BRUHER-CHLOVSKY, A.

"The Situation Of People's Nutrition is The Best Evidence Of A Nations Cultural Level." p. 78. (Vyziva Lidu. Vol. 7, No. 5, May 1953, Praha.)

SO: Monthly List of East European Accessions, Vol. 2, No. 9, Library of Congress, September 1953, Uncl.

IVANCHENKO, F.K., kand. tekhn. nauk; MIRONOV, A.F., inzh.; BRIN', A.I., inzh.; KORDABNEV, I.L., inzh.

Studying stripper mechanisms and ore transporter cranes.
Stal' 24 no.5:476-479 My '64. (MIRA 17:12)

BRIN, B.M.; KHUBETSOVA, R.D.; STRESHNEVA, N.V.

Mechanism of convulsions induced by pyramidon. Biul.eksp.biol. i med. 48 no.9:98-100 S '59. (MIRA 13:1)

1. Iz kafedry patofiziologii (zaveduyushchiy - prof. B.M. Brin) Severo-Osetinskogo meditsinskogo instituta, Ordzhonikidze. Predstavlena deystvitel'nym chlenom AMN SSSR V.N. Chernigovskim.
(AMINOPYRINE pharmacol.)

STULIY, L.A.; SAFRONOVA, O.N.; BUTS'KA, L.K., kand. med. nauk; KRIVOBOKOV, S.A. [Kryvobokov]; VOLOSHINOV, B.M. [Voloshynov, B.M.], dotsent BICHKOVSKIY, V.N. [Byshkovs'kyi, V.N.] dotsent; POKOTILOVA, V.Yu. [Pokotylova, V. IU]; KOLESNIKOV, G.F. [Kolesnykov, H.F.]; ZLATKIS, L.S.; SAVOST'YANOVA, S.I.; BRIN, D.D. [Bryn, D.D.]; MATVEYENKO, Ye.A. [Matviienko, IE.A.]; BRONZ, L.M.; YEPSHTEYN, L.G. [Epshtein, L.H.], kand. med. nauk; SHAKHNOVICH, L.A. [Shakhnovych, L.A.]

Annotations and authors' abstracts. Pediat. akush. ginek. no.3: 31-34 '63 (MIRA 17:1)

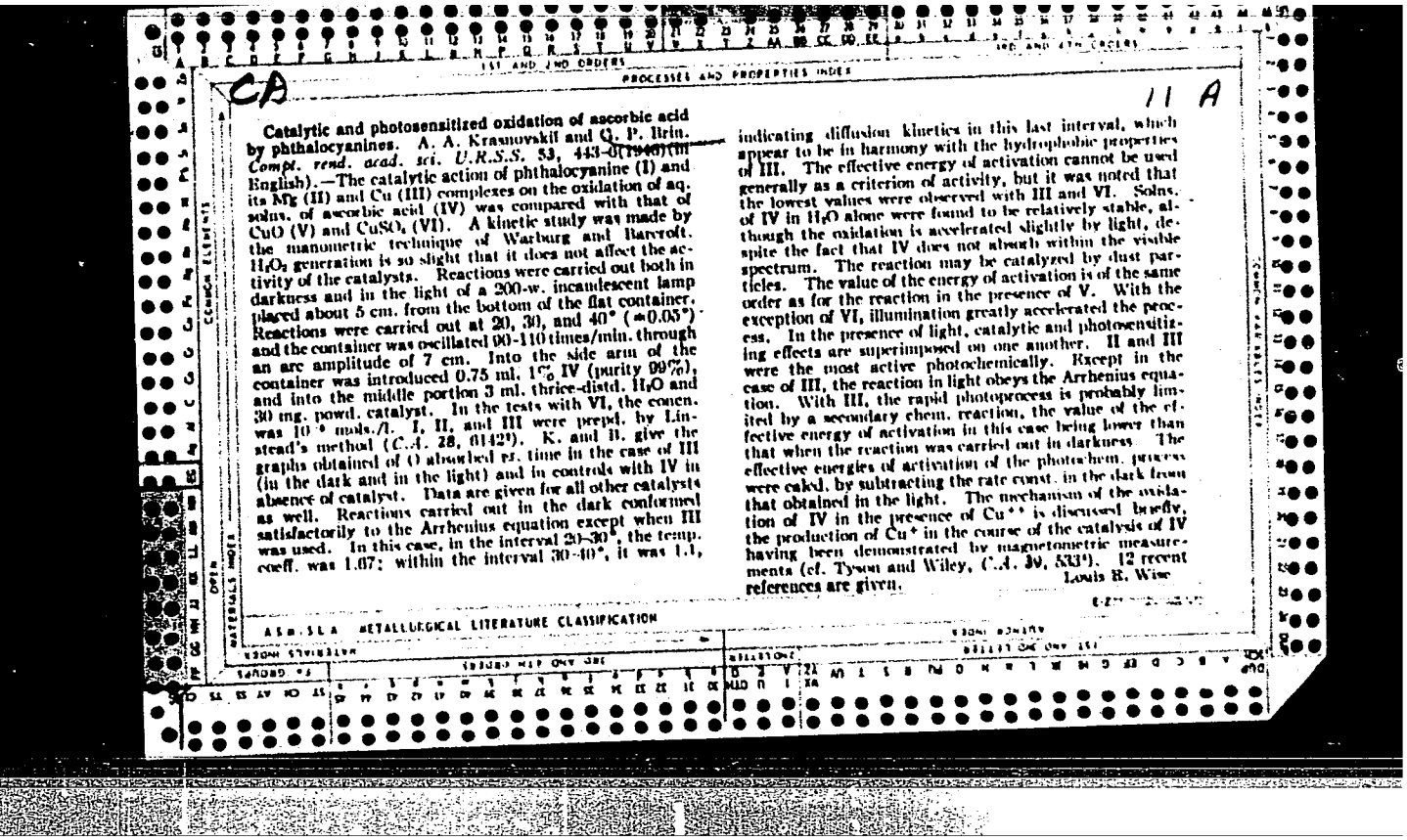
1. Khar'kovskiy nauchno-issledovatel'skiy institut okhrany materinstva i detstva (for Stuliy). 2. Kafedra detskikh bolezney Odesskogo meditsinskogo instituta (for Safronova). 3. Ukrainskiy institut okhrany materinstva i detstva (for Buts'ka). 4. Detskiy sanatoriy dlya rekonvalestsentov ot tuberkuleznogo meningita, Kiyev, Pushcha-Voditsa (for Krivobokov). 5. Detskaya klinika Ivano-Frankovskogo meditsinskogo instituta (for Voloshinov). 6. Kafedra detskikh infektsionnykh bolezney Krymskogo meditsinskogo instituta (for Bichkovskiy, Pokotilova). 7. Institut infektsionnykh bolezney Kiyev (for Kolesnikov). 8. Khar'kovskiy oblastnoy detskiy dom No.1 (for Zlatkis, Savost'yanova, Brin, Matveyenko). 9. Kafedra pediatrii Kiyevskogo med. instituta (for Bronz) 10. Kafedra fakul'tetskoy pediatrii Gor'kovskogo med. instituta (for Yepshteyn). 11. 2-ya detskaya bol'nitsa Shevchenkovskogo rayona g. Kiyeva (for Shakhnovich).

BRIN, G. I.

21571 KRASNOVSKIY, A. A.; i BRIN, G. I.

Perenos vodoroda ot askorbinovoy kisloty k kodegidraze 1 pod deystviyem sveta, pogloshennogo khlorofillom,
Doklady Akad. nauk SSSR, Novaya Seriya, t. LXVII, No. 2, 1949, s. 325 - 28.
Bibliogr: 6, NAZV.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.



CA

11 A

Catalytic and photosensitized oxidation of ascorbic acid by phthalocyanines. A. A. Krasnovskii and G. P. Brin. *Compt. rend. acad. sci. U.R.S.S.* 53, 443–8(1946)(in English).—The catalytic action of phthalocyanine (I) and its Mg (II) and Cu (III) complexes on the oxidation of aq. solns. of ascorbic acid (IV) was compared with that of CuO (V) and $CuSO_4$ (VI). A kinetic study was made by the manometric technique of Warburg and Barcroft. H_2O_2 generation is so slight that it does not affect the activity of the catalysts. Reactions were carried out both in darkness and in the light of a 200-w. incandescent lamp placed about 5 cm. from the bottom of the flat container. Reactions were carried out at 20, 30, and 40° (±0.05°) and the container was oscillated 90–110 times/min. through an arc amplitude of 7 cm. Into the side arm of the container was introduced 0.75 ml. 1% IV (purity 99%), and into the middle portion 3 ml. thrice-distd. H_2O and 30 mg. powd. catalyst. In the tests with VI, the concn. was 10^{-3} mols./l. I, II, and III were prepd. by Linstead's method (*C.A.* 28, 6142⁹). K. and B. give the graphs obtained of (1) absorbed ox. time in the case of III (in the dark and in the light) and in controls with IV in absence of catalyst. Data are given for all other catalysts as well. Reactions carried out in the dark conformed satisfactorily to the Arrhenius equation except when III was used. In this case, in the interval 20–30°, the temp. coeff. was 1.07; within the interval 30–40°, it was 1.1, indicating diffusion kinetics in this last interval, which appear to be in harmony with the hydrophobic properties of III. The effective energy of activation cannot be used generally as a criterion of activity, but it was noted that the lowest values were observed with III and VI. Solns. of IV in H_2O alone were found to be relatively stable, although the oxidation is accelerated slightly by light, despite the fact that IV does not absorb within the visible spectrum. The reaction may be catalyzed by dust particles. The value of the energy of activation is of the same order as for the reaction in the presence of V. With the exception of VI, illumination greatly accelerated the process. In the presence of light, catalytic and photosensitizing effects are superimposed on one another. II and III were the most active photochemically. Except in the case of III, the reaction in light obeys the Arrhenius equation. With III, the rapid photoprocess is probably limited by a secondary chem. reaction, the value of the effective energy of activation in this case being lower than that when the reaction was carried out in darkness. The effective energies of activation of the photochem. process were calcd. by subtracting the rate const. in the dark from that obtained in the light. The mechanism of the oxidation of IV in the presence of Cu^{++} is discussed briefly, the production of Cu^{+} in the course of the catalysis of IV having been demonstrated by magnetometric measurements (cf. Tyson and Wiley, *C.A.* 30, 533⁴). 12 recent references are given.

