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REEL #73

From

BUDNIK, V. S.

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BUDNIK, V. S.

PA 190T64

USSR/Medicine (Veterinary) - Infectious Diseases Mar 51

"New Data on the Chemical Prophylaxis of Equine Piroplasmosis," V. S. Budnik, Cand Vet Sci, Saratov Sci Res Vet Expt Sta

"Veterinariya Vol XXVIII, No 3, pp 11-18

Horses which had piroplasmosis remain carriers of P. caballi for 4-5 mo after recovery. As the disease is transmitted by the tick D. marginatus, epizooty may result. One or 2 applications of Trypan blue cure the horse, but are not effective

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from the epizootiologic standpoint for longer than 10-16 days. Repeated administration of Trypan blue to recovered horses prevents transmission of the infection for 40-50 days, i.e., entire season during which the ticks are active.

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BUDNIK, V. S.

"The Epizootical Importance of Parasite Carriers in Piroplasmosis of Horses," Cand. Vet Sci. V.S.Budnik, Saratov Scientific Research Veterinary Experimental Station, Veterinariya, No 3, pp 27-34, Mar 53.

Describes expts which demonstrated, contrary to the accepted theory of foreign scientists (Velu and others), that the Piroplasma caballi does not gain in virulence due to a prolonged stay in the organism of the transmitter, the D. marginatus tick. Author assumes that from the epizootic point of view the greatest danger lies in infection by parasite carriers of ticks, which become a reservoir of active virus. Compares the action of various drugs (tryplafavine, flavacridine, acaprine, and trypan blue) in preventing transmission from horses to ticks. States that trypan blue, which is effective for 40-50 days, is best from this standpoint.

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BUDNIK, V.S., kandidat veterinarnykh nauk.

New data on the mechanism of transmitting the causative agent of nuttalliosis of horses by the tick Dermacentor marginatus Sulz. Veterinariia 32 no.8:36-43 Ag '55. (MLRA 8:10)

1.Saratovskaya nauchno-issledovatel'skaya veterinarno-opytnaya stantsiya.
(TICKS AS CARRIERS OF DISEASE)(HORSES--DISEASES)(NUTTALLIA)

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USSR/Diseases of Farm Animals. Diseases Caused by Protozoa

Abs Jour: Ref Zhur-Biol., No 3, 1958, 12276.

Author : Budnik V. S.
Inst :
Title : New Data on Chemical Prophylaxis of Piroplasmosis in Horses.

Orig Pub: V sb.: Protozoynyye bolezni s.-kh. zhivotnykh (gemosporidiozy i tripanozomozy), M., Sel'khozgiz, 1955, 185-194.

Abstract: The epizootiological effectiveness of trypanic blue (I) with regard to the disturbed circulation of Piroplasma caballi from the horse as parasite-carrier to the tick Dermacentor marginatus is demonstrated. Experiments were carried out on 7 colts

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BUDNIK, V.S., kand.vet.nauk, starshiy nauchnyy sotrudnik

Experience in the control of equine piroplasmosis in Saratov Province. Veterinariia 36 no.3:26-30 Mr '59. (MIRA 12:4)

1. Saratovskaya nauchno-issledovatel'skaya veterinarnaya stantsiya.
(Saratov Province--Piroplasmosis)
(Horses--Diseases and pests)

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BUDNIK, V.S., kand.veterinarnykh nauk

Role of the nervous system in infection and immunogenesis in piroplasmosis in horses. Sbor.nauch.rab.Sar.NIVS 4:73-87 '60. (MIRA 15:7)

(Piroplasmosis) (Horses—Diseases and pests)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

BUDNIK, V.S., kand.veterinarnykh nauk.

Method for the typification of foci of piroplasmosis in horses.
Sbor.nauch.rab.Sar.NIVS 4:88-91 '60. (MIRA 15:7)
(Piroplasmosis) (Horses--Diseases and pests)

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BUDNIK, V.S., kand.veterinarnykh nauk

Effectiveness of the method of microovoscopy in diagnosing the causative agent of piroplasmosis in horses in the tick Dermacentor marginatus. Sbor.nauch.rab.Sar.NIVS 4:92-97 '60. (MIRA 15:7)
(Piroplasmosis) (Ticks as carriers of disease)
(Microscopy--Technique) (Horses--Diseases and pests)

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BUDNIK, V.S., kand.veterinarnykh nauk

New data on the mechanism of the transmission of the causative agent of nutalliosis in horses by the pasture tick, Dermacentor marginatus Sulz. Sbor.nauch.rab.Sar.NIVS 4:98 '60. (MIRA 15:7)
(Horses—Diseases and pests) (Ticks as carriers of disease)

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BUDNIK, V.S., kand.veterinarnykh nauk

Epizootological significance of parasite carriage in piroplasmosis in horses. Sbor.nauch.rab.Sar.NIVS 4:99 '60. (MIRA 15:7)
(Horses—Diseases and pests) (Piroplasmosis)
(Ticks as carriers of disease)

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BUDNIK, V.S., kand.veterinarnykh nauk

New advances in chemical prophylaxis for piroplasmosis in horses. Sbor.nauch.rab.Sar.NIVS 4:100 '60. (MIRA 15:7)
(Piroplasmosis) (Horses--Diseases and pests)

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ORLOV, Ye.I., prof.; BUDNIK, V.S., kand.veterinarnykh nauk

Epizootological significance of the characteristics of the tick factor in piroplasmosis in horses under the natural conditions of the lower Volga Valley. Sbor.nauch.rab.Sar.NIVS 4:101-110 '60. (MIRA 15:7)

(Piroplasmosis) (Volga Valley--Ticks as carriers of disease)
(Horses--Diseases and pests)

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BUDNIK, V.S.

List of works of associates of the Saratov Veterinary Research Center. Sbor.nauch.rab.Sar.NIVS 4:191-198 '60. (MIRA 15:7)
(Bibliography--Veterinary medicine)

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SADOVNICHIY, V.V.; BUDNIK, V.V.; LAGUTO, L.D.

The FPFM milling, processing, and forming machine for obtaining granulated peat. Vestsi AN BSSR Ser.fiz.-tekh.nav. no.1:131-133 '56. (Peat machinery) (MLRA 9:10)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

BUDNIK, Yu.; GRIGOR'YANTS, V.Kh.

Infection with brucellosis of ocular patients according to data of the ophthalmologic clinic of the Molotov Tashkent Medical Institute. Vest.oft. 30 no.1:13-14 Jan-Feb 51. (CLML 20:6)

1. Senior laboratory workers. 2. Of the Eye Clinic (Director--Honored Worker in Science Uzbek SSR Prof. P.F. Arkhangel'skiy), Tashkent Medical Institute imeni V.M.Molotov.

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Barium chloride. P. P. Budnikov. Russ. 480, July 31, 1925. A mixt. of heavy spar and silica with or without the addn. of coal is exposed to the action of $SiCl_4$ vapors at about 1000°. $BaCl_2$ is then extd. from the reaction products in the usual manner. A layout is given.

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

Budnikov, P. P., and Nekrich, N. SYSTEM SiO2-Al2O3
Keramika i Steklo, 3, 189-91 (1927) Referat. 3 (7) 120
(1927)

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

Budnikov, P. P. PROPERTIES OF CHAMOTTE WARE AND THEIR MANUFACTURE ACCORDING TO SCHRIDHAUER AND GEISSING METHOD. *Keram. i Steklo*, 4, 319-20 (1928).

