operating conditions. As the durability of brakes improves, further reductions will occur in the percentage of asbestos which survives the wear process, because each particle of asbestos is then subjected to more heat treatment. Of the approximately 1 per cent of asbestos remaining in wear products, a large proportion is ground down during the wear process to much less than the 5 μ length at which particles are judged to be fibres. This is easy to understand when one considers that under normal conditions a lining will lose about one-millionth of an inch of thickness for every 20 ft of sliding.

Over recent weeks I have had regular tests performed in which employees' private cars, and trucks from the Company fleet have been brought into the garage for brake cleaning. The drums have been removed and in a garage with no forced ventilation, all loose dust has been removed from the drums and back plates by the use of a compressed air jet. As each brake was cleaned, instantaneous atmospheric samples were rapidly taken by a hand-pump from the centre of the dust cloud. Several of the dust clouds were visibly filthy, and would, in my view, be avoided by the operator; the dust counts taken at the point of maximum dust density were as given in Table 1.

TABLE 1. DUST COUNTS DURING BRAKE CLEANING BY COMPRESSED AIR-JET

Test No.	Non-fibrous above 2 μ	Fibre count 2–5 μ	Fibre count Above 5 μ
Samples			
1	2000+	306	5·4
2	109	11	2·1
3	402	17	2·5
4	607	21	3·7
5	475	37	5·3
6	1513	49	8·2
7	628	35	3·2
10 min average	181	5·0	0·8

The interesting points from this exercise are, firstly, the ratio of the number of particles of asbestos to the total dust particles of a similar size, showing a very small percentage of asbestos, and, secondly, the distribution of size of the fibrous element, suggesting that those particles over 5 μ must have been only just over.

I am not suggesting for a minute that the practice of blowing out brake drums with a compressed air line is to be recommended, merely that an intense dust cloud of this composition is a lot less harmful than one might think.

Unfortunately, at the present time, no corresponding data is available from clutches but one would expect the situation to be better than in brakes rather than worse, because on the one hand, surface rubbing speeds are higher, giving rise to higher point contact temperatures, and on the other hand, wear rates are very much lower resulting in an even finer subdivision in the wear products.