

Monthly report for January 2605.A) Dr. FURTADO's REPORT

1. Administrative & Technical Staff: There was no change in the administrative and the technical staff.

Mr. CHAN YORK CHYE, Mr. P. BONAMIS and Che NGADIMAN were ill with influenza or malaria for some days.

2. Clerical: Che JURAIMI was in charge of the usual office routine. There was an increase in work in this month due to the calculation of the increases in the coolies' wages and also in the calculation of the budget for the coolies wages for the coming year. The increases in the salaries of the Ho-joins and the other budgets were calculated by Mr. QUAN AH GUN, the Syoki-Syunin jointly of the Museums and the Gardens. Mr. ESPECKERMAN and sometimes Mr. BONAMIS assisted Che JURAIMI. Che JURAIMI and I had also devote a good deal of our time in compiling different statistics required from the Gardens' Police Auxiliaries, either because the other Gardens' Police Auxiliaries were too busy with the gardens' work or because the statistics were urgently required and there was no time to explain the details to others. (In the Gardens Kampong there live 11 police auxiliaries and there are two more on the staff who live outside the Kampong). Mr. ESPECKERMAN also completed typing a list of plants "Flora of Syonan II Monocotyledons" compiled, at the Director's request, by Mr. E. J. H. CORNER, and "A List of Malayan Ferns" by Mr. R. E. HOLTUM. The typing was done at different times, but it is reported now because no report was made earlier. On several occasions Mr. ESPECKERMAN was called to attend to his post and meetings as a Syokutyo in the B Division of Syonan.

3. Herbarium: Che NUR rearranged 4727 specimens in the Herbarium incorporating in it the specimens from the Hongkong herbarium of the families concerned, that is, of Haemodoraceae, Indaceae, Amaryllidaceae, Dioscoriaceae, Liliaceae, Commelinaceae, and Flagellariaceae.

Che KIAH collected and dried seeds of different kinds of economic plants, and occasionally also living plants whenever wanted by Nipponzin visitors to the Gardens.

Che KIAH was also away for five(5) days from 22-27 January for the purpose of collecting in Penang the specimens and seeds mainly of Geophila herbacea and Rhinacanthus nassutus the former is said to contain emetine, a drug widely used in amoebic dysentery, while the leaves of the latter plant are a cure for ringworm, both maladies quite common now among many a labour force.

Over 75 specimens or drawings were identified for Nipponzins.

163 cards were written for the Index of the Genera not represented before in the Herbarium. This addition of new genera is due to incorporation in the Herbarium the specimens from the HonKong Herbarium which contains many specimens from temperate Asia.

4. Library: Mr. BONAMIS inspected and cleaned the books as usual and assisted in the preparation of the different clerical returns. He fumigated 71 books and cleaned 637 volumes in all.

5. Forest Reserves: Che NGADIMAN was in charge of the Reserves in Kranji and Bukit Timah. In both these reserves there was some unauthorised felling by the coolies of some butais; but, since steps have been taken to inform the Nipponzin superiors, it is expected that no such felling will be made again.

6. Seeds : There was a good demand for vegetable seeds from Nippon-zins especially from navy officials. The seeds mostly of Sawi, Bayam, Basella (Climbing spinach), Kangkong, Cucumbers, Brinjals, Kundor (Wax Gourd), Talinum (Java spinach), Erechites (Tumba-tumba Jipun) were supplied. The seeds of red Bayams (three kinds), of green Celosia with red flowers, and of small yellow flowering zinnias were supplied to the Tokubetu-Si Suido-ka for the purpose of camouflaging the water reservoir on Fort-Canning and further advice was also given for how to get other living plants for the purpose. Some seeds of flowering plants like Galphimia glauca, dwarf zinnia, Balsam, Marigold, Celosia spp; etc. were given to the officials of a paper factory in Palembang, Su

beds of medicinal plants, but so

far we could supply only those of Cassia alata, Datura metel, Blumea batsanifera, Andrographis paniculata, Vinca alba, and V. rosea and in addition planting material of Orthosiphon stamineus, Strophanthus gratus and Tithonia diversifolia.

