ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THE SOCIETY

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

172. Warren Ambrose: *A variation of a theorem of I. E. Segal on the group ring of a compact group.*

It is shown that the L_2-ring of a compact group is a direct sum of full matrix algebras. This is done using the special properties of the L_2-ring, and its ideal theory, without reference to the classical theory of group representations, though the proof parallels, in part, the proof of the Peter-Weyl theorem. (Received April 14, 1944.)

173. Reinhold Baer: *Crossed isomorphisms.*

The 1:1 correspondence f, mapping the elements in the group G upon the elements in the group H, is termed a crossed isomorphism of G upon H, if there exists to every element x in G an endomorphism $e(x)$ of G such that $(u^{e(v)}v)^f = u^f v^f$ for u, v in G. The position of crossed isomorphisms between ordinary isomorphisms and 1:1 correspondences is discussed and their relation to projectivities of G upon H is investigated. If the endomorphism $e(x)$ of G maps every subgroup of G upon itself, then f is termed an integral crossed isomorphism. All the groups that are integral crossed isomorphic maps of abelian groups are determined. (Received April 28, 1944.)

174. R. J. Duffin and R. S. Pate: *Structure elements of quasigroups. II.*

This paper continues the study of the concepts of *rank* and *left associativity* (Duke Math. J. vol. 10 (1943) p. 743). A *left set* is a set L of elements such that $(Lx)y = L(xy)$ for every pair (x, y) of elements of Q. The *middle rank* of Q is the number of permutations of the columns of the multiplication table of Q which are simultaneously permutations of the rows. The ranks of Q divide its order. A Q of middle rank r contains a sub-Q of order r whose elements consist of all the middle associative elements $\{m\}$, that is, $x(my) = (xm)y$. These considerations furnish a practical test to determine whether a quasigroup is a group because thc rank of a group is equal to the order. The meet, join and product of left sets are left sets. The set of elements $\{a\}$ such that $La = L$ is both a left set and a sub-Q. Unlike group theory, quotient Q's may be defined even when there are no sub-Q's. The lattice of quotient Q's is modular. The existence of a quotient quasigroup is equivalent to the existence of a set C satisfying certain associative and commutative laws. Permutation of rows, columns or symbols of the multiplication table leaves both rank and the lattice of weak quotients invariant. (Received May 31, 1944.)