| No. 11 | Econ Gdn Utilisation |
Economic Garda,
complete utilisation of
SUBJECT.

Complete utilisation of the Economic Garden.

COUNCILLOR PAPERS:

Sovereign Committee at a meeting on the 1st Monday in the month of Sept. 1929, ordered a preparation of plans for a complete utilisation of the Som Garden.

1. House submitted for approval.
2. & revised and circulated.

Committee in meeting Oct. 6th
ordered submission & plat.

Cl.

1921 Minutes of the E. B.

(1) require to be read with within a reasonable time by the.

(2) in 2209100, but the B. &.

G. r, the E. B. R. offered to would be transferred to the new.

final calculation at that time as suggested in para. 10 of 2911.

Above, the E. B. R. being to withdraw at the time.

of 20. 25 in 2209100 without the recommendation of question.

the B. & G. (7) para. 11 in for that. Section r $490$ for.

due salary could be created for.

2. The Prophetic Commission.

for the.

strong recommendation that final 6. The other Ingenious.

collaboration should be encouraged because would be necessary.

is coded杠呼也**

the position of the.

Congress. Inspection of products immediately the.

good; 20 and 200 and the up.

without the more a modern whole back to recommend.

to supply the fruit which to 9. Offence of other close.

planting principles, (my) remove the above objects, but not too.

the Provision,相关内容, if not too.

the fruit, remove by supply the.


go back to deal with this. 8. Perhaps you may want.

3. The greeting and support of the E. B. R. for.

much of the provision of maintenance under Bill E. B.

should be provided for 1961 to.

be taken by supplementing the.

18-10-10

will suit you.

of its last for the sentence.

as the B. & B. must ce.

4. If the Act, County for but the recommendation.

Browne is continued in the The Prophetic Commission.
The decision of the Government to build the 'affles memorial College in the Economic 'ardens (conveyed in letter 4240/21 dated 26th July, 1921) has been communicated to the 'ardens Committee together with my letter 487/21 of April 25th, 1921 to which the Government's letter quoted was the reply.

I had requested that the Government would do two things:

(i) would decide at once definitely to leave the corner of the Economic 'ardens carrying the 'ardens houses with the 'ardens, and (ii) would decide the fate of the rest of the 'arden first within a year. The reply does not meet my request at all.

2. As a consequence of the decision to put the 'affles memorial College into the Garden and of the want of any decision in regard to my first request the following works are held up in the Public Works department:

a) the building of a house for the Assistant Curator, 'arks, sanctioned and budgetted for in item 19 on p. 127 of the Estimates, urged and re-urged by me without any effect; needed when on May 23rd the officer in question arrived, and still needed.

b) the rebuilding of the Watchmen's quarters, budgetted for in item 23 on p. 127 of the Estimates. The old quarters have been patched at the 'ardens expense; but storms cause the men's bedding, and the condition is altogether wrong.

c) the building of lines for 12 single and 10 married tamils budgetted for in item 7 on p. 124 of the Estimates, and very badly needed.

d) the filling of the Cluny Lake, an anti-malarial measure, for which the Public Works department have been asked to estimate, on 16 December 1920.

Not one of these works is a matter which requires re-consideration because fewer cobbles will be required when the Economic 'arden is abandoned.

None of the buildings mentioned in the last paragraph appear to me at all likely to lie in the way of the college.
and I look upon the Government's postponement of an answer to my request as the result of a want of knowledge of the gardens, in the Secretariat.

There is another building that will almost certainly be in the way of the College, namely the subordinates' lines. The rebuilding of this will, doubtless, have to be faced; and, in re-building, the quarters should be made larger so as to accommodate the new laboratory assistant and the new museum assistant, and an overseer as well.

As I have pointed out elsewhere the Economic garden besides housing our officers and labour, consists of an experimental ground and of an Arboretum of economic trees planted in grass. This latter is virtually an extension of the Botanic garden; and so much so that in my report upon the complete utilisation of the Economic garden I suggested that it be roaded just as the Botanic garden is. Such a view I put before the Committee which His Excellency appointed last year to report on the Economic garden as suitable for building sites, and also I represented to them that greater Singapore would need a greater area to play in than there is in the Botanic garden. The Committee adopted my view and recommended that whereas the Economic garden's land might well be used for building, the gardens on its loss should be compensated by an extension on another side. This extension in my view might serve to hold the economic trees which will be lost to the Garden on the loss of the present site.

The services and investigations in progress in the Economic garden now are:

1) the supply to the public of garden stock. On the loss of the Economic garden certain trees which supply the seeds and cuttings for this service will be lost, and the service interrupted. For instance, the gardens will be unable to send out any Brazil nut seedlings, and Brazil cherry seedlings and Cola seedlings and Tonquin bean seedlings, etc., for a
period of years. Against this break I have been able to make some provision by planting a few new trees during the last few years in area Z., but it is not much, and new land is required for further planting.

b) The selection of fruit trees, for which purpose trees have been planted during the last few years. These new trees are young and most of them not yet altogether beyond transplanting. If new land be made available at once the loss on them need not be much more than one year's growth due to the heavy cutting back that we shall have to do to move them.

c) The saving of the valuable rubber trees 27 and 610. For this purpose a grove of seedlings has been raised that they may be grafted with grafts from the good trees and an officer of the Department of Agriculture is in Singapore to do the grafting.

d) A trial of many plants treated as annuals. These are easy to transfer.

e) The finding of an ideal stock onto which to graft the mangosteen. This work seems certain of interruption as the saving of the collection of Garciniias appears impossible.

With the idea of a removal of the Economic Garden being forced on me, for some three years I have been seeking alternative sites, and through the Settlements I have found only what I need in the Province "ellesley. The land is part of a forest reserve, it carries no buildings, and the present complete staff of the Economic Garden would need to be removed to it, and buildings erected for them. As the Government is taking from the gardens land valued at $10,000, it ought to be generous in starting a new station.
Fruit trees in the Economic Garden

- Avocado Pear
- Eugenia brasiliensis
- " malaccensis
- " Uniflora
- Rambusteen
- Guava (big red fleshed)
- Chikus (6 Crafts from Penang)
- Artocarpus integrifolia
- Diospyros discolor
- Mangos
- Nepheleum malayense
- Sperias lutes
- Nagpur Orange
- Plantains
- Papayas
- Pineapple plants
- Cocconut trees
- Brasil nut
- Caryocar bucerus

Total: 566
ECONOMIC GARDENS.

