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BIBLIOGRAPHIC INDEX OF USSR WORKS ON CORROSION

AND PROTECTION OF MATERIALS

by V. V. Krasnoyarskiy and P. M. Reznik

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BIBLIOGRAPHIC INDEX OF USSR WORKS ON CORROSION
AND PROTECTION OF MATERIALS

Following is the translation of portions of the Russian-language book, Korroziya i zashchita materialov -- Bibliografiya otechestvennoy literatury za period s 1917 po 1959 gody (Corrosion and Protection of Materials -- A Bibliography of USSR Literature for the Period 1917-1959), compiled by V.V. Krasnoyarskiy and F. M. Reznik, published by Mashgiz, the State Scientific-Technical Publishing House for Machine-building Literature, Moscow, 1961, 275 pages. Source page numbers of the portions translated are indicated in the Table of Contents below.

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LIST
OF ABBREVIATED AND COMPLETE TITLES
OF PERIODICAL AND CONTINUING PUBLICATIONS

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Aviatsiya i khimiya	Aviatsiya i khimiya	Aviation and Chemistry
Avtobronetankovyy Zh.	Avtobronetankovyy Zhurnal	Armored Transport Magazine
Avtogen. delo	Avtogennoye delo	Autogenous Operations
Avtomat. svarka	Avtomaticheskaya svarka	Automatic Welding
Avtomob. dorogi	Avtomobil'nyye dorogi	Highways
Avtotrakt. delo	Avtotraktornoye delo	Tractors
Avtomob. i traktornaya prom-st'	Avtomobil'naya i traktornaya promyshlennost'	Automobile and Tractor Industry
Avtomob. prom-st'	Avtomobil'naya promyshlennost'	Automobile Industry
Azerb. khim. zh.	Azerbaydzhanskiy khimicheskiy zhurnal	Azerbaydzhan Chemical Magazine
Azerb. nef. kh-vo	Azerbaydzhanskoye neftyanoye khozyaystvo	Azerbaydzhan Oil Industry
Anilokras. prom-st'	Anilokrasochnaya promyshlennost'	Aniline Dye Industry
Artiller. zh.	Artilleriyskiy zhurnal	Artillery Magazine
Atomnaya energiya	Atomnaya energiya	Atomic Energy

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Beton i zhelezo- beton	Beton i zhelezo- beton	Concrete and Reinforced Concrete
Brit. prom-st' i tekhn.	Britanskaya prom- yshlennost' i tekhnika	British Industry and Technology
Brodil'n. prom-st'	Brodil'naya promyshlennost'	Fermentation Industry
Bum. prom-st'	Bumazhnaya promyshlennost'	Paper Industry
Byull. Vsesoyuzn. khim. o-va	Byulleten' vsesoyu- znogo khimicheskogo obshchestva	Bulletin of the All-Union Chemical Society
Byull. kollektiva inzh. teplotekhn. in-ta	Byulleten' kollekt- iva inzhenerov tep- lotekhnicheskogo instituta	Bulletin of the Engineers Group of the Heat Engin- eering Institute
Byull. neft. geofiziki	Byulleten' neftya- noy geofiziki	Bulletin of Petroleum Geophysics
Byull. stroit. tekhn.	Byulleten' stroit- el'noy tekhniki	Bulletin of Construction Equipment
Vestn. AN SSSR	Vestnik Akademii nauk SSSR	Herald of the USSR Academy of Sciences
Vest. AN Kazakh. SSSR	Vestnik Akademii nauk Kazakhskoy SSSR	Herald of the Kazakh SSR Academy of Sciences
Vest. vozd. flota	Vestnik vozdushnogo flota	Air Force Herald
Vest. Vsesoyuzn. n.-i. in-ta zh.-d. transporta	Vestnik Vsesoyuzno- go nauchno-issledo- vatel'skogo instit- uta zheleznodorozh- nogo transporta	Herald of the All-Union Research Institute of Rail Transport

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Vestn. vyssh. shkoly	Vestnik vysshey shkoly	University Herald
Vestn. inzh. i tekhn.	Vestnik inzhenerov i tekhnikov	Engineers and Technologists Herald
Vestn. kom-ta po izobret.	Vestnik komiteta po izobreteniyam	Herald of Committee on Inventions
Vestn. Leningr. un-ta	Vestnik Leningradskogo universiteta	Leningrad University Herald
Vestn. mashinostroyeniya	Vestnik mashinostroyeniya	Machine Construction Herald
Vestn. metallpromsti	Vestnik metallopromyshlennosti	Metal Industry Herald
Vestn. Mosk. un-ta	Vestnik Moskovskogo universiteta	Moscow University Herald
Vestn. standartizatsii	Vestnik standartizatsii	Standardization Herald
Vestn. khim. o-va im. D. I. Mendeleeva	Vestnik khimicheskogo obshchestva im. D. I. Mendeleeva	Herald of the imeni D. I. Mendeleev Chemical Society
Vestn. elektropromsti	Vestnik elektropromyshlennosti	Herald of the Electrical Industry
Vinodeliye i vinogradarstvo SSSR	Vinodeliye i vinogradarstvo SSSR	Viniculture and Viticulture in the USSR
Vodn. transport	Vodnyy transport	Water Transport
Vodosnabzh. i san. tekhn.	Vodosnabzheniye i sanitarnaya tekhnika	Water Supply and Sanitation Equipment
Vopr. kommun. kh-va	Voprosy kommunalnogo khozyaystva	Questions of Communal Economy
Vost. neft'	Vostochnaya neft'	Eastern Oil

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
VUGI	Vsesoyuznyy ugol'-nyy institut	All-Union Coal Institute
Gazovaya prom-st'	Gazovaya promyshlennost'	Gas Industry
Geodeziya i kartografiya	Geodeziya i kartografiya	Geodesy and Cartography
Gigiyena truda	Gigiyena truda	Industrial Hygiene
Gidroliznaya i lesokhim. prom-st'	Gidroliznaya i lesokhimicheskaya promyshlennost'	Hydrolysis and Wood Chemistry Industry
Gidrotekhn. str-vo	Gidrotekhnicheskoye stroitel'stvo	Hydraulic Engineering Construction
Gor. kh-vo Moskvyy	Gorodskoye khozyaystvo Moskvyy	Moscow Urban Economy
Goryuchiye slantsy	Goryuchiye slantsy	Bituminous Shale
Grazhd. aviatsiya	Grazhdanskaya aviatsiya	Civil Aviation
Grozn. neftyanik	Groznenskiy neftyanik	Groznyy Petroleum Miner
Dizelestroyeniye	Dizelestroyeniye	Diesel Engine Constructio
Dokl. AN SSSR	Doklady Akademii nauk SSSR	Reports of USSR Academy of Sciences
Dokl. AN Ukr. SSR	Doklady Akademii nauk Ukr. SSR	Reports of Ukrainian SSR Academy of Sciences
ZHil. kommun. kh-vo	Zhilishchno-kommunal'noye khozyaystvo	Housing and Public Utilities
ZH. neorg. khimii	Zhurnal neorganicheskoy khimii	Journal of Non-Organic Chemistry
ZH. obshch. khimii	Zhurnal obshchey khimii	Journal of General Chemistry

