Notebook in Experimental Cytology

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Desk 6.

Monday, January 4, 1943 - 2AM
(write Eng't report on Colchicine)

Examine Mouse 472, 100 v Colchicine 10 hours since
First spermatocytes from very early leptotene to pachytene, seen as bi, tetra-nucleates
One case of anaphase non-disjunction
Some blocked, varying contracted, gonia
2nd spermatocytes "disrupted" indeterminately
bi, quadrinucleate Sertoli cells, tri-nucl!
bi-nuc early spermatids
binucleate seen, Sertoli and blocked metaphase
Somatic pairing (not very close) of chromosomes
1 gonium with two blocked meta's very closely associated
Some regular gonial metaphases.
Meiotic ameta, anaphases perfectly reconcilable with type

12M. Allium roots into .005% colch (dil. from saline)

Tuesday, January 5, 1943
Albino swollen.

Talks to Laurie about
colchicine project.

Dessicat mouse at 10 PM
Examine for fatalities

Wednesday, January 6, 1943

All 300 - 350 γ mice dead

Longitudinal growth of tumour continues, in Allerin solution changed.

Make drawings for publication of onion root tip material

Reexamine Allerin - colchicine material, discuss publication with WG Whaley. Decided to publish in PNAS, Sinnott as communicator, under title of "A Colchicine Susceptibility Gradient in Onion Root Tip" - It should be in print in a month or six weeks.

Louis accepts project; presumably will work as Gross and Ledenberg. "Mechanisms of Cell-Enlargement in Colchicine Treatment of onion root tips." Perhaps this title is not valid. Certainly the central cells do enlarge but Hawkes claims that the volume of the "tumour cells" is not ~~in~~ greater than that of the linear elements. A careful study should be made of the morphogenesis of colchicine treated material in order that some notion be formulated of the nature of the "differentiation process". Today, indeed, one can not even clearly state the problem for fear of making implicit assumptions that one has no right to. We should like to know how a meristem leads to the formation of a root. This is an indeterminate system perhaps making the attack simply, the analysis more difficult than is the case in the embryonic development from single cells. The perfect regulation of the meristem demands a precise regulation and coordination of the various processes that must be taking place. While the morphological problem of the histogenesis of the

1/6/43

various tissue elements which are present, the importance of the problem lies in the mechanism of differentiation. The first problem is the potency of a cell internally determined or is the immediate fate of the cell determined by its position, or its relation to some physiological gradient. The immediate problem can be stated: what is it that determines that a cell shall divide again, or that it shall absorb solutes, enlarge, deposit cellulose, and differentiate?

Cell-division cannot be simply a matter of cell size; perhaps cytoplasm is the fundamental ratio. Do cells which are elongating secrete or circulate substances which inhibit nuclear multiplication, or are there secretory processes in the "focus" of the meristem stimulating cell division and protoplasmic synthesis?

The testing of these preliminary hypotheses is made extremely complicated by the effects of wounding on plant tissues. An extensive series of experiments have to be run on the effects of cutting at different points in the meristem. In particular can a meristem, a root cap be regenerated; how many cells are required for such regeneration; Does the meristem ~~go~~ change in size during the life of the root. What factors are responsible for branch root formation. Does the auxin theory explain every detail? Is the differentiation ~~hypothesis~~ just a matter of auxin gradients, or are other substances (Lyptohormone, etc.) involved?? Experiments on the effects of auxin on roots, and the interaction of auxin and colchicine and of cutting are required; in particular, a careful study of colchicine effects when momentarily intermittently, and continuously applied should be made.

Thursday, January 7, 1943 12— AM

Drawings for PNAS '43 paper.

Clean up; check out Chem 11 Lab. at Powell's
office, learn to apply for Med School, Sept. '44
not here in evening.

Friday, January 8, 1943;

Lab: demonstrations

Saturday, January 9, 1943.
Allium tumours stopped growing longitudinally.
Replace in . ~~[illegible]~~ water!
Another onion to grow.

[1 2]
10PM–2AM Close observation of Mrs, Krell. Am about ready to make drawings, but too tired...
The brilliance of the chondriosome stain is inversely proportional to the comfortability of the chromosome stain. The Benda method might have been preferable.

[1] – mouse
[2] – ?

Monday, January 11, 1943

11PM Wh. onion in Sulfanilamide .02M

11PM Onion in .004M Colchicine.

New pronucleatum forming; branch roots in colch. stuff

Cytology drawings to ZAP

Tuesday 1/12/43

Cytology drawings

.02M = 2 × 3.44 g
= .6 %.

Wednesday; January 13/1943

.02M
Allium in sulfanilamide growing very vigorously;
smear: +

In .004% Colchicine, not visibly affected.

High mitotic index, possibly, especially for area, telophases. Some cells may have abnormally large nuclei, but bi nucleate, (as I had reported) is not to be found, strikingly. In these smears of course, cell walls are not emphasized.

~~Saturday~~ Sunday, January 17, 1943

4 PM Zoo/25 Drawings complete

Monday January 18, 1943

Hdd for "nails"

A.M. - 33 Pine St. for Physical Exam.

P.M.

[= USNavy V-12 qualification

bitten fingernails — an issue]

Wednesday January 20

Thursday January 21, 1943

Moved to 1911 Subconscious Extension.

Writing 200 117 pages.

