S-71

229441

Dr. Levin

No 76286

833

Mon Repos

7 pm

Vaudman: 33 09 87

Sunday

7 30

Sheldon Amos Mon Repos

Hotel Grand Chalet

Victoria 7 avec le Brun

Brun Legaux 5

321183 Chambre (1)

General Giraud

Holland

Hotel RAUCH, Scheveningen

Grand Hotel "

Park Hotel, The Hague

Mrs Velman 35-76-65

Genève

Cartes: Kalberer

Mrs Barlow Conn

216 Scheveningen

[Baarn 13 op gouden wieken]

[1812]

Shields

Boek Alvin Brees

Monozygotic twins

Berkhouts

De novo argument

Probable that one or the other parent but not both are perfect

~~of mother perfect~~

$e^{-n}$ $e^{-\frac{n}{2}}$

$e^{-\frac{n}{2}}$ is probability that mother perfect if child is perfect

$\lambda\ f(x) = e^{-n}$

$\lambda\ g(x) = e^{-n/2}$ \ fraction of those mothers of "perfects" who are tagged x

$\frac{f(x)}{g(x)} = e^{-\frac{n}{2}}$

$\lambda g(x) = e^{-n}$

$\lambda^2 g(x) = \left[\frac{f(x)}{g(x)}\right]^2$

$\lambda = \frac{f(x)}{g(x)} \frac{1}{\sqrt{g(x)}}$

Also:

$\lambda f(x) = e^{-n}$

$\lambda f(x) = \frac{f(x)}{g^2(x)}$ | $\lambda = \frac{f(x)}{[g(x)]^2}$

H

Insert 1.)
Let us consider a stationary population which is in equil.

Now $f(x)$

$$\frac{e^{-n}}{f(x)} = i$$

We expect
$$i^2 f(x) = e^{-2n}$$

This checks theory. —

---

Probab that 1 or the other parent survives age x or both =
$$= \left[1 - (1 - e^{-n})^2\right]$$

Probab that both are perfect $e^{-2n}$

---

$$1 - \left(1 - 2e^{-n} + e^{-2n}\right)$$

$$\left\{ \quad 2e^{-n} - e^{-2n} = 2e^{-n}\left(1 - e^{-n}\right)\right.$$

---

Probab that one or the other parent is perfect but not both
$$= 2e^{-n} - 2e^{-2n}$$

for $n \ll 1$ $\quad 2\left(1 - n + \frac{n^2}{2!}\right) - \left[1\right.$

de Nroo (Bust)

select population of females (~~those alive or recently dead~~) in second generation.

$Ne^{-2n}$

---

among these ~~the number~~ of those who are derived from a perfect mother, these number is

$$Ne^{-n}e^{-n/2}$$

if n male = n female

~~this means~~ It follows that probability of a perfect female has a perfect mother is

$$e^{-n/2}$$

We may thus write.

$$\lambda\, g(x) = \lambda\, f(x) \cdot e^{-n/2}$$

(select fraction)

where $g(x)$ denotes ~~how many~~ (of mothers of females ~~to~~ within the select group ~~[illegible]~~ had died at an age above $x$

---

size of select group:

$\left[\frac{Ne^{-n}}{N}\right]$; this is also number of mothers of ~~women~~ women contained in select group

De Novo (Brst)

We consider ~~population~~ stationary population of ~~N persons~~ N females (no siblings)

population age distribution over 30 years of age

N couples

n male = n female

select group contains $N e^{-n}$ perfect females reach 30 years each year

f(x) is number of females ~~who have begun~~ above age x who are alive.

~~above~~ Number of perfect females older than x who are alive

1) is $e^{-n} = \lambda(x) f(x)$

(now dead)

2) ~~In the population we assume let us m~~ let us now look at the mother of this population (equal in number) female because no siblings in the ~~population~~

probability that a mother's ~~death~~ age of death is above x

$g(x)$

number of perfect mothers

$\lambda g(x)$

De Novo (bast)

but for x we may

write form

$$f(x) = \lambda e^{-n}$$

$$\lambda = f(x) e^{n}$$

and (5a)

$$\frac{g(x)}{f(x)} = e^{+n/2}$$

$$n = 2 \ln \frac{g(x)}{f(x)}$$

---

For males out of age $(x-3)$

$$\lambda_m(x-3) = \lambda(x)$$

similar consideration probab of both parents of a female being perfect ~~female~~ perfect female

$$e^{-n}$$

Number of ~~parents~~ couples who are parents of women

~~[illegible]~~ in the select group and ~~where~~ both ~~[illegible]~~ are ~~[illegible]~~ perfect ~~[illegible]~~ traits of the couple ~~[illegible]~~ is $\Gamma(x)$

where $f(x)$ is fraction of ~~[illegible]~~ couples where woman died at an age over $x$ and man died at an age over $\{x-3\}$

See Novo (back)

Therefore number of perfect mothers of within select group must be

$$\frac{N\,e^{-n}}{h}\times e^{-n/2} = g(x)$$

$f(x)$ — size of select group

where $f(x)$ give the ~~number~~ (number) of women in the select group who ~~[struck]~~ had died above age $x$.

$$N \times f(x) = e^{-n}$$

size of select group $= N\,f(x)$

probability of a perfect mother

$\left\{N f(x) \cdot e^{-n/2}\right\}$ = is number of perfect mother

within group of ~~mothers~~ of women of the select group

there number is $\frac{g(x)}{h(x)}$

but for $\frac{g(x)}{h(x)} = N e^{-n/2}\,f(x)$ ~~[struck]~~

(5)

$$g(x) = \frac{g(x)}{[N\,f(x)]} = h(x)\,e^{-n/2}$$

~~Drawing~~ ~~(Ces)~~

$n = 3$ $\quad e^{-3} \simeq \frac{1}{20}$

if we choose $x$ so that we have

$f(x) = \frac{1}{40}$

then

$\nu = 2$

$g(x) = \frac{1}{2} e^{-\frac{n}{2}} = \frac{1}{2}\sqrt{\frac{1}{20}}$

$\delta(x) = \frac{1}{4} e^{-n} = \frac{1}{4}\,\frac{1}{20}$

---

If $n = 0$ and if we choose

$f(x) = \frac{1}{40}$ ; $\nu = \frac{1}{40}$

$g(x) = \frac{1}{40}$

$\delta(x) = \frac{1}{40 \times 40}$

If very large number of ~~[illegible]~~ independently workers each of which has a small effect. —

$f(x)$

~~fraction of such couples~~

H

$$\frac{\Gamma(x)}{N f(x)} = f(x)$$

~~N Fraction~~ of perfect couples is:

$$\frac{\lambda^2 \Gamma(x)}{N f(x)} = \lambda^2 f(x)$$

and we should have

$$\lambda^2(x) f(x) = e^{-n}$$

~~$$\frac{1}{\lambda^2 f(x)} = e^{n} = \left[\frac{g(x)}{f(x)}\right]^2$$~~

~~$$\lambda = f(x)\, e^{n}$$~~

~~$$\frac{1}{f^2 e^{2n} f(x)} = \left[\frac{g(x)}{f(x)}\right]^2$$~~

$$f(x) = \frac{e^{-n}}{\lambda^2}$$

Geneva ; De Novo

by determining ~~(N) at a given age x~~ the age for which

$N = 2$ we have determined ~~how long a guarantee~~ the median for the life span of a population which is rid of all longevity markers.

---

De Novo

$N f(x) = e^{-x}$

$$\frac{\lambda g(x)}{N f(x)} = \lambda g(x) = e^{-x/2}$$

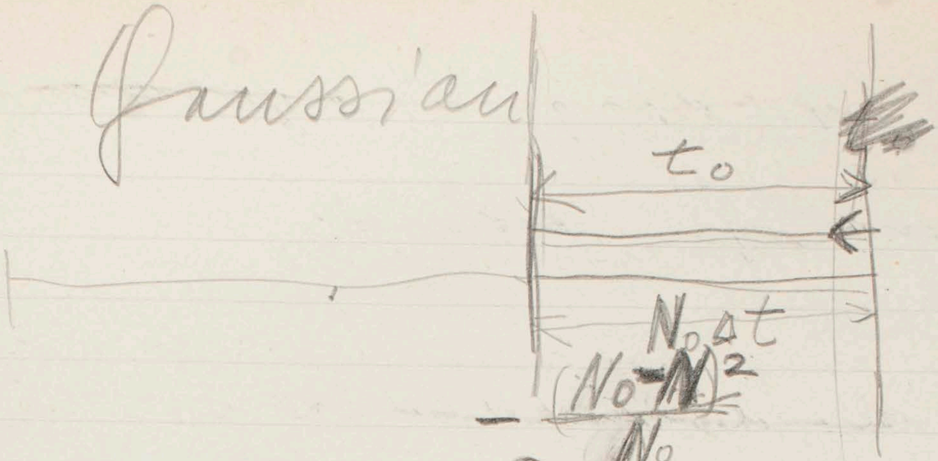
$g(x)$

$$\boxed{\frac{g(x)}{f(x)} = e^{x/2}}$$

$$\left[\frac{f(x)}{g(x)}\right]^2 = e^{-x}$$

$N f(x) = e^{-x}$ $\quad\Big\|\quad$ $\lambda = \dfrac{f(x)}{[g(x)]^2}$

Gaussian




H.

$$\frac{t_0}{\Delta t} = N_0$$

$$e^{-\frac{(N_0 - N)^2}{N_0}}$$

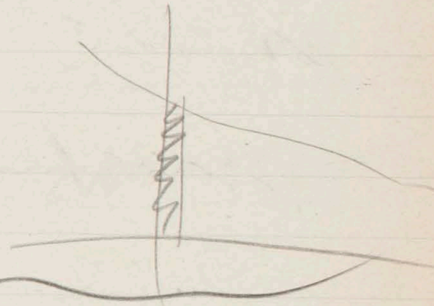
$$N = \frac{1}{4} N_0$$

$$N = \frac{1}{10} N_0$$

$$e^{-\frac{\left(\frac{3}{4}N_0\right)^2}{N_0}} \qquad e^{-\frac{9}{16}N}$$

$$e^{-N_0 + 2N - \frac{N^2}{N_0}}$$

$$e^{-\left(N_0 - 2N + \frac{N^2}{N_0}\right)} \qquad e^{-N_0} \times e^{+2N}$$



$$\left[\frac{g(x)}{f(x)}\right]^2 = e^{x}$$

$$\lambda(x)\, f(x) = e^{-x} = \left[\frac{f(x)}{g(x)}\right]^2$$

$$\lambda = \frac{f(x)}{[g(x)]^2}$$

and it further follows
that ~~it a~~ $\frac{1}{f(x)}$ ~~of a~~
the probab that both
parents of a woman in the
the select group ~~have~~ ~~are~~
survived beyond age x
is

$$f(x) = r^2 e^{-r}$$

or

$$f(x) = [g(x)]^2$$

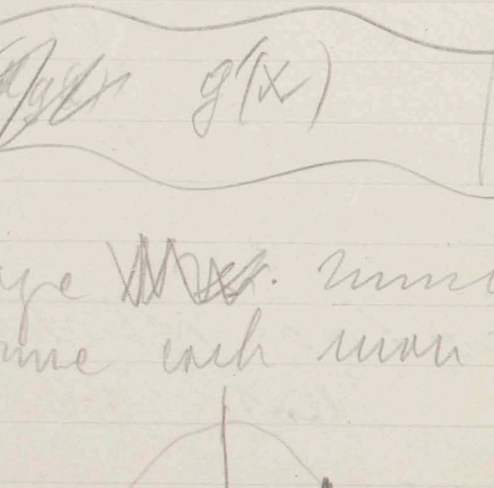
and from this and (   ) we
may then also write

$$(\ \ ) \qquad r = \sqrt{f(x)}$$

~~g(x)~~ $g(x)$ ‖ $f'(x) = 2g(x)\,g'(x)$

$$\frac{f'(x)}{f(x)} = 2\,\frac{g'(x)}{g(x)}$$

large ~~No.~~ number of families
assume each man lives to proper age



children are poisson
with $N_0^* = N_0 - 1/2$
and slightly changed
~~standard dev.~~
scatter.

$\Delta$ is determined by
death rate!

# Geneva DeNovo

$$\lambda^2 f(x) = e^{-x}$$

$$\lambda g(x) = e^{-x/2}$$

$$\lambda^2 [g(x)]^2 = e^{-x}$$

$$f(x) = [g(x)]^2$$

~~$g^*(x) = g(x-d)$ $\quad \lambda^*(x) = \lambda(x-d)$~~

of couples who are perfect

$e^{-2x}$ all daughters are ~~per~~ perfect ~~therefore if a daughter is gen perfect~~

since $e^{-x}$ of the daughter in our ~~g~~ pop are perfect it follows that the probably that a perfect ~~daughter~~ both parents of a gen perfect daughter are perfect is

$e^{-x}$

Probability of 4 grandparent perfect

$$e^{-2x} \times e^{-2x} = e^{-4x}$$

contribute $2e^{-4x}$ grand daughters

$$2e^{-x}$$

$\frac{1}{2} e^{-3x}$ is probab of

4 grandparents perfect of

in select group. Each is lost with probab $\frac{1}{\lambda}$ × probab. to find a Fanzsumme $\Sigma(x)$

$$\frac{1}{\lambda^4} \frac{1}{2} e^{-3x}$$

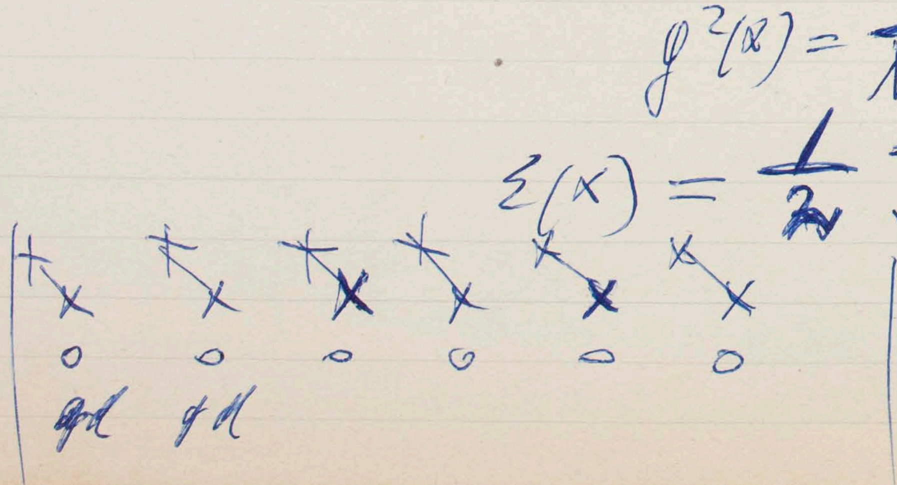
$$f(x) = \frac{1}{\lambda} e^{-x}$$

$$g(x) = f(x) e^{-x/2}$$

$$g(x) = \frac{1}{\lambda} e^{-3/2}$$

$$g^2(x) = \frac{1}{\lambda^2} e^{-3x}$$

$$\Sigma(x) = \frac{1}{2N} \frac{1}{\lambda^2} g^2(x)$$



~~Constance~~ Constance of $\mathcal{H}$ $n$

and $e^{n/2}$

$$\frac{d}{dx}\frac{g(x)}{f(x)} = 0$$

$$f(x)\,g'(x) = f'(x)\,g(x)$$

$$\frac{f(x)\,g'(x)}{g(x)\,f'(x)} \approx 1$$

$$\frac{g'(x)}{g(x)} = \frac{f'(x)}{f(x)}$$

$$\delta'(x) = 2\,g(x)\,g'(x)$$

$$\frac{f'(x)}{\delta(x)} = 2\,\frac{g'(x)}{g(x)}$$

$$\frac{\delta'(x)}{\delta(x)} = 2\,\frac{f'(x)}{f(x)}$$

instead of

$N = 100,000$

$\lambda = 2$

$g(x) = 4.5 f(x) = 4.5 \frac{1}{40} \approx \frac{[illegible]}{10^4}$

$\approx 1000$

$100,000 \times f(x)$

$g(x) = \frac{1}{4.5} \frac{1}{\lambda}$

$\frac{g(x)}{f(x)} = e^{+x/5}$

$f(x)^2 \approx \frac{1}{100}$ couples $1000$

[illegible] $= \frac{1}{2} \left(\frac{1}{40}\right)^3 \times 10^5$

$= \frac{1}{2} \frac{1}{64000}$

~~How many have [illegible]~~

~~per~~ $e^{-4x}$ $\left(\frac{1}{20}\right)^4 = \frac{1}{640000}$

how few

how many have 3 grandparents

(1) 3 donors

2.) 3 grandp. 60 donors

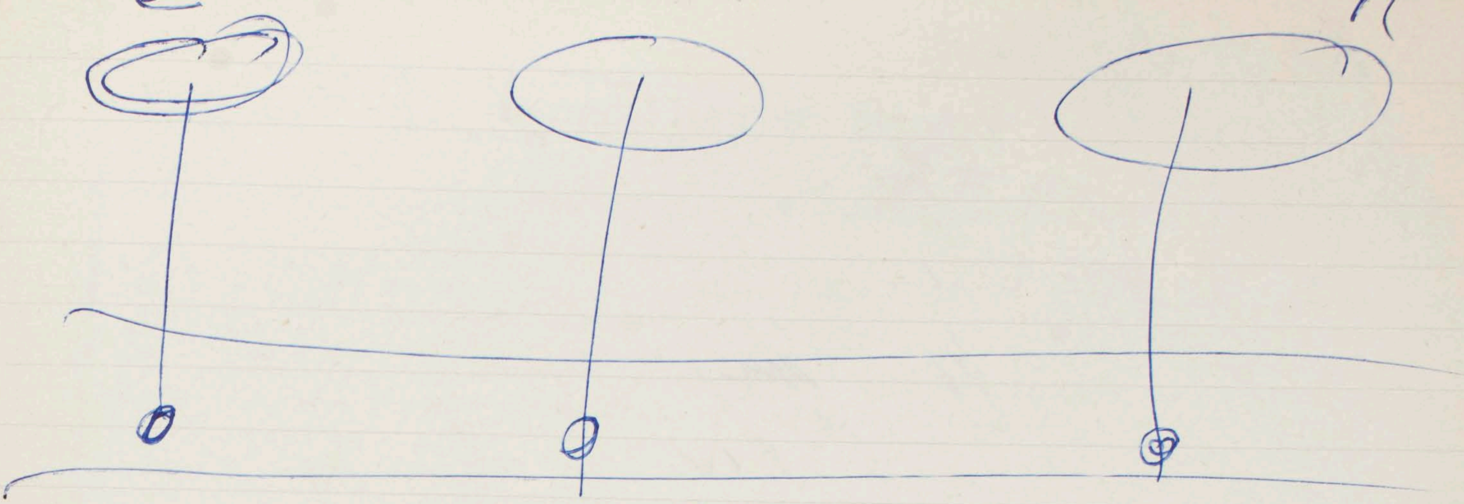
3.) 2 grandp. 1200 donors

multiply with 20 to get number of available donors

not all manifest

to make them manifest divide by 16, 8, and 4

$e^{-4x}$ H



$e^{-x}$

$e^{-3x}$ is probab of having 4 grandparents perfect. ~~Probab~~ that all of them live to age x is $\varepsilon(x)$

$$\varepsilon(x) = \frac{e^{-3x}}{\lambda^4}$$

$$f(x) = \frac{e^{-x}}{\lambda}$$

$$f(x) = \frac{e^{-x/2}}{\lambda}$$

$$\varepsilon(x) = \frac{1}{\lambda} f^3(x)$$

$$= \frac{1}{\lambda}\frac{1}{20}\frac{1}{20}\frac{1}{20} = \frac{1}{\lambda}\frac{1}{8000}$$

for $\lambda = 2$

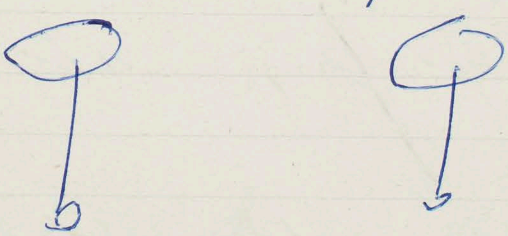
$\varepsilon(x) = \frac{1}{16,000}$

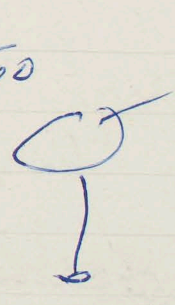
for $N = 10^5$

less than 100

$\approx 6$

$e^{-2x}$





$$\frac{e^{-x}}{\lambda^2} = f^2(x)$$

# IMMUNE AGENTS MAY PLAY Ca ROLE

## Researchers find that antigens and antibodies can cause mitosis in cultures of human blood cells

Antigens and antibodies may play a role in leukocytosis and neoplastic disease.

