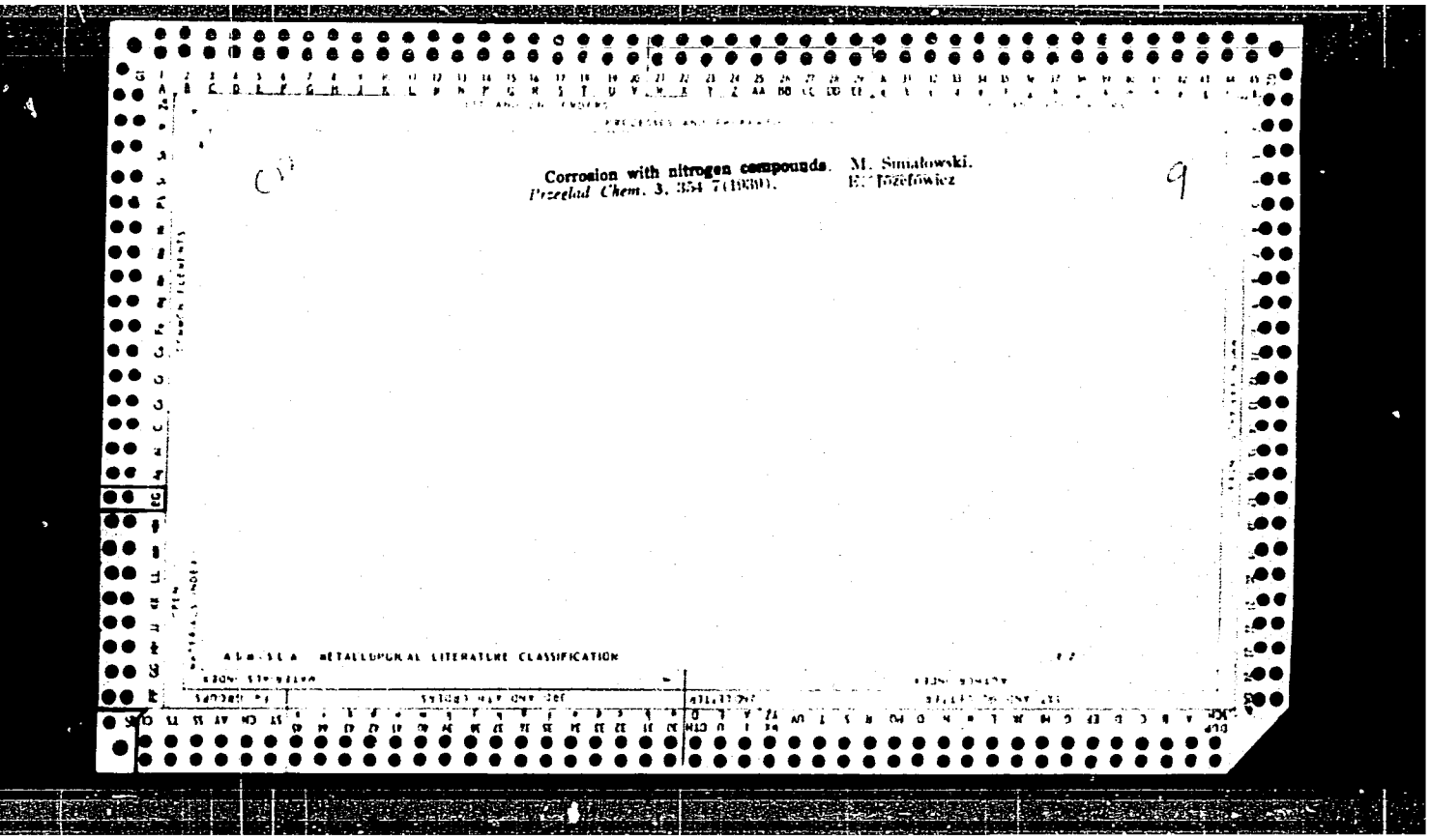
Contribution to the knowledge of the mechanism of plastic deformation and of recrystallization of zinc. M. Smialowski. *Wiadomości Inst. Metallurg. Metalox.* 5, 61-72(1938). Cubic test samples of Zn, cut from single crystals, were cold-worked in 3 different directions ([0001], [10$\bar{1}$0] and [11$\bar{2}$0]). Because of twin formation, cubes compressed perpendicularly to the hexagonal basal surface, show first relatively largest deformation. At a load larger than 5 kg./sq. mm. the upsetting-strength increases considerably and it exceeds the values observed for the two other directions. In cubes compressed perpendicularly to the hexagonal prismatic face, the presence of curved sliding lamellas was noticed. Perpendicularly to the prismatic face of the first kind, the pressure values which produce a definite decrease of the height of the sample were about 1.5-2 times higher than in Zn single-crystal cubes compressed perpendicularly to the prismatic face of the second kind. The recrystn. of single crystals, which were cold formed perpendicularly to the basal surface, takes place uniformly in the whole test cross section. At a temp. of 290-80° the size of the grains greatly increases. The recrystn. of single-cryst. samples of Zn, in which the compression produced curvature of the sliding lamellas (direction of the compression [10$\bar{1}$0] and [11$\bar{2}$0]), appears at temps. below 260° only in parts of the sample adjacent to these lamellas. Above 260° a coalescence of the crystallites takes place, also formation of a rather uniform large-gram structure can be observed. The reason for the large increase of the speed of the recrystn. at 260-280° seems to be the disappearance of the arresting influence of the admixts. Forty-nine references. Edward A. Ackermann



PROCESSES AND PROPERTIES INDEX

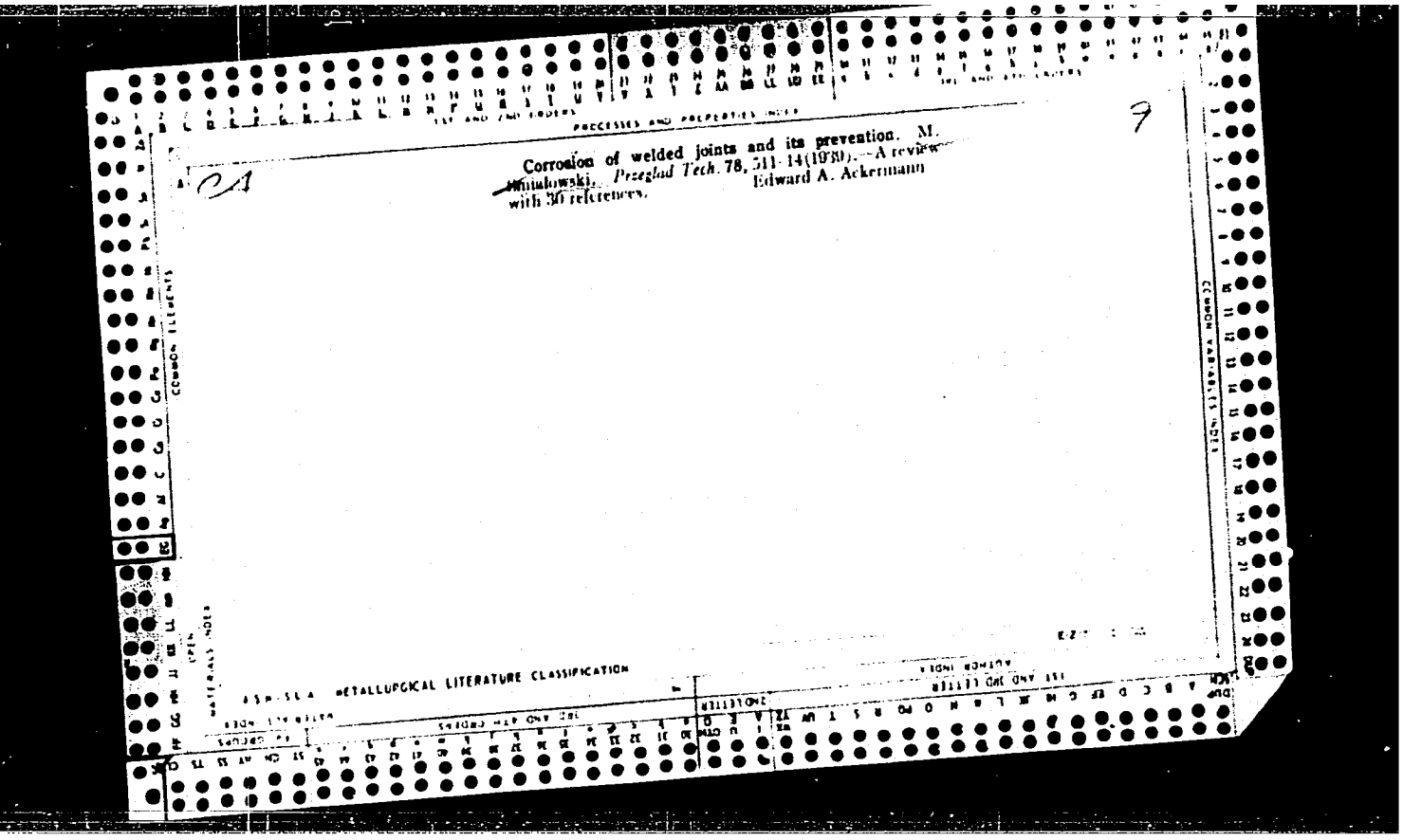
Intercrystalline corrosion of coarse-grained steel samples in a solution of ammonium nitrate. M. Smialowski. (*Wiadomości Inst. Metalurg. Metalog.* 5, 80-2 (1938); cf. *C. A.* 32, 5752⁸.—The role of grain boundaries in intercryst. corrosion was examd. Test samples cut from a 1-mm. Fe plate (C 0.055, Mn 0.008, P 0.009, S 0.019, Cu 0.10, Ni 0.15%, traces of Cr and Si), which was recrystd. at 800°, were bent in the form of a horse shoe and subjected to the influence of a boiling 50% soln. of NH_4NO_3. Metallographic examn. of the samples proved that the corrosion cracks proceed exclusively by way of the grain boundaries. Single crystals of Fe do not show any tendency to crack formation. Edward A. Ackermann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

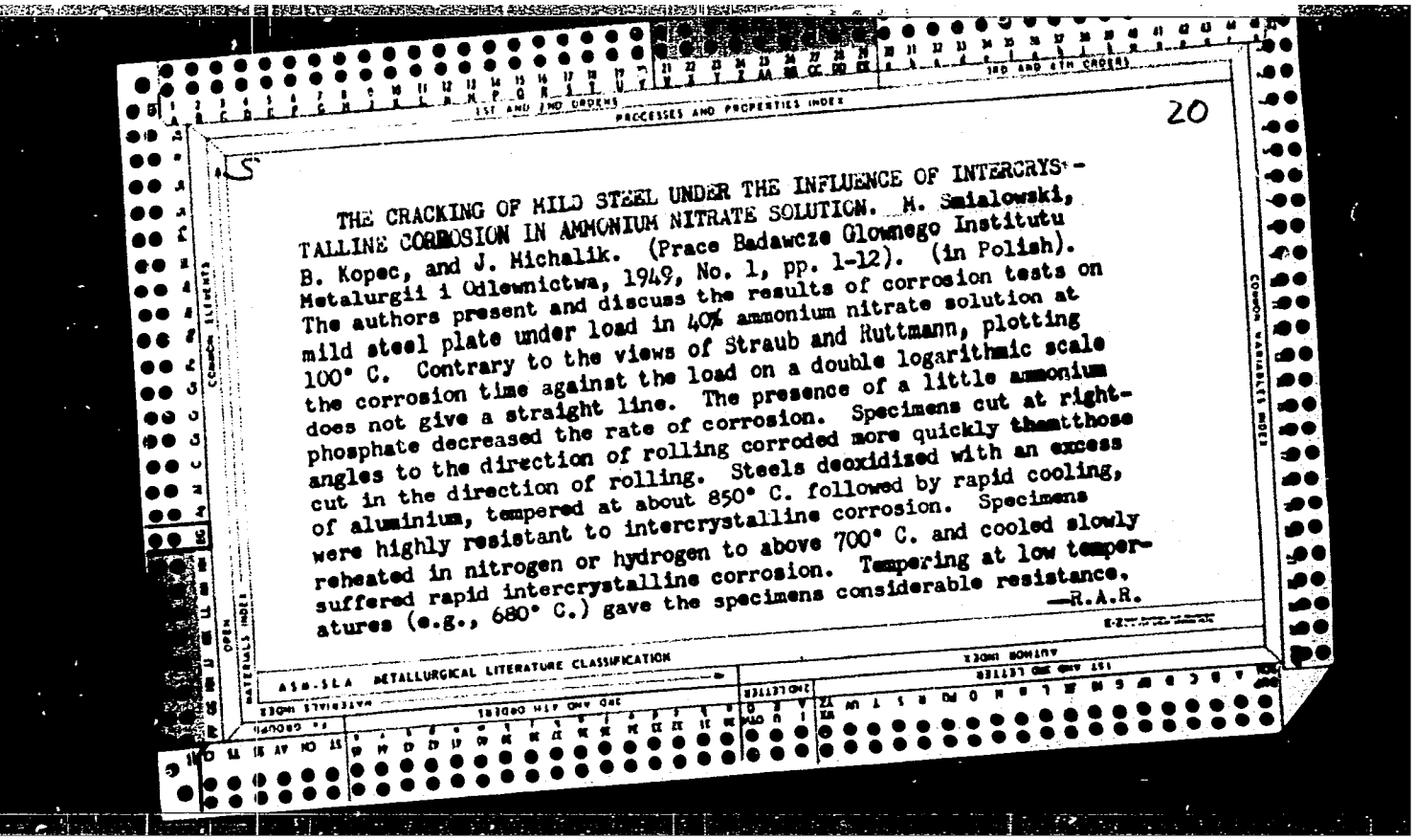


Corrosion with nitrogen compounds. M. Smialowski. B. Józefowicz
Przeglad Chem. 3, 354 7(1939).