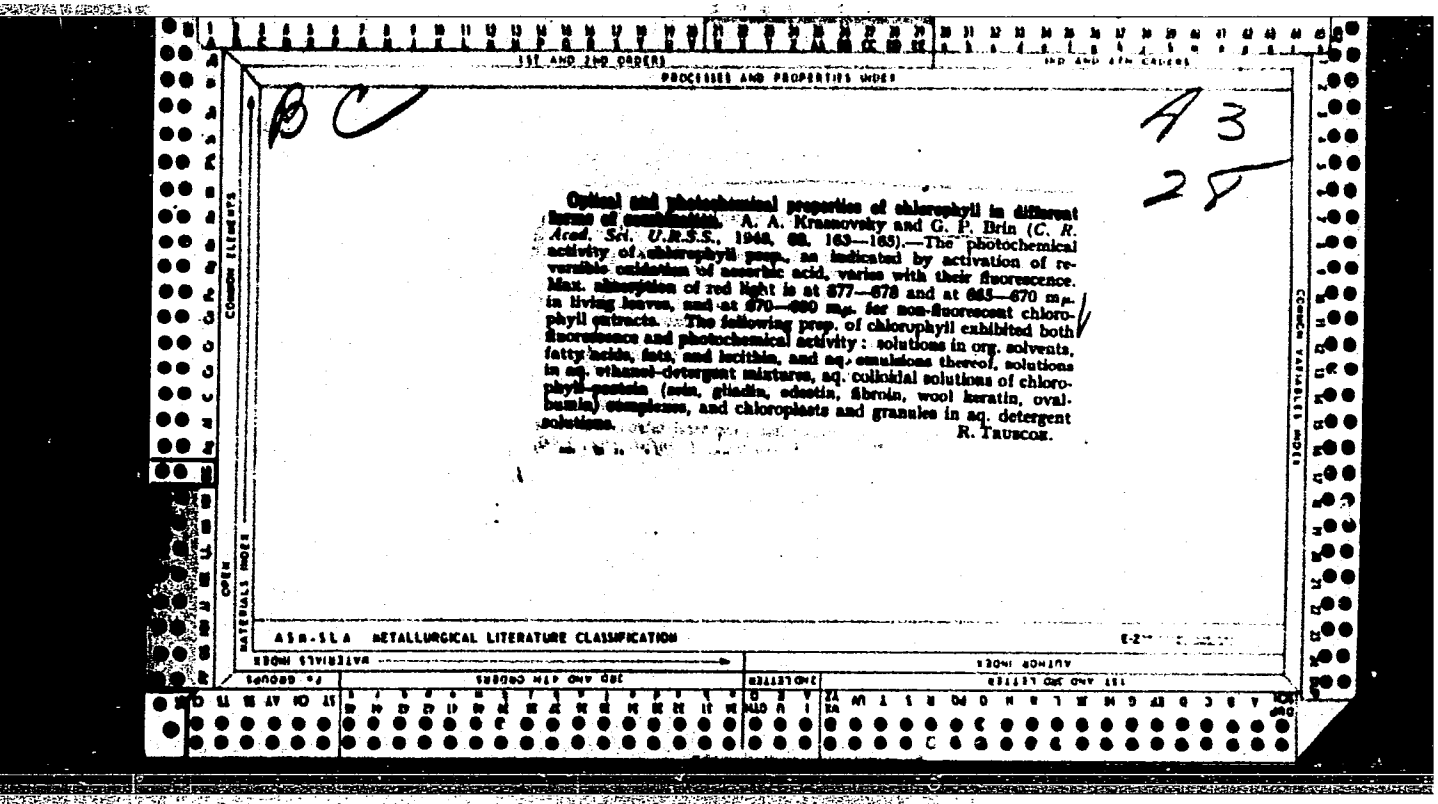
Louis B. Wise

CA

110

Photosensitizing action of magnesium phthalocyanine and chlorophyll in solution. A. A. Krasnovskiĭ and G. P. Brin (A. N. Bakh Biochem. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 58, 1087-90(1947); cf. *C.A.* 43, 44a.—Oxidation of oleic acid and oxidation of ascorbic acid were examd. as to sensitization by Mg phthalocyanine or chlorophyll. In both cases the results were pos. (given graphically). The mechanism appears to be that of reorientation of the electron spin in the sensitizers, putting them into excited state; the products combine with O and O is then transferred to the O-acceptors. In the case of oleic acid the process appears to continue as a chain reaction. No temp. dependence was found, indicating that the photochem. stage is the rate-detg. step. Chlorophyll, having labile H, in contrast to the phthalocyanine deriv., possesses stronger sensitizing activity. The photooxidation of the sensitizer decreases in the presence of the O-acceptors used; with phthalocyanine there is more destruction of the pigment during the reaction when oleic acid is present than is observed in its absence.

G. M. Kosolapoff



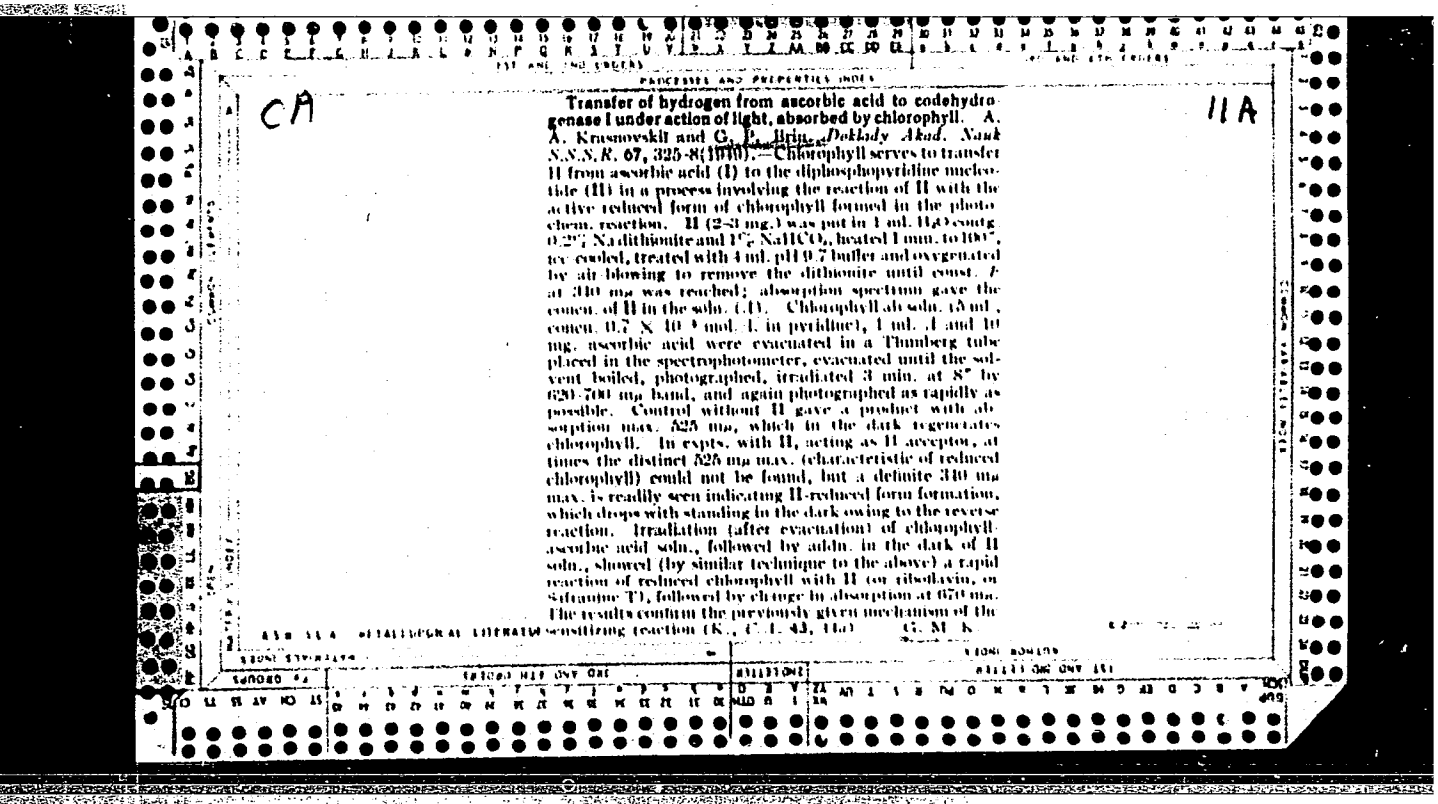
B C

A 3

25

Optical and photochemical properties of chlorophyll in different forms of combination. A. A. Krasnovsky and G. P. Brin (*C. R. Acad. Sci. U.R.S.S.*, 1948, **60**, 163—165).—The photochemical activity of chlorophyll preps., as indicated by activation of reversible oxidation of ascorbic acid, varies with their fluorescence. Max. absorption of red light is at 677—678 and at 665—670 mμ. in living leaves, and at 670—680 mμ. for non-fluorescent chlorophyll extracts. The following prep. of chlorophyll exhibited both fluorescence and photochemical activity: solutions in org. solvents, fatty acids, fats, and lecithin, and aq. emulsions thereof, solutions in aq. ethanol-detergent mixtures, aq. colloidal solutions of chlorophyll-protein (zein, gliadin, edestin, fibroin, wool keratin, ovalbumin) complexes, and chloroplasts and granules in aq. detergent solutions.

R. Truscor.



CA

11A

Transfer of hydrogen from ascorbic acid to codehydrogenase I under action of light, absorbed by chlorophyll. A. A. Krasnovskii and G. P. Brin. *Doklady Akad. Nauk S.S.S.R.* 67, 325-8(1949).—Chlorophyll serves to transfer H from ascorbic acid (I) to the diphosphopyridine nucleotide (II) in a process involving the reaction of II with the active reduced form of chlorophyll formed in the photochem. reaction. II (2-3 mg.) was put in 1 ml. H$_2$O containg 0.2% Na dithionite and 1% NaHCO$_3$, heated 1 min. to 100°, ice cooled, treated with 4 ml. pH 9.7 buffer and oxygenated by air blowing to remove the dithionite until const. I_t at 340 mμ was reached; absorption spectrum gave the concn. of II in the soln. (A). Chlorophyll alc. soln. (5 ml., concn. 0.7 × 10^{-5} mol. l. in pyridine), 1 ml. A and 10 mg. ascorbic acid were evacuated in a Thunberg tube placed in the spectrophotometer, evacuated until the solvent boiled, photographed, irradiated 3 min. at 8° by 630-700 mμ band, and again photographed as rapidly as possible. Control without II gave a product with absorption max. 525 mμ, which in the dark regenerates chlorophyll. In expts. with II, acting as H acceptor, at times the distinct 525 mμ max. (characteristic of reduced chlorophyll) could not be found, but a definite 340 mμ max. is readily seen indicating II-reduced form formation, which drops with standing in the dark owing to the reverse reaction. Irradiation (after evacuation) of chlorophyll-ascorbic acid soln., followed by addn. in the dark of II soln., showed (by similar technique to the above) a rapid reaction of reduced chlorophyll with II (or riboflavin, or Safranine T), followed by change in absorption at 670 mμ. The results confirm the previously given mechanism of the sensitizing reaction (K., C. A. 43, 11c). G. M. K.

BA

Enzymes

Transfer of hydrogen from ascorbic acid to codehydrogenase I by action of chlorophyll modified by illumination. A. A. Krasnovsky and G. P. Brin (*C.R. Acad. Sci. U.R.S.S.*, 1949, **67**, 435—438).—Illumination of chlorophyll in pyridine in presence of ascorbic acid leads to production of reduced chlorophyll, which reacts in the dark with a number of H acceptors, such as codehydrogenase I, Safranine-T, riboflavin, and O_2. Reduced codehydrogenase I is able to donate its H to dehydroascorbic acid in absence of light.
R. Truscon.