It describes a method of manufacturing fire clay products used already for more than two years by the Schridhauer and Geissing Co. in Germany. According to this method the binding clay of the chamotte mass is diluted by adding, in special machines, soluble glass, potassium, humus materials, etc., dissolved in water. The mass obtained in this way contains only from 4 to 5% of water as compared with from 18 to 25% by using the usual method. From 90 to 93% of chamotte can be mixed together with only from 7 to 10% of binding clay and still a homogeneous mass is obtained. The small amount of water considerably shortens the period of drying. Physical properties of products manufactured by this method are very high. The method makes it possible besides to cover the products obtained with a layer of carbide of silicon or another material by which the refractory properties of the products may be increased considerably.

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2ND LETTER

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METALLURGICAL LITERATURE CLASSIFICATION

R

Budnikov, P. P., and Smelyanskii, I. S. CHANGE OF QUARTZ INTO TRIDYMITE IN SILICA BRICK IN THE PRESENCE OF MINERALIZERS AND A PARTIAL SUBSTITUTION OF QUARTZITES BY SAND IN A SILICATE BRD. *Trans. Ukrainian Sci. Research Inst. Silicate Ind. Sci. Techn., Dept. Supreme Council Nat. Econ.* (U.S.S.R.), 2, 51 pp. (1929).—(1) An addition of Marten slags to the batch aids the transformation of quartz into tridymites. (2) A 1% admixture of Marten slags to the batch produces silicates with a low specific gravity; 2% admixture increases the quantity of tridymite but also increases the specific gravity; 3% raises the content of tridymite but the specific gravity is also raised. (3) An addition of more than 3% did not increase the content of tridymite but increased the specific gravity. It was also found that an addition of about 25% sand instead of quartzite does not lower the properties of silica brick and with a suitable firing these change into tridymite.

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ca

20

Manufacturing of anhydrite cement. P. P. Budnikov. *Zhur. Prikladnoi Khimii* 2, 389-93(1929); cf. *C. A.* 20, 3142, 3222, 3540; 21, 800, 2177; *Zement*, 17, No. 6 (1928); *Stroitel'naya Promyshlennost* No. 6(1924), No. 4(1923), No. 8(1924), No. 3(1926). The best catalyst for mfg. anhydrite cement is a mixt. of $NaHSO_4$ and $CuSO_4$. Anhydrite cement can be regenerated without further addn. of catalysts. CaO reduces the strength of cement. Variations in the strength of cement with time can be probably explained by formation of an unstable complex hydrate. V. K.

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3RD AND 4TH ORDERS

B

9

Dependence of the solubility in water of the soluble substances of clays and ceramics on the temperature of calcination. P. P. Budnikov (Ukrain. Chem. J., 1929, 4, [Tech.], 205—213).—The materials examined were Tschasov-Jarski and Nikolaevski clays, Cetlitski kaolin, porcelain from the Baranovski factory, dinas from the Krasogorovski factory, and earthenware from the Budjanski factory, these being extracted with water after being heated at various temperatures, and the electrical conductivity of the solutions measured. With Tschasov-Jarski clay, heating at 900° corresponds with the maximum formation of water-soluble products. With Nikolaevski clay the maximum solubility is obtained by heating at 750°, and with both this and the preceding clay the solubility is increased by boiling the material in water after calcination. Somewhat different results are obtained with the other materials. The varying behaviour is ascribed to chemical reactions between the components during the heating.

T. H. Pope.

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Ca

19

The use of gypsum waste products. P. P. Budnikov and V. M. Lechyev. *Keramika i Stekla* 5, 432-5(1929). -The great quantities of waste gypsum from ceramic industries can be utilized in various ways: after being fired this gypsum can be used for plaster, or in the prepn. of anhydrite cement. When waste gypsum is fired at 500-700° no catalyzers are necessary to aid the setting; such a cement has a shrinkage of 1-1.5%. The addn. of catalyzers as 0.6% $NaHSO_4$ or 0.8% $CuSO_4$ prevents shrinkage and lowers the setting time.

M. V. Kondoidy

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COMMON ELEMENTS

Production of Dinas blocks in U. S. S. R. P. P. BUDNIKOV. *Stroitelnaie Materialui* (*Building Materials*) No. 1, 27-30(1930).—Results of tests given in curves and tables show that the properties of Russian Dinas blocks are equal to those prepd. abroad.
M. V. KONDOIDY

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Ca

20

Action of some aggregates on portland cement. P. P. Budnikov and M. I. Nekrich. *Tech. Novosti* 3, No. 17-18, 41-5(1930).—Cements with admixts. of gypsum, dolomite and marl do not differ greatly from pure portland cement in their mech. properties. In some cases, the tensile strength of pure cement is somewhat higher than that of cement with admixts., while the resistance to pressure in the latter is higher than in the former. Gypsum, dolomite and marl act, on the one hand, as densening agents, and on the other, as absorbents. With a sufficient water content a gel is formed and the whole mass solidifies. The particles of admixts. are enveloped by the colloidal gel and not only do not lower the mech. strength of cement but sometimes increase it. An addn. of 10% admixts. can be used without fear of lowering the qualities of cement. They must be added during grinding of the clinker. M. V. Kondoidy

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

Budnikov, P. P., and Khizh, B. A. FORMATION OF MULLITE IN REFRACTORIES. *J. Applied Chem.* (U.S.S.R.), 3, 21-24 (1930). --Furnace lining made of a mixture of clays which was fired at 1300° analyzed SiO_2 57.0 to 58.0, Al_2O_3 36.4 to 37.3, Fe_2O_3 1.5 to 2, and CaO 1.5 to 1.9%. After 6 months' service in a coal-fired furnace its composition changed to SiO_2 49.38, Al_2O_3 28.54, Fe_2O_3 20.82, and CaO 0.91%. Microscopic examination revealed the presence of a large number of crystals of mullite with embedded crystals of FeO. Under certain conditions formation of mullite in refractories is favored by Fe compounds. Expert firing leads to the formation of a surface film on the refractory material and lengthens the time of its service. The life of refractories is also prolonged if the raw material after the usual firing procedure is subjected, for a short length of time, to the action of a still higher temperature in a reducing medium.

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PROCESSES AND PROPERTIES INDEX

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Ca

Theory of crushing. P. P. Budnikov and M. I. Nekrich. *Zhur. Prikladnoi Khimii* 3, 191-205(1930). Review which emphasizes the inadequacy of our present methods of crushing. V. Kalichevsky

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ca

9

Basic slags from blast furnaces and their utilization for manufacturing cement.
P. P. Budnikov and V. M. Lezhoev. *Zhur. Prikladnoi Khim.* 3, [illegible]
Properties of unsatisfactory slags are improved by adding $CaSO_4$ to molten slags.
V. Kalichevsky

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

Budnikov, P. P. TESTING STABILITY AGAINST SLAG. *Stroitel. Materialy*, 1930, [4] 35-42 -B. reviews different methods for testing stability of refractory materials to the action of slag and concludes that the methods used do not represent actual working conditions in industry. The testing samples used in the investigations made by B. contained cavities which were filled with the corroding agents, e.g., powdered slag or glass. Graphite electrodes were attached to the cavities and the electric current for heating could be regulated and could maintain the required temperature. This arrangement for testing the stability of refractories to the action of slag corresponds more exactly to the conditions prevailing in industry than all other methods used.

