

Morris Newman (February 25, 1924 - January 4, 2007)

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By Abdul-Ahad Butt

Morris Newman, born February 25, 1924, was a mathematician from Brooklyn, New York. His parents were Russian immigrants who met in Brooklyn after escaping the pogroms in the early 1900s. Newman did his undergraduate at New York University and started his graduate work at Columbia University. At Columbia, he wrote a Master's thesis, but soon realized that his real interest was in number theory, and left for the University of Pennsylvania under the direction of Hans A. Rademacher, where he received his Ph.D. in 1952. Newman's first occupation was as a research mathematician at the National Bureau of Standards (NBS), where he stayed from 1951 to 1976. He became NBS' chief of the Numerical Analysis Section in 1963, a position he held until 1970. From 1970, he was a Senior Research Mathematician until his retirement from NBS in 1976. At NBS, he produced well over 100 papers, and wrote and edited several books, such as his well-known *Matrix Representations of Groups* (1968), which had sold over 20,000 copies. Another great book was his *Integral Matrices* (1972), which was regarded as a standard reference for the theory of matrices over principal ideal domain.

At NBS, Newman was in a position to accept postdoctoral candidates to work under his supervision. Richard Brualdi, Russell Merris, Stephen Pierce, Charles Johnson were just a few of the many accredited people he wrote joint papers with. In addition, numerous distinguished visitors came to NBS for various periods of time, and Newman associated with a number of

them. This included Alexander Ostrowski, Helmut Wielandt, Marvin Knopp, Oliver Atkin, and the famous Paul Erdős.

Newman's tenure at NBS coincided with the development of digital computers. In 1951, there was only one digital computer at NBS, known as the Standards Eastern Automatic Computer (SEAC). It was a first-generation electronic computer and one of Newman's tasks was to write software which produced a complete set of matrix programs. Based on his accomplishments, he was awarded a U.S. Department of Commerce Gold Medal in 1966 for his work on algorithms for solving integral linear systems exactly by using congruence techniques.

As Newman dove deeper in the concepts of matrices, he began working on the general theory of integral matrices and the structure of matrix groups over principal ideal rings. This interest led Newman to matrix theory and applications of number theory. In 1960, Newman formulated Newman's Conjecture, which was a conjecture about the behavior of the partition function modulo any integer. Amazingly, it is still unsolved as of 2021. The proposal of Newman's interesting conjecture was inspired by the great Ramnujan's conjectures and identities.

With all of his rich theorems, Newman never forgot about his love for computing. For 45 years since he left NBS, he had gained an immense amount of exposure in writing algorithms and carrying them out on various machines. For Newman, the theories of discrete mathematics and the illustration of these theories by computing always went hand in hand, truly making him a discrete mathematician by heart.

In 1977, Newman moved to California and became a professor at the University of California, Santa Barbara, where he served until his retirement in 1993. He continued to be technically active advising graduate students through early 2005.

In the years leading to his death, Newman had remained active as ever, invigorating his profound interest in number theory, matrix theory, and the strong bond between the two. Outside of Mathematics, he would enjoy his free time from retirement and play a lot of tennis.

Unfortunately, Newman's time came to an end, passing away on January 4, 2007 at the age of 82.