ALGORITHM 65
FIND

C. A. R. Hoare
Elliott Brothers Ltd., Borehamwood, Hertfordshire, Eng.

procedure find (A,M,N,K); value M,N,K;
array A; integer M,N,K;
comment Find will assign to A [K] the value which it would have if the array A [M:N] had been sorted. The array A will be partly sorted, and subsequent entries will be faster than the first;
begin integer J;
if M < N then begin partition (A, M, N, I, J);
if K ≤ I then find (A,M,I,K)
else if J ≤ K then find (A,J,N,K)
end
end find

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J. S. Hillmore

The body of the procedure find was corrected to read:
begin integer I, J;
if M < N then begin partition (A, M, N, I, J);
if K ≤ I then find (A, M, J, K)
else if J ≤ K then find (A, I, N, K)
end
end find

and the trio of procedures was then successfully run using the Elliott Algol translator on the National-Elliott 803.

The author's estimate of \( \frac{1}{2}(N-M)\ln(N-M) \) for the number of exchanges required to sort a random set was found to be correct. However, the number of comparisons was generally less than \( 2(N-M)\ln(N-M) \) even without the modification mentioned below.

The efficiency of the procedure quicksort was increased by changing its body to read:
begin integer I, J;
if M < N-1 then begin partition (A, M, N, I, J);
quicksort (A, M, J);
quicksort (A, I, N)
end
end
end quicksort

This alteration reduced the number of comparisons involved in sorting a set of random numbers by 4-5 percent, and the number of entries to the procedure partition by 25-30 percent.