Table 2. 9-cm. Camera film

	(i)		(ii)		(iii)		Tempered at 100° C.
	c/a	Distance A_3—M_2	c/a	Distance A_3—M_2	c/a	Distance A_3—M_2	Distance A_3—M_2
0·89 per cent C	1·0409 ± 0·0001	0·80 mm.	1·0407 ± 0·0001	0·73 mm.	1·0402 ± 0·0001	0·65 mm.	0·85 mm.
1·20 per cent C	1·0568 ± 0·0001	1·20 mm.	1·0566 ± 0·0001	1·09 mm.	1·0564 ± 0·0001	1·00 mm.	1·25 mm.

(i) Samples quenched in brine, followed by (ii) immersion in liquid air and nitrogen, and finally by (iii) immersion in liquid helium.

martensite upon the temperature are the next steps in the present investigations. I wish to express my appreciation to Prof. C. W. Dannatt, head of the Department, for his constant interest in this work, and to Drs. G. W. Brindley and H. Lipson for many helpful discussions of theoretical points.

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Laminated Structure in Recrystallized Aluminium

BY electron microscope studies of alumina replicas taken by well-established methods[1] from specimens of recrystallized aluminium we have observed a fine laminated structure (Fig. 1). This has a mean spacing of approximately 600 A., from which variations do not exceed 100 A. The laminations themselves appear to have a nodular structure which is very clear in the example of Fig. 1, although the nodules are not always so clearly resolved. The general direction of the laminations over a wide field is constant; but over small distances (of the order of 15,000 A.) the direction varies two or three degrees from this. This laminated structure differs from those previously observed in metal crystals by Straumanis[2] and Graf[3], which have spacings of the order of 10,000 A.

The laminations have been observed in several samples of aluminium, including 99·99 per cent metal and 98 per cent commercial sheet, in every case after cold working and annealing at 550–600° C. for at least two hours: further annealing up to a total time of 90 hours has no effect. The specimens were electrolytically polished, and laminations were observed both on the polished surface and after etching in Lacombe's hydrofluoric–hydrochloric–nitric acid reagent[4]. This etching, of course, produces etch pits, and these make possible a determination of the orientation of the laminations the general direction of which may be interpreted as [100].

In Fig. 2 a cubic etch pit, part of which shows at the top right-hand corner, has its base practically parallel to the replica and its sides normal to it: it follows that if the pit is of {100} form, the plane of the replica is also nearly (100), and in this particular case the structure is in the form of whorls resulting from the intersection of a plane and the undulating laminations to which it is almost parallel.

The behaviour of the laminations at the boundary between two grains is particularly interesting (Fig. 3); it is apparent that any interruption in the normal crystal structure at the boundary cannot exceed a width of about 150 A. in the very pure metal.

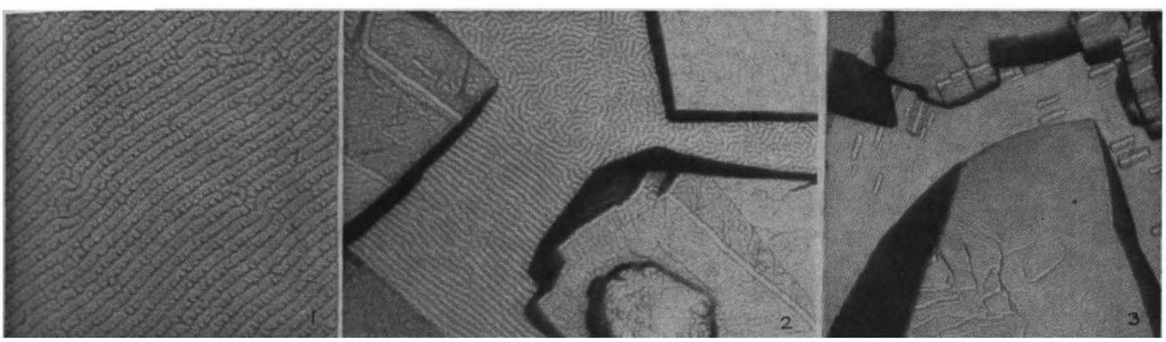

Fig. 1. 99·99 per cent aluminium, electrolytically polished but unetched (× 9,500); Fig. 2, etched specimen of 98 per cent aluminium showing a boundary between two grains, the surface of one lying almost in the plane of the laminations (×8,500); Fig. 3, etched specimen of 99·99 per cent aluminium showing the sharp boundary between two grains (× 6,000)

Note added in proof. This phenomenon appears to be the same as one mentioned by A. F. Brown in the last paragraph of his letter dated May 2, which appears in *Nature* of June 18, page 961.

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