```
procedure drivemby2(t, ls, ld);
value t; integer t; integer array ls, ld;
begin
  integer array s[1: nm - 1], d[0: nm - 1];
  procedure mby2(t, nm, nn, nu, n);
  value t, nm, nn, nu; integer t, nm, nn, nu;
  integer array n;
  begin
    integer array v, r[0: nm - 1];
    procedure count(m);
    value m; integer m;
    begin
      integer lim;
      if m = nm then drivemby2(t + 1, n, d)
      else begin
        v[m] := v[m - 1] - d[m - 1];
        start := if r[m] > v[m] then 0 else v[m] - r[m];
        lim := if v[m] > n[m] then n[m] else v[m];
        if m = nm - 1 and t = 0 then
          combs := combs + lim - start + 1
        else for d[m] := start step 1 until lim do
                count (m + 1);
      end;
    end of count;
    d[0] := 0; v[0] := nu; r[0] := nn;
    for i := 1 step 1 until nm - 1 do
      r[i] := r[i - 1] - n[i];
    count (1);
  end of mby2;
  for i := 1 step 1 until nm - 1 do
    s[i] := ls[i] - ld[i];
  mby2(if t = nt - 1 then 0 else t, nm, q[t], u[t], s);
end of drivemby2;
q[1] := nn;
for i := 1 step 1 until nt - 2 do
  q[i + 1] := q[i] - u[i];
for i := 0 step 1 until nm - 1 do
  d0[i] := 0;
combs := 0;
drivemby2(1, n, d0);
combinations: = combs;
end of combinations;
```

References

Bell, A. C. (1970). Partitioning integers in *N* dimensions, *The Computer Journal*, Vol. 13, p. 278.
Boulton, D. M., and Wallace, C. S. (1970). The Information Measure for Hierarchical Classifications (in press).
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Book review

Algebraic Theory of Automata by F. Gecseg and I. Peak, 1972. *The Publishing House of the Hungarian Academy of Sciences, Budapest.*

Although this book was written, and published, in Hungary, it is in English. It is not said what other versions exist in different languages, but it appears that this version has been prepared by the authors themselves, and they are to be congratulated on the high standard attained. The subject is the theory of abstract sequential machines treated from a strictly mathematical viewpoint, and it is clearly intended for specialists in this area. Indeed, the authors keep closely to sequential machines, and even pushdown automata are given only a brief description. Sequential machine theory has two sources: one is the report of S. C. Kleene of 1951, in which regular sets were defined; the other is the paper of Robin and Scott of 1958, in which a semi-group is associated with state movements. Developments stemming from both sources are, in fact, described in this book, but naturally most of it deals with variations of the semi-group approach. Considerable attention is given to the kinds of semi-groups originally put forward in the work of Fleck and of Weeg.

A strong impression from this book is that it was completed in the middle of the 1960's. It gives a comprehensive and thorough treatment of work up to that time, it briefly mentions the work of Krohn and Rhodes, but does not describe their results. It does not mention tree automata, or other later developments. The authors draw on references equally from Eastern Europe and the Western World, perhaps the striking thing there is the evidence of similar work in both places. Throughout the book there are numerous results due to the authors themselves, and there is a substantial section on Automaton mappings which summarises lengthy work by Gecseg. It is the specialist who will want to look at this book, partly for the section on Automaton Mappings and partly as a careful summary of mathematical theory up to the mid 1960's.

J. J. Florentin (London)