ABSTRACTS OF PAPERS

The following papers have been submitted to the Secretary and the Associate Secretaries of the Society for presentation at meetings of the Society. They are numbered serially throughout this volume. Cross references to them in the reports of the meetings will give the number of this volume, the number of this issue, and the serial number of the abstract.

ALGEBRA AND THEORY OF NUMBERS

1. A. A. Albert: *Quadratic forms permitting composition.*

It is proved that a quadratic form over a field F permits composition if and only if it is equivalent in F to the norm form xx^J of an alternative algebra over F such that $x+x^J$ and xx^J are in F. These norm forms are shown to be quadratic forms in 1, 2, 4 or 8 indeterminates, except for the diagonal norm forms (in 2^t indeterminates) of the purely inseparable fields of degree 2^t and exponent 2 over F of characteristic 2. The result has never before been obtained for fields of characteristic 2. Indeed it seems only to have been given completely for algebraically closed fields of characteristic not two. (Received October 20, 1941.)

2. S. P. Avann: *Lattices with arbitrary automorphism groups.*

There exists a partially ordered set having an arbitrary group as its group of automorphisms. Hence there exists a distributive lattice with a given automorphism group. A partially ordered set with cyclic group C_n has at least 3 conjugate sets of n elements for $n \leq 7$ and at least 2 for $n > 7$. From these facts minimal partially ordered sets, lattices, and distributive lattices with cyclic automorphism groups can easily be obtained. (Received October 25, 1941.)

3. S. P. Avann: *The τ-function and its application to semi-modular lattices.*

Let $\tau[L]$, $\sigma[L]$ be the number of join irreducibles and the number of meet irreducibles, respectively, in a finite lattice L. In a non-distributive Birkhoff lower semimodular (ξ'') lattice $\sigma > \tau \geq \rho$, where ρ is rank of lattice. In a finite lattice L the following conditions are equivalent: (1) every element has unique irredundant join irreducible representation; (2) the sublattice generated by the elements covered by an element is a Boolean algebra, for each element of the lattice; (3) L is a finite Jordan-Dedekind chain lattice with $\tau = \rho$; (4) L is a ξ'' lattice with every modular sublattice distributive; (5) L is a ξ'' lattice with no modular non-distributive sublattice with coverings; (6) L is a ξ'' lattice with no modular non-distributive sublattice; (7) L is a ξ'' lattice with $\tau = \rho$. Although some of the equivalences are known, a new method of proof in contrast to combinatorial methods is emphasized. Note $(6) \rightarrow (5)$ and $(3) \rightarrow (7)$. (Received October 25, 1941.)

4. Reinhold Baer: *Inverses and zero-divisors.*

It may happen that an element in a ring is both a zero-divisor and an inverse, that