This suggestion comes from two widely separated teams of researchers. A Finnish research group bases its hypothesis on the finding that antibodies can induce mitosis in human leukocytes. New Zealand investigators reached the same conclusion after getting similar results with the antigen tuberculin.

While the two groups have come to much the same general conclusions, both their experimental studies and their conclusions lie along different paths.

The Finnish workers— Drs. Ralph Gräsbeck, Clas Nordman and Albert de la Chapelle of Helsingfors' Minerva Foundation Institute for Medical Research and the Folkhälsan Institute for Genetics—immunized rabbits with a series of five intravenous injections of a preparation of whole leukocytes obtained from five healthy human volunteers. The resulting antisera, harvested ten days after the last injection, were added to cultures of human peripheral leukocytes.

For a control series, serum samples were taken from some of the rabbits before immunization; one rabbit was "immunized" with saline; and serum samples from other nonimmunized rabbits were used.

Dr. Gräsbeck's group found that four out of five antisera induced mitoses in the leukocyte cultures. The fifth antiserum had a toxic effect only.

"The results demonstrate a clear mitogenic action," they report in the *Lancet,* adding that "since the injected leukocyte preparations contained other blood cells, one cannot say against which cell type the antibody responsible for the mitogenic activity was directed."

It is possible that leukocyte antigens are liberated in rabbits and are contained in the resulting antiserum, but at present the Finnish investigators believe that an antileukocytic immune globulin is responsible for the effect.

"Our view is that some kind of biochemical chain reaction is involved when a cell is stimulated to divide. Apparently, numerous stimuli can trigger this reaction, and antigens acting on presensitized cells are one such group."

Such stimuli, they add, could include both phytohemagglutinin (a well-known inducer of cell division) and antileukocytic immune serum. "Adhering to the cell surface, they cause the cell to divide, no presensitization apparently being required."

#### Findings from New Zealand

The New Zealand investigators—Drs. R. R. Lycette, G. E. Pearmain and P. H. Fitzgerald—based their studies on the hypothesis that the mitogenic action of phytohemagglutinin (PHA) might have an immunological basis.

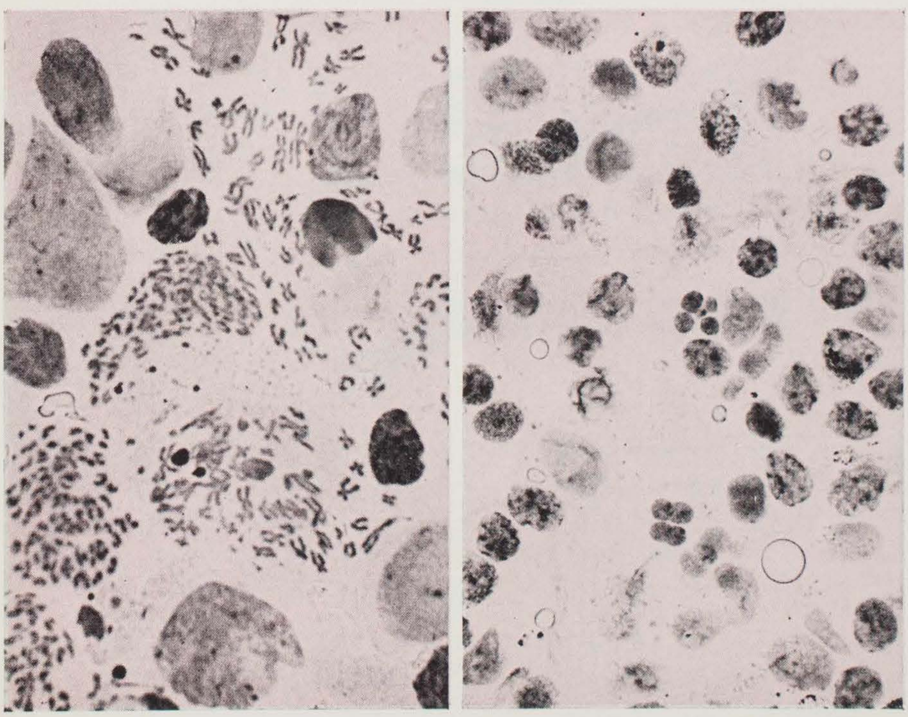
Substituting tuberculin for PHA in peripheral blood leukocyte cultures made from individuals sensitized to tuberculin, they discovered mitoses similar to those obtained with PHA.

They then took lymphocytes from five patients with severe hay fever, and cultured them with grass pollens. Again, they found that blast transformation cells and mitoses occurred consistently after four to six days of incubation at 37° C. Lymphocytes cultured from normal persons as controls showed no such effect.

Further studies on lymphocyte cultures with Sabin polio vaccine also produced blast transformation cells and mitoses in four to five days.

These findings, they suggest, may be a clue to a possible explanation of the abnormal blood pictures in such conditions as sarcoidosis, berylliosis, rheumatoid arthritis and Hashimoto's disease, where the lymphocyte is histologically predominant.

They also point out that the abnormal leukocytes encountered in routine differential counts in young children, particularly those suffering from infections, may be the equivalent of blast transformation cells present in lymphocyte-antigen cultures. ■



**LEUKOCYTES** cultured in antileukocyte serum show numerous mitoses with blast formations (left). Effect is absent in cells that are grown with nonimmunized serum (right).

$$\lambda = \frac{f(x)}{g(x)^2}$$

If we set $\lambda = 2$

$$2 \frac{g(x)}{f(x)}$$

$$f(x) = \lambda$$

$$\left(\frac{g(x)}{f(x)}\right)^2$$

$$\frac{g(x)}{f(x)} = e^{x^2/2}$$

$$\lambda = \frac{f(x)}{[g(x)]^2}$$

$$f(x) = \frac{1}{\lambda}\left[\frac{f(x)}{g(x)}\right]^2 = \frac{e^{-x^2}}{\lambda}$$

$$f(x) = \frac{1}{\lambda}\left[\frac{f(x)}{g(x)}\right]^2$$ which

for $x=3$ $\left[\frac{f(x)}{g(x)}\right]^2 = \frac{1}{20}$ means that within a few generations

$$\frac{g(x)}{f(x)} \cong 4.5$$

within one gen by giving freee $x = 3$ for $x = 1/2$

$f(x)$ would go to $\frac{1}{2}\frac{1}{4.5}$

~~most one 1/9 of population dies before maturity~~

(14) $f(x) = \frac{1}{2}\left(\frac{1}{20}\right)^3$ ~~[illegible]~~ 4

~~[illegible]~~ 16,000

1 ~~[illegible]~~

(15) $\frac{d}{dx} \frac{g(x)}{f(x)}$

(16)

since 1 1

(17)

(18)

(21) $g(x) = p^2(x)$

(22) $e^{-2n}$

23 $e^{-n}$

24.) $g(x) = \lambda^2(x)\, e^{-n}$

$\left( g(x) = \lambda e^{-n/2} \right)$

By differentiating ~~[illegible]~~ and dividing () with $g(x)$ ~~[illegible]~~ we obtain for ~~the [illegible]~~ $\frac{g(x)}{f(x)}$ the "death rate" of the ~~[illegible]~~ long lived samples $\frac{g(x)}{f(x)}$

let number of ~~faults~~ "small numbers" N
defines an x ~~L~~ so that half of individuals

would live to x and higher

take those ~~(which~~ mothers ~~are dropped by~~ have fewer than $N_0$ by ~~ΔN~~ ΔN

their daughters have fewer than $N_0$ by $\frac{\Delta N}{2}$ how many will have less by ΔN

$$\frac{f(\Delta N) g\left(\frac{\Delta N}{2}\right)}{g(\Delta N)}$$

$$\frac{g(x)}{f(x)} = g\left(\frac{\Delta N}{2}\right)$$

Probab that mother has ΔN


Those who survive to x and above have a certain mean value $N_0 - \Delta N$

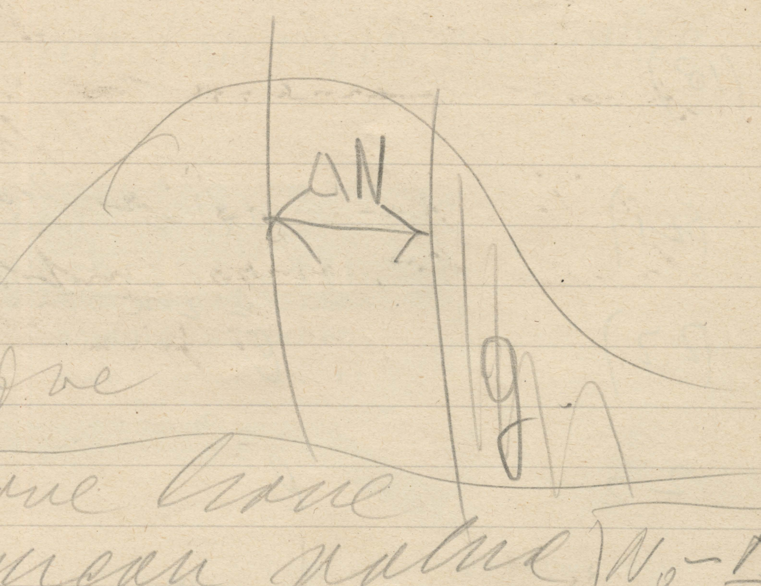
and of those who have ~~this value~~ an ~~d~~ of a ~~g~~ particular with this mean value a fraction $w(x)$ would survive let number of ~~faults~~ "small numbers" N defines an x so that half of individuals would have to x and higher

take those ~~which~~ mothers ~~are dropped by~~ have fewer than $N_0$ by $\Delta N$

their daughters have fewer than $N_0$ by $\frac{\Delta N}{2}$ how many will have less by $\Delta N$

$$\frac{g(\Delta N)\, g\cdot\left(\frac{\Delta N}{2}\right)}{g(\Delta N)} \qquad \frac{g(x)}{f(x)} = g\left(\frac{\Delta N}{2}\right)$$

Probab that mother has $\Delta N$




Those who survive to x and above have a certain mean value $N_0 - \Delta N$

and of those who have ~~this value~~ and of a ... with this mean value a fraction $p(x)$ would survive

H

$\frac{1}{2}e^{-x/2}$

$\frac{1}{9}$ lives to x in 1st gen of breed.

$\frac{1}{2}e^{-x} = \frac{1}{40}$

$\frac{1}{2}e^{-x/2} = \frac{1}{9}$

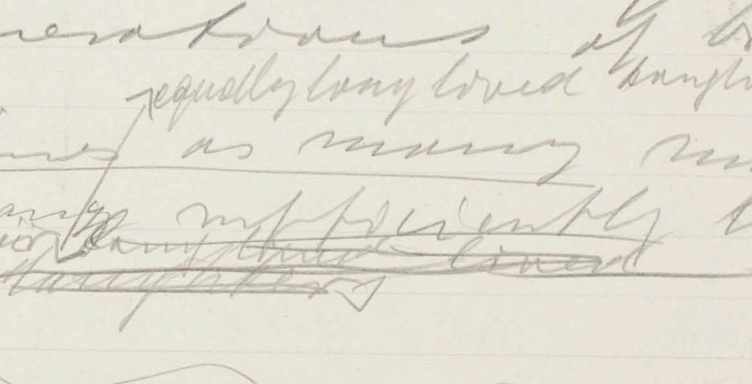
half of 1st gen would live as long $\frac{1}{9}$ of initial population lives

$\frac{1}{9} = \frac{1}{2}\frac{f(x)}{g(x)}$

$\frac{1}{2}\left[\frac{f(x)}{g(x)}\right]$ this is fraction of initial population which lives to the age and higher to which 1/2 of population lives that went through a few generations of breeding equally long lived daughters.

4 1/2 times as many mothers live to any sufficiently high age as their ~~long lived~~ ~~daughters~~

$\propto \sqrt{N_0}$



$\frac{1}{h(x)}$ is fraction of all ~~which~~ have N or smaller than N mothers and live longer than x

$$2\left(p(x) - a\right) = g\left(\frac{An}{2}\right)$$

If $g(x) > f(x)$

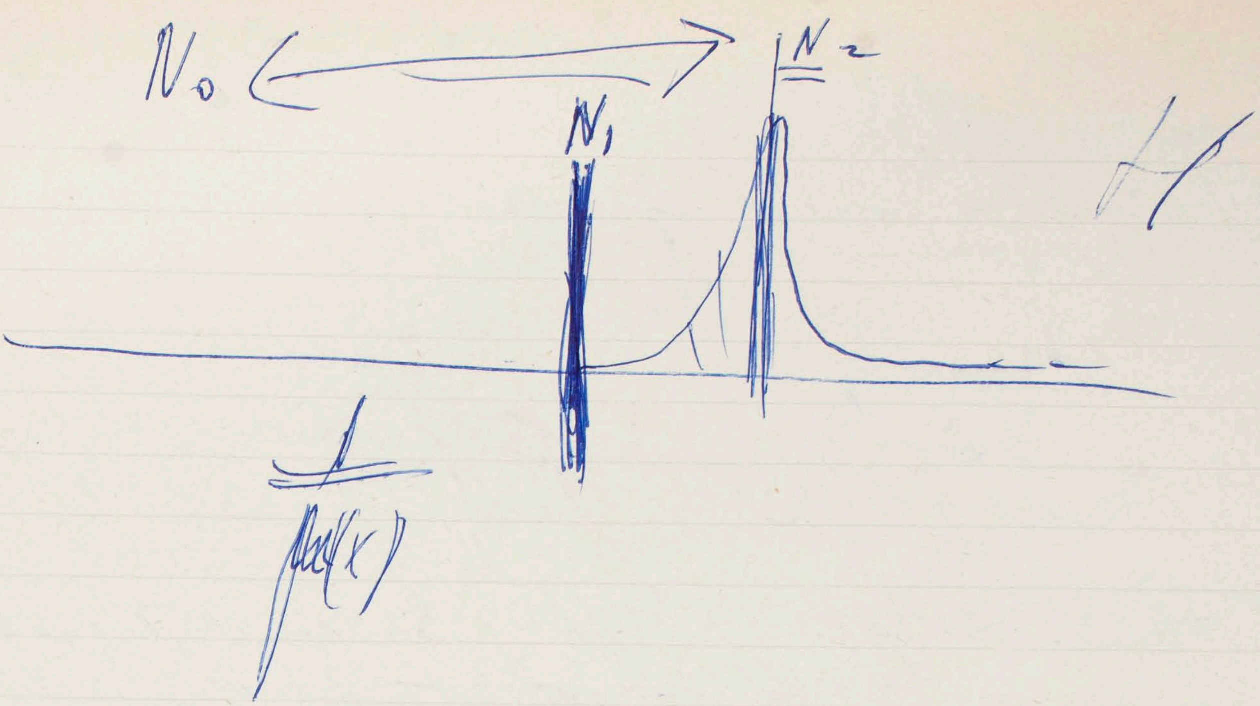
$$\frac{g(x)}{f(x)} > \frac{g\left(\frac{An}{2}\right)}{g(An)}$$

probability for a select number to have N beyond critical value

$$g\left(\frac{An}{2}\right)$$

$$\frac{2\left(g(x) - a\right)}{2\left(f(x) - a\right)} = \frac{g\left(\frac{An}{2}\right)}{g(An)}$$

$$\frac{g(x)}{f(x)} < \frac{g\left(\frac{An}{2}\right)}{g(An)}$$




take an $x$ ; there is an $\Delta n$ so that $\frac{1}{2}$ of those who have an $n$ smaller than $n_0 - \Delta n$ will survive to $x$

$$f(x) = a + \tfrac{1}{2}\, g(\Delta n)$$

---

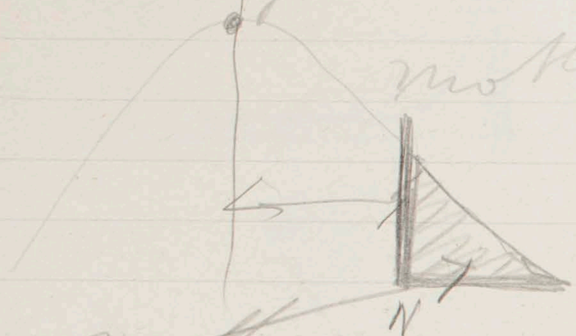
of all mothers there are $g(\Delta n)$ who fall in same category as interesting surviving daughters of the interesting daughters who are daughters of such mothers are longer than ~~mother~~

$$g(\Delta n)\; g\left(\frac{\Delta n}{2}\right)$$

$$2\left(f(x) - a\right) = g(\Delta n)$$

~~Mothers having beyond X~~

assume no environmental
scattering and Gaussian.




those ~~mothers~~
give daughter with $\frac{\Delta}{2}$ maximum
shift

~~half of whom die above x~~

~~daughters who die above x~~

of whom $g\left(\frac{\Delta}{2}\right)$ die above x

~~number of mothers who die~~

$$f(\Delta)\, g\left(\frac{\Delta}{2}\right) = g(\Delta)$$

$g\left(\frac{\Delta}{2}\right)$ is probability
that a select mother
is ~~above~~ below N.

$$\frac{g(x)}{f(x)} = g\left(\frac{\Delta}{2}\right)$$

Of $g(\Delta)$ daughters $g(\Delta)\, g\left(\frac{\Delta}{2}\right)$ are
daughters of "mothers below N"
probab to find a select mother
(below N) is $g\left(\frac{\Delta}{2}\right)$

probab to find a daughter
below N is $g(\Delta)$

$f(x) =$ ht

$f^*(x)$

perfects

---

fraction of genetically perf pop surviving to $x$ = $\frac{1}{n}$ fraction of actual pop surviving to $x$

~~fraction of~~

$$\frac{e^{-n}}{n}$$

~~ratio which gives~~ tells ~~us how~~

fraction of gen perfect population that survives to a high age $x$ is larger by a factor of $K$ than the fract of the individ pop that survives to the same age $x$ and we have $K = e^{n}$ or

$$K = \left[\frac{g(x)}{f(x)}\right]^{n}$$

for $n = 3$ the genetically perfect

From

What is probab. of female having $n(1)$?