The Committee appointed by His Excellency the Governor, has considered the matters included in the terms of reference set out in the Colonial Secretary's letter (No.13856/1920) and begs to report as follows:-

(1) The Economic Gardens form an important part of the general area under the Director of Gardens, and comprise practically the only land he has available for experimental work in reference to economic trees, plants and fruits.

(2) With the exception of one or two special trees in the Rubber section, and one or two plots on which experimental work is in progress, there is nothing of high value in the Economic Gardens at present, and the greater part of the area might be diverted to other uses, without serious economic loss.

(3) If such diversion took place, however, without compensation being provided by acquisition of other lands, the work done by the Department which is under the Director of Gardens would be seriously curtailed, and the work is of importance at present and should be of greater importance in the future, as part of a system which is designed to cover the whole of the peninsula.

(4) The Committee are strongly of opinion that in view of the expansion of Singapore, the present area of the Botanical Gardens, considered simply from the point of view of an open space, is much too small, and the extension of the Gardens over the area of the Economic Gardens has been contemplated. We are convinced, however, that a much more advantageous extension could be made by embracing in the Gardens area a part of the Tyersall Estate. It should be possible to acquire a part of this estate immediately without serious disturbance of existing interests, and ultimately the whole estate should be taken into the Gardens area. This would provide sufficient land for carrying on all the Economic experimental work now dealt with by the Director of Gardens, and would result in certain valuable sanitary improvements in the proximity of the Tanglin Barracks. As large building areas are being mapped out beyond Tanglin and the Tyersall Estate, it is most desirable that action to preserve the only suitable area be taken as early as possible.
In the event of the suggestion made in paragraph 4 being adopted, the Committee are of opinion that the whole area of the present Economic Gardens with a few minor and temporary reservations, should be made available as building sites. The upper portion could be used at once for the class of residence mentioned in (b) of the terms of reference. The level of the low lying portion requires raising, but when that is done it also will be valuable building land.

The Committee agree with the views of the Commission on Profiteering that in the case of fruit "Government should directly assist by establishing a fruit farm for the propagation and selection of improved varieties". They are of opinion that this could be done very advantageously on a portion of the area which they suggest should be acquired from the Tyersall Estate.

With reference to the supply of vegetables, the Committee are of opinion that continuation, and extension of such action by Government as the Commission on Profiteering refer to in paragraphs 174, 175 and 176 of their Second Interim Report are more likely to be helpful to the community than employment of the whole or any part of the area of the Economic Gardens for vegetable growing.

We now give specific answers to the questions put in our terms of reference:

(a) The Director of Gardens should deal with fruit only, and could do so more advantageously on the Tyersall Estate area than on the Economic Gardens area.

(b) If the Tyersall area is acquired, the whole of the Economic Gardens area, subject to the small temporary reservations already referred to, should be made available for building;

(c) If the Tyersall Estate cannot be acquired it will be necessary to retain the greater portion of the Economic Gardens for the purposes of the Botanical Department, otherwise the practical utility of that department will be destroyed. In the event of such retention as is not
Consider that the portions which could be given up are suitable for the class of houses mentioned in (b) of our terms of reference.
The Committee appointed by His excellency the Governor, has considered the matters included in the terms of reference set out in the Colonial Secretary's letter (No. I2856/20) and begs to report as follows:

(I) The Economic Gardens form an important part of the general area under the Director of Gardens, and comprise practically the only land he has available for experimental work in reference to economic trees, plants and fruits.

(2) With the exception of one or two special trees in the Rubber section and elsewhere, there is nothing in the Economic Gardens at present which need stand in the way of the area being utilised for building purpose.

(3) If such utilisation for building took place, however, without compensation being provided by acquisition of other lands the work done by the Department which is under the Director of Gardens would be seriously curtailed, and that work is of importance at present and should be of greater importance in the future, as part of a system which is designed to cover the whole of the peninsula.

(4) The further point has to be considered:— The Committee are strongly of opinion that in view of the expansion of Singapore, the present area of the Botanical Gardens, considered simply from the point of view of an open space, is much too small, and the extension of these Gardens over the area of the Economic Gardens has been contemplated. We are convinced, however, that a much more advantageous extension could be made by embracing in the Gardens area part of the Tyersall Estate which is entirely suitable for such extension. As large building areas are being mapped out beyond Tagglin and the Tyersall Estate, it is more desirable that action to preserve the only suitable area for Gardens extension should be taken at once. Inclusion of the area in the Gardens would, it may be pointed out, enable valuable sanitary improvements to be made, a matter of importance in view of its proximity to Tanglin Barracks.

(5) In the event of the suggestion made in para: 4 being adopted, the Committee are of opinion that a considerable part of the area of the present Economic Gardens would be available as building
sites. The upper portion which is high land could be used at once for the class of residences mentioned in (b) of the terms of reference. The level of the low lying portion requires raising but when that is done it also will be valuable building land.

(6) The Committee agree with the views of the Commission on Profiteering that in the case of fruit "Government should directly assist by establishing a fruit farm for the propagation and selection of improved varieties", but this need not necessarily be done entirely within the area of the Economic Gardens.

(7) With reference to the supply of vegetables, the Committee are of opinion that continuation and extension of such action by Government as the Commission on Profiteering refer to in paragraphs 174, 175 and 176 of their second Interim Report are more likely to be helpful to the Community employment of the whole or any part of the area of the Economic Gardens for vegetable growing.

(8) We now give specific answers to the questions put in our terms of reference:

(a) The Director of Gardens should deal with fruit only. This may be done partly on what would remain of the Economic Gardens, and partly on land which might be farther away from the city.

(b) If part of the Tyersall Estate is acquired, the high land of the Economic Gardens, subject to temporarily reservations, should be made available at once for building official residences, while, after raising its level, the land with frontage to Bukit Timah Road could be sold for building purposes, and a belt of garden would separate the two groups of property.

(c) If part of the Tyersall Estate cannot be acquired it will be necessary to retain the greater portion of the Economic Gardens for the purposes of the Botanical Department, otherwise the practical utility of that Department will be greatly restricted. We do not consider that the portions which could be given up without obtaining compen-
sation in the manner we have suggested are suitable for the class of houses mentioned in (b) of our terms of reference.

Sd. F.J. Pigott
" A.W. Still
" J. Lornie
" Lim Boon Keng
" I.H. Burkill
MEMORANDUM UPON THE DIRECTOR OF GARDENS' PROPOSALS FOR THE EXISTING ECONOMIC GARDENS

On 2,II.30 the Colonial Engineer called upon me for a report upon the Director of Gardens' proposals as formulated in his letter of the IIth, October and although it is unsatisfactory to oppose the proposals of another department I feel I must register a protest against the scheme as suggested by him.