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
ZH. prikl. khimii	Zhurnal prikladnoy khimii	Journal of Applied Chemistry
ZH. rezin. prom-sti	Zhurnal rezinovoy promyshlennosti	Journal of the Rubber Goods Industry
ZH. russ. metallurg. o-va	Zhurnal russkogo metallurgicheskogo obshchestva	Journal of the Russian Metallurgical Society
ZHRFKhO	Zhurnal russko-fiziko-khimicheskogo obshchestva	Journal of the Russian Physical Chemistry Society
ZH. tekhn. fiz.	Zhurnal tekhnicheskoy fiziki	Journal of Physics Engineering
ZH. fiz. khimii	Zhurnal fizicheskoy khimii	Journal of Physical Chemistry
ZH. khim. prom-sti	Zhurnal khimicheskoy promyshlennosti	Journal of the Chemical Industry
Za prom. kadry	Za promyshlennyye kadry	For Industrial Staffs
Za torf. industriyu	Za torfyangyu industriyu	For the Peat Industry
Za ekonomiyu topliva	Za ekonomiyu topliva	For Fuel Economy
Zavodsk. laboratoriya	Zavodskaya laboratoriya	Factory Laboratory
Izv. AN SSSR OTN	Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk.	News of the USSR Academy of Sciences. Technical Sciences Division
Izv. AN SSSR. OMEN, ser. khim.	Izvestiya Akademii nauk SSSR. Otdeleniye matematicheskikh i yestestvennykh nauk, seriya khimicheskaya	News of the USSR Academy of Sciences. Mathematical and Natural Sciences Division, chemistry series.

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Izv. AN SSSR. OKhN	Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk	News of the USSR Academy of Sciences. Chemical Sciences Division
Izv. AN SSSR. OTN Metallurgiya i toplivo	Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo	News of the USSR Academy of Sciences. Technical Sciences Division. Fuel and Metallurgy
Izv. Azerb. fil. AN SSSR	Izvestiya Azerbaydzhanskogo filiala AN SSSR	News of Azerbaydzhan Branch of USSR Academy of Sciences
Izv. AN Azerb. SSR. Ser. fiz-tekhn. i khim. n.	Izvestiya Akademii nauk Azerb. SSR. Seriya fiziko-tekhnicheskikh i khimicheskikh nauk	News of the Azerbaydzhan SSR Academy of Sciences. Physical Engineering and Chemical Sciences Series
Izv. AN Latv. SSR	Izvestiya Akademii nauk Latv. SSR	News of the Latvian SSR Academy of Sciences
Izv. Vsesoyuzn. teplotekhn. in-ta	Izvestiya Vsesoyuznogo teplotekhnicheskogo instituta im. imeni F. Dzerzhinskiy F. Dzerzhinskogo	News of All-Union Heat Engineering Institute
Izv. vyssh. ucheb. zavedeniy. Neft' i gaz	Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz	News of Institutions of Higher Learning: Petroleum and Gas
Izv. vyssh. ucheb. zavedeniy. Khimiya i khim. tekhnologiya	Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya	News of Institutions of Higher Learning: Chemistry and Chemical Engineering
Izv. vyssh. ucheb. zavedeniy. Tsvet. metallurgiya	Izvestiya vysshikh uchebnykh zavedeniy. Tsvetnaya metallurgiya	News of Institutions of Higher Learning: Non-Ferrous Metallurgy

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Izv. sektora fiz.- khim. analiza	Izvestiya sektora fiziko-khimiches- kogo analiza	News of Sector of Physico Chemical Analysis
Izv. Sib. otd. AN SSSR	Izvestiya Sibirsk- ogo otdeleniya Ak- ademii nauk SSSR	News of Siberian Branch of the USSR Academy of Sciences
Izv. elektroprom- sti slabogo toka	Izvestiya elektro- promyshlennosti slabogo toka	News of the Weak-Current Electrical Industry
Inform. byull. po protivokorrozi- y tekhnike	Informatsionnyy byulleten'. Tekh- nika zashchity ot korrozii	Information Bulletin. Anti-Corrosion Techniques and Equipment
Kauchuk i rezina	Kauchuk i rezina	Latex and Rubber
Kachestv. stal'	Kachestvennaya stal'	Hard Steel
Kislород	Kislород	Oxygen
Kozh.-obuv. prom-st' SSSR	Kozhevenno- obuvnaya promysh- lennost' SSSR	Leather Footwear Industry of the USSR
Koks i khimiya	Koks i khimiya	Coke and Chemistry
Kolloidn. zh.	Kolloidnyy zhurnal	Colloids Journal
Kommun. str-vo	Kommunal'noye stroitel'stvo	Public Buildings Construction
Konserv. prom-st'	Konservnaya promyshlennost'	Canning Industry
Konservn. i ovosh- chesushil'n. prom- st'	Konservnaya i ovoshchesushil'naya promyshlennost'	Canning and Dehydrated Vegetables Industry
Korroziya i bor'ba s ney	Korroziya i bor'ba s ney	Corrosion and Anti-Corrosi Techniques

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Legkaya prom-st'	Legkaya promyshlennost'	Light Industry
Legkiye metally	Legkiye metally	Light Metals
Lesokhim. prom-st'	Lesokhimicheskaya promyshlennost'	Wood Chemistry Industry
Liteynoye proizvo-	Liteynoye proizvod-	Foundry Production
stvo	stvo	
L'nopen'kodzhutov- aya prom-st'	L'nopen'kodzhutov- aya promyshlennost'	Flax-Hemp-Jute Industry
Malyarnoye delo	Malyarnoye delo	Housepainting
Maslob.-zhir. prom- st'	Masloboyno-zhiro- vaya promyshlennost'	Oils and Fats Industry
Mashinostroitel'	Mashinostroitel'	Machine Construction Worker
MDNTP	Moskovskiy dom nauchno-tekhnichesk- oy propagandy	Moscow House of Scient- ific Technical Propagan- da
MTS	Mashino-traktornaya stantsiya	Machine Tractor Station
Med. prom-st'	Meditsinskaya promyshlennost'	Medical Industry
Metallovedeniye i obrabotka metallov	Metallovedeniye i obrabotka metallov	Metals Science and Metal Processing
Metallovedeniye i term. obrabotka metallov	Metallovedeniye i termicheskaya ob- rabotka metallov	Metals Science and Heat Treatment of Metals
Metallurg	Metallurg	Metallurgist
Mekhaniz. str-va	Mekhanizatsiya stroitel'stva	Mechanization of Con- struction