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PROCESSES AND PROPERTIES INDEX

Acidproof ceramic products. P. P. BUDNIKOV. *Stroitelnuie Materialui (Building Materials)* No. 4, 46-52(1930).—B. describes the prepn., properties and qualities of acidproof ceramic products made from Russian clays. M. V. KONDODY

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BC

Diminution of the water content of sludge in the manufacture of Portland cement by the wet process. Influence of diluting substances on the fineness of grinding materials for the manufacture of cement by the wet process. P. P. Budnikov, G. V. Kuhlev, and V. M. Lesnov (Ukraine Chem. J., 1930, 5, [Tech.], 27—39, 41—42).—The fluidity of Portland cement sludge containing 48% of distilled water is equal to that of a sludge made by adding 42% of a 0·01N-sodium silicate solution. This entails an economy of 0·3% of fuel required for the preparation of dry cement, and permits a greater throughput for a given plant, by diminishing the bulk of the products. The fluidity of cement sludges is adversely affected by the presence of alkaline-earth ions in the water; hence the addition of any reagents precipitating these ions, such as carbonates, silicates, and sucrose, will augment the fluidity. The proportion of grains of small diameter obtained by grinding cement in the presence of 0·04N-sodium carbonate solution is greater than when spring-water is used. R. Truszkowski.

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CA

19

Preparation of chamotte-free fireproof and acidproof objects. P. P. BUDNIKOV, N. N. ZHIKHARKEVICH AND I. G. SHAKHNOVICH. *Ukrainskii Khem. Zhur.* 5, Tech. Pt., 93-103(in German 104)(1930).—Chamotte-free fireproof and acidproof objects can be prepd. by using artificially prepd. lean lime to the extent of 85-93% of the mixt. The process lends itself easily to mech. treatment. For the dehydration of lime a drying drum is required working on the counter-current principle. To make brick by this process a pressure of 250 atm. is required. This method eliminates prepg. the mixt before shaping the objects and drying before firing. S. L. MADORSKY

COMMON ELEMENTS

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Chasov-Yar clays. P. P. Budnikov. *Mineralnoe Suir'e* 5, 507-610(1930); *Chem. Zentr.* 1930, II, 1085. A. Burger

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

Budnikov, P. P. CLAYS OF THE SHCHEKIN REGION. *Mineral' Syr'e*, 5 [9] 1240-45 (1930).—It discusses the characteristics and properties of the various clays of the Shchekin region.

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19

Investigation of the Vladimirov clays. P. P. Budnikov. *Mineral Sutr'e* 5, 1246-54(1930); *Chem. Zentr.* 1931, I, 2102.—Various clays of the Vladimirov region show slightly different fusion and vitrifying temps. They contain up to 37.46% Al_2O_3 and crack easily in burning. M. G. Moore

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"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310001-6

Budnikov, P. P., Zhikharevich, S. A., and Shaknovich, I. G. MOLDING REFRACTORY OBJECTS MADE OF HALF DRY PASTES. *Keram. i Stekło*, 6 [2] 81-84 (1930). The authors describe tests made with clays from Chasov-Yar, the composition of which is given. The results obtained were as follows: (1) a dry method of molding can be used for preparing grog blocks for kilns; (2) the quantity of grog is about 70%, 15% thin clay, and 15% binding clay diluted by a suitable electrolyte; (3) the time of drying with such a paste is 6 to 10 days instead of 3 to 3.5 months; and (4) this paste can be used for preparing firebrick which can be fired immediately after their preparation.

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BUDNIKOV, P. P., SMELYANSKII, I. S., AND ENDOVITZKY, V. I.
Tests of refractory materials under pressure at high temperatures. Keram. i Steklo, 6 [4] 192—95 (1930).—A discription of tests with refractory materials under a pressure of 1 kg./sq. cm. at high temperatures is given. The experiments were made in electric kilns of Steger and Hirsch-Hecht. Grog blocks began to deform at 1250 to 1350°.

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BUDNIKOV, P. P.

A3M-3 A METALLURGICAL LITERATURE CLASSIFICATION

Budnikov, P. P., and Loginov, S. P. MANUFACTURE OF REFRACTORY BRICK WITHOUT GROG. *Keram. i Stekla*, 6 [11-12] 534-36 (1930).—The authors discuss the properties of refractory brick for steel foundries: (1) The refractoriness of the brick must not be lower than 1600°; (2) the brick must be stable to sudden temperature changes; (3) it must be mechanically stable, viz., the interior surfaces of the brick must not fuse when in contact with fused steel; (4) its structure must be homogeneous. The composition of such brick is given and their preparation, shaping, drying, and firing is described.

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Ukrainian quartzites. P. P. Budnikov. *Mineralnoe Suir'e* No. 9, 1254-9 (1930).—Comprises estimates of available supplies and chem. analyses. B. N. D.

Some practical hints in connection with chrysotile asbestos. F. E. Kerr. *Trans.*

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Slag cement without clinker. P. P. BUDNIKOV AND V. M. LEZHOEV. *Stroitelnye Materialy* No. 9–10, 19–27(1950).—Tests were made with slag cement in which the clinker was replaced by more active agents, i. e., gypsum fired at 700°, anhydrite cement and estrich gypsum. The results showed that the setting and hardening of slag cement was greatly increased and that the mech. properties of such cement were very high. Slags with a 1.4 or higher modulus can be used. Normal or acid sulfates added to the anhydrite regulate the setting time and the strength of slag cement without clinker. Tables are given showing the properties of these cements. M. V. K.

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Budnikov, P. P., Zhikharevich, S. A., and Shaknovich, I. G. MANUFACTURE OF REFRACTORY AND ACID-PROOF PRODUCTS FREE FROM GROG. *Ber. deut. keram. Ges.*, 11 [5] 275-81 (1930); *Ukrain. Khem. Zhur.*, 5, 93-104 (1930).--As most of the costs are due to the preparation of the raw materials, e.g., firing the grog and drying the brick, the manufacture of the same products without grog is considered. Conclusions are as follows: (1) Refractory products, brick, etc., can be manufactured without grog by adding clay made lean by heating. (2) The manufacture can be mechanized entirely. For the dehydration of the clay, a drying drum can be used. (3) The drying is unnecessary. (4) It is unnecessary to have complicated and expensive equipment for preparing mixtures. (5) The material cost of the products will be lower.

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Basic conditions of the production of anhydrite cement. P. P. BUDNIKOV AND V. LAZHORV. *Research Inst Silicate Ind* (Charkov) 17, 18 pp (1930). Data are given on the compn, properties, production and use of anhydrite cement M V K

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Gypsum. P. P. Budnikov. *Bull. acad. sci. U. R. S. S.* 1930, No. 77, 1-180 —A collection of the papers published on the above subject by B. and co-workers from 1922 to 1928. B. C. A.

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Clay pipes used in casting open-hearth steel at steel plants. P. P. BUDNIKOV AND S. P. LOGINOV. *Domez* 1031, No. 3, 1-9.—Clay pipes prepd. from clay and sand, without fireclay, were used for casting steel. About 2200 ton of steel was cast by this method.

