CONCLUSIONS

When dina mixtures are tempered, there is a chemical reaction between the CaO and SiO2. The process is of an adsorption-chemical nature, and the number of reaction products is proportional to the surface of the quartzite grains in the mixture. The rubbing off of neoeneres from grains during tempering in the mill leads to an increase in the number of them, compared with the theoretical figure.

It has been shown that the principal product in the reaction between Ca(OH)2 and SiO2 when tempering dina mixtures is bicalcium hydrosilicate. Investigation has also shown that calcium hydrosilicates do not increase the strength of green dina; they only play a part during firing.

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EXCHANGE OF EXPERIENCE

RATIONALIZATION AND INVENTION AT SEMILUKI PLANT

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Competing with the establishments in the same economic region, the Semiluki Refractory Plant has continually been awarded the second and third places over the last three years by the Voronezh Council of National Economy and Obhprofsovet in the competition for advances in invention and rationalization.

Design offices have been set up in the factory shops to develop designs for implementation of the proposals submitted.

Great attention is being given to invention and rationalization by the organizations at the plant. The plant newspaper "Refractory" regularly publicizes the activities of the plant's invention and rationalization society.

In 1960, 1276 proposals were implemented, with a yearly saving of 392,000 rubles.

The proposals have helped to improve the use of electric power with a yearly saving of 30,000 rubles.

A considerable amount of ferrous and non-ferrous metals and fuel have also been saved.

Below we describe some of the proposals which may be of use to other refractory industry establishments.

When cars are passed through the tunnel-type kiln, rarefaction at the pre-heating zone is sharply decreased, the hydraulic regime is disturbed, and the air supply is reduced, leading to incomplete combustion of the gas. To avoid this, Andonyev, Stolovkov and Kulagin have suggested the installation of an automatic device controlling the amount of gas fed to the kiln (Figs. 1 and 2).

Fig. 1. Simplified circuit for automatic reduction of fuel consumption:
1) VK-211 end switch attached to kiln door; 2) microends attached to end of baffle; 3) electromotor winding; 4) from automatic control

Fig. 2. Paired sprocket for elevators

1) Here and throughout article this means 1961 rubles.
When the kiln doors are opened, a slave mechanism controlling the baffle plate in the gas tube receives a signal causing it to close slightly and reduce the gas discharge.

The amount of gas required is found experimentally.

When the kiln doors close again, the baffle returns to its original position and the normal gas flow is continued.

The introduction of this proposal enables a saving of 300,000 m$^3$ natural gas per year.

There are two sprockets on the shafts of the top and bottom elevator heads. The repair and replacement of these sprockets was a very laborious process. Moreover, this design caused the chains to bend and break, interrupting the entire production cycle.

Tobolin, Kuleshov and Grigor'yev proposed that the two sprockets should be replaced by one paired sprocket (Fig. 2). The width of the sprocket should correspond to the ladle dimensions. The implementation of this proposal has made it possible to reduce stoppages and cut down time spent on repairs to the elevators. The life of the chains has also been increased, the cost of making sprockets has been reduced and the elevators now operate more smoothly.

At the suggestion of Podgaynyy, the plant now uses an all-purpose vise (Fig. 3).

The vise is used for working inclined planes on horizontal shapers and milling machines.

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Fig. 3. All-purpose vise

Fig. 4. Friction coupling for transmission shaft of PZh–25 crane:
1) principal transmission shaft; 2) friction base; 3) conical pinion; 4) thrust bearing