# TABLE OF CONTENTS

A Radix Product Representation for Real Numbers .............................. *Arnold Knopfmacher* 290

Partitions with “$M(a)$ Copies of $a$” .................................................. *E.E. Guerin* 298

Periods in Ducci’s $n$–Number Game of Differences ............................... *Amos Ehrlich* 302

Fibonacci Numbers of the Form $CX^2$, Where $1 \leq C \leq 1000$ ........................... *Neville Robbins* 306

Vinogradov’s Inversion Theorem for Generalized Arithmetical Functions .............................. *Penti Haukkanen* 316

Two Classes of Numbers Appearing in the Convolution of Binomial-Truncated Poisson and Poisson-Truncated Binomial Random Variables ........................................... *M. Koutras* 321

On the Number of Propagation Paths in Multilayer Media ....................... *Jon T. Butler* 334

Third International Conference Proceedings ............................................ 339

Asymptotic Positiveness of Linear Recurrence Sequences ................................. *Kenji Nagasaka and Jau-Shyong Shiue* 340

On the Generalized Fibonacci Pseudoprimes ............................................ *Adina Di Porto, Piero Filipponi and Emilio Montolivo* 347

Report on the Fourth International Conference on Fibonacci Numbers and Their Applications ................................. *Herta T. Freitag* 354

Extensions of Congruences of Glaisher and Nielsen Concerning Stirling Numbers ................................. *F.T. Howard* 355

Generalized Fibonacci Sequences via Arithmetical Functions .............................. *P.J. McCarthy and R. Sivaramakrishnan* 363

Elementary Problems and Solutions .................................................. *Edited by A.P. Hillman* 371

Advanced Problems and Solutions .................................................. *Edited by Raymond E. Whitney* 376

Volume Index ........................................................................ 383

Announcement on Fifth International Conference ........................................ 384

---

**VOLUME 28**  
**NOVEMBER 1990**  
**NUMBER 4**
PURPOSE

The primary function of THE FIBONACCI QUARTERLY is to serve as a focal point for widespread interest in the Fibonacci and related numbers, especially with respect to new results, research proposals, challenging problems, and innovative proofs of old ideas.

EDITORIAL POLICY

THE FIBONACCI QUARTERLY seeks articles that are intelligible yet stimulating to its readers, most of whom are university teachers and students. These articles should be lively and well motivated, with new ideas that develop enthusiasm for number sequences or the exploration of number facts. Illustrations and tables should be wisely used to clarify the ideas of the manuscript. Unanswered questions are encouraged, and a complete list of references is absolutely necessary.

SUBMITTING AN ARTICLE

Articles should be submitted in the format of the current issues of THE FIBONACCI QUARTERLY. They should be typewritten or reproduced typewritten copies, that are clearly readable, double spaced with wide margins and on only one side of the paper. The full name and address of the author must appear at the beginning of the paper directly under the title. Illustrations should be carefully drawn in India ink on separate sheets of bond paper or vellum, approximately twice the size they are to appear in print. Since the Fibonacci Association has adopted $F_1 = F_2 = 1$, $F_{n+1} = F_n + F_{n-1}$, $n \geq 2$ and $L_1 = 1$, $L_2 = 3$, $L_{n+1} = L_n + L_{n-1}$, $n \geq 2$ as the standard definitions for The Fibonacci and Lucas sequences, these definitions should not be a part of future papers. However, the notations must be used.

Two copies of the manuscript should be submitted to: GERALD E. BERGUM, EDITOR, THE FIBONACCI QUARTERLY, DEPARTMENT OF COMPUTER SCIENCE, SOUTH DAKOTA STATE UNIVERSITY, BOX 2201, BROOKINGS, SD 57007-0194.

Authors are encouraged to keep a copy of their manuscripts for their own files as protection against loss. The editor will give immediate acknowledgment of all manuscripts received.

