

SHORTER NOTES

The purpose of this department is to publish very short papers of an unusually elegant and polished character, for which there is no other outlet.

AN EMPTY INVERSE LIMIT

WILLIAM C. WATERHOUSE

This note gives a simple natural example of a surjective inverse limit system with empty limit.

For each finite subset α of the uncountable set R , let X_α be the set of injections of α into the integers. Each X_α is countable, and for $\alpha \subseteq \beta$ the restriction map $X_\beta \rightarrow X_\alpha$ is surjective. But the inverse limit of the X_α is empty, since an element of it would give an injection of R into the integers.

REFERENCES

1. L. Henkin, *A problem on inverse mapping systems*, Proc. Amer. Math. Soc. **1** (1950), 224–225. MR **11**, 675.
2. G. Higman and A. H. Stone, *On inverse systems with trivial limits*, J. London Math. Soc. **29** (1954), 233–236. MR **15**, 773.

DEPARTMENT OF MATHEMATICS, CORNELL UNIVERSITY, ITHACA, NEW YORK 14850

Received by the editors May 12, 1972.

AMS (MOS) subject classifications (1970). Primary 54B25.

© American Mathematical Society 1973