In the first place the high ground in the Economic Gardens which is of approximately 50 to 55 acres in extent forms one of the finest undeveloped building site that there is in the whole of the Tanglin area.

The Collector of Land Revenue has informed me that recent sales of building land in this area have taken place at 30 - 40 cents per square foot, assuming the lower figure this makes the value of this portion of the Gardens which the Director of Gardens wishes to perpetuate for problematic economic purposes at $660,000 to $720,000.

I suggest that there are many other areas in Singapore which are not suitable as building sites and which will more efficiently fulfil the requirements of the Director of Gardens as areas for Economic Experiments and which can be obtained at a tythe of the above cost, even if Government have not already land in their possession suitable for this purpose.

His Excellency the Governor has expressed his intention of constructing quarters for the Senior Government Officials which shall be more fitting as their official residencies than the existing buildings now occupied by them.

The principal difficulty in the erection of such residencies is the finding of suitable sites for same within reasonable distance of town and in the Residential area; but this difficulty will be overcome if the high ground of the Economic Gardens is reserved for this purpose.

Summarizing the construction of such houses which will shortly be before Government they appear to be as follows:

1. Official Residence for Chief Justice, $178,000 provided in 1921 Estimates

2. Suggested Official Residence for H.E. the G.O.C. Similar
4. Official Residence for the Treasurer.
5. Official Residence for the Colonial Engineer.
6. " " " " Director of Medical and Sanitary Service S.S. and F.M.S.

It is obvious that to meet these requirements it will be essential to have some 25 to 30 acres of first class building land and unless the Economic Gardens is utilized for this purpose the acquisition of other suitable land will materially delay the suggested construction.

Re. Residence for Chief Justice it was originally suggested to erect this on the Nassim Hill site but this I would submit is not now suitable as a Residence for the Chief Justice as it is ringed round with numerous small houses and a fresh site should be chosen.

Discussing in detail the different features of the Director of Gardens' proposals,

(a) He suggests reserving the best portion of this area for quarters for the officers of the Gardens Staff "area marked pink on plan". These houses must of necessity be small in view of the salaries of the officers who will use them and therefore cannot add to the appearance of the district.

(b) He suggests concentrating the whole of the labour staff of the Gardens on the area coloured blue i.e. in close proximity to the new European Residences that have been erected along Cluny Road, the proper site for such construction is at the junction of Cluny and Bukit Timah Roads.

(c) The suggested motor road will split up the high building land and also form a most dangerous junction with Cluny and Dalveys Roads.

This new road is constructed should commence at the junction of Dalvey and Nassim Roads and follow the lines of the existing Cart roads which acts as the dividing line between the high and low ground of the Gardens.

(d) The most valuable ground for the purpose of economic expen
experiment appears to be the area coloured red which lies outside the cart track, the high ground inside same being of question-able value for agricultural experiments.

(e) The draft estimates as far as the P.W.D. work is concerned are sufficiently accurate being based on figures supplied unofficially by this Department.

(f) The suggestion that most of the valuable trees (specimens) could be retained on the high ground if the Director of Gardens' proposals were approved would stand good if the area was devoted to Official Residences as I suggest that this area should be maintained by Gardens labour on the same lines as Government Domai at the present time.

(g) I do not like the idea either of reclaiming the yellow area by earth obtained from the high ground within the Economic Gardens the spoil for this reclamation if MMMM desired to proceed with it should come from the high ground on the other side of the Bukit Timah Road thus leaving the whole of the high ground within the Economic Gardens unspoiled for Residential purposes.

In para: I35 page A. 29 of the recommendations of the Housing Commission it was therein suggested that this portion of the Economic Gardens should be utilized for building purposes. As it is "absolutely wasted as Economic Gardens" and my proposals merely provide for a reduction in the number of houses to be constructed on this property in order to comply with the requirements of His Excellency the Governor to provide suitable sites for Residencies for the more important officials of the Colony.

Sd. T.F. Kinder
Executive Engineer
11th October, 1920

ON THE COMPLETE UTILISATION OF THE
ECONOMIC GARDEN, SINGAPORE.

Sir,

I am instructed to forward to you the enclosed memorandum upon the complete utilisation of the Economic Garden. The proposals made in it, and endorsed by the Committee for the Management of these Gardens may be set forward as follows:-

A. to get rid of about 24 acres of land, being the frontages towards Bukit Timah Road and part of Muny Road,
B. to decide upon a policy of years regarding the rest of the Economic Garden, in this way:-

to keep the ridge coloured red on the map for the quarter of the European staff and Field Assistants,
to keep as now the purple area for lines for Javanese coolies, and for watchmen,
to allot the blue area for lines for Tamils,
to carry forward as commenced the planting of the orange area with fruit trees, clean weeded,
to carry on as now planting the green area with specimen economic trees in grass,
to allot the red area and the part of the yellow area to be retained to clean weeded cultivation of the "kitchen garden kind, i.e. to fruits and vegetables, etc.
C. to raise above flood-level the part of the yellow area retained, getting the soil for the purpose from the only reasonable source within the Economic Garden, namely the blue area, before transferring the Tamil lines,
D. to make a monorail through the garden,
E. to increase work on fruit trees, as in my letter to
you no. 87/20 of 27th. Aug., 1929, using the orange, and the part retained MMXX of the yellow area, subject to some slight rectification of the boundaries between the red and the yellow areas. This increase involves the building of quarters within the pink area for an officer who will take charge of the intenser operations contemplated.

2. Please note that this is a scheme of complete utilisation. Schemes in the past there have been, schemes with objects involving calculations of costs, based on the object, and not contemplating completely utilising the ground so that parts of the garden have remained uncared for. The time has now come when there should be no uncared for ground within Municipal limits.

3. The cost in the Memorandum is worked out upon the assumption that the coolie's wage will be 65 cents per diem. The General Labour Committee in their recent report, said that an estate labourer's wage should be equivalent to the cost of a gantang of rice; and I believe that a gantang of rice is expected to come down to about 65 cents next year. You will observe that after an initial expenditure of $105,520 maintenance is set down at $36,560. At the present time the Economic Garden is costing about one half of that, the difference being chiefly in the labour bill. Wages are above my figure; and labour is in deficit of what was aimed at when the last budget was drawn up.