S. L. MADORSKY

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Effect of temperature of igniting kaolin on the color of ultramarine. P. P. Budnikov. *J. Applied Chem. (U.S.S.R.)* 4, 438-40(1931).—The color of kaolin colored with ultramarine changes with temp. of ignition because of decompn. of kaolin and dispersion of Al_2O_3 and SiO_2.

V. Kalichevsky

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Dolomite calcined at different temperatures and other substances as activators of the granulated slags of blast furnaces. P. P. BUDNIKOV AND L. GUTINOVA. J. Appl. Chem. (U. S. S. R.) 4, 447-54(1931); cf. C. A. 25, 60.—Dolomite should be calcined at about 900°.

V. KARCHEVSKY

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Inversion of kaolinite into mullite and quartz into tridymite by means of compounds of iron. P. P. Budnikov and V. G. Popov. *J. Applied Chem (U. S. S. R)* 4, 607-[illegible] (1931); cf *C. A.* 24, 3871, 4909.—Exptl work showed that Fe is a good catalyst for both.

V. Kalichevsky

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

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Influence of "tripel" on the mechanical properties of Portland cement. P. P. Budnikov, L. G. Gulinov, and V. I. Tokarev (Ukrain. Chem. J., 1931, 6, [Tech.], 13—16).—The addition of "tripel" (hydrated silicic acid) to Portland cement in certain cases increases its mechanical strength.

R. Truszkowski.

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Control of moisture in ceramic masses. P. P. Budnikov and B. I. Endovitzkii. *Keram. i Steklo* 7, No. 4, 30-1(1931).—With an increase in water content, the elec. cond increases proportionally. Deviation from normal water content is shown by change in elec. cond.

M. V. Kondoidy

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Defects in faience glazed ware caused by using quartz sand; reasons for their formation and means of removing them. P. P. BUDNIKOV AND M. I. SOLOMONOV. *Keram. i Steklo* 7, No. 7-8, 41-3(1931).—The formation of swellings and pits is due to the vol. change of the silica. Quartz sand should be fired before using it or the ware should be fired to 1280° to avoid these defects. M. V. KONDOROV

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R

Budnikov, P. P., and Müller, V. E. LINEAR EXPANSION OF ORDINARY AND "BLACK" DINAS BRICK DURING HEATING. *Domez*, 1931 [10-11] 24 28.—Brick made of Dinas alone and of Dinas mixed with 2% blast-furnace dust ("black" brick) were tested for linear expansion between 0° and 1000°. Both kinds expand about the same.

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Expansion of Chasov-Yar fire brick at high temperatures. P. P. Budnikov and V. E. Müller. *Domez* 1931, No. 12, 11-14.—Two grades of Chasov-Yar fire brick, prepd. from grog and clay 50:50 and 55:45 were tested for expansion at temps. up to 1000°. The bricks had the following compn: SiO_2 61.1-61.4, Al_2O_3 32.8-33.1, TiO_2 0.9, Fe_2O_3 1.9-2.4, CaO 1.1-1.3%. Tables and curves are given showing phys. and mech. properties and coeffs. of thermal expansion of the bricks. S. L. Madorsky

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The tridymitization of quartz in silica brick in the presence of mineralizers and by partial replacing of quartzites by sand in the batches for silica brick making. P. P. Budnikov and V. S. Smelyanskii. *Trans. Ukrainian Sci. Research Inst. Silicate Ind.* [U. S. S. R.] 15, 28(1931); *J. Soc. Glass Tech.* 17, 314-15A.—The Yasinovato-Avdeevsky quartzites investigated have the following av. compn.: SiO_2 98.62%, Al_2O_3 1.65, Fe_2O_3 1.76, CaO 0.74, MgO traces, loss on ignition 0.39. The sp. gr. is 2.645 and m. p. 1750°. From 62 batches of these quartzites with different additns. silica bricks have been prepd. Conclusions: (1) The quartzites were of av. quality in comparison with pure cryst. and so-called amorphous quartzites. They were slowly transformed, so that to obtain 1st-grade silica bricks either the burning temp. should be high (1460-70°) maintained for 21-8 hrs., or the quartzites should be mixed with those easy of conversion. (2) Of 3 mixts. with different granulometric compns. the most suitable had the following compn.: 10% grains from 5 to 2.5 mm., 40% grains from 2.5 to 1 mm., and 50% from 1 mm. to dust. (3) The open-hearth slags undoubtedly promote the tridymitization of quartz and the obtaining of uniform, dense bricks with true and strong corners and edges (without holes and flaws). These properties are obtained by addn. of 1-3% of open-hearth slags. It is not recommended to introduce into the batch more than 3% of open-hearth slags, as increase above this does not correspondingly increase the tridymitization of quartz. (4) Phosphorites of Isyum are excellent mineralizers, promoting the transformation of quartz into tridymite and the obtaining of a uniform dense body. The optimum quantity of this addn. is 2-3% of the wt. of the dry substances of the batch. (5) Water glass is a more active mineralizer than open-hearth slags and phosphorites, but it gives a less dense body. The optimum quantity is 1%. (6) Mn oxides promote the conversion of quartz into tridymite. (7) Coal ashes of the av. compn. SiO_2 37.10-49.45, Al_2O_3 38.00-45.58, Fe_2O_3 6.72-14.22, CaO 0.75-1.85, MgO 0.58-0.85, SO_3 0.29-3.15 and P_2O_5 0.20-1.30% also promote the change of quartz into tridymite. The optimum quantity is 1%. (8) The addn. of burnt quartzites assists in lowering the sp. gr. of silica bricks, but, in general, not much. (9) The addn. of broken silica bricks up to 15% is desirable from all points of view. (10) By addn. of 25% of quartz sand, silica bricks are obtained not inferior in quality to those obtained from quartzites only. The optimum quantity of sand is 25% of the wt. of the dry substances in the batch. To obtain silica bricks with a greater mech. strength, it is recommended to add to such a sand-contg. batch 2% of open-hearth slags. (11) Molasses is a very useful addn., as by introducing it the "green" silica bricks acquire a greater strength, and the finished product has more regular corners and edges. It is necessary to introduce 0.25% (or a max. of 0.5%) of molasses to the wt. of the dry substances in the batch.

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Budnikov, P. P., and Smelyanskii, I. S. ON THE TRIDYMITIZATION OF QUARTZ IN SILICA BRICK IN THE PRESENCE OF MINERALIZERS AND BY PARTIAL REPLACING OF QUARTZITES BY SAND IN THE BATCHES FOR SILICA BRICKMAKING. *Trans. Ukrainian Sci. Research Inst. Silicate Ind. Sci. Techn., Dept. Supreme Council Nat. Econ.* (U.S.S.R.), 15, 28 pp. (1931).—The authors have continued their research on 42 other samples of Dinas blocks (see *Ceram. Abstracts*, 9 [7] 540 (1930)) and have obtained the following results: (1) Quartzites investigated can be used for preparing Dinas blocks only when fired to a high temperature (1400 to 1470°) and for a long time (24 to 48 hr.). (2) The grain size most suitable for their change into tridymite during firing was found to be a mixture composed of 10% grains from 5 to 2.5 mm. (3) The influence of different admixtures on the degree of conversion of quartz is as follows: (*a*) Martin slag promotes the process of converting quartz into tridymite (maximum 3%). (*b*) Phosphorites from Ixium (from 2 to 3%) are good mineralizers converting quartz into tridymite and giving a dense homogeneous body. (*c*) Soluble glass (about 1%) is a strong mineralizer but produces a less dense body. (*d* and *e*) Manganese oxide and coke powder promote the conversion of quartz into tridymite. (*f*) Fired quartzites lower the specific gravity of Dinas blocks. (*g*) Fired Dinas (up to 15%) is desirable from every point of view. (*h*) Molasses (from 0.25 to 0.5%) promotes a greater durability of blocks. (*i*) Sand (up to 25%) promotes the conversion. (*j*) Clay up to 10% does not lower the quality of Dinas blocks.