7. Sultana: 2 beds of Strophanthus, 10 plants of Blumea, 27 plants of Brucea, 3 beds of Rozelle, and 3 beds of a different Hibiscus were planted. In addition, several seeds of Andrographis and tobacco were sown. The other vegetables are reported below.

8. Vegetables: The vegetable plots were maintained as usual with the idea of supplying seeds to the local people, and also providing vegetables to all our people. The labourers were supplied each with about 5 katies of leafy vegetables and 6 katies of tapioca, all without any charge. In communal plots over 2,000 cuttings of tapioca, 11 beds of Talinum, 16 beds of Maize, 31 beds of Sweet Potato, 6 beds of Keladi, 2 beds of Terong and 13 beds of Kangkong were planted.

9. General work: Motor mowers were worked in Lawns A, B, C, D, E, O, P, and Q. Scythes and babats were used in B, J, K & O. Canna beds and plants in Lawns A, B, C, D & E were weeded and ~~mulch~~ mulched with grass cuttings. In the last mentioned lawns many shrubs and climbers that were growing around plants were also removed. Drains in Lawns A, D & J have been cleaned. Three new shelters near the office were covered up with timber and turf. The plants in the tropical show houses were changed from time to time so as to maintain the attraction of the places. Some flowering plants were also sent at the entrance to the office. Drains and shelters in the Gardens' Kampong were cleaned twice during the month.

During the rains on the night of 26th January two trees broke down, and it was found that both had been weakened by splinters passing through the trunk probably during the shelling in February 2602. As the trunks were an obstacle to road traffic, they were cut and removed in the same night by using the Gardens' coolies.

10. Wages: All the labourers were given a 2 to 4% increase in this month, this in addition to the large increase granted in October last to the coolies drawing less than a dollar a day.

The health was on the whole very good, the people suffering only from minor ailments.

11. Planting material

Seeds - Alcurites montana, Dioscorea pentaphylla, Croton tiglium, Indigofera, Canna (Pride of K.L. + Nilsum No. 2), Cocchorus olitorius, Rhododendron (3 lots).
Cuttings - Hibiscus (15, 2, 49, 4), Rhododendron No. 47 and Amorpha rosea and tubers of Amorphophallus, Cognac and another species.

Plants potted - Miconia sp., Atalantia, Fukiensia, Hibiscus (8 lots), Tithonia (?), and a few Anthuriums.

A few aerial orchids were furnished with new fern roots.

Four plants of Rhododendrons were planted at the Plant House.

Two unsuccessful attempts at grafting tomatoe on to Solanum

(Santo Gaja) were made.

Cross pollination of Cannas and also of Arradidaes were attempted.

12. Orchids: The orchid collection of seedlings and larger plants was maintained as usual. The collection of spathoglottis plants were re-potted. A few new pollinations were made, chiefly of Dendrobium formosum (which flowers rarely) and its hybrids. Hippeophyllum plants flowered for the first time in over two years, and were studied by Mr. HOLTUM. Three new hybrids flowered for the first time; Vanda Sumatrana + Arachnis Hookeriana, Vanda Josephine + V. Hookeriana-Joaquima and Vanda Cooperi + Josephine. Of the last two, several plants flowered, two being selected for propagation, the others discarded.

B. Mr. HOLTUM'S BOTANICAL WORK

Mr. HOLTUM completed his series of drawings of characteristic features of Malayan ferns, and continued to write general accounts of the main groups of ferns in Malaya. He began a study of Malayan grasses,

writing new descriptions of the Malayan species of the genera Paspalum, Panicum, Brachiaria, Isachne, Alloteropsis, Eriochloa and Axonopus, with keys to the species in each genus.

C. Mr. CORNER'S BOTANICAL WORK

Mr. CORNER continued his studies on Malayan fruits, with respect to the development of the aril. He investigated particularly the Caesalpinoideae and was obliged to make some detailed studies on the development of the flower and fruit in as many genera as were growing in the Botanic Garden.

