If the graph of $y = f(x)$ is concave downwards and $P_1, P_2, \ldots, P_n$ are points on the curve (not all coincident), then it is intuitively obvious and easily proved by induction that their centroid $(\bar{x}, \bar{y})$ lies below the curve, so that $f(\bar{x}) > \bar{y}$.

If P_i is (x_i, y_i) and we use the letter M to denote " the arithmetic mean of ", so that $\bar{x} = Mx_i$ and $\bar{y} = Mf(x_i)$, we have

$$f(Mx_i) > Mf(x_i). \tag{1}$$

Now if $f(x)$ is a strictly increasing function in the range concerned, so that the function has an inverse f^{-1}, we can write (1) in the form

$$Mx_i > f^{-1}Mf(x_i). \tag{2}$$

A curve with the required properties is $y = \log x$, and (2) then becomes the familiar inequality

arithmetic mean > geometric mean.

Similarly if we take $f(x) = -1/x$ we obtain

arithmetic mean > harmonic mean.

Cheltenham College. ALAN BARTON

CORRESPONDENCE

To the Editor, *The Mathematical Gazette*

DEAR SIR,—It has been said [1] that a good mathematical symbol should be " see-able " and " say-able ". The history of mathematical notation shows that for a symbol to survive it must also be " script-able ", that is, capable of being written by very few pen-strokes, preferably connected. The signs $-$, $<$, $\int$, $+$, $\times$, $=$ and the numerals 0, 1, ..., 9 meet all three requirements.

The practical teacher accustomed to the simple but ousted " $\therefore$ " may well accept the precise though ungainly newcomers $\Rightarrow$ and $\Leftrightarrow$ with some reluctance. Although see-able, the latter would normally be formed by no less than *four* disconnected pen movements. Would not the simple alternative $\leftrightarrow$, requiring only *one*, be more acceptable? To match this, would not $\rightharpoondown$ be easier to write than $\Rightarrow$? (Admittedly, $\rightharpoondown$ badly written could be confused with $-$ or $>$; but $=$ badly written can easily be mistaken for $<$ or $>$.)

Finally, authors of mathematical texts could well consider to what extent their symbols, eminently distinctive in print, are likely to remain

https://doi.org/10.2307/3611863 Published online by Cambridge University Press

so when written. For example, how many books which use bold type for vectors give any *practicable* suggestion of how to *write* vectors?

Yours faithfully,

College of Technology,
Kingston-on-Thames.
F. GERRISH

[1] Chaundy, Barrett and Batey, *The printing of mathematics* (Oxford, 1954), pp. 67–8.

NOTICES

It is sometimes difficult to find people willing to serve on Subject Panels for C.S.E. and G.C.E. Members of the N.U.T. who are subject specialists and interested in work at either O-level or A-level are invited to send their names, together with details of experience, to

The Secretary,
Education Department, N.U.T.,
Hamilton House,
Mabledon Place, W.C.1,

quoting the reference " EF ".

EUREKA

The Journal of the Archimedeans (Cambridge University Mathematical Society) has just published No. 31, for October 1968. The price is 2s. 6d., and correspondence should be addressed to

Eureka, The Arts School, Bene't Street, Cambridge, England.

(This particular number includes some fascinatingly irritating diagrams of Impossible Objects!)

OBITUARIES

Prof. H. T. H. Piaggio, M.A., D.Sc., 1884–1967

Henry Thomas Herbert Piaggio was born in London on 2 June, 1884. He had one brother and one sister, and the family were happy and devoted to one another. His father, Francis, had a dancing academy at Margate. Piaggio was educated at the City of London School and at St. John's College, Cambridge. After receiving his degree of M.A. at Cambridge, his subsequent research earned him the D.Sc. in 1914.

In 1908 he was appointed Lecturer in Mathematics at the University of Nottingham. At that time there was no separate department of mathematics, and Piaggio worked under W. H. Heaton, Professor of Physics and Mathematics. In 1919 a separate chair of