Grandmother having $r$ × Probab of daughter having $n$, if mother has $r$

$\left[\frac{r+n_0}{2}, n_1\right]$

# The Gaussian

if standard deviation is shifted half, how many more survive to age to which $2\frac{1}{2}\%$ of entire population survives?

$\frac{2.5}{2} = 1.25$

5000
125
4.875

$\sigma = 2.24$

for $\sigma = 1.12$

5000
3686
.1314 or 26%

$\frac{26\%}{2.5\%}$ roughly factor 10

in our case factor (was) 4.5 for $n = 3$

Gaussian

$$\frac{f(x)}{f(x)} = \frac{f\left(\frac{\Delta}{2}\right)}{f(\Delta)}$$

this determines $\Delta$

median age of death of ~~reduct~~ mothers is shifted we may expect the same shift in the median age at death in the offspring of

---

Probab. for daughter having $n$ if ~~father~~ being mother had $n_1$ =

Poisson for $p(r, n_1) = \left(\frac{n+n_0}{2} ; n\right)$

~~Probab for daught~~

Probab for daughter has $r$

$f(r)$ Number of those in gen population whose mother had $\frac{n}{3}$ . ~~if mother had~~ $f(n)$

of these probab that

Tue VIC 9434 Ennals
VIC 7764 Wigg – tomorrow – will ring if return
Benn 8.30 pm. after 4.30. (9)

Park 5503

12 Holland Pk Ave

Wd 5.30 pm Transport Ho Smith Sqn.

6 pm Sonny

Beard (Pat. Lintop)

FAI 5295

Dr. B. Benjamin Mu 6811
General Reg. Offi
Somerset Ho

N.A. Mitchison Mill Hill 3666
Home Mill Hill 7260
Call (10 to 11 AM)

R. Beard Esq.
Pearl Assurance Co LTD
High Holborn LONDON W.C.1 Holborn 8441

9 pm
7 30 pm 400 pm – Napier

(4) (5)
2 3

4 5 4 5
2 3 3 2

Sheldon Arny

# Rabbit

4

(4) (5)

Mother 4/4 Father 5/5

~~offspring~~ mother immunized or shot has anti 5.

New born and also adult has very little 5 and large amount of (4)
ratio [72 to 1]

Ordinary ratio [4] : [5] = 2 to 1

Nature

---

Morenter's Node cells (not immunised animal)
adult less than 1% of cells
seems to make only allotype

~~the~~ Immunology (England) 1963 or 1964

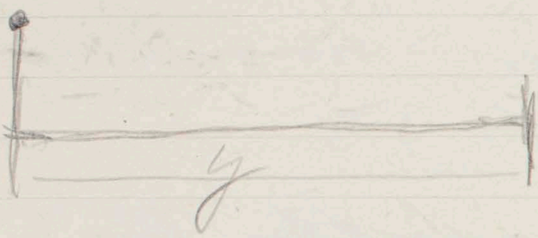
anti (5) anti (4)

○

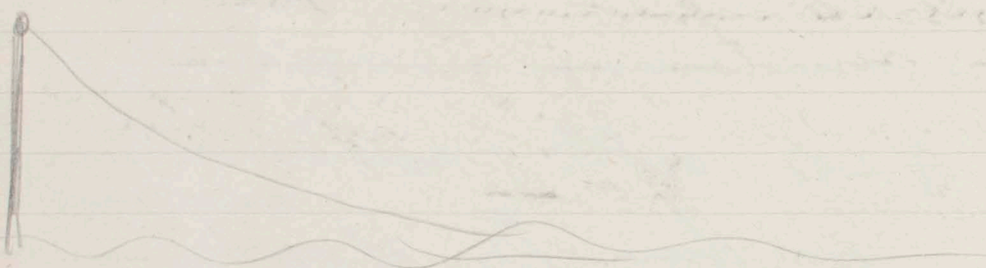
(4) (5)
2 3

4 5 4 5
2 3 3 2

by only 2½ % of the individual population —




$$\frac{\frac{d\varphi}{dy}}{y} = e^{-\delta y}$$



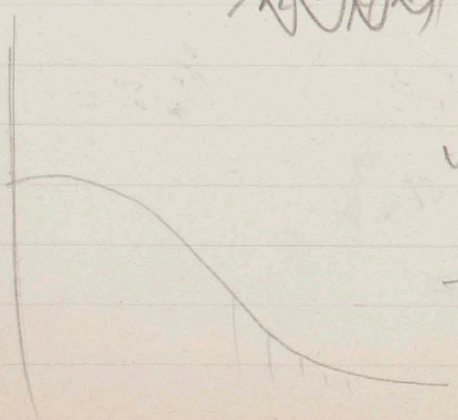
$\Delta_0 t$

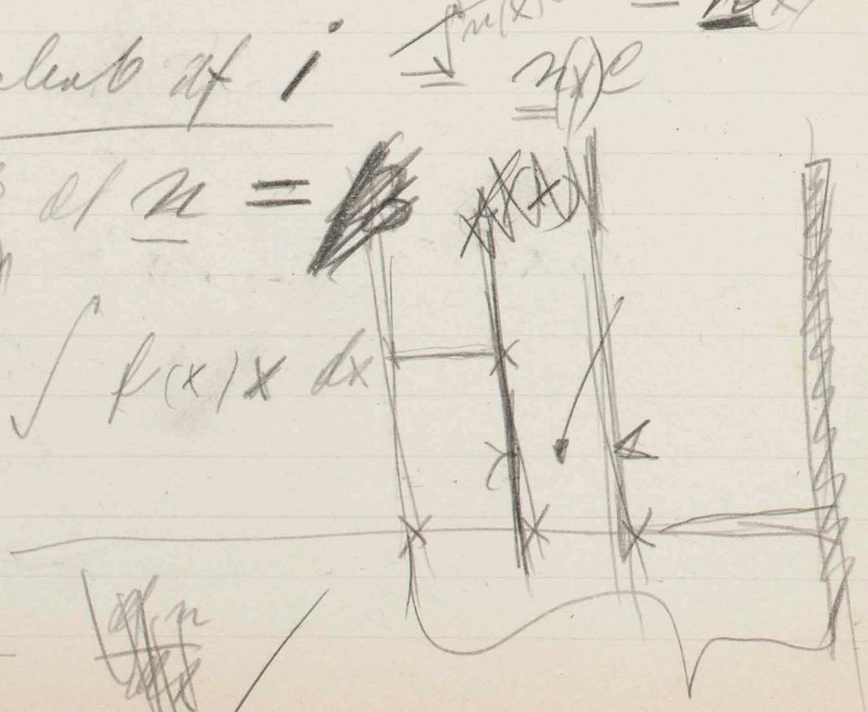
$n(x)\, e^{-\int_0^{x_0} n(x)\,dx}$

Product of $i$ = $n(x)\, e^{-n(x)}$

Product of $\underline{n}$ =

$\int f(x)\, x\, dx$





UX

$\int_0^x x e^{-\beta x}$ — $u'$, $\int u$, $v$

$u'v$ $\quad d(uv) = u'v + v'u$

$\int_0^x u'v = uv - v'u$

$\frac{d}{dx} e^{-x} = -e^{-x}$

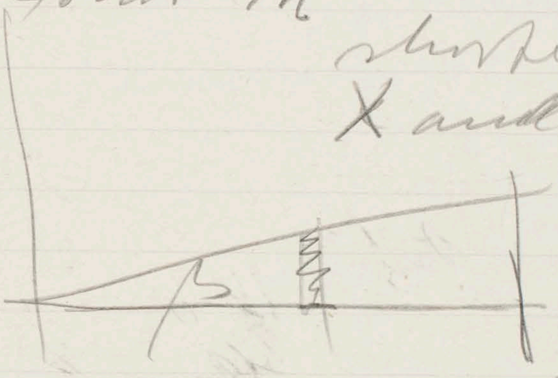
$= -\frac{e^{-\beta x}}{\beta x} - e^{-\beta x}$

$n_0 = \int_0^x \beta x\,dx = \frac{\beta x^2}{2}$

$\beta x\,dx$ is ~~the shortening~~

is ~~number for a fault~~

~~star~~ number of faults which shorten life by between $x$ and $x + dx$




total life shortening $\frac{\beta x_0^3}{3} =$ 10 yrs

$\frac{\Delta t}{t_0}$

$\frac{\beta x_0 x_0}{2} = 10$ years $\qquad x_0 = 6$ years

$\frac{\text{Total}}{x_0} = \beta x_0$

$\beta$

$f(x)dx$ probability is $n(x)dx$

prob that 1 part will take shortening between x and x + dx is

$f(x)dx\, e^{-\beta x\, dx}$

x expressed in $\frac{\Delta\theta}{t_0}$

number of deaths $f(x)$

$f(x) = e^{-\beta x}$

total $n = \int e^{-\beta x} dx = -\frac{1}{\beta}\int_{0}^{x_0} e^{-\beta x} dx$

Total $n = \pm\frac{1}{\beta} e^{-\beta x_0}$ ~~[illegible]~~

~~total~~ mean shortening: $u'$

$$\int_0^{x_0} x\, e^{-\beta x} dx \quad u \quad v$$

$$\frac{d}{dx}\left\{ \frac{x}{\beta} e^{-\beta x} + e^{-\beta x} \right\} = \frac{[illegible]}{\beta} e^{-\beta x} + \frac{x}{\beta} e^{-\beta x} - \beta e^{-\beta x}$$

$$\frac{d}{dx} uv = u'v + v'u$$

$$uv - v'u = u'v$$

$$u = -\frac{1}{\beta} e^{-\beta x}$$

$$-\frac{x}{\beta} e^{-\beta x} - e^{-\beta x} = \int_0^x x\, e^{-\beta x} dx$$

check: $+\frac{x}{\beta} e^{-\beta x}$ ~~$+\frac{x}{\beta}$~~ $e^{-\beta x} + \beta e^{-\beta x}$

$$\boxed{-\frac{x}{\beta}e^{-\beta x} - \frac{1}{\beta^2}e^{-\beta x}} = \int_0^x x e^{-\beta x}\,dx$$

Check

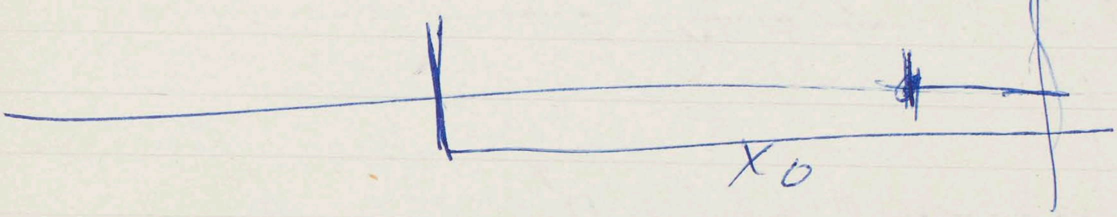
$$\frac{d}{dx}\square = +x e^{-\beta x} - \frac{1}{\beta}e^{-\beta x} + \frac{1}{\beta}e^{-\beta x}$$

$$\int_0^x x e^{-\beta x}\,dx = y$$

$$y = \frac{1}{\beta^2} - \frac{1}{\beta^2}e^{-\beta x_0} - \frac{x_0}{\beta}e^{-\beta x_0}$$

$$y = \frac{1}{\beta^2} - \left(\frac{1}{\beta^2} + \frac{x_0}{\beta}\right)e^{-\beta x_0}$$

670
755




~~$\beta e^{-\beta(x_0-x)}\,dx$~~

is prob. to have a [illegible] between x and x + dx

$$\boxed{\frac{b}{e^{\beta x_0}}e^{+\beta(x_0-x)}} = b\,e^{+\beta x}$$ under [illegible]

remaining

$\frac{\Delta t}{t_0}\sqrt{N}$ = Const

$$\Delta t = \frac{1}{\sqrt{N}}$$

$$N = \frac{1}{(\Delta t)^2} \qquad N = \frac{1}{(\Delta t)^2}(\Delta t)^2 = \frac{1}{N}$$

Gaussian

$2g(2\sigma)\,2g(\sigma)$

$2g(2\sigma)$

probability of mother born N at $2\sigma$ is $2g(\sigma)$

must be the same for Gaussian.

$x$ $x^2$

---

Check ~~no~~ ng scattering

If mother beyond $(2\sigma)$

~~then probab de~~ then by daughters have median at $1\sigma$ but scattering is changed! assume variance $\frac{1}{2}\frac{+1}{2} = 3/4$

and $\sigma = \sqrt{\frac{3}{4}}\,\sigma = 0.867$ Gauss

daughters at ~~2σ~~ $\frac{1}{0.867} = 1.157\,\sigma$

$g(2\sigma)\; g(\sigma = 1.157) \ne g(2\sigma)$

Prob for mother to be beyond $2\sigma$

$= g(\sigma = 1.157) =$

.1230

put $N = \frac{1}{4\lambda}$

H

$\int \frac{1}{x} =$ ~~[illegible]~~

---

If father and mother both genetically out to 20

~~[illegible]~~ $\frac{1}{2}$ children should be ought to $2_{20}$. ~~[illegible]~~

$\frac{1}{2} g(20)\ g(20) =$ ~~[illegible]~~

~~number of children out~~

number out $g(20)$

~~per child found at 20~~

~~therefore of children~~

for each child found at 20

prob to find both parents

~~by beyond~~ living beyond 20

is $\left(\frac{1}{\lambda}\right)^2 \frac{1}{2} g(20)$

if $20 = \frac{1}{1040}$

$\lambda = \frac{1}{2}$

$\frac{1}{400}$ have both parents alive

$10^5 = 2500$

$\frac{10^5}{400} = 6$ couples

in case of $n = 3$

$\left(\frac{4.5}{40}\right)^2 \approx \frac{1}{100}$ or

25 couples

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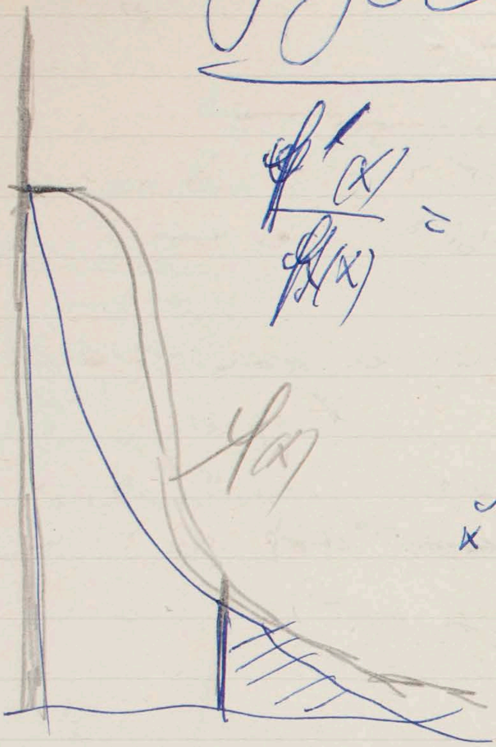
Gaussian

$$\begin{array}{r} .5000 \\ 250 \\ \hline 4750 \end{array}$$

# Speculation.

$$\frac{\varphi'(x)}{\varphi(x)} = -c\,e^{bx}$$




Lebenserwartung $= \int_x \varphi(x)\,dx$

$$\varphi(x) = \frac{-\varphi'(x)}{c} e^{-bx}\,dx$$

$$y = \int_x^\infty \varphi(x)\,dx = \int_x^\infty -\frac{1}{c}\,\varphi'(x)\,e^{-bx}\,dx$$

$y =$

$$\frac{d(uv)}{dx} = \frac{du}{dx} v$$

$$C_i\,e^{at} =$$

$$\Phi(x) = \int g(\xi)\,\varphi(x+\xi)\,d\xi$$

$$\frac{\Phi'(x)}{\Phi(x)} = C_\Phi^*\,e^{ax}$$

$$\frac{\varphi'(x)}{\varphi(x)} = C_\varphi\,e^{ax}$$

$$g(\xi) = e^{\frac{(x_0-\xi)^2}{\sigma^2}}$$

$$\frac{d \ln \varphi}{dx} = \ln C_0 + ax$$

~~[illegible]~~ Gaussian 4

no scattering

If father beyond 2σ and mother beyond 2σ ~~[illegible]~~ then daughter

$\frac{1}{2} f(2\sigma)\, f(2\sigma)$ gives daughters beyond 2σ

Therefore probab that both father and mother of select woman are beyond 2σ is $\frac{1}{2} f(2\sigma)$

$$\frac{1}{2}\,\frac{2.5}{100}\,\frac{2.5}{100} = \frac{6.25}{2}\,10^{-4}$$

by comm with ~~[illegible]~~ **31**

~~[illegible]~~

$$\left(\frac{~~4.5~~}{40}\right)^2 = \frac{20}{1600} = \frac{2}{160}\,\frac{2.5}{100} =$$

$$= \frac{5}{16}\,\frac{1}{1000}$$

$$\frac{5}{16} = \boxed{31}$$

Beyond $\frac{\sigma}{\sqrt{2}}$ we have 16% — σ Binom

Binomial

62 children (brothers and sisters)

10 should be ~~[illegible]~~ beyond stand dev

If σ were 9; $\frac{\sigma}{\sqrt{2}} \simeq 6.4$

75%

~~[illegible]~~ ~~[illegible]~~

8 years doubled

1.3 1.3, 1.3,

$\frac{\dot{f}}{f} = e^{at}$ $e^{at}$

$\frac{d}{dt}\log f = e$

$1-\left(1-\frac{1}{Q}\right)^2$

$1-\left(1-\frac{2}{Q}-\left(\frac{1}{Q}\right)^2\right)$

$\ln\frac{2}{Q^{\xi}} = \left(\ln 2 - [illegible]\ \xi\right)m$

$m\xi = \frac{age}{2\tau}$

---

Paper

Extending human life

Infant mortality

75% example (what we are up against)

reaches limit in near future

postponing death or slowing aging?