CA

11D

Conditions for reversible transformations of chlorophyll under the influence of light. A. A. Krasnovskii, G. P. Brin, and K. K. Vulnovskaya (A.N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 69, 381-6(1949).—The reverse reaction of chlorophyll in the dark was observed only in org. solvents or in the presence of some bases, such as pyridine, histidine, or imidazole. Examn. of absorption spectra of such solns. reveals a shift of 662 mμ band in Et_2O to 660 in pyridine, while the 448 band shifts to 442 mμ, with the displacement of the entire spectrum. Photoreduction of chlorophyll ab was observed only with ascorbic, dihydroxymaleic acids, cysteine, $PhNHNH_2$, and H_2S, all giving reduced chlorophyll with an abs. max. of 625 mμ, which oxidizes in the dark to chlorophyll. In chlorophyll a the reversibility of photoreaction is high and the spectrum of regenerated product is that of the original, although in the presence of much ascorbic acid considerable amts. of irreversibly formed products are formed. In chlorophyll b the reversibility of photoreaction is low, the product has an abs. max. 416 mμ (in pyridine), and removal of pyridine from the product by H_2O washing and extn. with petr. ether gave the product with abs. max. at 643 and 432 mμ, which may be a product of irreversible reduction of the CHO group of chlorophyll b. G. M. Kosolapoff

C A

11 D

Reactions of the reduced form of chlorophyll. A. A Krasnovskii and G. P. Ilyin (A. N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* **73**, 1239–42(1950).—Chlorophylls a and b, reduced by ascorbic acid in pyridine with irradiation (red filter) at 16° until a pink color formed, was treated with various reagents and the soln. directly examd. spectrophotometrically (extinction at 670 mμ). The dark reaction of ascorbic acid itself (in pyridine) was similarly measured with phenolindophenol (oxidation-reduction potential 0.21 v. at pH 7), thionine (0.062 v.), and methylene blue (0.011 v.), all of which became decolorized (rate curves are given). Nile blue (−0.12 v.), riboflavin (−0.22 v.), safranine T (−0.20 v.), and neutral red (−0.32 v.) were unaffected. Reactions with the reduced chlorophyll system with reagents having pos. oxidation-reduction potentials showed regular oxidation of the former (curves given) by the above dyes, quinone, hematin, dehydroascorbic acid, Fe^{+++}, NO_2^-, NO_3^-, and O_2. The reaction with dehydroascorbic acid is much slower than that with the dyes and the results above may be explained either by direct action of the dyes on reduced chlorophyll or by their intermediate action on dehydroascorbic acid, forming a reactive monodehydroascorbic acid, which then reacts with reduced chlorophyll. Reduced chlorophyll similarly reacts rapidly with the above dyes with neg. oxidation-reduction potentials that do not react with ascorbic acid in the dark; diphosphopyridine nucleotide also reacts, but xanthine does not. Hence the potential of the chlorophyll system is about −0.35 v. Malic acid also reacts, $(CO_2H)_2$ retards reoxidation, while pyruvic, citric, succinic, fumaric, lactic, and acetic acids have no action. The temp. coeff. of reoxidation of reduced chlorophyll is small and indicates an activation energy of about 1.5–3.0 kcal. G. M. Kosolapoff

BRIN, G.P.; KRASNOVSKIY, A.A.

Effect of compounds with various oxidation-reduction potentials on photosynthesis and respiration of Elodea. Biokhimiya '51, 16, 453-460.(MLRA 4:10) (BA -AIII My '53:728)

KRASNOVSKIY, A. A.; YEVSTIGNEYEV, V. B.; BRIN, G. P.; GAVRILOVA, V. A.

Algae: Proteins

Isolation of phycoerythrin from red algae; its spectral and photochemical properties. Dokl. AN SSSR 82 no. 6, 1952. Institut Biokhimii im. A. N. Bakha Akademii Nauk SSSR rcd 26 Nov 1951.

SO: Monthly List of Russian Accessions, Library of Congress, July 1953, Uncl.

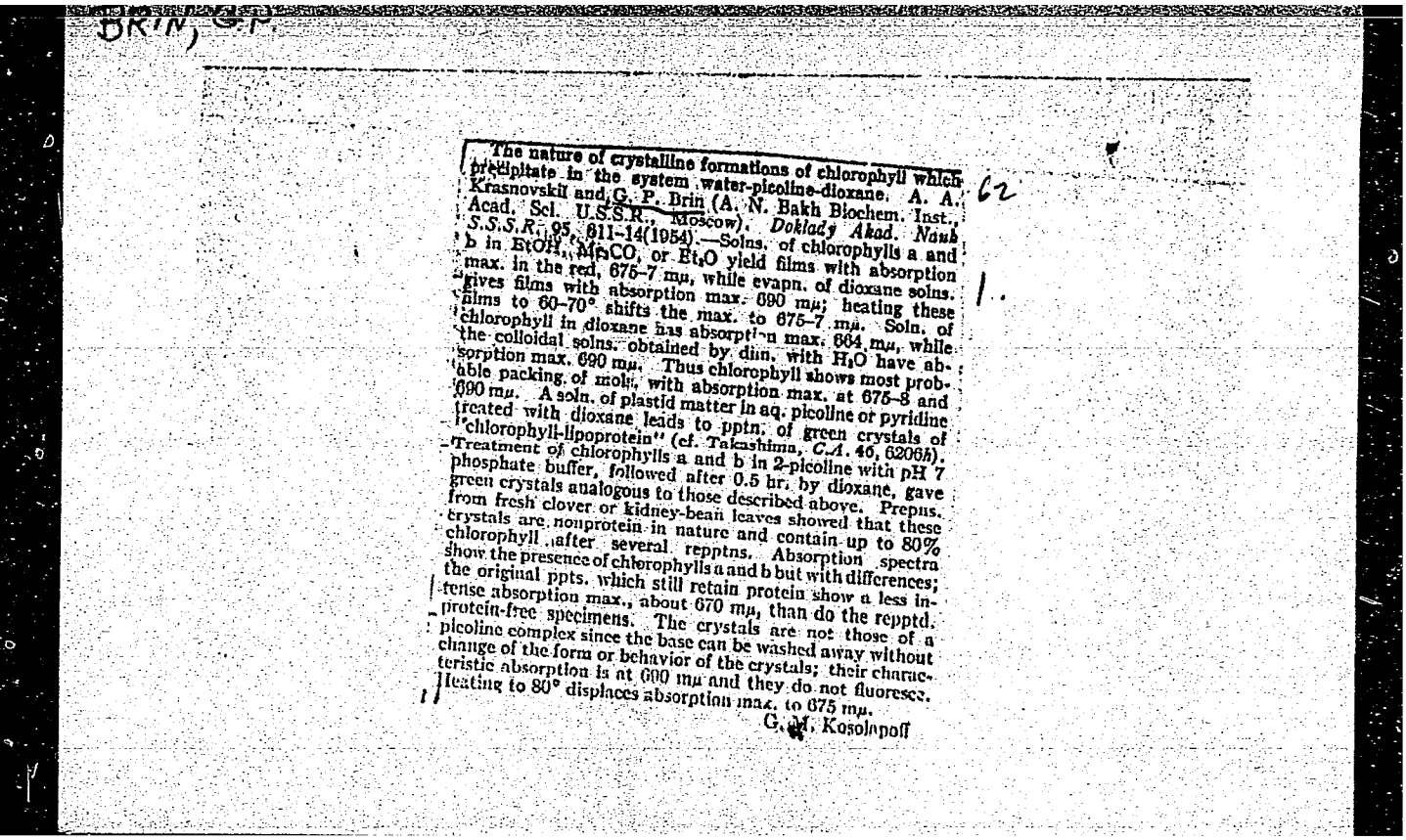
SISAKYAN, N.M.; KRASNOVSKIY, A.A.; MIKHAYLOVA, Ye.S.; BRIN, G.P.

Interrelation of photochemical capacity and enzymatic processes. Biokhimiia 18 no.6:725-731 N-D '53. (MIRA 6:12)

1. Institut biokhimii im.A.N.Bakha Akademii nauk SSSR, Moscow.
(Photosynthesis) (Enzymes)

KRASNOVSKIY, A.A.; BRIN, G.P.

The nature of the activating action of bases on the reaction of reversible photochemical reduction of chlorophyll and pheophytin. Doklady Akad. Nauk S.S.S.R. 89, 527-30 '53. (MLRA 6:3)
(CA 47 no.16:8195 '53)



BRIN, G. P.

62

1.

The nature of crystalline formations of chlorophyll which precipitate in the system water-picoline-dioxane. A. A. Krasnovskii and G. P. Brin (A. N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 95, 811–14(1954).—Solns. of chlorophylls a and b in EtOH, $MeCO$, or Et_2O yield films with absorption max. in the red, 675–7 mμ, while evapn. of dioxane solns. gives films with absorption max. 690 mμ; heating these films to 60–70° shifts the max. to 675–7 mμ. Soln. of chlorophyll in dioxane has absorption max. 664 mμ, while the colloidal solns. obtained by dilu. with H_2O have absorption max. 690 mμ. Thus chlorophyll shows most probable packing of mols. with absorption max. at 675–8 and 690 mμ. A soln. of plastid matter in aq. picoline or pyridine treated with dioxane leads to pptn. of green crystals of "chlorophyll-lipoprotein" (cf. Takashima, *C.A.* 46, 6206h). Treatment of chlorophylls a and b in 2-picoline with pH 7 phosphate buffer, followed after 0.5 hr. by dioxane, gave green crystals analogous to those described above. Prepns. from fresh clover or kidney-bean leaves showed that these crystals are nonprotein in nature and contain up to 80% chlorophyll after several repptns. Absorption spectra show the presence of chlorophylls a and b but with differences; the original ppts. which still retain protein show a less intense absorption max., about 670 mμ, than do the repptd. protein-free specimens. The crystals are not those of a picoline complex since the base can be washed away without change of the form or behavior of the crystals; their characteristic absorption is at 690 mμ and they do not fluoresce. Heating to 80° displaces absorption max. to 675 mμ.

G. M. Kosolapoff

BRIN G.P.

Action of heavy water on the reaction of photoreduction of chlorophyll and the photochemical activity of the substance of green leaves. A. A. Krasnovskii and G. P. Brin (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 96, 1025-8 (1954); cf. *C.A.* 44, 2602g.—The presence of D_2O affects the photochem activity of green substance of the leaf (cucumber-leaf macerate), as shown by the reaction of reduction of indophenol, in such a way that D_2O hinders the reaction at 20° and 30°; the results given graphically for 10–100% D_2O clearly show the blocking action of D_2O. The temp. coeff. of the D_2O reaction is 2.1, against 1.3 for H_2O, indicating greater activation energy. Photoreduction of chlorophyll by ascorbic acid in pyridine to which 10% either H_2O or D_2O was added also shows a slower action of the D_2O system, both during the light phase and the dark phase of the reaction. Photoreduction of chlorophyll can be represented by the reaction of activated chlorophyll with intermediate oxidation-reduction systems under action of light to yield a chlorophyll neg. ion and ionically reduced form of the reductive system, which under the action of a suitable catalyst yields the reduced chlorophyll and the oxidized form of the reductive system. In photosynthesis there occurs a transfer of electrons and protons from H_2O into a system of consecutive reactions in which the intermediate reduction systems and enzymes take part in the reduction of CO_2. Chlorophyll participates in the dark-stage catalytic transfer of the protons. G. M. Kosolapoff

BRIN, G. P.

BRIN, G.P. --"The Participation of Chlorophyl in Processes of Hydrogen Transfer." * (Dissertations for Degrees in Science and Engineering Defended at USSR Higher Educational Institutions) Acad Sci USSR, Inst of Biochemistry imeni A. N. Bakh, Moscow, 1955

SO: Knizhnaya Letopis', No. 25, 18 Jun 55

* For Degree of Candidate in Biological Sciences

BRIN, G.P.