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R

Budnikov, P. P., Kukolev, G. V., and Smolyanskii, I. S.
REFRACTORY MATERIALS FOR COKE KILNS *Trans. Ukrainian Research Inst. Bldg. Materials*, No. 21, 80 (1931).—The authors discuss (1) conditions of work of refractories in coke kilns, (2) kinds and quality of refractories for them, and (3) behavior of Dinas and half-acid brick used in coke kilns.

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R

Budnikov, P. P., and Pevzner, R. L. MANUFACTURE OF GROG BRICK. Gostrojisdat, Moscow and Leningrad, 1932. 1.85 R. Reviewed in *Feuerfest*, 9 [5] 79 (1933).

This book describes the latest achievements in the field of the production of grog brick in Europe and the U. S. It comprises (1) characteristics, (2) obtainment, (3) control and properties of raw materials, (4) firing and grinding of grog, (5) preparation of the mix, (6) molding and shaping, (7) drying and firing the products, and (8) the firing of the furnace. Estimation of quality and standard specifications of grog brick are given also.

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Rodnikov, P. P. SILICATE INDUSTRY OF U. S. A. [illegible] A DESCRIPTION OF THE OTHER CERAMIC MATERIALS. State Scientific Technical Publication, Charkov, USSR, 1932. 86 pp. This publication is the result of the author's

personal impressions and study during his recent trip to America. R. describes (1) the method of dry pressing and the production of high aluminum, magnesite, and chrome brick, (2) production and use of Dinas brick, (3) production and use of silicon carbide, (4) the use of vacuum filters, presses, and handling equipment, and (5) production of gypsum and Portland cement. The use of gypsum materials is well illustrated. The progress attained by Germany in the production of alumino-silicate cements is described. The technique and production and the high quality of American building materials is praised

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Utilization of waste products in the production of alumina from kaolin. P. P. Budnikov and V. M. Dorofeev. *Ukrain. Khem. Zhur.* 7, Wiss.-tech. Abt. 185-8(1932); cf. *C. A.* 27, 1123.—The waste products obtained in the extn. of alumina from kaolin by the Shmatko soda process were added to the mixts. in the *production of anhydrite cement* and *anhydrite-dolomite cement* with good results. Chas. Blanc

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Budnikov, P. P., and Endovitzkii, V. I. INTRODUCING BINARY KAOLINS INTO THE FIRE-CLAY MIX IN ORDER TO INCREASE ITS ALUMINA CONTENT AND REFRACTORINESS. *Donecz.* 1932 [1-2] 11-13; *Ber. deut. keram. Ges.*, 13 [6] 253-56 (1932).—With the view of improving the quality of some Russian firebrick, experiments were conducted in which binary kaolins were added to the fire-clay mix. Four brick samples, containing 57.68, 56.75, 55.59, and 55.24% SiO_2, respectively, and 36.07, 37.33, 37.99, and 39.25% Al_2O_3, respectively, were prepared. These samples were burned at 1350°. The resulting properties were: mechanical strength 239, 255, 289, and 298 kg./sq. cm.; refractoriness 1720°, 1735°, 1740°, and 1745°; beginning of deformation under 2 kg./sq. cm. pressure 1395°, 1365°, 1375°, and 1400°. A semicommercial plant for the manufacture of brick of the fourth type is recommended.

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Prolnikov, P. P., and Kasyan, M. S. QUANTITATIVE DETERMINATION OF QUARTZ, CRISTOBALITE, AND TRIDYMITE IN SILICA BRICK. *Zavodskaya Lab.*, 1932 [4] 30-18. The determination of the specific gravity of silica brick gives results usable for estimating their quality

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Manufacture of portland cement from anhydrite and gypsum. P. P. BUDNIKOV AND M. I. NEKRICH. *J Applied Chem.* (U. S. S. R.) 5, 173-6(1932). cf. C. A. 25, 5744.—Anhydrite and gypsum are both suited for mfg. H_2SO_4 with simultaneous production of portland cement. The following difficulties arise: the temp best suited for decompn of $CaSO_4$ is close to its m. p.; the $CaSO_4$, CaO which is formed during decompn also has a low m. p.; COS is formed in the reducing atm. Expts on a com. scale can alone det the practicability of the process. V. KALICHEVSKY

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Budnikov, P. P., and Mandelgrün, E. L. CHROMITE-DINAS BRICK. *J. Applied Chem.* (U.S.S.R.), 5 [3-4] 299-302 (1932); *Ber. deut. keram. Ges.* 13, 521-24 (1932).

As Dinas is thermally unstable and has a poor resistance to alkaline slag, 20, 30, and 50% chromite were added to the Dinas mix to obtain a refractory stable to the thermal and chemical action of acid and alkaline slag. Chromite from the Urals containing 29.13% Cr_2O_3 and 32.68% Fe_2O_3 and Ukrainian amorphous quartzite with a 96.92% SiO_2 content were used. The brick was shaped pneumatically and fired in a tunnel furnace. The brick obtained had a lowered refractoriness (Seger cones 28 and 29) and deformation appeared between 1335 and 1435°. The microscopical investigation of the structure showed a thorough transformation of quartz into tridymite and cristobalite. The investigation of the thin section of the mixture of Cr_2O_3 and SiO_2 after heating it to 2100° for 1 hr. showed the presence of undissolved Cr_2O_3 in a finely distributed state in a net composed of tridymite crystals, cristobalite, and the amorphous mass. Undoubtedly, Cr_2O_3 and SiO_2 do not combine in chromite-Dinas brick.

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Budnikov, P. P., and Mandelgrün, E. L. CHROMITE-DINAS BRICK. *J. Applied Chem.* (U.S.S.R.), 5 [3-1] 290-302 (1932); *Ber. deut. keram. Ges.* 13, 521-24 (1932).

As Dinas is thermally unstable and has a poor resistance to alkaline slag, 20, 30, and 50% chromite were added to the Dinas mix to obtain a refractory stable to the thermal and chemical action of acid and alkaline slag. Chromite from the Urals containing 20.13% Cr_2O_3 and 33.08% Fe_2O_3 and Ukrainian amorphous quartzite with a 99.92% SiO_2 content were used. The brick was shaped pneumatically and fired in a tunnel furnace. The brick obtained had a lowered refractoriness (Seger cones 28 and 29) and deformation appeared between 1335 and 1435°. The microscopical investigation of the structure showed a thorough transformation of quartz into tridymite and cristobalite. The investigation of the thin section of the mixture of Cr_2O_3 and SiO_2 after heating it to 2100° for 1 hr. showed the presence of undissolved Cr_2O_3 in a finely distributed state in a net composed of tridymite crystals, cristobalite, and the amorphous mass. Undoubtedly, Cr_2O_3 and SiO_2 do not combine in chromite-Dinas brick.