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Corrosion of welded joints and its prevention. M. Miniulowski. *Przeglad Tech.* 78, 511-14(1958).—A review with 30 references.
Edward A. Ackermann



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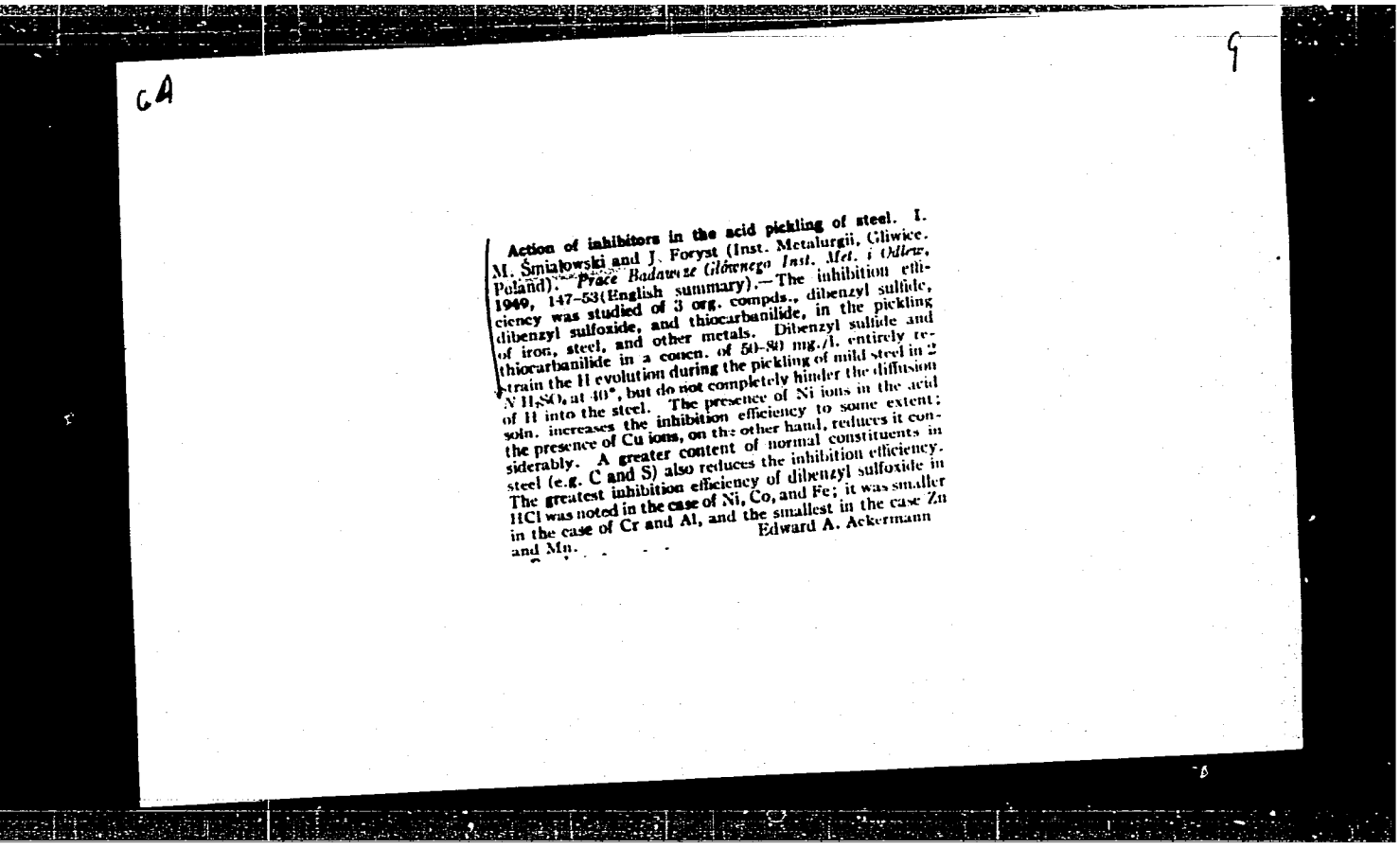
THE CRACKING OF MILD STEEL UNDER THE INFLUENCE OF INTERCRYSTALLINE CORROSION IN AMMONIUM NITRATE SOLUTION. M. Smialowski, B. Kopec, and J. Michalik. (Prace Badawcze Glownego Institutu Metalurgii i Odlewnictwa, 1949, No. 1, pp. 1-12). (in Polish). The authors present and discuss the results of corrosion tests on mild steel plate under load in 40% ammonium nitrate solution at 100° C. Contrary to the views of Straub and Ruttmann, plotting the corrosion time against the load on a double logarithmic scale does not give a straight line. The presence of a little ammonium phosphate decreased the rate of corrosion. Specimens cut at right-angles to the direction of rolling corroded more quickly thantthose cut in the direction of rolling. Steels deoxidised with an excess of aluminium, tempered at about 850° C. followed by rapid cooling, were highly resistant to intercrystalline corrosion. Specimens reheated in nitrogen or hydrogen to above 700° C. and cooled slowly suffered rapid intercrystalline corrosion. Tempering at low temperatures (e.g., 680° C.) gave the specimens considerable resistance. —R.A.R.

CA

9

Investigations on calcined pyrites containing zinc. I. Reducibility of ferric oxide and zinc oxide in calcined pyrites. M. Świałowski (Inst. Metalurgii, Gliwice, Poland). *Prace Badawcze Gliwnego Inst. Met. i Odlew.* 1949, 105-9(English summary).—The reducibility of pure ferric oxide, ZnO, Zn ferrite, and of calcined pyrite contg. Zn (49.74% Fe, 0.65% Zn) was investigated with H, coke-gas, or coke as reducing agents. The difference between the reducibility of ferric oxide in pure form and in combination with ZnO was found to be rather small. On the contrary, the reducibility of ZnO combined with Fe oxide is much lower than that of pure ZnO. Evidently the bond of Zn ferrite is a direct one between Fe and ZnO. It remains after the deoxidation of Fe_2O_3 and renders the reduction of ZnO and distn. of Zn more difficult than in the case of ZnO alone. 14 references. E. A. A.

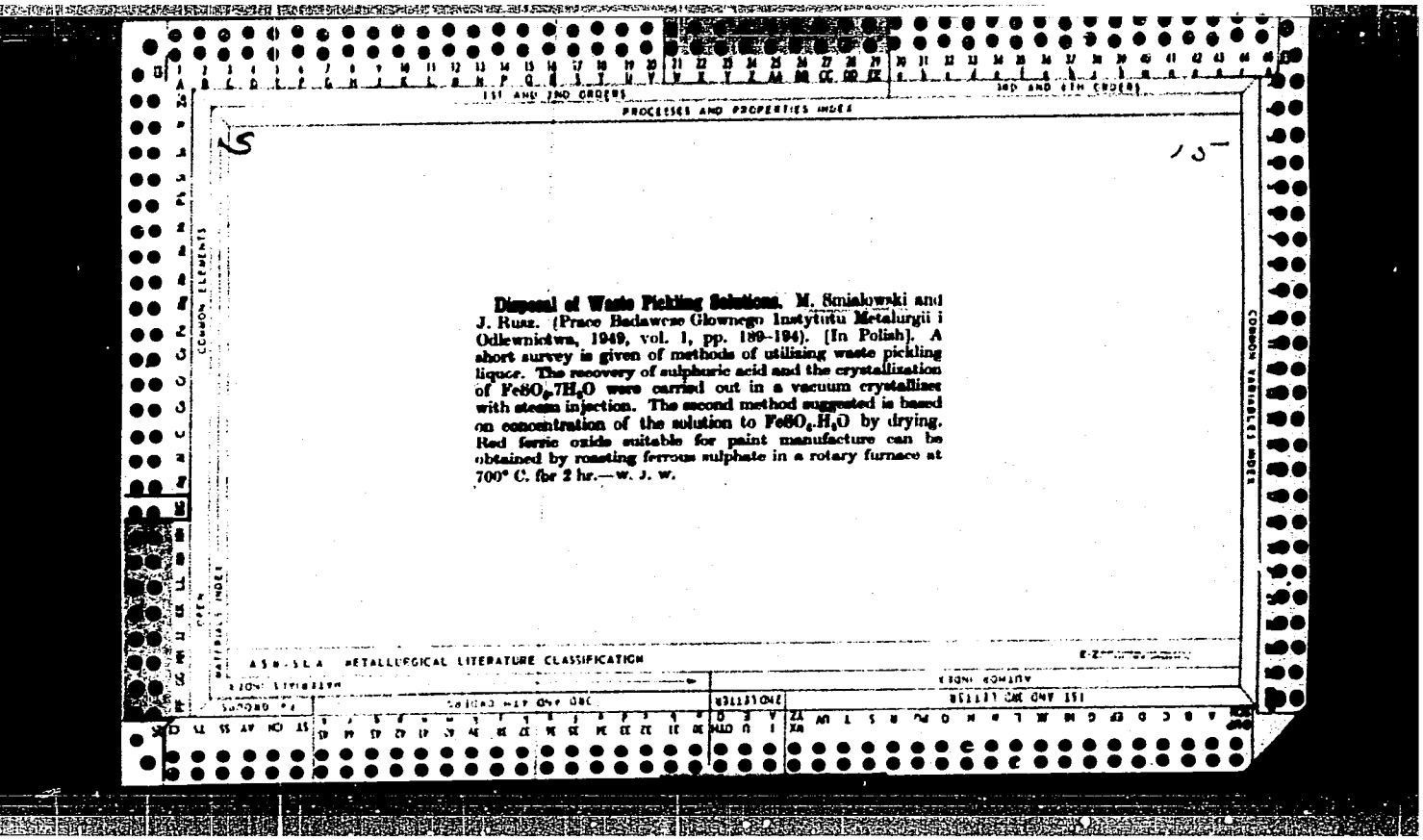


CA

9

Action of inhibitors in the acid pickling of steel. I. M. Śmiałowski and J. Foryst (Inst. Metalurgii, Gliwice, Poland). *Prace Badawcze Głównego Inst. Met. i Odlew.*, 1949, 147–53 (English summary).—The inhibition efficiency was studied of 3 org. compds., dibenzyl sulfide, dibenzyl sulfoxide, and thiocarbanilide, in the pickling of iron, steel, and other metals. Dibenzyl sulfide and thiocarbanilide in a concn. of 50–80 mg./l. entirely restrain the H evolution during the pickling of mild steel in 2 *N* H_2SO_4 at 40°, but do not completely hinder the diffusion of H into the steel. The presence of Ni ions in the acid soln. increases the inhibition efficiency to some extent; the presence of Cu ions, on the other hand, reduces it considerably. A greater content of normal constituents in steel (e.g. C and S) also reduces the inhibition efficiency. The greatest inhibition efficiency of dibenzyl sulfoxide in HCl was noted in the case of Ni, Co, and Fe; it was smaller in the case of Cr and Al, and the smallest in the case Zn and Mn.

Edward A. Ackermann



Disposal of Waste Pickling Solutions. M. Śmiałowski and J. Ruaz. (Prace Badawcze Głównego Instytutu Metalurgii i Odlewnictwa, 1949, vol. 1, pp. 189–194). [In Polish]. A short survey is given of methods of utilizing waste pickling liquor. The recovery of sulphuric acid and the crystallization of $FeSO_4.7H_2O$ were carried out in a vacuum crystalliser with steam injection. The second method suggested is based on concentration of the solution to $FeSO_4.H_2O$ by drying. Red ferric oxide suitable for paint manufacture can be obtained by roasting ferrous sulphate in a rotary furnace at 700° C. for 2 hr.—W. J. W.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