Friday January 22. 1943

Worked, for Ryan: 3 hours 3:15 - 6:15 P.M.

Write up Zoo 117 paper.

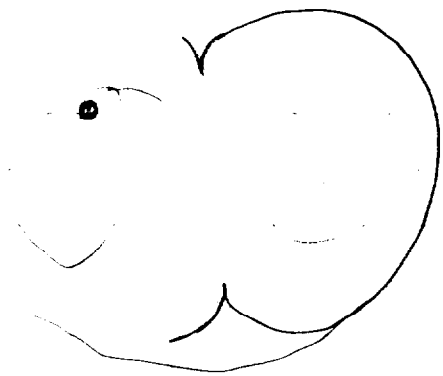
Saturday

Sunday
Review Zoo 125 for exam

Monday, January 25, 1943

January 29, 1943 Friday.

While I have a few days time before the beginning of next semester, it is very likely that my time then will be severely restricted, and that research activities may be sharply curtailed. I am therefore suspending the mouse research for a couple of weeks until I know just how much time I will have available for this work. Things are too unsettled now. So meanwhile I am wasting much time, reading, movies and some Math and Physics study.



January 30, 1943 Saturday
Library work.
Summary of cobalt work to date:

Hours	50 V	100 V	200 V	350 V 400 V	500 V	1000 V
½						
1					432	
2						
3			448	460	427	
4						
6			449	461		
8		472 S	450	462		
12						
16					433	
18			454	463		
20			451			
22						
24						
26			452 455 447		429 437	
30					X	
36			~~475~~			X
40				X		
48	445	444	456	439	446	
72			457			
96						
3 da						
4 da						
7 da			458			
14 da						

Rab:

Monday, February 1, 1943
Worked 5h.
Humanities readings; M104

Tuesday 2/2/43
11:30AM 4$3 0 inj .2 mg to be sacr 11PM 2/3/43
Classes —
Work 2:15
457
Rd St. Augustine.

Wednesday, February 2, 1943 to be changed ✓
9AM - Phys 9 lecture for laboratory assignment ✓
2PM - Humanities quiz.

< 3PM Animal # 473 deceased. Found buried in straw; was in cage with vigorous female
?- Is brachyuria a sex-linked character?

Classes. Work - (wash; labels for museum)
Study, incl. Phys 10.
No mice now available. Cadaveny short.

Thursday, February 4, 1943 9-7:30
Classes (German 6 not given; Chem 2 42; sit in 300 118.

Work: 11:30-12:00 Bath 30 min
3:30-7:00 Ryan 3:30

Study: Humanities, Phys 10, Chem 66; Do Math Probl.
– to NYPL early for books; see Kent Vincent about
some for exchange with Keller: "Romeo & Julia"

Read: Humanities Bx 4-10 Trig tomorrow.

$$dz = \frac{\partial z}{\partial x} \cdot dx + \frac{\partial z}{\partial y} dy + \cdots$$

Friday; February 5, 1943 10 - 10:30
Classes to 2. Cramon St. Augustine
No lab work yet.
Work PM; wash glassware (orm); prepare for Chem 66L, begun very successfully and properly.
PM+... Dante; Math 104 HW Math 34 HW

Saturday, February 6, 1943 12 -
Work to 4:30 Eat (Home 4:30??)

Read Dante; do Chem 66 calculations; Math homework

Tonite: Read Dante
Lits., Delcourt

Tomorrow:
Study the history of ♂ cytes in the 700V series; determine if possible the earliest occurrence of binucleate cells.
Study 24 hours + slides for the multinucleate condition reported in the literature.
Do Math HW's. Phys 10.

Return journals at P+S library.
Renewed.

Sunday, February 7, 1943; 12:45 — 6:30

P & S Library (Rd Lits 1936)

Do Math HW Work 15m gratuitously.

Schedule to be daily 2 hours daily, 5 hours days.

Do: Math 104 ✓
Math 34R ✓
Physics 10
Dante
English C4 ✓

Monday, February 8, 1943; 9:30 – 11:30

Classes – 3PM
Work – 5PM ✓ – 5:45
Supper – 530
Phys 10 – 7:00
Chem 66 – 7:30
Microscopy – 8:30 < English C
Dente 8:30 – 10 Calculus

Math 104 5:45 – 6:15

most time spent on Math HW.

463A, 437y apparently shows the gonial entiated chromosomes now condensed in the reformation of nuclei. No discrete micronuclei seen. This is 500r – 30h

454A2 conditions too bad for significant observation. The gonial conditions in 200r/18h are most interesting. Discrete clumping; doubling; possibly injection to spindle.

457A 200r 73h. Dispersed-clumped gonial mitoses can be seen.

500r 25h. Prepuse stage. Doubling and mitotic pairing cannot be doubted; the peculiar cytophenomena.

400r 46 Resp. clumping stage.

Tuesday February 9, 1943 9:30 —

See Wrahy for some colchicine

See Schoenheimer about more mice. Imperative that new series be begun: careful smears at hourly intervals; sections at the important stages

Repeat Math work.