W. H. F. F. F. F.
1/2/05.

SYONAN BOTANICAL GARDENS

Monthly report for February 2605

A) Dr. FURTADO's REPORT

1. Administrative & Technical Staff: Dr. FURTADO continued to be the chief administrative and technical assistant, and Mr. QUAN AH GUN, the Syoki-Syunin of the Department.

Mr. QUAN AH GUN, Mr. YORK CHYE, MR. T PAKIANATHAN, and Mr. BONAMIS were sick from influenza and malaria.

Che JURAIMI was down with mumps.

2. Herbarium: Che. NUR rearranged 2320 specimens belonging to the plant families Juncaceae, Pandanaceae, and Araceae.

Che. KIAH collected a number of seeds of different kinds of economic plants and prepared them in packets for the purpose of distributing them to the military and other public. He also went round to collect specimens of some ferns, Citrus hystrix (Limau Purut), Lansium domesticum (Duku & Langsat), and specimens of some species of Erythrina now flowering in Syonan.

Over 115 specimens were identified for the Nipponese officers, most of them were medicinal or poisonous plants. Information concerning them and other plants was supplied.

3. Library: Mr. BONAMIS cleaned and inspected the books as usual. He also typed for military visitors to the library over 40 pages of information concerning the uses, history, analyses, etc of some medicinal plants.

4. Plant and Seed Distribution: Over 200 packets of vegetable seeds were distributed to Nipponese visitors, most of the seeds being of kitchen vegetables like Basella, Talinum, Bayam, Erechtites, Celosia, Sawi, Timon and Kundor. In some cases cuttings of Tapioca, Sweet-Potatoes and Chekur Manis were given. Of medicinal plants seeds of Andrographis paniculata, Datura metel and cutting of Tinospora and Orthosiphon were supplied. Of ornamental and other plants the following were supplied:

1 clump of Cyrtostachys lakka, one of Bambusa sp., one of Musa Textilis, 20 seedlings of Hymenaea courbaril (West Indian Locust tree), 100 plants of Lotus plants, 20 cuttings of Pterocarpus indicus (Poko Sena). In addition some military took a number of grown up seedlings for camouflaging purposes.

5. Forests: The two forest reserves were maintained as usual. There was some unauthorised felling in the Bukit Timah Reserve but the suspected culprits have been warned.

6. Sultana: In addition to growing foodcrops the medicinal plots were weeded & mulched. Further 25 beds of Orthosiphon (Kumis Kuching) were planted with cuttings, 2 beds with seedlings of Akar Chireta (Andrographis) and 2 with seeds of Blumea balsamifera.

7. Vegetable Plots: The plots were maintained with the usual view of growing common vegetables to meet the needs of the labourers and other staff, to keep a stock of seeds and plants for the public and to serve as a demonstration for the Nipponese. In all about 4 katies of leafy vegetables and 6 katies of Tapioca were supplied free to the labourers, the produce from plants grown in smaller scale being distributed to the members of the office staff.

During this month an attempt has been made to bring under cultivation about 8 acres more of land in the Sultana. For this purpose the coolies were released from other work twice a week. As soon as this work is over, the communal plots will be attended again.

8. Lawn and General Work: Motor mowers worked on Lawns B, E and W, where babats and scythes were also used. The Sunrockery, the paths in Lawn O, the drains in O, at Main Gate and Maranta Avenue were weeded. Supports were supplied to several Bougainvillea and Orchid Plants in Lawns B & X. Plants at the office and Plant house were regularly changed. Many trees were pruned of their branches which obstructed the road traffic or were coming in contact with telephone wires. The coolie lines were cleaned twice during the month.

Police Auxiliary Work: Eight Hojoins and three Miscellaneous Workmen in the Gardens are serving as members of the Police Auxiliary Force (Keisatsu Kyozyodan) and as such they are called upon frequently to do work concerning passive defence. During this month Mr. ESPECKERMAN (a Syokutyō in the B Division) and Dr. FURTADO (a Kumityō in E Division) and his assistant Che JURAIMI (Keiboin) had to do a good deal of work in calling for and verifying the worker's books, and in their absence employers' certificates, to see if any of the persons were affected by the Male Employment Ordinance.