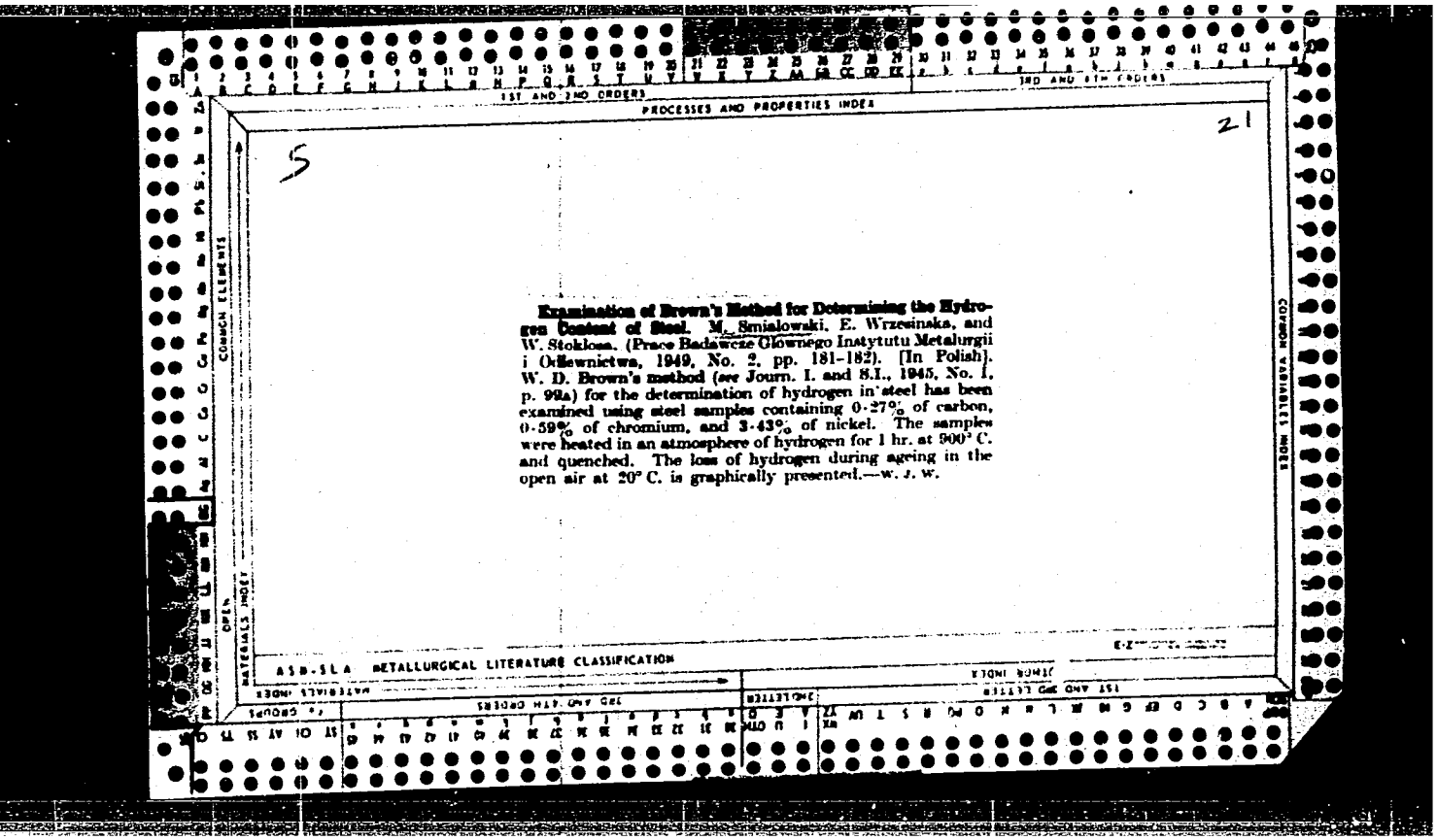
3RD AND 4TH ORDERS

BC

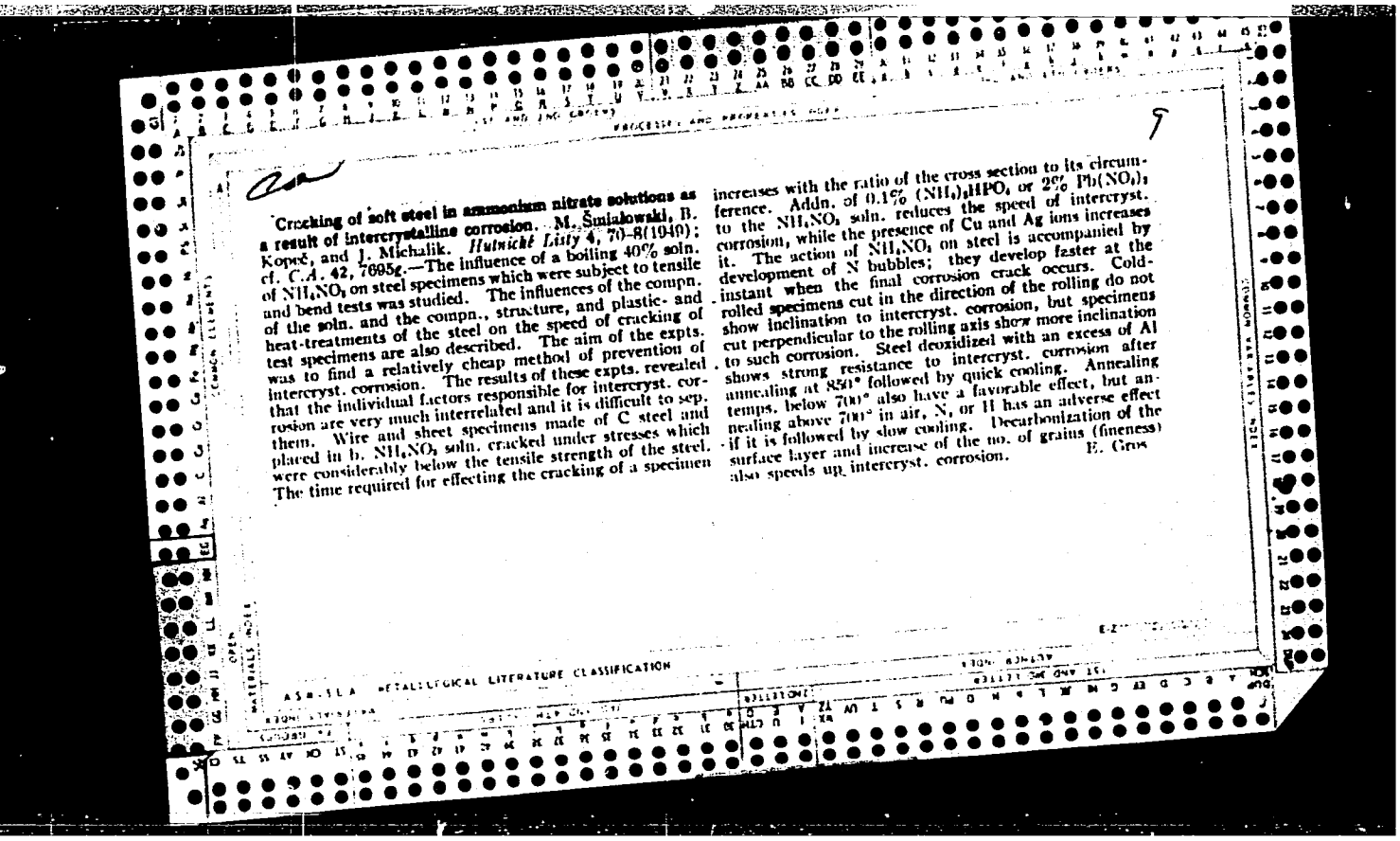
B1
5

Action of inhibitors in acid pickling of steel. M. Smialowski and J. Ferynt (*Prace Badawcze Glownego Inst. Met. i Odlewnictwa*, 1949, No. 2, 147–153; *J. Iron Steel Inst.*, 1950, 165, 90).—Dibenzyl sulphide and thiocarbanilide (50—60 mg. per L.) completely inhibit the evolution of H_2 during the pickling of mild steel in 2 N-H_2SO_4 at 40°, but do not completely prevent diffusion of H_2 into the steel. Ni'' in the acid solution increases and Cu'' decreases the degree of inhibition. The inhibiting efficiency of dibenzyl-sulphoxide in HCl is greatest with Ni, Co, and Fe; it is less with Co and Al and lowest with Zn and Mn. R. B. CLARKE.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Examination of Brown's Method for Determining the Hydrogen Content of Steel. M. Smialowski, E. Wrzesinska, and W. Stokloss. (Prace Badawcze Glownego Instytutu Metalurgii i Odlewnictwa, 1949, No. 2, pp. 181–182). [In Polish]. W. D. Brown's method (see Journ. I. and S.I., 1945, No. 1, p. 99A) for the determination of hydrogen in steel has been examined using steel samples containing 0·27% of carbon, 0·59% of chromium, and 3·43% of nickel. The samples were heated in an atmosphere of hydrogen for 1 hr. at 900° C. and quenched. The loss of hydrogen during ageing in the open air at 20° C. is graphically presented.—W. J. W.



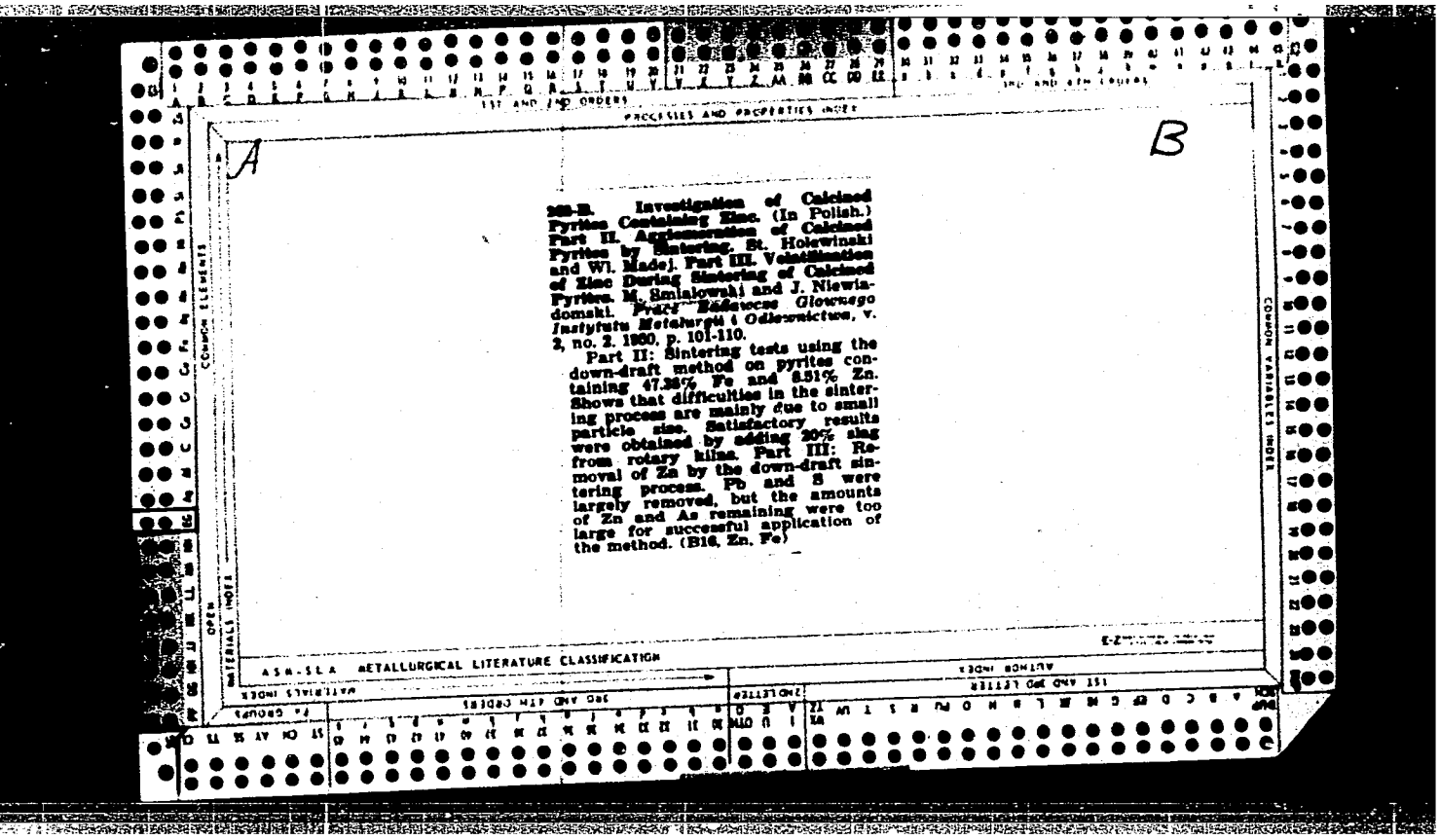
Cracking of soft steel in ammonium nitrate solutions as a result of intercrystalline corrosion. M. Šmialowski, B. Kopeč, and J. Michalik. *Hutnické Listy* 4, 70–8(1949); cf. *C.A.* 42, 7695g.—The influence of a boiling 40% soln. of NH_4NO_3 on steel specimens which were subject to tensile and bend tests was studied. The influences of the compn. of the soln. and the compn., structure, and plastic- and heat-treatments of the steel on the speed of cracking of test specimens are also described. The aim of the expts. was to find a relatively cheap method of prevention of intercryst. corrosion. The results of these expts. revealed that the individual factors responsible for intercryst. corrosion are very much interrelated and it is difficult to separate them. Wire and sheet specimens made of C steel and placed in b. NH_4NO_3 soln. cracked under stresses which were considerably below the tensile strength of the steel. The time required for effecting the cracking of a specimen increases with the ratio of the cross section to its circumference. Addn. of 0.1% $(NH_4)_2HPO_4$ or 2% $Pb(NO_3)_2$ to the NH_4NO_3 soln. reduces the speed of intercryst. corrosion, while the presence of Cu and Ag ions increases it. The action of NH_4NO_3 on steel is accompanied by development of N bubbles; they develop faster at the instant when the final corrosion crack occurs. Cold-rolled specimens cut in the direction of the rolling do not show inclination to intercryst. corrosion, but specimens cut perpendicular to the rolling axis show more inclination to such corrosion. Steel deoxidized with an excess of Al shows strong resistance to intercryst. corrosion after annealing at 850° followed by quick cooling. Annealing temps. below 700° also have a favorable effect, but annealing above 700° in air, N, or H has an adverse effect if it is followed by slow cooling. Decarbonization of the surface layer and increase of the no. of grains (fineness) also speeds up intercryst. corrosion. E. Gros

