Dec. 7, 1929

Dear Burnham,

Thanks for your letter & data. I am glad to have the counts, for as you know, I hate to repeat such counts as I am n.g. in ambition.

Yes I am there with seminar except for 2 more. Wish come later. I rather enjoyed them altho I did not get any research done as you might think.

Dr. Sharp is up & around with out any assistance - walks to & from the lab. too.

As for finding trisomics in the $\boxtimes_5$ - I have not made a count as yet. Instead I have been planting corn - have planted over 8,000 kernels - should not wonder but what I have planted nearer 10,000. I am trying to sift down as many trisomics as possible before planting time. We are going to have more room in the greenhouse this year. I shall be able to do more than I had expected.

I have gotten good counts on b-lg chromosome. So far my lg lg lg ♂ × lg lg ♀ gives 1370 lg : 626 lg. There are many more counts that will be added in a few days.

I have some more data on 3 strands or rather chromosome crosses. Will enclose a copy. Rhoades is interested in this also & is anxious to see the data. I have sent it on to him also. Rhoades has grown a generation in California - made counts etc. Not so bad!

Have you seen the papers on Malva - Kristofferson, K.B., Hereditas 7. And on Galeopsis - Müntzing. Hereditas 12: 297-319. Species crosses gave $F_1$ ⧄. $F_2$ gave N & ⧄ but with some gradations. Müntzing states cytology ok. I don't believe it! His evidence is poor. He doesn't seem to grasp the type of cytological investigation needed or rather doesn't know good from bad. No figures are given - merely statements -

Have you written your paper? You must get at it for Randolph is finding lots of recombinations & breaks etc. which may eat into your line. Don't wait any longer! [Respectfully submitted, however]

I am glad you are going to the meetings. I am so poor I can't see Christmas presents even. I wrote an abstract for the meetings concerning t-lg & r-golden chromosomes. Randolph is going & I suppose Eames. I don't know about the others.

As for aceto-carmine - I use 45% acetic. Boil & add carmine until saturated. Cool & filter. Use steel needles - that is all. For morph. I use the chloral. hydrate + aceto carmine

As for the slides - I shall send you what I have - which isn't much - I can give you a good single ring. The ring J 6 we didn't work much with permanents. Have you any more material? The ring +1 - I shall see what we have. - So much for A. M. It is now P. M. & I have had so many interruptions my work has'nt gone on - neither has this letter. I have looked over the slides - low power only - & don't see anything too unusual. I shall try oil when my scope is free. Miss Besley & Mr. Hill are using it now so I haven't had any show with it.

After our great pains to clear you out & make room to stretch the body we have been re cramped again. Mr. Scott has descended upon us. We have done some more rearranging to squeeze him in. It was the only thing we could do. We have plenty of tables, though.

[1 day later] - I was interrupted again so am continuing in our next. Have gotten some information from seedlings which increases the no of trisomes isolated - as they stand it looks like this:

Starting from smallest:

1 - r-g.
2 - $\square_2$ ?
3 } c-sh. ux $\square_2$ { 2193 (2), 2198 (6)
4 }
5 — { not sw, a, pr. Satisfactory
6 — { not sw, a, Mc 218 (2) + sat. +6.
7 - f-lg.
8 — { not sw, a Mc 218 (1) +4
9 Mc 137 (3)
10 - f-br.

I have chr. 6 & 8 trisomic - or in 2n+2 plants from which I can isolate them. I hope to get #2 from your $\square_2$ if no. 2 is involved. If c-sh-ux is #4 I may have #3 in some of my material. #10, or f-br. should come from Brink's $\square_1$. I may have #9 in one of my trisomics. We ought to have a good share of them isolated by next summer if, again, I will get to work. I have been unpardonably lazy!

Sharp & Emerson are trying to get me a job in the Graduate School, now. Other attempts were futile. From what Dr. Emerson says I don't believe there is much of a chance. When you see Brink at Christ mas time do your best for me & I will be very grateful. I may be out of a job next fall. If Brink merely wants some one for next summer Hill may be OK by that time. You might mention that also.

Beadle told me Lindstrom was going to give a talk on recent developments in corn. Dr. Emerson was asked to do it but turned it over to Lindstrom but why? He doesn't know recent developments as Dr. Emerson himself realizes. I think it is rather too bad.