The cost would be a little reduced if Mr. Haniff, now Field-Assistant in Penang, should be appointed to the control of the Economic Garden work in the place of the suggested European officer; but should he be appointed I must in justice to him ask for some concession to him. With that matter I need not further burden this letter.

4. The Gardens Committee wish me to make two statements; (1) that the fruit work will be essentially commercial before it is experimental, i.e. that fruit trees will be put on
sale without waiting for any improvements from the investigations on methods of propagation or for the search for better races, and (ii) that the soil of the Economic Garden is amenable to good cultivation as has been demonstrated by the excellent crops raised under Mr. Mathieu.

5. The Committee is aware that proposals exist for the planting of an area of fruit in connection with the Waterfall Gardens at Penang, and also at Kuala Lumpur; otherwise they would have wished the area in Singapore much greater.

I have the honour to be,

Sir,
Your obedient servant,

Director of Gardens, S.S.

The Honorable
the Colonial Secretary,

Singapore.
Then the Gardens Committee asked me to put up my plans for the complete utilisation of the area of the Economic Garden, I was about to start for Europe, and the note which I posted back from Aden was not as finished as I desired. The following is abridged for that note.

I would remind the Committee that the Botanic Gardens are established alike for education and for research, and are open to the inspection of all. In point of fact, because the necessity of open cultivation enables them to attract more than one class of visitor, the Committee should therefore, under these principles, be more liberal towards the Botanic gardens than their views might otherwise let them be the net of an uneducated part of the community believe, and that especially in such matters as the public is interested in. As education demands:

...I regard the Singapore Gardens, I would have them proceed:

1. That among the first duties of these Gardens is the securing of desirable plants with a view to their propagation and distribution, some of which plants may not be beautiful to look at, and consequently are best segregated from the most attractive parts of the Gardens, yet should not be beyond the easy reach of the public, nor grown without some means being taken to indicate the public to them. In fact,

2. That the preserve for the few should be segregated with, but outside the Gardens' limits, those of the requisite staff not merely for the garden purposes but probably they may then consider, and show off in its beauty to people of all walks, yet may appeal to

3. That the Botanic Garden, Singapore, was an area of
the area of other tropical gardens which are, Brimstone Hill 145 acres, St. John's 130 acres with experimental area and a hill garden, and 150 acres with an experimental area, Georgetown, Demerara 150 acres together with town Parks and experimental grounds, Hope Cemetery, Lusiana, 110 acres, and Salattan 214 acres, which are in general use.

In that the slope in the Economic Garden, and the irregular topography could not be devoted to inclining with many of the plants requiring room there, can reasonably be maintained as those planted with space in landscape fashion and that such a part of the Garden is so set attractive to the ordinary visitor should be readied to induce him to approach the economic plants which should be thrust into his notice; further that the know of the European staff should look out and take care, and not recently from those slopes, but that operation there, in effect thrown to regards their work and

regarded as the source of the ordinary, and thought of,
In accordance with the views expressed in the above, I believe that the Botanic Garden could be ideally built into the Botanic Gardens, and developed in the following way. I make my proposals categorically.

1. That a metalled road be made in connection of the port of Garden Road, within the Gardens, upon the line indicated in the map. Garden Road in 34 feet wide, and the Arboretum Road (this was I propose for 16) would have the same breadth, it would start from a circle in Clay Road, and in this way the improvement of the Dalve Road entrance to the Botanic Garden (which improvement has been so much pressed on the Municipality) would be affected. It is planned to serve the quarters of the superior staff, and the Arboretum Garden office, to have very easy gradients, and to save the gardens no valuable trees.

2. That the area in green, being the slopes, be kept as now in grass planted with trees. It will yield about 200 more trees. It needs more labour than it gets now.

3. That the area colored pink, being theridge, be reserved for the houses of the European staff, those of the Watchmen and the so-called Artist's quarters being removed as soon as their great disrepair makes them no longer worth retaining. No new houses now exist within the area with their fronts on inclined ground, and the lots (that for the Asst. Curator for town gardens and parks, a sanctioned post) has been asked for; a fourth house is likely to be required later.

4. That the timid lines be removed as soon as possible from their central position upon the proposal laid to the margin of the Garden, preferably for Clay Road. So that later when the larger may have the power of getting among the experimental plots. These lines are disreputably decayed.

5. That the orange, melon and potato areas be kept for their trial cultivation, the badger area being gained
...eighty inches to be the true final level. These figures may be considered as a consequence of the clearing of the land towards Bukit Timah and Holland Road: they did not occur fifty years ago when the rain ran off the land more slowly, nor, certainly even thirty years ago. They now take a turn over the ridge track. The old HOLLAND ROAD is roughly 903' 60" cubic feet, which I can get from one place only, the area marked blue, and but down to the level of Ungi Road, and back 150 feet wide yielded a convenient site for the Telok Line.

I therefore that the area is due, now planted with cotton, the be used for filling, and the telok Line transferred to it afterwards.

The balance of about 1000 cubic feet, the yellow area, being required, be dotted with 22' and of, with or without filling in as the Government may desire. This part should be the 226' feet long and back, or 70 feet, do farming about 45 acres, and leaving 28 acres of their low base form in the farm...

8. That if the raising can be done, work to be commenced on the Sago Paddies with the substitution of papaya and plantain for sugar cane.

The question of selection of the raising of cane stock, which are yielding revenue to the landowners...
## Fair Copy

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Dated: 30th June 1944

Signed by: [Signature]

Note: [Handwritten notes and annotations]
To

Sir,

Enclosed.

The following tend to
Her demand for commercial plants.

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The low land cannot be piled
regardless of its purpose, and
therefore the expenditure is not
exact for long time but for

health.
LABOUR FOR THE ECONOMIC GARDEN

2 mandores getting 50 cents p.d., the no. as now
labour for metalled road, at $150 per mile
labour for unmetalled roads 3 men at 65 cents p.d.
for 25 acres of the yellow area at 2 men per acre
for 12 acres the red area at 3 men per acre
for 25 acres the green area at 1 man per two acres
for 12 acres the orange area at 2 men per acre
for 4 acres, the pink area at 1½ men per acre
for the tamil lines caretaker and cook
for three watchmen pay 15-1A-20. average taken as 15 p.m.
to be on the P.W.S. vote as now
rubber leased, sago neglected at present
the rate is as now
fewer are employed now
half the area is cultivated now
as now (Javanese do. charged to the Botanic Garden)
one and a cooly employed now.

