

## 2. Breeding work.

(A) Commercial races in Southern Brasil. A fairly large job of collecting commercial races has been carried out, to a great extent with the help of colleagues from other Institutions and the Extension Services. Dr. Gurgel thus verified the following for the most southern State, Rio Grande do Sul: predominant type yellow dent with 24 rows and sometimes large and long ears, frequency about 40%; yellow dent with pronounced infiltration from orange flint, frequency 20%; white dent, 13%; others such as orange flints and pop corn, 3% each with a total in all of about 27%. In the States of Parana and St. Catarina the situation is more or less the same, again with a pronounced predominance of dents or of dents infiltrated by orange flints. In the State of Sao Paulo until recently, it has been the current opinion, that the orange flint "Cateto" was the most cultivated race. We do not know whether this opinion was really incorrect or whether there has been a pronounced change in the last 15 years from flint to dent. In any case, it seem that dent types are now predominating. The origin of these dents cannot be explained in detail and with convincing documentary evidence. The native Caingang dent has apparently been used very little, though some cases of cultivation of Caingang Dent, infiltrated strongly by orange flint have been noted. The primary source for dent corn however was represented by a number of successive introductions from the United States, in several periods and both under Government action or through farmers. These imported types lacked natural adaptation to the local climate, and thus accidental infiltration from the adapted local yellow flint gave beneficial results thus giving rise to the large class of "hard dents", which are still unstable and segregate, but are gaining over the older flints because of better productivity and over imported dents because of better adaptation. Thus it seems, that the situation in these southern states of Brasil is not too different from the one which existed in the U.S.A., when the combination of southern Gourd Seed and northeastern Little Flint gave origin to modern Corn Belt Dent. In both cases a new commercial race of higher productivity was introduced and adaptation and improvement of type was obtained by crossing to a local old, but unproductive, race. In both cases the very pronounced hybrid vigor of flint dent crosses was used, in spite of the fact that there is no explication available for the outstanding interpopulational combining ability of flint-dent crosses.

The samples collected may thus offer very promising material for new breeding projects designed to obtain substitutes for the few double hybrids now existing, which are either pure orange flint or flint-dent double hybrids. In order to make the first preliminary field test and to eliminate the less promising original types, 508 samples were planted out in a specially designed experiment.

F. G. Brieger