## RESEARCH PROBLEMS

13. A. D. Wallace: *A problem on modular lattices.*

Denote by $L$ a connected compactum and suppose that $L$ is supplied with a pair $\vee$, $\wedge$ of continuous lattice operations. It is known (L. W. Anderson, unpublished) that if $L$ can be imbedded in $R^2$ then $L$ is distributive. It is also known (D. E. Edmondson, to appear in Proc. Amer. Math. Soc.) that $L$ may be topologically a 3-cell and be nonmodular. If $L$ is modular and can be impedded in $R^n$ it seems unlikely that $L$ has to be distributive. If $L$ is modular, if $L$ can be imbedded in $R^n$, and if the boundary of $L$ (relative to $R^n$) is a distributive sublattice of $L$ does $L$ have to be distributive? It may be helpful to use the fact (L. W. Anderson, to appear in Proc. Amer. Math. Soc.) that if dim $L=1$ then $L$ is a chain. (Received April 27, 1956.)

14. A. D. Wallace: *Topological algebraic structures.*

A space has PRF if it is compact and if each proper retract has the fixed point property. It is clear that an absolute retract or any $n$-sphere has PRF. Many pathological spaces have this property, for example certain indecomposable continua. If $S$ is a topological semigroup with PRF then either $S$ is a group or else $K$, the minimal ideal of $S$, consists of idempotents. If dim $S=n\geqq 1$ then $H^n(S)=0$ (any coefficients) if $S$ also has a unit and if $S$ is not a group. If $n\geqq 2$ is $H^{n-1}(S)=0$ under these hypotheses? Do either of these conclusions hold if the stipulation "$S$ has a unit" is replaced by "$S=S\cdot S$"? For references see Bull. Amer. Math. Soc. vol. 61 (1955) pp. 95–112. (Received May 28, 1956.)