930 – 10 Library ✓
10 – 11 Class Ch 242 ✓
11 – 12 Discuss colch project
12 – ~~1130~~ 1 Zoo 118 ✓
1 – 1:30 Lunch ✓ Math.
1:30 – 2 $\int \sec^3 x \, dx$ unnecessary now
2 – 3 Math 34R not done.
~~3 – 5~~ Work not done.
5 – ~~6~~ Chem u 66 Colloquium. Ribq.v.
6 – 10 Class
10 – 11 Research.

Seminar:

The Quantitative Study of the Anaphase movement of chromosomes. Hans Ris.

"mysteries of mitotic forces".

Anaphase chromosome movement most striking and perhaps most easily measured. Various elementary hypotheses proposed; now pessimistic. While ultimate description must be physical; but exact biological data must first be establishment. But how explain actually the poleward movement. — Movement of chromosomes; see d'A Thompson — But these propositions are not shown.

1. How do chromosomes move, as Belar. Experimental causal analyses der mitose in terms of cell structures.

1. Centres: astr, central spindle – granules can penetrate.
2. Nuclear material: nuclear spindle " do not "

(Schmidt – orientation of long particles).

The spindle in animal material, usually elongates. In plants may not. Cell (spindle) elongation may correlate with cleavage. Kinetochore. Necessary for coorientation and anaphase; chromosome fibres

"chromatid coherence" till anaphase.

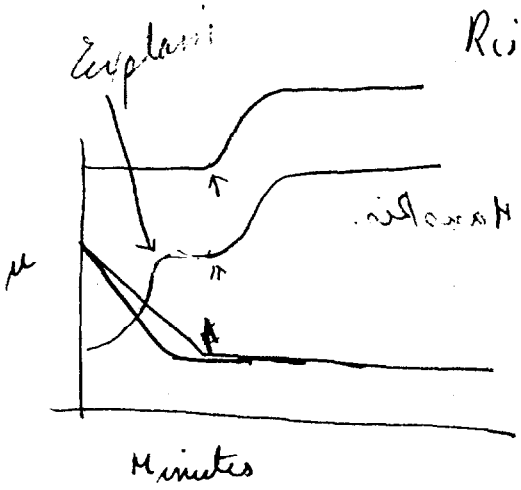
Barber '39 chromosomal. Plotted kinetochore distances. But time intervals are too large.

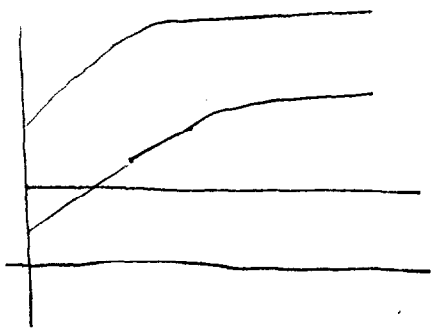
Aphids were found to be very good material; dissect out testis from males in paraffin oils, mitoses continue for 10 hours. Similarly, parthenogenetic females for embryos.

The kinetochore moves in a curved path in grasshopper.

(Accuracy of observations)?

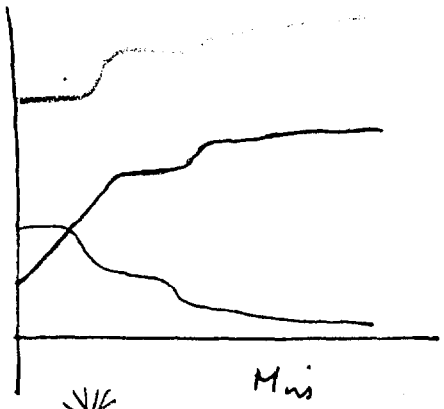
Ri Seminar: February 9, 1943

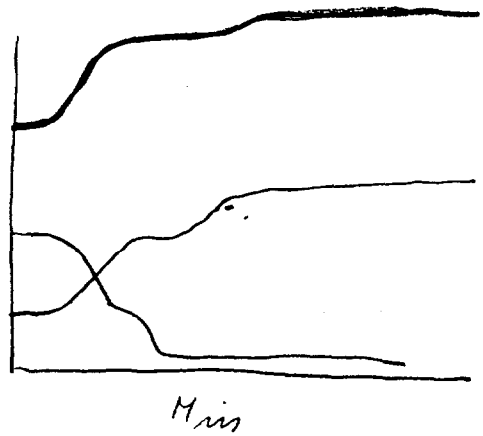




Protenor Thelia I
Aphid II
Protenor genia
Aphis embryos.
Diffuse attachment

I Aphis Tamalia





Meiosis I

Chortippus Melanoplus

Meiosis II

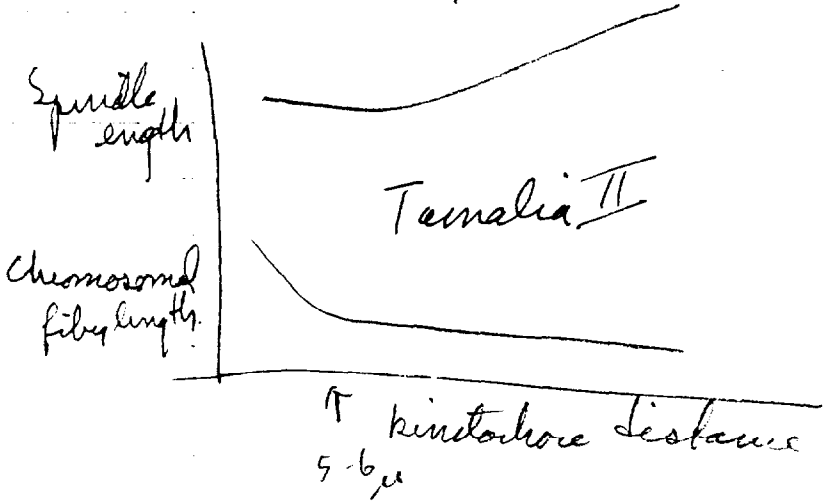
Small kinks may occur near spindle axis in the first grasshopper

But the elongation of the ~~chromosomes~~ spindle occurs at about the same time.

