

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.

318. Dr. J. S. Frame: *On the degrees of the irreducible components of simply transitive permutation groups.*

In a simply transitive permutation group G^* of order g and degree n , the subgroup leaving one symbol invariant will permute the others in λ sets of transitivity involving $k_1, k_2, \dots, k_\lambda$ symbols respectively. If this group G^* be represented in the usual way by a group G of matrices of degree n , in which the matrix $(\delta_{\alpha'\beta})$, $\alpha, \beta = 1, \dots, n$, corresponds to the permutation (α') , the group will be a reducible linear group with $r = \lambda + 1$ irreducible components, having the respective degrees $n_0 = 1, n_1, n_2, \dots, n_\lambda$. Let $N = n_1 n_2 \dots n_\lambda$, and $K = k_1 k_2 \dots k_\lambda$. The object of this paper is to show that $n^{\lambda-1} K / N$ is an integer, which is a perfect square when the numbers k_i are distinct. We prove this theorem for $\lambda \leq 3$, and also for an infinite family of permutation groups (including all values of λ), which consist of the permutations induced by the symmetric group of degree ν on the $n = \binom{\nu}{\lambda}$ sets of ν symbols taken λ at a time. A somewhat complicated identity in binomial coefficients is proved as a lemma. (Received July 25, 1936.)

319. Professor W. L. Ayres: *Periodic transformations of sets.*

Periodic, pointwise periodic, and almost periodic transformations of sets are defined and shown to have unique inverses. A pointwise periodic continuous transformation of a graph is shown to be periodic. If the graph contains at least one branch point, pointwise periodic may be replaced by almost periodic. If any of these transformations on a tree leaves the end points invariant it leaves all points invariant. Either a pointwise or almost periodic continuous transformation of a tree is periodic if only a finite set of end points are non-invariant. (Received July 27, 1936.)

320. Dr. Reinhold Baer: *Abelian groups without elements of finite order.*

In this paper the properties of direct sums of rational groups and of separable groups are investigated (rational group = subgroup of the additive group of rational numbers; separable group = group whose finite subsets are contained in direct summands which are direct sums of rational groups). There exist