Memorandum to Bill Brown, ~~regarding~~ Conclusions on our conferences at Raleigh, Feb. 14-16, 1962.

Project I: DETERMINATION OF THE CHROMOSOMAL COMPONENTS THAT CONTRIBUTE TO THE SPECIFICITY OF RACIAL CHARACTERISTICS.

General ~~Outline for~~ purpose of Project I:

1. Examination of the F_2 progeny derived from crosses of two races, each exhibiting widely differing morphological and chromosomal characterizations. to relate the chromosomal characters to the racial characters.

2. The selected races for project I:

(a) Palomero Toluqueño with many knobs and Cacahuacintle with no knobs.

(b) Zapalote chico with many knobs and U.S.Knobless Flint.

3. Detailed outline for Project I.

(1) To be done at Raleigh, Summer 1962:

a). Sow 50 seed of Cacahuacintle on May 14, 1962
Sow 50 " " " " May 24, 1962
Sow 50 " " Palomero Toluqueño on May 10, 1962
Sow 50 " " Zapalote chico on May 10, 1962
Sow 50 " " U.S.Knobless Flint on May 17, 1962
Sow 50 " " " " " " May 24, 1962
Sow 50 " " " " " " May 31, 1962

(2) Collection of Sporocytes from:

a). 25 plants of Palomero Toluqueño, ~~and~~ To be examine before pollination time.

b). 35 " " Cacahuacintle, ~~and~~ To be exmine rapidly to find those plants that have no knob or only 1 knob.

c). 35 Zapalote plants. Make chromosome examination of several of them before pollination time. Others sporocyte collections should be placed in deep freeze for later examinations.

(3) Pollinations to be made:

a). Cross at least 20 plants of Palomero Toluqueño by knobless Cacahuacintle plants, using Palomero Toluqueño as the female in the cross.

b). Make the reciprocal cross with a few of the no-knob Cacahuacintle plants.

c). Sib or self the remaining no-knob Cacahuacintle plants and cross these to other Cacahuacintle plants that have only one or two knobs.

d). Cross reciprocally 20 plants of Zapalote chico, including those that received early cytological examination,--by U.S.Knobless Flint.

e). Sib Zapalote chico plants and plants of knobless flint not used in making the hybrid cross.

WINTER, 1962-63. To be conducted in Florida

1). Select 5 ears produced by each of the two types of hybrid cross outlined above.

2). Sow 2 rows of kernels derived from each ear (20-30 kernels per row)

3). Observe the degree of diversity of plant characters among the plants in each family.

4). Make sib crosses between individuals within each family (The plants to be selected for each sib cross would depend upon .....??)

SUMMER, 1963. To be conducted at Raleigh.

The procedures for examining the F_2 progeny will be outlined after ears of the F_1 sib crosses have been examined. A conference will be scheduled to outline this.

	Race	Collection Number	Dates of Sporocyte collection in Chapingo, 1959	number of seed required
*	Arrocillo amarillo	Pue. 260 (original)	6/22 to 6/23	
	Bolita	Oax. 180 (original)	6/26 to 7/1	
*	Cacahuacintle	Mex. 7a (derived)	6/18	
	Celaya	Celaya II(derived)	7/6 to 7/8	
	Chalqueño	Mex. 208 (original)	6/22	
*	Chapalote	Sin. 6 (original)	6/29 to 7/6	
*	Cónico	Mex. 207 (original)	6/18	
	Maíz Dulce	Gto. 100 (original)	7/1	
*	Nal-Tel	Yuc. 7 (derived)	7/8 to 7/10	
*	Palomero Toluqueño	Mex. 210 (original ?)	7/1 to 7/8	
	Reventador	Nay. 39 (derived)	6/29 to 7/6	
*	Salvadoreño de Costa Rica	C.R. 30 (original)	7/6 to 7/8	
*	Zapalote chico	Oax. 179 (original)	6/22 to 6/23	
*	Zapalote grande	Chis.236 (original)	6/22 to 7/1	

collection dates

(1) Arcalis Amarillo - 6/22 - 6/23

(9) Nal-Tel - (different polytaes) 7/8 - 7/10

(3) Cacahuacente - 6/15 (good polytaes)

