ABSTRACTS OF PAPERS

The abstracts below are abstracts of papers presented by title at the October Meeting in New York and the November Meeting in Evanston. Abstracts of papers presented in person at these meetings will be included in the reports of the meetings which will be published in the January issue of this BULLETIN.

Abstracts are numbered serially throughout this volume.

ALGEBRA AND THEORY OF NUMBERS

446*t*. R. H. Bruck and Erwin Kleinfeld: *New identities for alternative rings*. Preliminary report.

Let R be an alternative ring with (skew-symmetric) commutator $(x, y)=xy-yx$ and associator $(x, y, z)=xy\cdot z-x\cdot yz$. Known identities for the associator are mainly based upon (*) $(wx, y, z)-(w, xy, z)+(w, x, yz)=w(x, y, z)+(w, x, y)z$. Instead, define f by $(wx, y, z)=(x, y, z)w+x(w, y, z)+f(w, x, y, z)$, and use (*) to prove f skew-symmetric. Skew-symmetry of f, and one of several identities such as (i) $f(w, x, y, z)=((w, x), y, z)+((y, z), w, x)$, are equivalent to (*). Other functions are introduced in the same spirit; these and f are powerful tools in the study of alternative rings. Among the significant byproducts are: (ii) $((x, y, z)^2, y, z)=0$; (iii) $((w, x)^2, y, z) =(w, x)f(w, x, y, z)+f(w, x, y, z)(w, x)$. (Received July 21, 1950.)

447*t*. D. O. Ellis: *An algebraic characterization of lattices among semilattices*.

A semilattice is an associative, commutative, idempotent groupoid. The set-theoretic product of the sets of units for each of two elements of a semilattice is a sub-semilattice. Cosets of this sub-semilattice by its own elements are considered. The original semilattice is said to have property M if at least one such coset consists of a single element for each two elements of the original semilattice. The principle result is: *Let L be a semilattice under $a+b$. It is possible to define a second operation, ab, in L so that L forms a lattice under $a+b$ and ab if and only if L has Property* M. *Moreover, the introduction of this second operation may be accomplished in exactly one way*; *namely, by construction from Property* M. (Received June 2, 1950.)

448*t*. D. O. Ellis and J. W. Gaddum: *On solutions of systems of linear equations in a Boolean algebra*.

Let B be a Boolean algebra with meet, join, and complement denoted by ab, $a+b$, and a', respectively. Consider the system of equations (1) $\sum_{j=1}^{n}a_{ij}x_j=k_i$; $i=1, 2, \cdots, m$, where the a_{ij} and k_i are constants. The cardinals m and n are finite, $\leqq\aleph_0$, or arbitrary according as B is arbitrary, σ-complete, or complete. Define $d_{ij}=\prod_{\lambda=1,\lambda\neq i}^{m}(a'_{\lambda j}+k_\lambda)$; $j=1, 2, \cdots, n$. The principle results are: 1. If $k_i=0$; $i=1, 2, \cdots, m$ in (1), the complete solution is the n-parameter form $x_j=a_jd_{ij}a'_{ij}$; $j=1, 2, \cdots, n$. 2. A necessary and sufficient condition that (1) have a solution is that $k_i\sum_{j=1}^{n}a_{ij}d_{ij}=k_i$; $i=1, 2, \cdots, m$. 3. The solutions of (1) are those values of the n-parameter form $x_j=a_jd_{ij}(a'_{ij}+k_i)$; $j=1, 2, \cdots, n$, for which the parameter values satisfy $k_i\sum_{j=1}^{n}a_{ij}d_{ij}a_j=k_i$; $i=1, 2, \cdots, m$. Some of the results have been obtained