9

CA

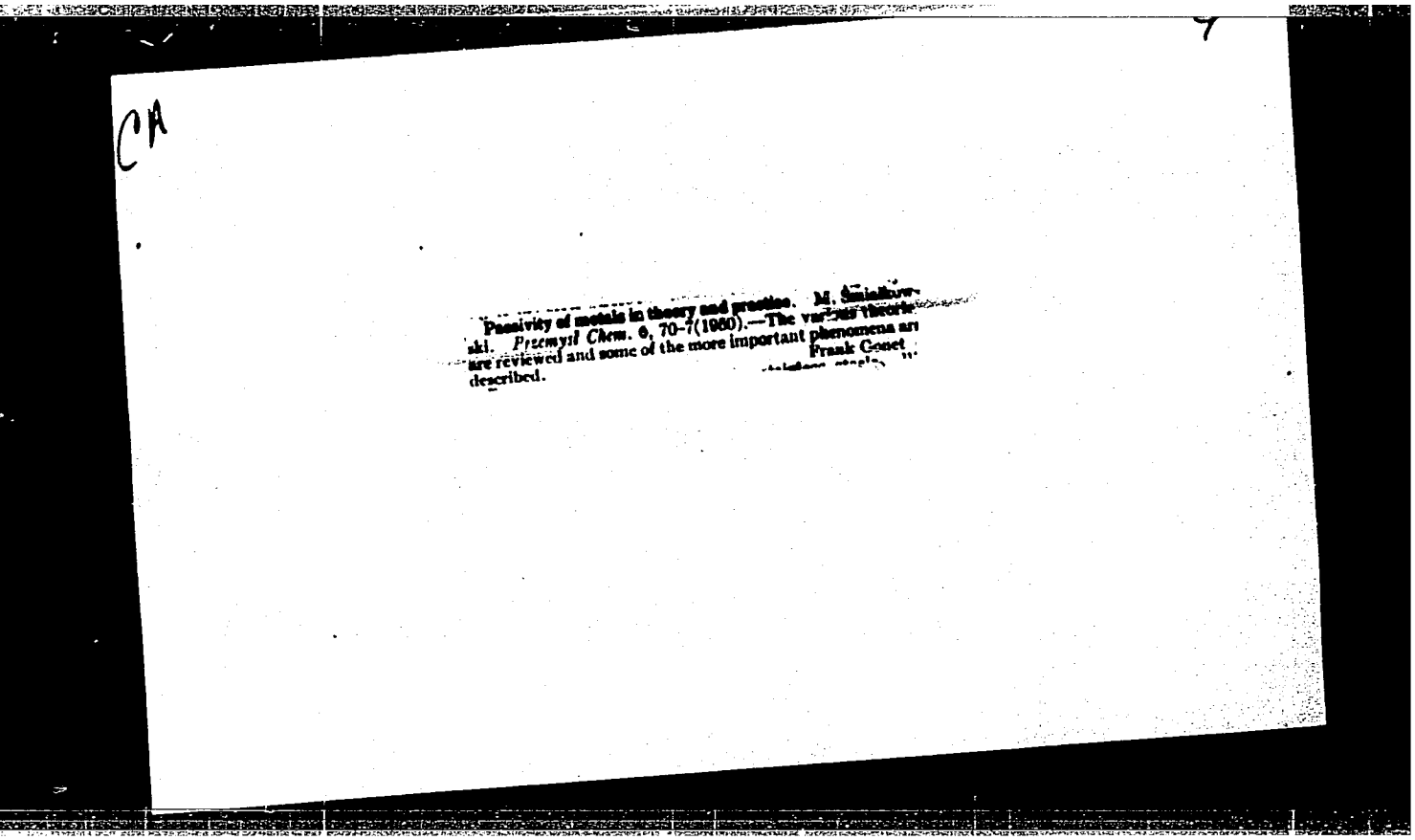
Action of inhibitors in the acid pickling of steel. II. M. Śmiałowski, J. Synowiec, and M. Szota (Polytech. Inst. Silesia, Katowice, Poland). *Prace Badawcze Głównego Inst. Met. i Odlew.* 2, 31-5(1950)(English summary); cf. *C.A.* 4852a.—The inhibition efficiency of dibenzyl sulfide in H_2SO_4 soln. at 40° was studied on samples of various sorts of structural steel. No satisfactory results were obtained. The inhibition efficiency probably depends not only on the compn. of steel but also on several other factors, like microstructure, surface state, etc. Further expts. concerned mixts. of electrolytic Fe powder with 2% addn. of Ni or Cu powder. The inhibition efficiency of dibenzyl sulfide was found to be greater for Fe-Ni and Fe-Cu mixts. than for pure Fe, and particularly for Fe-graphite mixts. Expts. carried out with aniline and diphenylamine showed that these compds. have only faint inhibitive properties for steels in H_2SO_4.

Edward A. Ackermann



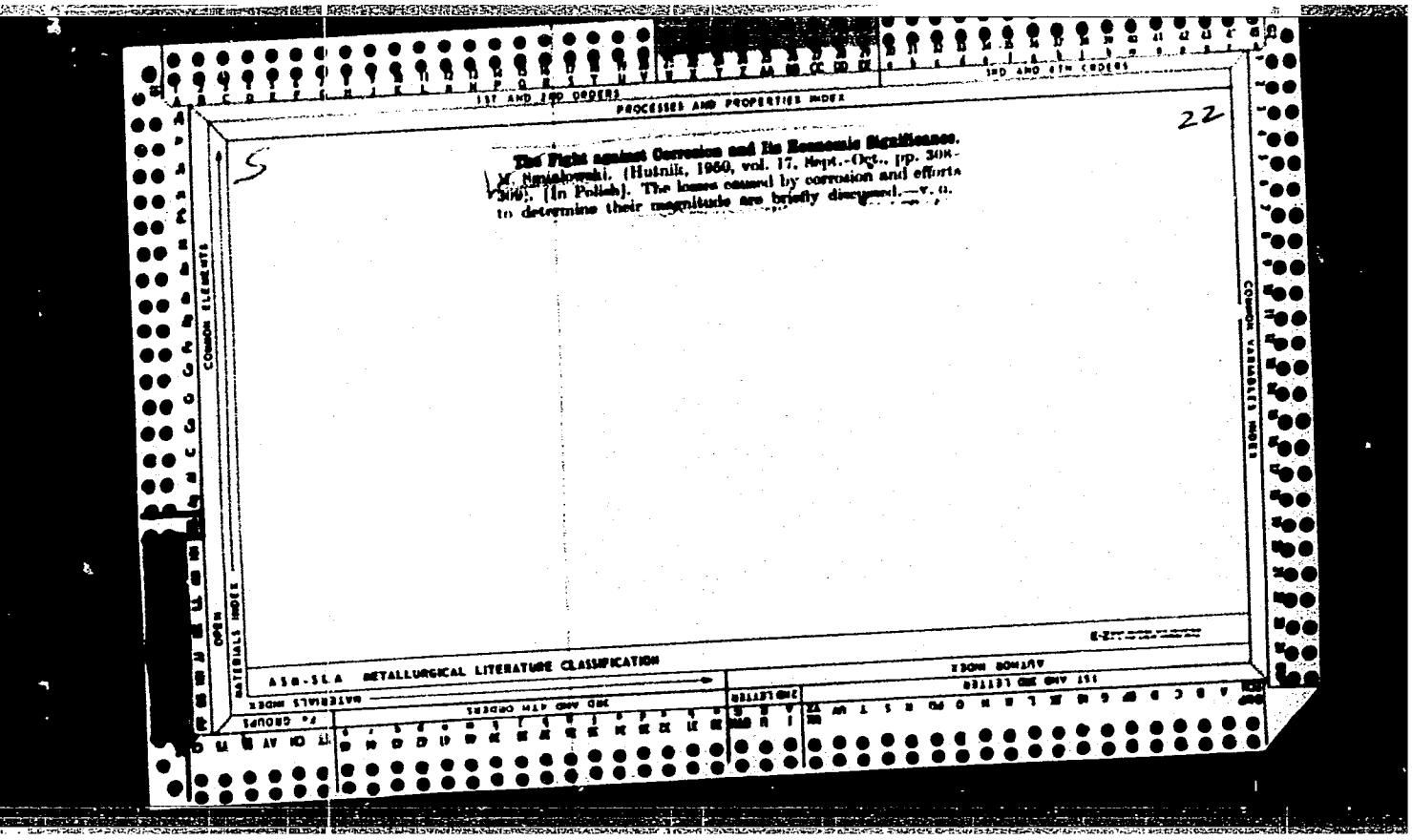
Investigation of Calcined Pyrites Containing Zinc. (In Polish.) Part II. Agglomeration of Calcined Pyrites by Sintering. St. Holewinski and Wł. Madej. Part III. Volatilization of Zinc During Sintering of Calcined Pyrites. M. Smialowski and J. Niewiadomski. *Prace Instytutu Metalurgii i Odlewnictwa, Glownego*, v. 2, no. 2. 1960. p. 101-110.

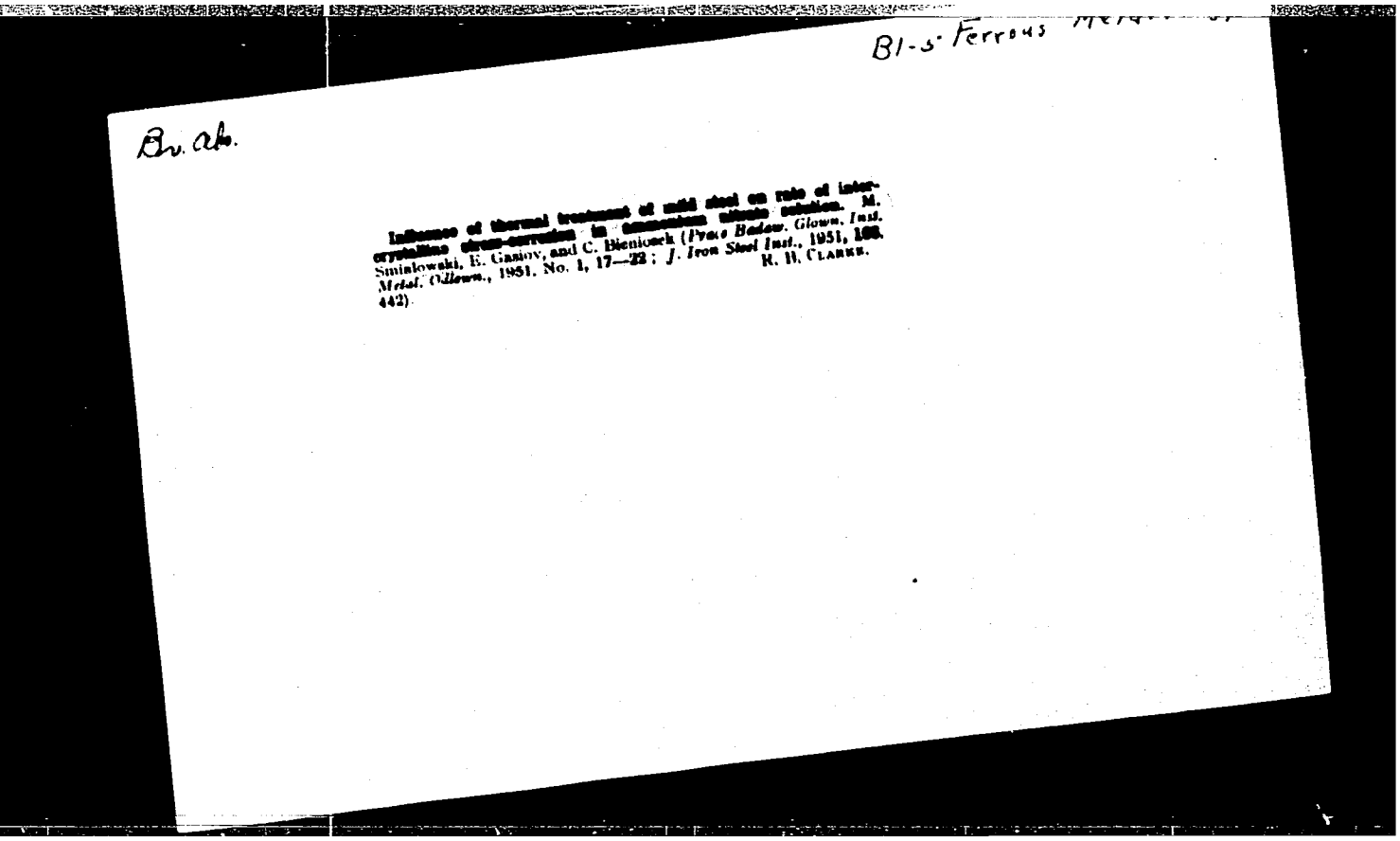
Part II: Sintering tests using the down-draft method on pyrites containing 47.36% Fe and 8.51% Zn. Shows that difficulties in the sintering process are mainly due to small particle size. Satisfactory results were obtained by adding 20% slag from rotary kilns. Part III: Removal of Zn by the down-draft sintering process. Pb and S were largely removed, but the amounts of Zn and As remaining were too large for successful application of the method. (B16, Zn, Fe)



CA

Passivity of metals in theory and practice. M. Smialowski. *Przemysl Chem.* 6, 70–7(1950).—The various theories are reviewed and some of the more important phenomena are described. Frank Gonet