Spectrophotometric determination of the activity of dehydrogenase in green suspensions. G. P. Brin (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R., Moscow). *Biokhimiya* 21, 444–7(1956). The [illegible] discoloration by green [illegible] at 0 [illegible] with a photoelectric colorimeter [illegible] suspensions [illegible] at low temp with 0.87% KH$_2$PO$_4$ [illegible] centrifuged. Green suspensions were then diluted with [illegible] buffer so that the extinction (E) in the PEC registered [illegible] 11%. These suspensions were stable; the turbidity remained unchanged on long standing. Suspensions were diluted 1:5 times with buffer when detns. were to be made [illegible] E = [illegible] zone in which case a cup 1 cm. in diam. [illegible] dehydrogenase detns. were made [illegible] [illegible] were used in [illegible] 2,6-dichlorophenolindophenol [illegible] and 1 ml. of the diluted susp. [illegible] = 1.20 with [illegible] [illegible] incubated, the mixt. incubated at 37–39° for 10 min., thionine added to the green suspension, and the E detd. The initial detn. was the E registered immediately after pouring the thionine; following detns. were made at 1, 2, and 5 min. intervals for 20–30 min. The immediate E was taken as 100%. At complete thionine discoloration E fell to 55% of the initial value. This was taken as the 100% drop for comparison with following drop detns. Control expts. with boiled suspensions were also carried out. As the dehydrogenase activity was detd. in the centrifugate the results necessarily left out active factors contained in the ppt. This is a shortcoming of the method. — R. S. Levine

COUNTRY : USSR
CATEGORY : PLANT PHYSIOLOGY. Photosynthesis. I

ABS. JOUR. : REF ZHUR - BIOLOGIYA, NO. 4, 1959, No. 15250

AUTHOR : Brin, G.P.; Krasnovaskiy, A.A.
INST. : Inst. of Biochemistry, AS USSR
TITLE : Investigation of Photooxidation Sensitized by Chlorophyll and Pheophytin.

ORIG. PUB. : Biokhimiya, 1957, 22, No.5, 776-788

ABSTRACT : At the Institute of Biochemistry of the Academy of Sciences of the USSR a study was performed on the reaction of sensitized oxidation of ascorbic acid to a concentration of pigments in an acid solution, a volume of water in a solvent, and the pH and intensity of exposure. Cystine, polyphenols, and cytochrome c also participated in the reaction. Pheophytin a and b, having a higher potential to photoreduction than chlorophylls, behaved

CARD: 1/3

COUNTRY :
CATEGORY : PLANT PHYSIOLOGY. Photosynthesis.

ABS. JOUR. : REF ZHUR - BIOLOGIYA, NO. 4, 1959, No. 15250

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : as more active photosensitizers in the tested reactions. In the opinion of the author the process of photooxidation of organic compounds sensitized by means of pigments is comprised of a reaction in the light of photoreduction of the pigment and a reaction in the dark of O_2 with the photoreduced form of pigment. In genuine reactions and colloid reactions obtained with the use of detergents chlorophyll has a high photochemical activi-

CARD: 2/3

COUNTRY
CATEGORY : PLANT PHYSIOLOGY. Photosynthesis.

ABS. JOUR. : REF ZHUR - BIOLOGIYA, NO. 4, 1959,

AUTHOR :
INST :
TITLE :

No. 15250

ORIG. PUB. :

ABSTRACT : ty, i.e., chlorophyll which is found in the monomeric state. -- I. A. Popova

CARD:

SISAKYAN, N.M.; KRASNOVSKIY, A.A.; MIKHAYLOVA, Ye.S.; BRIN, G.P.

Photoreactivation of cytochrome oxidase activity in plant tissues containing and lacking chlorophyll [with summary in English]. Biokhimiia 24 no.1:3-8 Ja-F '59. (MIRA 12:4)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R., Moscow.

(CYTOCHROME OXIDASE)
(PLANTS, EFFECT OF LIGHT ON)
(CHLOROPHYLL)

BRIN, G.P.; KRASNOVSKIY, A.A.

Chlorophyll-induced photosensitization of oxidation-reduction conversions of pyridine nucleotides in chlorophyll solutions and leaf homogenates. Biokhimiia 24 no.6:1085-1093 N-D '59.
(MIRA 13:5)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R, Moscow.

(CHLOROPHYLL chem.)
(NUCLEOSIDES AND NUCLEOTIDES chem.)

BRIN, G. P., VOROBYEVA, L. M., DROZDOVA, N. N., YEROKHIN, YU. YE., KRASNOVSKY, A. A., PAKSHINA, YE. V., UMRIKHINA, A. V. (USSR)

"Different Forms of Chlorophyll and its Analogues and their Role in Processes of Photochemical Electron (or Hydrogen) Transfer."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 August 1961

KRASNOVSKIY, A.A.; BRIN, G.P.

Photocatalytic action of ZnO and TiO_2 in the reactions involving the liberation of oxygen. Dokl. AN SSSR 139 no.1:142-145 Jl '61. (MIRA 14:7)

1. Institut biokhimii im. A.N. Bakha AN SSSR. Predstavleno akademikom A.N. Tereninym.

(Zinc oxide) (Titanium oxide) (Photochemistry)

KRASNOVSKIY, A.A.; BRIN, G.P.

Inorganic models of Hill's reaction. Dokl. AN SSSR 147 no.3:656-659 N '62. (MIRA 15:12)

1. Institut biokhimii im. A.N. Bakha AN SSSR. Predstavleno akademikom A.N. Terenin ym.
(Chemical models) (Photochemistry)

KRASNOVSKIY, A.A.; BRIN, G.P.; DROZDOVA, N.N.

Oxidation-reduction conversions of benzyl nicotinamide and pyridine nucleotides photosensitized by chlorophyll. Dokl. AN SSSR 150 no.5:1157-1160 Je '63. (MIRA 16:8)

1. Institut biokhimii im. A.N.Bakha AN SSSR. 2. Chlen-korrespondent AN SSSR (for Krasnovskiy).

(Nicotinamide) (Codehydrogenases) (Chlorophyll) (Oxidation-reduction reaction)

KRASNOVSKIY, A.A.; BRIN, G.P.

Participation of reduced pyridine nucleotides in photochemical oxidation-reduction reactions. Dokl. AN SSSR 153 no.1:212-215 N '63. (MIRA 17:1)

1. Institut biokhimii im. A.N. Bakha AN SSSR. 2. Chlen-korrespondent AN SSSR (for Krasnovskiy).

KRASNOVSKIY, A.A.; BRIN, G.P.

Photochemistry of reduced pyridine nucleotides and N-benxyl-nicotinamide. Dokl. AN SSSR 158 no.1:225-228 S-O '64
(MIRA 17:8)

1. Institut biokhimii imeni A.N. Bakha AN SSSR. 2. Chlen-korrespondent AN SSSR (for Krasnovskiy).

L 38563-65 EWT(m)/EPF(c)/EPR/EWP(j)/T/EWA(c) Pc-4/Pr-4/Ps-4/P1-4 RPL
RWH/WW/RM

ACCESSION NR: AP5010171 UR/0020/65/161/002/0399/0402

AUTHOR: Khutareva, G. V.; Brin, G. P.; Davydov, B. E.; Krentsel', B. A.; Krasnovskiy, A. A. (Corresponding member AN SSSR)

TITLE: Photosensitizing properties of polyconjugated organic polymers

SOURCE: AN SSSR. Doklady, v. 161, no. 2, 1965, 399-402

TOPIC TAGS: photosensitization, conjugated double bond system, polyconjugated polymer, ascorbic acid, oxidation, polyacronitrile, Schiff's base, polynitrile, polyquinoline

ABSTRACT: This study investigates the photosensitizing effect of polymers with a system of conjugated double bonds on the oxidation of ascorbic acid. The study was prompted by the fact that photosensitization was established for some crystalline organic dyes and phthalocyanines (semiconducting substances with conjugated bonds). The Warburg-Barcroft micromanometric method was applied to trace the kinetics of the reaction. The reaction was conducted in aqueous ascorbic acid solution in the presence of finely powdered polymers under red light (wavelength more than 600 mμ), white light of an incandescent bulb, or UV light (mercury 365-mμ band). The following polymers were used: thermally treated polyacronitrile, heat-polymerized

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ACCESSION NR: AP5010171

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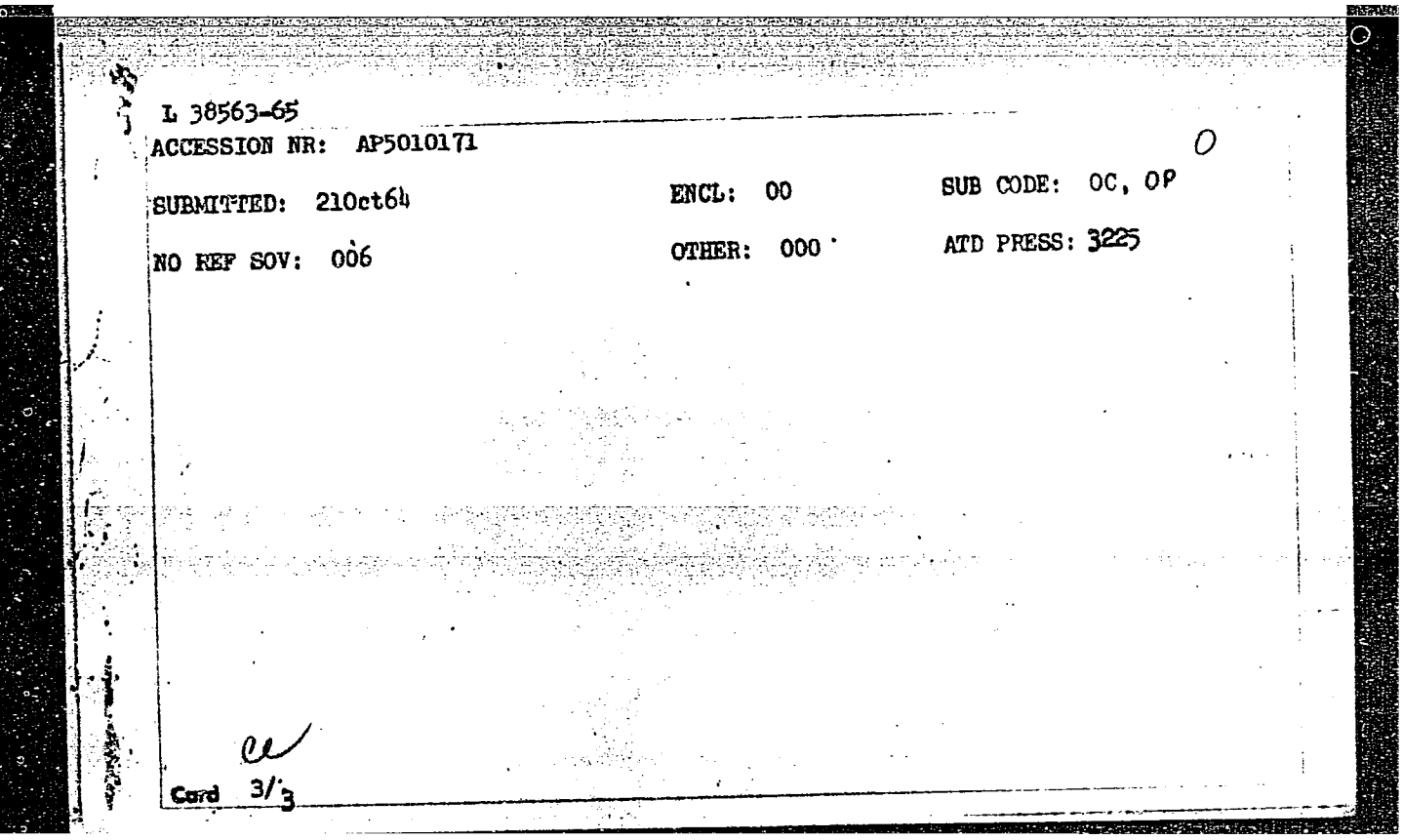
quinoline, polypropiolic acid, polymeric Schiff's bases, polyazines and polynitriles. All of these polymers were insoluble, colored solids with absorption maxima in UV and were p-type semiconductors in the air. They could be divided into two groups with respect to their catalytic effect on the oxidation of ascorbic acid: 1) photosensitizing polymers, such as heat-treated polyacronitrile, polyquinolines, polypropiolic acid, and poly-Schiff's bases, all of which promoted the photooxidation of ascorbic acid, which is not oxidized without catalyst; 2) catalysts in the dark: polynitriles and paracyanogen, the catalytic effect of which in general was inhibited by illumination in the sequence UV light > white light > red light. The following observations were made on the photosensitizing effect of the heat-treated polyacronitrile: 1) the presence of carbonized structures was not essential for the effect, since one of the most carbonized specimens displayed a very weak photosensitizing effect in the UV light and none under the white light; 2) the presence or absence of cross links was of no special influence, since polyacronitrile, heat treated in solution (which precluded the formation of cross links), displayed a rather high photosensitizing effect. Further investigation of the mechanism of the effect is being continued. Orig. art. has: 2 figures and 4 tables. [BN]