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Mekhaniz. i motor- iz. RKKA	Mekhanizatsiya i motorizatsiya Raboche-Krest'- yanskoy Krasnoy Armii	Mechanization and Motor- ization of the Worker- Peasant Red Army
Mikrobiologiya	Mikrobiologiya	Microbiology
Miner. udobr. i insektofungisidy	Mineral'nyye udob- reniya i insekto- fungisidy	Mineral Fertilizers and Insectofungicides
Molochno-maslodel. prom-st'	Molochno-maslodel- atel'naya promysh- lennost'	Dairy and Butter Making Industry
Morskoy flot	Morskoy flot	Maritime Fleet
Morskoy i rechnoy flot	Morskoy i rechnoy flot	Maritime and River Fleet
Moskva i Volgostroy	Moskvavolgostroy	Moscow and Volgograd Construction Trust
Motor	Motor	Motors
Myasnaya industr- iya SSSR	Myasnaya industr- iya SSSR	Meat Industry of the USSR
Nauka i zhizn'	Nauka i zhizn'	Science and Life
Nauch. dokl. vyssh. shkoly. Mashino- stroyeniye i pri- borostroyeniye	Nauchnyye doklady vysshey shkoly. Mashinostroyeniye i priborostroyeni- ye	University Scientific Reports: Machine Con- struction and Instrument Making
Nauch. dokl. vyssh. shkoly. Metallurg- iya	Nauchnyye doklady vysshey shkoly. Metallurgiya	University Scientific Reports: Metallurgy
Nauch. dokl. vyssh. shkoly. Stroitel'- stvo	Nauchnyye doklady vysshey shkoly. Stroitel'stvo	University Scientific Reports: Construction

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Nauch. dokl. vyssh. shkoly. Khimiya i khim. tekhnologiya	Nauchnyye doklady vysshey shkoly: Khimiya i khimicheskaya tekhnologiya	University Scientific Reports: Chemistry and Chemical Engineering
Neft'	Neft'	Petroleum
Neft. kh-vo	Neftyanoye khozyaystvo	Oil Industry
Novaya tekhn. montazh. i spets. rabot v str-ve	Novaya tekhnika montazhnykh i spetsial'nykh rabot v stroitel'stve	New Techniques and Equipment for Assembly and Specialized Operations in Construction
Ogneupory	Ogneupory	Fireproof Materials
Optiko-mekhan. prom-st'	Optiko-mekhanicheskaya promyshlennost'	Optical Mechanics Industry
Organizatsiya upravleniya	Organizatsiya upravleniya	Control Organization
Plastmassy	Plasticheskiye massy	Plastics
Podshipnik	Podshipnik	Bearings
Predpriyatiye	Predpriyatiye	The Factory
Priborostroyeniye	Priborostroyeniye	Instrument Making
Priroda	Priroda	Nature
Proizv.-tekhn. inform. byull. Gl. upr. metiz. prom-sti	Proizvodstvenno-tekhnicheskiy informatsionnyy byulleten'. Glavnoye upravleniye metiznoy promyshlennosti	Production Engineering Information Bulletin of the Main Administration of the Metalware Industry

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Promysl. kooperatsiya	Promyslovaya kooperatsiya	Manufacturing Cooperatives
Prom. energetika	Promyshlennaya energetika	Industrial Power Engineering
Prom. str-vo	Promyshlennoye stroitel'stvo	Industrial Construction
Prom-st' organ. khimii	Promyshlennost' organicheskoy khimii	Organic Chemistry Industry
Rabochiy metallurg	Rabochiy metallurg	The Metal Worker
Redkiye metally	Redkiye metally	Rare Metals
Rechn. transport	Rechnoy transport	River Transport
Russko-germ. vestn. nauki i tekhniki	Russko-germanskii vestnik nauki i tekhniki	Russo-German Herald of Science and Technology
Rybnoye khoz-vo	Rybnoye khozyaystvo	Fisheries
Samolet	Samolet	Aircraft
Sakhar	Sakhar	Sugar
Sakharnaya prom-st'	Sakharnaya promyshlennost'	Sugar Industry
Svarochnoye proizvodstvo	Svarochnoye proizvodstvo	Welding
Sel'khozmashina	Sel'khozmashina	Farm Machinery
Signaliz. i svyaz' na zh.-d. transp.	Signalizatsiya i svyaz' na zheleznodorozhnom transporte	Signalling and Communication on Rail Transport
Sintetich. kauchuk	Sinteticheskiy kauchuk	Synthetic Rubber

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Sov. metallurgiya	Sovetskaya metallurgiya	Soviet Metallurgy
Sov. metropoliten	Sovetskiy metropoliten	Soviet Urban Subways and Elevateds
Sorena	Sorena	
Sostialistich. nauka i tekhnika	Sotsialisticheskaya nauka i tekhnika	Socialist Science and Technology
Sotsialistich. transport	Sotsialisticheskiy transport	Socialist Transport
Sotsialistich. rekonstruktsiya i nauka	Sotsialisticheskaya rekonstruktsiya i nauka	Socialist Remodelling and Science
Spirtovaya prom-st'	Spirtovaya promyshlennost'	Alcohol Industry
Stal'	Stal'	Steel
Standartizatsiya	Standartizatsiya	Standardization
Stanki i instrument	Stanki i instrument	Lathes and Tools
Stroit. prom-st'	Stroitel'naya promyshlennost'	Construction Industry
Stroit. materialy, izdeliya i konstruktsii	Stroitel'nyye materialy, izdeliya konstruktsii	Construction Materials, Items and Frames
Str-vo predpr. neft. prom-sti	Stroitel'stvo predpriyatiy neft-yanoy promyshlennosti	Construction of Oil Industries Enterprises
Str-vo truboprovodov	Stroitel'stvo truboprovodov	Pipe Line Construction
Sudostroyeniye	Sudostroyeniye	Ship Building
Tabak	Tabak	Tobacco

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Tankist	Tankist	Tankman
Tekstil'n. prom-st'	Tekstil'naya promyshlennost'	Textile Industry
Tekstil'n. vestn.	Tekstil'nyy vestnik	Textile Herald
Teoriya i praktika metallurgii	Teoriya i praktika metallurgii	Theory and Practice of Metallurgy
Teplo i sila	Teplo i sila	Heat and Power
Teplosilovoye kh-vo	Teplosilovoye khozyaystvo	Diesel and Thermal Power
Teploenergetika	Teploenergetika	Heat and Power Engineering
Tekhnika vozdushno-go flota	Tekhnika vozdushno-go flota	Air Force Materiel and Technology
Tekhn. zhel. dorog	Tekhnika zheleznnykh dorog	Railway Engineering
Tekhnika molodezhi	Tekhnika molodezhi	Youth Engineering
Tekhnika svyazi	Tekhnika svyazi	Communications Engineering
Tekhn. propaganda	Tekhnicheskaya propaganda	Technical Propaganda
Torf. prom-st'	Torfyanaya promyshlennost'	Peat Industry
Tochnaya industriya	Tochnaya industriya	Precision Industry
Transp. str-vo	Transportnoye stroitel'stvo	Transport Construction
Tyazheloye mashinostroyeniye	Tyazheloye mashinostroyeniye	Heavy Machine Construction
Ugol'	Ugol'	Coal