Until chromosomes are completely separated; slow, fast, slow fast....

Cell begins to elongate about the same time as the ~~re-~~ movement of the chromosomes.

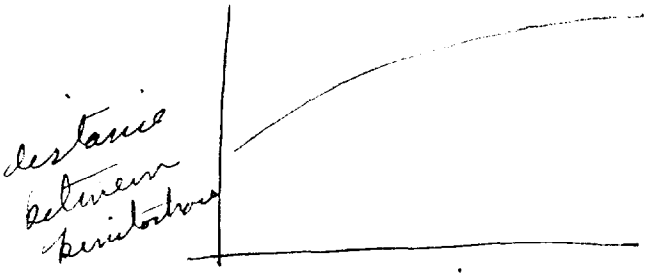
Plot spindle against kinetochore distance



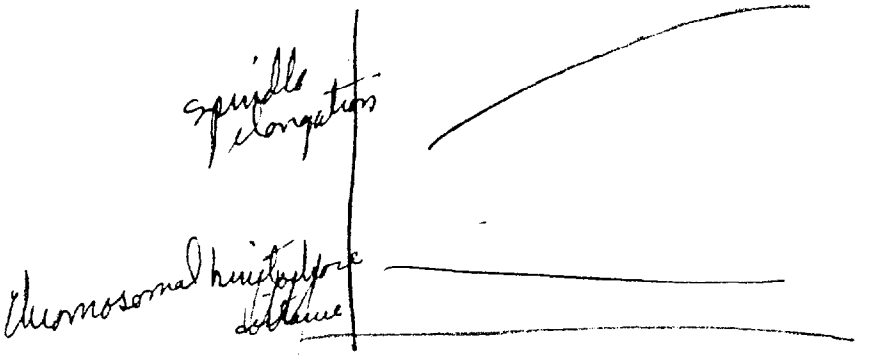
Cleavage furrow just after spindle starts to elongate.

Actual resultant path of the chromosomes

Tamalia I



Mure chromosomal



Protenor, Thelia I like other standard types.

In Protenor X (which lags), the first factor is the rate difference during chromosomal fiber contraction CI

(Different method). In Melanoplus, elongation begins during (CI)

Meiosis II < time Meiosis I ?? Possible shrinkage in spindle during Melanoplus I.

In Grasshoppers, change lasts at the end of division. Beginning elongation of spindle is later in I. Chorthippus II: so likely place early in anaphase movement.

Are not the kind later as little stretched.

Subtract curves from each other to signify contraction.

How do estimates of C/ length compare with those in fixed material.

Complexity of curve demands several fibers! "What's accumulating at poles."

"Sp of pull chromosomes to the poles" ??
Elongation of spindle.

Alternation apparently exists between cell elongation and C/ contraction.

In diffuse kin. — In what respects are they different ??

Stemmkörper: Main weakness: no break in fibers: continue ~~#~~ intrynsals found.

Differential stretching indicated in a centrin' motion

Barth: diameter of spindle no use".

~~Barth~~: Schrader: flow?

Consider using Uranium salts to discharge the very troublesome electrostatic charges on ribbons.

Ta
Destain
Settle wit
Whaley
Class:
2-4 W
Phys 10
7-8 M
8-9 M
Be sure t
in Englis
9+ W

Tomorrow

Destain 9-10AM

Settle with Schrader "issue" St. (Fe Hem) 448/451 449/454 447/461 461/462

Whaley - 11AM 463/446 5PM. thru oxal; MnO_4^-, etc.

Class: 10-11; 12-1; -2 11:30 - into Hematoxylin, after thorough washing.

2-4 Work movie PM; reading, etc.

Phys 10 5-7

7-8 Math 34R

8-9 Math 104

Be sure to read some Lit; progress in English; put in several homework.

9+ Work

Wednesday, February 10, 1943.

2/11/43

9:30
10-
12
1-
3-
5:3
6-
10
11-

See 462A - at 377-1228-

Sadly organized day.

2/12/43 Friday.

9:30 - 10:00 Work.
10 - 12 Class
12 - 1 Lunch
1 - 3 Class
3 - 5:30 Work
5:30 - 6 Study Lunch.
6 - 10 Chem Lab
10 - 11 Work.
11 - 11:30 Inject a cat.

2/13/43 Saturday
Phys Lab; day wasted

2/14/43 Sunday
Preliminary electrostatic experiments.
Work 3 h. for Ballentine

Monday, February 15, 1943 9:30 – 12
AM: classes –

Cut Phys Ed: "cold weather. Mouse and rat work ~~and~~ PM
Photomicrography – 8 PM.
Work for Ryan 2½ hrs.
476, 477.
Ad library.

.10 bet with H. Taylor on issue of military importance

Hydathodes in grasses?