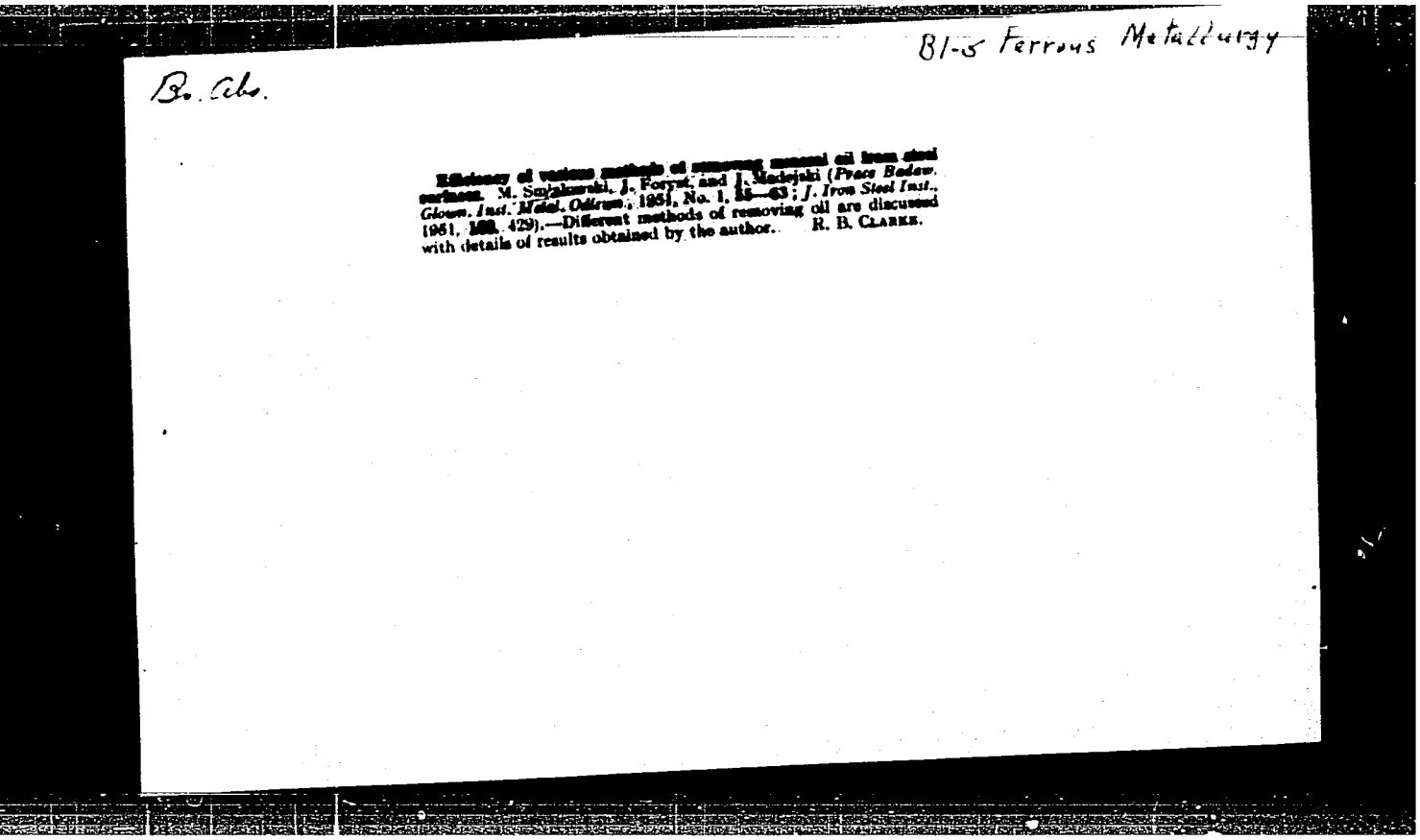




B1-5 Ferrous

Br. Ab.

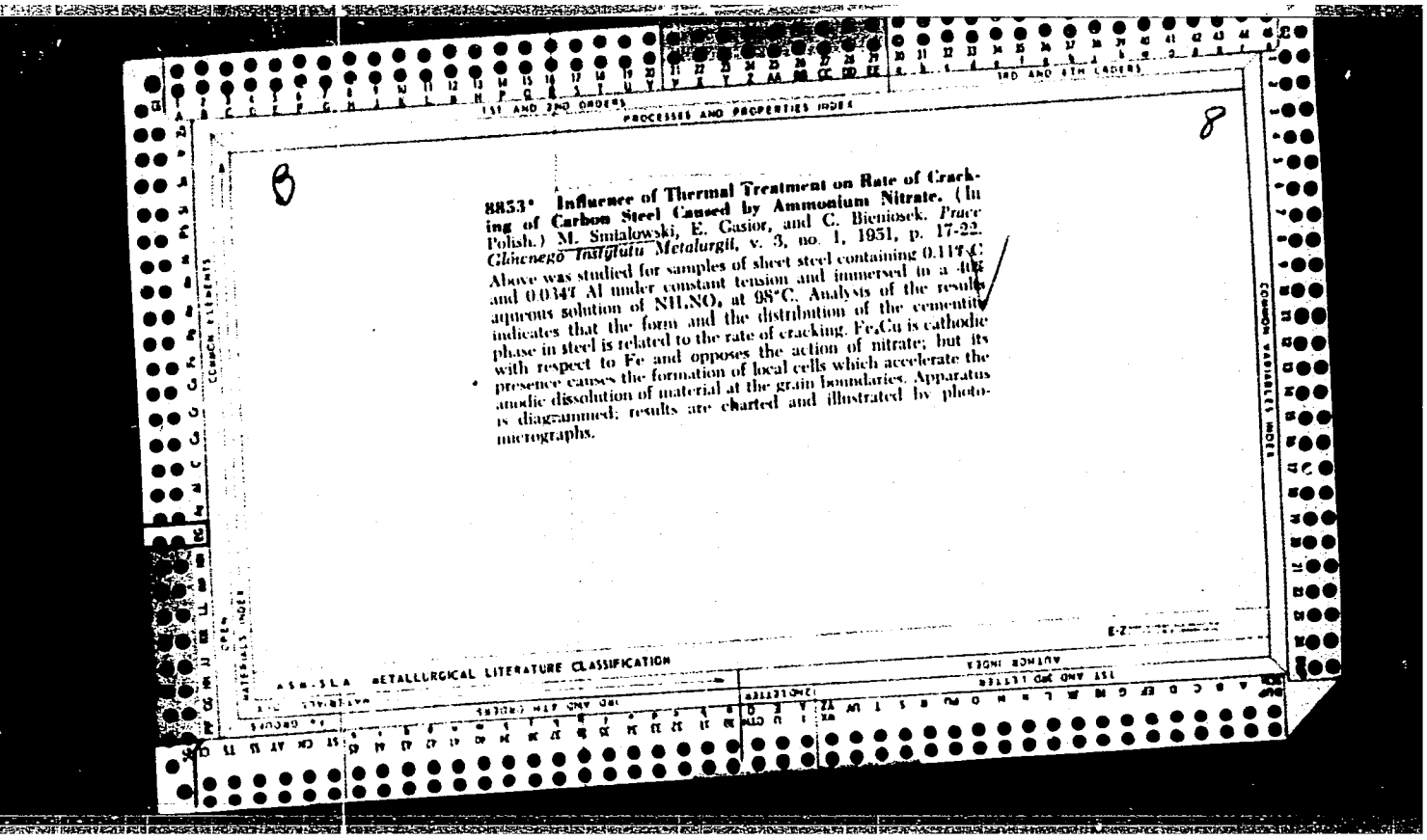
Influence of thermal treatment of mild steel on rate of intercrystalline stress-corrosion in ammonium nitrate solution. M. Smialowski, E. Ganiov, and C. Bieniosek (*Prace Badaw. Glown. Inst. Metal. Gliwice.*, 1951, No. 1, 17—22; *J. Iron Steel Inst.*, 1951, 168, 442). R. H. Clarke.



B1-5 Ferrous Metallurgy

B. Abs.

Efficiency of various methods of removing mineral oil from steel surfaces. M. Szajkowski, J. Foryst, and J. Madejski (*Prace Badaw. Głown. Inst. Metal. Odlewn.*, 1951, No. 1, 53—63; *J. Iron Steel Inst.*, 1951, 168, 429).—Different methods of removing oil are discussed with details of results obtained by the author. R. B. CLARKE.



8

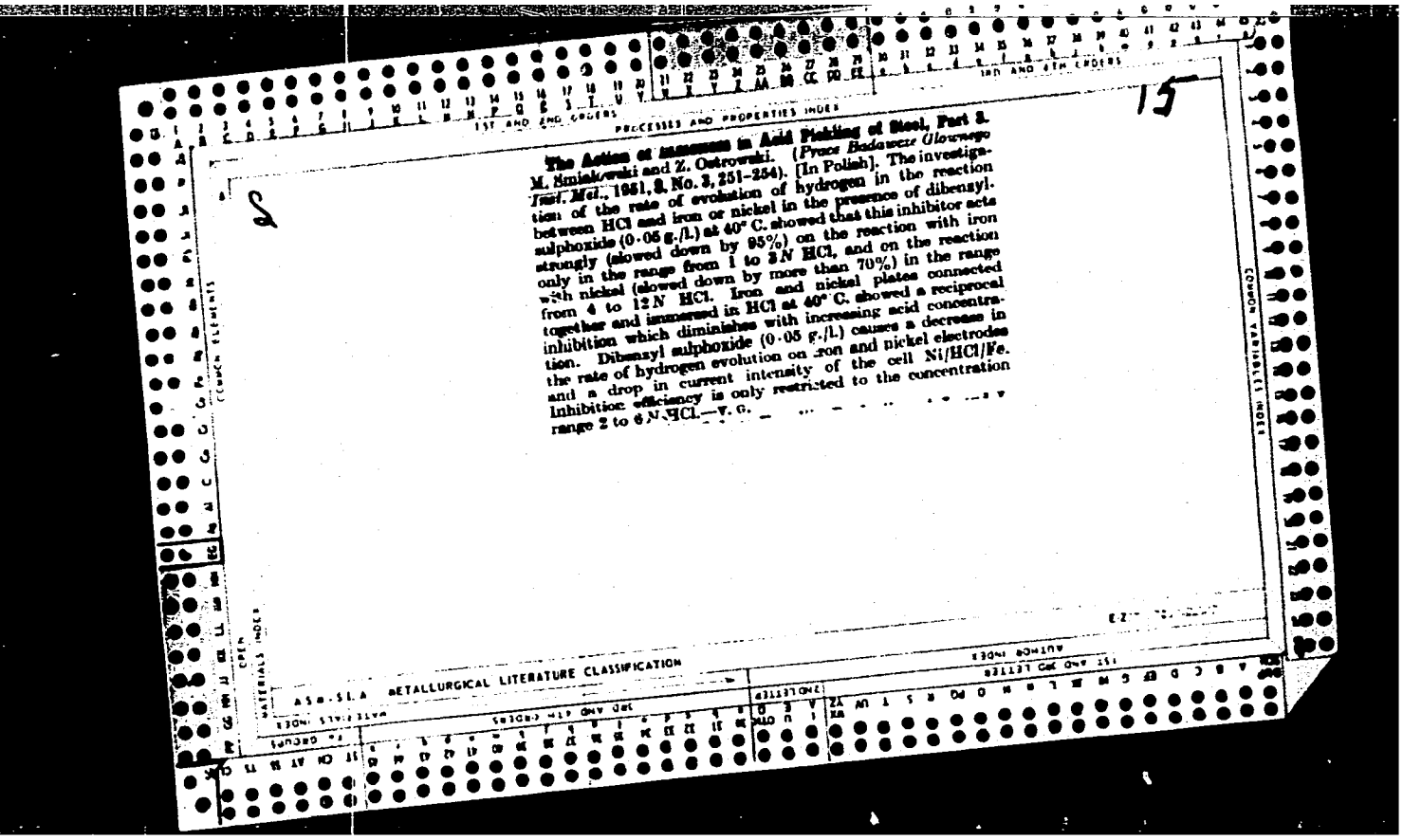
8853* **Influence of Thermal Treatment on Rate of Cracking of Carbon Steel Caused by Ammonium Nitrate.** (In Polish.) M. Smialowski, E. Casior, and C. Bieniosek. *Prace Glinenego Instytutu Metalurgii*, v. 3, no. 1, 1951, p. 17-22. Above was studied for samples of sheet steel containing 0.11% C and 0.034% Al under constant tension and immersed in a 40% aqueous solution of NH_4NO_3 at 98°C. Analysis of the results indicates that the form and the distribution of the cementite phase in steel is related to the rate of cracking. Fe$_3$C is cathodic with respect to Fe and opposes the action of nitrate; but its presence causes the formation of local cells which accelerate the anodic dissolution of material at the grain boundaries. Apparatus is diagrammed; results are charted and illustrated by photomicrographs.

8

C.A.
1951

Testing the efficacy of various methods of cleaning steel surfaces from mineral-oil layers. M. Smialowski, J. Foryst, and A. Madejski. *Prace Glow. Inst. Met.* 3, No. 1, 55-83(1951).—Specimens of cold-rolled soft steel strip were thoroughly cleaned with fine-grained emery paper (000) and then electrolytically treated in a soln. contg. NaOH 2, Na_2FO_3 1, and Na_2SiO_3 (sp. gr. 1.37) 4% at cathodic c.d. 5 amp. per sq. dm., at 90°, for 2 min. The cleaned surface was then immersed in a soln. of 1–10% by wt. of machine oil in benzene for 1 min. The specimen after immersion was allowed to drain for 3 hrs. during which it was kept upright on blotting paper. Specimens were then subjected to chem. and electrolytic degreasing, after which the cleanliness of the surface was tested by the following methods: wetting with water, weighing, ultraviolet irradiation, and plating with Cu. The chem. degreasing was carried out by immersing for 5 min. at 90–95° in aq. solns. contg. 1 or more of the following substances: NaOH, Na_2SiO_3 (sp. gr. 1.37), Na_3PO_4, Leonil S (Na salt of the condensation product of naphthalenesulfonate with CH_2O), common soap, oleic soap, naphthenic soap, Ultravon (an emulsifier produced by Ciba, Basel), and Saponol (emulsifier produced by the firm Boruta in Zgierz, Poland). Of these substances Na_2SiO_3 was most effective, but none gave complete degreasing. A 3% soln. of Na_2SiO_3 combined with 1% of one of the other substances gave best results with NaOH in which case the degree of cleaning was 99%. NaOH (1%) combined with 1% of one of the other substances gave better results than any of the substances taken alone but worse than in combination with Na_2SiO_3. The relatively best results were obtained in its combination with Leonil S. Mixts. of 1% Leonil S with 1% of one of the other substances (except NaOH) gave no better results than Leonil S taken alone. Of 3-component mixts. best results gave Na_2SiO_3 3, NaOH 1, and Leonil S 1%; degreasing was effected in 2–2½ min. A mixt. of the first two substances and common soap 1% gave degreasing within 2-3 min. A mixt. of the first two and Na_3PO_4 1% gave within 3 min. almost complete degreasing. Thus, an effective bath can be devised of several components which when acting alone are either utterly ineffective or only modestly effective. Electrolytic degreasing in a soln. contg. Na_3PO_4 0.75, NaOH 1, and Na_2SiO_3 3% at 90–95° with a Ni anode, and a cathodic c.d. of 3.5 amp. per sq. dm. was effected completely after 60 sec. The 3-component bath and the electrolytic method although effective in removing oil films applied for test purposes were ineffective in removing oil layers left during cold rolling. In the latter case only C_2HCl_3 was effective.