In this connection the householders had also to be told not to get alarmed at this inquiry since the object of the ordinance, as explained in the preamble, is to direct the able bodied males between 15-40 years of age to more useful work as judged from the food production and the military point of view, leaving the less useful and non-fatiguing work for the males not falling in the above mentioned category, and to the female workers. In the three Kumis in the Gardens and around it, no one has been affected by the ordinance.

Further we had to inform the people that though the Government would very much appreciate if female workers were to step in and fill up the vacancies created by the males affected by the ordinance, as explained by the official announcement, it will not violate the social or religious customs of the local communities by compelling the female population to do work in offices, factories, etc.

10. Propagating Yard:

Seeds Sown - Canna, 2 hybrids.

Cuttings - Geophila (from Penang), Atalantia (suckers), Ruta graveolens, Petraeovitex, Petrea arborea, Ravenia spectabilis, Rhododendron indicum, Stephanotis, Lonicera Japonica, and a few unlabelled plants from Penang.

Plants Potted - Lagerstroemia tomentosa, Hibiscus Nos. 95, 87, 90, 79, 83, 102, 81, 85, 75. Mucuna Bennettii, Cactus sp.

In the Glass House practically all the begonias, ferns, and succulent plants were re-potted.

Plants planted outside include Ravenia spectabilis, Zephranthes (hybrid), Cooperanthes (hybrid), and Rhododendron (hybrids).

Attempts at grafting tomato on Solanum (Santo Gaja) were made.

A number of cross pollinations between a disease-resistant Canna and other varieties were made. Many flowers of Arrabidaea rotundata were crossed with A. magnifica and one good fruit resulted.

11. Orchids: The orchid collection was maintained as usual during the month. A number of plants were re-potted. A few new pollinations were made of plants which rarely flower.

B. Mr. HOLTUM'S BOTANICAL WORK

Mr. HOLTUM continued his study of the grasses native in Malaya, writing new descriptions of all species and correcting the names in Ridley's Flora. He completed a survey of the Panicum tribe and began to deal with the Andropogon tribe. He also continued to write a summary of his usual observations on Malayan ferns.

C. Mr. CORNER'S BOTANICAL WORK

Mr. CORNER continued his researches on the structure and development of Malayan fruits and seeds. He has nearly completed the survey of Leguminous seeds, and has made a large number of drawings illustrating the development not only of the fruit but of the flower. The research has led to many points of revision in the classification of the tropical Leguminosae.

H. Furtado
28/2/08

SYONAN BOTANICAL GARDEN

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Over 110 specimens were identified for the Japanese officers, most of them were medicinal or poisonous plants. Information concerning them and other plants was supplied.

3. Library: Mr. BONAMIS cleaned and inspected the books as usual. He also typed for military visitors to the library over 40 pages of information concerning the uses, history, analyses, etc of some medicinal plants.

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C. Mr. CORREX'S BOTANICAL WORK

Mr. CORREX continued his researches on the structure and development of Malayan fruits and seeds. He has nearly completed the survey of leguminous seeds, and has made a large number of drawings illustrating the development not only of the fruit but of the flower. The research has led to many points of revision in the classification of the tropical Leguminosae.

W. H. Holtum
28/2/28 -

Monthly report for March 2605

A) Dr. FURTADO'S REPORT

1. Administrative & Technical staff: There was no change in the administrative and technical staff.

The NUR, the Herbarium Assistant, was ill for 12 days with pneumonia, and was treated at the Boh Jin Hospital. Mr. Especkerman was ill with influenza.

2. Herbarium: The NUR rearranged 1050 specimens in the Herbarium belonging to Araceae, Alismaceae, Nymphaeaceae and Cyperaceae. The specimens of these families from the Hongkong herbarium were incorporated in the general herbarium.

The KIAH collected and dried seeds of the economic plants and also brought in living specimens when wanted by visitors. In all 155 specimens were determined for the Nipponese military.

Library:

3. Mr. ESPECKERMAN & Mr. BONAMIS inspected the books both for vermin and for alteration in the Index Cards. Nipponese Military were shown a number of books and references pertaining to the subjects of their inquiry, mostly medicinal. Mr. BONAMIS also typed some sheets of information required by the visitors.

