(A definite event is a finite class of finite inputs.) (4) There exists an indefinite event (a regular event that is not definite). (5) There exists a recursively enumerable class of binary-coded integers that is not a regular event.

The synthesis problem (the problem of constructing a net to represent specified regular events) is solved, although the solution is not of practical value.

W. L. DUDA

EDWARD F. MOORE. *Gedanken-experiments on sequential machines.* Ibid., pp. 129–153.

This is a theoretical treatment of finite automata, and especially of the problem of obtaining information about an unknown automaton by imposing a sequence of inputs and observing the resulting outputs. There is no use of mathematical logic.

Author's corrections: p. 136, line 6 f.b., for "indistinguishable" read "distinguishable"; p. 151, in the last column of the tables of Machine H, for "Present Input" read "Present Output."

ALONZO CHURCH

MOCHINORI GOTO, YASUO KOMAMIYA, RYOTA SUEKANE, MASAHIDE TAKAGI, and SHIGERU KUWABARA. ***Theory and structure of the automatic relay computer E. T. L. Mark II.*** Researches of the Electrotechnical Laboratory, no. 556. Electrotechnical Laboratory, Agency of Industrial Science and Technology, Tokyo 1956, ix + 214 pp. and 37 plates.

Only Chapter III, *Theory of relay networks*, falls within the scope of this JOURNAL. The remarks of XX 285(2) are applicable. The theory of sequential circuits receives brief treatment relying on a few examples only. The authors stress a solution of equations of the form

$$\sum_{i=1}^{n} A_i = \sum_{i=0}^{\infty} d_i 2^i$$

where "$\sum$" denotes ordinary addition of natural numbers, and the parameters A_i as well as the d_j vary over 0, 1. The circuits "associated with" these solutions are claimed to possess novel self-checking features.

The solution which the authors give which recursively expresses the d_j's as a propositional formula in the A_i's is needlessly involved. A simpler recursive solution is readily given: d_0 is the modulo-two sum of the A_i's and

$$\sum_{k=1}^{n-1} B_k = \sum_{i=0}^{\infty} d_{i+1} 2^i$$

where B_k is the Boolean product of A_{k+1} and the modulo-two sum of $A_1, A_2, \ldots, A_k$. An explicit solution may also be given: d_i is the modulo-two sum of all $\mathbf{\Pi} S$ where S varies through all subsets of $\{A_1, A_2, \ldots, A_n\}$ with 2^i elements and "$\mathbf{\Pi} S$" denotes the product of the elements in S. This solution depends upon the fact that if $m = \sum_{i=0}^{\infty} d_i 2^i$, then d_i is congruent modulo two to $\binom{m}{2^i}$.

CALVIN ELGOT

ANTONIN SVOBODA. *Graphico-mechanical aids for the synthesis of relay circuits.* ***Aktuelle Probleme der Rechentechnik,*** Deutscher Verlag der Wissenschaften, Berlin 1957, pp. 43–50.

The two graphico-mechanical aids are contact bones and contact grids. Contact bones are an aid in analyzing (i.e., finding a logical formula for) contact networks. The logical theory of contact network analysis has been generally understood for a long time, but there are practical difficulties, especially in the analysis of bridge networks (i.e., networks which are not of the series-parallel type). Contact grids are an aid in obtaining a normal formula for functions given in truth-table form. They are helpful in obtaining what are called (by others) prime implicants. The last para-