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Ukr. matem. zh.	Ukrainskiy matematicheskiy zhurnal	Ukrainian Mathematical Journal
Ukr. khim. zh.	Ukrainskiy khimicheskiy zhurnal	Ukrainian Chemical Journal
Ural. metallurgiya	Ural'skaya metallurgiya	Ural Metallurgy
Uspekhi khimii	Uspekhi khimii	Advances in Chemistry
Fiz. metallov i metallovedeniye	Fizika metallov i metallovedeniye	Physics of Metals and Metals Science
KHim. nauka i prom-st'	Khimicheskaya nauka i promyshlennost'	Chemistry and Industry
KHim. prom-st'	Khimicheskaya promyshlennost'	Chemical Industry
KHim. volokna	Khimicheskiye volokna	Chemical Fibers
KHim mashinostro-yeniye	Khimicheskoye mashinostroyeniye	Chemical Machine Construction
KHimiya v shkole	Khimiya v shkole	Chemistry in the School
KHimiya i tekhnol. topliva	Khimiya i tekhnologiya topliva	Chemistry and Fuel Engineering
KHimiya i tekhnol. topliv i masel	Khimiya i tekhnologiya topliv i masel	Chemistry and Fuels and Lubricants Engineering
KHimstroy	Khimstroy	Chemical Construction
KHlopch.-bum. prom-st'	Khlopchatobumazhnaya promyshlennost'	Cotton Industry
KHolodil'n. tekhnika	Kholodil'naya tekhnika	Refrigerator Equipment
TSvetnyye metally	Tsvetnyye metally	Non-Ferrous Metals

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
TSement	Tsement	Cement
Energomashinostro- yeniye	Energomashinostro- yeniye	Power Engineering Machine Construction
Elektr. stantsii	Elektricheskiye stantsii	Electric Power Stations
Elektrichestvo	Elektrichestvo	Electricity
Energetik	Energetik	Power Engineer
Energ. byull.	Energeticheskiy byulleten'	Power Engineering Bulletin
BSE	Bol'shaya sovetskaya entsiklopediya	Large Soviet Encyclopedia
Byull. gos. n.-i. khim. in-ta vysokikh davleniy	Byulleten' gosudar- stvennogo nauchno- issledovatel'skogo khimicheskogo instituta vysokikh davleniy	Bulletin of the State High Pressures Chemical Research Institute
VNITOM	Vsesoyuznoye nauchnoye inzhen- erno-tekhniches- koye obshchestvo metallurgov	All-Union Scientific Society of Metallurgical Engineers and Technicians
VINITI	Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii	All-Union Institute of Scientific and Technical Information
Zap. In-tu khemii	Zapiski Instituta khimii	Records of the Chemistry Institute
ITEIN AN SSSR	Institut tekhniko- ekonomicheskoy in- formatsii Akademii nauk SSSR	Institute of Technical and Economic Information of the USSR Academy of Sciences

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Mosk. in-t stali	Moskovskiy institut stali	Moscow Steel Institute
Mos. ped. in-t im. Lenina	Moskovskiy pedagogicheskiy institut im. V. I. Lenina	Moscow Teacher Training Institute imeni V. I. Lenin
Nauch-tekhn. sb. po gazovoy tekhnike	Nauchno-tekhnicheskiy sbornik po gazovoy tekhnike	Scientific-Technical Anthology on Gas Equipment
Nauch. zap. Kiivs'k un-tu	Nauchnyye zapiski Kiyevskogo universiteta	Scientific Notes of Kiev University
Nauch. zap. In-ta mashinovedeniya i avtomatiki AN Ukr. SSR	Nauchnyye zapiski Instituta mashinovedeniya i avtomatiki Akademii nauk Ukr. SSR	Scientific Notes of the Institute of Machine Science and Automation of the Ukrainian SSR Academy of Sciences
Nauch. zap. Ukr. poligr. in-ta	Nauchnyye zapiski Ukrainetskogo poligraficheskogo instituta	Scientific Notes of the Ukrainian Printing Institute
Nauch. zap. Khar'-kovsk. in-ta sov. torgolvi	Nauchnyye zapiski Khar'kovskogo instituta sovetskoy torgovli	Scientific Notes of the Kharkov Institute of Soviet Trade
Nauch. tr. Mosk. poligr. in-ta	Nauchnyye trudy Moskovskogo poligraficheskogo instituta	Scientific Proceedings of the Moscow Printing Institute
Nauch. tr. Novocherk. politekhn. in-ta	Nauchnyye trudy Novocherkasskogo politekhnicheskogo instituta	Scientific Proceedings of the Novocherkassk Polytechnical Institute
Nauch. tr. Khar'-kovsk. gorn. in-ta	Nauchnyye trudy Khar'kovskogo gornogo instituta	Scientific Proceedings of the Kharkov Mining Institute

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Sb. Kom-ta po korrozii i zashchite metallov Vsesoyuzn. soveta nauch.-tekhn. o-v	Sbornik Komiteta po korrozii i zashchite metallov Vsesoyuznogo soveta nauchno-tekhnicheskikh obshchestv	Anthology of Committee on Corrosion and Protection of Metals of the All-Union Council of Scientific-Technical Societies
Sb. Mosk. in-ta stali	Sbornik Moskovskogo instituta stali imeni I. V. Stalina	Anthology of the Moscow Steel Institute imeni V. I. Stalin
Sb. nauch. rabot komsomol'tsev AN SSSR	Sbornik nauchnykh rabot komsomol'tsev Akademii nauk SSSR	Anthology of Scientific Works of Komsomol Member of USSR Academy of Sciences
Sb. statey Gos. in-ta prikl. khimii	Sbornik statey k 20-letiyu Gosudarstvennogo instituta prikladnoy khimii	Anthology of Articles for the 20th Anniversary of the State Institute of Applied Chemistry
Soveshch. po vopr. korrozii i bor'by s ney	Soveshchaniye po voprosam korrozii i bor'by s ney	Conference on Questions of Corrosion and Means of Combatting It
Soobshch. Vsesoyuzn. in-ta metallov	Soobshcheniya Vsesoyuznogo instituta metallov	Communications of the All-Union Institute of Metals
Soobshch. Giprokoksa	Soobshcheniya Gosudarstvennogo instituta po proyektirovaniyu predpriyatiy koksokhimicheskoy promyshlennosti	Communications of the State Institute for the Planning of Industrial By-Product Coke Enterprises
Soobshch. Dal'nevost. fil. AN SSSR	Soobshcheniya Dal'nevostochnogo filiala Akademii nauk SSSR	Communications of the Far Eastern Branch of the USSR Academy of Sciences

