THE APRIL MEETING IN MONTEREY

The five hundred twenty-fifth meeting of the American Mathematical Society was held at the U. S. Naval Postgraduate School in Monterey, California, on Saturday, April 28, 1956. Attendance was approximately 140, including about 110 members of the Society.

By invitation of the Committee to Select Hour Speakers for Far Western Sectional Meetings, Professor H. C. Wang delivered an address on *Some aspects of transformation groups and homogeneous spaces.* He was introduced by Professor Z. W. Birnbaum. Presiding at the sessions for contributed papers were Professors Paul Garabedian, Ivan Niven, and Raphael Robinson.

Following are the abstracts of papers presented at the meeting, those whose numbers are followed by "t" having been given by title. Where a paper has more than one author, the paper was presented by the author whose name is followed by "(p)". Mrs. Butler was introduced by Professor Alfred Tarski, Mr. Hanf by Professor Bjarni Jonsson, and Professor Craig by Dr. R. L. Vaught.

ALGEBRA AND THEORY OF NUMBERS

552. Jean W. Butler: *On operations in finite algebras.*

Consider a finite set A with $n \geqq 2$ elements. Let F_A^m be the set of all functions (m-ary operations) on $A \times \cdots \times A$ (m times) to A; F_A be the union $F_A^1 \cup F_A^2 \cup \cdots \cup F_A^m \cup \cdots$. For $X \subseteq F_A$, $\overline{X}$ denotes the smallest $Y \subseteq F_A$ with the properties: $X \subseteq Y$; if $f \in Y$ and h is obtained from f by identifying or transposing two arguments, or by substituting a function $g \in Y$ for an argument, then $h \in Y$. X is *closed* iff $\overline{X} = X \subseteq F_A$; Y is a *basis of* X iff $\overline{Y} = X$ and $\overline{Z} \neq X$ whenever $Z \subset Y$. F_A has a finite basis (Post, 1921). Theorems: (I) *For every closed* $X \subseteq F_A^1$ *there is a largest closed* $Y \subset F_A$ *such that* $Y \cap F_A^1 = X$. (II) *There exist* p *closed sets* $M_1, \cdots, M_p \subset F_A$ (p *finite, depending on* n) *such that every closed* $X \subset F_A$ *is included in some* M_i. (III) *There is an integer* p (*depending on* n) *such that every basis of* F_A *has* $\leqq p$ *elements.* (II) follows from (I), and (III) from (II). (I)–(III) generalize results of Post (Annals of Mathematics Studies, No. 5) for $n = 2$. Tarski has noticed that a modification in the proofs of (II) and (III) leads to more general results (II′) and (III′) differing from (II) and (III) only in that F_A is replaced by any closed set Z with a finite basis. (Received April 25, 1956.)

553t. Anne C. Davis: *On simply ordered relations with nontrivial automorphism groups.*

Let S be a simply ordered relation, let $G(S)$ be the group of automorphisms of S and let α be the order type of S. Theorem 1. $G(S)$ consists of more than one element if and only if α is representable in the form (1) $\alpha = \beta + \gamma \cdot (\omega^* + \omega) + \delta$, where $\gamma \neq 0$. Lemma 2. Suppose that $f, g \in G(S)$ and x belongs to the field of S. Let β be the type of the subrelation of S whose field consists of all elements $h(x)$, where h belongs to