499.20
608.20
9328.80
- the rest would cost another
6384.00
9714.40

2535.00
4880.00
982.80
72.00
648.00

26894.80
23224.40
SUBJECT.

Scheme for the Complete utilization of the Economic Garden

CONNECTED PAPERS

MINUTES.

There is within a copy of the scheme for each member, and only one copy of the large map. Please retain your copy, but ask which it is possible to have the large map by you.

26.6.20. Mary Llewellyn

The copy retained.

The copy retained.

The copy retained.
No Minutes should be written on this page. A separate half-sheet to be used if required.
When the Gardens' Committee asked me to put up my plans for the complete utilisation of the area of the Economic Garden, I was about to start for Europe, and the note which I posted back from Aden was not as finished as I desired. The following is substituted for that note.

I would remind the Committee first that British Botanic Gardens are institutions alike for education and for research, set out in the manner of parks because the necessity of irregular open cultivation enables them to serve also as places for public recreation; therefore, seeing that places for recreation are necessary in town areas, the governments concerned can afford to be more liberal towards the botanic aspect than their views might otherwise let them or the set of an unenlightened part of the community demand, and this especially in such measure as the public is attracted to the education offered:

Secondly, as regards the Singapore Gardens, I would make four postulates:-

i. that among the first duties of these Gardens is the securing of desirable plants with a view to their propagation and distribution, some of which plants may not be beautiful to look at, and consequently are best segregated from the most attractive parts of the Gardens; yet they should not be beyond the easy reach of the public, nor grown without some means being taken to induce the public to look at them.

ii. that the quarters for the staff should be segregated also within the Gardens' limits, those of the superior staff not merely for the staff's convenience but because they are custodians, and those of the labour to save time in getting to work.

iii. that the "Botanic Gardens", Singapore, with an area of 84 acres is too small to be by itself a first class garden, and needs a large part of the Economic Garden to maintain it so. (That 84 acres is a small area can be seen by comparing the area of other tropical gardens e.g. Buitenzorg 145 acres and also with experimental areas and a hill garden, Peradeniya 150 acres and also an experimental area Georgetown, Demerara 150 and also town parks and experimental grounds, Jamaica, 210 acres, and
iv. that the slopes in the Economic Gardens, because irregular open cultivation must be resorted to in dealing with many of the plants requiring room there, can reasonably be maintained as lawns planted with trees in landscape fashion, and that such a part of the Garden being the most attractive to the ordinary visitor should be readied to induce him to approach the economic plants desirable for a thrusting into notice: further that the houses of the European staff should look out unto tidy grounds, and may reasonably face these slopes; but that coolies, some among them thieves as regards edible produce and untidy as regards their surroundings, should be housed on the margin of the grounds, and fenced off.

In accordance with the views expressed in the above postulates I believe that the Economic Gardens ought to be firmly built into the Botanic Gardens, and developed in the following way. I make my proposals categorically.

1. That a metalled road be made in continuation of the part of Garden Road within the Gardens, upon the line indicated in the map. Garden Road in 24 feet wide, and the Arberetum Road (this name I propose for it) would have the same breath. It would start from a circle on Cluny Road, and in this way the improvement of the Dalvay Road entrance to the Botanic Garden (which improvement the Committee has so much urged on the Municipality) would be effected. The road is planned, in addition to admitting the carriage public, to serve the quarters of the superior staff, and the Economic Garden Office, to have very easy gradients, and to cost the Gardens no valuable trees.

2. That the area in green, being the slopes, be kept as now in grass planted with trees. It will hold about 200 more trees. It needs more labour and attention than it gets now.

3. That the area coloured pink, being the ridge be reserved for the houses of the European staff, those of the watchmen and the so called artist's quarters being removed.
as soon as their great disrepair makes them no longer worth retaining. Two good houses now exist within the area, with their fronts east or south east, and another house (that for the Assistant Curator for town gardens and parks, a sanctioned past) has been asked for; a fourth house is likely to be required later.

4. That the Tamil lines be removed as soon as possible from their central position upon the proposed road(s) to the margin of the Garden, preferably the Cluny Road edge so that after hours the labour may have no reason for minimum getting among experimental plots. These lines are disreputably decayed.

5. That the orange, red and part of the yellow lines be kept for clean weeded cultivation, the part of the yellow area required being raised eighteen inches so as to be above flood level. The floods now so common, arise as a consequence of the clearing of the land towards Bukit Timah and Holland Road; they did not occur fifty years ago when the rain ran off the land more slowly, nor, commonly, even thirty years ago. They now rise even over the riding track. The soil needed is roughly 902,160 cubic feet, which I can get from one place only, the area marked blue.

That area cut down to the level of Cluny Road, and back 160 feet would afford a convenient site for the Tamil lines. Therefore

6. That the area in blue, now planted with guava trees, be used for filling, and the Tamil lines transferred to it afterwards.

7. That the balance of about two thirds of the yellow area, not being required, be got rid of. This part should be the road frontages roughly as marked on the large map receiving say 24 acres from the gardens and 14 acres of this low lying ground in the Gardens.

8. That if the raising can be done work to be commenced on the ways blocks with the substitution of papyrus and papyrus, the same being grown for the purpose of selection and the raising of stock upon the blocks of...
In rubber which are yielding revenue would follow.

The是谁 involved in the Economic Garden
There should be an European Horticulturist in charge of it,
I mean Mr. Barry and charge of it.
Initial and maintenance changes I estimate as follows

<table>
<thead>
<tr>
<th>Initial</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Officer, 8300-15A-450</td>
<td>2900</td>
</tr>
<tr>
<td>average charge per 24Hr.</td>
<td>2300</td>
</tr>
<tr>
<td>Prof. from the island (as now)</td>
<td>2700</td>
</tr>
<tr>
<td>(22-23-24)</td>
<td>2300</td>
</tr>
<tr>
<td>House for European officers</td>
<td>25000</td>
</tr>
<tr>
<td>Labour as on the new sheet, being about twice present amount</td>
<td>22824</td>
</tr>
<tr>
<td>New tar, mill liner adequate for increased labour</td>
<td>23200</td>
</tr>
<tr>
<td>Married men</td>
<td>26000</td>
</tr>
<tr>
<td>Unmarried men</td>
<td>28000</td>
</tr>
<tr>
<td>New vahinge lines</td>
<td>6200</td>
</tr>
<tr>
<td>Metalling of road, 88704 sq. ft.</td>
<td>8800</td>
</tr>
<tr>
<td>Filling of low area retained at 70 cents per 27 cu. ft., plus 10 per cent</td>
<td>25720</td>
</tr>
<tr>
<td>Stored Tools, travail, etc. at</td>
<td>25800</td>
</tr>
<tr>
<td>82000 which we may spend</td>
<td>100,800</td>
</tr>
</tbody>
</table>
Labour for the Economic Garden

2 manders getting 80 cents per day, the number as now

labour for metalled road, at $150 per mile

for unmetalled roads 3 men at 60 cents p.d.

for 14 acres of the yellow area all men

per acre

for 12 acres, the red area, at 3 men

per acre.

for 20 acres, the green area, at

one men per two acres

for 12 acres, the orange area, at

two men per acre

for 4 acres, the pink area, at

1/2 man per acre

for the lane & lines caretaker

and cook

for three watchmen pay $15-IA-2.0

taken as 18 p.m.