~~What else can~~ Is there anything that can be done ~~to~~ prolong life and ~~possibly slowing~~ not only but slowing the aging process through selective breeding

{ New society

} 7% standability

(our problem here ~~is~~ not to

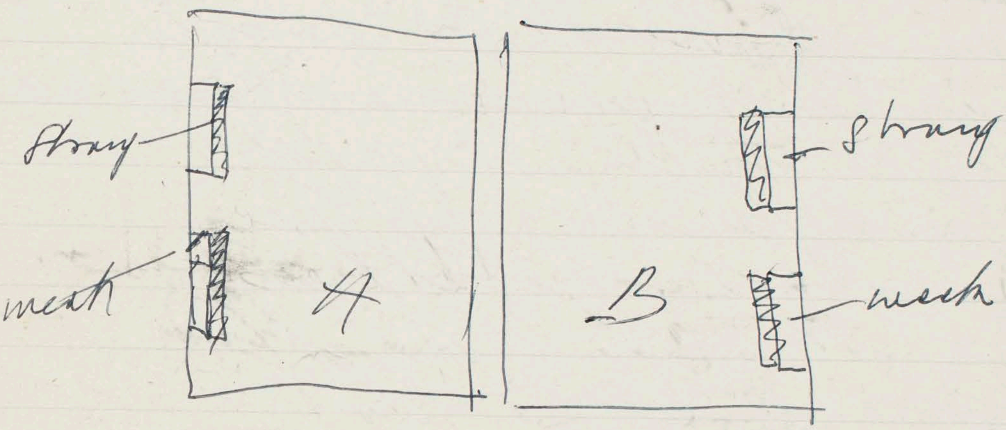
$$\frac{d}{dx}(uv) = uv' + vu'$$

$$uv = \underbrace{\int uv'}_{y} + \int vu'$$

$$y = uv - \int vu'$$

$$y_1 = \varphi(x) - \underbrace{\int g(\xi)\,\varphi(x+\xi)\,d\xi}_{y_2}$$

$$-y_2 = \int g(\xi)\,\varphi(x+\xi)\, e^{a(x+\xi)}\,d\xi$$




I Contact between B and Res. long to permit exchange both of chain which is strongly abs and

II Contact between A and B just long enough to permit exchange of chain which is weakly absorbed ~~weak adsorption~~ chromosomes which is weakly absorbed but not ~~between~~ chromosomes (which ones) are strongly absorbed. —

We do not know / whether ~~any~~ a substantial prediction is ~~how much~~ if any due to gen. causes

~~is due to gen scatt.~~
and if so how much and therefore we are in no position to predict from the obs distrib of the ages of death within one cohort how much we could gain in one generation ~~[illegible]~~ ~~or in total~~

the purpose of this paper is to show that ~~given a population~~ we could make such a prediction however by determining the mean of mothers or fathers

This prediction is based on the following considerations

$f(x+\delta) = f(x)$

no sex linked longevity genes.

children of long lived fathers — ~~[illegible]~~ children of long lived mothers.

General theorem:

predict whether this will happen and if so when but ~~to examine~~ rather to examine the following question:

$2\sigma$ <u>males</u>

~~It may be shown~~

If observed scattering of age at death were all due to gain [illegible] <u>std. dev.</u>

if $\sigma_{gen} = 9$ years

~~total gain >~~ for $n > 3$ total gain $= \sqrt{n}\,\sigma$

$$\sigma = \sqrt{3}\,n = \frac{n}{\sqrt{3}}$$

total gain $(n) = a\sqrt{3} \times \sigma$

(for $n = 4$ total gain $= 2\sigma$
for $n > n$ " " $> 2\sigma$

~~total gain only~~ ~~total~~

$\sigma_{non\,g} =$ ; $\sigma_{gen} = 9$ years

$$10^2 = 9^2 + x^2$$

$$x = \sqrt{100 - 81} = \sqrt{19} =$$

If $\sigma_{gen} = \sigma_{non\,gen}$

$$\sigma_{gen} = \frac{10}{\sqrt{2}} =$$

~~Text~~

If father and mother have $\frac{n}{2}$ and poisson, sum is also poisson with ~~[illegible]~~ average at $\underline{n}$

daughter is then poisson with average at $\frac{n}{2}$

What is shift?, shift is $\frac{n}{2} = 1.5$ ~~more than~~ 1

$\sqrt{3} = \underline{\underline{1.7}}$ || 1.3    1.76

---

$$e^{-\left(\frac{n_0 - n}{n_0}\right)^2}$$

Probab of daughter beyond $2\sigma$ ~~is larger than~~:

$$\frac{\int(2\sigma)\int(1.23\sigma)}{\sigma_1^2 + \ldots}$$

mean is at $\sigma$    from mean

$$\sqrt{\sigma} \times \frac{\sigma}{\sqrt{2}} = \frac{\sigma}{\sqrt{2}}$$

$$\frac{\sigma}{1.23}$$

0.1112 $\frac{1}{10}$ $\frac{1}{44}$

$\int(2\sigma)$ .0227

$\int(\ldots) = \int(2\sigma)$

ratio > 5

2.2 to 2.5

Text 14

$\sigma_s$ (obs)

$\sigma_s$[gen]

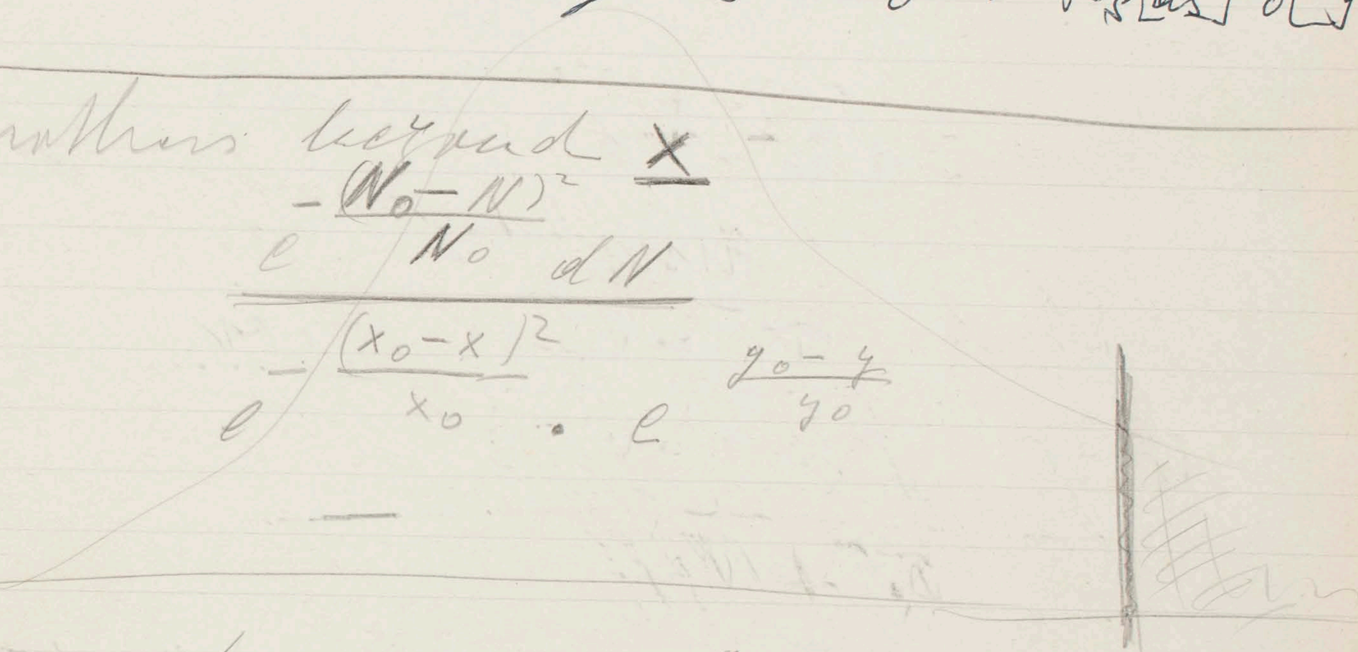
$$\sigma_s(gen) \geq \sqrt{\sigma_0^2(obs) - \sigma_0^2(mon\ g)}$$

$$\sigma = \frac{\sqrt{n}\,\delta t}{\sqrt{2}}$$

$n\,\delta t$ for $n \geq 1$

lubel prin > $\sigma$

mding $\Delta t \geq \bar{t}_s - \bar{t}_0 + \sqrt{\sigma_s^2[obs] - \sigma_0^2[mg]}$



mothers beyond X

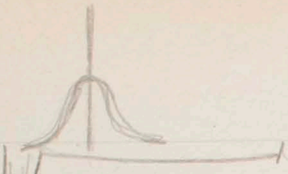
$$\frac{e^{-\frac{(N_0-N)^2}{N_0}}\, dN}{e^{-\frac{(x_0-x)^2}{x_0}} \cdot e^{\frac{y_0-y}{y_0}}}$$

for daughter to be beyond

$$\frac{(n)^r}{r!} e^{-n}$$

$\sum_r \left(\frac{1}{2}\right)^r \frac{n^r}{r!} e^{-n}$ is probab. of 0

$\sum \frac{\left(\frac{n}{2}\right)^r}{r!} e^{-n}$ | $\sum \frac{\left(\frac{n}{2}\right)^r}{r!} = e^{n/2}$

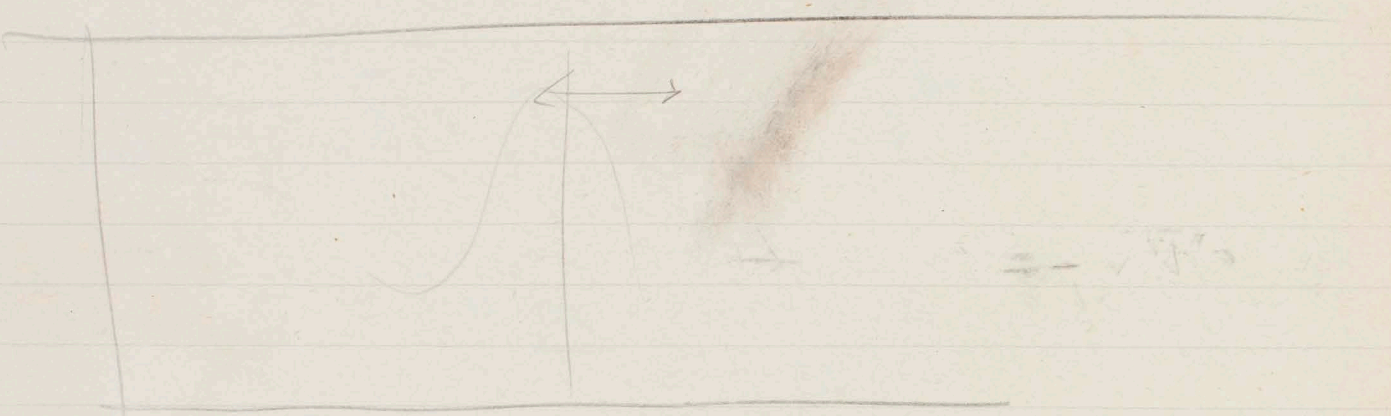


$$\frac{\delta\sqrt{N_1 - N_2}}{\bar{t}_0}$$

$$\frac{\delta\sqrt{N_1 - N_2}}{\delta\sqrt{N_1}}$$

$$t_0 - N_0\delta = \bar{t}_0$$

$$\frac{\delta\sqrt{N_1 - N_2}}{\frac{t_0}{\tau} - N\delta}$$



$$\frac{\sigma_1^2 - \sigma_2^2}{(N_1 - N_2)\bar{\tau}^2} = (N_1 - N_2)\bar{\tau}^2$$

$$(N_1 - N_2)\bar{\tau} = \Delta \bar{t}$$

$$\frac{\sigma_1^2 - \sigma_2^2}{\Delta \bar{t}} = \tau$$

$$\frac{\sigma_1^2 - \sigma_2^2}{(\Delta \bar{t})^2} = \frac{1}{\Delta N}$$

$$^4 \sim \frac{1}{\sqrt{N}}$$

$$N \approx \frac{(\Delta \bar{t})^4}{(\sigma_1^2 - \sigma_2^2)^2}$$

$$N\tau = \frac{(\Delta \bar{t})^3}{\sigma_1^2 - \sigma_2^2}$$

$\sqrt{e} = 1.65$ ✓

$e^2\sqrt{e} = 12.1$

$\sqrt{12.1} \cong 3.5$

$\frac{f}{f}$ Factor between 3.5 and 5
larger than ~~3.5~~
$\tau > 2.5$
if we go out to $\frac{1}{45}$

$\Delta > \tau + \bar{t}_2 - \bar{t}_1$

$\Delta > \tau + \bar{t}_2(si) - \bar{t}_1(si)$

$\sigma_1^2 - \sigma_2^2(s)$

$\sigma_s^2(en) \times \sigma_{s1}^2(ge)$ $= \{\sigma_s^2(en) + \sigma_{s2}^2(ge)\}$

$\sigma_1^2(s) - \{\sigma_2^2 s\}$

$\sigma_1^2(s) - \sigma_2^2(s) = \sigma_{s1}^2[ge] - \sigma_{s2}^2[ge]$

~~$N_1 - N_2$~~

$\frac{N_1 (\sigma x)^2}{0.08}$

Neutrons: shift in $\bar{t}(m_0)$

$$\sigma^2_{math(ge)} = \frac{N_0}{2} + \frac{N_0 - \Delta N_0}{4}$$

$\Delta N_0 = 0$ ; $\sigma^2_{math(ge)} = \frac{3}{4} N_0$

$$\sigma^2_{0\,obs} = \sigma^2(en) + \frac{3}{4} N_0 \tau^2 - \frac{\Delta N_0}{4} \tau^2$$

$$\sigma^2_{math[obs]} = \sigma^2 en + N_0 \tau^2$$

$$\boxed{diff = \frac{1}{4} N_0 \tau^2} + \frac{\Delta N_0}{4} \tau^2$$

$$\bar{t}_{m_0} - \bar{t}_0 = \frac{\Delta N_0 \tau}{2}$$

$$\frac{diff}{\bar{t}(m_0) - \bar{t}_0} = \frac{1}{2} \frac{N_0}{\Delta N_0} \tau + \frac{1}{2} \tau = \frac{1}{2}(\sqrt{N} + 1)\tau$$

$$= \frac{1}{2}\left(\frac{N_0}{\Delta N_0} + 1\right) \tau$$

$$\frac{diff}{(\bar{t}(m_0) - \bar{t}_0)^2} = \frac{4\left(\frac{1}{4} N_0 \tau^2 + \frac{\Delta N_0}{4} \tau^2\right)}{(\Delta N_0)^2 \tau^2}$$

$$= \frac{N_0}{(\Delta N_0)^2} + \frac{1}{\Delta N_0}$$

$$= 1 + \frac{1}{\sqrt{N_0}}$$

---

$$\sigma^2 diff = \frac{n}{2} \tau^2$$

$$shift = \frac{n}{2} \tau \qquad \frac{n^2}{4} \tau^2$$

$$\frac{(shift)^2}{diff\,\sigma^2} = \frac{1}{2} n$$

$$\bar{t}_1 - \bar{t}_2 = \frac{\sqrt{N}}{A}$$

$$\boxed{\frac{\sigma_1^2 - \sigma_2^2}{\Delta \bar{t}} = \tau}$$

---

$$\frac{\sigma_1^2 - \sigma_2^2}{[\Delta \bar{t}]^2} = \frac{1}{\frac{\sqrt{N}}{A}}$$

$$N\tau =$$

$$\frac{\sqrt{N}}{A} = \frac{[\Delta \bar{t}]^2}{\sigma_1^2 - \sigma_2^2}$$

$$\frac{N}{A^2} = \frac{[\Delta \bar{t}]^4}{[\sigma_1^2 - \sigma_2^2]^2}$$

$$\boxed{N\tau = A^2 \frac{(\bar{t}_1 - \bar{t}_2)^3}{\sigma_1^2 - \sigma_2^2}}$$

---

$$\left(\frac{N}{2}\right)^2 + \left(\frac{N}{4}\right)^2 \quad \sqrt{\frac{N^2}{4} + \frac{1}{16}}$$

$$\sqrt{\frac{3}{4}N} \quad \sqrt{\frac{3}{4}}\sqrt{N} = \frac{1.7}{2}\sqrt{N}$$

$n \approx 3$ or $4$

$\sigma_0^2 - \sigma^2(\text{mothers}) = \frac{n}{2}\tau^2$

shift is $= \frac{n}{2}\tau$

$$\frac{\sigma_0^2 - \sigma^2(\text{mothers})}{\text{shift}} = \tau$$

~~$\left[\frac{\sigma_0^2 - \sigma^2(\text{mothers})}{\text{shift}}\right]^2$~~

$$\frac{\text{shift}}{\tau} = \frac{n}{2}$$

$$\frac{[\text{shift}]^2}{\sigma_0 - \sigma^2(\text{mothers})} = \frac{n}{2}$$

$$n = \frac{2[\text{shift}]^2}{\sigma_0^2(\text{obs}) - \sigma_m^2(\text{obs})}$$

~~$\int_{-\infty}^{\infty} x^2 e^{(x_0 - x)^2} dx$~~

$\int (x - x_0)^2 e^{-(x_0 - x)^2} dx = \sigma^2$

$x^2 - 2xx_0 + x_0^2$

$y - 2x_0^2 + x_0^2 = \sigma^2$

$y - x_0^2 = \sigma^2$

$y = x_0^2 + \sigma^2 = (\bar{\tau})^2 + d^2$

Sayers [illegible]

Swed, Norway, Denmark

England

Alfred Sauvy — Director of the Inst. Nat. des Études Demographiques

↓

Med. Gen. — ~~[illegible]~~ [Sutter]

David Glass Demographer
Popul. Gen: Prof London School of Economics

~~Allan~~ Stevenson Oxford Med Res Unit

J. V. Neel (Human) U.S.
~~[illegible]~~ Gen.
Univ of Michigan; ~~[illegible]~~ Med School

Haldane

B. Benjamin Chief Stat. Ministry of Health London

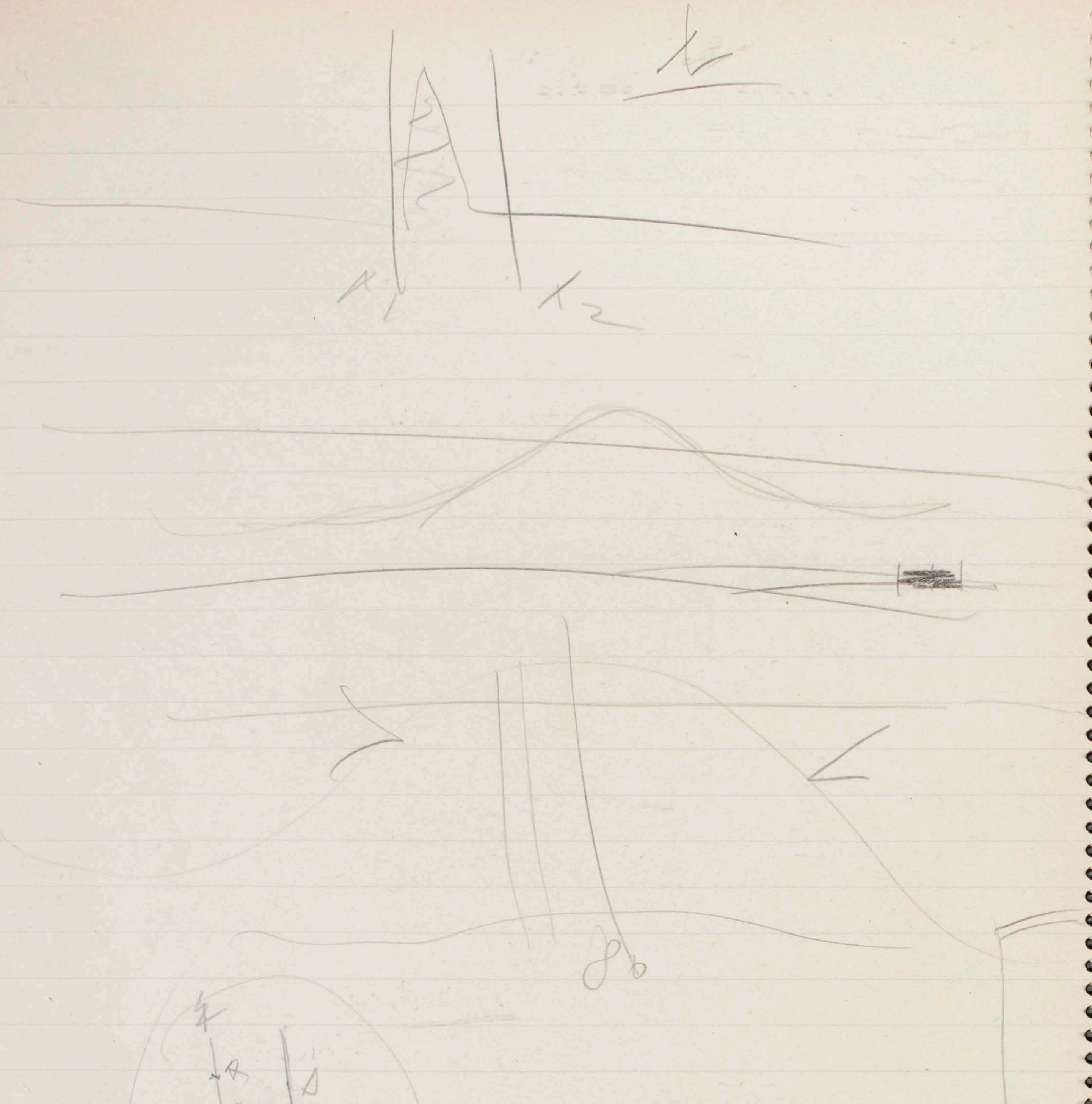
Somerset House Strand London
Gen. Register Office

Hague. T. Van den Brink
Central Statistical Office Hague
Ost-Duinland Str.

