Mathematics People

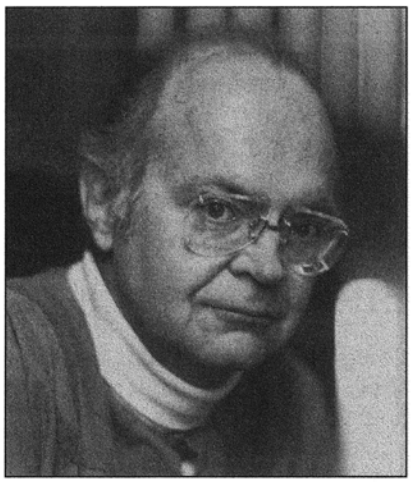
Knuth Receives Kyoto Prize

DONALD KNUTH of Stanford University has received the 1996 Kyoto Prize in the category of Advanced Technology. The prize includes a gold medal and a cash gift of 50 million yen (approximately $460,000). Knuth will receive the prize in ceremonies to be held in November in Kyoto.

Knuth has made innumerable contributions to the development of twentieth-century information sciences through research and education. In addition to creating the foundations for and systematizing the field of software science, he has achieved great results in a broad spectrum of research ranging from the basics of algorithm analysis to designing programming languages and developing information-processing technology for practical application on computers.

Information sciences originated in cybernetics, as advocated by Norbert Wiener, and the systematization of information theory, as defined by Claude Shannon (a 1985 Kyoto laureate). Knuth's development of information processing technology made a great contribution to the arrival of our present information-based society. His achievements include:

1. The publication of *The Art of Computer Programming* and research on algorithms. Not only did Knuth do research on algorithms, he helped popularize and spread awareness of computer programming as a science. While the three volumes of *The Art of Computer Programming* currently in print can be regarded as classical textbooks, they are also considered the bible of algorithms. They provide deep insight into the inherent meaning of algorithms and their associated programs.



Donald Knuth

2. Development of the TEX computer typesetting system and the Metafont font design system. It was Knuth's research and development of these systems which first enabled document publishing and professional quality typesetting to be conducted using computers. TEX is presently used throughout the world as a typesetting system for European languages, as well as for Japanese and Korean. It has been employed in the publication of documents, books, and treatises of the American Mathematical Society and other academic societies. TEX is public domain software of worldwide acclaim, benefiting society in immeasurable ways that have not brought Knuth financial gain.

3. Development of LR parser and attribute grammar. Knuth's work in this area has established a new method of language analysis and made fundamental contributions to compiler technologies.

In addition to the accomplishments cited above, Knuth's achievements span the entire spectrum of computer and information sciences, including string pattern matching algorithms, random number generating algorithms, the Knuth-Bendix algorithm, and a wide range of other theo-

retically renowned and practical algorithms. Knuth is also the creator of literate programming, resulting in the development of a literate programming support system.

Donald Ervin Knuth was born on January 10, 1938, in Milwaukee, Wisconsin. He received his B.S. in 1960 from the Case Institute of Technology and his Ph.D. in mathematics in 1963 from the California Institute of Technology. He was on the Caltech faculty from 1963 until 1968, when he moved to Stanford University. He is currently Professor Emeritus in The Art of Computer Programming at Stanford. His awards and honors include the Grace Hopper Award (1971) and the Alan Turing Award (1974) of the Association for Computing Machinery, the National Medal of Science (1979), the IEEE Computer Pioneer Award (1982), the ACM Software Systems Award (1986), the New York Academy of Sciences Award (1987), the Franklin Medal (1988), and the J. D. Warnier Prize (1989).

Also receiving Kyoto Prizes this year are molecular geneticist Mario R. Capecchi and philosopher Willard V. O. Quine. The Kyoto Prizes are presented annually by the nonprofit Inamori Foundation to recognize individuals and groups worldwide which have made significant contributions to the betterment of humanity. The foundation was established with a personal endowment of $200 million in 1984 by Kazuo Inamori, a Japanese humanitarian and pioneer in the field of technical ceramics. Inamori is the founder and chairman of Kyocera Corporation, a producer of technical ceramics, and DDI Corporation, a telecommunications company.

— from Inamori Foundation News Release

U.S.A. Places Second in International Olympiad

Competing against teams representing a record 75 countries, six American high school students won six medals and took second place at the 37th International Mathematical Olympiad (IMO) held in Bombay, India, July 5–17, 1996.

The top 10 teams and their scores (out of a possible 252 points) are: Romania (187), U.S.A. (185), Hungary (167), Russia (162), United Kingdom (161), China (160), Vietnam (155), South Korea (151), Iran (143), and Germany (137). The U.S. IMO team members are: CARL J. BOSLEY, Washburn Rural High School, Topeka, KS (Gold Medalist); CHRISTOPHER C. CHANG, Henry M. Gunn High School, Palo Alto, CA (Gold Medalist); NATHAN G. CURTIS, Thomas Jefferson High School for Science and Technology, Alexandria, VA (Silver Medalist); MICHAEL R. KORN, Mounds View High School, Arden Hills, MN (Gold Medalist); CARL A. MILLER, Montgomery Blair High School, Silver Spring, MD (Silver Medalist); and ALEXANDER H. SALTMAN, LBJ High School Science Academy, Austin, TX (Gold Medalist).