$499.20

$130.

608.20

rubber leased, $50

neglected at present 5678.40

the rest would cost another 9734.40

the rate is as now 7320.80

fewer are employed now 2525.

half the area is cultivated now 4880.00

as now (Javanese do

is charged to the Botanic

garden) 72.00

One and a cooly employed

now 648.00

2324.80
ENCOURAGEMENT

1. The following increase in the net demand for economic plants:

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>784</td>
</tr>
<tr>
<td>1915</td>
<td>1094</td>
</tr>
<tr>
<td>1916</td>
<td>947</td>
</tr>
<tr>
<td>1917</td>
<td>2559</td>
</tr>
<tr>
<td>1918</td>
<td>1257</td>
</tr>
<tr>
<td>1919</td>
<td>2563</td>
</tr>
</tbody>
</table>

2. The land must be filled regardless of its purpose and therefore the expenditure is not exactly for horticulture but for health.

3. Visitors are on increasing in numbers that we need more attractive space for them.
Postulate 1, Illustrated.

The Botanic Garden, Singapore, covers 64 acres, the Botanic Garden 100. This 36 acres would be small is apparent from the size of some other tropical gardens:

- Batuasery, ........... 140
- Paradisiy, ........... 130
- Georgetown, Demolys, 130
- Hope Gardens, Jamaica, 210
- Calcutta ........... 214

Additional land is attached to all of these for experimental work.

It is not surprising that Malaysia with 80 acres only 2,800 experimental plots of real.

...
It is the aim of the station to establish a permanent orchard that will serve as a complete collection of the different kinds of fruit trees found in the islands, as well as those which are introduced from time to time to adapt and blend these varieties that have already been established. Including experimentally all species planted; and finally to carry on hybridizations with an immediate purpose available.
MEMORANDUM.

From

To 18 Saint Ga
The method of propagation may be a matter of experiment, for in modern nursery practise we carry forward graft for choice, the better to the parent roots of excellence, and not always by any means upon the same species of variety.

4. I feel that I must insert here a note upon modern nursery practise to point out the importance of skill beyond a native or at any rate, remind you that in temperate and subtropical climates every good apple, every good pear, every good apricot, every good peach, every good sweet almond, every good plum, every good cherry and every good orange is grafted onto roots not its own, roots which are chosen because they feed the graft in some more suitable way than its own roots would. Ignorance prevents us from doing similarly by our tropical fruits as science tells us we should teach ourselves methods.

5. This brings us to the state and why skill being in agricultural practice being described
Plants from the Gardens in the following measure:

- In 1914: 761
- In 1915: 1044
- In 1916: 937
- In 1917: 2599
- In 1918: 1067
- In 1919: 2923

This includes seedlings, cuttings, transplants, etc. From these numbers it is evident that the ornamental parts of the Gardens may be fully developed.
So many cubic yards lead
25 cubic feet @ 70 cents
2 cents

Total came 27 cubic feet for same price
and 10%
\[ \frac{2246}{2} = 664209 \times 2 = 1327.4 \]

\[ \frac{3985}{2} = 1899.675 \text{ cubic m} \]

\[ 1899.675 \div 27 = 70.36 \text{ cubic cm} \]

F11/42
Area of enclosed lines

\[ \text{Area} = \frac{263 \text{ ft}^2}{128} \times \frac{189}{135} \]

\[ \frac{128 \times 189}{135} \]

\[ \frac{128}{189} \]

\[ \frac{121.5}{189} \]

\[ \frac{108.0}{189} \]

\[ \frac{135}{189} \]

\[ \frac{225.5}{189} \]

\[ \frac{127.5}{189} \]

\[ \frac{241.92 \text{ of ft.}}{189} \]

\[ \frac{122.8}{189} \]

\[ \frac{241.92}{189} \]

\[ \frac{122.8}{189} \]

\[ \frac{369.49}{189} \]

Area of enclosed lines: \( 369.49 \text{ of ft.} \)

\[ \frac{230}{3600} \]

\[ \frac{69000}{3600} \]
What is the cost of metalizing a road per ft. per foot? Salt-water having been done?

Average subsequent cost of maintenance for traffic being lifted and replaced?
30th August, 1920

Dear Kinder,

For a reply that I have to put up to the Gardens Committee, can you please tell me what it would cost approximately to build new quarters for our watchmen, allowing room for even men instead of as now, and what it would cost to build quarters for twice as many families as we have now. We shall need possibly rooms for 20 married couples, and 80 unmarried at, say, four to a godown. The quarters, as now, are but temporary sheds; it will be advisable to house them like the coolies, and I would suggest that the estimate be made for lines as the new Japanese lines are also how much do you put down as the cost for maintenance of such structures?

Sincerely yours,

Almira

[Signature]

25. As for 7 Watchmen. Building 70'x20' including verandah and a kitchen block — $6000.

26. As for 20 Married Couples, 10'x10' rooms with 5' verandah and a kitchen block — $3350.

27. Building 150'x50' allowing 87'x50' for men, for 80 men and a kitchen block — $16000.
Dear Burke,

Please see enclosed list of various items
for the various lines.

The cost of maintenance varies
with the age of the item. It should be planted
for the first two years. It can go to
a cost of £20.00 per annum, but this
would have to be borne out of the

C. R. Voice

Yours sincerely,

[Signature]
DRAFT.