N.Y. Population Branch U.N.
Mr Durand

Spiegelman [Metrop. Life]

Dr Sanghvi [WHO] Med. Gen.



$\sigma^2_{new} = n\bar{\tau}^2 + n\lambda^2 + \sigma^2(en)$ 1/

$mothers^2 = \frac{n}{2}(\bar{\tau})^2 + \frac{n}{2}\lambda^2 + \sigma^2(en)$

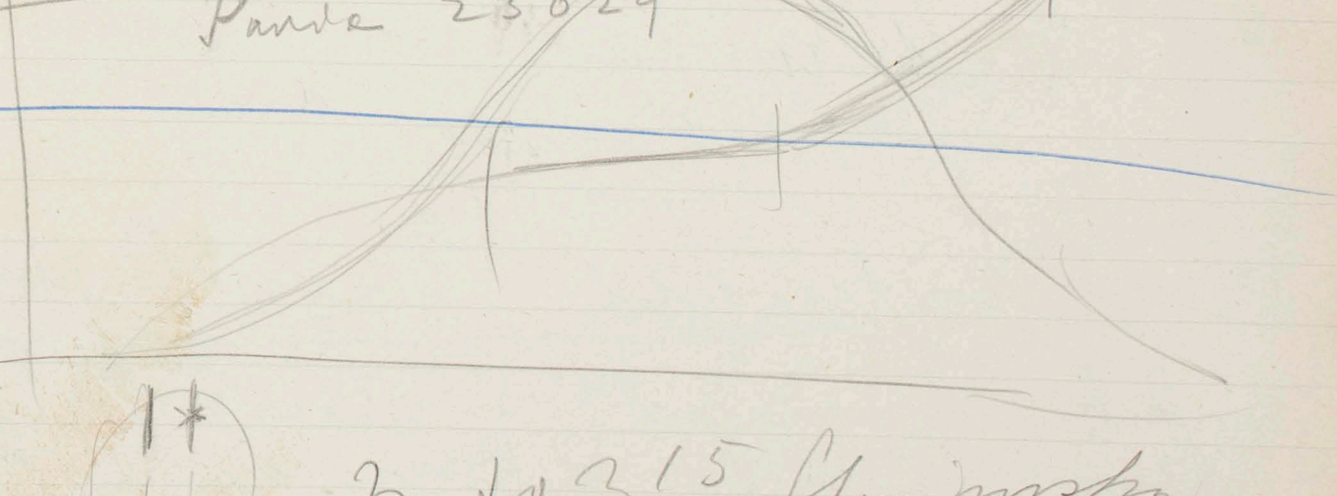
$n\bar{\tau}$ is known = A

What is probab. that if an indiv. is perfect brother also perfect?

CAVALLI – SFORZA
(1156)

Hotel "de Wittebrug"
(opposite Madurodam)

Waddington 11 30 AM
10 30 Admit
Brenner 2 pm
Cavalli Milano 634706 7 30 – 8 00 | 9 15 pm 10 pm
Pavia 23029



1*

3 to 3 15 Glinowsky

[illegible] Hypothesis

4.) Stent

N terminal ; Methylamine
Threonine

Brenner

Waddington
Penrose

Darlington   Prof of Botany
Oxford

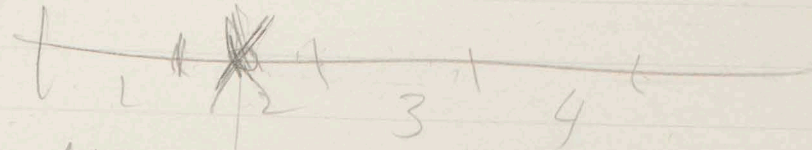
R.A.
Alan   Beatty 6 pm

c/o Waddington

Steut

M

(1.)



Hierarchy { Sabin U.C.L.A. / Ames

Haemaglobin Itano N.I.H.

2.) Modulation

down and up modulation

{ Ames / Hartman

2.) b.) Polarity mutants

say, "2" knocked out

3.) Operator O

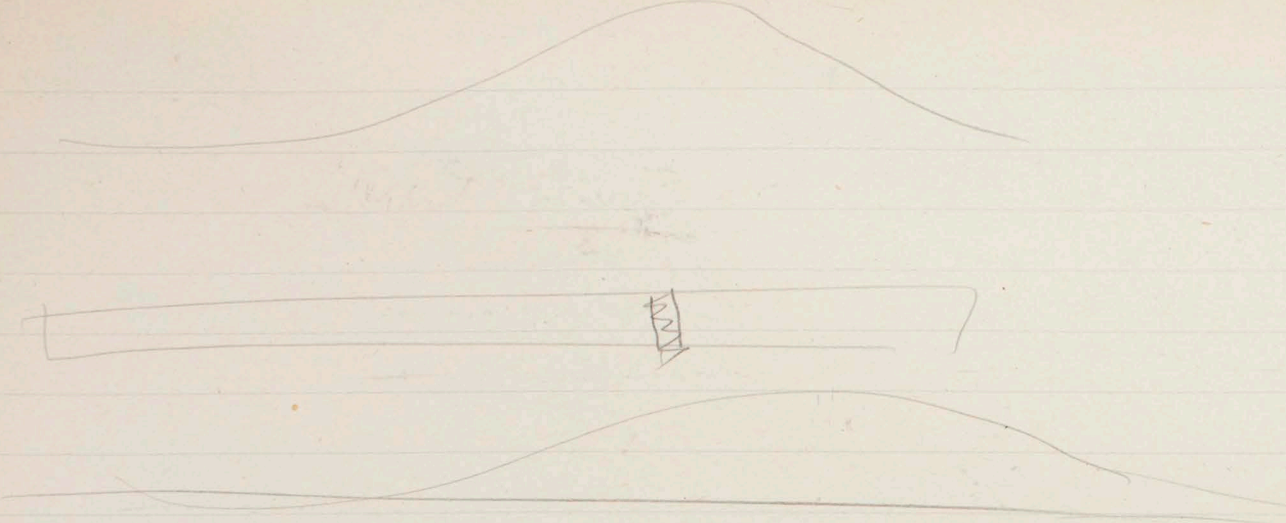
Beckwith (Pardee)

Suppressor mutations. → β galactosidase

original "nonsense"
suppressor makes "sense"
also phenotypically several
Fluorouracil

---

Buzzati || Hotel Brazil



Hardy - Weinberg

D. S. Falconer an introd. to Quantitative Gen.

Oliver & Boyd London Edinburgh

(1959)

65 sq/ pul (net)

4.000,000 unfurnished

Stadman

---

Hotchkiss Roma Pension

Pension Werder –

---

Slonimski

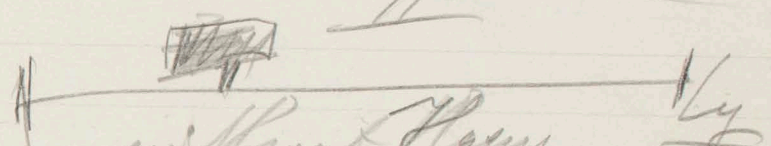
Cytochrome C

Yeast

---

(I)

II




0.015%

without Haem
repressor

Pjabr

Gif s/Yvette

Slonimski Laboratory of Genetics

office (928)4676

Home (928)5490

---

Armadillos

---

Commonwealth Bureau of
Animal Genetics

Inst. of Animal Genetics

West Mains Rd

Edinburgh 9.

[Newington 1081
near Edinburgh]

~~Napier~~ R.A.N Napier

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NORFOLK

ENGLAND

1 cage N15

rabbit year — N 6

500 rabbit { N 12,000

N25/rabbit

N4.000000 volume Turkey

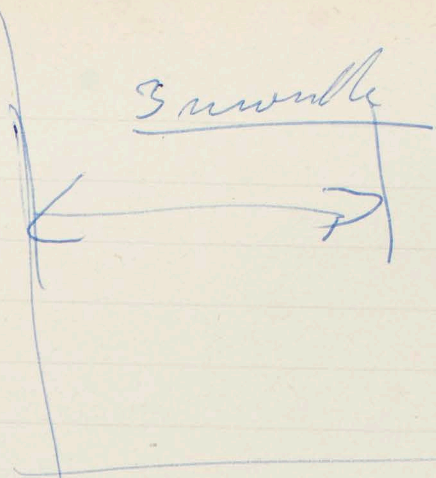
Handbook on Biological Data (U.S.A.) (1960) W. S. Spector

~~Volume on Longevity~~

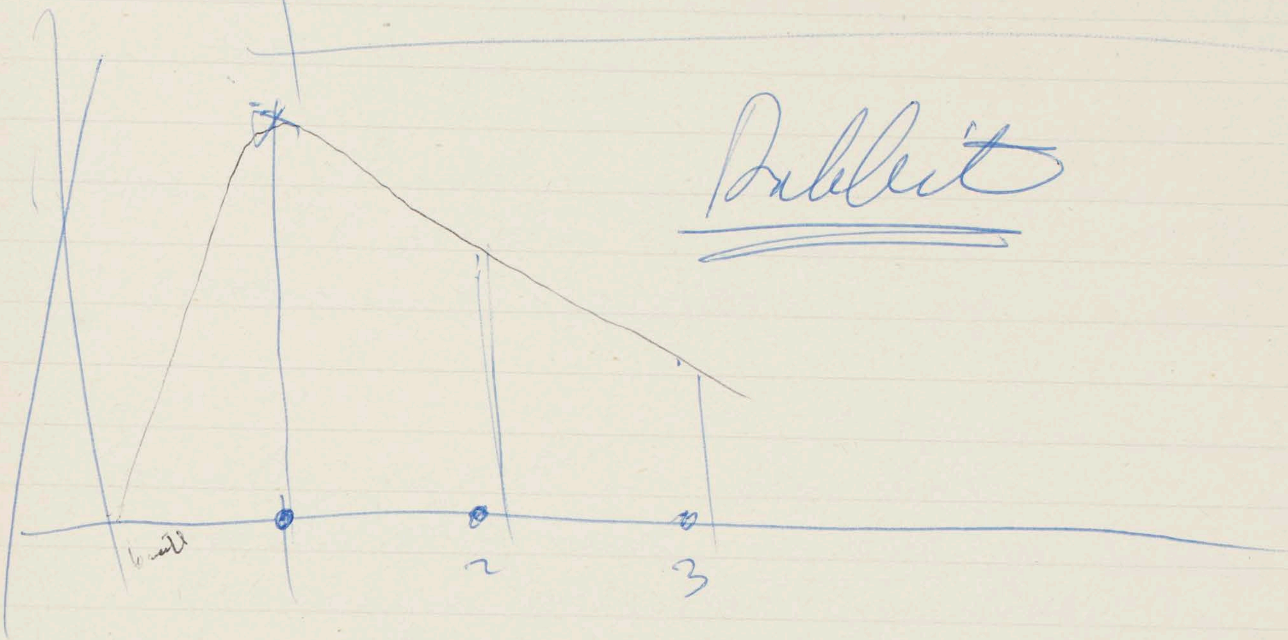
Lifespan

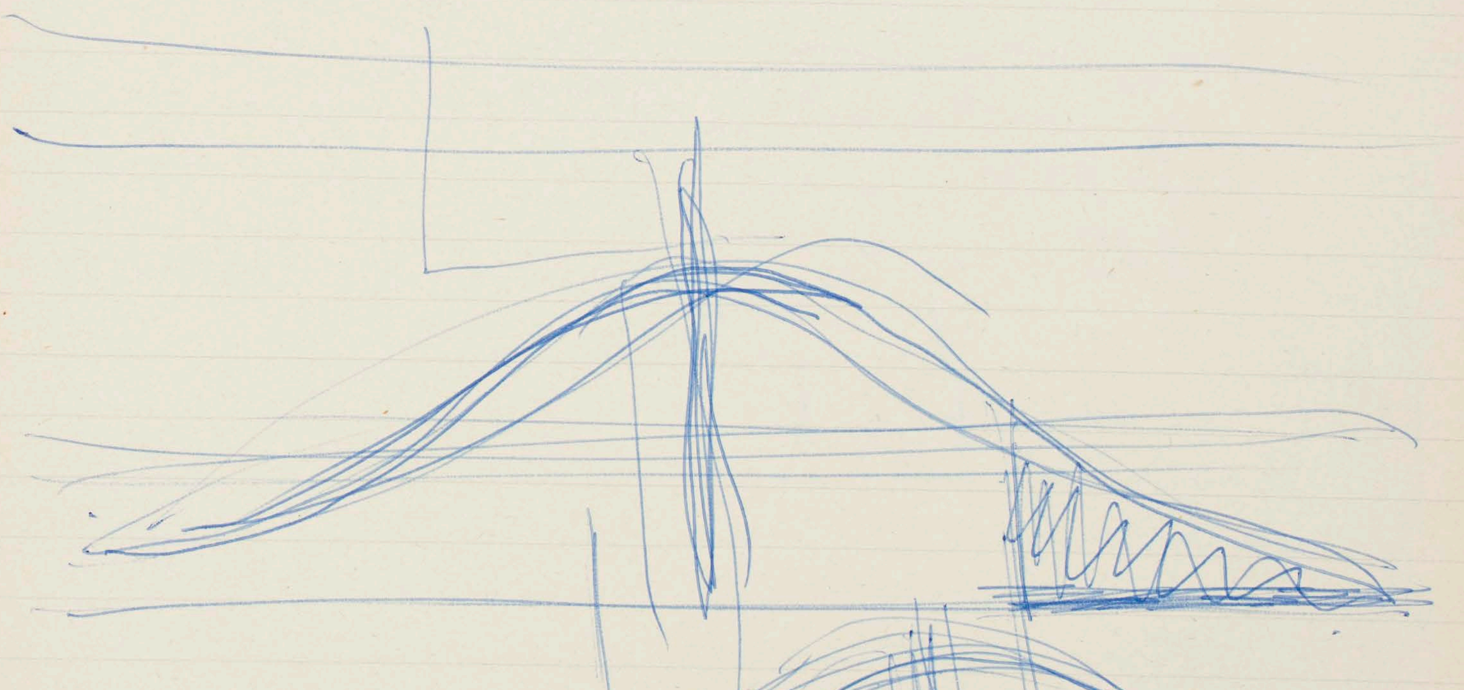
Dr. J. Hancock
J. L.
Animal Breeding Research Organ
6 S. Oswald Rd
Edinborough 9.

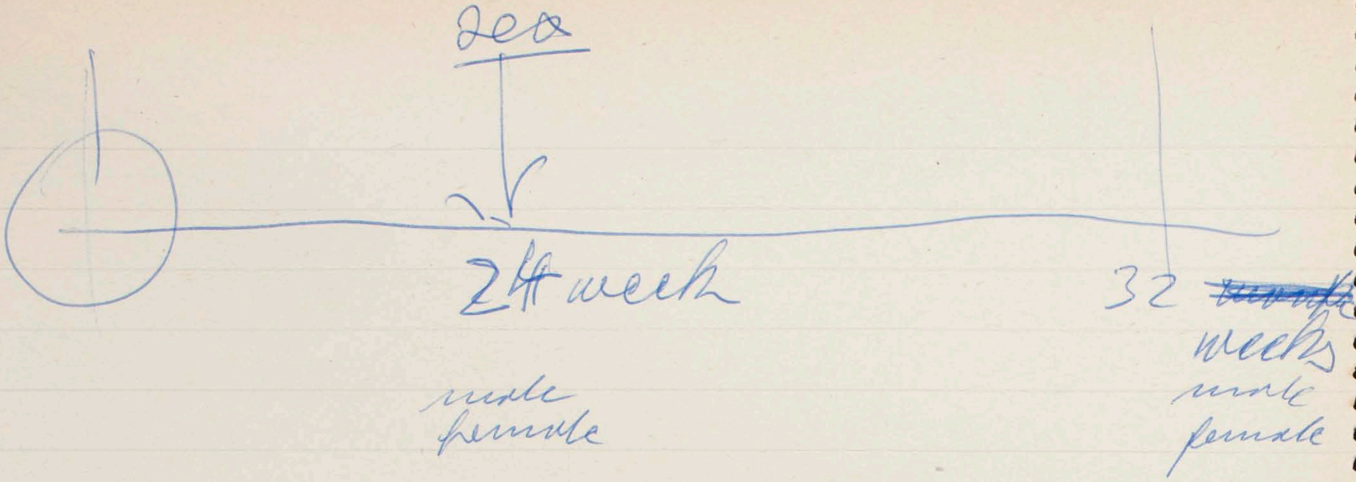
Hotel Edinborough
Lygon Hotel




Dobbelt






Turkey

Quail 6 or 8 week per generation

Change of sex in amphibia

Witschi & Chang (Toad)

$$\int (x-y)^2 e^{(x_0-x)^2} e^{(y_0-y)^2} \, dx\,dy = \int (x_0 - x - \{y_0 - y\})^2$$

$$y_0 + \bar{y} - 2\bar{x} \qquad = (x_0-x)^2 + (y_0-y)^2$$

$$2\sigma^2$$

$\sigma\sqrt{2}$ is about $\sqrt{(x-y)^2}$ x.