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva (Institute of Petrochemical Synthesis); Institut biokhimii im. A. N. Bakha Akademii nauk (Institute of Biochemistry, Academy of Sciences)

Card 2/3



L 38563-65
ACCESSION NR: AP5010171 O

SUBMITTED: 21Oct64 ENCL: 00 SUB CODE: OC, OP

NO REF SOV: 006 OTHER: 000 ATD PRESS: 3225

Card 3/3

KRASNOVSKIY, A.A.; BRIN, G.P.

Use of methylviologen as electron acceptor in photochemical reactions of chlorophyll and reduced pyridine nucleotides. Dokl. AN SSSR 163 no.3: 761-764 Jl '65. (MIRA 18:7)

1. Institut biokhimii im. A.N.Bakha AN SSSR. 2. Chlen-korrespondent AN SSSR (for Krasnovskiy).

L 42180-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6021609 SOURCE CODE: UR/0020/66/168/005/1100/1103

49

AUTHOR: Krasnovskiy, A. A. (Corresponding member AN SSSR); Brin, G. P. B

ORG: Institute of Biochemistry im. A. N. Bakh, Academy of Sciences, SSSR (Institut biokhimii Akademii nauk SSSR)

TITLE: Photochemical liberation of oxygen in aqueous solutions of ferric iron; sensitization with tungsten, titanium and zinc oxides

SOURCE: AN SSSR. Doklady, v. 168, no. 5, 1966, 1100-1103

TOPIC TAGS: photochemistry, oxygen, zinc oxide, titanium dioxide, tungsten compound, QUANTUM YIELD, AQUEOUS SOLUTION

ABSTRACT: The quantum yields of liberation of oxygen in the photochemical oxidation of water (containing potassium ferricyanide or ferric ammonium alum) and the stoichiometry of the reactions taking place were studied in the presence of the photocatalysts ZnO, TiO_2, and WO_3. The sensitized liberation of oxygen was measured in glass vessels, i.e. under conditions where the direct photochemical liberation of oxygen is practically absent. The 365 mμ line of mercury was used as the exciting light in experiments with ZnO and TiO_2; the 365, 404, and 436 mμ lines were used for WO_3. The quantum yield of the reactions was found to be of the order of 10^{-2}; in nitrogen, the quantum yield is higher than in air. The highest yield of liberation of oxygen was obtained in the system containing WO_3 and ferric ammonium alum. Although the efficiency of the sensitized reactions is low, it is much higher than that of direct photoreactions (without photo-

Card 1/2 UDC: 541.1+541.8+541.4

L 42180-66

ACC NR: AP6021609 O

catalysts) taking place in these systems in shorter UV light in quartz vessels. Possible mechanisms of the overall reaction

$$Fe_2(SO_4)_3 + H_2O \rightarrow 2FeSO_4 + 1/2\ O_2 + H_2SO_4$$

are discussed. Orig. art. has: 2 figures and 1 table.

SUB CODE: 07/ SUBM DATE: 20Dec65/ ORIG REF: 007/ OTH REF: 007

Card 2/2

RUMSHISKIY, Lev Zimonovich; BRIN, I.A., red.; MOROZOVA, I.Ye., red.; BRUDNO, K.F., tekhn.red.

[Elements of the theory of probability] Elementy teorii veroiatnostei. Moskva, Gos.izd-vo fiziko-matem. lit-ry, 1960. 155 p. (MIRA 13:10)

(Probabilities)

BRIN, I.A.

PHASE I BOOK EXPLOITATION SOV/4893

Vsesoyuznoye soveshchaniye po fizike, fiziko-khimicheskim svoystvam ferritov i fizicheskim osnovam ikh primeneniya. 3d, Minsk, 1959

Ferrity; fizicheskiye i fiziko-khimicheskiye svoystva. Doklady (Ferrites; Physical and Physicochemical Properties. Reports) Minsk, Izd-vo AN BSSR, 1960. 655 p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agencies: Mauchnyy sovet po magnetizmu AN SSSR. Otdel fiziki tverdogo tela i poluprovodnikov AN BSSR.

Editorial Board: Resp. Ed.: K. N. Sirota, Academician of the Academy of Sciences BSSR; K. P. Belov, Professor; Ye. I. Kondorskiy, Professor; K. M. Polivanov, Professor; R. V. Telesnin, Professor; G. A. Smolenskiy, Professor; N. N. Sholtis, Candidate of Physical and Mathematical Sciences; E. M. Smolyarenko; and L. A. Bashkirov; Ed. of Publishing House: S. Kholyavskiy; Tech. Ed.: I. Volokhanovich.

PURPOSE: This book is intended for physicists, physical chemists, radio electronics engineers, and technical personnel engaged in the production and use of ferromagnetic materials. It may also be used by students in advanced courses in radio electronics, physics, and physical chemistry.

COVERAGE: The book contains reports presented at the Third All-Union Conference on Ferrites held in Minsk, Belorussian SSR. The reports deal with magnetic transformations, electrical and galvanomagnetic properties of ferrites, studies of the growth of ferrite single crystals, studies of the chemical and physicochemical analysis of ferrites, problems in the chemical and physical analysis of ferrites, studies of ferrites having rectangular hysteresis loops and multicomponent ferrite systems exhibiting spontaneous rectangularity, problems in magnetic attraction highly coercive ferrites, magnetic spectroscopy, ferromagnetic resonance, magneto-optics, physical principles of using ferrite components in electrical circuits, anisotropy of electrical and magnetic properties, etc. The Committee on Magnetism, AS USSR (S. V. Vonsovskiy, Chairman) organized the conference. References accompany individual articles.

Ferrites (Cont.) SOV/4893

Card 12/18

Card 4/18

30519
S/194/61/000/008/078/092
D201/D304

24.2200 (1147, 1144, 1164)

AUTHORS: Brin, I.A., Lisitsyn, G.F. and Shamayev, Yu.M.

TITLE: Surface effect in a rectangular hysteresis loop ferrite membrane

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1961, 53, abstract 8 I342 (V sb. Ferrity. Fiz. i fiz.-khim. svoystva, Minsk, AN BSSR, 1960, 377-385)

TEXT: The surface effect has been evaluated in a thin ferrite membrane with and without the effect of magnetic viscosity. If the viscosity is absent it is assumed that the process of magnetic polarity reversal of material layers occurs instantaneously as soon as the intensity of the reversed magnetic field reaches the value H_c inside the layer. The equation has been derived for this case of the inter-domain boundary displacement. For actual ferrites, the time τ of the magnetic polarity reversal is of the order of

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Surface effect...

one or tenths of a millimicrosecond. The fundamental influence on the surface effect is shown by ε and the pulse magnetic permeability. In practice its effect may be neglected for the values of electric conductivity $\sigma \leq 10^{-4}$ (ohm.cm)$^{-1}$. By comparing theoretical, numerical and experimental data, it is concluded that the greatest influence on τ is exerted by the material viscosity. The influence of the latter on the propagation of the electromagnetic wave is determined by solving the Maxwell's equations in conjunction with the viscosity equation. 3 references. [Abstracter's note: Complete translation]

Card 2/2

3934
S/103/62/023/007/001/009
D201/D308

16.8000

AUTHOR: Brin, I. A. (Moscow)

TITLE: Stability of certain systems with lumped and distributed parameters

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 7, 1962, 863-871

TEXT: The author analyzes the stability of automatic control systems, the transfer function of which is a rational fractional function of $\sqrt{p}$. If $z_1, z_2, \ldots, z_s$ are the roots of the polynomial in the denominator $B(z)$ of a rational fractional function and if $r_1, r_2, \ldots, r_s$ are their multiples, then by considering the rational fractional function $F(z) = \frac{A(z)}{B(z)}$ and

Card 1/3

substituting $\sqrt{p}$ for z, it is shown that for the system to be stable it is necessary and sufficient that all roots $z_1, z_2, \ldots, z_n$ of the polynomial $B(z)$ satisfy the condition $|\arg z_k| > \frac{\pi}{4}$ ($k = 1, 2, \ldots, n$). For graphical determination of the stability of the above system, it is necessary and sufficient that the vector

$$W = B(\rho e^{i\frac{\pi}{4}})$$

make in the plane of the W exactly $n/8$ revolutions anticlockwise around the point $W = 0$ when the real parameter ρ increases from zero to infinity, n being the degree of polynomial $B(z)$, which is a criterion of stability analogous to that of Mikhaylov. In cases when the high degree of the polynomial $B(z)$ and its dependence on a large number of parameters makes the construction of the hodograph of the vector W difficult, criteria

Card 2/3

of stability are suggested which are essentially analogous to the Hurwitz criterion. It is concluded that, while it follows from the condition $|\arg z_k| = \frac{\pi}{4}$ that $\mathrm{Re}\, z_k^2 = 0$, the limits of the region of variations of the parameters of the transfer function within which the system is stable are partly those within which a polynomial, having as its roots the squares of roots of polynomial $B(z)$, is a Hurwitz polynomial. There are 3 figures.

SUBMITTED: December 16, 1961

Card 3/3

BRIN, I.A.; SHAMAYEV, Yu.M.

Transmission of binary data through a shift register consisting of identical contimuous random links. Trudy MEI no.60 pt.1:31-48 '65. (MIRA 19:1)

KOZHUKHOV, Petr Semenovich; BRIN, I.A., kand. fiz.-matem. nauk, dots., red.; SOLOMENETSEV, Ye.D., kand. fiz.-matem.nauk, dots., red.

[Ordinary differential equations] Obyknovennye differentsial'nye uravneniia. Moskva, Mosk. energ. in-t, 1963. 121 p. (MIRA 17:5)

SHILEYKO, Aleksey Vol'demarovich; BRIN, I.A., red.; BORUNOV, N.I., tekhn. red.

