of semi-finished products and burning. The practical data given in that chapter are of considerable value and should be used in both the planning and practice of Dinas brick plants.

The chapter "Special Dinas Brick Production" goes into Dinas brick for open-hearth, electric, coke and glass furnaces and dwells on the features of the process which allow the production of high quality dinas brick for that purpose. The production of high-density dinas brick and all types of dinas in combination with chromite, zirconium, carborundum, concrete, mortar, light-weight and unburned dinas and even dinas made of raw material like vein quartz, zuartz sands, chalcedony and quartz glass. The effect of the characteristics of a production process on quality is discussed in great length for each refractory.

The author states that in addition to regular dinas brick made of quartzites, new types of dinas refractories with a wide range of properties can be manufactured; it is possible to produce zirconium dinas brick, for instance, with a higher initial softening point or dinas carborundum brick with greater thermal stability.

The next chapter "Properties of Dinas Brick" investigates the properties of these refractories, their correlation and the factors that determine their physical, chemical and technological properties. The part that deals with the effect of solid, liquid and gaseous phases on Dinas brick is noteworthy.

The concluding chapter "Use of Dinas Brick" describes the duty and wear of dinas in different furnace units.

The monograph gives a detailed and thorough insight into all aspects of dinas production and use. The author referred to a great variety of foreign sources on Dinas brick (the bibliography contains over 1000 references). However, the following shortcomings should be pointed out:

1. The first chapter should have been subdivided into (a) general physical and chemical basis of the production process and (b) physical and chemical bases and processes of individual operations in the production process.

2. In discussing the ternary system of $SiO_2 - FeO - Al_2O_3$ the author claims that ferrous oxide has greater fluxing properties than magnetite. However, the fact that Al_2O_3 destroys the immiscible liquids in the $FeO - SiO_2$ system and, consequently, the liquid phase increases, is omitted. Since this fact is of considerable importance for the service life of Dinas brick it should have been indicated.

3. The heat capacity of wustite, hematite, fayalite etc. (see p. 370) could have been eliminated because their negligeable presence in Dinas brick does not affect the heat capacity of that refractory.

4. In investigating the interaction with solid, liquid and gaseous atmospheres it would be interesting to learn about the effect of alkaline vapors on dinas (the papers by Rowden and Green, for instance) a factor which is significant for the life of Dinas brick in coke and glass furnaces.

5. In discussing the durability of Dinas brick in glass furnaces the author omits any mention of the fact that in the manufacturing of boron silicate glass the wear of Dinas brick is greater than in making alkaline glass because it is produced at higher temperatures (by 150 to 200°C).

In our view the title "Formation of the Dinas Body" (Chapter 1) should have read "Forming of Dinas During Heating" while "Forming the Green Material" should have been more appropriately called "Pressing of Dinas Mixtures" (Chapter II).

The above shortcomings do not diminish the great value of the paper which is written on a scientific level and is marked by a profound and versatile discussion of the theory and practice of Dinas brick production. The paper is recommended for investigators, planners and production personel. There is no doubt that it will enhance the level of scientific knowledge with regard to the physical chemistry of silica refractories.

Reviewed by V. A. Bron

ARTICLES PUBLISHED IN OGNEUPORY

1933 Nr 4. Effect of Limestone and Grain Distribution on the Properties of Dinas Brick.
Nrs 6-7. Fuel Consumption in a Lengersdorf Tunnel-type Furnace.

1934 Nr 8. Effect of Additives on the Properties of Dinas Brick.
Nr 12. Linear changes in Dinas Brick During Firing.

1935 Nr 4. Dinas Brick with Whitewash Binder.
Nr 7. Abnormal Behavior of Tarasov Sandstone During Firing.
Nr 9. Unburned Reinforced Suspension Roofs for Open-Hearth and Electric Furnaces.

1937 Nr 8. Tarasov Sandstone in Dinas Brick Production.
Nr 12. Investigation of Dinas Expansion During Firing (first article)

1938 Nr 9. Investigation of Dinas Expansion During Firing (second and last article)

1939 Nr 9. Determining the Suitability of Raw Material for the Production of Dinas Brick and Refractory Silica Mixtures.

1945 Nr 1. Dinas Brick Made from Crystalline Quartzite
Nr 6. Dinas Brick with an Iron Binder.
Nrs 7-8. Dinas Brick Made from Chalcedony.