Howard J. Curtis
pp. 686 – 694 Aug 23 /63
Science Vol 141 No 3583

H. J. Curtis Radiobiology S. L. T. Ilbery
Ed. Butterworth, London 1961 p. 193

Age of mother at birth, effect on longevity
P. A. Jacobs, A. G. Baikie, W. M. Court-Brown,
J. A. Strong, Lancet 1959 – I p. 710 (1959)

C. Crowley and H. J. Curtis
Proc. Nat. Acad. Sc. 49 626, 1963
(Chromosome aberrations in livers)

~~H. J. Curtis and C Crowley~~

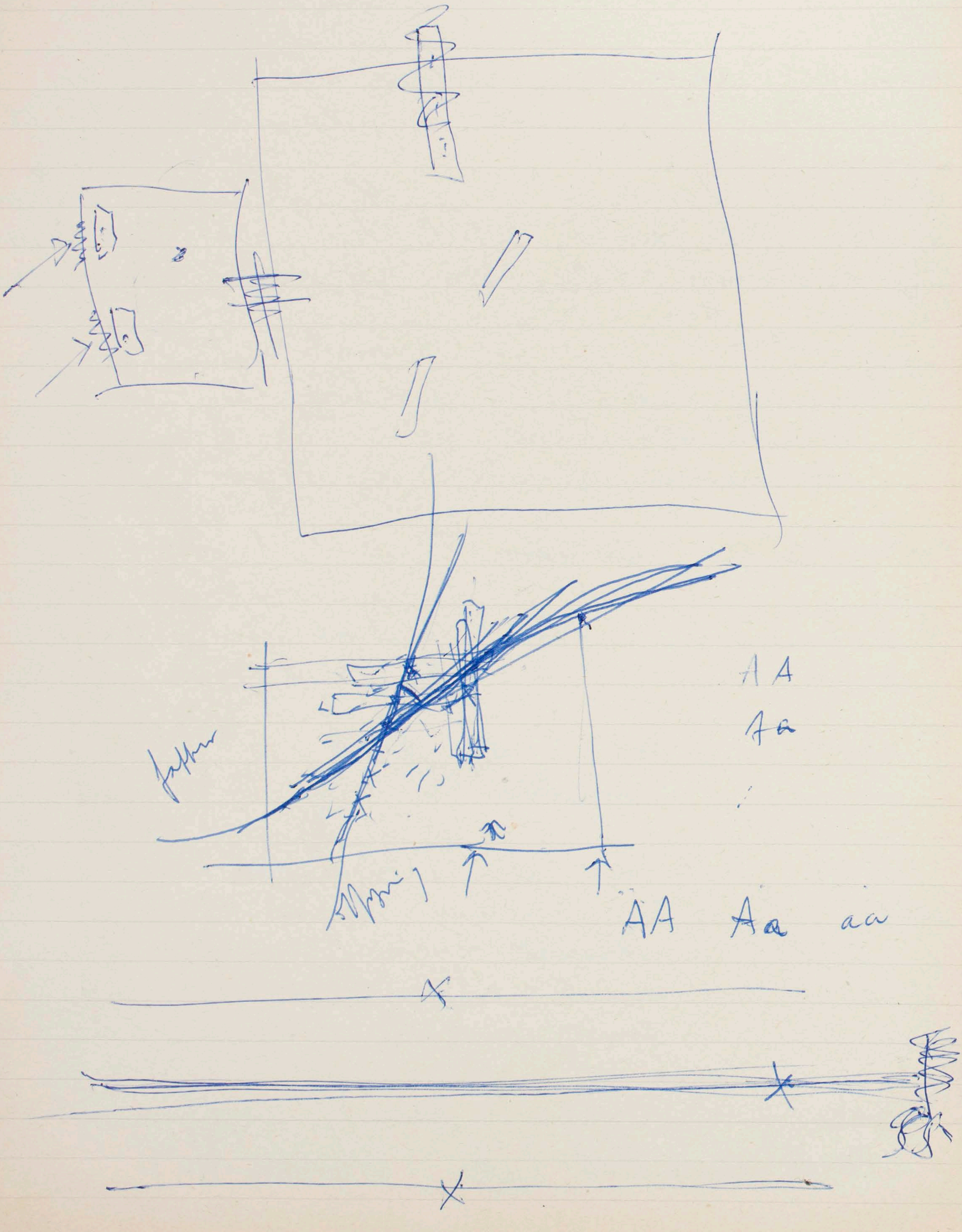
K. J. Stevenson / H. J. Curtis Radiation Res. 8
15, 774, 1961

Curtis and Crowley
Radiation Res. 19 337. 1963

Curtis p. 692 "It has been estimated that the human brain loses without replacement, about 10,000 brain cells every day."

Curtis, Chairman, Biology Dept
Brookhaven Nat. Lab. Upton. N.Y.

$$\int (x-y)^2 e^{-y^2} e^{-x^2}\, dx\, dy$$

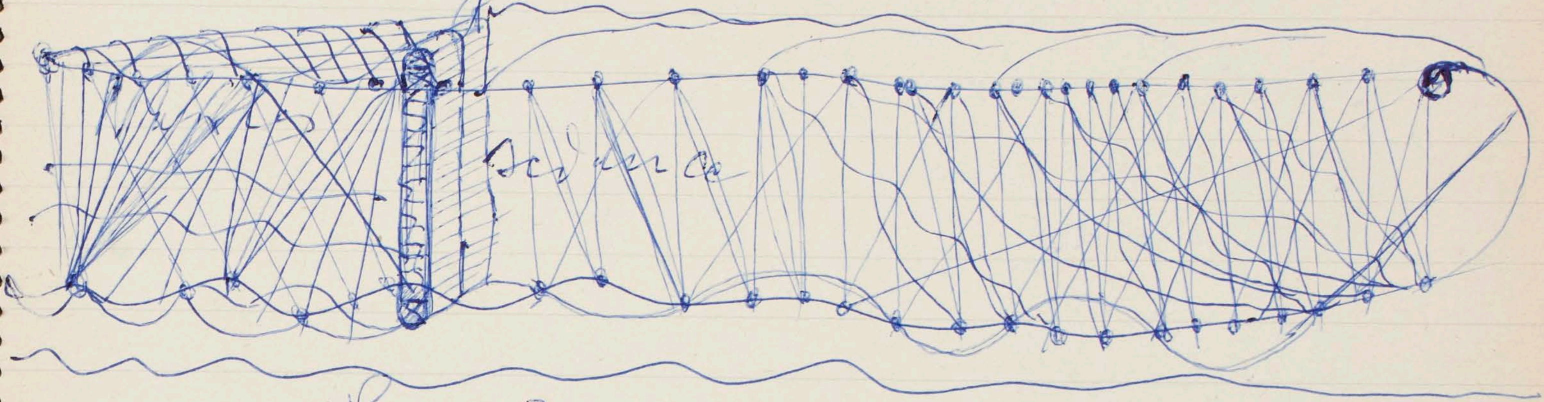


H

oocytes of urodeles

lampbrush chromosomes

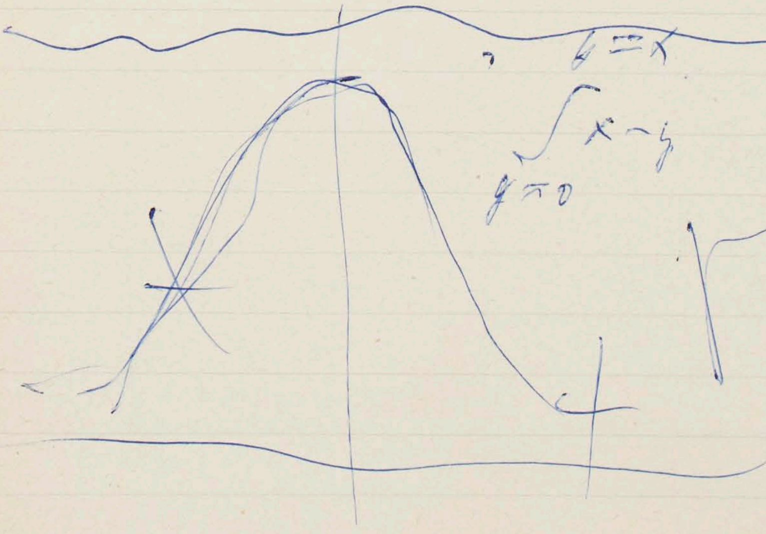
H. G. Callan



$$\int_0^\infty x e^{-x^2} dx = \frac{1}{2}$$

$$\int_0^\infty x^2 e^{-x^2} dx = \frac{\sqrt{\pi}}{4}$$

$$\int_0^\infty e^{-a^2x^2} dx = \frac{1}{2a}\sqrt{\pi}$$



$$\int_{y=0}^{y=x} x-y$$

$$\overline{|x-y|} = A$$

$$\sqrt{\overline{(x-y)^2}} = B$$

$$\frac{A}{B}$$

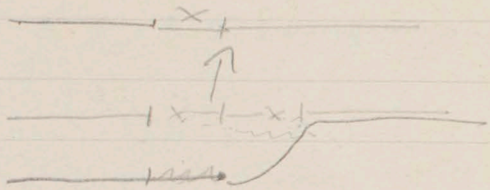
2000 sec

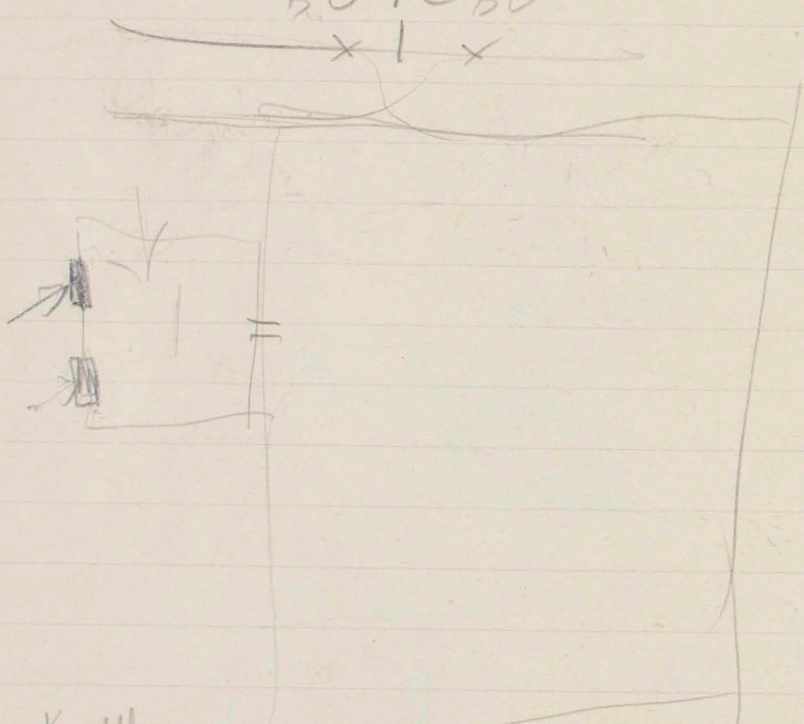
$50 \times 400 =$

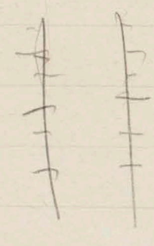
~~10~~

~~20000~~

20,000





p A

q a

$p+q=1$

Kernfthen

| | AA | Aa | aa |
|---|---|---|---|
| AA | p | | |
| Aa | q | | |
| aa | o | | |

$$\int (x-y)^2 e^{x^2} e^{y^2} dx$$

$\sigma\sqrt{2}$

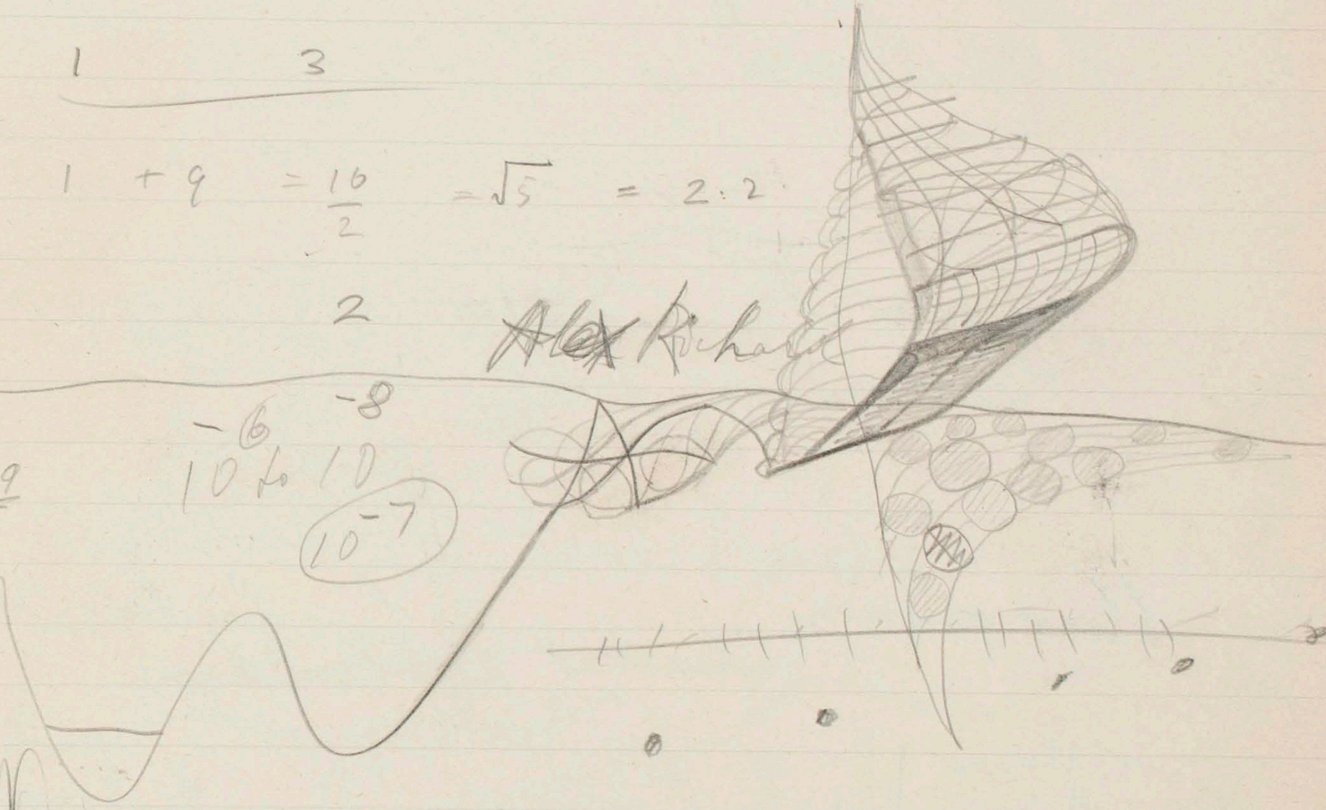
$|x-y|$

$10 = \frac{14.5}{\sqrt{2}}$

1 3

$1 + 9 = \frac{10}{2} = \sqrt{5} = 2.2$

2



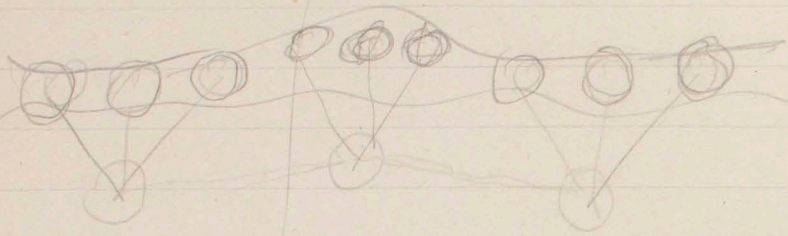
$10^{-9}$

$10^{-6}$ to $10^{-8}$

$10^{-7}$

$5 \cdot 10^{8}$

$$x - y = \int \left[ (x - \bar{x}) - (y - \bar{y}) \right] (x,y)$$



Zoology:

Parker, Haswell

Seymour Papert c/o Piaget

36

Chicken geneticist, Gilmore

blood groups School of Agriculture Cambridge

~~Gordon~~ Dennis Healy 45 ~~Foreign Sec~~ Defense.

Gordon Walker 55 Foreign Sec.

David Ennals (close to Wilson) <

Transport Mo VIC 8434

Park 5503 Dick Taverne (30) M.P.

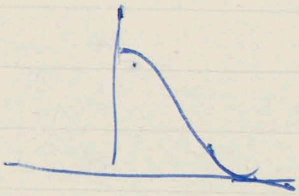
→ Wedgewood Benn M.P.

Victoria 7764 George Wigg

Anderson M
Norman Johnson
Sept 7th /63

# Ageing theory

$$\sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}} = \sigma \qquad \frac{\Sigma|x-\bar{x}|}{n} = \text{mean deviation}$$



$$\frac{2}{\sqrt{2\pi}}\int_0^\infty x e^{-x^2/2}\,dx$$

2,63 hrs / 4.3

62 / 12

$$\overline{|x_1 - x_2|} =$$

$$\Sigma(x_1-x_2)^2 = 2\Sigma(x_1-\bar{x})^2$$

Günter Grass
Katz und Maus Rohwolt RoRoRo
oder Blech Trommel
(Tin drum)

M. L. D.

(Henry Owen)

Harry Rowen

---

General Pierre GALLOIS
6 ~~Avenue~~ Rue Rembrand. PARIS. 8.
(Bloch-Dassault)

---

Franzosen sagen:

in West Germany = Prof. Scheuner - Bonn University
Theo Sommer - Zeitung "die Welt" Hamburg
Wilhelm von Cornides - Europa-Archiv - Bonn -

---

Mikhail I. Bruk,
Senior Editor, the Novosty (News)
Press Agency, Pushkin Square,
Moscow, U.S.S.R.

---

Arnaldi (Edoardo) Home 80-28-91
Office 49-50-360

Cugliatti (Vincenzo)
Off: 49-03-24

---

Monsignor: Moretti | Claudio Botte

Helfmuth Schmidt
Theo Sommer

Salvinucci: Pap. Acad

Msgr. P MARCINKUS
VATICAN CITY

---

François de Rose || Gen Gallois
André Beaufre Pierre, Dassault Aircraft Co
André Fontaine Le Monde → Instr for Strat. Studies

The Editor CERN 342050 320040 N 314950 Prawina

John Freeman
New Statesman
10. Gt. Turnstile | W.C.2
Ldn

1100 — 3000 - 4000 words

Encounter
The Editor ; Melvin Lasky
25 Haymarket S.W.1
4000 words!

Unilateral disarmament

Wayland Young : 100 Bayswater Rd, London W.2.
(Lord Kennet) AMBassador 4187.
KENNET

ALASTAIR Buchan.

David Wheeler B.B.C.
Oct 6 / 63 Panorama, 50 min Mon on 8²⁵ pm

Eckart Heimendahl, Bremen, Oberneulander Heerstr. 23 -
office: Radio Bremen, 44041

R.P DUBARLE
35 Rue de la Glacière
PARIS 13e

For de Gaulle:
Etienne BURIN_DES_ROSIERS_ Président de la République — Palais de l'Elysée. [Genl Secretary of the P.]

