

**EARLY DAYS OF GENETICS CONNECT TO MAIZE RESEARCH
INSTITUTE ZEMUN POLJE IN SERBIA:
*Their corn breeders travel to North America for further training and experiences***

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Following the discovery of Mendel's laws of inheritance in 1900 (PETERSON, 2010), several university sites in the United States and England embraced these genetic concepts. In the United States, Columbia University's Zoology Department related Mendel's laws with their studies of chromosome segregation (WILSON, 1902). In England, BATESON (1902) saw a relationship between Mendelian laws to the heredity of a number of phenotypes. Several Columbia University graduates were recruited by the University of Kansas, and there in Kansas, expanded on the relation of Mendel's laws of Segregation and Chromosomes (SUTTON, 1903).

Though the year 1900 initiated the Birth of Genetics (GENETICS SUPPL. 1950), plant breeding and especially corn breeding had been practiced in the past centuries (WALLACE and BROWN 1956). Corn breeding in the United States was mainly concentrated in the corn-belt. However, the Connecticut Experimental Station (CES) in New Haven, Connecticut was also breeding corn materials and they were in need of a leader in the corn breeding program. They recruited an Illinois cereal chemist to head the corn program at CES. This was **EM East** who was actively involved as a graduate assistant in the hi-oil, hi-protein selection program at the University of Illinois (DUDLEY and LAMBERT, 1992).

This move by EM East to Connecticut had important futuristic consequences'. When **W. Bateson**, a Reader in Zoology at Cambridge University (*in 1908, Professor*), arrived at Yale in 1907 to give the Silliman Lectures on "*Problems in Genetics*", there were likely interactions between the members of the Yale Biology group and CES. Though this writer is unaware of any specific instances of

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communication, what is known is that Harvard University inquired of Bateson of possible candidates to lead the Bussey Institution, an Institute of Harvard University located in Jamaica Plain outside of Boston. This writer does not know of a specific interaction or of discussions of Bateson with East, but what is known is that Bateson recommended Dr. East to the Harvard search committee for the Bussey Position. And, here, East arrived in Jamaica Plain and in time, started a genetic dynasty that eventually developed in the training of generations of plant geneticists and breeders (Figure 1).

In time, those that came to the Bussey Institution and received degrees in Genetics left for other universities and started their own trained scientists that extended East's dynasty into the future (Figure 1). This pedigree tree that has its roots in the concepts discovered by Mendel and that extends to East with a main trunk to Cornell (Emerson) and many branches (Figure 1).

In the middle 1920's, **RE Emerson** at Cornell attracted a number eager students that wished to embrace the new concepts of genetics. Many, such as **George Beadle**, originally from a rural area of Nebraska (Wahoo) and the University of Nebraska as well as **MM Rhoades** from Kansas arrived at the Ithaca (New York) campus to join EW Emerson's group to study genetics. Many others came from farm back-grounds, although **B McClintock** arrived from Brooklyn NY. In any case, these and others of the Cornell group made rapid progress in maize genetics (EMERSON, BEADLE and FRASER, 1932). More importantly, graduates of the Emerson group went on to develop genetic programs and trained many students who started their own program at their own universities.

One of the many who trained with Emerson was **GS Sprague**. Sprague became a corn breeder in the United State Dept. of Agriculture and eventually was assigned to the Agronomy Department of Iowa State College (later, Iowa State University). With the popularity of the maize lines (Iowa Stiff Stalk Synthetics) in his program, world wide attention was focused on this progress. As a consequence, many aspiring students and corn breeders came to his program for their graduate degrees.

As is evident in Figure 1, the East Legacy in genetics by the succeeding plant breeders and geneticists and other researchers gave rise to major groups of maize geneticists and breeders in Universities and Experiment stations all across the United States and countries abroad. From these early East-trained and Emerson trained researchers, many succeeding geneticists and breeders were widely located.

Many aspiring corn breeders came to the United States from foreign countries. Among these groups that came to Ames to work with Sprague and his successors (ex. **HALLAUER**, 1984) in the Corn Breeding Program were a large number (14) from the Maize Research Institute in Zemun Polje, Serbia. Starting in the 1950's, they came and (are still coming) to the Iowa State University Corn Breeding group for the next four decades.