4. Seeds & Planting Material Distributed: Many Military and Naval Butais visited the Gardens for vegetable seeds and the following were supplied:
 Talinum and Erechites 120 packets of each, Temon (Cucumber) 8 packets, Bringals 5 packets, Celosia 20 packets, Andrographis 10 packets and Datura Metel 3 fruits.

Cuttings of the following were given away:
 Tapioca 400, Talinum 100, Orthosiphon (Kumis Kuching) 30 cuttings, Tinospora indica 30, and Coccinea indica 25.

5. Vegetable Plots: They were maintained as usual with the purpose of showing a good assortment of the commonest vegetables and with the purpose of enabling the Department to supply the coolies with some vegetables very frequently. Owing to the heavy rains, all the plots suffered a bit and many freshly prepared beds were washed off by the rains.

6. Labour Force: These were supplied with 5 katies of leafy vegetables and 8 katies of Tapioca, all free of cost. Owing to the very high rise in price of foodstuffs, the staff as a rule have been unable to purchase in the market commodities like fish, green gram (green kachang) etc., which are no more controlled in the market. This has had a very adverse effect on the health of the staff as can be seen by the look at the physique of our men, frequent ailments, also the lowered power of resistance ~~of~~ to wounds, etc.

In combination with the Police Auxiliaries, the coolies have been advised to cultivate every available inch of ground, to rear poultry, to consume in larger quantities a variety of weeds and other common vegetables that are available in the area, and also to eat frequently the cakes made of slightly fermented tapioca or cereals. (This last contains a large quantity of Vitamin B.)

The surroundings of the Coolie Lines were cleaned officially 4 times during the month so as to reduce the danger from mosquitoes, flies, etc.

However, it would be a great boon if green gram (Kachang Biji Hijau) could be made available to our people at controlled price, at least at the rate of one katie per head.

7. Sultana: Most of the time of the coolies available was used in maintaining the existing economic plants. However the following plants were planted:

Blumea --	5 beds	Indigofera --	4 beds
Hibiscus		Erythroxylon -	2 beds
(Roselle)	2 beds		

The following were harvested:

Sesamum indicum -	5 katies
Castor oil seeds -	1 Katie

Also about 5 katies of the branches of Akar Chireta (Andrographis) and 2 katies of Orthosiphon (Kumis Kuching) were given away to visitors to be used medicinally.

8. General Work: Motor Mowers were worked in Lawns C, A, X & O, and babats and scythes were worked in Lawn D, X & C.

The plants in Lawns C, A, B, E & O were weeded.

The drains in Maranta Avenue, Dalvey Gate Road and in Lawn Z were cleaned and weeded.

The attap roof of the Jagas quarters was mended with new attaps.

The bullock cart was repaired and was used to transport compost, sweepings, etc.

The show of plants in Plant houses was maintained as usual.

9. Forest Reserves: Both the Reserves were maintained as usual, Che NGADIMAN making frequent visits to both these places.

10. Propagating Yard:

Seeds Sown -- *Datura*, *Mucuna* sp., *Arrabidaea* ²*rotundata* (Goss.)

Cuttings taken -- *Rondeletia odorata*, *Petrea nigra*, *Hibiscus* Nos. 40, 49, 51, 4, 42, *Juniperus conferta*.

Plants potted -- *Piper nigrum*, *Hibiscus* 81, 85, 78, 102, *Lycopodium squarrosum*, *Rhododendron* No. 47, *Livistona*, *Woodfordii*, *Spathoglottis*, *Begonia*s and Maiden-Hair Ferns.

In the Glass House many *Begonia*s and Maiden Hair ferns were propagated.

Three plants of *Ravenia spectabilis* and 1 *Bougainvillea* (Lord Willingdon) were planted in the Lawns.

11. Orchids: Maintenance of the Collections was continued as usual.

B) Mr. HOLTUM'S BOTANICAL WORK

Mr. Holtum continued his study of Malayan grasses, preparing new descriptions of all species. He completed his account of the large tribe *Andropogoneae* and then dealt with the miscellaneous smaller tribes; the only remaining large tribe is the *Bambuseae*.