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The use of various modifications of calcium sulfate in basic slags of blast furnaces.
P. P. Budnikov and L. Gutinova. *J. Applied Chem.* (U. S. S. R.) 5, 303 (1932).
Anhydrite is the most promising material for mfg. cement from slags. V. K.

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Refractory plugs and spouts for ingot molds in iron metallurgy. P. P. Budnikov and S. P. Loginov. *Domez* 1932, No. 6, 30-5. Plugs and spouts were prepd. from the following mixts.: (1) 25% refractory plastic clay contg. 38-40% Al_2O_3, 25% schamotte contg. 38-30% Al_2O_3 and 50% Ceylon graphite (all these were crushed to a grain below 1 mm. size); (2) 35% refractory plastic clay contg. 38-30.5% Al_2O_3, size of grain below 1 mm., and 65% schamotte, size below 0.5 mm. The plugs and spouts produced from these mixts. were tested for refractoriness, porosity, H_2O absorptiveness, sp. gr. and shrinkage on burning. A table is given showing these properties, also mineral and chem. compn. of the various samples prepd. S. I. Madorsky

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Budnikov, P. P., and Belovodskii, V. V. Utilization of Ukrainian kieselguhr in the cement and refractory industries. *Ukrain. Khem. Zhur.*, 7 [3] 103-12 (1932).- A detailed account of researches made to use kieselguhr in the refractory and cement industries is given. The results are tabulated. Insulating brick with 50% porosity have been produced which may be used for temperatures not exceeding 750°.

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B-1-10

Utilisation of waste products from manufacture of alumina from kaolin. P. P. [illegible] and V. M. Donovsky (Ukrain. Chem. J., 1952, 7 [Tech.], 185—188).—The waste products (average SiO_2 26·6, Al_2O_3 7·6, Fe_2O_3 1·25, CaO 28·5, K_2O 2, and Na_2O 13·2%) can be utilised in the manufacture of Portland and anhydrite cement. R. T.

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B-1-10

Utilisation of Krivoi Rog clinker for manufacture of clinker Portland cement. P. P. Budnikov and L. Gulinova (Ukrain. Chem. J., 1932, 7 [Tech.], 205—212). —Krivoi Rog clinker mixed with 15—30% of Portland cement yields satisfactory cement. R. T.

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Budnikov, P. P., Batt, A. O., Grebenik, A. A., and Endovitzkii, V. I. GROG BRICK WITH INCREASED ALUMINA CONTENT. *Feuerfest*, 8 [11] 161-64 (1932); *Stal*, 3 [1-2] 80-86 (1933). Attempts to manufacture grog products having a 40% alumina content, a refractoriness of 1750° (Seger cone 34), and a deformation beginning at 1400° are described. Data on the raw materials used, the products manufactured, and methods are given.

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Budnikov, P. P., and Tabakov, Z. Ya. MAGNESITE REFRACTORIES. *Doklady*, No 9, pp 21-31 (1962). An account is given of the commercial aspects of the refractories industry. Special reference is made to the economic aspects of magnesite refractories.

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Budnikov, P. P. Refractory fire-clay ware produced by the method of dry pressing at the Chasov Yar plant "Ukrogneupor." *Domez*, 1932 [12] 58-60. Refractory brick, crucibles, and large blocks were prepared by the dry press method.

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R

Budnikov, P. P., Kukolev, G. V., and Smelyanskii, I. S. TRIDYMITIZATION OF QUARTZITES. *Spe[illegible]ksnal*, 65 [20] 520-33 (1932). A mixture consisting of 33.5% quartzite grains of 4 to 7 mm., 16.5% of 2.3 mm., 16.5% of 1.2 mm., and 33.5% of up to 0.2 mm., and 2% CaO of the weight of the quartzites was used for obtaining Dinas blocks of high quality from the Panteleimonovka quartzites. The best catalyzer for the tridymitization of quartzites is phosphate. Although anhydrite is a good catalyzer, the Dinas obtained has a limited mechanical strength. An addition of 1% molasses to the mixture acts favorably. The firing curve of the Krasnogorovka plant of the Ukrainian Silicate Trust does not correspond to the normal firing curve.

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Cement free of clinkers. P. P. Budnikov and L. G. Gulinova. Russ. 31,245, Sept. 30, 1933. In the prepn. of a clinkerless cement by grinding together blast-furnace slag and burned dolomite, instead of synthetic anhydrite (gypsum burned at 700-800°), natural anhydrite is applied, and instead of caustic dolomite, which was burned at a temp. not exceeding 800-900°, dust obtained as waste on burning metallurgical dolomite is used.

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Increasing the hydraulic properties of dolomite lime. P. P. Budnikov and M. S. Feigin. Russ. 33,848, Dec. 31, 1933. The hydraulic properties of dolomite lime are improved by the addn. of unburned clay dried at a temp. not exceeding 160°.

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C

BUDNIKOV, P. P., AND SMELYANSKII, V. S. O neupory v Metallurgii. Gosdarst. Nauch.-Tekh. Izdatelstvo Chernoi i Tsvetnoi Metallurgii, Moscow, 1933, 68-81.--Discussion of "Employing black dinas in Martin furnaces" is found on the above pages.

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Determination of the exact specific gravity of Dinas. By P. Budnikov, [illegible] Grebenik and V. I. Rudovitzkii. *Zavodskaya Lab.* 1933, No. 5, 27 9.—Samples varied from 2.32 to 2.51. M. C. de Mohai

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Influence of fireclay dust on the chemical and thermal properties of refractive bricks. P. P. Budnikov and E. I. Mandelbrin (J. Appl. Chem. Russ., 1933, 6, 1—11).—The H_2O content of unbaked refractive clay and the strength and sp. gr. of the fired brick (I) increase with its content of "dust" (II) (particles < 0·2 mm. in diam.), whilst the porosity, capacity for absorption of H_2O, and refractivity to temp. of (I) diminish. The resistance to deformation at higher temp. is practically independent of the content of (II). No definite connexion was found between content of (II) and resistance to corrosion by slag; in the case of Tschasov Jar clay, max. corrosion was obtained with brick containing 20% of (II). R. T.

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Influence of Fireclay Dust on the Chemical and Thermal Properties of Firebricks. P. P. Budnikov and E. L. Mandelgrin (*Zhurnal Prikladnoi Khimii* (*Journal of Applied Chemistry*), 1933, [B], 6, (1), 1–11).—[In Russian, with German summary.] The influence of grain-size of the fireclay on the properties of firebricks was investigated. Large grain-size increases the porosity and thus lowers the mechanical strength and increases its thermal resistance. With a large proportion of fine material (less than 0·2 mm.) deterioration in the resistance to heat changes, slagging and deformation occur. Tests with fireclay made from Tchasovtar clay containing silica 53·96, alumina 32·45, iron oxide 0·65, titania 1·01, lime 0·31%, magnesia traces, alkalis 2·36, loss on ignition 8·66%, showed that increase of dust (less than 0·2 mm.) content raises the water requirements, which thus become directly proportional to the dust content. Contraction in volume on burning increases up to 20% dust, but falls thereafter. The density increases, whilst specific porosity and water absorption power decrease with increase of dust content. Mechanical strength increases with dust content, refractory properties and deformation under load remain unaltered, whilst resistance to thermal changes falls progressively. No relation could be established between dust content and resistance to slagging. 20% appeared to be the optimum figure for the fireclay in question. Linear expansion of the bricks is inversely dependent on this volume contraction.—M. Z.