Pierre GENEVEY - Secrétariat général de la Défense nationale - 51 Boulevard de Latour Maubourg. Paris (VIIe) SOL 4204
(Conseiller pour le désarmement)

~~[illegible]~~ L.A.; F1 hybrid of two mouse inbred strains

irrad mice of F1 hybride

life shortening

Bar Harbour; Green and Storer | mouse exp. in progress

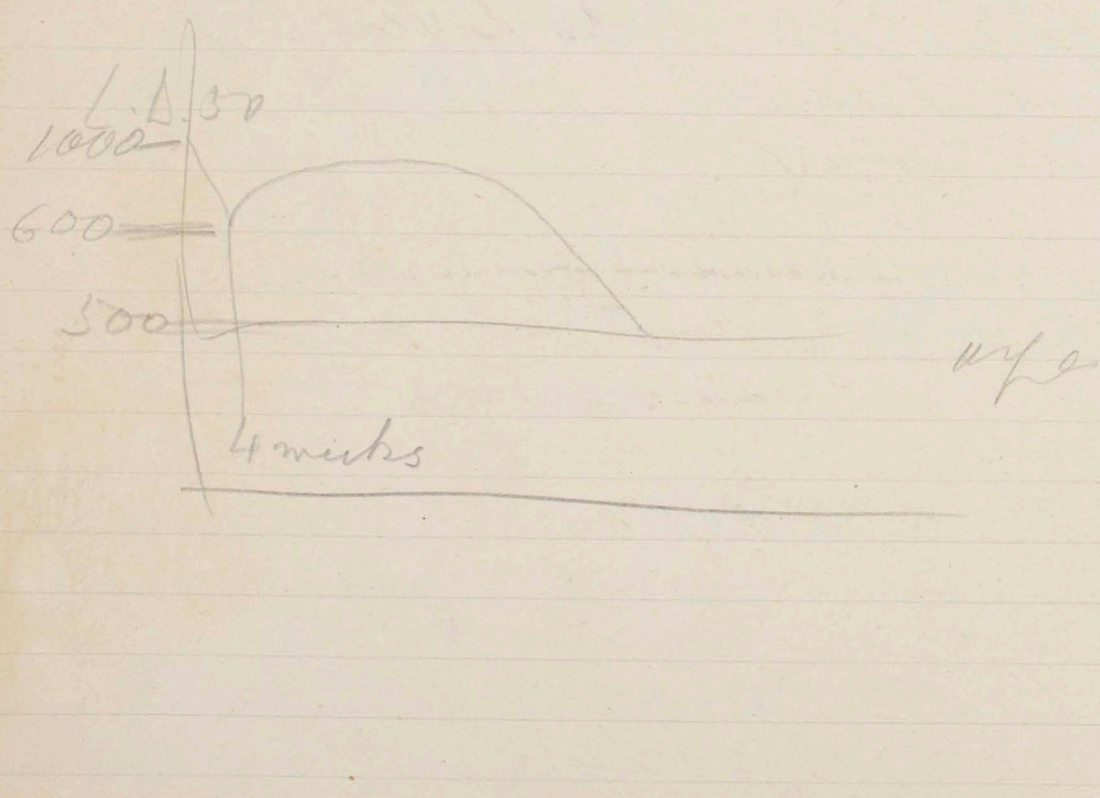
irrad inbred strains and then form hybrid.

in other mouse work 2% life shortening of irradiated animal per 100 r. —

---

25 sec N2 breathing gives full protection

effect on L.D.50



W.
Ballogh Birkbeck Coll.
Dept. of Zoology

Mouse-liver

Cornea | Glass

K. Lüning; Carolinska Inst.
genetics
Inbred swiss albino male
fathers x six gen of 200 r;
brother sister | "outbreeding"
mean lifetime 90 weeks

patricia
a subclone of A strain, inbred for 30 gen
mean life 110 weeks
single dose 350 r to father for
3 generation
no inbreeding

Russel | rats semi inbred
neutrons | ~~1st gen~~
irradiate male
F1 has same life
shortening as irradiated population

Gerald Leach. 110 Regents Park Road
London NW1
[PRImrose 3776]

BBC Producer: Philip Daly. BBC Television
Centre [SHEphards Bush 8000]
will contact you in Geneva sometime ~~[illegible]~~ in
next few days about long film interview.

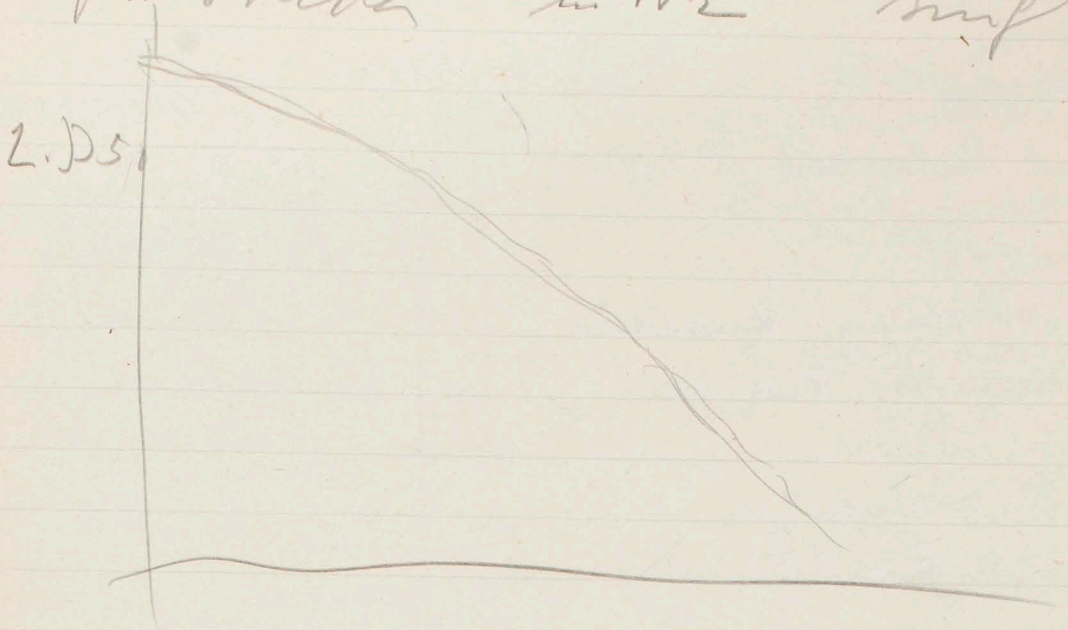
Buzatti (Home) 35-66-816
office Dr. Forti 4682
via Lucania 29 CNEN
c

830 pm

Prof Giacomello

Piazza Navone

Patricks in $N_2$ single dose




Alt work – Revesz with Klein

in $N_2$

D 37 for Tumor cells

Diploid    Tetraploid

300 r    500 r

(150 r in Air)

P.L.

Krohn, Dept of Anatomy
Birmingham (Ovid Schiadol)

H.B. Chase    greying of mice. —

Patricia Lindop

WORK CLErkenwell 0661 ext 126

Home ESDALE SPEedwell 5860

58, Wildwood Rd

N.W.11

41 Portland

Stiftung Volkswagenwerk Hannover Gustav-Brandt-Str. 7 (Tel. 887657)

KLAUS VON BISMARCK
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Präsident des Wiss. Rates

Prof. RAUPACH, München,
Institut für Ostforschung

Prof. BERGSTRÄESSER, FREIBURG

Kerscher

Prof. Rothfels (Publikation der Akten der A.A.)
Auswärtigen Amtes

Kröning, Waldemar

Steven Muller:
Carl Mommer (CDU)
Uwe Nehrlich (Comidos)

Amerikaner

Gerold Freund Rockefeller Fo
Kurt Meselson
Steven Muller
Ernst Haas
(? Carl Friedrich ?)
Franklin Lang
Bob Jenner
Stanley Hofmann
Fred Warner Neal

Klaus Gottstein

12 - 15

[6507 Ingelheim], Stiegelstr. 48
am Rhein

H.

Kalter: Richard v. Weizsäcker

Picht (George) Leiter der Forschungsstelle der Evang. Forschungsgemeinschaft Heidelberg

Max Planck Inst.

Helmuth Becker, für Bildung Forschung

{ Klaus Gottfried: Inst. Wissenschaft und Politique; München

Afheldt; V.d.W. [100] [ ] → (861530)

{ Hamburg: "Die Zeit" Gräfin Dönhoff —
~~Theo Sommer~~ ( Senator ) Helmuth Schmidt (SPD)
anders Juges (Wilhelm)
Bonn: Europa Archive Cornides (Editor)
{ Deutsche Gesellschaft für auswärtige Politik
Studiengruppe für Rüstungskontrolle

---

Fritz Erler
Gerstenmaier
Schröder (politician)
Brandt
? Guttenberg (C.D.U.)?

[Wehner]
no use
to us?
pro de Gaulle

---

~~Axel von dem~~
A.v.d. Bussche — aus Basel — Freund von Richard W.
Dr. Günter Howe v. — Mathematiker, Physiker — Heidelberg
General Graf Baudissin, Fontainebleau (Nato)
Oberst Roth, Hamburg-Blankenese — contact mit Afheldt
Bischof Kunst, Bonn — offizieller Vertreter der Evgl.-Kirche

Baudissin
Howe } c/o Richard von
Picht Weizsäcker
(near Wiesbaden)

6507 Ingelheim, Stiegelstr. 48
[C. H. Boehringer Sohn, Ingelheim]
Pharmazeutical Co.

Reginald Paget (

Tuesday night dinner B.B.C.
Wd lunch ~~[illegible]~~ BBC shaw
Th lunch ~~[illegible]~~ Crossman
Fr. W. Benn / no lunch dinner Black
Sat lunch Nicholson 1¼
Sun
Mo ~~[illegible]~~ Napier
Phone Vic 7764 Monroe Blackett
Phone Wigg 3 pl – Beard Holborn 8441
Phone Sir Aubrey Jones
~~Wd 5³⁰ Gunnats~~
Dennis Healey 3³⁰
St. Stevens Bldg
Westminster Tube Stat.
Tu
Wd 1 pm Alan Gwynne Jones
Wd 5³⁰ Gunnats
Mountbatten 3130
Transport Ho
Smith Sq

Army Navy Club (the Rag)
St James' Square
3³⁰
Com Haymarket 25 (Panton Str.) Encounter

B.B.C. Tonight 7 05 7 45 H
Anthony Smith 36 ii
SHE 2000

Fox ; Grist Tahn (domestic)
David Wheeler (foreign)

~~[illegible]~~ Iain Macleod. ; Humphrey Berkeley
R.A. Butler Lord Hailsham
Duncan Wilson → P. . . . . . . .
Aubrey Jones

9 Vincent Square
1 pm

KINGS ~~[illegible]~~ || Cambr. 50411
(5285) Home
[Ed Shils]

Lasky TR 4561 [~~[illegible]~~ Bryan Mealing]
M. J. Lasky → 3 30 pm Panton. – Encounter 4th fl
HAYmarket 25

Aron Glicksman Sutton Branch Vigilant 6011
Home Downland 1434
Flaxman 8171 Chipstead [DL 5]
Ext Prof Smithers office Surrey DL
Tu 10 miss Daniel
~~Lamerton Maynard~~
Charter House Sq E.C.1. New Sc. Bldg.

Lorant Goldschlaeger
40, Avenue Rd N.W.8
Office TR 2775 Primrose 3362

~~Bruno~~ ~~Robert~~ 2 Schrecker P.M.S. ~~Blackett~~
3 WIM 2610 48 Paulton Sq S.W.3
FLA 3228
7 30 pm

Very recent therefore (2)

When normal cells ~~from non injected animal~~ are injected in paralysed host then after 5 days you can get antibody with adjuvant.

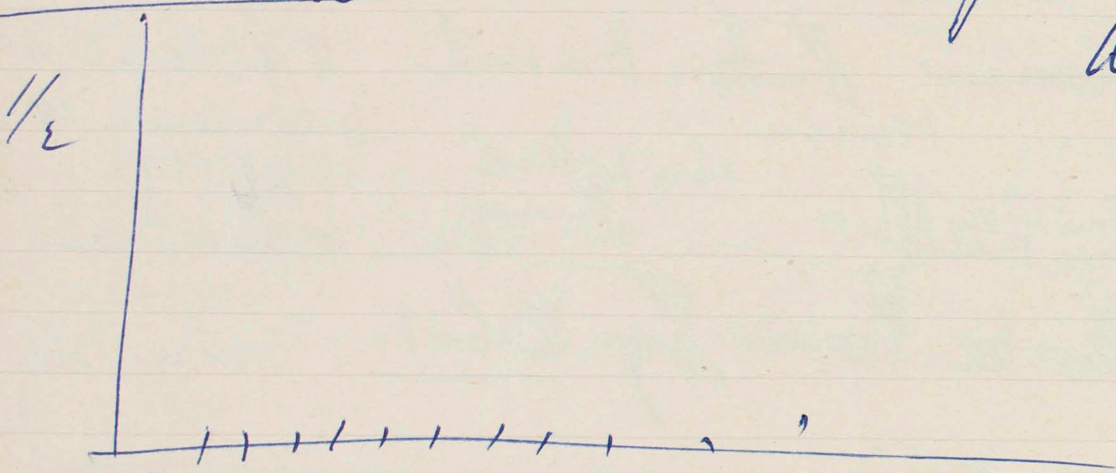
When an animal gets a paralysing dose of antigen and transplant cell in ~~a paralysed~~ host within two hours

now wait 5 days, now immunize with adjuvant. — no antibody. —

---

~~Infekta~~

All ... cell transfer exp. with albumin



Biology H.
Lecture (surgical)

Hutchison; David Dresser

B.C.G. fraction ~~S~~ SS (75) less or no ~~not~~ antibody made

~~Not~~ not antigenic in mice (unless
5
12, 6 adjuvant)
11, 6
3. 6 Bov. albumin in mouse half life
10 19 hours. —
6

γG has half life 4 days
~~R~~ Responsiveness returns between
3. to 6. months. —
Removal of thymus avoids return
of responsiveness. —

~~Paralyzed~~ Paralyzed animal
will make antibody if it receives ~~cells~~
forbidden
cells from an immunized animal
which makes antibody. —

Paralyzed animal receiving
cells from not immunized
animal is capable of making
forbidden antibody (lymph
cells.) — 5 x $10^6$ cells! —

R. D. Clarke — Prudential
B. Benjamin — Ministry of Health
Wilfred Perks — Pearl
PERKS
F. M. Redington — Prudential.

Ed - Lew

The ancestry of the Lang Edward
Raymond Pearl

$\log = a + bx$

Gompertz $\mu_x = Be^{\alpha x}$

Makeham $= A + Be^{\lambda x}$

Perks $= \dfrac{A + Be^{\lambda x}}{1 + De^{\lambda x}}$

Newsbeat H
HSA; BSA
Rublicht 8 day to life

- ~~D~~ time ~~after~~ at 3 days
times

---

~~Mr~~ Critchley (Julian)
M. P. conservative recommended
by Marc Arnold-Foster
Tel: Park 1975

---

Col: Alvin Gwynne Jones
~~FLA~~ FLA 8841 ~~[illegible]~~
The London Times
Printing Ho Sq
Off: CEN 2000 London EC4
~~[illegible]~~ Army / Navy Club
the Bay Wdn
St. James Sq 1 pm

---

1300 words — Voice
(Louis Heren World)
Conservative
Julian Critchley

20,000 England
7,000 U.S.
10,000 Europe

~~Horge~~ 800 words

Remember 5000 word
deadline 20 (25th) comes a month later

Dr. Auerbach Animal Genetics (Waddington) Edinborough. —

---

Armadilla

Bar Harbour; inbred rabbits

A

B

C

---

Are there inbred lines in Brazil; George Clayton c/o Waddington

or Hans Abplanalp, Poultry Husbandry, Univ of Cal Davis Col. —

---

Inbread lines in Chicken use blood groups. there are; artificial insem feasible. — ask Dr. Gilmore. — School of agriculture Cambridge

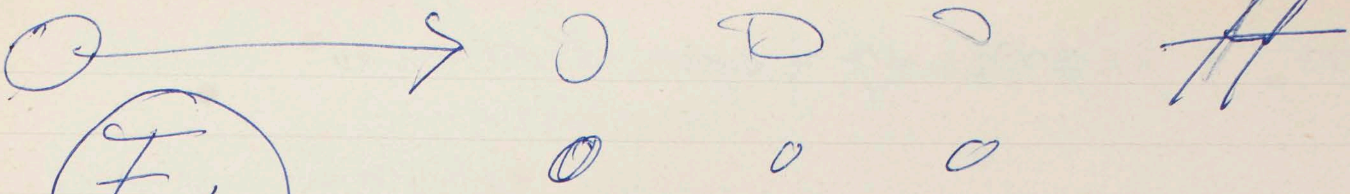
---

In Turkey you could use colors.

---

Chicken lives to 15 years!

AB AB



(F1)

Turkey    28 day for hatching    + 36 weeks

100 eggs    10 day one    10 days 3 etc.
fewer or 5 months
10 females each gives 12 fertilized eggs
within 4 weeks

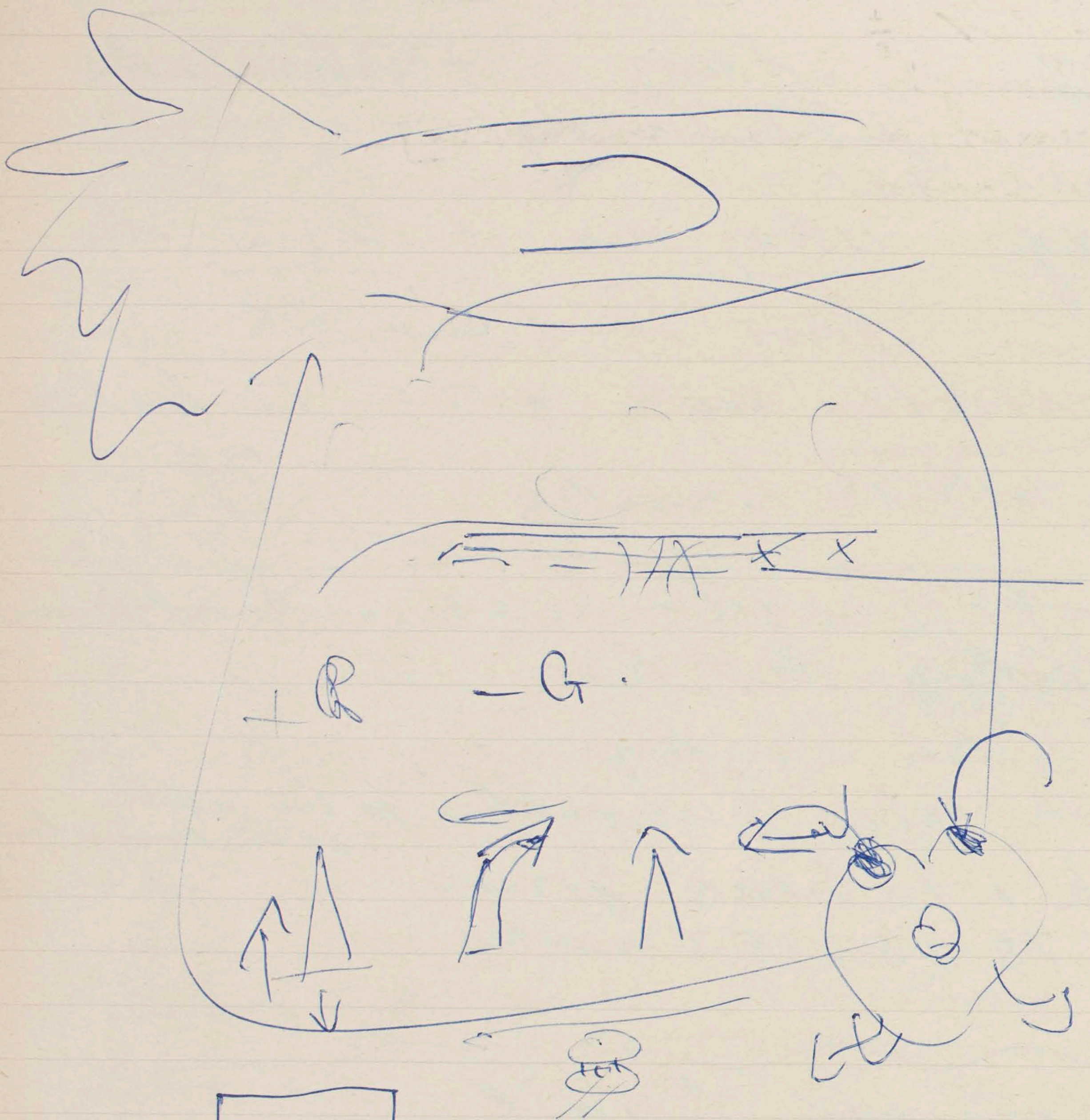
---

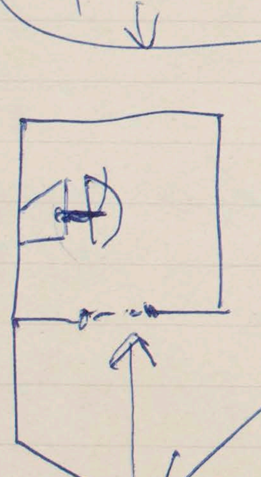
No artificially insemination
in [struck out] chicken. —
eggs hatch in 21 days
each takes 5 months to be able to be breeder
1 cock + 15 hens gives
15 × 5 × 52 weeks

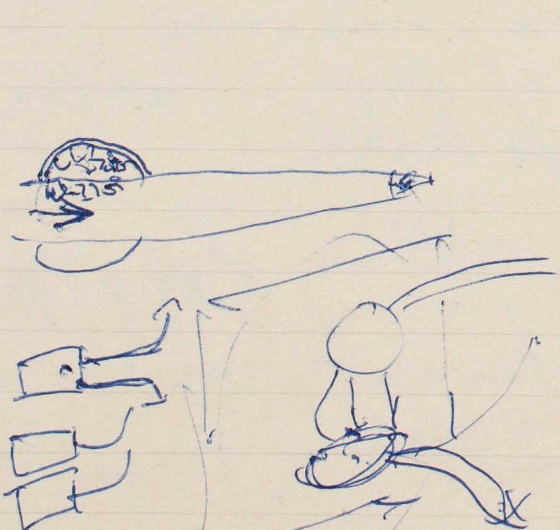
---

Japanese Quail
21 days to hatch    after 6 weeks starts breed
set ups one to one —
5 egg/week or 100 eggs in
twenty week

Brit. Journ. of Exp. Path.