M. Hoseh



PROCESSES AND PROPERTIES INDEX

15

The Action of Inhibitors in Acid Pickling of Steel, Part 2. M. Kmiak-ski and Z. Ostrowski. (*Prace Badawcze Glownego Inst. Met.*, 1951, 3, No. 3, 251–254). [In Polish]. The investigation of the rate of evolution of hydrogen in the reaction between HCl and iron or nickel in the presence of dibenzyl sulphoxide (0·05 g./L.) at 40° C. showed that this inhibitor acts strongly (slowed down by 95%) on the reaction with iron only in the range from 1 to 3 *N* HCl, and on the reaction with nickel (slowed down by more than 70%) in the range from 4 to 12 *N* HCl. Iron and nickel plates connected together and immersed in HCl at 40° C. showed a reciprocal inhibition which diminishes with increasing acid concentration. Dibenzyl sulphoxide (0·05 g./L.) causes a decrease in the rate of hydrogen evolution on iron and nickel electrodes and a drop in current intensity of the cell Ni/HCl/Fe. Inhibition efficiency is only restricted to the concentration range 2 to 6 *N* HCl.—V. G.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

Corrosion

B.I.R.

5574* **Study on the Anodic Passivation of Lead, Part I. Effect of Cl and CrO_4 Ions on the Passivation of Lead in Zinc Sulfate Solution.** (In Polish) M. Smialowski and E. Przybyla. *Prace Glownego Instytutu Metalurgii*, v. 3, no. 6, 1951, p. 501-505.

The change of lead anode potential with time was studied experimentally at various current densities, using a Cure electrometer and a photographic recorder. Typical potential-time curves obtained under "normal" experimental conditions are presented. Results obtained with pure Pb anodes and with Pb anodes containing 1% Ag are compared.

C. A.
1951

Metallurgy and metallography
9

Metal corrosion in the light of modern physical chemistry. Michał Śmiałowski. *Hutnik* 18, 89-96(1951).—Metals show a natural tendency to change into the ionic state. The units of measurement of this potential tendency were found to be inadequate. The resistance of metals to corrosion was evaluated quantitavely. The forces acting upon the surface of the metals are discussed in detail. Each reactive metal is considered to be an energy carrier surrounded by a "protective trench" of an insulating skin-layer. The following factors detg. the rate of corrosion are discussed: the oxidation of metal in contact with air; the solvation of metals in aq. electrolytes, when free H is evolved simultaneously; the solvation of metals in aq. electrolytes in conjunction with depolarization of O; the polarization of electrodes in working corrosion-cell and atm. corrosion.

Adam. J. Pikor

SMIALOWSKI, M.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Adsorption of dibenzyl sulfoxide on metals. M. Śmiałowski and Z. Szklarska-Śmiałowska. *Bull. acad. polon. sci.* 1, 135-7(1953).—Adsorption of dibenzyl sulfoxide on Cu and Ni powders was measured by a desorption technique in which a spectrophotometric method was used. Adsorption isotherms are given for Cu at 2, 15, and 20°; no distinct effect was observed for temp. on the adsorption on Ni. Expts. involving Fe were unsuccessful. Calcd. values of enthalpy of adsorption, by the Clausius-Clapeyron equation, range from 0.5 to 1.7 kcal. per mole depending on concn. of dibenzyl sulfoxide in the soln. used. These low values indicate that the adsorption is phys. rather than chem.

William A. Pennington

SMIALOWSKI, M.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Metallurgy and Metallography

Evaluation of diffusion of hydrogen into iron by observation of linear expansion of a sample. M. Smialowski and Z. Szklarska-Smialowska. *Bull. acad. polonaise sci.* 59-63(1953).—A mild steel wire treated electrolytically for 310 min. in N H_2SO_4 at 3° shows very little elongation with time. Addn. of thiourea caused a great increase in elongation; Thiourea was ineffective when dibenzyl sulfoxide had been used in the acid during the pickling. Addn. of As_2O_3 to the acid caused a great increase in elongation, but if dibenzyl sulfoxide was added, the As_2O_3 became ineffective. The erratic results obtained by other investigators is probably due to lack of control, there being effective compds. present that are not suspected. William A. Pennington

SMIALOWSKI, M.

Mechanism of diffusion of cathode hydrogen into iron. M. Smialowski and Z. Szklarska-Smialowska (*Bull. Acad. polon. Sci.*, [illegible] 327–331).—The hydrogen penetration into iron was determined by measuring the linear expansion of a fine steel wire used as a cathode during the electrolysis of aqueous solutions of acids or alkalis, *e.g.* at 40° and at a cathodic current density of 0·14 amp./cm.² from a solution of 1 N-H_2SO_4 containing 0·15 g. of thiourea per litre. It was found that the expansion of the wire depends on the tensile strength, grain size, and decarburation of the steel. The wire became brittle on impregnation with hydrogen, and the wire did not contract when the hydrogen was removed. The cause of the diffusion of cathodic H_2 into iron is the formation of a very high value of atomic H pressure on the surface of the contact of the working electrode with the electrolyte.

D. J. C. YATES.

SMIALOWSKI, M.

(2)

Mechanism of penetration of cathodic hydrogen into iron. M Smialowski and Z. Szklarska-Smialowska (*Roczn. Chem.*, 1953, 27, 505—521).—Diffusion of cathodic H into Fe is studied by a method consisting of measuring the elongation of a fine Fe wire acting as cathode during the electrolysis of aq. solutions of acids and alkalis. Factors affecting the rate and degree of elongation of the wire (apart from its heat treatment) are: composition of the electrolytic bath, temp. of electrolysis, and current density. Additions of As_2O_3, H_2S, and thiourea favour the penetration of H into Fe and give rise to much smaller bubbles on the cathode than in the case of a pure acid or an acid containing inhibitors. It is suggested that the diffusion of H is due to a very high pressure of at. H (probably $\sim 10^3$ atm.) on the cathode surface.

S. K. LACHOWICZ.

Journal of Applied Chemistry
April 1954
Industrial Inorganic Chemistry

SMYALOWSKIY M., SHKLYARSKAYA-SMYALOVSKAYA, Z.

"Study of Diffussion of Hydrogen in Iron from Observations of Elongation of the Specimen"
Byull. Polskoy Akad. Nauk, Otd. II, No 3-4, 1953, pp 155-156

A method facilitating the evaluation of the effect of various admixtures on penetration of hydrogen into iron electrode during electrolysis is presented. The method is based on the relation binding the elongation of the iron filament under a given load to the hydrogen abundance. (RZhFiz, No 11, 1954)

SO: W-31187, 8 Mar 55

SMIALOWSKI, M.

USSR

A new method of investigating the mechanism of cathodic processes and its application. M. Smialowski and Z. Szklarska-Smialowska. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1954, 181–4 (Engl. translation).—See *C.A.* 48, 13476*d*.
H. L. H.

SMYALOVSKIY, M.

A new method of investigating the mechanism of cathodic processes and its application. M. Smyalovskii and Z. Shklyarskaya-Smyalovskaya. *Izvest. Akad. Nauk, Otdel. Khim. Nauk* 1954, 225–9.—A soft iron wire spiral coil, annealed at 900° in a H atm., was suspended in electrolyte so that it was free to elongate. A Pt anode was used either as central wire or as an external gauze cylinder. On cathodic polarization, in the presence of traces of certain elements from groups V and VI the Fe wire absorbed H and elongated. Org. inhibitors such as dibenzylsulfonic acid prevented penetration of H. Optimum concn. was easily detd. by plotting elongation vs. conc.. V. N. B.

Smialowski, M.

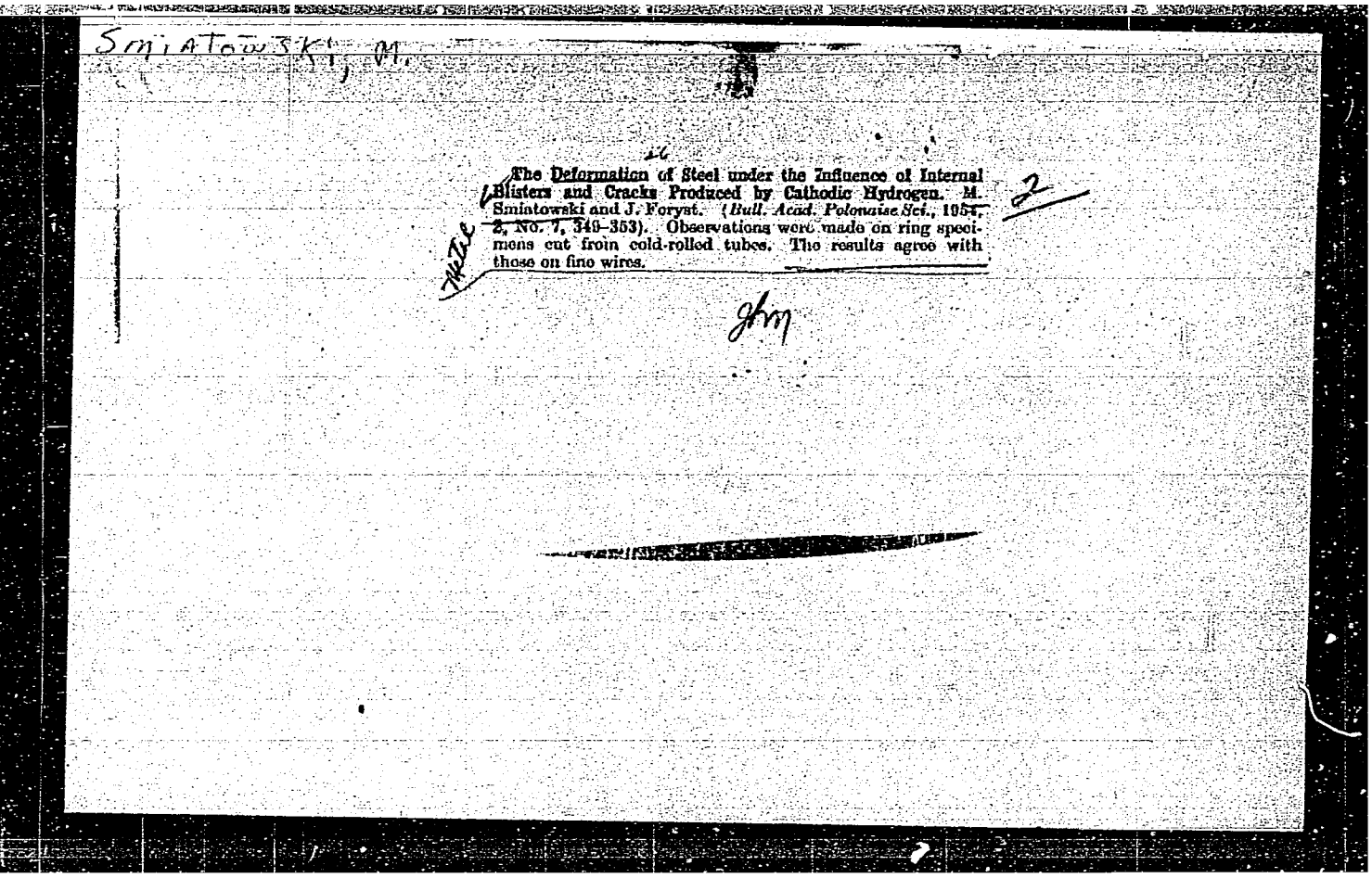
SMIALOWSKI, M.; PZEKLARSKA-SMIALOWSKA, Z.

"The Expansion of Iron Spirals as a Result of Saturation with Cathodic Hydrogen", P. 73, (POLSKA AKADEMIA NAUK, Vol. 2, No. 2, 1954, Varsovie, Poland)

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 4, No. 3, March 1955, Uncl.

SMIALOWSKI, M.

✓ "A New Method of Investigation of the Mechanism of the Cathode Processes and Its Application. M. Smialowski and Z. Szklarska-Smialowska (*Invest. Acad. Mines & Sci., USSR, 1954*, [Khim.], (2), 225–229).—[In Russian]. The increase in length of a specially prepared and weighted Fe spiral acting as cathode during electrolysis is utilized in the study of the mechanism of cathode processes. The increase in length is due to the diffusion of H into the Fe during electrolysis and becomes appreciable after addn. to pure electrolyte ($1N$-H_2SO_4) of increasing concentrations of elements of Groups V and VI. The presence of As, Sb, P, S, Se, and Te in the electrolyte slows down the combination of H atoms, as a result of which the pressure of atomic H and the rate of its diffusion into the Fe increases. Under certain conditions the increase in length of the spiral can be almost 10-fold and the pressure of H ~1400 atm. (cf. *Roczniki Chem.*, 1953, 27, 505–521). The degree of the catalytic slowing down of the reaction $2H \rightarrow H_2$ depends on the stability of the compounds of As, Sb, P, S, Se, and Te with H, and decreases linearly in the order P, As, Sb in Group V and S, Se, Te in Group VI.—S. K. L.