Other universities in the United States were sites for visitors from Zemun Polje to receive further experience in corn breeding. Some of these universities are as follows: to Illinois (7), to Minnesota (4), to Purdue (5), to North Dakota (1), to Cornell (1), North Carolina (2) and Wisconsin (2).

Others went to Canada: Manitoba (2) and Guelph (2).

One of the first to arrive in the United States from Serbia, was **Vladimir Trifunovic**. He joined Robert Jugenheimer at the University of Illinois at Urbana, Illinois and was awarded a Masters degree in the Department of Agronomy. Later, following a policy of the Zemun Polje Plant Breeding Institute in Serbia to award Fellowship to their corn breeders to travel to the United States for further experiences, Trifunovic came to Ames, Iowa to join in the activities of the successful Iowa Corn Breeding Program (KONTANTINOV, 2010).

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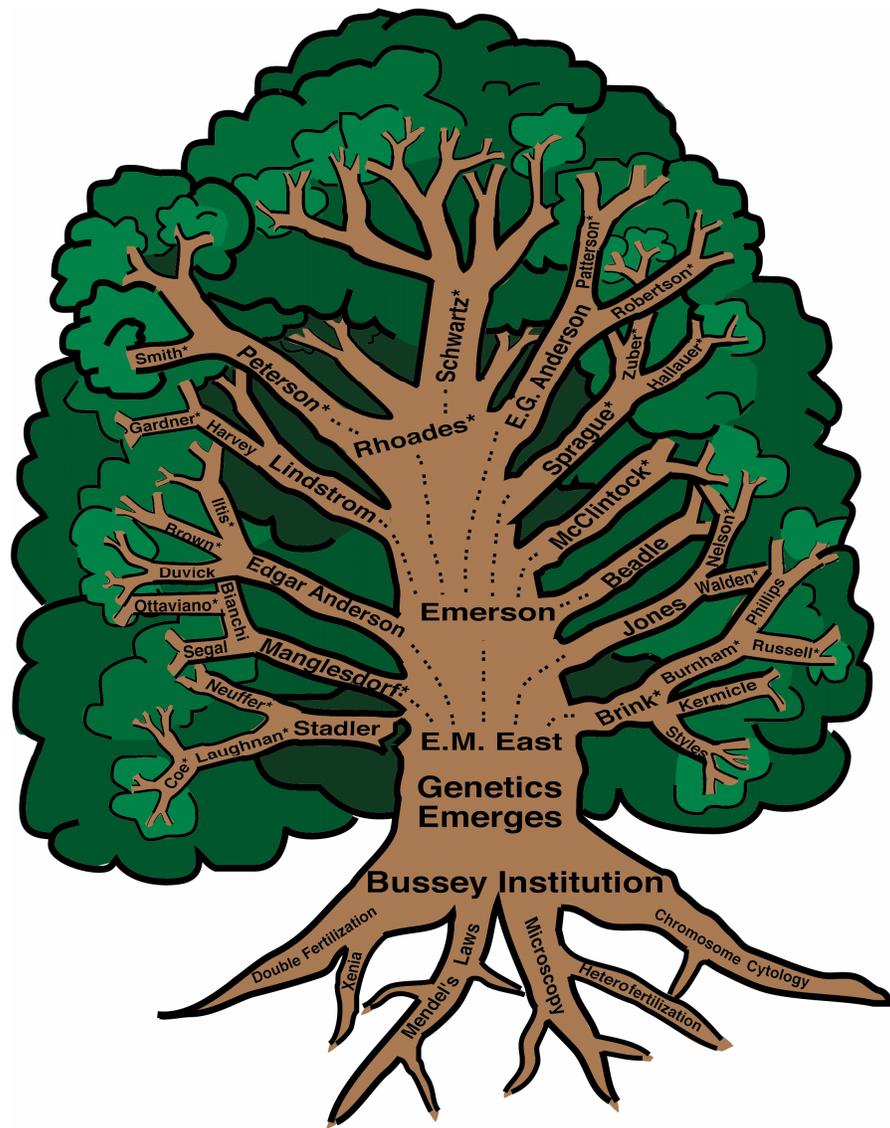


Fig 1. The emerging plant genetics and breeding in the early days after the re-discovery of Mendelian Genetics in 1900 and the beginning of the East dynasty at the Bussey Institute.