Fair Copy signed by

To

\[ \frac{(246 \times 54)}{2} \times \frac{(100 \times 54)}{2} = 90216 \]

Yes it will do

\[ 246 \]

\[ 39\times 2 \]

\[ \text{line} \]

\[ \text{Back soft lift} \]

\[ 246 \]

\[ 400 \]
Cost of 902.160 cubic yards @ 70 cents per 27 cubic feet

\[
\frac{902.160}{27} = 33.418
\]

\[
\frac{33.418}{81} = 0.413
\]

\[
\frac{111}{108} = 1
\]

\[
\frac{36}{27} = 1.33
\]

\[
\frac{90 + 10\%}{90} = 1.10
\]

\[
\frac{23,889}{23,88.9} = 99
\]

\[
\frac{257.18}{2.10} = 122
\]

\[
\text{Total} = \$257.20
\]
Memorandum

From: Eco. Gardens

To: The I.F.S.

July 30, 10:30

Sir,

1. The rubber trees, tapper more than half the circumference are 162 in number.

2. The number of trees that can be accommodated in the arboretum are as under, arranged according to the blocks. (Map Submitted).
<table>
<thead>
<tr>
<th>No. of Block</th>
<th>No. of Hens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>10</td>
</tr>
<tr>
<td>Block 2</td>
<td>13</td>
</tr>
<tr>
<td>Block 3</td>
<td>30</td>
</tr>
<tr>
<td>Block 4</td>
<td>20</td>
</tr>
<tr>
<td>Block 5</td>
<td>15</td>
</tr>
<tr>
<td>Block 6</td>
<td>5</td>
</tr>
<tr>
<td>Crescent Block</td>
<td>47</td>
</tr>
<tr>
<td>Block 7</td>
<td>29</td>
</tr>
<tr>
<td>Block 8</td>
<td>15</td>
</tr>
<tr>
<td>Block 9</td>
<td>8</td>
</tr>
<tr>
<td>Block 10</td>
<td>10</td>
</tr>
<tr>
<td>Block 11</td>
<td>3</td>
</tr>
</tbody>
</table>

**Grand Total:** 354

This is 3 Minutes
Matched. Just
2oo reared
<table>
<thead>
<tr>
<th>Item</th>
<th>Notes</th>
<th>Rate</th>
<th>Hours</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rustcutter</td>
<td></td>
<td>300-450</td>
<td>35-50</td>
<td>495.60</td>
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<td>2 foreman foremen</td>
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<td>49.90</td>
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<tr>
<td>2 cauculators actual</td>
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<tr>
<td>Labor for</td>
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<td>33.00</td>
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<tr>
<td>Bored or</td>
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<tr>
<td>23 acres</td>
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<td>From 1 for 2 acres</td>
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<td>23 acres</td>
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<td>Watchman at 1</td>
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<td>Sanitation</td>
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<td>2 men employed</td>
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<td>Average pay 13 pm</td>
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<td>No of men</td>
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<td>No of men</td>
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</tr>
</tbody>
</table>
To Sir,

Difficulties in the way.

1. The P.W.D. has no Holley Line to spare and therefore unless one is brought, Holley cannot be done at the estimated cost but at a cost of $315.75.

2. The design of the tunnel line is such that we cannot leave them standing while we lay both the Holley.

3. The metalized road cannot be completed until the tunnel lines are necessary from the抛弃.

A. To commence Holley the road to be involved at once, and to claim...
The law seemed to divide into the part above flood limit, and the part below. The flood area twenty feet high was now so liable to flood as usual. This is a consequence of the clearing up blood and flowing out around some pool, but the quiet remain constant.

Plotting in acres:
20 acres = 100 square feet = 2552530.

I am finding from my measurements an elevation between the Cherry and entrance of 17 feet. The plantation is level 1.2 miles, and 300 feet south of mean line are 130 feet on the plantation level, 1.5 miles.

F11/50
The levee formed an invisible into
the part above flood limit, and the
part below. The flood area twenty feet
ago was not so liable to flood as now.
This is a consequence of the changing of
water and so liable to flood as now.

The area free from flooding is acres.
The area liable to flooding up to 18 miles is
acres. 170,1700 square feet. +

To raise it 18 inches requires 255,7550 cubic
feet of soil, which I can find from
one part of the Economic farm sys-
name the Bolivar plantation between
the jamaica lines & the Chung wash entrance.

Cubic feet could be for than 1
Cutting the slope back to 20 feet behind the
front of the Bolivar plantation.
This would leave a level of the
road 230 feet deep with acres 300
feet long = 69,000 or near three and a
half times which is 36,500.
To

Indoors the Beppins we do not know

roost, which feed the flock in a more suitable way than it is done; and sometimes even 'British' an double 1175. It is sent in by the

sent with our consent. 

we lay along, raising hedges.

it is here, by means of the

platanus, and, like the

heart of our fruit tree from

seed, a proceeding in which

medicine now proceeds, has

inferior races revert.

To meet the need, we need to possess the best fruit

trees in the country, and have

them to propagate them in the

best possible way, for the

ascertainment of which special

is necessary.
DRAFT.

Fair Copy signed by

To

Sir.

All the sample fruit trees required can be placed in the same area of the same garden, or 18.

The sale stock in pots is likely to require more soon than it has room for; but

that soon in available, I submit

the potting yard backwoods.

A garden of plantains is wanted

for the supply of the best kind

and must be provided for in the yellow area. I suggest that

the Philippine Department of Agriculture

许可 5 kinds only. This year,

December should suffice with

us. If each an area of

5000 Square feet might suffice.

Then adjoining another 2000

Square feet for experimental

plantation making us all

in one acre.

F11/52
Take as a fact that the Colonne
Governor on the adventurer
of Singapore (I use the word
of a prominent unofficial head
of the Legis-lature council) and
it is known how it is not
known to know. Now others
must see on foot a letter
(born into prosperous one) as Mufasa
Lunetta, and I am for
a conviction that the chief
I am now at the Forestry Office, may not wish the address of the late
Tod, which Kuala lumpur is
( in Singapore )
In this memorandum "Botanic Garden" means the area of the Gardens south of Salvey Road, and "Economic Garden" the area north of Salvey Road.

Physically, the Economic Garden consists of three parts, - (1) the hill top, (2) the slopes, and (3) the low land. The "Riding Track" runs along the line where the slopes to the east and with end, and so makes a sharp division between them and the low land. It bounds the Arboretum which extends upwards behind the east of the hill, to a recognised but not so well defined upper limit. Within the boundary of the Arboretum is the fruit tree ground, ground planted with various kinds of Fruit, and ground occupied by buildings, being the hill top and western slope of the hill. The Arboretum thus serves as a belt, separating the low land from an area composed of the hill top and the western slope and thus western slope being warmer and partly occupied by the cool, lower areas, an area from planting
relatively so small that it is hardly convenient to separate it

I propose to consider the Economic
Garden thus as of three parts. There
are now plans of their utilisation.

