

## Viewpoints

We would be interested to hear from anyone who may have problems in this particular field, or indeed in any area of optimization.

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### REFERENCES

- <sup>1</sup> C. B. WEINBERG (1971) Response curves for a leaflet distributed—further analysis of the DeFleur data. *Opl Res. Q.* **22**, 177.
- <sup>2</sup> G. PECKHAM (1970) A new method for minimizing a sum of squares without calculating gradients. *Computer Jnl* **13**, 418.
- <sup>3</sup> M. J. D. POWELL (1965) A method for minimizing a sum of squares of non-linear functions without calculating derivatives. *Computer Jnl* **7**, 303.
- <sup>4</sup> L. C. W. DIXON and M. C. BIGGS (1970) Meander—a Newton-based procedure for *N*-dimensional function minimization. Numerical Optimization Centre, Tech. Rept. 9.

### JOINT PROBLEM OF INVESTMENT AND FINANCING: CORRECTION

ANYONE going over the arithmetic of this paper<sup>1</sup> with a very fine pen will find that the rate we used to discount post-horizon cash flows was 9.6 per cent. In the final write-up of the results, some gremlin led me to think this had been 9.8 per cent (which we had been using in one of the sensitivity analyses). This is not too important, and indeed one of the points of the analysis is that strategic decisions are unlikely to hinge on small differences in the discount rate employed. But it should be placed on record (and apologized for) since a reader who tries to derive the weighted-average cost in the example of p. 269 may be led to imagine subtleties which are not in fact there.

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### REFERENCE

- <sup>1</sup> DAVID CHAMBERS (1971) The joint problem of investment and financing. *Opl Res. Q.* **22**, 267.

### DAMAGED VEHICLES—REPLACE OR REPAIR?

ONE PROBLEM that sometimes faces the transport (or garage) manager when confronted with a badly damaged lorry is whether he should repair the vehicle or buy a new one. This applies not only to lorries but to fork-lift trucks, vans, cars, in fact any other piece of machinery that has a fairly short operating life. The decision involves a little arithmetic but it is fairly simple, and it is very easy to apply. The mathematics of the “repair” or “replace” decision is actually quite complex (reference 3, ch. 10) but the rules given here offer a good approximation and can be applied by any busy manager.

Before we look at the problem of whether to scrap a damaged vehicle or replace it, we must glance briefly at the more general problem of how long to keep a vehicle before buying a new one—in other words the optimum vehicle life.