melting point of iron. This produces a layer of carbon in solution in liquid iron. Then the melt hardens and excess carbon is evolved in the form of needles of cementite. The reduction in the melting temperature of iron in contact with graphite also plays a part, because the iron-carbon diagram is of the eutectic type. The small thickness of the thermal influence zone indicates that there are very severe temperature gradients during cooling

thermal influence zones is also of interest. The existence of this zone is apparently associated with the total effect of heating in the impact wave heating by heat transfer from the metal surface. From the appearance of the structure it seems that the initial process is twinning, which is only later followed by polygonization.

nitude greater than those of the saturation and

In conclusion the authors would like to thank T. M. Aver'yanova, and L. I. Gryaznova for help in conducting the experiments.

LITERATURE CITED

GRYAZNOV et al.

- K. I. Kozorczov and L. I. Mirkin, Dokl. Akad. Nauk SSSR, <u>171</u>, No. 2, 324 (1966) [Sov. Phys.-Dokl., 11, 982 (1967)].
- L. I. Mirkin, Fiz. i Khim. Obrabotki Materialov, No. 1, 105 (1967).

of the melt. The significant polygonal zone that

was observed with dimensions two orders of mag-

- L. I. Mirkin, Dokl. Akad. Nauk SSSR, <u>186</u>, No. 2, 305 (1969) [Sov. Phys. - Dokl., <u>14</u>, 494
- IED

(1969)].

- 4. A. N. Minkevich, Chemical and Heat Treatment of Metals and Alloys [in Russian] (1965).
- T. M. Aver'yanova, L. I. Mirkin, et al., Zhurn. Prikl. Mekh. i Tekhn. Fiziki, No. 6, 84 (1965).
- K. I. Kozorezov and N. F. Skugorova, Fiz. i Khim. Obrabotki Materialov, No. 2, 99 (1969).

SO

SO TH ST

> thi a i fa

> > any

to b of t of a its can if, c con of t

> lr s

a 117