1. No realignment in the area or
change in the place of the Laboratory,
but a filling up of gaps, and the
making of a motor road through it.

2. The planting of fruit trees upon
Area F of the Hill top: their
extension over the area of the
Vineyard, lines, if there can be
remained, and again their
extension over the area G, the
currant trees thereon being removed.

3. The utilisation of area H and is now - a trial ground for
herbaceous plants.

4. The embanking of areas S,
and S2, so as to keep out
flooding water from the Binhaid
road; the making of an internal
drainage system (in area S1, first) with a sluice; and upon the
Acceleration of the dirt lines thus
therefore made, the gradual subs-
stitution of the subturn for various
trees, and the planting up of the
Sap area.
The new position for the Tamil lines would be in Area S1.

It is necessary that the formula "one acre, one man" should be recognized, and adequate labor provided. This formula is applied & practised generally in the Malay Peninsula, and just suffices.

1. As to the Arboretum:

Cantley planned it on his taking up the charge of the Gardens. Why? Under the object of producing an educational collection of Economic Trees. It was a fell wish and Governor And several years before had contracted with the & Lyceum Horticultural Society. That on receiving a promising plant, Economic plants should be found in the Garden. Morten came therefore, planted vigorously, and demonstrated that the Botanic Garden would not have all the benefit of it: Whereupon the Government of the Colony put at the disposal of the Superintendent of the Garden (Morten then, but immediately afterwards he left and was succeeded by Cantley) the land of the "Military Reserve," and this land became the Economic Garden.

As Cantley lost no time in planting the Arboretum, many of the trees are now nearly five years oíd, and such are well found.

The area of the Arboretum is about 25
acres. That the addition of 26 acres to
the area of the Botanic Garden for the
purpose of planting a collection of
delicate trees, was not unreasonable, is
demonstrable from a comparison of the
size of various Botanic Gardens. The
Kew Botanic, Royal Botanic Gardens,
Sydney, for instance, cover rather more
than 280 acres of which over 200 are
planted with trees. Now as the
Botanic Garden, Singapore, offers a
Surface of only 82 acres. The
addition of 26 to it would less 10%
and find that there were 30 to
occupied by the Garden, jungle,
saddles, lake, plant houses, serpentin
yard, nurseries, etc. It is thus,
shown that the area around the
trees planted in such a way as to
please the eye by landscape effects,
could be used half of that at Calcutta.

Unfortunately, I have only the
impressions of Botanical, Sydney,
Mumbai, Bangalore, and various
references elsewhere, but I believe
that I shall when I get there, find
that the areas in these planted
with trees, plants, exceed the area
of the "Botanic Garden".

The collection of trees in Penrith
is as much educational as for research.
That purpose is in itself the reason
for the landscape gardening involved in
the planting, with the object of attracting
visitors. It is also a strong reason for the walking of the motor road through the area as I have planned. The divers will please the visitor who has no special object beyond filling his leisure; at the same time it will bring the visitor who comes with a more particular purpose near to the experimental work in the Garden to the right on & the left of the road; to the race of fruit trees under delution which will but exhibit their special character at first time, or to the herbaceous crops bordering the Riding Track.

The Arboretum has a fair number of gaps in it, which can be filled with discrimination, and variety, as there is the room which should be added to the collection.

2. The planting of fruit trees.

This has been dreamt curious, and work commenced. The fruit work embraces a planting of these trees of every race of the twoades from that can be got of every kind and of every race of Ramoerau, and it has.

Also it embraces the planting of more than three trees of The Brazil Cherry, and established Avocado Sears with the object of having fruit to distribute.
to even seek as a means of popularising them.

It embraces the gathering wherever of all manner of citrus trees. The production of some oranges being such fertile in the Straits, but not undertaken.

Upon the races coming experiments will be done: toinstance the Peerless rambutan, and the large Malaccan. Rambutan will be tried in the hope of finding the attributes of free-stoned kern and large size withou and, the same plant. The Hongi
cerry will be crossed with all the local jabutis in the hope of fitting
fruit-flavored hybrids.

Further the money of plants on sale will be kept stockpiled with drafts. We find good trees.

The rambutans and jabutis
planting will proceed to other kinds of fruit, and it will be long
before the whole area under 200 yards in diameter to hold the stone
fruiting. Then will come the time
in terminal of the Tsawalk lines, of
the fruit planting with spread up to
the Nellie Ann and quarters.
Next of the small triangle of Indian
which now reaches from the main
hills to the field kitchen, grateful
is an area planted with fruit. This
fruit has failed now, want of
shade, I see the reason to keep
it. But of it again in jütta, above
under shade, and doing joint well.
The part of it might be removed
ultimately to make room for more
fruit trees, as it is not going to hold
up anything, and the demand for its
seed is insubstantial. The failed
jütta should be removed as fruit
trees are put by covering the ground
it now occupies.

3. The herbaceous experimental round.

The herbaceous experimental round
should be used as now. It is
excellent for the purpose to which
it has been put. At the present time
Swiss beets in the particular case
occupy a large part of it, next
year it will be another desirable
race, and in the year after yet
another.

There is abundant room for new
and land.
4. The Swamp area.

Effective use of the Swamp area will depend on a reduction of the swamp conditions.

It has been noted that the present lower road cuts the area into two sections, S1 and S2, on the map. The road will have to be raised a couple of feet, and S2 will present flood water fromipping from one end to the other. I suggest by a low bermed embankment, but the flood water from S1 and S2, and leaving S2 alone at present.
With the flood water of the Bucket Tianau road at the embankment out and the hill drainage known out to the west and east, it will be but the rain which falls there is area S, that can flood it.
I suggest a tank as drawn to hold any that the ground cannot take up until the sluice mark can be opened to let it go.

The earth dug out of the tank would make a platform for the tank lines.

It is clear that Tumits would be content with this spot, seeing how they live at the 4th mile Bucket Tianau road.

Having succeeded with area S1, the lock could be extended to area S2.

One third of S, and the whole of S2 are covered with tobacco, which has served its purpose except those 27 and 610. These tobacco areas should be tapped out gradually, and if they become...
The youngest rubber is on $S_1$ and would be the last to go. Some of the oldest rubber is ready to be harvested.

New areas $S_1$ and $S_2$ have races of coconut, races of flax, cotton, coffee, and other such plants and being just been planted and their plans are to bring in needed study.