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Soobshch. Leningr. in-ta metallov	Soobshcheniya Leningradskogo in- stituta metallov	Communications of the Leningrad Institute of Metals
Soobshch. Tsent. in-ta metallov	Soobshcheniya Tsentral'nogo instituta metallov	Communications of the Central Institute of Metals
Tekhnich. entsiklopediya	Tekhnicheskaya entsiklopediya	Technical Encyclopedia
Tr. AN Lit. SSR	Trudy Akademii nauk Litovskoy SSR	Proceedings of the Lithuanian SSR Academy of Sciences
Tr. Azerb. industr. in-ta	Trudy Azerbaydzhan- skogo industrial'nogo instituta	Proceedings of the Azerbaydzhan Industrial Institute
Tr. Voronezhsk. un-ta	Trudy Voronezhskogo universiteta	Proceedings of Voronezh University
Tr. Vsesoyuzn. alyumin.-magniyev- vogo in-ta	Trudy Vsesoyuznogo alyuminiyev- magniyevogo instituta	Proceedings of the All-Union Aluminum and Magnesium Institi
Tr. VIAM	Trudy Vsesoyuznogo instituta aviatsionnykh materialov	Proceedings of the All-Union Institut of Aviation Materials
Tr. Vsesoyuzn. in-ta sodovoy prom-sti	Trudy Vsesoyuznogo instituta sodovoy promyshlennosti	Proceedings of the All- Union Institute of the Soda Industry
Tr. Vsesoyuzn. n.-i. in-ta metrologii	Trudy Vsesoyuznogo nauchno-issledovatel'- skogo instituta metro- logii	Proceedings of the All-Union Scientific Research Institute of Weights and Measures

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Tr. Vsesoyuzn. n.- i. in-ta po pere- rabotke nefti i gaza i polucheniya iskusstv. zhidko- go topliva	Trudy Vsesoyuznogo nauchno-issledovat- el'nogo instituta po pererabotke nefti i gaza i polucheniya iskusstvennogo zhidko- go topliva	Proceedings of All-Union Scientific Research Institute for Refining and Processing of Oil and Gas and Extraction of Synthetic Liquid Fuels
Tr. Vsesoyuzn. n.- i. in-ta prirodnykh gazov	Trudy Vsesoyuznogo nauchno-issledovat- el'skogo instituta prirodnykh gazov	Proceedings of All-Union Scientific Research Institute of Natural Gases
Tr. Vsesoyuzn. soveshch. po radiats. khimii	Trudy Vsesoyuznogo soveshchaniya po radiatsionnoy khimii	Proceedings of the All- Union Conference on Radiational Chemistry
Tr. Gor'kovsk. politekhn. in-ta	Trudy Gor'kovskogo politekhnicheskogo instituta	Proceedings of the Gorky Polytechnical Institute
Tr. Gruz. politekhn. in-ta	Trudy Gruzinskogo politekhnicheskogo instituta	Proceedings of the Georg- ian Polytechnical Instit- ute
Tr. Dnepropetr. in-ta zh.-d. transp.	Trudy Dnepropet- rovskogo instituta zheleznodorozhnogo	Proceedings of the Dnepro- petrovsk Institute of Rail Transport Engineers
Tr. Dnepropetr. khim.-tekhrol. in- ta	Trudy Dnepropetrovskogo khimiko-tehnologichesk- kogo instituta	Proceedings of the Dnepropetrovsk Chemical Engineer- ing Institute
Tr. Ivanovsk. khim.-tekhrol. in- ta	Trudy Ivanovskogo khimiko-tehnologichesk- kogo instituta	Proceedings of the Ivanovo Chemical Engineering Institute
Tr. In-ta zh.- d. transporta	Trudy Instituta zheleznodorozhnogo transporta	Proceedings of the Institute of Rail Trans- port

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Tr. In-ta kristallogr. AN SSSR	Trudy Instituta kristallografi Akademii nauk SSSR	Proceedings of the Crystallography Institute of the USSR Academy of Sciences
Tr. In-ta metallov	Trudy Instituta metallov	Proceedings of the Institute of Metals
Tr. In-ta metallurgii AN SSSR im. Baykova	Trudy Instituta metallurgii Akademii nauk SSSR imeni Baykova	Proceedings of the imeni Baykov Metallurgical Institute of the USSR Academy of Sciences
Tr. In-ta nefti AN SSSR	Trudy Instituta nefti Akademii nauk SSSR	Proceedings of the Petroleum Institute of the USSR Academy of Sciences
Tr. In-ta prikl. Mineralogii	Trudy Instituta prikladnoy mineralogii	Proceedings of the Institute of Applied Mineralogy
Tr. In-ta torfa AN Bel. SSR	Trudy Instituta torfa Akademii nauk Bel. SSR	Proceedings of the Peat Institute of the Belorussian SSR Academy of Sciences
Tr. In-ta fiziki i matematiki AN Azerb. SSR, ser. fiz.	Trudy Instituta fiziki i matematiki Akad. nauk Azerb. SSR, Seriya fizicheskaya	Proceedings of the Institute of Physics and Mathematics of the Azerbaydzhan SSR Academy of Sciences, Physics Series
Tr. In-ta fiz. khimii AN SSSR	Trudy Instituta fizicheskoy khimii Akad. nauk SSSR	Proceedings of the Institute of Physical Chemistry of the USSR Academy of Sciences
Tr. Kazansk. aviats. in-ta	Trudy Kazanskogo aviatsionnogo instituta	Proceedings of the Kazan' Aviation Institute
Tr. Kazansk. khim.-tekhnol. in-ta	Trudy Kazanskogo khimiko-tekhnologicheskogo Instituta	Proceedings of the Kazan' Chemical Engineering Institute

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Tr. Kazakh. gorno-metallurg. in-ta	Trudy Kazakhstanskogo gorno-metallurgicheskogo instituta	Proceedings of the Kazakh Mining and Metallurgy Institute
Tr. Komissii po bor'be s korroziy metallov AN SSSR	Trudy Komissii po bor'be s korroziy metallov AN SSSR	Proceedings of the USSR Academy of Sciences Commission on Anti-Metal Corrosion Measures
Tr. konfer. po korrozii metallov AN SSSR	Trudy konferentsii po korrozii metallov AN SSSR	Proceedings of Conference of USSR Academy of Sciences on Corrosion of Metals
Tr. Leningr. in-ta aviats. priborostroyeniya	Trudy Leningradskogo instituta aviatsionnogo priborostroyeniya	Proceedings of Leningrad Aircraft Instrument Making Institute
Tr. Leningr. korablestr. in-ta	Trudy Leningradskogo korablestroitel'nogo instituta	Proceedings of the Leningrad Ship Building Institute
Tr. Leningr. tekhnol. in-ta im. Lensoveta	Trudy Leningradskogo tekhnologicheskogo instituta im. Lensoveta	Proceedings of the Leningrad Engineering Institute imeni Leningrad Soviet
Tr. Leningr. khim.-tekhnol. in-ta	Trudy Leningradskogo khimiko-tekhnologicheskogo instituta	Proceedings of the Leningrad Chemical Engineering Institute
Tr. Leningr. elektrotekhn. in-ta inzh. signalizatsii i svyazi	Trudy Leningradskogo elektrotekhnicheskogo instituta inzhenerov signalizatsii i svyazi	Proceedings of Leningrad Electrical Engineering Institute of Signalization and Communication Engineers
Tr. Mosk. aviats. in-ta	Trudy Moskovskogo aviatsionnogo instituta	Proceedings of the Moscow Aviation Institute