Smiatowski, M.

The Deformation of Steel under the Influence of Internal Blisters and Cracks Produced by Cathodic Hydrogen. M. Smiatowski and J. Foryst. (*Bull. Acad. Polonaise Sci.*, 1954, 2, No. 1, 349–353). Observations were made on ring specimens cut from cold-rolled tubes. The results agree with those on fine wires.

Mechanical, Pt.

POL

Applicability of Traube's rule to the inhibiting action of fatty acids on stress corrosion of steel. M. Smialowski and T. Ostrowska. *Bull. acad. polon. sci., Classe III*, 2, 345-7(1954)(in English).—Fe wire, 0.45 mm. diam., and analyzing C 0.09, Mn 0.35, Si 0.00, P 0.033, S 0.046, Cu 0.47, Ni 0.03 was tested in 500 mm. lengths. The cold-drawn wire was heated 50 min. in H at 900°, to give a tensile strength of 26.0 kg./sq. mm. One end of the wire was fastened to a glass hook on the bottom of a hollow-walled tube. The wire ran vertically out of the tube and was hung over 2 pulleys with a 3-kg. wt. suspended from the opposite end to produce a stress of 18.7 kg./sq. mm. Forty-five ml. of 6*N* soln. NH_4NO_3 was poured into the vessel, and H_2O vapor at 100° was circulated through the wall of the tube. Fatty acids were introduced into the soln. in MeOH solns. Graphs show the relation between the corrosion time and concn. for 3 monocarboxylic fatty acids with an unbranched chain: butyric, hexanoic, and heptanoic. The curves indicate that the greater the no. of C atoms in a mol. of a fatty acid the smaller the crit. concn. necessary for reducing the rate of stress corrosion cracking. Mols. of fatty acid, becoming adsorbed on the active centers of the steel surface, make them hydrophobic and this, since it renders access of the corroding medium difficult, contributes to a slowing-down of the corrosion process. The results denote that the extent to which the stress corrosion cracking process is inhibited depends on the length of the hydrocarbon chain, in a way conforming to the rule of Traube (*Ann.* 265, 27(1891)) and Szyszkowski (*C.A.* 3, 133) which was formulated for adsorption on the surface of aq. solns.

C. W. Schuck

Smialowski, M.

POL.

Deformation of steel under the influence of internal blisters and cracks produced by cathodic hydrogen. M. Śmiałowski and J. Poryst. *Bull. acad. polon. sci., Classe III*, 2, 349-52(1954)(in English).—Measurements were made of the deformations of annularly bent steel samples under the influence of their satn. by cathodic H in a soln. of *N* H_2SO_4 contg. 2×10^{-4} mole As per l. The rings were cut from cold-rolled tubing analyzing C 0.26, Mn 0.52, Si 0.22, P 0.015, S 0.029%. The samples measured 38 mm. diam., 15 mm. long, 0.4 mm. wall thickness, with a 0.5 mm. wide gap or strip cut out. Samples were polished, degreased, and coated with a thin layer of ceresin, then connected with the negative pole of a d.-c. source and immersed in a small glass vessel, through which flowed the electrolyte at 25 ± 1°. A Pt sheet anode 10 × 10 × 0.05 mm. was placed in the middle of the ring. Cathodic c.d. was 0.1 amp./sq. cm. The ring was removed every 30 min. and the width of the gap was measured, always in the same place, with a microscope. The width usually increased during electrolysis, and also occurred when the outer surface of the ring was not covered with ceresin. If the anode was on the outside of a ring not insulated with ceresin, the gap during electrolysis often diminished to 0 and the ring contracted with great force. In the initial state the rings did not become deformed under the influence of H. The gap width, even after a long period of electrolysis, remained const. or, at the most, increased to 0.40 mm. Rings heated at 450° or higher, gradually expanded under the influence of hydrogenation, the gap acquiring a const. value on the av. about 2 mm. greater than the initial width after about 2 hrs. of current flow. Long, narrow cracks were apparent under the microscope in specimens satd. with cathodic H after annealing at 450°. They were mostly transcryst. It is con-

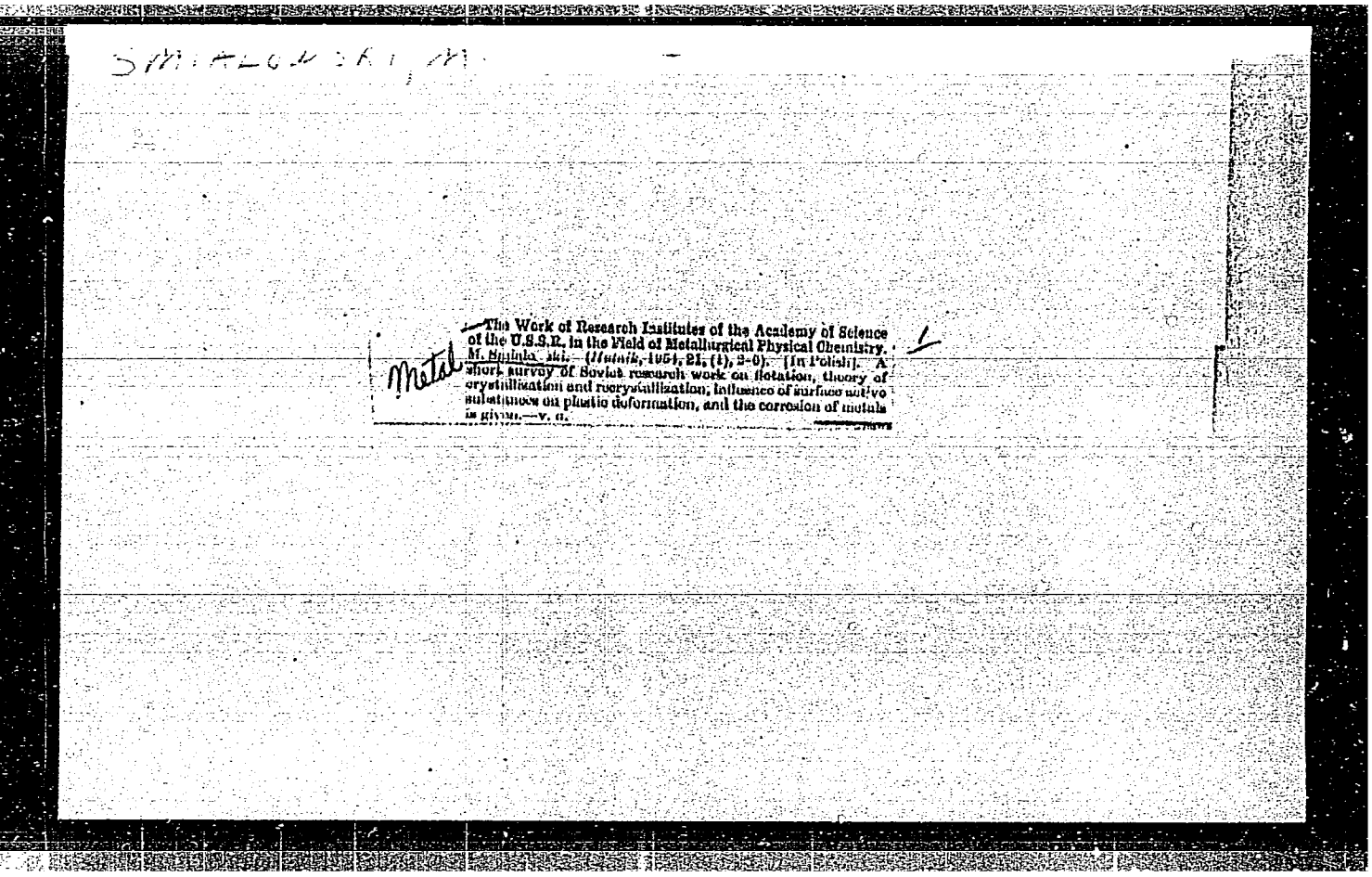
OVER

(1)

M. SMIŁOWSKI

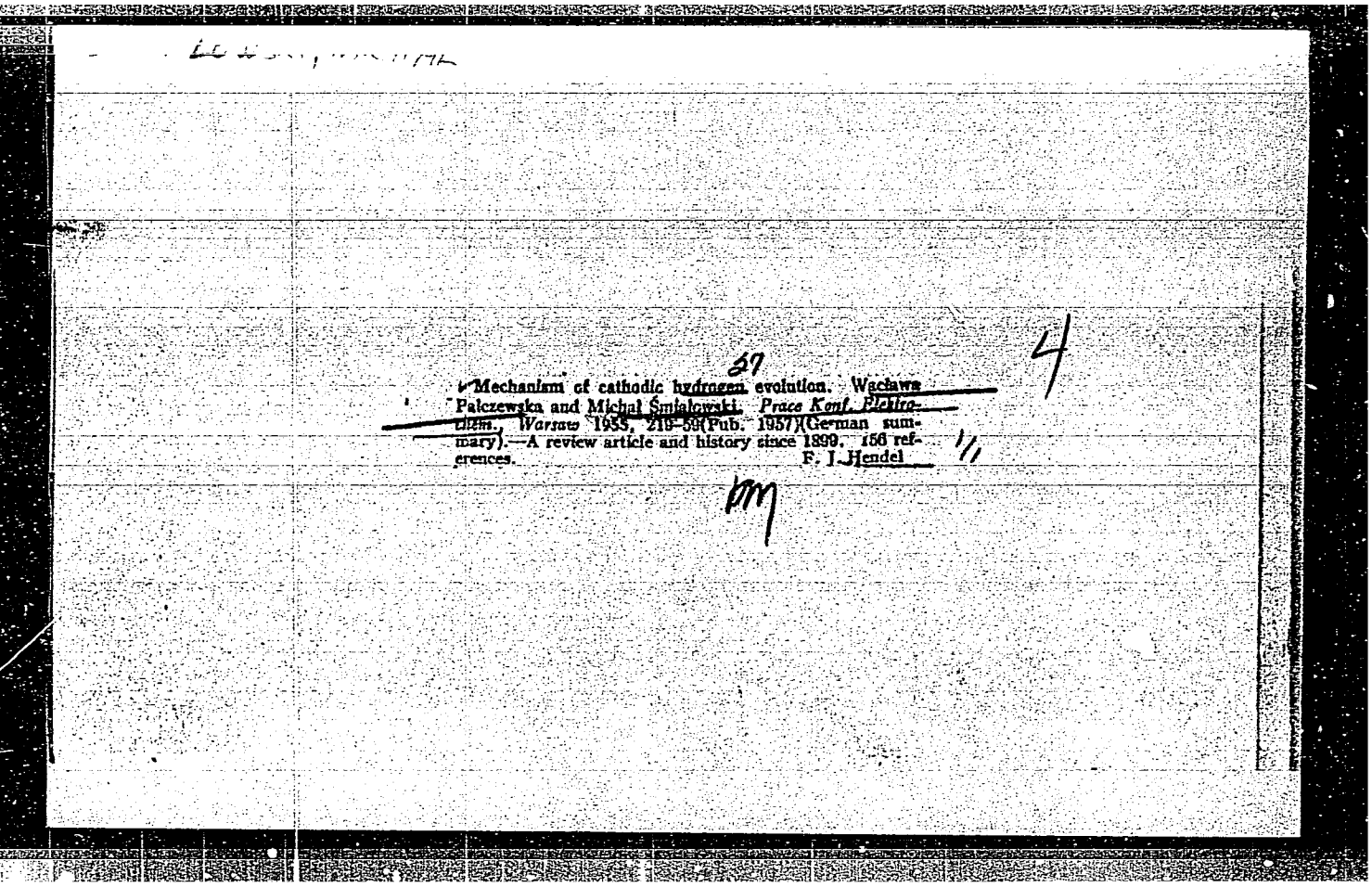
cluded that the deformation is due to the accumulation, under high pressure, of mol. H in the internal steel structure. Since Fe does not show any important changes in elec. cond. under the influences of hydrogenation, and since the changes in its magnetic properties are small, it is assumed that the H diffuses in an at. form, and not as a proton. When the H atoms encounter an inclusion or a hole present on the grain boundaries, they unite into particles which remain motionless in a given place. Approx. calcns. seem to show that the magnitude of the pressures created in the steel structure by the H blisters arising in this way may probably attain 10^4 or 10^5 atm.

C. W. Schuck



Metal

The Work of Research Institutes of the Academy of Science of the U.S.S.R. in the Field of Metallurgical Physical Chemistry. M. Smirlak. *Hutnik*, 1954, 21, (1), 2-9). [In Polish]. A short survey of Soviet research work on flotation, theory of crystallisation and recrystallization, influence of surface active substances on plastic deformation, and the corrosion of metals is given.—v. n.



Mechanism of cathodic hydrogen evolution. Wacława Palczewska and Michał Śmiałowski. *Prace Kom. Elektrochem., Warsaw* 1955, 219-59(Pub. 1957)(German summary).—A review article and history since 1899. 156 references. F. I. Hendel

SMIALOWSKI, M.