SUBSCRIPTIONS, ADDRESS CHANGE, AND REPRINT INFORMATION

Address all subscription correspondence, including notification of address change, to: RICHARD VINE, SUBSCRIPTION MANAGER, THE FIBONACCI ASSOCIATION, SANTA CLARA UNIVERSITY, SANTA CLARA, CA 95053.

Requests for reprint permission should be directed to the editor. However, general permission is granted to members of The Fibonacci Association for noncommercial reproduction of a limited quantity of individual articles (in whole or in part) provided complete reference is made to the source.

Annual domestic Fibonacci Association membership dues, which include a subscription to THE FIBONACCI QUARTERLY, are $30 for Regular Membership, $40 for Sustaining Membership, and $67 for Institutional Membership; foreign rates, which are based on international mailing rates, are somewhat higher than domestic rates; please write for details. THE FIBONACCI QUARTERLY is published each February, May, August and November.

All back issues of THE FIBONACCI QUARTERLY are available in microfilm or hard copy format from UNIVERSITY MICROFILMS INTERNATIONAL, 300 NORTH ZEEB ROAD, DEPT. P.R., ANN ARBOR, MI 48106. Reprints can also be purchased from UMI CLEARING HOUSE at the same address.

1990 by
©The Fibonacci Association
All rights reserved, including rights to this journal
issue as a whole and, except where otherwise noted,
rights to each individual contribution.
The Fibonacci Quarterly

Founded in 1963 by Verner E. Hoggatt, Jr. (1921-1980) and Br. Alfred Brousseau (1907-1988)

THE OFFICIAL JOURNAL OF THE FIBONACCI ASSOCIATION
DEVOTED TO THE STUDY
OF INTEGERS WITH SPECIAL PROPERTIES

EDITOR
GERALD E. BERGUM, South Dakota State University, Brookings, SD 57007-0194

ASSISTANT EDITORS
MAXEY BROOKE, Sweeney, TX 77480
JOHN BURKE, Gonzaga University, Spokane, WA 99258
LEONARD CARLITZ, Duke University, Durham, NC 27706
HENRY W. GOULD, West Virginia University, Morgantown, WV 26506
A.P. HILLMAN, University of New Mexico, Albuquerque, NM 87131
A.F. HORADAM, University of New England, Armidale, N.S.W. 2351, Australia
CLARK KIMBERLING, University of Evansville, Evansville, IN 47722
DAVID A. KLARNER, University of Nebraska, Lincoln, NE 68588
RICHARD MOLLIN, University of Calgary, Calgary T2N 1N4, Alberta, Canada
GARY L. MULLEN, The Pennsylvania State University, University Park, PA 16802
SAMIH OBAID, San Jose State University, San Jose, CA 95192
JOHN RABUNG, Randolph-Macon College, Ashland, VA 23005
NEVILLE ROBBINS, San Francisco State University, San Francisco, CA 94132
DONALD W. ROBINSON, Brigham Young University, Provo, UT 84602
LAWRENCE SOMER, Catholic University of America, Washington, D.C. 20064
M.N.S. SWAMY, Concordia University, Montreal H3C 1M8, Quebec, Canada
D.E. THORO, San Jose State University, San Jose, CA 95192
CHARLES R. WALL, Trident Technical College, Charleston, SC 29411
WILLIAM WEBB, Washington State University, Pullman, WA 99164-2930

BOARD OF DIRECTORS
THE FIBONACCI ASSOCIATION

CALVIN LONG (President)
Washington State University, Pullman, WA 99164-2930

G.L. ALEXANDERSON
Santa Clara University, Santa Clara, CA 95053

PETER HAGIS, JR.
Temple University, Philadelphia, PA 19122

FRED T. HOWARD
Wake Forest University, Winston-Salem, NC 27109

MARJORIE JOHNSON (Secretary-Treasurer)
Santa Clara Unified School District, Santa Clara, CA 95051

JEFF LAGARIAS
Bell Laboratories, Murray Hill, NJ 07974

LESTER LANGE
San Jose State University, San Jose, CA 95192

THERESA VAUGHAN
University of North Carolina, Greensboro, NC 27412