Correction to Smyrl's results for thin yawed wedges

By N. L. ARORA†

Department of Aeronautical Engineering, Delft University of Technology, Delft

It is the purpose of this note to correct Smyrl's (1963) results for the perturbation pressure in the interaction field produced behind a plane shock which is being diffracted by a supersonically moving thin yawed wedge.

Smyrl (1963, p. 235, bottom line) calculated wrongly the unit vector **k**, which should be in the direction

$$\{\tan\phi_0\cos(\beta-\mu), \quad -1, \quad \tan\phi_0\sin(\beta-\mu)\},$$

in the notations used by Smyrl. This affects his subsequent results for the case of yaw. Smyrl's figure 11 is corrected by the present figure 1 for the pressure distribution on the wedge face in the Mach-reflexion region for $M' = 2$, $M = 2$ and $\beta = 0.5$, 1.25 and 1.5 radians.
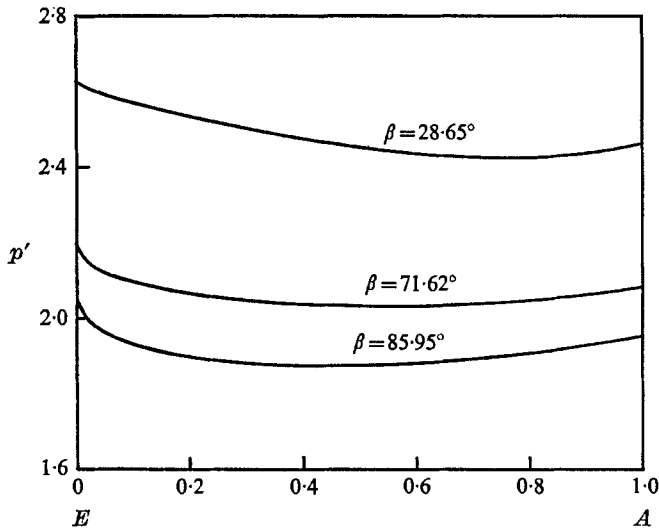

FIGURE 1. Pressure distribution on wedge face (along EA) for $M' = 2$, $M = 2$ and $\beta = 0.5$, 1.25 and 1.5 radians.

The method of calculation was, in fact, similar to that of Arora (1968) rather than that of Smyrl. In the procedure used one deals with the hyperbolic equations and an arbitrary shape of the yawed aerofoil can be assumed. The results can be obtained in closed form for the entire disturbance field behind the incident shock. The details of the calculation are available in a recent report by Arora (1969).

† Present address: Indian Institute of Technology, Kanpur.

The author is indebted to Prof. J. A. Steketee for many valuable discussions.

REFERENCES

ARORA, N. L. 1968 *J. Fluid Mech.* **34**, 209.
ARORA, N. L. 1969 *Tech. Univ. Delft Report* VTH-158.
SMYRL, J. L. 1963 *J. Fluid Mech.* **15**, 223.