Influence of polarization conditions on brittleness of iron and nickel which is caused by penetration of hydrogen. Michał Śmiałowski and Zuzanna Szklarska-Śmiałowska. *Prace Konf. Elektrochem., Warsaw*, 1955, 801–11 (Pub. 1957) (German summary); cf. *C.A.* 48, 8146*i*; 49, 2804*a*.—Cathodic H causes brittleness of Fe. Ni, however, is more resistant to cathodic H; it is also resistant to catalytic poisons. When seasoned, Ni regenerates nearly fully its original properties. Thus, the authors conclude that during cathodic polarization of Ni there is only first degree of hydrogenation (i.e., H forms a satd. solid soln. with Ni). In the case of cathodic polarization of Fe there is first a formation of dild. solid solu. of H or H^+ in Fe which with increasing concn. of H forms pores and crevices filled with H under high pressure (which causes deformation of Fe). The reason for different behavior between Fe and Ni lies, most probably, in the different catalytic characteristics of the surface layers of both metals with respect to the desorption process and recombination of H atoms in the mol. It is evident that Ni accelerates the recombination much faster than Fe and is much less susceptible against As poisoning than Fe.

F. J. Hendel

Distr: 4F1

Smialowski, Michal

18 27

Susceptibility of steels on the action of cathodic hydrogen versus the chomical composition of these steels. Juljusz Foryst and Michal Smialowski. *Prace Konf. Elektrochem., Warsaw* 1955, 319-24(Pub. 1957)(German summary).—The authors think that H brittleness of steel due to the action of cathodic H is caused by the solid soln. of H in steel and not by the formation of bubbles in steel (which follow the above solid soln.). This was shown on 2 different Armco steel bars of 3-5 mm. diam. and 180-240 mm. long of Polish production. The samples had the compn.: C 0.02, 0.00; Si 0.03, 0.15; Mn 0.06, 0.06; P 0.007, 0.000; S 0.026, 0.0035; Al 0.00, 0.07; Ti 0.00, 0.35; V 0.00, 0.09; SiO_2 0.0145, 0.0121; Al_2O_3 0.0145, 0.0120; MnO 0.0061, 0.0012; FeO 0.0256, 0.0132; MnS 0.0045, 0.00081; and FeS 0.0570, 0.0088%. The samples of steel were polarized in *N* H_2SO_4 contg. 0.00002*M* As_2O_3; the anode was made of Pt wire, the temp. was kept const. at 21°, and the cathodic d. was 0.1 amp./sq. cm. The first type of steel showed an approx. 4 times larger elongation than the 2nd type (which during melting was deoxidized with Si, Al, Ti, and V, left over to a certain extent in steel). F. J. Heudel

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1/1

SMIALOWSKI M.

3

3940 541.135.64

Śmiałowski M., Szklarska-Śmiałowska Z. Study on Hydrogen Depolarisation. The Influence of Electrolyte Composition on the Degree of Deformation of Iron Cathodes in Sulphuric Acid Solutions. CH

„Studia nad depolaryzacją wodorową. Wpływ składu elektrolitu na stopień odkształcania się katod żelaznych w roztworach kwasu siarkowego". Roczniki Chemii (PAN). No. 1, 1955, pp. 85-94, 6 figs., 1 tab.

The authors have found that by measuring the deformation of an iron wire spiral acting as cathode in acid solution, it is possible to evaluate the degree of saturation of the metal with hydrogen. Using this method, the action of diverse promoter elements was compared with the binding force of hydrides according to Siebert's data (Z. anorg. Chem., v. 274, 1953, p. 24). Also studied was the influence of H_2SO_4 concentration in aqueous and alcoholic solution on the degree of hydrogenation.

MET

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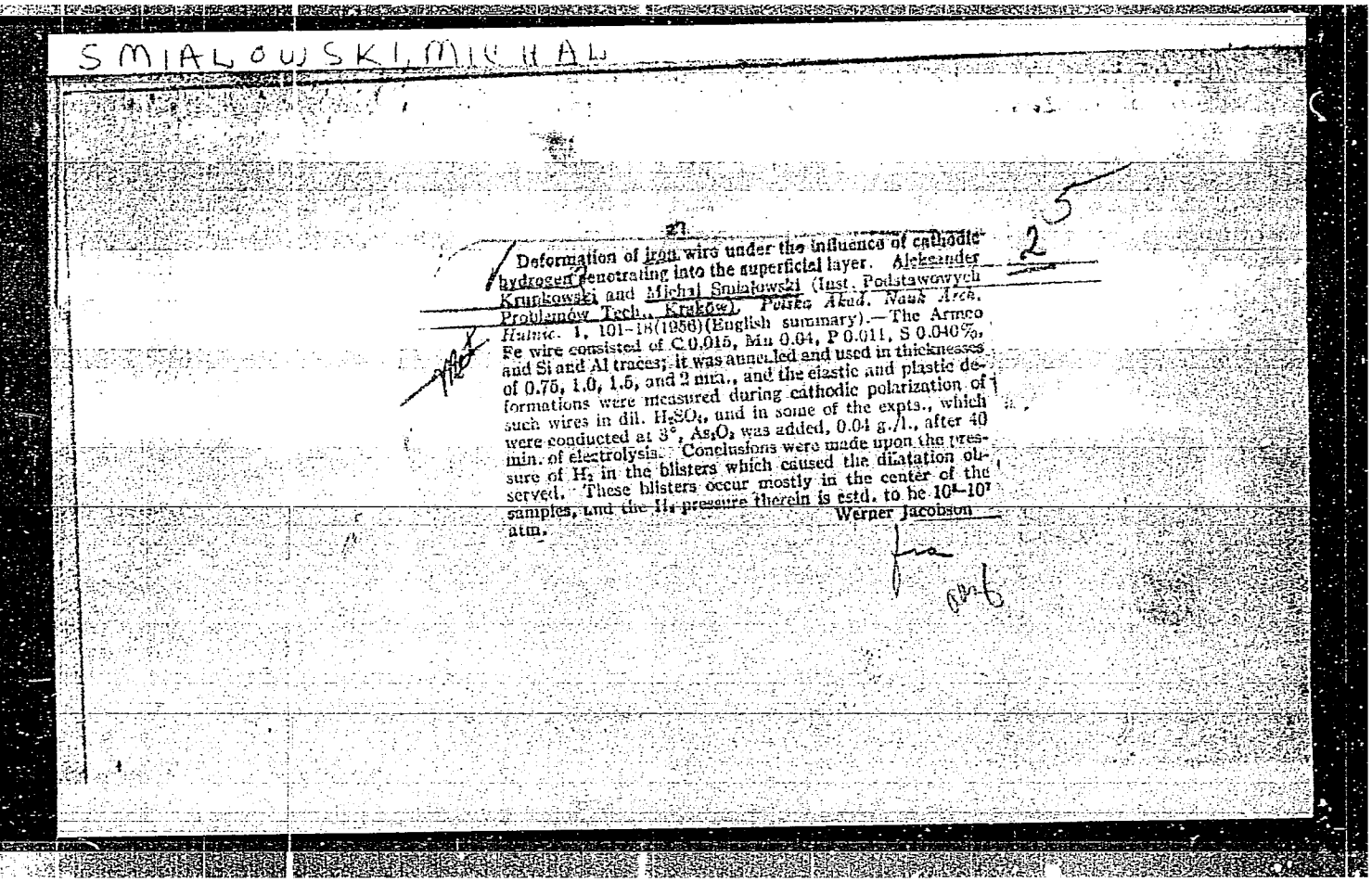

SMIALOWSKI, MICHAL

27

Deformation of iron wire under the influence of cathodic hydrogen penetrating into the superficial layer. Aleksander Krunkowski and Michal Smialowski (Inst. Podstawowych Problemów Tech., Kraków). *Polska Akad. Nauk Arch. Hutnic.* 1, 101–18(1956)(English summary).—The Armco Fe wire consisted of C 0.015, Mn 0.04, P 0.011, S 0.040%, and Si and Al traces; it was annealed and used in thicknesses of 0.75, 1.0, 1.5, and 2 mm., and the elastic and plastic deformations were measured during cathodic polarization of such wires in dil. H_2SO_4, and in some of the expts., which were conducted at 3°, As_2O_3 was added, 0.04 g./l., after 40 min. of electrolysis. Conclusions were made upon the pressure of H_2 in the blisters which caused the dilatation observed. These blisters occur mostly in the center of the samples, and the H_2 pressure therein is estd. to be 10^4–10^7 atm. Werner Jacobson

SMIALOWSKI, M. POLAND

"Stanislaw STASZIC - Scientist in the Service of the Polish Nation," by M. SMIALOWSKI; Prace Instytutow Ministerstwa Hutnictwa, Nos. 2-4, 1955.

[redacted]

SMIALOWSKI, M.

POLON

The influence of fatty acids on the polarization curves of iron in ammonium nitrate. M. Smiałowski and T. Ostrowska. *Bull. Acad. polon. sci., Classe III*, 3, 29–31(1955)(in English).—Plotting of the polarization curves of iron in a 5*N* soln. of NH_4NO_3 in the presence of different normal fatty acids, ranging from $C_4H_8O_2$ to $C_8H_{16}O_2$, showed that addn. of these compds. influence polarization both of the anode and of the cathode, although to a lesser degree in the case of the latter. The extent of this influence depends on the no. of C atoms in a mol. of fatty acid. The presence of fatty acids facilitates the passivation of Fe anodes in an NH_4NO_3 soln.

Bernard Rubin

SMIALOWSKI, M.

The influence of catalytic poisons and of substances increasing hydrogen overvoltage on the electrolytic reduction yield of nitrobenzene and oxalic acid. M. Śmiałowski and H. Jarmołowicz. *Bull. acad. polon. sci., Classe III*, 3, 107–10 (1955) (in English).—Catalytic poisons of the reaction $2H = H_2$ increase the yield of $PhNH_2$ in the electrolytic reduction of $PhNO_2$ but do not affect the yield of glyoxalic acid (I) from $H_2C_2O_4$. It is hypothesized that reduction of $PhNO_2$ is based on the action of atomic H but that reduction of $H_2C_2O_4$ is dependent on the H overvoltage. Addn. of 0.02 g./l. As_2O_3 to the catholyte increases the yield of $PhNH_2$ when $PhNO_2$ is reduced under the following conditions: catholyte is 10 g. $PhNO_2$, 15 ml. EtOH, and 400 ml. 6% HCl; cathode is a 1 sq. dm. Pb sheet; cathodic c.d. is 5 amp./sq. dm.; anode is a Pb sheet; anolyte is 10% H_2SO_4; temp. is 20 to 50°, and a ceramic diaphragm. With the same conditions except for a catholyte of 10 g. $PhNO_2$, 280 ml. 80% HOAc, and 140 ml. 25% HCl, the yield of $PhNH_2$ increases in the order: no catalyst < Sb, Se, or Te < Na_2S, H_2S, or thiourea < 0.02 g./l. As_2O_3 < 1.2 g./l. yellow P in CS_2. Addn. of 0.02 g./l. As_2O_3 decreases the yield of I when $H_2C_2O_4$ is reduced under the following conditions: cathode is a 0.85 sq. dm. Pb sheet; catholyte is 10 g. $H_2C_2O_4.2H_2O$ in 4% H_2SO_4; cathodic c.d. is 2.35 amp./sq. dm.; anode is Pb; anolyte is 11% H_2SO_4; ceramic diaphragm; temp. is 10–12°. Under the same conditions 25 g./l. Na_2SO_4 (which raises the H overvoltage on Pb) increases the yield; P, S, Sb, Se, and Te do not affect the yield, and Cu^{++} stops the reaction. Herbert B. Rickert

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SMIALOWSKI, MICHAL

POLON

Hydrogen depolarization—Influence of electrolyte composition on the degree of deformation of iron cathodes in sulfuric acid solutions. Michał Śmiałowski and Zuzanna Szklarska-Śmiałowska (Polish Acad. Sci., Warsaw). *Roczniki Chem.* 29, 85–93(1955)(English summary).—Spirals of Fe wire polarized cathodically in H_2SO_4 soln. expand under the action of H produced in a manner similar to that of Bourdon tubes, as a result of a high pressure created in the intercryst. spaces of the Fe. The resulting forces tend to increase the radius of curvature of the bent Fe cathode. The degree of deformation of the spiral (Δl) in presence of different promoter elements shows a linear relation between the const. f of the binding force of hydrides of S, P, As, and Sb, and the value $\Delta l/n$ where n is the valence of the given element. Results indicate that during acid electrolysis a large H pressure develops on the surface of the cathode because of capillary effects. In the presence of promoter elements or catalytic poisons retarding the H mol. formation, at. H contributes to the rise in pressure and penetration into the base metal. The ability of the elements of the 5th and 6th groups to act as promoters is proportional to their ability of forming hydrides. Morris Eisenberg

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Mechanism and prevention of stress-corrosion cracking of iron and steel in the presence of nitrates. M. Smialowski, T. Ostrowski and Z. Szklarska-Smialowska (*Roczn. Chem.*, 1955, 29, 671—690).—Experiments were made with wires of mild steel (95·9% Fe, 0·09% C), of diam. 0·45 mm., under tension, at 97—99°, to investigate the influence of O_2 in accelerating stress-corrosion cracking in presence of nitrates, etc. Solutions used were: (*i*) $Ca(NO_3)_2,H_2O$ (860 g.) and NH_4NO_3 (30 g.) in water (1 l.), and (*ii*) 9*N*-NH_4NO_3 solution. Solution (*ii*) produced cracking far more rapidly than (*i*), under conditions of direct immersion or moistening for 10 min. followed by immersion. Carbonyl iron wires (99·66% Fe, 0·03% C) immersed in solution (*ii*) showed greater resistance to cracking, but cracked sooner if first moistened. Cracking of moistened steel wires occurred only in presence of atm. O_2, and was accelerated by additional O_2. Fe monocrystals did not exhibit cracking, but polycryst. samples exhibited intercrystalline fissures. The cracking was inhibited by straight-chain fatty acids, whose effectiveness increased with increasing chain length.

L. S.

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