[Digital models] TSifrovye modeli. Moskva, Izd-vo "Energiia," 1964. 111 p. (Biblioteka po avtomatike, no.95) (MIRA 17:4)

BRIN, I.A. (Moskva); MACHINSKIY, M.V. (Moskva)

Analysis of complex systems using a matrix method. Izv. AN SSSR. Energ. i transp. no.4:419-426 Jl-Ag '64. (MIRA 17:10)

L 59563-65 EWT(d)/EED-2/EWP(t) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG

ACCESSION NR: AP5013842 UR/0103/65/026/005/0866/0875
62-502

AUTHOR: Brin, I. A. (Moscow); Shamayev, Yu. M. (Moscow)

TITLE: Transmission of binary information through a shift register

SOURCE: Avtomatika i telemekhanika, v. 26, no. 5, 1965, 866-875

TOPIC TAGS: shift register, binary information

ABSTRACT: The shift register is regarded as a chain of series-connected structural components, or "links". A concept of "link characteristic" is introduced, which determines the probability of conversion of input signal into output signal, with an allowance for random spread of characteristics of individual links. The transfer characteristics of the shift register are found on the basis of link characteristics. Integral equations are set up for determining the probability of conversion of an arbitraty input into 0 or 1 signal, determining the effective chain length, etc. The shift register usually contains 10 or more links. To ensure the conversion of input into 0 or 1, only two absorbing zones are necessary and sufficient. The characteristics of the chain can be obtained by solving linear algebraic equations 18-22, whose coefficients are determined by the link-

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L 59563-65

ACCESSION NR: AP5013842

D

characteristic matrix. Shifting the link characteristic to the right or to the left enhances the probability of signal restoration or noise immunity respectively. The "order" is the link characteristic $\beta - \alpha$ should be the chain shaping 0 or 1 signal. Orig. art. has: 1 figure, 38 formulas, and 5 tables.

ASSOCIATION: None

SUBMITTED: 06Mar64 ENCL: 00

NO REF SOV: 004 OTHER: 000

Card 2/2

L 45780-66 EWT(d)/EWP(1) IJP(c) GG/BB

ACC NR: AR6016023 SOURCE CODE: UR/0271/66/000/001/B027/B028

AUTHOR: Brin, I. A.; Shamayev, Yu. M.

TITLE: Transmission of binary information over a shift register

SOURCE: Ref. zh. Avtomat. telemekh. i vychisl. tekhn., Abs. 1B193

REF SOURCE: Tr. Mosk. energ. in-ta, vyp. 60, ch. I, 1965, 31-47

TOPIC TAGS: binary information, shift register

ABSTRACT: The concept of an element characteristic which fully determines all the characteristics of the circuit, i. e. module characteristics resulting from an analysis of the transmission characteristics of individual elements, is introduced. These characteristics make it possible to determine all the characteristics of the shift register which use these modules. The characteristic of an element determines the probability of converting an input signal value to an output signal observing the spread of transmission characteristics of individual elements. Differential equations are derived for determining the probability of converting the arbitrary value of an input signal into a zero or unit signal, or the effective length of the circuit. A method of solving the equations and numerical examples is given. Orig. art. has: 1 illustration and 5 tables. [Translation of abstract] [DW]

SUB CODE: 09/

Card 1/1 UDC: 681.142.642.7

BRIN, I.D., inzhener.

Effect of the die design on the quality of the forged piece in the process of forging on crankshaft presses. Vest.mash. 33 no.11:90-91 N '53.
(MLRA 6:12)
(Dies (Metal-working))

BRIN, I. D.

PHASE I BOOK EXPLOITATION SOV/2166

25(5)

Opyt ratsionalizatsii kuznechnogo proizvodstva; k 250-letiyu Leningrada (Experience in Improving Forge Work; On the 250th Anniversary of Leningrad) [Leningrad] Lenizdat, 1957. 194 p. 3,000 copies printed.

Ed. (Title page): P.V. Kamnev; Ed. (Inside book): Ye. V. Yemel'yanova; Tech. Ed.: N.I. Rodchenko

PURPOSE: The collection of articles is intended for workers and engineers in forge shops and also for designers of machinery in related branches of machine manufacturing.

COVERAGE: The book describes the experience gained at several Leningrad plants in the rationalization of manufacturing processes, modernization of equipment, and improvement in the economics and planning of forging production. Tables and drawings accompany every article. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TS 225.K336)

TM/fal
10-18-59

Card 3/3

(C)

PHASE I BOOK EXPLOITATION SOV/3690

Brin, Izrail' Davydovich, Engineer, and Semen Naumovich Gil'denblat, Engineer
Shtampovka na mekhanicheskikh kovochnykh pressakh; opyt zavoda (Forging With Mechanical Forging Presses; Practices of a Plant) Leningrad, 1958. 27 p. (Series: Informatsionno-tekhnicheskiy listok, no. 58, Kovka i shtampovka) 6,200 copies printed.

Sponsoring Agencies: Leningrad. Dom nauchno-tekhnicheskoy propagandy, and Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR, and Nauchno-tekhnicheskoye obshchestvo Mashproma. Leningradskoye pravleniye. Komitet kovki i goryachey shtampovki.

Ed.: P.V. Kamnev, Candidate of Technical Sciences; Tech. Ed.: M.M. Kubneva.

PURPOSE: This booklet is intended for personnel in forging shops.

COVERAGE: The book deals with a new method of drop forging on crank presses. The advantages of crank-toggle presses over steam drop hammers are discussed. According to authors a rapid shift from steam hammers to crank presses and

Card 1/2

Forging With Mechanical (Cont.) SOV/3690

the further development of the A.V. Potekhin method are two of the main problems in the modern forging and stamping industry. No personalities are mentioned. There are 4 references, all Soviet.

TABLE OF CONTENTS: None given. The book is divided as follows:

AVAILABLE: Library of Congress (S3603)

Card 2/2

VK/lsb
7-8-60

PHASE I BOOK EXPLOITATION 892

Angervaks, A.I., Brin, I.D., Gil'denblat, S.N., Golovneva, M.A., Golovnev, Ivan Fedorovich, Kamnev, Petr Vladimirovich, Kutsovskiy, F.V., Plyatskiy, V.M., Sokolov, N.L.

Bezobloynaya shtampovka (Flashless Press-forming) Moscow, Mashgiz, 1958. 294 p. 7,000 copies printed.

Ed.(title page): Golovnev, I.F., Candidate of Technical Sciences; Reviewers: Stel'makov, S.M., Engineer, and Eduardov, M.S., Engineer; Ed.(inside book): Obolduyev, G.T., Engineer; Ed.of Publishing House: Chfas, M.A.; Tech. Ed.: Speranskaya, O.V.; Managing Ed. for literature on the technology of machine building (Leningrad Division of Mashgiz): Naumov, Ye.P., Engineer.

PURPOSE: The book is intended for engineering personnel and it may be useful to students of vtuzes and technical schools.

COVERAGE: The book presents the processes of press forming without flash in closed dies from steel and nonferrous alloys later called

Card 1/5

flashless press-forming. The following suggestions for mastering this process are made: technical and economical indices, rules for designing parts to be made by this process, determining heating regimes preventing scale formation, methods of designing and cutting blanks, determination of capacity of forging equipment, design and calculation of dies, and reference tables. Typical production examples are included (with calculation and drawings for dies) and new data on flashless press forming techniques abroad are presented. There are 32 references of which 21 are Soviet and 11 are English.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

GO/hcr
12-15-58

Card 5/5

GUBENKO, Yu.K., inzh.; BRIN, L.G., inzh.; STEPANYUK, K.Kh., inzh.

New universal PN-24 loader. Trakt. i sel'khozmash. 30 no.6:30-31 Je '60. (MIRA 13:11)
(Loading and unloading) (Agricultural machinery)

GUBENKO, Yu.K.; BRIN, L.G.; STEPANYUK, K.Kh.

PN-24, a new loader. Sakh.prom. no.4:24-25 Ap '60. (MIRA 13:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.
(Loading and unlaoding)

GUBENKO, Yu.K.; BRIN, L.G.

The PN-24 universal grab loader. Biul.tekh.-ekon.inform. no.5:52-53 '60.
(MIRA 14:3)
(Conveying machinery)

PARASCHIV, Nicolae, fierar-betonist; BUSUIOC, Dumitru, maistru; ERIN, Mihai, malaxorist

Rostrum of excellent workers. Constr Buc 15 no.722:1 9 N '63.

DAN'SHIN, M.I.; BRIN, M.S.

Improve the quality of fittings. Standartizatsiia 27 no.1:59 Ja '63. (MIRA 17:4)

BRIN, V.

Evidence, planning verification and reconditioning of the measuring equipment in industrial enterprises. p. 41.
Rheostats with retort carbon plaques. p. 46.
Apparatus for mercuric vacuum distillation. p. 47.
(METROLOGIA APLICATA. RUMANIA. Vol. 2, no. 2, Feb. 1955)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 7, July 1957, Uncl.

BRIN, V.B.

State of the blood coagulation system and fibrinolysis in experimental pathology of the thyroid gland. Pat. fiziol. i eksp. terap. 9 no.5:67-70 S-O '65. (MIRA 19:1)

1. Kafedra patologicheskoy fiziologii (ispolnyayushchiy obyazannosti zav. - dotsent R.D. Khubetsova) i kafedra normal'noy fiziologii (zav. - prof. N.N. Pronina) Severo-Osetinskogo meditsinskogo instituta, Ordzhonikidze. Submitted September 18, 1964.

EL'BERG, G.A.; BRIN, V.I.

Operation of the traumatological center in Kalinin District, Leningrad; 25th anniversary of the organization of traumatological centers. Trudy LSGMI 39:130-140 '58. (MIRA 12:8)

1. Kafedra gospital'noy khirurgii Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta (zav.kafedroy - z.d.k., prof.A.V.Smirnov) i Travmatologicheskiy punkt Kalininskogo rayona (zav. punktom - V.I.Brin).
(ACCIDENTS, prev. & control, in Russia, traumatol. centers (Rus))

BRINARU, P., dr.; SORESCU, D., dr.

Considerations on a case of massive eosinophilia. Med. inter., Bucur 13 no.3:465-469 Mr '61.

1. Lucrare efectuata in Serviciul medical al Spitalului muncitoresc, Pitesti.

(LUNG DISEASES case reports) (EOSINOPHILIA case reports)

BRINBERG, I. L.

PA 14T4

USSR/Welding - Methods Jun 1947
Welding, Electric

"Problems of Control of Automatic Welding Conditions Under a Flux," I.L. Brinberg, 8 pp

"Avtogennoye Delo" No 6, 1-8

Discusses methods of control, effect of the length of the arc, effect of variations of network voltage, effect of variation of the coefficient of the melting electrode, particulars of the automatic stabilization process. Fully illustrated with diagrams, formulae, and graphs of operating data.

14T4

PA 30/49T76

BRINBERG, I. L.

USSR/Engineering Oct 48
Welding, Autogenous
Welding, Electric

"Automatic Electric Arc Welding," I. L. Brinberg, Cand Tech Sci, Welding Sec, Cen Sci Res Inst of Tech and Mach Const, 6 pp.

"Vest Mashinostroy" No 10

Reviews advances made by Brinberg's section. Describes application of automatic machines to welding of locomotive tube nests and fireboxes.