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Tr. Mosk. in-ta khim. mashinostroyeniya	Trudy Moskovskogo instituta khimicheskogo mashinostroyeniya	Proceedings of the Moscow Institute of Chemical Machine Construction
Tr. Mosk. khim.-tekhrol. in-ta im. D. I. Mendeleyeva	Trudy Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendelejev	Proceedings of the Moscow Chemical Engineering Institute imeni D. I. Mendelejev
Tr. N.-i. in-ta osnovnoy khimii	Trudy Nauchno-issledovatel'skogo instituta osnovnoy khimii	Proceedings of the Research Institute of Basic Chemistry
Tr. N.-i. in-ta sintetich. spritov i organicheskikh produktov	Trudy Nauchno-issledovatel'skogo instituta sinteticheskikh spritov i organicheskikh produktov	Proceedings of the Research Institute of Synthetic Alcohols and Organic Products
Tr. N.-i. i projekt. in-ta azotnoy prom-sti (GIAP)	Trudy Nauchno-issledovatel'skogo i proyektного instituta azotnoy promyshlennosti	Proceedings of the Design and Planning Research Institute of the Nitrogen Industry
Tr. Novosib. s.-x. in-ta	Trudy Novosibirskogo sel'skokhozyaystvennogo instituta	Proceedings of the Novosibirsk Agricultural Institute
Tr. Novocher. politehn. in-ta	Trudy Novocherkasskogo politekhnicheskogo instituta	Proceedings of the Novo-cherkassk Polytechnical Institute
Tr. Odessk. industr. in-ta	Trudy Odesskogo industrial'nogo instituta	Proceedings of the Odessa Industrial Institute
Tr. Sib. fiz.-tekh. in-ta	Trudy Sibirskogo fiziko-tekhnicheskogo instituta	Proceedings of the Siberian Physicotechnical Institute

<u>Abbreviation</u>	<u>Complete Title</u>	<u>English Translation</u>
Tr. Soveshch. po voprosam korrozii i bor'by s ney	Trudy Soveshchaniya po voprosam korrozii i bor'by s ney	Proceedings of Conference on Questions of Corrosion and How To Combat It
Tr. Ukr. n.-i. in-ta metallov	Trudy Ukrainskogo nauchno-issledovatel'skogo instituta metallov	Proceedings of the Ukrainian Research Institute of Metals
Tr. Ural. politekh. in-ta	Trudy Ural'skogo politekhnicheskogo instituta	Proceedings of the Ural Polytechnical Institute
Tr. Khar'kovsk. n. -i. uglekhim. in-ta	Trudy Khar'kovskogo nauchno-issledovatel'skogo uglekhimicheskogo instituta	Proceedings of the Khark Research Institute of Coal Chemistry
Tr. Khar'kovsk. politekh. in-ta	Trudy Khar'kovskogo politekhnicheskogo instituta	Proceedings of the Khark Polytechnical Institute
Tr. TsAGI	Trudy Tsentral'nogo aviatsionnogo gidrodinamicheskogo instituta im. N. Ye. Zhukovskogo	Proceedings of the Central Aviation Institute of Hydrodynamics imeni N. E. Zhukovskiy
Uch. zap. Belorussk. un-ta	Uchennyye zapiski Belorusskogo universiteta	Scientific Notes of the Belorussian University
Tr. Tsentr. n.-i. in-ta morskogo flota	Trudy Tsentral'nogo nauchno-issledovatel'skogo instituta morskogo flota	Proceedings of the Central Research Institute of the Maritime Fleet
Uch. zap. Kazansk. un-ta	Uchennyye zapiski Kazanskogo universiteta	Scientific Notes of the Kazan' University

<u>Abbreviations</u>	<u>Complete Title</u>	<u>English Translation</u>
Uch. zap. Leningr. un-ta	Uchenyye zapiski Leningradskogo universiteta	Scientific Notes of the Leningrad University
Uch. zap. L'vivs'k. u-tu	Uchenyye zapiski L'vovskogo universiteta	Scientific Notes of the L'vov University
Uch. zap. MGU	Uchenyye zapiski Moskovskogo gosudarstvennogo universiteta	Scientific Notes of the Moscow State University
Uch. zap. Rost. n/D. gos. un-ta	Uchenyye zapiski Rostov n/D gosudarstvennogo universiteta	Scientific Notes of the Rostov-on-the-Don State University
Uch. zap. Chelyab. pedagogich. in-ta	Uchenyye zapiski Chelyabinskogo pedagogicheskogo instituta	Scientific Notes of the Chelyabinsk Teacher Training Institute
TS NIITMASH	Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya	Central Research Institute of Machine Technology

LIST OF CONVENTIONAL ABBREVIATIONS

AN SSSR.....	Akademiya nauk SSSR...	Academy of Sciences of USSR
AN Azerb. SSR.....	Akademiya nauk Azer- baydzhanskoy SSR.....	Azerbaydzhan SSR Academy of Sciences
AN Gruz. SSR.....	Akademiya nauk Gruz- inskoy SSR.....	Georgian SSR Academy of Sciences
AN Kazakh. SSR.....	Akademiya nauk Kaz- akhs koy SSR.....	Kazakh SSR Academy of Sciences
AN Latv. SSR.....	Akademiya nauk Lat- viyskoy SSR.....	Latvian SSR Academy of Sciences
AN Lit. SSR.....	Akademiya nauk Lit- ovskoy SSR.....	Lithuanian SSR Academy of Sciences
AN Ukr. SSR.....	Akademiya nauk Ukrainskoy SSR.....	Ukrainian SSR Academy of Sciences
Bibliogr.	Bibliografiya.....	Bibliography
Byull.	Byulleten!.....	Bulletin
Vyp.	Vypusk.....	Issue
Vyssh.	Vysshaya.....	Advanced
Gos.	Gosudarstvennyy.....	State
Diss.	Dissertatsiya.....	Dissertation
Zh.	Zhurnal.....	Journal
Zavodsk.	Zavodskaya.....	Factory

