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1. A study of the local and regional maize populations (Zea mays L.).

Maize in the zones of its original cultivation (for instance in the USA) became, in a relatively short time, the subject-matter of detailed studies in the most varied directions. These studies were based on collections gathered with ant-like zeal by research workers. In the course of time these investigations of the collections terminated (in our opinion) materially, and today the whole extent of maize has, on principle, been exhausted, studied and evaluated, the prospective types being in a considerable measure utilized in the selection practice.

In other zones (for instance in Czechoslovakia) this is far from the case. Maize in Central Europe was late in becoming an article of economic utilization, which also necessarily resulted in detailed scientific investigation. The inevitable consequence of this state of things was, among others, that the local and regional maize populations retained for a long time their positions in farming practice. The situation was further stressed by the rich geographical articulation of Central and Southern Europe and the historically different (often contrasting or crossing) articulation of trade routes that were likewise of great assistance in the historical dissemination of agricultural produce in Europe. These conditions (and probably others as well) resulted in different and genetically immensely valuable populations. These began to be utilized and improved in the selection practice, but the process of collecting, investigation and utilization has not by far been terminated.

In Czechoslovakia great attention is being paid to the questions of collecting, study and utilization of local and regional maize populations. In area (127.858 km<sup>2</sup>) Czechoslovakia does not range among the large countries, but her position and geographical articulation made it possible to originate here interesting populations. A certain contrariety is reflected in the fact that Czechoslovakia has always belonged to the progressive countries and has left an influence on the preservation of these populations. Another important factor was the establishment of collective large-scale agricultural units which made possible a complete introduction of the present-time technique and technology, organization of work, and the use of the most effective variations and hybrids in all production areas. There arose in dead earnest the question of an accelerated termination of maize collection. The Staff of the Department of Genetics and Selection, assisted by the pupils of agricultural and other schools in the most varied degree of instruction, began to collect some time ago, and has, at the present time terminated the detailed collection of the local and regional populations. On the whole 536 sites in Czechoslovakia have been covered. Special attention was paid to submontane and montane valleys (because of the cold-resistant and early-crop types). The relatively dense covering of the whole area resulted in duplications, in some instances, but in a work like this, this is immaterial. Representatives of the following varieties have been secured: *Zea mays* L.: v. *Indurata*, v. *Indentata*, v. *Everta*, v. *Saccharata*. The stage of collecting has thus been terminated. Now the main attention is being devoted to substantial studies and

evaluation, the most valuable material being placed at the disposal of workers at the Selection Stations. It is not possible in this short preliminary report to present an analysis of the results obtained. Some interesting facts can, however, be mentioned.

1. A valuable starting material for special selection has been gained. This is characterized by a considerable cold-resistance, a relatively quick start in the first stages of growth (our regions are distinctive for relatively cold springs), and relatively short vegetation periods.

2. In the genetic studies of the secured materials and chiefly in the genetic disintegration due to selfpollination we frequently met with the type-lines (a part of the material has been worked up into  $S_6 - S_8$ ) which, as regards their taxonomico-anatomical structure, are very much like the respective classical, present-day lines in the USA.

3. The material obtained from the more eastern and central zones is frequently characterized by a fairly high farmability. Populations obtained from central (in which case there is a clear conflict of directions), eastern, northern and southern zones are characterized by lower farmability. From this one may infer that maize populations spread to this country from the more western countries (chiefly via western Germany) already in a certain degree of improvement and selection. Populations that had reached this country chiefly from the Balkans were not to such a high degree subject to human selection and have retained great variety and genetic width (this may have been caused by a greater geographic articulation of the places of transition and of those of cultivation). Some results point out to the basic directions of advance into this country even with regard to the individual zones.

4. As a complement to these studies populations from other countries of Europe are being collected. Also from this fairly rich material a whole series of prospective types for detailed study and utilization in special selection has been evaluated. These materials are also subject-matter for investigation.

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1. The mutability of the components of the  $E_n$  system.

The varied forms of  $E_n$ :  $E_n$  (Enhancer) is necessary for the mutability of the  $a_1^{m(r)}$  allele. In the absence of  $E_n$  this allele is colorless and indistinguishable from other colorless alleles. The pattern of mutability expression is a result of rate (low and high) and time (early and late) of mutation events. Given a common  $a_1^{m(r)}$  allele, different  $E_n$  can cause a predictably different mutable expression. In addition, each of the  $E_n$  isolates shows somatic changes.

The varied forms of "I": In the  $E_n$  system of mutability, the element suppressing the action of the locus has been designated "I" (Peterson, Genetics 46). When adjacent to the locus, the action of the