30/49T76

USSR/Engineering Apr 49
Welding Machines
Tractors

"Universal Welding Tractors Constructed by TsNIITMASh and Experiments in Their Industrial Application," I. L. Brinberg, Cand Tech Sci, Welding Dept, TsNIITMASh MTM, 5 pp

"Avtogennoye Delo" No 4, 25-30

Photographs, description, and operating characteristics of three types of universal welding tractors, the UT-1200, the UT-1500, and the UT-2000.

[redacted] 43/49T33

USSR/Engineering - Welding, Equipment Apr 51

"Equipment of the TsNIITMASh for Automatic Welding Using Three-Phase Current," I. L. Brinberg, Cand Tech Sci

"Avtogen Delo" No 4, pp 15-20

Describes construction and operation of expt1 installation which may serve as std equipment in designing industrial installation for automatic welding of high-pressure boilers and other cylindrical containers. Application of 3 single-phase universal welding heads, mounted in a single block for joint work, permits wide variation

197T35

USSR/Engineering - Welding, Equipment Apr 51 (Contd)

in positions of electrodes. Welding may be done either with 3-phase arc or with arcs in succession.

197T35

UDOTOV, K. A., BRINBERG, I. L.

Electric Welding.

Instrument and equipment for automatic electric-arc welding of the Central Scientific Research Institute of the Technology of Machine Construction. Vest. mash. 31 no. 11, 1951.

9. Monthly List of Russian Accessions, Library of Congress, September 1953 Uncl.

BRINBERG, I. L.

USSR/Engineering - Welding, Equipment Jan 52

"Standardization of the Welding Tractors of TsNIITMASh," I.L. Brinberg, Cand Tech Sci, V.P. Yakushkin, Engr, Laureates of Stalin Prize

"Avtogen Delo" No 1, pp 16-20

Discusses gradual development and improvement of 2 types of welding units: heavy- and light-duty universal welding tractors UT-1250 and UT-2000 M. Gives tech characteristics of latest models accepted as std equipment. Each model permits adjustment for variety of operations in field of automatic welding under flux.

212T15

BRINBERG, I. L.

USSR/Engineering - Welding Apr 52

"Conference of Innovators - Welders From Enterprises of the Ministry of Heavy Machine Building," I. L. Brinberg, Cand Tech Sci, Laureate of Stalin Prize

"Avtogen Delo" No 4, pp 18-21

At Conference 6 - 8 Dec 51 for exchange of advanced practical experience, Deputy Min V. N. Yakovlev illustrated considerable increase in machine production and improvement in machine design by several examples: single-shaft high-pressure steam turbine of 100,00 kw capacity was constructed, claimed as 1st of this kind in the world; new water turbines for Dneproges were installed, being more powerful and improved than US turbines used in prewar time; 1st postwar blooming mill of high capacity and a great deal of other rolling equipment not fabricated before in USSR. All achievements are attributed mainly to intensive use of elec welding and gas cutting of metals. A number of reports described individual cases of improvement in welding technique.

212T35

212T35

BRINBERG, I. L.

PA 233T52

USSR/Metallurgy - Welding, Equipment Aug 52

"Light-Ray Indicator of TsNIITMash Design for Arc Directing in the Process of Automatic Welding Under Flux," I.L. Brinberg, Cand Tech Sci, Stalin Prize Laureate

"Avtogen Delo" No 8, pp 24-26

Describes device which, being attached to welding machine, produces light ray indicating correct position of electrode in its movement along edges to be welded. Light of 15-w bulb, passing through double convex lens, serves as pointer producing light spot on surface of workpieces. Exptl indicator was tested with good results and possibility was established for design without lens.

233T52

1. BRINBERG, I.L.

2. USSR (600)

4. Welding

7. Lectures of the All-Union Society of Welding Engineers and Technicians at the meetings of the Committee on Automatization and High-efficiency Methods. Avtog. delo 23 no.10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

1. BRINBERG, I.L.; RYBALKO, P.G.; KRROBASTOV, M.F.; YAKUSHKIN, V.P.

2. USSR (600)

4. Electric Welding

7. Automatic electric arc welding of pipes with a spiral weld, I.L. Brinberg, Engs. P.G. Rybalko, M.F. Krrobastov, V.P. Yakushkin, Avtog.delo 24 no. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

BRINBERG, I.L., kandidat tekhnicheskikh nauk; YAKUSHKIN, V.P., inzhener.

New general-purpose UT-2000M welding machine. [Trudy] TSNIITMASH 60:72-91 '53. (MLRA 6:11)
(Electric welding)

BRINBERG, I. L.

USSR/ Engineering - Arc welding

Card 1/1 : Pub. 128 - 18/31

Authors : Brinberg, I. L.

Title : The automatization of electric-arc welding in the heavy machine construction industry

Periodical : Vest. mash. 10, 75 - 80, Oct 54

Abstract : A narrative report is given concerning methods and equipment introduced by the Central Scientific-Investigational Institute of Machine Technology, and the E. O. Paton's Institute of Electric Welding, in the field of automatic arc-welding. Nineteen USSR references (1949 - 1954). Illustrations; drawing.

Institution : ....

Submitted : ....

BRINBERG, I. L.

112-1-1405

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 1, p.214 (USSR)

AUTHOR: Brinberg, I.L.

TITLE: Works of TsNIITMASh in Automation of Electric Arc Welding in Heavy Machinebuilding (Raboty TsNIITMASh po avtomatizatsii elektrodugovoy svarki v tyazhelom mashinostroyenii)

PERIODICAL: Sbornik: Avtomatizatsiya tekhnol. protsessov v mashinostr. Goryachaya obrabotka metallov. Moscow, AN SSSR, 1955, pp.237-243

ABSTRACT: Bibliographic entry

Card 1/1

BRINBERG, I.L., kandidat tekhnicheskikh nauk; YAROVINSKIY, L.M., kandidat tekhnicheskikh nauk

Welding practices in heavy machine building. Svar.proizv. no.1:20-22 Ja '55. (MLRA 8:9)
(Welding)

BRINBERG, I. L.

771* Flux-Shielded Metal Arc Welding of Steel 16 GNM. Elektrodugovaya svarka stali 16 GNM. (Russian.) I. L. Brinberg and L. V. Golub. *Svarochnoe proizvodstvo*, 1956, no. [illegible], p. 18-21.

Fluxes and welding techniques, micro-structure, yield point, yield strength, other mechanical indices of welded specimens, and effect of heat treatment. Micrographs, graphs, tables, diagrams. 2 ref.

1

(1)

Met

AID P - 5054

Subject : USSR/Engineering-Welding

Card 1/2 Pub. 107-a - 3/9

Authors : Brinberg, I. L. and P. G. Rybalko (TsNIITMASh)

Title : Automatic alignment of the welding head with the seam

Periodical : Svar. proizv., 5, 12-17, My 1956

Abstract : Since the deviation of the seam-line from the axis in automatic butt welding indicates a defective weld, the Central Scientific Research Institute of Machine Building Technology (TsNIITMASh) has developed two devices for steady holding of the welding electrodes, viz. the "automatic tracer" (avtokopir), which was developed by I. L. Brinberg in the "Avtogennoye Delo", No. 4, 1951, and the 'light indicator' (svetoukazatel'), described by Brinberg in the same magazine, No. 8, 1952. Here the authors describe the newest device for true automatic welding developed by the TsNIITMASh jointly with the

AID P - 5054

Svar. proizv., 5, 12-17, My 1956

Card 2/2 Pub. 107-a - 3/9

Central Scientific Research Laboratory and Central Design Bureau of the "Elektroprivod" (Electric Drive Plant) for automatic alignment of the welding head with the seam. This photoelectric device is used with the UT-2000M welding tractor. Eleven drawings, 3 photos; 11 Russian references (1946-55) and 1 English reference (1954).

Institutions: As above

Submitted : No date

BRINBERG, I.L., kandidat tekhnicheskikh nauk; SOKOLOVA, A.M., inzhener.

Organizing centralized machinery production for mechanization and automatization of arc welding. Vest. mash. 36 no.6:68-71 Je '56. (MLRA 9:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut tyazhelogo mashinostroyeniya.
(Electric welding)

SOV/137-58-7-15173

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 179 (USSR)

AUTHORS: Brinberg, I.L., Kochanovskiy, N.Ya., Chernyak, V.S.

TITLE: Modern Welding Equipment and Problems of Its Design (Sovremennoye sostoyaniye i zadachi v oblasti konstruirovaniya svarochnogo oborudovaniya)

PERIODICAL: V sb.: Sovrem. napravleniya v obl. konstruirovaniya tekhnol. oborud. Moscow, Mashgiz, 1957, pp 242-265

ABSTRACT: The design of modern welding equipment (E) must be directed along the lines of further development of such widely employed welding (W) methods as arc, resistance, and electric slag W, as well as gas-flame treatment of metal. An immediate task in mechanization of manual arc welding (in the case of short-run and single-unit production) is the design of universal welding tilters and manipulators with mechanical, pneumatic, hydraulic, and magnetic devices capable of handling stock weighing 0.1-50 t. The design of W E employing electrodes must include provisions for the creation of automatic production lines for continuous manufacture of electrodes. E for automatic submerged and gas-shielded W is described briefly,

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Modern Welding Equipment and Problems of Its Design

together with the most advanced types of design of such E. Recommendations are given for the construction of improved W heads, supporting rollers, trucks, pumps for drawing off of flux, feeding mechanisms, etc. Electric slag W E is examined together with the E supplying the electrical power. Means of further improvement of design of electric slag W E are outlined; they include resistance-slag W, W with laminated and combined electrodes, W of structures with curved seams, building up of metal surfaces by means of W, etc. A survey of modern resistance W E is given. Latest machines for resistance W E is given. Latest machines for resistance W are described briefly; this includes the MTIK-01 machine for spot welding of metal 0.01 to 0.1 mm thick; the ATMS-14 x 75 machine for manufacturing of columns, grids, and frameworks employed in reinforced-concrete structures, and the MShShI-40 machine for seam welding of components made of Al alloys with a thickness varying from 0.8 mm to 2 mm, etc. Goals in the design of resistance W E are presented in detail; they include the following: Creation of three-phase-single-phase power circuitry; employment of direct (rectified) low-frequency current; extensive employment of electronics, semiconductors, and pneumatic-hydraulic devices in the circuits of the W machines; creation of E capable of controlling the quality of welded connections. An abbreviated description of modern E for gas-flame treatment

SOV/137-58-7-15173

Modern Welding Equipment and Problems of Its Design

of metals includes the following topics: Oxygen cutting, gas welding, surface hardening, metallization, gas-flame spraying on of plastics. Requirements that must be satisfied by the newly produced E are formulated. 15 drawings and photographs are included. Bibliography: 29 references.

B.K.

1. Welding--Equipment

Card 3/3

BRINBERG, I.L.

135-7-4/16

SUBJECT: USSR/Welding

AUTHOR: Brinberg, I.L., Candidate of Technical Sciences.

TITLE: Methods for Approximate Calculation of Parameters for Electric Slag-Welding (Metodika priblizhennogo rascheta elektricheskikh parametrov reshima elektroshlakovoy svarki)

PERIODICAL: "Svarochnoye Proizvodstvo ", 1957, # 7, pp 10-13 (USSR)

ABSTRACT: Since the complex processes of slag welding are not yet sufficiently studied and no close theoretical calculation of separate welding technology elements is yet possible, and since it is too expensive and requires too much time, to solve the problems empirically for every single case, the TsNIITMASh carried out an experimental investigation with the purpose to find data enabling engineering calculation. The author proposes a method of pre-calculating the electrical parameters which is based on the date obtained by investigation.