Im.	Imeni.....	Named After
Inzh.	Inzhenernyy.....	Engineering
In-t.....	Institut.....	Institute
Zap.	Zapiski.....	Notes
Izv.	Izvestiya.....	News
Kand.	Kandidata.....	Candidate
Kn.	Kniga.....	Book
Mosk.	Moskovskiy.....	Moscow
Nazv.	Nazvaniy.....	Titles
N.-i.	Nauchno-issledovatel'skiy..	Research
O-vo.....	Obshchestvo.....	Society
Otd.	Otdeleniye.....	Section (Department)
N.	Nauk.....	Sciences
Probl.	Problemy.....	Problems
Red.	Redaktsiya.....	Editorial Board
Rets.	Retsenziya.....	Review
Sb.	Sbornik.....	Anthology
Sm.	Smotri.....	Confer
Soobshch.	Soobshcheniya.....	Communications
Tekhnol.	Tekhnologicheskij.....	Technological
Tr.	Trudy.....	Proceedings
Un-t.....	Universitet.....	University
Fiz.	Fizicheskiy.....	Physical

Khim.Khimicheskiy.....Chemical
Konfer.....Konferentsiya.....Conference
Prom-st'.....Promyshlennost'.....Industry
Soveshch.Soveshchaniye.....Conference

INTRODUCTION

The corrosion of construction materials or, in other words, their spontaneous destruction under the action of the surrounding environment is causing immense damage to our national economy.

Hundreds of millions of roubles are being spent on combatting corrosion; it is therefore understandable that the Soviet government should devote such attention to this question. Recent years have seen the issuance of a number of resolutions providing for effective measures at improving the combatting of corrosion of metals.

The present state of the science of corrosion and protection of metals in the USSR is extremely good, as is underscored in the foreign press in 1959 by such scientists as Brenner (USA), Cotton and Potter (England) and others. This fine showing is the result of persistent work of Russian and Soviet scientists over a period of more than 200 years.

The first detailed study of the dissolution of metals in acids (nitric and hydrochloric) was carried out by M. V. Lomonosov in 1744; using the microscope, he determined the amount of gas given off (Dissertatsiya o deystvii khimicheskikh rastvoriteley vobshche /Dissertation on the Action of Chemical Solvents in General/ published in the New Commentaries of the Academy of Sciences, 1747, Vol I, pages 245-266). Lomonosov showed that the mechanism of dissolution of metals is basically different from that of the dissolution of salts, in that in the dissolution of metals heat is given off whereas in the dissolution of salts heat is consumed. He also brought to light the cessation of the dissolution of iron wire in "strong spirit of saltpeter" (nitric acid), i. e. in other words he discovered the phenomenon of the passivity of metal.

A great contribution to the study of the phenomena of dissolution and passivity of metals was made by Academician V. V. Petrov (Izvestiya o gal'vani-vol'tovskikh opytakh /News of the Galvani-Volta Experiments/ St. Petersburg, 1803). He was the first to explain the process of passivation by the formation of a layer of oxide on the surface of the metal and proposed that the metal be etched on its surface with diluted sulphuric acid in order to activate it.

Academician A. I. Sherer expounded in great detail in 1808 the principles of the theory of corrosion, noting for the first time the role of temperature and contact of two metals (Rukovodstvo k prepodavaniiyu khimii /Guide for the Teaching of Chemistry/, Section 148, St. Petersburg, 1808). And Prof. F. I. Gize (Chemistry, Kharkov University) propounded the theory of the dissolution of metals by the action of microelectrochemical elements (Vseobshchaya khimiya dlya uchashchikh i uchashchikhsya /General Chemistry for Students and Teachers/, Sections 99-100, Kharkov, Vol I, 1813).

A number of significant practical works on the combatting of corrosion were executed at the beginning of the 19th century, when the problem arose of eliminating the destruction of the copper plating of ships' hulls. The iron nails fastening the copper plates were subject to intensive corrosion. As early as 1820, S. P. Vlasov succeeded in perfecting a method for obtaining on the surface of the iron nails of a protective oxide film. The use of nails so treated considerably decreased the rate of corrosion of the copper plating (cf. V. Lyubarskiy's article in Sorevnovatel' prosveshcheniya /The Educationalist/, 1821, Part 16, pages 236-237).

Of great practical importance were the works of Academician B. S. Yakobi at electrochemical protection of steel in seawater; these projects were executed at the commission of the Maritime Scientific Committee in the period from 1854 to 1858. The researches resulted in the use of a zinc protector to shield the steel hulls of mines from corrosion.

Interesting researches on acid corrosion of metals were performed in 1881 by N. Kayander (Zhurnal russkogo fiziko-khimicheskogo obshchestva, chast' khimicheskaya /Journal of the Russian Physicochemical Society, Chemical Part/, 1881, Vol 13, pages 231, 246, 257), who drew attention to the fact that the speed of corrosion was a function of the electrical conductivity of the solution. N. P. Sluginov was the first to undertake a quantitative calculation of the activity of the microgalvanic elements (Teoriya elektroliza /Theory of Electrolysis/, St. Petersburg, 1881).

Systematic researches on the processes of passivization of metals were begun in 1907 and pursued in the sequel by V. A. Kistyakovskiy (Journal of the Russian Physicochemical Society, Chemical Part, 1907, Vol 39, Section 1, Issue 8, 1445-1446, 1453-1454; 1454-1455; 1908, Vol 40, Section 1, Issue 8, 1782-1784; 1909, Vol 41, Section 1, Issue 4, 527; Elektrokhimiya /Electro-

chemistry, St. Petersburg, Part I, 1912; Part II, Issue I, 1919; Part II, Issue 2, 1916). He discovered electrochemical phenomena and propounded the film theory of passivity.

Comparative atmospheric tests on iron roofing of various types were carried out at the beginning of the 20th century by A. I. Omufrovich (Zhurnal Russkogo metallurgicheskogo obshchestva /Journal of the Russian Metallurgical Society/, 1910, No 5, 203), while Ye. Kuklin made a study of the processes of etching of steel (Journal of the Russian Metallurgical Society, 1910, No 5, page 238).

A number of interesting researches on the theory of corrosion were carried out in the prerevolutionary years by Corresponding Member of the USSR Academy of Sciences N. A. Izzaryshev (Issledovaniya v oblasti elektrodnykh protsessov /Researches in the Field of Electrode Processes/, Moscow, 1914; Elektrokhimicheskaya teoriya razrusheniya metallov /Electrochemical Theory of Corrosion of Metals/, Moscow, 1916).

Especially fruitful and numerous researches on corrosion and protection of metals have been carried out since the Great October Revolution. In the period from 1925 to 1940 there developed three main trends in the treatment of processes of metal corrosion. The first, which we have chosen to call the colloid-electrochemical, is represented by the works of Academician V. A. Kistyakovskiy (1865-1952) and his colleagues. On the basis of a study of the electrochemical behavior of metallic electrodes, he formulated a theory of corrosion of metals which included the notions of the thin oxide film on the surface of the metal, as a highly dispersed, colloidal, amorphous system, and of the existence of intermediary states of the metal surface distinct from both the active and the passive ones. The transition of the metal from a passive state into an active one begins with the formation of corrosion in the film, its crystallization caused by the action of molecular forces. Corrosion, according to Kistyakovskiy, occurs as a result of local galvanic currents between the component parts of the amorphous film and other impurities on the surface of the metal and the metal itself. Oxygen and carbonic acid serve as depolarizers for the local currents.