Examine normal mouse smear:
bunicleates not found; gonial metaphases quite normal; with elongate chromosomes

Do mitoses found in post hepatectomies
In 477, accumulations of irregular micronuclei may represent a-mitosis.

Thursday, Febr. 18, 1943; 7:30 - 10:45

Take care of field material;
Review Math
to them calculations

Examine injected frog: (478)
Two cells, apparently spermatocyte, with scattered chromosomes seen; if there were more such cells, they would be better than mouse

Hepatectomy (mean total) on mouse or rat;
buy rat, mice ...
Collect paychecks
Clean out Cytology

etc. Details impossible to see.

Wednesday 9:30 - 6
Swearing in VI
Classes —

Thursday, February 18, 1943
Classes - 2
Chem 66 calculations

Monday, Febr. 22, 1943
Univ. Holiday: Wash Birthday

Work: 9-11

Thurs 2-25-43
Inj. Rab ♂ 500r 3 Pay
Mouse stub tail ♂ 400V

Made up new colchicine solution: 99 ± .5 mg
in 49.5 ± .5 cc H_2O.

25h. 400V Binucleates

"Clumps" of 60+ chromosomes
no cell boundary observable.

~~2~~. 75-80 chromosomes.

another. 80ca.

In some, the chromosomes are more rod-like, perhaps some orientation; in one.

One "syncytium?" was seen with hundreds of chromosomes. A few entirely clumped, pycnotic cyles.

Rab 25h 500V

Sunday, Febr. 28, 1943

#480 [X] Rat of 2-25 found dead PM. ?? Is the rat so much less resistant than the mouse; conditions of non-watering should be mentioned

481 4PM 2-28-43 400 r Brachyuric albino

482 1/2 gm capsule Sod Nembutal in 8 cc H_2O. Of this solution, .2 cc to a 20 (ca) g. black, full tail male mouse, subc-intramusc testes descend rapidly! Injected leg, possibly injured - tries to scratch his ear, Paralysis setting in. Washing face. Back of his body probably paralyzed. Cannot move his legs. Struggles a bit; Moves about several times in circles. Has some traction in legs; cannot stay up. In about 2 mins. Stops moving; breathing a little irregular eyes open; testes descended. Not yet anesthetized. Convulses if touched. No climbing reflex. Feels quite warm. Does not turn over if upset; penis ~~[illegible]~~ retracted testes sign retraction Extremities bluish

Recovered in 1/2 hr.

Repeat injection

Recovered again (about 40 min.)

Give .4 cc. Partial right orchidotomy after 10 mins of anesthesia.

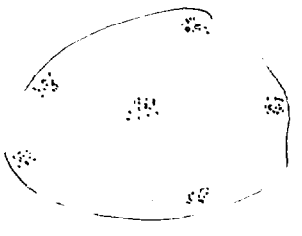
7PM 2-28-43 Smear Examined:

Some abnormalities seen:
polynucleate pachytene (early)
binucleate metaphase
Spindles apparently good, but

fairly common among normals

Some abnormal chromosome arrangements
Chromosomal configurations in agonial early and late anaphase apparently normal.
Gonial metaphase chromosomes unusually large; perhaps some c-dispersion; no contraction

483 Remove other testis ~~[illegible]~~
Fix Flem., Champy, Bouin, Carnoy, Act
- Smear:
As above
Unusually high proportion of gonial anaphases. Can these be the sensitive phase; the source of binucleates?
Try on root tips.
Peculiar "cell": No nucleus.
Not uncommon. (always amongst tids)



refringent globules (fat?)

9:30AM Monday 3-1-43

484 Inject. 4cc of Nembutal solution described above; legs. Quick, decisive anesthesia. Perhaps too profound. Near apnea; no response to stimulus of touching, etc. Testes completely descended.

12M. Found dead. May have drowned!

481 looks sick 10PM 3-1-43. (30h.) (400 r)
Put in ice box about 13° with a control ~~[illegible]~~ (brown, full tail, ♂). to test viability at cold.

Tuesday 3-2-43
481 found eaten by control!!
Inject control 450 r, ca., and put into ice box
ca. 11:10. next day

485 .3cc solution described (fresh) into gray ♂
Nembutal.
4:30 rept'd
Rept. .4cc
No great effect
anesthesia prolonged
not lethal.

survived.

Thursday 3-4-43

Sunday 3-7-43

½ gm Numb. - 4cc H_2O.

486 Rat #1 ~~1cc~~ 1.3 cc anesth. quickly anesthetized. Radical (partial hepatectomy) ~~[illegible]~~ fairly done, but incision unnecessarily long. Recovered nicely.

487 Rat #2 .75 cc anesth. hepatectomy. Did not survive

488 Mouse #1 (~~485~~) .1+ cc anesth. hepatectomy. Recovered ~~[illegible]~~ nicely

Recovery too slow in all cases. Perhaps the anesthetic is ill suited; Aseptic precautions should be a little stronger

489 Rat alb. Attempt to put piece of ~~kidney in~~ liver in kidney. Died post suture, before recovery from anesthetic. .75 cc overanesth.