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B-I-10

Metallurgical slag as a basis for manufacture of clinker-free cements. P. P. [illegible] and L. Gulipova (J. Appl. Chem. Russ., [illegible], 6, 1036—1043).—Basic slag (I) [illegible] cements (II) with natural or artificial [illegible] (III), gypsum, or dolomite (IV). The crushing [illegible] of mixtures of (I), (III), and burnt (IV) is > that of (II) containing also 15 or 30% of Portland cement clinker. R. T.

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Chlorine-resistant vitreous (siliceous) materials in the preparation of aluminum chloride. P. P. Budnikov. *J. Applied Chem.* (U. S. S. R.) 6, 1043-8(1933).—The best temp. for the prepn. of $AlCl_3$ from $Al_2O_3 \cdot 2SiO_2$ + CO + $3Cl_2$ is 1000-1150°. Suitable lining for the app. is a high-grade Dinas brick prepd. from a quartzite contg. SiO_2 97.12-98.88, Al_2O_3 0.41-1.47, Fe_2O_3 0.02-1.3, CaO 0.1-1.08 and MgO traces to 0.17, with CaO 1.5-2.0% as binder. The best mortar should contain a mixt. of quartz 60, waste from burned Dinas brick 30, and a plastic refractory clay 10%. The seams should not exceed 3 mm., so as to avoid the escape of gases. Also in *Sprechsaal* 67, 135-6(1934). A. A. B.

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Effect of MgO on physicochemical properties of Dinas brick. P. P. Budnikov and N. S. Kassiyan. *Domez* 1933, No. 7, 14-17.—Exptl. bricks, contg. 0, 0.2, 0.3, 0.5, 1 and 2% MgO, were prepd. from mixts. of 2 kinds of quartzites. Micro- and macroanalysis and physicochem. tests showed that in every case the bricks were of good quality. S. L. Madorsky

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R

Budnikov, P. P. INVESTIGATIONS OF QUARTZITES OF THE POLTAVSKII BEDS OF THE OCHERETINO REGION. *Mineral'. Syr'e*, 8[5]11-20(1933). - Data on the quartzite deposits and experiments in using them are given. The quartzites should be fired from 1200 to 1480° for 35 hr. to obtain good refractories.

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Investigation of quartzites of Poltava beds in the Ocheretino region, P. P. Budnikov. *Mineral. Sur'e* 8, No. 5, 20-6(1933). Lab. and semi-com. tests showed the material is suited for production of Dinas bricks for lining Martin furnaces and coke ovens. Chas. Blanc

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Acid-resistant earthenware and high-quality refractory products from Druzhkovka clays. P. P. [illegible] (Ukrain. Chem. J., [illegible], 8, [illegible]).—Products from Druzhkovka clays are superior in quality to those from Tschaqov Jar clays. R. T.

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Dilution of portland cement with chalk. P. P. Budnikov and L. G. Gulinova. *Ukrain. Khem. Zhur.* 8, 422-9(1933).—The mech. properties of portland cement are slightly improved by including 10-20% of $CaCO_3$ in the mixt. At the same time setting is slightly delayed, the d. of the cement is diminished and less H_2O is required for mixing. B. C. A.

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Employing waste products from the production of aluminum chloride from kaolin in the ceramic industry. P. P. Budnikov and M. Ya. Salomin. *Keram. i Steklo* 8, No. 9, 9(1939).—The waste products composed of 88-90% SiO_2 in a finely dispersed state, 12-14% Al_2O_3 and traces of CaO were used in making faience. The mix was composed of kaolin 33.1, clay 30.2, waste products 31.7 and cullet 5%. The ware was fired to 1280°. Porosity of the body was 14-16%. The ware was then glazed and fired to 1220°. The glaze frit was: SiO_2 13.2, feldspar 33.6, chalk 14.4, PbO 18.4, borax 19.9, kaolin 1.5; the glaze consisted of: frit 82.00, SiO_2 10.00 and kaolin 6.80.

M. V. Kondoudy

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Budnikov, P. P. MAGNESIA REFRACTORY MATERIALS. *Ref. Leaflets Central Council All-Union Inventors' Soc.*, 12 [224-228] (1933—issued 1934).—The uses of magnesia refractories are described. Chemical and physical characteristics of magnesite deposits in the U.S.S.R., the U.S.A., and other countries are given. Methods of production are described, with a special reference to the Satka plant in the Ural. B. discusses the mining of magnesite rock, firing of magnesite, preparation of the mass, molding, drying, and firing of the brick. The properties of magnesite brick and claims made for it are given. Magnesia materials produced without subsequent firing and magnesite nozzles for casting steel are described.

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A19-11 A METALLURGICAL LITERATURE CLASSIFICATION

Rydnikov, P. P. SILICA REFRACTORIES GIVE DOUBLE SERVICE. *Ogneup* 1Ge, 22 (5) 130-31 (1933). The experimental production of "black Dinas," a form of silica refractory in which the quartz has largely been converted to tridymite, is described in detail. Conversion to tridymite is effected by the addition of iron-bearing mineralizers and a reducing material such as coke dust or charcoal. Open hearth furnace slag, Thomas and weld slags, and blast-furnace dust, obtained from the smelting of cast iron are used as mineralizers. The quantity of iron-containing mineralizer should not exceed 2 to 3% of the weight of dry quartzite. A greater quantity of mineralizer does not promote additional conversion into tridymite under the same firing conditions, but does lower refractoriness, porosity, and softening point under load at high temperatures. Grains of metallic iron are removed from the ground mineralizer by means of a magnet, as such particles act as fusing centers which result in fused brick. The mineralizer is added to the dry quartzite powder in a finely ground state. The customary lime solution is not added until the mineralizer has been thoroughly dry-mixed with the quartzite. To secure a reducing atmosphere within the brick and to give it the normal porosity, about 1.5% of ground coke or charcoal is added. The reducing atmosphere is necessary for the formation of the ferrous-oxide glass in which the quartz dissolves relatively easily and in which the crystallized tridymite remains undissolved. The normal porosity imparts the necessary resistance to spalling. To increase the green strength, 0.125 of 1% of organic binder is added. One-half of 1% of lime is also added. The granulometric composition of the mixture must be such that the grains vary from a fine flour up to grains of 5 mm. in diameter. It is sufficient if not more than 50% of the grains will pass through a 1.0 mm.-mesh sieve. The firing of black Dinas brick is carried out under conditions comparable to those employed with ordinary silica brick. It is especially important to employ a reducing atmosphere during the main firing, to fire at a high temperature (1460 to 1480°C.), and to hold the ware at a high temperature. The duration of soaking depends upon the quality of the raw material used. The cooling must be carried out carefully, especially at temperatures below 600°C. An open-hearth furnace unit built from first class tridymite brick made thus is claimed to withstand approximately 600 meltings.

