type $\alpha_{2,4}$ is indecomposable; $\alpha_{2,8}$ has, apart from order, the unique decomposition into indecomposable factors:

$$\alpha_{2,8} = \alpha_{1,2} \times \alpha_{2,4};$$

and finally $\alpha_{2,12}$ has two different decompositions into indecomposable factors:

$$\alpha_{2,12} = \alpha_{2,6} \times \alpha_{1,2} = \alpha_{2,4} \times \alpha_{1,3}.$$

Thus the last example shows that the refinement theorems 4.7 and 4.8, as well as the unique factorization theorem 4.9, of Jónsson and Tarski cannot be extended to algebras which have an idempotent element but not a zero element. The problem whether the cancellation theorem 4.10 can be extended to such algebras still remains open.

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NOTE ON A PAPER BY C. E. RICKART

R. P. DILWORTH AND MORGAN WARD

In a recent issue of this Bulletin,[1] C. E. Rickart proves the following two theorems:

THEOREM 1. *Any one-to-one multiplicative mapping of a Boolean ring onto an arbitrary ring is necessarily additive.*

THEOREM 3. *Any one-to-one meet preserving mapping of a distributive lattice onto a distributive lattice is also join preserving.*

We should like to point out that both of these theorems are simple consequences of the following well known principle of lattice theory: *Any one-to-one mapping of one lattice onto another lattice which preserves order both ways is a lattice isomorphism.*

Now a one-to-one meet preserving mapping of one lattice onto another preserves order both ways; for if x and x' denote corresponding elements,

$$a \geqq b \rightleftarrows a \cap b = b \rightleftarrows a' \cap b' = b' \rightleftarrows a' \geqq b'.$$

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