490 Rat alb .4cc very complete hepatectomy liver slipped; considerable hemorrhage but stopped. Doing well but not yet

recovered: [illegible]

Tabulation of mortality

Survived
486 hepatectomy
488 mouse "
~~490 good hepatectomy~~

Died in operation & cause
489 hemorrhage (renal)

Died post op cause
487 anesth.
490 ? tumb. Shock

has recovered in all respects; shows "interest in life" etc.
Similarly very active.
491 - hemorrhage (aspiration)
492 - hemorrhage ? shock (aspirated)

Inject 400 r colch. into 486
Sacrifice 488; Ac Carmine, (testis and liver)

History of 488:
hepatectomy 7PM 3-7-43
Colchicine ~~6PM~~ ~~10PM~~ 200 r 3-9-43 10:30 PM
Sacri 8PM 3-10-43.
Very little liver was left; apparent fatty (yellow) degeneration.
In liver, many cells show scattered micronuclei and/or chromosomes, odd shaped nuclei. Prophase sum.
In testis: gonia show regularly dispersed chromosomes; cytes well clumped; 4-, 8-nucleate spermatids.
(Should have fixed better!!! Very sorry!)
Reaction (c. rather acute. Test Rat tomorrow

486 Found dead out of cage 3-11-43 6 Pay
Cause: unjustifiably collusive

3-28-43
5 small ♂ 200 r colch. 10 AM
All fatalities. Beginning of epidemic??
in 24-36 hours.

Sunday April 11, 1943

Colchicine 400 r administered subcutaneously.
1 young male 10:50 A.M.
Have in possession 6 more young ♀ rats only
492. this single male

4-12- Severe diarrhea. AM.
Diarrhea still 4PM
pronounced.

Hughes - Schrader. Early meiotic chromosome phenomena.

Little literature on "prophase problems".

In these mantids, 6 different meiotic prophases can be detected.

1. → ends, early leptotene: all aggregate toward center. Unipolar bouquet through zygotene. Then released.
2. Late pachytene: ends applied to region of membrane near center (double bouquet to to center division. Breakdown of nuclear membrane
3. chromosomes relax; no further activity of ends.
4. Kinetochores move rapidly to the poles. Great attenuation
5. A reapproach of the kinetochores (contraction of bivalent
6. Chromosomes to the equator forming metaphase plate.

In 4, little synchrony. The equatorial ones usually most attenuated.

plane of separation random to spindle plane.

Frist noted by White in 3 spp. Mantidae suggested the spindle was forming, then sudden spindle elongation.

Stagmomantis carolina

Monday, May 31, 1943; 3 PM

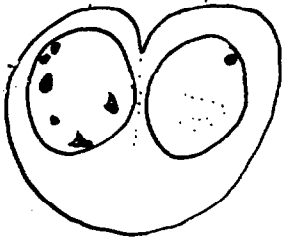
Look over and draw slides, colchicine.

Abandon electrostatic project on theoretical grounds.

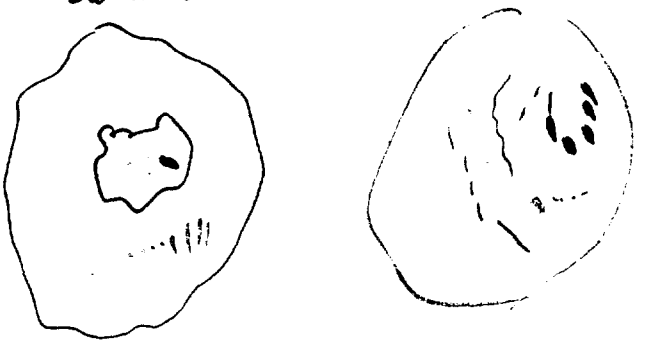
drawings of 350 γ - material spermatocytes

432:01 500 γ 1½ h.

An early prophase of the character (possible interp.)



This is a fairly young testis, and few cells are mature spermatocytes. There are no spermatids. Such spermatocyte metaphases as occur are blocked:



Some cytes demonstrate normal mitosis, but these cells and their chromosomes are unusually small and small cyto-pycnosis.

There are fairly large numbers of clumped spermatogonia, in some regions.

427A3 looks highly overfixed (500 r -- 3 h).

Will Stain 427A1

427A8 - Fix and stain: rather fuzzy, but better than A1..

The ~~spermatids are discr~~ genial chromosomes are unexceptionably discretely despised. This may differ from clumping only in the fixation. will Check with smears.

Spermatocytes are not quite so tightly condensed.

460B: 350 r 3 h. This is a Bouin - Violet, and did not come out too clearly. So far as can be told, cytes are in the stage of aberrant mitosis, which can readily be seen.

Tuesday, June 1, 1943; 10 A.M.

350 r
6 h. 45 m.

461 A3. An excellent violet preparation. The gonial chromosomes are dispersed and generally show the projections mentioned. The chromosomes are indisputably doubled.

Cyte chromosomes are in rings and chains. There are polar views of aberrant mitoses.

On careful focussing:

No certain polyploidy or multinucleate

462A 350 r 9½ h. Very poor slide. Essentially normal spermatocytes, meiosis; others as above. Gonia as above.

wild stain.

new slides essential!

493 6/1/43 ~~11:45 – 12:15~~ Kill by concussion. Put testis into colchicine solution.

494 same time: inject 1000 r.

4B3 A2 500 r 16 h. All cells have only clumped cyte chromosomes: Gonia dispersed.

463: 350 r 19h. Good Violet preparation.

