

alike to AgCl and the peak of hardness alteration by annealing, abnormal hardening was measured, at 100°C and 200°C after 15 minutes from the start of annealing but not measured at 300°C. Also as for AgBr such hardening existed after 15 min. at 100°C.

Applying X-ray Laue method, photographs showed that AgCl and AgBr foils had fibre structure whose axis  $\langle 110 \rangle$  was parallel to the direction of rolling and recrystallization phenomenon existed in such ionic crystals, and that such a phenomenon begins at 100°C for 120 min. for AgCl and at room temperature for 3 days for AgBr. On the basis of the fact that three samples annealed, at 100°C. 240 min., 125°C. 30 min., 150°C. 3 min., respectively, resembled to each other with respect to the distribution of Laue spots by recrystallization, which are of the same order, and having an equal residual fiber structure, the activation energy of recrystallization was calculated to be 27500 cal/mol.

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#### 14. Influence of Slag, especially of $\text{Al}_2\text{O}_3$ and $\text{TiO}_2$ in Slag upon the Structure and Mechanical Properties of Cast Iron. (VI)

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The gray cast iron was melted under the slag of  $\text{SiO}_2\text{-CaO-Al}_2\text{O}_3\text{-TiO}_2$  system ( $\text{TiO}_2$ : 0-12%) at 1400°C., and the sample cooled in air with carbon crucible. (This Bulletin, 23, Dec., (1950)).

$\text{CaO/SiO}_2$  ratio of the used slags was 0.5, 1 and 1.5 respectively, the contents of  $\text{TiO}_2$  in each slag being from 0 to 12%.

- (1) The titanium content in gray cast iron has increased in accordance with the increase of titanium oxide in the slag; the maximum percent in our research reached about 0.24% titanium.
- (2) Nitrogen contained in gray cast iron showed no remarkable change by the increase of the above titanium.
- (3) The flaky graphite carbon of original pig iron were found to become finer in our experiments.

We found that the cast iron of a fine eutectic graphite carbon structure, completely and uniformly homogeneous, was usually obtainable when the common pig iron was melted under the slag of  $\text{SiO}_2\text{-CaO-Al}_2\text{O}_3\text{-TiO}_2$  system ( $\text{TiO}_2$ : about 10%) and with the  $\text{CaO/SiO}_2$  ratio 1.5 at the experimental condition already described.