Let me know more dope - on the work at Harvard. Is East reconciled to your continuing on corn? Do you see much of him? Do you plan to come back this Spring? - all to be answered in your next, if that isn't before Spring + here's hoping the spirit moves you sooner than it did before -

As to the tables on b-lg chr 3 chr. crossing:

(1) Extra chrs. function then pollen almost not at all.

(2). ♀ = 25% 2n+1 from 2n+1 × 2n

(3) Are we selecting crossover types among n gametes?

$\underset{bi}{=} + \underset{mi}{-}$ Bi = crossover
mi = free as no crossovers.

Therefore AI (or II) = (n) / (n) + mi lagg + is left out. Therefore selecting crossover gametes, % of crossovers in b.c. not true % that took place.

(4) lg $V_4$ = crossover between 2+3
Lg $V_4$ = " " " 1+3 + non-cross-over (3)
lg $V_4$ = " " " 1+2 + " " " 2
Lg $V_4$ = " " " 1+2
2+3 + " " " 1
1+3

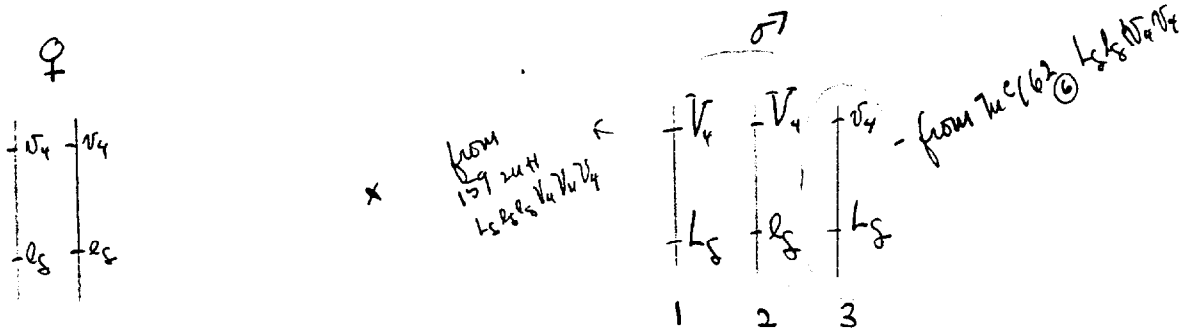
∴ lg $V_4$ = direct index of crossing over between 2 strands. Others can be calculated from this - As it stands each strand retains the same x-over with every other as it did before approximately + the

total no. of x-over gamers that function is increased. Double & triple cross-over involving 2 + 3 strands not provided for.

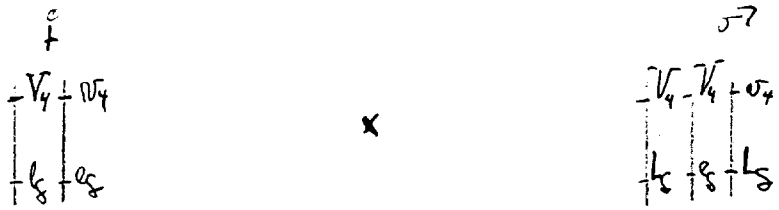
So much for the news & notes -

As ever,

Barb.




| Culture | $L_s V_4$ | $l_s V_4$ | $L_s v_4$ | $l_s v_4$ |
|---|---|---|---|---|
| 238 | 149 | 114 | 86 | 36 |
| 240 | 141 | 70 | 78 | 34 |
| 241 | 157 | 90 | 77 | 45 |
| Totals | 447 | 274 | 249 | 115 |




| | | | | |
|---|---|---|---|---|
| 234 | 245 | 125 | 67 | 21 |
| 239 | 245 | 49 | 94 | 20 |
| Totals | 490 | 174 | 161 | 41 |

Reciprocal of above i.e., 2n+1 b-$l_s$ $\frac{v_4}{L_s}$ $\frac{V_4}{l_s}$ $\frac{v_4}{L_s}$ + $v_4 l_s$. Am making chr. counts on all for x-over calc.

| | | | | |
|---|---|---|---|---|
| 237 | 113 | 29 | 35 | 10 |