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A VISIT WITH E. H. MOORE

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E. H. Moore is the Patron Saint of this conference. Born in Marietta, Ohio on January 26, 1862, he spent a considerable part of his childhood in Athens. His grandfather for whom he was named served as Treasurer of this University, as President of a local bank, and as congressman for this area. One of his Athens playmates, Martha Morriss Young later became his wife. Her brother J. W. Young also became a mathematician and ended his career at Dartmouth College.

E. H. Moore prepared himself in the Cincinnati High School to enter Yale University. Ormond Stone, director of the Cincinnati Observatory at that time, invited Moore to be his assistant one Summer. Though primarily an astronomer, Ormond Stone had a high regard for mathematics and he inspired his young assistant to become interested in mathematics. It is interesting to note that Professor Stone later became Director of the Leander McCormick Observatory of the University of Virginia and a founder of the *Annals of Mathematics* which started up at the University of Virginia and was one of the first mathematical journals in the United States. Afterwards this journal was moved to Harvard and then to Princeton.

Gordon and I first met E. H. Moore in 1926 at the American Mathematical Society's winter meeting in Chicago, Illinois. When Gordon and I set out to attend this meeting, we had never been north. Our only trip outside the state of

Texas had been a tour by car the summer before to Sante Fe, New Mexico. Our major professor R. L. Moore drove cadillacs and boasted about the speed he was able to attain. Gordon and I drove a light blue secondhand Dodge sports roadster with a canvas top and a rumble seat. R. L. Moore took great pride in his car. Our car was very special to us too. When we put that top down and sped along those Texas roads our sense of freedom welled up but somehow we felt it necessary to keep those moonlight rides a deep, dark secret from Dr. Moore. Going to Chicago was different, a real adventure. We road the old elevated train; it rumbled and bumbled around giving us the impression that it might jump the track any minute. It was cold, cold, cold. Finally, we found the University of Chicago. The two day meeting took place December 31, 1926 and January 1, 1927. No one else had come up from Texas. Though R. L. Moore had urged us to go to the meeting, he did not go. We knew no one. We felt ill at ease. However, when we met Professor E. H. Moore things changed. R. L. Moore had talked to us about E. H. Moore and told us what a great mathematician he was. I was expecting an elderly, rather austere man but he was not like that at all. True he was not young but he was kind and vital, full of mathematics, and extraordinarily receptive. He asked us to join his group for lunch and that afternoon he took us up to his office. We just sat down together and talked. He inquired what was my favorite subject in high school. Geometry I answered, whereupon he talked about the Greeks using geometry to make their algebra concrete. This

presented a startling new point of view. He went on to expound on the unity of mathematics and was disappointed to learn that our high school mathematics had been taught in tight little compartments.

E. H. Moore was perhaps the last of the generalists. To quote G. A. Bliss: "Moore was a prolific thinker. He had a catholic interest in all domains of mathematics and breadth of knowledge which was remarkable. Few men have had so great an appreciation of the mathematical efforts of others or been so well qualified to discuss them in many different fields, qualities which were an important part of his insignia of leadership." It was only much, much later that I learned that in his retiring address as President of the American Mathematical Society in 1902 he had advocated vigorously the teaching of mathematics as one subject with each division illuminating the others. Indeed he served on a National Committee on Mathematical Requirements for Secondary Schools. This committee was chaired by his brother-in-law J. W. Young of Dartmouth and received a grant from New York City to further its aims.

Gordon delivered his first paper before the AMS at this meeting. When he rose to present the paper I noticed that his face blanched slightly and that he gripped his left hand so tightly it turned white. I had never seen him like this before and suddenly I was frightened for him. After all this was a very august assembly of highly educated, talented mathematicians. The title of his paper was "Cyclicly Connected Continuous Curves." He looked around the audience

and then he began to tell Professor Moore about this exciting new insight he had found--a notion that R. L. Moore was to generalize into his theory of cactoids--and there was Gordon just talking about mathematics as he always loved to do. One could see E. H. Moore's interest rising. When Gordon finished he asked several questions and made some interesting remarks. Thus in a natural way he had used his leadership ability to launch one more young mathematician into the AMS, in this case a great grandson. Gordon always looked forward to AMS meetings after that.

I would like to end with a story and gleanings from two letters. The story shows his pride in the University of Chicago, the letters show his pride in his students. The story is about an Augustus H. Strong who opposed John D. Rockefeller's donation to the University of Chicago. Strong insisted that Chicago was not the place for a University. He predicted that it would be a mongrel institution of necessity provincial and sectional. He felt that such a university would not attract college graduates for years. Let us recall that among the early recipients of the Ph.D. at Chicago were G. D. Birkhoff, G. A. Bliss, L. E. Dickson, T. H. Hildebrandt, D. H. Lehmer, R. L. Moore, and Oswald Veblen. Indeed it has been said that during the period 1892-1908 the University of Chicago was unsurpassed in America as an institution for the study of higher mathematics. The letters are to Professor Oswald Veblen who spent most of his mathematical career at Princeton University and was a moving figure in the establishment of the Institute for

Advanced Study. Indeed if you look at the register of members you will find Oswald Veblen first and Albert Einstein second. E. H. Moore's letters are dated long before the founding of the Institute for Advanced Study. The letter we quote is dated July 13, 1925. "Let me take this occasion to congratulate you on the really remarkable, brilliant, success you have achieved in the twenty five years since we had such good times together here in Chicago. To think of it makes me feel stronger and younger." Moore later writes to congratulate Veblen on his Presidency of the AMS and to express his appreciation of the Society's recognition of the Chicago meetings as regular meetings of the AMS after twenty five years.

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