

CODEN IJMTAW
VOLUME 30
NUMBER 2

PAGES 197-390
SUMMER 1986
ISSUE 119

ILLINOIS
JOURNAL
OF
MATHEMATICS

.....

a quarterly journal published by the
UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

.....

edited by
ROBERT G. BARTLE
GERALD J. JANUSZ
ROBERT KAUFMAN
FRANK B. KNIGHT
DAVID MASSER
PHILIPPE TONDEUR

ILLINOIS JOURNAL OF MATHEMATICS

Manuscript

Original research papers in pure and applied mathematics intended for publication in this journal may be written in English, French or German. They should be addressed to the Illinois Journal of Mathematics, 1409 West Green Street, University of Illinois at Urbana-Champaign, Illinois 61901, or one of the editors:

ROBERT G. BARTLE (Managing Editor), University of Illinois, Department of Mathematics, 273 Altgeld Hall, 1409 West Green St., Urbana, Illinois 61801.

GERALD J. JANUSZ, University of Illinois, Department of Mathematics, 273 Altgeld Hall, 1409 West Green St., Urbana, Illinois 61801.

ROBERT KAUFMAN, University of Illinois, Department of Mathematics, 273 Altgeld Hall, 1409 West Green St., Urbana, Illinois 61801.

FRANK B. KNIGHT, University of Illinois, Department of Mathematics, 273 Altgeld Hall, 1409 West Green St., Urbana, Illinois 61801.

DAVID MASSER, The University of Michigan, Department of Mathematics, 3220 Angell Hall, Ann Arbor, Michigan 48109-1003.

PHILIPPE TONDEUR, University of Illinois, Department of Mathematics, 273 Altgeld Hall, 1409 West Green St., Urbana, Illinois 61801.

All papers should be typewritten, double-spaced, and the author should keep a complete copy. Bibliography and footnotes should be typed, double-spaced, on separate sheets of paper. Figures should be drawn separately in black ink on white paper suitable for being photographed.

Proof

Authors will receive only galley proof. Proof sent to North American addresses will be accompanied by manuscript and sent by first class mail. To other addresses, proof will be sent by airmail, and manuscript will be sent only if requested. Authors are asked to return proof (and manuscript if sent) by the same class of mail that was used in sending it to them.

Page charges

To cover a part of the cost of production, the author's institution will be billed for \$40 per page.

Reprints

One hundred free offprints are supplied to the sole author of a paper; fifty free offprints are supplied to each author of a joint paper. Additional offprints may be purchased.

THE ILLINOIS JOURNAL OF MATHEMATICS (ISSN 0010-2082) is published quarterly (Spring, Summer, Fall, Winter) by the University of Illinois Press. Second-class postage paid at Champaign, Illinois and additional mailing offices. *Postmaster*: Please send change of address to University of Illinois Press, 54 E. Gregory Drive, Champaign, Illinois 61820.

**IN MEMORIAM
WILLIAM WERNER BOONE
1920-1983**

This issue of the Illinois Journal of Mathematics is dedicated to the memory of William Werner Boone, who was born in Cincinnati in 1920 and died in Chicago in 1983, and the bulk of whose working life, from 1958 onwards, was spent at the University of Illinois. By the mathematical world at large, Bill will be remembered for his fundamental contributions to the area between algebra and logic, and especially for his construction of a finitely presented group with unsolvable word problem. By his friends, he is remembered for the meticulous honesty of his work, for his devotion to the several strands of cultural tradition which link us to the past, for his generous appreciation of the work of others, whether teachers, colleagues, or students, and for a certain singularity of character which made him always unpredictably and unmistakably himself. We miss him; and in love and in sorrow we offer this tribute.

The editors for this issue were Kenneth Appel, Graham Higman, Carl Jockusch and Derek J.S. Robinson.