The development and substantiation of the heterogeneous-electrochemical trend in the science of corrosion of metals and research on structural corrosion have been carried out by G. V. Akimov (1901-1953) and his pupils. According to Akimov, a corroding metal represents a complex system of many electrodes.

The theory of multielectrode electrochemical systems developed by Akimov and N. D. Tomashov formed the basis for a successful explanation of the cause of intercrystal corrosion, the mechanism of the appearance of nonreversible potentials, the phenomena of the differential and the shielding effects, as well as several other instances of corrosion of metallic installations which were of practical importance. The school of corrosion experts founded by Akimov is the biggest in the USSR and it has received world-wide recognition. Individual chapters of his book Teoriya i metody issledovaniya korrozii metallov (Theory and Methods of Research on Corrosion of Metals), published in Russian by the USSR Academy of Sciences in 1945 were brought out in English translation in 1955 in the journal Corrosion, organ of the National Association of Corrosion Engineers of the USA.

The trend developed by Academician A. N. Frumkin, Ya. M. Kolotyrkin, A. I. Shultin, Ya. V. Durdin and their colleagues in a number of works is called the homogeneous-electrochemical trend, because it is based on the assertion of the possibility of the occurrence of processes of electrochemical corrosion without any spatial differentiation of the surface of the metal into anode and cathode sectors. At the same time, in the event of a lesion of the homogeneous nature of the surface causing, as a rule, an acceleration of the corrosion process, it is assumed that at the cathode connection the cathode reaction predominates while the conjugate anode reaction is slower; and, conversely, at the anode connection the process of anode oxidation is more intensive and simultaneously the conjugate cathode process of regeneration. If the area of connections is small, the entire surface of the metal can be considered to be equipotential, as has been shown by special calculations of V. G. Levich and A. I. Frumkin (Zh. fiz. khimii, 1941, Vol 15, No 6, page 789). In this case the speed of corrosion can be calculated, the influence of external conditions analyzed and the effectiveness of corrosion inhibitors determined, using the kinetic laws of electrode processes.

A substantial contribution to the development of the science of corrosion and protection of metals has been made by the associates of the USSR Academy of Sciences.

In the post-war years, N. D. Tomashov has discovered the phenomena of the reduction of the speed of corrosion of metals in process of passivation upon the insertion of cathode boosters. I. L. Rozenfel'd has studied the mechanism of the action of corrosion inhibitors and the electrochemical processes in the thin films of electrolytes; A. I. Golubev has studied the real micro-

elements and estimated the action of corrosive galvanic elements; P. D. Dankov, N. A. Shishakov, D. V. Ignatov and V. V. Andreyeva have carried out crystallochemical researches of the processes of metal oxidation; A. T. Vagramyan and K. M. Gorbunov have studied the laws governing electrocrystallization of metals and alloys; N. S. Gorbunov has researched the processes of formation of thermodiffusing coatings and I. V. Krotov has researched the processes of formation of phosphate coatings.

A number of interesting researches on corrosion and protection of metals have been carried out in the industrial research institutes and in the universities. Mention must here be made in the first place of the work done by S. A. Balezin, S. D. Beskov, I. N. Putilova and V. P. Barannik on corrosion inhibitors; by S. G. Vedenkin on corrosion and protection of metals on rail transport; by L. I. Antropov on corrosion inhibitors and the role of the zero point of metals; by A. V. Ryabchenkov on corrosion of metals under conditions of stress; V. P. Batrakov on corrosion in strongly oxidizing environments and media; by A. I. Krasil'shchikov on the mechanism of oxygen depolarization; by I. Ya. Klinov on non-metallic chemical materials and by N. T. Kudryavtsev and V. I. Layner on galvanostegia.

In recent years large-scale work on corrosion and protection -- works which are important practically -- have been carried out in the Union Republics. In Latvia, Active Member of the Latvian SSR Academy of Sciences L. K. Lepin' and her associates are researching colloidal-chemical phenomena of dissolution of metals; in Lithuania, Active Member of the Lithuanian SSR Academy of Sciences Yu. Yu. Matulis is heading researches on the electrocrystallization of metals; in the Ukraine, projects are in progress under the direction of Corresponding Member of the Ukrainian SSR Academy of Sciences I. N. Frantsevich on cathode protection of underground pipe-lines and at finding protective alloys; Corresponding Member of the Azerbaydzhan SSR Academy of Sciences V. F. Negreyev is directing projects at protection of maritime underwater petroleum bases and high-level viaducts; in Georgia, Active Member of the Georgian SSR Academy of Sciences R. I. Agladze is doing work on electrocrystallization and corrosion of manganese.

Great attention is devoted in the USSR to the publication of reference works. Mention must here be made of such basic reference works as V. P. Batrakov's Korroziya konstruktсионnykh materialov v agressivnykh sredakh (Corrosion of Construction Materials in Aggressive Media); the N.I. Ryabtsev-edited Zashchita podzemnykh metallicheskih sooruzheniy ot korrozii (Protection of

Underground Structures from Corrosion); and also a number of reference works published by the Montazhkhimzashchita (Prevention of Metal Corrosion in Building Materials) Trust.

The brief survey of the history and present state of the science of corrosion and protection of metals makes clear the necessity of keeping the personnel of the research institutes and of industry well-informed on all published works in this field. Yet hitherto this so necessary bibliography of our own national literature on corrosion and protection has not been compiled. It is worthy of note that the foreign press has more than once published bibliographies of works on corrosion. In the USA, for example, a bibliography on questions of corrosion is regularly published by the National Association of Anti-Corrosion Engineers. In England the Metals Institute publishes a bibliography of works on corrosion.

In view of the fact that no special journal on corrosion and protection of metals is published in the USSR (whereas such journals are published in USA, England, France, West Germany and Czechoslovakia), the compilation of a bibliography of articles published in more than 200 journals and magazines presented certain difficulties.

The publication of this bibliography of our national scientific-technical works on corrosion and protection of materials will contribute to the incorporation of these published works into the practice of the USSR national economy.

V. V. Krasnoyarskiy

PART I, SECTION 4N

ROLE OF PROTECTIVE FILMS

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PART I, SECTION 7

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PART II, SECTION 2

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PART II, SECTION 7

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PROTECTION OF UNDERGROUND INSTALLATIONS FROM
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PART III, SECTION 5

CORROSION AND PROTECTION IN
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CORROSION OF NON-METALLIC MATERIALS

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