(6) Chapalote 6/29 - 7/6 (some with good polytaes)

(8) Maíz dulce 7/1 (good polytaes for ~~that~~ this)

(7) Cónico 6/18 -

(11) Reventador 6/29 - 7/6 (different polytaes)

(13) Zapalote chico 6/22 - 6/23 (good fesp in 1st generation)

(14) " grande 6/22 - 7/1 " " " 1 " " " "

(5) Chalqueño 6/22

(4) Celaya 7/6 - 7/8 " " " " "

(2) Bolita 6/26 - 7/1

(10) Palomero Toluqueño 7/1 - 7/8 " " " " " " "

Salvadoreño, Honduras. 6/26 - 6/29 (coll # Honduras 19) dupe

" de Nicaragua 6/29 - 7/6 (Nic 4 Comal)

(12) ← " " Costa Rica = pre Heb. Chr. 10 - 7/6 - 7/8

CCR 30 dupe

Project II. THE EFFECT OF presence and absence of K-10 ON THE DISTRIBUTION OF PARENTAL CHARACTERS IN F_2 PROGENIES DERIVED FROM RECIPROCAL CROSSES OF F_1 PLANTS, ~~PRODUCED FROM THE CROSS OF A XXXXXXXXXX PLANT CARRYING MANY KNOBS WITH ONE CARRYING NO KNOBS~~.

1. Parental races selected:
   a). Those carrying K-10:
   Zapalote grande, Mexican collection # Chis. 236
   (Arrocillo amarillo, " " # Pue. 260
   (Bolita " " # Oax. 180
   (Celaya " " # Celaya II)
   (Salvadoreño de Costa Rica)
   b). U.S.Knobless Flint.

Salvadoreño de Costa Rica C.R. 30 origin.

2. Sow 50 kernels of Zapolote grande in Raleigh, May 10, 1962

3. Collect sporocytes of plants and examine immediately to determine presence or absence of K-10 in each.

4. Cross Zapalote ~~chico~~ group, ~~with~~ carrying K-10, by U.S. Knobless Flint, using Zapalote chico as female parent in cross.

5. Do same with plants that do not carry K-10.

WINTER 1962-63. To be conducted in Florida.

1. Grow 4 familes (10 plants each) from kernels on ears produced by cross given in 4. above.

2. Grow 4 families (10 plants each) from kernels on ears produced by cross given in 5. above.

3. Grow plants of U.S.Knobless Flint (2 plantings)

4. Make reciprocal crosses between plants in 1. above and those in 2. above with the knobless Flint plants.

SUMMER,1963. To be conducted at Raleigh.

1. Grow progenies produced by reciprocal crosses described above.

2. Examine the diversity of plant types derived from the reciprocal crosses. If strong diversity is exhibited among them, in the manner expected of preferential segregation of segments of chromosomes carrying the knobs contributed by Zapalote Grande, examine chromosomes of plants to determine if

K-10 is present in plants of these families and is absent from plants derived from families that do not show this scued distribution of parental traits.

To be attended to by Bill:

1. Seed of (1) U.S. Kubler Fleet
   (2) Zapoteto Arco – to determine if any seed available
   (3) For forest products...
   (4) Fodder – trees to plant
2. Write to Hathaway to obtain information on varieties of trees – quality of Fi, and on stability of trees following inbreeding.

To be attended to by Wes.

1. Write to Weyerhaeuser for seed from trees: To be sent to Bell Farm
   a) of designated trees
   b) of trees in Eastern section of forest under + in Tennessee + South Eastern States.

2. Write to Rieger for seed of trees of many -- designated, with details of origin of collection (from climate) + methods of propagation (no pooled "trees" can be used). Explain method of seeding used. Request that Bluemeadow bring some seed with him and the method of packing - (DDT dusting; cup packing; note from Bell Farm - keep trying this in case to South State entry).

3. Collection data in tabular form for preparation of different tables to be used in study.

4. Check notes on quality of chemical preparation of Salvarsan -