Uncle Richmond (Pollock)
Penicillinase
John Collins
Mandelstam repression of glucose

Dressler ÷
Lunch Humphrey
(ashenaz [in vitro synthesize]
Mrs David)

James Gowans, Oxfd.
potential
(lymphocytes from thoracic ducts
85% small 15% large
F₁ hybrids (baby 5 days old)
mice
gets runts disease

Dressler; David

| Mice | CBA |
|---|---|

Our experiment:
B G₃₅ G

Humphrey Asherson

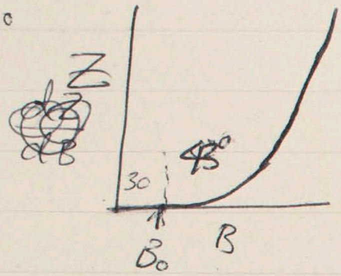
Askonas Brigitte (Y+c

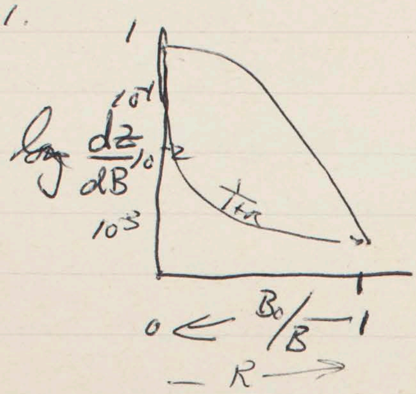
Temp-sensit β-gal (i) mutant

Pairs mut 30° $i^+$ S.A = 0.0006

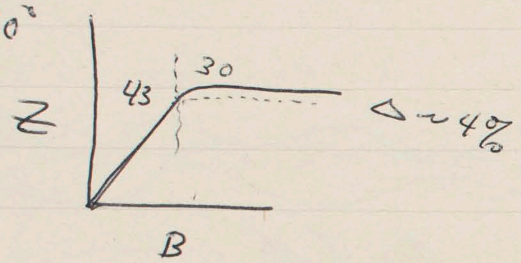
43° $i^-$ SA ~1.

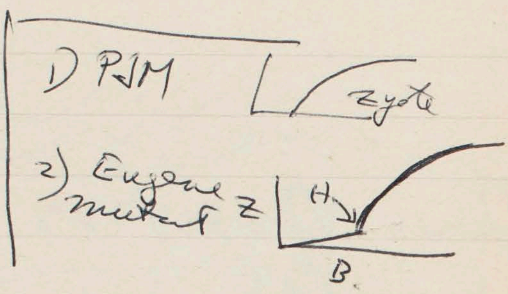
30° → 43°



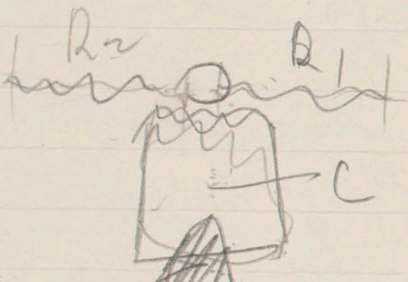

43° → 30°

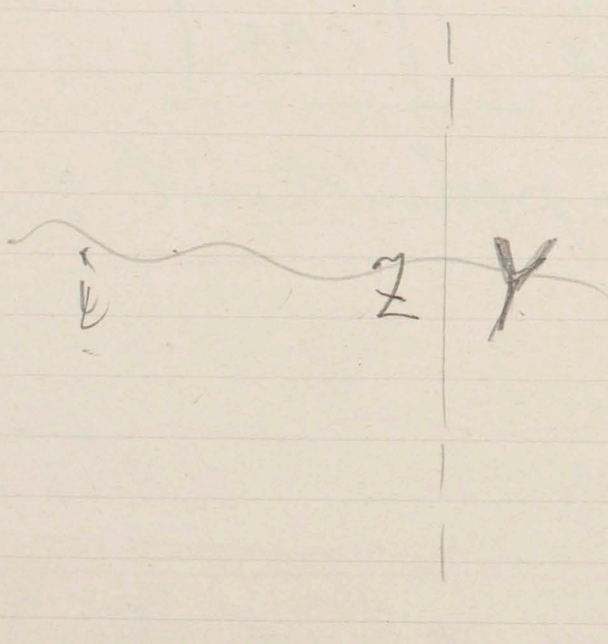



Suppressor of O°

Beckwith



Raskin Rockefeller Fd

Gerald Freund
(Steven Muller)

Miss Turner

Howard Newcombe
Chalk River, Canada

Beadle

Walter Leen
M. 3-0800 - X4004

other Americans from following his example. But why arrest a R who spies for R. He has not done anything reprehensible and if he is arrested his place will be taken by another patriotic R ~~in the~~ who will hope that he won't be caught. There is no shortage of patriotic Russians.

If the F.B.I. discovers that a R is a spy why not just let him discreetly know this. His usefulness ~~as~~ as a spy to Russia would then be ~~as~~ ended. Why do the R. the honour of telling them that this man has to be replaced.

Prof B. has rendered a publ. serv. by demonstrating that the last people the Govt might be consult on Russia are the so-called Russian expert. I had written ~~the kind of things about Russia which anything of the thing which Prof B has written about Russia I would not have visited Russia as tourist.~~ ~~had~~

which Prof B had I would not ~~have hardly~~ ~~thereafter so that~~

R as a tourist. ½

~~An man who spies for~~

There is nothing wrong of arresting an American who ~~spies~~ spies for R.

He has done something that is generally regarded as reprehensible and his arrest may deter

~~If the a war~~

If a war between U and R started with a direct nuclear exchange between them it would be likely to be of short duration and if England ceased to be an integral part of the ... defense system ~~she was~~ she would ~~not be~~ escape being ~~likely to be~~ injured! ~~She might be In that case~~ She might ~~be~~ effected ~~the~~ a problem ~~would~~ be unless she had available a number of fallout shelters to some extent by any fallout ~~Fallout shelt~~ ~~The building of fallout shelters~~ ~~is~~ would be a rather useless in areas which may be expected to be the target of a nuclear attack exercise but ~~it might make such shelters might be very useful~~ it ~~might~~ might ~~would~~ ~~make~~ make sense elsewhere

The building of such shelters

What holds for an ~~ame~~ Russian ~~or~~ who operates ~~in~~ as a spy in ~~America~~ would also hold for an American who operates as a spy in Russia. There is no shortage of patriotic Americans who would be willing to oblige the CIA and would ~~to~~ hope to escape undetected.

I propose that ~~Perhaps A and R should~~ in order to avoid ~~frictio~~ wholly unnecessary friction A and R enter into an understanding that ~~they will~~ henceforth they ~~will~~ are not going to arrest each others ~~spy~~ spies except of course if they are their own nationals.

I know, this won't be done; it would be too sensible

~~the two~~ the Bill controversy
which are centered outside
of Europe. ~~[illegible]~~ Because
of the ~~ex~~ overwhelming superiority which
A strategic striking forces had
over R in 1962 it ~~would seem~~
in retrospect that ~~contrary to what~~ ~~[illegible]~~
~~many people in Washington thought~~
even if we had invaded Cuba
Russia would not moved
against a hostage in Eu
such as West Berlin. But
~~in a sim~~ if a similar contin-
gency were to ~~occur in the future~~
~~[illegible] Russia might very~~
~~well move against [illegible]~~
~~some close~~ outside of Europe
lead to a protracted ~~conflict~~
Russia might very well move
against a close ~~ally of~~
political ally of ours. [illegible]
in Europe

~~Having observed at close range~~
~~the political~~
~~I believe that in the years to come~~
The Presid of the U
States might draft a course
to be followed by U S policy
which if followed it would

~~~~smaller the~~~~

~~If~~ ~~If A and R succeed ambitions~~
~~there is a war between A and R~~ ~~of~~
~~if they succeed~~

~~If there is a war between A and R~~

~~She might be affected to a certain extent by Fallout, but this problem could be solved by building fallout shelters (The building of such shelters would be a rather useless excercise however in areas which are likely to be the target of an atomic attack)~~

If the war between A and R takes the form of a protracted conflict which stops short of an atomic war ~~then~~ it is ~~insufficient not enough for England to have disentangled herself from the A defense system~~ and England wants to avoid being ~~affected~~ overrun by R a as a hostage then Eng must go one step further and adopt well ahead of time a pos of neutrality an
~~~~

not feasable even after the 1964 elections then the issue is settled and nothing further can be done.

But if the president ~~has not~~ is not fully exposed to it then the decision will come about by default.

---

~~In a sense~~ One might ~~say~~ argue that in view of the prevailing ~~temper~~ temper of the Am. people ~~it may~~ ~~be more~~ ~~reasonably~~ ~~that~~ the one even if but mostly it will be the R. who will take the first step to stop escalation ~~but it would be less misleading to say~~ but ~~[illegible]~~ this it would be ~~more~~ correct to say that ~~, in view~~ if one of the two parties will take a step to stop escalation it will be the Russians. By phrasing it in this ~~way~~ manner ~~then it is~~ ~~it is made clear~~ one does not obscure the fact that the prevailing ~~mood of the~~ temper of the Am people does not ~~lessen~~ increase but ~~rather it increases~~ the chance

allow us to progress from
fat poverty to ~~moreses~~ and
and controlled disarmament.
~~but in & between & prospectly~~
~~they~~ I believe however that
because of the prevailing
domestic political pressure
the Pres might be unable
~~to follow any~~ to get ~~the~~
~~to~~ the country to follow
any such course. And
will be unable to ~~do~~

and in these circumstances
~~at~~ however can not dodge
the possibility that they
might get into a war
with Russia even though
neither of them wants
such a war.

Farewell:

If the Pres ~~but~~ fails to ~~fully~~ grasp ~~is~~ the great problem of understanding what needs to be done ~~implications~~
or If he understands it, but ~~does~~ what needs to be done but decides that it is not desirable for one reason or another
Or if he thinks it is desirable but politically

be too sensible.

—

~~If they we~~ They would not lose anything by doing so and ~~something~~ they would ~~advantages~~ ~~and~~ avoid & incidents that are bound to cause friction

—

The Twin

There is no case of bigamy

Oh to which one was he married
To neither.

—

During ~~the first six months~~ the twin the pools showed that they ran neck to neck. But soon then on B. began to pull ahead. These popularity polls the damaging were rumours that ~~he treated~~ ~~the was~~ ~~poor~~ ~~divorced~~ that he gambled and that ~~his~~ ~~divorced~~ ~~wife~~ ~~was arranged~~ ~~that~~ he was rude to his wife. A was still married to his first wife and ~~it was~~ everybody ~~on ideal~~ said that it was an ideal marriage — if his wife drank that was no fault of his.
None of this ~~sh~~ could shake B's self confidence. I can not lose he said over and over again and some

Decreases the chances ~~of~~ that either one or the other of the two parties may stop ~~use~~ short of an exchange of strategic nuclear strikes directed against each others territory. ~~It is open to doubt whether~~ ~~Beyond that point it is at~~ When that point in escalation is reached ~~reached is~~ the temper of the two people might well undergo a change but from that point on ~~it is important~~ one can not ~~assume~~ ~~with a reasonable degree of assurance that Am and Russia or Am that~~ ~~assume that the~~ Am and R responses ~~will~~ might ~~be~~ not be based ~~thought~~ on rational considerations ~~any longer~~. any longer

---

I can conceive of several objections that might be raised the strongest of them being that this would

1

approaching agreement on this premise presupposes a general settlement and in the prevailing circumstances of such a settlement is not longer within the power of Britain and Russia

1

Part I

shift from first page

Because of the inferiority of her strategic striking forces in 1962 I doubt that Russia would have personally made such a move at that time

The advent of subcontinental parity would make it much more increase, a Russia likely that Russia may retaliate in this position in a similar contingency. A Russian response of this would be more likely to respond in this fashion in subcontinental parity

whether he was stupid or 11.
whether he had something
up his sleeve. They thought
they knew the answer when
48 hours before the elections
the house was plastered
with posters accusing Mr. 3
Wolfe of being a communist.
~~A mentally broken thing is not~~
~~had the presence of mind~~
It would have lost the elections
~~if~~ had he not ~~had the~~
have the presence of mind
~~to call a press conference~~

---

3 after every speech his
purpose should be would have
won the elections himself
down if he had not overreached
the rep.
themselves..

---

The U.S. Senate ~~has~~ tempting seat has been tempt-
ing ambition but he never
came anywhere near of having
a chance to get the nomination. *

Australia

Peace ~~The~~ Plan.

Survival * (Alistair Buchan
Inst of Strat. Studies
John Adams St.
~~Strand~~
London W.1

Leonard Beaton

Prof. Michael Howard
c/o Inst. of Strategic Studies

~~It would~~ A Russian response of this kind would be much more likely in the future in [illegible] parity

~~It would~~ To me it seems likely that ~~American superiority~~ the superiority of the American striking forces ~~might~~ may have deterred Russia from responding in such a fashion but ~~I would not venture to make any prediction~~ this argument would not ~~long~~ hold in situations [illegible] any longer.

---

1) Renounce <u>murder / suicide</u>

2.) minimal unacceptable damage

3.) Germany China

Price :

14

Bearnish

$$e^{x} = \frac{1}{f_0^*}\, e^{\frac{(\lambda_0-\lambda)^2}{\lambda_0}}$$

$$x = \text{const} + \frac{(\lambda_0-\lambda)^2}{\lambda_0}$$

$$= \text{Const} + \frac{\lambda_0^2 - 2\lambda_0\lambda + \lambda^2}{\lambda_0}$$

$$= \text{Const} + \lambda_0 - 2\lambda + \frac{\lambda^2}{\lambda_0^2}$$

$$= 2 + \frac{(2-\lambda)^2}{2}$$

$$\frac{dx}{d\lambda} = -2 + \frac{2\lambda}{\lambda_0^2}$$

$$\text{survivors} = \int_\lambda^0 x\, d\lambda = \left[(\text{Const}+\lambda_0)\lambda - \lambda^2 + \frac{1}{3}\frac{\lambda^3}{\lambda_0}\right]_\lambda^0$$

$$\frac{dx}{d\lambda}\Big/\text{survivors} = \frac{-2 + \frac{2\lambda}{\lambda_0^2}}{(\text{Const}+\lambda_0)\lambda}$$

$$= \frac{-2}{\text{Const}+\lambda_0}\;\frac{1}{\lambda}$$

---

those who survive for x have a distribution of N

and of those who have distribution $N(x)$ survive

Take now females of this distribution and ask how many would in random mating have daughters with what k?

<u>$w(N,x)$</u>

---

$[g(x)]^2 = f(x)$ | $\xi = \frac{t}{2m\tau}$

---

$$f = \left[1 - \left(1 - e^{-\xi}\right)^{\frac{~~r~~}{2}}\right]^{m-r} e^{-r\xi}$$

~~r is really number of~~

$(m - r)$ is really $=$ ~~m~~ $m \cdot e^{-\frac{r}{m}}$

~~and $e^{-r\xi} = e^{m(1 - e^{-\frac{r}{m}})}$~~

and $e^{-r\xi} = e^{-m(1 - e^{-\frac{r}{m}})\xi}$

$$f = \left[1 - \left(1 - e^{-\frac{t}{2m\tau}}\right)^2\right]^m$$

$$\ln f = m \ln\left[1 - \left(1 - e^{-\frac{t}{\tau}\frac{1}{2m}}\right)^2\right]$$

$$P_r = \frac{n^r}{r!} e^{-n}$$

$x$ age at death $= \sqrt{4m \ln \frac{1}{f^*}} + \ln \frac{1}{f^*}$

$$\frac{x^2}{4m} = \ln \frac{1}{f^*}$$

$$e^{\frac{x^2}{4m}} = \frac{1}{f^*} = \frac{1}{f_0^*} \cdot e^{+\frac{(\lambda_0 - \lambda)^2}{\lambda_0}}$$

small values of $\lambda$

$$e^{\frac{x^2}{100}}$$

$$\frac{x^2}{100} = \frac{+(\lambda_0 - \lambda)^2}{\lambda_0} + \text{Const}$$

equal probab. for $\lambda$ between $\lambda_0$ and $0$

$$\frac{x}{10} = \frac{\lambda_0 - \lambda}{\sqrt{\lambda_0}}$$

$\lambda_0$ high

$$y = \int_\lambda^0 x\,dx = 10 \int_\lambda^0 \frac{\lambda_0 - \lambda}{\sqrt{\lambda_0}}\, d\lambda$$