According to this method the required heat quantity and the equivalent electric power for the given dimensions of weld connection and the given welding conditions are determined by formulas and diagrams. The diagrams show the required heat

Card 1/2

135-7-4/16

TITLE: Methods for Approximate Calculation of Parameters for Electric Slag-Welding (Metodika priblizhennogo rascheta elektricheskikh parametrov rezhima elektroshlakovoy svarki).

quantity in cal/sec for various thicknesses of metal and for welding with various numbers of electrodes (1 to 4), the ratio between the heat consumed for melting and the heat losses for heating the base metal. The method can also be applied in slag-welding.
The coefficients of the heat balance equation will be established more precisely in the course of further work by comparing them with the experimental values.

The article contains 1 schematic diagram, 4 curve diagrams, 2 tables, and 3 bibliographic references (all of which are Russian).

ASSOCIATION: "TsNIITMASh".

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 2/2

Brinberg, I.L.

28(1) PHASE I BOOK EXPLOITATION SOV/2156

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy soveshchaniya/, tom 1: Goryachaya obrabotka metallov (Automation of Machine-Building Processes; Proceedings of the Conference on Overall Mechanization and Automation of Technological Process, Vol 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V.I. Dikushin, Academician; Compiler: V.M. Raskatov; Ed. of Publishing House: V.A. Kotov; Tech. Ed.: I.P. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. I, contains articles under the general title, Hot Working of Metals. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: casting - P.M. Akenov, D.P. Ivanov and G.M. Orlov; forming - A.I. Tsilikov, A.D. Tomlenov and V.T. Meshcherin; welding - G.A. Nikolayev, B.I. Prolov and G.A. Maslov. There are 183 references: 142 Soviet, 34 English, 6 German, and 1 French.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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(1)

18(5)

AUTHORS: Brinberg, I.L., Suslov, V.N., Candidates of Technical Sciences, and Tsel'niker Ye.Ya., and Grudkin, D.A., Engineers

TITLE: Improvement of Equipment for Carbon Dioxide Shielded Arc Welding

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 11, pp 21-25 (USSR)

ABSTRACT: Experience has shown that many an important component (gas-electric blowpipes, hoses, feeding devices, meters for the control of gas consumption) incorporated in equipment for carbon dioxide shielded arc welding needs further improvement. In order to remedy the situation, the organization TsNIITMASh has improved the vital units of semi-automatic welding machines PSh-5-U and PDShM-500, and developed design of a special semi-automatic machine PGSh-2M. All these machines are intended for welding low-carbon and alloy-steels of a thickness over 3-4 mm by means of carbon dioxide shielded arc welding. A group of experts including, besides the authors of this article, the following persons: S.I.Klepikov, P.D. Denisenko, Ya.M. Glukhov and V.I. Praporshchikov, began researching on blowpipes, hoses and leads, meters, pressure regulators and elec-

Card 1/2

Improvement of Equipment for Carbon Dioxide Shielded Arc Welding

trode feeding devices. The speed of the electrode wire feed was regulated by changing the number of revolutions of the electromotor armature; this method was developed by the TsNIL-Elektrom AN SSSR. The Following persons participated in working it out: G.M. Kasprzhak, I. Ya. Rabinovich, Ye.I. Slepushkin and V.M. Shchitova. The basic constructional alterations of the PSh-5-U semi-automatic welding machine are: The holder for combined hose feeding of the blowpipe replaced by two separate hoses; devices for feeding with gas and water changed; the electric system is adapted for operation on direct current. Reconstruction of the PDShM-500 machine was carried out along the following lines: regulator of gas pressure substituted by a reduction nipple; pressure relay and wire straightening device are eliminated. There are 2 graphs, 1 table, 5 diagrams and 2 photographs.

ASSOCIATION: TsNIITMASh

BRINBERG, I.L.

VLADIMIRSKIY, T.A., doktor tekhn.nauk; VROBLEVSKIY, R.V., inzh.; GLEBOV, L.V., inzh.; GODIN, V.M., kand.tekhn.nauk; GUZOV, S.G., inzh.; GULYAYEV, A.I., inzh.; YERSHOV, L.K., inzh.; KOCHANOVSKIY, N.Ya., kand.tekhn.nauk; LYUBAVSKIY, K.V., prof., doktor tekhn.nauk; PATON, B.Ye., akademik, prof., doktor tekhn. nauk; RABINOVICH, I.Ya., kand.tekhn.nauk; RADASHKOVICH, I.M., inzh.; RYKALIN, N.N., prof., doktor tekhn.nauk; SPEKTOR, O.Sh., inzh.; KHRENOV, K.K., akademik, prof., doktor tekhn.nauk; CHERNYAK, V.S., inzh.; CHULOSHNIKOV, P.L., inzh.; SHORSHOROV, M.Kh., kand.tekhn.nauk; BRATKOVA, O.N., prof., doktor tekhn.nauk, nauchnyy red.; BRINBERG, I.L., kand.tekhn.nauk, nauchnyy red.; GEL'MAN, A.S., prof., doktor tekhn.nauk, nauchnyy red.; KONDRATOVICH, V.M., inzh., nauchnyy red.; KRASOVSKIY, A.I., kand.tekhn.nauk, nauchnyy red.; SKAKUN, G.F., kand.tekhn.nauk, nauchnyy red.; SOKOLOV, Ye.V., inzh., red.; IVANOVA, K.N., inzh., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Welding handbook] Spravochnik po svarke. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Vol.1. 1960. 556 p. (MIRA 14:1)

1. AN USSR (for Paton, Khrenov). 2. Chleny-korrespondenty AN SSSR (for Rykalin, Khrenov).

(Welding--Handbooks, manuals, etc.)

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A006/A001

AUTHORS: Brinberg, I.L., Candidate of Technical Sciences, Sokolova, A.M., ~~Engineer~~

TITLE: Welding in Carbon Dioxide

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 12, pp. 23-26

TEXT: The authors report on a series of semi-automatic and automatic machines for welding in CO_2, shown in a special exhibition. The ПГШ-3 (PGSh-3) semi-automatic machine for welding in CO_2 operates with a wire of 1.6-2 mm in diameter, on 250-500 amp current, in lower and inclined position; its efficiency is up to 50 kg weld metal per shift. The ПШ-5 (PSh-5) semi-automatic machine was modified by replacing the holders by gas-electric burners and by introducing a carbon dioxide feed system; the machine operates with 1.6-2 mm-diameter-wire on 250-500 amp current. The А-547р (A-547r) semi-automatic machine operating with 0.6-1.2 mm-diameter-wire and 20-200 amp current can be used for welding in CO_2 of thin metals in all spatial positions. Its application in shipbuilding is demonstrated on a ship model. The П-130 (P-130) automatic machine for welding with a 0.8-1 mm-diameter-wire 0.5-2 mm thick metal, is fed from a ВС-130/ 20

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Welding in Carbon Dioxide

(VS-130/20) selenium rectifier it is employed for the repair of automobile parts. The ПДПГ-300 (PDPG-300) semi-automatic machine (Figure 4) operates with 0.8-2 mm-diameter-wire on 60 to 500 amp current. Welding can be performed in all spatial positions and can be effectively used for welding-up cast defects. The АДПГ-500 (ADPG-500) automatic machine (Figure 5) is intended for arc welding of steel in CO_2 with a wire of 0.8-2.5 mm in diameter and 60 to 500 amp current; angular and butt welds in the lower position can be produced. The АДК-500-3 (ADK-500-3) automatic machine (Figure 6) is used for welding in shielding gases or under flux circular seams of 75 to 300 mm in diameter, in horizontal or inclined position of the table. Welding is performed with wire of 1.6-2.5 mm in diameter, on up to 500 amp current. The Р-912 (R-912) stand is used to produce circular seams of 6 to 200 mm in diameter with a vertical rotation axis. Automatic welding in CO_2 is made with a wire of 0.5-1.2 mm in diameter on 40 to 200 amp current. The stand is employed in large-scale production for welding-on oil funnel tubes, and lids of electric contacts to compressor bottoms. The Р-964 (R-964) welding machine (Figure 7) is used to produce automatically circular seams on parts of up to 300 mm in diameter with a horizontal rotation axis, with a wire of 0.5-1.2 mm in diameter. The machine is equipped with two welding heads making possible to produce simultaneously two seams. The unit is employed to weld

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automobile Cardan shafts. The Р -899 (R-899) stand is intended for the automatic assembly and welding in CO_2 of thin-walled steel spheres of 200 mm in diameter, with 0.8-1.2 mm diameter wire on 70-150 amp current. The efficiency of the stand is 25-30 items per hour. The multi-purpose С -55 (S-55) unit (Figure 8) is used to produce circular seams on tubular work with a horizontal and vertical rotation axis. Seams of 20 to 100 mm in diameter can be welded on 200-300 mm long pipes (on roller supports) of up to 300 mm in diameter in a horizontal plane. Wire of 0.8 to 1.2 mm in diameter is used. The multi-purpose УСА-2 (USA-2) apparatus (Figure 9) is intended for automatic, semi-automatic and electric-rivet welding in shielding gas or under flux. A wire of 0.8 to 3 mm in diameter and 100-600 amp current is used. The unit includes an electric-riveting head with automatic electrode wire feed and precision measuring out of welding time, performed by an electronic time relay. The described processes can be performed with the use of a number of wires developed for this purpose including the Св -08ГС (Sv-08GS) Св-08Г2С (Sv-08G2S) Св-10ХГ2С (Sv-10KhG2S) Св-08Х3Г2СМ (Sv-08Kh3G2SM) Св-08 Х ГСМ(Sv-08KhG2SM) Св-08ХГ2СМФ (Sv-08KhG2SMF) Св-08Х14ГТ (Sv-08Kh14GT) and Св-10Х17Т (Sv-10Kh17T) wires. These wires are employed for welding carbon and alloyed steels in CO_2 and have been included into GOST 2246-60. A method is demonstrated of obtaining CO_2 from dry ice by evaporation in gasificators. The

Welding in Carbon Dioxide

The CO_2 thus obtained has high purity and a low water vapor content. The use of the described methods of welding in CO_2 is demonstrated on a series of welded articles, such as steam turbine diaphragms, and other turbine parts, automobile parts, ship and agricultural machine components, boilers and oil containers, blast furnace parts and pipelines. The method ensures a raised labor efficiency and savings amounting to 50 to 90,000 rubles yearly per one automatic machine and to 25-35,000 rubler per one semi-automatic unit.

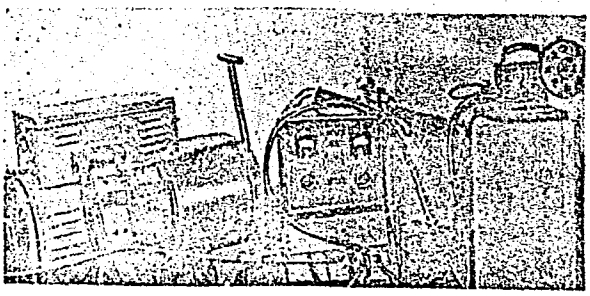

Figure 4.

The PDPG-300 semi-automatic machine.