The cyte chromosomes are beginning to dispense out of their clumped state. There is ~~no~~ some indicative evidence yet of a spindle

The typical orientation is on the surface of a hollow hemisphere.

My theoretical interpretation is that a center at one side of the agglomerated mass of chromosomes begins its activity, hollowing out half a sphere. A spindle develops about some of these. If correct, 350 r, >19h should be aberrant mitotic. Unfortunately there are no such preparations. In some cases, the hemisphere is almost spherical

493 - Acetamine smear. Results inconclusive. Normal(?) zonia. Young animal. No cytes — Flem:

494 - Acetamine Smear. Definite pycnotic clumping of cyte chromosomes in ½ hours. No normal mitosis. One dispersed, no other zonia found. — Champy Benda

Sunday, 15 Aug. 1943.

All preparations hence are prefixed N (for Navy) followed by characteristic numeral.

In AM, hunted Anasa tristis and Melanoplus femur-rubrum, and dissected same in P.M. Was so well impressed by the clarity of the Melanoplus material that I decided to conclude my colchicine work thereon. I will spend 6 weeks, no more, on the problem.

First some normal material (inclusions too) and then colchicinized. This should not appear to reveal a colchicine bug in me, but I would like to put an appropriate end to this research, and not leave it hanging in mid-air.

Attempt also to see live mitoses. nvq

Flem: 15, 4, 1 — N1 Flemming — Anasa

~~N2 Benda~~ — "

Champy 77 ¢ — ~~N3 Champy~~ — "

N4 F — Melanoplus.

Benda 15, 4, 3 drops — N5 B

N6 C

Monday 16 Aug. 1943

N1, N4, N6 in H_2O

N5 in mordant.

Tuesday, 17 Aug 0945

A/I into 30
N4 change HSO.

Thursday, 19 Aug.

Add to ~~100cc~~ 100.00 cc H_2O .99 cc of
(B) → standard A M.B. Resulting solution = .005%
add in .1cc increments to .5cc, then separately
.5cc + .1cc increments, etc., and calculate a calibration curve. dilute this B solution 1/21 (5cc to 100)
(C) and use also.

[start another project.
competitive adsorption of
methylene blue / sulfanilamide on charcoal.

Saturday 21 Aug.
add 20cc "A" to 500. cc H_2O. and thrusts

1g. Norite A. (E&A, Pharm. grade)
Equilibrium assumed in 20 mins. A = 16.7
≃ .000035 %
Add 40cc "A" to 460cc H_2O. Add 1g N-A
thrusts.
Dis. = 62.9

Take 2cc + 100cc H_2O Dis = 4.8
.000451

Summary of experimental results: Colchicine: Spring 1942

	C N P		# and other data			Colchi~~cine~~ - R.	
	SLIDE	S.#				Results	dose
3	277 C	1 9	1 26 32	10 1 28 29	11 0 33 21	tot 2 87 82	5 27
3	277 B	1 11	15 31 27	12 10 17 21	13 11 23 30	tot 36 71 78	5 27
	282	1	13 33 33	2 12 20 31	3 9 21 27	tot 34 74 101	5 25½
3	283 A	24	24 29 54	25 22 28 41	26 20 30 41	tot 66 87 136	5 24
3	283 B	13	58 10 38	14 38 7 44	15 45 8 48	tot 141 25 130	5 24
3	280 B	8	7 53 15	9 4 53 12	10 5 57 24	+ 16 163 51	6 8
3	285	20	0 27 32	21 0 45 50	22 0 60 71	+ 0 122 153	6 ½
3	328 A	25	1 29 32	26 3 28 21	27 5 21 24	+ 9 78 77	6 2
3	329 A	25	2 37 42	26 1 30 42	27 4 30 50	+ 7 97 134	6 2
3	330 A	21	6 24 19	22 9 29 43	23 9 41 29	+ 24 114 91	6 3
3	330 B	16	5 25 22	17 11 18 30	18 10 18 30	+ 26 61 82	6 3
	331 B	13	26 11 24	14 16 11 22	15 19 11 16	+ 61 33 62	6 4½
	331 C	26	28 6 21	27 35 12 22	28 15 8 12	+ 78 28 55	6 4½
	332	8	73 4 39	9 66 3 34	10 78 3 39	+ 217 10 112	6 8
	333 A	14	34 6 10	15 58 4 10	16 62 8 11	+ 154 18 31	6 12
	333 B	37	76 11 44	38 69 5 34	39 61 11 36	+ 206 27 114	6 12
	334 A	14	21 20 32	15 13 21 12	16 8 10 10	+ 42 61 54	6 22
	334 B	13	59 7 27	14 69 15 28	15 54 7 32	+ 182 29 87	6 22
	335 A	18	5 14 21	19 2 16 15	20 7 23 31	+ 14 53 67	6 46
	335 B	15	17 8 17	16 13 9 19	17 13 8 16	+ 43 25 52	6 46
	262 2	1	87 11 03	2 109 13 31	3 87 6 38	1:3 68 15 30	5 +
	262 4	2	64 7 54	1 105 3 45	3:1 64 17 52	+½ 212 36 167	5 +
	351 A	6	0 24 51	17 0 25 32	18 0 28 35	+ 0 77 174	6 0
	351 B	1	0 62 81	2 0 66 73	3 0 62 87	+ 0 190 241	6 0
	353 A		1 27 19	– 22 18	– 29 23	1 78 60	6 2
	353 B	2	0 15 29	3 0 27 30	39 0 16 17	40 0 26 21	6 2
		4	0 23 17			3+/5 0 54 114	6 2
	355 A	1	13 3 20	2 9 4 18	3 9 8 13	4 19 5 21	6 4
		5	12 4 18			3+/5 37 14 60	6 4
	355 B	6	12 7 20	7 10 6 14	8 5 7 23	9 4 8 18	6 4
		10	8 6 20			3+/5 23 20 57	6 4
	361 A	10	18 3 18	11 17 0 31	12 23 0 19	+ 58 3 68	6 7
	363 A	A	11 10 5	6 13 0 19	c 11 0 7	+ 35 1 26	6 8
	365 A	32	40 1 25	33 54 0 36	34 42 0 18	+ 136 1 79	6 9
	365 B	12	44 0 18	13 52 0 19	15 80 2 26	+ 176 2 63	6 9
	367 A	2	09 9 29	1 62 3 14		3+/2 130 18 63	6 10
	367 B	15	24 1 8	11 19 0 8		3+/2 63 2 24	6 10