The IMO is a rigorous two-day competition composed of problems that would challenge most professional mathematicians. In addition to comprehensive mathematical knowledge, success in the IMO requires exceptional mathematical creativity and inventiveness.

A representative question which appeared on the 1996 IMO is as follows: Let $ABCDEF$ be a convex hexagon such that AB is parallel to ED, BC is parallel to FE, and CD is parallel to AF. Let R_A, R_C, R_E denote the circumradii of triangles FAB, BCD, DEF respectively, and let s denote the semiperimeter of the hexagon. Prove that s does not exceed $R_A + R_C + R_E$.

Team leader Titu Andreescu, from the Illinois Mathematics and Science Academy, said, "We are extremely happy. The problems were very difficult and every team member performed to his best potential. We had an outstanding four-week training program preceding the competition and our hard work paid off. We demonstrated again that the U.S.A. is able to maintain its high ranking in the IMO."

Accompanying the team also were Kiran Kedlaya, recent graduate of Harvard University, deputy of the team and a former U.S. IMO team member, and Walter E. Mientka, a professor at the University of Nebraska-Lincoln, and the U.S.A. team leader observer.

The U.S.A. team was chosen on the basis of performance in the 25th annual U.S.A. Mathematical Olympiad held in May of this year. The training program was held at the University of Nebraska-Lincoln, June 5–July 3.

U.S.A. Mathematical Olympiad activities are sponsored by nine national associations in the mathematical sciences, including the AMS. Arrangements for the Olympiad are made by the Mathematical Association of America. Financial support is provided by the Army Research Office, the Office of Naval Research, Microsoft Corporation, and the Matilda R. Wilson Fund.

—Joint Policy Board for Mathematics News Release

Seiberg Receives MacArthur Fellowship

Nathan Seiberg of Rutgers University has received a fellowship from the John T. and Catherine T. MacArthur Foundation. The fellowships, dubbed "genius awards", recognize exceptional creativity in all areas of human endeavor.

Nathan Seiberg is a theoretical physicist who has made important contributions to what has been described as a new revolution in fundamental physics. His discoveries have had a decisive influence on the burgeoning fields of string theory and other quantum field theories and are central to the advancement of fundamental theoretical physics today. His collaboration with Edward Witten resulted in the celebrated Seiberg-Witten equations, which have had a profound effect on low-dimensional topology and gauge theory [see "Gauge Theory is Dead!—Long Live Gauge Theory!", *Notices*, March 1995, page 335]. A professor of physics at Rutgers University, Seiberg was born in 1956 and received

his B.S. (1977) from Tel-Aviv University and his Ph.D. (1982) from the Weizmann Institute of Science, Israel.

—from MacArthur Foundation News Release

Deaths

HAROLD W. BROCKMAN, professor emeritus at Capital University, Columbus, Ohio, died on July 24, 1995. Born on March 31, 1922, he was a member of the Society for 36 years.

EDWIN H. COMFORT, professor emeritus at Ripon College, Ripon, Wisconsin, died on May 26, 1996. Born on August 12, 1907, he was a member of the Society for 65 years.

SISTER M. ELIZABETH FRISCH, professor at Thomas More College, Crestview Hills, Kentucky, died on May 19, 1993. Born on October 18, 1901, she was a member of the Society for 47 years.

MARTIN JURCHESCU, of University of Bucharest, died on May 1, 1996. He had been a member of the Society for 5 years.

HARLAN D. MILLS, professor at Florida Institute of Technology, Melbourne, Florida, died on January 8, 1996. Born on May 14, 1919, he was a member of the Society for 43 years.

BOB PARKER, associate professor emeritus at Texas Technical University, Lubbock, Texas, died on June 18, 1996. Born on December 30, 1904, he was a member of the Society for 49 years.

R. B. SAUNDERS, professor emeritus of Oregon State University, Corvallis, Oregon, died on October 17, 1995. Born on January 12, 1912, he was a member of the Society for 49 years.

M. A. SCHEIER, retired, died on March 12, 1991. Born on December 15, 1901, he was a member of the Society for 51 years.

ROBERT H. SORGENFREY, professor emeritus at University of California, Los Angeles, died on January 7, 1996. Born on August 14, 1915, he was a member of the Society for 58 years.

PETER THULLEN, professor emeritus at University of Fribourg, Switzerland, died on June 24, 1996. Born on August 24, 1907, he was a member of the Society for 54 years.

B. L. VAN DER WAERDEN, retired, died on January 12, 1996. Born on February 2, 1903, he was a member of the Society for 48 years.

LUCILLE E. WHYBURN, retired associate professor at University of Virginia, Charlottesville, Virginia, died on November 15, 1995. Born on July 31, 1905, she was a member of the Society for 64 years.

RICHMOND T. ZOCH,retired, died on February 27, 1996. Born on May 18, 1903, he was a member of the Society for 12 years.

Editor's Note: Due to a database error, the death notice for Mrs. Ewa Wojcicka (*Notices*, June 1996, p. 687) referred to Mrs. Wojcicka as "he". The *Notices* regrets this error.