C) Mr. CORNER'S BOTANICAL WORK

Mr. CORNER continued his studies on the structure of the fruit, seed and flower in the *Leguminosae*, with a view to preparing an adequate introduction to this important family of tropical plants. He also continued his researches on the arillate seeds of flowering plants in general, making use of the living material in the Botanical Gardens as flower and fruit were produced. Thus, the field of study varied enormously from *Michelia* to *Delonix* and *Podocarpus*. Many ~~ex~~ paintings and drawings of microscopic structure were made.

W. H. H. H.
8/3/08

SYDNEY BOTANICAL GARDENS

Monthly Report for May 2605

A) Dr. FURTADO'S REPORT

1. Administrative and Technical Staff: There was no change in the administrative or technical staff of the Department.

2. Herbarium: Che NUR rearranged 5657 specimens in the general herbarium incorporating in it the specimens from the Hong Kong herbarium; the families concerned being Gramineae and Dilleniaceae.

Che KIAM devoted most of his time to cleaning the cases of spirit collections, all of which had started to develop moulds on the panes and boards. He also devoted some time to collecting seeds of economic plants.

In all 145 specimens were identified mostly of common weeds, of which the Military Authorities wanted to know the edible ones.

3. Library: Che BAJURI, Che JURAIMI, Mr. BONAMIS and Mr. ESPACKERMAN assisted in cleaning the books and inspecting them inside, killing the borers when present.

4. Forest Reserves: Che NGADIMAN continued to be in charge of the two forest reserves. In the Bukit Timah Reserve vigilance had to be increased in order to prevent the neighbouring Butais from encroaching on the reserves unknowingly. The coolies carried on regularly the duties both of patrolling the area and of cleaning the paths.

5. Vegetable Plots: These plots, as usual, are maintained, firstly, to grow, for the purpose of demonstration, as many common, easily-growing local vegetables as possible, and secondly, to provide for the entire staff, including the Romusyas, as much leafy vegetable as possible. The seeds were also collected for the purpose of supplying them to the public.

6. Communal Tapioca Plots: An attempt is being made to increase the area of the communal plantings under tapioca. For this purpose more people are being released from general work. During this month about 9 katis of tapioca tubers were distributed to every Hojoin and Romusya in the Gardens.

7. Sultana: Owing to the requirements of a Butai, the plots of Indigo and Castor oil had to be changed. Hence these two crops are now being planted in a new area. In addition the following were planted:

Orthosiphon (Kumis Kuching)	34 beds (cuttings)
Andrographis (Akar Chireta)	16 beds (seedlings)
Latura metel (Kecubong)	4 beds (seeds)
Cannabis indica var (Ganja)	2 beds (seeds)

8. General Work: Motor Lawn Mowers were worked in Lawns B, D, E, X and W, and babats in Lawns E, C, O & X.

Weeding was done in drains and around plants in Lawns A, B, D, O and Sunrockeries.

The cut grass, fallen leaves, etc. were collected and removed to the vegetable plots for composting.

Owing to many thefts of tapioca, the Tyersall grounds have been closed in many parts by barbed wires; this fence will be extended in the next month. The carpenter and his assistant repaired some of the huts in the Tyersall, soldered old watering cans and repaired the Palm and the Plant houses and a cement water tank, that is, in addition to doing their usual duties of working out the motor pump, making labels, etc.

The orchids and the show plants in plant-houses and at the office were changed from time to time.

9. Labourers: The condition of the labour force has considerably

not expected owing to the high rise in the cost of living, and now that the supply of bread has been stopped they will feel the pinch all the more, especially those persons who have a large number of members of the family who are not able to work and thus contribute towards the reduction of the family expenses. It is with this view in mind that the Department is doing its best to assist its staff by extending the plots under tapioca and vegetables and giving something extra to those who have large families.

10. Potting Yard: General maintenance and so time were carried on as usual.

Seeds sown:- *Cannabis sativa*

Cuttings taken:- *Cleome (pink)*, *Petrea rugosa*, *Callistemon phosnicellus*, *Cupressus pinifera var squarrosa*, *Cupressus sempervivens var pyramidalis*, *Plumbago rosea*, *Brunfelsia unaulata*, *Plumbago capensis*, *Rhododendron indicum*.