R = F.J. Ryan
B = Barth, L.C.
RB = Robert Ballintine

Work Schedule

January, 1943	22 F	3 hours		3:15 - 6:15	R
	23 S	2 hours		3:30 - 5:30	R 2d.
	28 Th	15 m		AM	B
	29 F	20 M		AM	B (Ms)
February 1943	1 M	3:15		3:30 - 6:45	B, R.
5		1:45		7:45 - 9:30	~~B~~ R
	2 T	15 M		11:15 - 11:30	B
6:45		1:30	2:30	2:45 - 4:15	R
	3 W	~~3:30~~		3:30 - 6	B, R
10:15		1:00		6:15 - 7:15	
	4 Th	:30		~~11~~ - 11:30	
14:15		3:30		3:30 - 7	
15:30	5 F	~~3:05~~ 1:15		3:05 - 4:20	R, B.
4:30	6 S	11:45 - 4:15			Ryan (glass)
20:00					
	7 S	15m.			
	8 M	4:45 - 5:45			Barth's uncle
1:15		10:10 - 10:25			Ryan - upkeep, etc.
20	9 T	4 - 4:20.			Barth.
2.00	10 W	9:30 - 11:30			
25m.	11 Th	PM			
	12 F	9:30 - 9:50 AM			Paid
	13 S				

15 M 2:30 Ryan, Barth
16 T 20m. Barth
17 W 15m Barth
18 Th 30m Barth
19 F 20m 8:10
20 S 4:15 Ryan
21 S 2:35 Ryan. (11:45 - 2)
22 M. 1:30 ~~Barth, Ryan~~ (9:30 - 11) AM
23 T :25
24 W :25
25 T :20, 25 15 / 3:20
26 F — due 6:40
27 S —
28 S 12-3 3h.

paid

.45 / 1:30 / 2:15 — 10:45
2:15
:25
:25
1:00
4:05

Mach 1 4-4:25 (Pollister's errand) 5:00-6:50 (Schraag's errand) 10-10:20 Barth. 2:35
T
W 2
T 3 15m. B :15
6:50 F 4. 2:20-6:20 2h. Schraag :15 1:45 Ryan Barth. 4:00 :10
7:15 S 5 " :15
2:40 S 6 7-9:40 " 2:40
9:50
M 7 :10 Barth
T 8 2:05 Schraag :20 Barth
W 9 :25 Barth
T 10 :20 Ryan :40 Ryan 1:40 Barth, Ryan
F 11 :20 Barth
6:10 S 12 :20 Barth -
(3:50 due) S 13 1:50 Barth, Ryan. (7:10) 2:50 due. 2h. due.
~~[illegible]~~
M 14 3h BR

1:55 {

T :20 B
W :15 B
T :20 B
S 2:45 B, R
S 5:20 B, R
10.00

Friday: 15

1:55
2:45
4:40
5:20

1:15-6:35

T. Ryan :30 2:30 } 3:00
W.

S	M	T	W	T	F	S	
~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	
~~10~~	~~11~~	~~12~~	~~13~~	~~14~~	~~15~~	~~16~~	
~~17~~	~~18~~	~~19~~	~~20~~	~~21~~	~~22~~	~~23~~	January
~~24~~	~~25~~	~~26~~	~~27~~	~~28~~	~~29~~	~~30~~	
~~31~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	
~~7~~	~~8~~	~~9~~	~~10~~	~~11~~	~~12~~	~~13~~	February
~~14~~	~~15~~	~~16~~	~~17~~	~~18~~	~~19~~	~~20~~	
~~21~~	~~22~~	~~23~~	~~24~~	~~25~~	~~26~~	~~27~~	
28	1	2	3	4	5	6	
7	8	9	10	11	12	13	March
14	15	16	17	18	19	20	
21	22	23	24	25	26	27	
28	29	30	31	1	2	3	
4	5	6	7	8	9	10	April
11	12	13	14	15	16	17	
18	19	20	21	22	23	24	
25	26	27	28	29	30	1	May
2	3	4	5	6	7	8	
9	10	11	12				

< July 1, 1943 Dr USNR, active duty.