BIBLIOGRAPHY OF WILLIAM W. BOONE

1. *Several simple unsolvable problems related to the word problem*, Dissertation, Princeton, N.J., 1952.
 2. *Certain simple, unsolvable problems of group theory, I–VI*, *Indag. Math.*, vol. 16 (1954), pp. 231–237; vol. 16 (1954), pp. 492–497; vol. 17 (1955), pp. 252–256; vol. 17 (1955), pp. 571–577; vol. 19 (1957), pp. 22–27; vol. 19(1957), pp. 227–232.
 3. *The equivalence of the word problem and Magnus' extended word problem*, *Bull. Amer. Math. Soc.*, vol. 63 (1956), p. 148.
 4. *Analysis of Turing's "The word problem in semigroups with cancellation"*, *Ann. of Math.* vol. 67 (1958), pp. 195–202.
 5. *The word problem*, *Proc. Nat. Acad. Sci. U.S.A.*, vol. 44 (1958), pp. 1061–1065.
 6. *The word problem*, *Ann. of Math.*, vol. 70 (1959), pp. 207–265.
 7. (with G. Baumslag and B. H. Neumann) *Some unsolvable problems about elements and subgroups of groups*, *Math. Scand.*, vol. 7 (1959), pp. 191–201.
 8. *Partial results regarding word problems and recursively enumerable degrees of unsolvability*, *Bull. Amer. Math. Soc.*, vol. 68 (1962), pp. 616–623.
 9. *Finitely presented group whose word problem has the same degree as that of an arbitrarily given Thue system (an application of methods of Britton)*, *Proc. Nat. Acad. Sci. U.S.A.*, vol. 53 (1965), pp. 265–269.
 10. *Word problems and recursively enumerable degrees of unsolvability. A first paper on Thue systems*, *Ann. of Math.*, vol. 83 (1966), pp. 520–571.
 11. *Word problems and recursively enumerable degrees of unsolvability. A sequel on finitely presented groups*, *Ann. of math.*, vol. 84 (1966), pp. 49–84.
 12. (with H. Rogers, Jr.) *On a problem of J.H.C. Whitehead and a problem of Alonzo Church*, *Math. Scand.*, vol. 19 (1966), pp. 185–192.
 13. *Decision problems about algebraic and logical systems as a whole and recursively enumerable degrees of unsolvability*, *Math. Logic, Colloquium, Hannover 1966*, North-Holland, Amsterdam, 1968, pp. 13–33.
 14. (with W. Haken and V. Poenaru) *On recursively unsolvable problems in topology and their classification*, *Math. Logic, Colloquium, Hannover 1966*, North-Holland, Amsterdam, 1968, pp. 37–74.
 15. *The theory of decision problems in group theory*, A survey, circulated on tape by the Amer. Math. Soc.
 16. (with D. J. Collins and Ju. V. Matijasevic) *Embeddings into semigroups with only a few defining relations*, *Proceedings of the Second Scandinavian Logic Symposium, Oslo 1970*; *Studies in Logic and the Foundations of Mathematics*, vol. 63, North-Holland, Amsterdam, 1971, pp. 27–40.
 17. *Between logic and group theory*, *Proceedings of the Second International Conference on the Theory of Groups, Canberra 1974*, *Lecture Notes in Math.*, no. 372, Springer, Berlin, 1974, pp. 90–102.
 18. *Word problems and recursively enumerable degrees of unsolvability. An emendation*, *Ann. of Math.*, vol. 94(1971), pp. 389–391.
 19. (with D. J. Collins) *Embeddings into groups with only a few defining relations*, *J. Austral. Math. Soc.*, vol. 18 (1974), pp. 1–7.
 20. (with G. Higman) *An algebraic characterisation of groups with solvable word problem*, *J. Austral. Math. Soc.*, vol. 18(1974), pp. 41–53.
 21. (with G. Higman) *An algebraic classification of groups with solvable order problem*, *Logic Colloquium '73, Bristol 1973*, *Studies in Logic and the Foundations of Mathematics*, vol. 80, North-Holland, Amsterdam, 1975, pp. 53–54.
 22. (Editor, with F. B. Cannonito and R. C. Lyndon) *Word problems: Decision problems and the Burnside problem in group theory*, *Studies in Logic and the Foundations of Mathematics* vol. 71, North-Holland, Amsterdam, 1973.
 23. (Editor, with S. I. Adjan and G. Higman) *Word problems II: the Oxford book*, *Studies in Logic and the Foundations of Mathematics*, vol. 95, North-Holland, Amsterdam, 1980.
- Note: An obituary of William W. Boone by D. G. Collins appeared in the *Bull. London Math. Soc.*, vol. 17 (1985), pp. 168–174.