1946 Nr 6. Technical Problems in Dinas Brick Production.

1947 Nr 1. Study of Loosening in Dinas Brick.
Nr 5. Metallurgical Dinas Brick Made of Bolshoy Neverovsk Quartzite Sandstone.
Nr 7. Vein Quartz — A Raw Material for Dinas Brick Production.
Nr 11. Development and State of Dinas Production in the Soviet Union.

1948 Nr 2. Loosening of Silica Rock and Production Process of Dense Dinas Brick.
Nr 4. Effect of Grain Distribution of the Dinas Mixture on Density.

1949 Nr 3. The Working Properties of Roof Dinas Brick (physical and chemical factors, which determine the spalling of Dinas brick).
Nr 5. The Working Properties of Roof Dinas Brick (investigation of fiber formation in overheated Dinas brick).
Nr 7. The Working Properties of Roof Dinas Brick (effect of the absorption of iron oxide by Dinas brick on its abaility to form fibers during overheating).
Nr 12. The Working Properties of Roof Dinas Brick (physical and chemical processes which cause the fusion of Dinas brick in open-hearth furnaces).

1950 Nr 6. Mixing Dinas Mixtures.
Nr 7. Pressing Dinas Mixtutres.

1951 Nr 2. Physico-chemical Method of Enhancing the Density of Refractories Made from Lean Clays.
Nr 10. Crystallization of Silica in High-Density Silica-Rich Dinas Brick.

1952 Nr 4. Continuous Mixing of Dinas Mixtures.
Nr 8. Firing Shaped Coke Dinas Brick in a Tunnel- Type Kiln.

1953 Nr 1. Production of High-Density Silica-Rich Dinas Brick for Open-Hearth Roots.
Nr 4. Light Dinas Brick in a Dinas Firing Kiln.
Nr 7. Organizing the Production of Light Dinas Brick

1954 Nr 3. Introducing High-Density Silica-Rich Dinas Brick into Production.
Nr 8. Wear of Dinas Brick and Its Causes.

1955 Nr 2. Coatings and Mortars for Light Dinas Brickwork.
Nr 4. Life of Dinas Brick in Glass Tanks for the Production of Refractory Glass.
Nr 7. Enhancing the Density of Magnesite Mixtures and Preparing High-Density Refractories.

1956 Nr 2. Investigation of the Sintering Process of Magnesite Milled by Vibrator.
Nr 5. Strength of Dinas Brick and Changes Therein at 1600°C.

1957 Nr 1. Effect of Decreased Microhardness of Mineral Powders Under the Action of Surface Active Compounds on Densening During Pressing.
Nr 4. Investigation of the Effect of the Composition of Additives and Grain Distribution on Phase Composition.
Nr 6. Plasticity of Dinas Brick Versus Basic Technological Factors.
Nr 9. The Effect of Hydration of the Magnesite Mixture on Firing of Refractories.
Nr 12. Setting up the Production of Dinas-chromite Brick.

1958 Nr 1. Zinc spinel and Its Refractory Properties.
Nr 3. Processes During the Heating of Dinas Brick and Their Effect on Strengh.
Nr 7. Laws Governing the Changes of Plastic Properties of Dinas Brick During Heating.
Nr 8. Application of Dinas Chromite Brick in the Checkerwork of Open-Hearth Furnaces.
Nr 11. Charging Unburned Dinas Brick on Tunnel Kiln Cars for Drying.

1959 Nr 4. Pressing Graphite and Carborundum Refractories in a Thermoplastic State.
Nr 9. Service and Wear of Carborundum Refractories.

1960 Nr 2. Oxidation of Carborundum Refractories and Methods to Decrease It.
Nr 4. Carborundum Refractories with a Silicon Nitride Binder.
Nr 12. Hot-Pressed Ultra-Dense Carborundum Articles.

1961 Nr 1. Strength of Unburned Dinas Brick and Laws Governing It.
Nr 2. Pressing Ordinary Brick from Clay and Kaolin in the State of Thermoplasticity.
Nr 3. Reaction of Calcium Oxide to Silica in Mixing Dinas Mixtures.
Nr 7. Carborundum Refractories in Reduction Furnaces for Iron Oxide and Conversion of Natural Gas.
Nr 9. Technological Aspects of Automation in Dinas Brick Production.

1962 Nr 2. The Behavior of Dinas Zirconia Brick in the Arches of Arc Furnaces.
Nr 2. Production of Dustfree Granulated Hygroscopic Dinas Mortar.