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Clinker-free slag cements. P. P. Budnikoff. *Zement* 22, 325-30, 342-4, 359-61 (1933). - Granulated Russian blast furnace slags ranging in compn. between 30 and 37% SiO_2, 7 and 12% R_2O_3, 47 and 52% CaO, 0.5 and 1.7% MgO and 2.2 and 2.9% S made satisfactory cements when combined with gypsum and related compds. or with impure dolomite calcined to 900°. Sulfide S increases the activity of blast furnace slags. H. F. K.

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Gypsum and anhydrite as raw materials for the chemical and building materials industries. P. P. Budnikov. *Trans. Sci. Inst. Fertilizers* (U. S. S. R.) No. 101, 99-108 (1933).--B. analyses the reactions involved in the production of H_2SO_4 from gypsum by thermal methods and the utilization of the residue in the manuf. of portland cement. He also discusses the production of S from the slag of reverberatory furnaces, of $(NH_4)_2SO_4$ and portland cement from gypsum and anhydrite. I. S. Ioffe

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Cement. P. P. Budnikov. Russ. 36,262, April 30, 1934. Addn. to Russ. 31,245 (C. A. 28, 4380). An hydrite is used as the main ingredient, while the slag is used only as an admixt. In addn. to slag and dolomite dust is used also the by-product from the prepn. of alumina by the alk. method. Natural or artificial anhydrite may be used.

Apparatus for testing cement pastes or conglomerates during hardening. Cesare Zamboni. Brit. 476,253, Dec. 6, 1937. A pendulum is allowed to swing against the specimens and the height of the rebound of the pendulum measured.

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CARBON ELEMENTS

Platinum catalyst. P. P. Budnikov. Russ. 37,698, July, 1934. An inert carrier is impregnated with a soln. of Pt salts together with reducing agents such as essential oils or turpentine pretreated S or SCl_2. The impregnated mass is ignited.

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Budnikov, P. P. DINAS REFRACTORIES. USSR Pat 30[illegible], Oct 31, 1934. -A binder obtained as waste in the preparation of Al_2O_3 by the soda-lime process is used instead of CaO

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R

Budnikov, P. P. FIRE-CLAY BRICK, ETC. U.S.S.R. Pat. 39,658, Oct. 31, 1934.—In the preparation of brick, etc., fire clay is moistened with a solution of an electrolyte and finely ground clay mixed with a coagulant, such as $AlCl_3$, $CaCl_2$, $FeCl_3$, or $Fe_2(SO_4)_3$, is added.

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Activation of blast-furnace slags and preparation of clinkerless cement. P. P. Budnikov (Compt. rend. Acad. Sci. U.R.S.S., 1934, 1, 255—263).—The quality of the cement depends on the nature of the activator, the composition of the slag, the manner and degree of its granulation, and the conditions of cooling of the molten slag. Slags should contain $\nless$ 46% CaO, $\nless$ 9% Al_2O_3, $\nless$ 3% MnO, and $\ngtr$ 2% FeO. CaS improves the mechanical properties of the cement. H. J. E.

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The reaction of the reduction of sodium sulfate to sodium sulfide. P. P. Budnikov. *Compt. rend. acad. sci.* (U. R. S. S.) [N. S.] 1, 332-4(in English 334-6) (1934); cf. *C. A.* 27, 5071.—The com. method of prepg. Na_2S from Na_2SO_4 and coal in open-hearth or rotating furnaces is very wasteful and gives an impure product. These investigations show that the most efficient way is to atomize the Na_2SO_4 in a flame of atomized fuel. The reaction begins with pure sugar C at 800°, with birch charcoal at 750°, with a graphite at 880° and with gas black at 750-800°. Once started, the action accelerates, as a result of the fluxing action of the Na_2S. At 850°, with a Na_2SO_4:C ratio of 3:1, the action is 95% complete in 2-3 min., while at 1100° and with a ratio of 4:1 the yield is 88.6% in 40 sec. Prolonged heating results in lowered yields, in consequence of side reactions that form SO_2, S, etc. CO reacts with Na_2SO_4 only in the presence of a catalyzer (C or Ni). H_2 reacts slowly, even without a catalyzer. Yield at 800° in 45 min., 44.4%; same with Ni, 81.0%. These yields increase with the temp. up to 1000°, then drop off again. S and SO_2 are formed as decompn. products.

J. E. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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The action of carbon monoxide on fire clay. P. P. Budnikov and D. Nirenshtein. *Stal* 4, No. 7, 48-52 (1934). —At 400-500°, FeO present in fire clay brick (1-5%) acts as a catalyst for the reaction $2CO \rightarrow CO_2 + C$. The C thus pptd. in the pores of the bricks disintegrates them. At higher temp. such action does not take place. The addn. of a small amt. of $CuSO_4$ to the fire clay hinders disintegration.

H. W. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Budnikov, P. P.

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METALLURGICAL LITERATURE CLASSIFICATION

Budnikov, P. P., and Nirenshtein, D. A. RELATION OF REFRACTORY GROG MATERIALS TO INFLUENCE OF CARBON MONOXIDE. *Stal*, 7, 48-52 (1934).—The question of the influence of carbon monoxide on refractory linings of furnaces is of real practical importance. Its destructive influence is caused by the reaction, $2CO \rightarrow CO_2 + C$, which takes place under the catalytic influence of iron oxide contained in the refractory brick and leads to deposition of carbon which leads to destruction of the lining. Investigations by different authors are described. Investigations by the authors to find the conditions under which grog brick would be the most resistant to the influence of CO are described. The following conclusions were made: iron oxides and sulfides contained in the clay or taken into the mass during its working up in machines for the most part change to iron oxide. This acts as a catalyzer to the above-mentioned reaction. The optimum temperature for the reaction is 450 to 500°; at higher temperatures it goes in the inverse direction and no depositions of carbon are observed. The destruction of grog refractories is higher around iron spots. An important factor for the resistivity is the volume porosity of brick on which their permeability to gases depends. A very small addition of copper sulfate to the charge improves the resistivity of grog materials to CO, and this circumstance should be investigated more extensively. The following practical suggestions are made: the iron content (computed as Fe_2O_3) must not surpass 1 to 1.3% which can be attained by careful mechanical cleaning of clay and electromagnetic separation of the charge; this quantity of iron must be regularly distributed in the mass; an elevated density of the brick is required, the volume porosity not surpassing 18%; the firing of grog refractories in the temperature interval of 1300 to 1500° is desirable in a reducing atmosphere, as the ferric compounds formed at this temperature make the brick dense and catalyze the formation of mullite. Under the above condition a protective "crust" forms on the surface which improves the chemical resistivity of the brick.

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Budnikov, P. P. REFRACTORIES AND THEIR CORROSION. [redacted] S.S.S.R.), 7, 430-34 (1934); *Ceram. Age*, 25 (4) 121-22 (1935).—The chief destructive factors are chemical and thermal influences (about 80%), mechanical wear (15%), and other factors (5%). A classification of refractories is given, the limits of fusing temperatures of refractories are indicated, and the causes of thermal and chemical wear of all kinds of refractories (influence of slags, ash, oxides, gases, salts, etc.) are described. Ways of improving the quality of different refractories are suggested. The causes of wear of refractories are analyzed.

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