Plants potted:- *Verbena tenera*, *Nibiscus* Nos. 74, 76 & 85, *Macleis guineensis*, *Arrabidaea rotundata*.

The grass house propagation of *Begonias* was continued, and most of the maiden hair ferns were supplied with bone meal fertiliser.

About a dozen aerial orchids were furnished with fern roots; also two *Aspleniums* from the Plant House.

A few attempts at crossing *Cannas* were tried. ~~Five lots of *Nibiscus* were planted at the nursery.~~ Grafts of *Rhododendron hybrid* on to *Rhododendron indicum* were attempted.

11. Orchids: Routine care of orchid seedlings and older plants continued as usual. The young seedlings are kept in flasks as long as possible, so that they may be safer for transplanting. Few new seeds were planted. The *Amphibium* plants repotted some months ago are now well grown and some are flowering. More have been repotted during the month.

12) MR. MONTANI'S BOTANICAL WORK

Mr. MONTANI completed his account of the Malayan Gramineae (grasses) by preparing descriptions of the bamboos. The bamboos in cultivation in the Gardens were very useful in this work. The plan and list of cultivated bamboos were checked and some wrong identifications corrected. There are now about thirty species of bamboos in the Gardens, including three from Borneo which are growing very vigorously. Towards the end of the month, Mr. MONTANI began a study of the family Cyperaceae.

13) MR. BAKER'S BOTANICAL WORK:

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Mr. BAKER nearly completed his research on the seed and flower of the Leguminosae, particularly the Caesalpinioideae. He also studied the fruits and seeds of several Myristicaceae, Connaraceae and Steruliaceae and made detailed drawings and paintings of their structure. He has prepared a draft of the first volume of a work on the primitive fruit of the Angiosperms, which deals entirely with the Leguminosae.

Montani
31/5/05

A) Dr. FURTADO'S REPORT

1. Administrative & Technical Staff: There was no change in the administrative and technical staff.

The HUR, the Herbarium Assistant, was ill for 12 days with pneumonia, and was treated at the Don Chin hospital. Mr. de Gooch was ill with influenza.

2. Herbarium: The HUR rearranged loose specimens in the herbarium belonging to Araceae, Alismaceae, Maraceae and Cyperaceae. The specimens of these families from the Hongkong herbarium were incorporated in the general herbarium.

The HUR collected and dried seeds of the economic plants and also brought in living specimens which wanted by visitors. In all 153 specimens were determined for the Japanese military.

Library:

3. Mr. ESPRACK and Mr. BONAMIS inspected the books both for vermin and for alteration in the Index Cards. Japanese Military were shown a number of books and references pertaining to the subjects of their inquiry, mostly medicinal. Mr. BONAMIS also typed some sheets of information required by the visitors.

4. Seeds & Planting Material Distributed: Many Military and Naval Butais visited the Gardens for vegetable seeds and the following were supplied:

Talinum and Erechtites 120 packets of each, Temon (Cucumber) 5 packets, Bringals 5 packets, Celosia 20 packets, Andrographis 10 packets and Datura Metel 3 fruits.

Cuttings of the following were given away:

Tapioca 400, Talinum 100, Orthosiphon (Kumis Kuching) 30 cuttings, Dioscorea indica 30, and Coccinea indica 25.

5. Vegetable plots: They were maintained as usual with the purpose of showing a good assortment of the commonest vegetables and with the purpose of enabling the department to supply the coolies with some vegetables very frequently. Owing to the heavy rains, all the plots suffered a bit and many recently prepared beds were washed off by the rains.

6. Labour force: These were supplied with 5 katies of leafy vegetables and 3 katies of Tapioca, all free of cost. Owing to the very high rise in price of foodstuffs, the staff as a rule have been unable to purchase in the market commodities like fish, green gram (green kacang) etc., which are no more controlled in the market. This has had a very adverse effect on the health of the staff as can be seen by the look at the physique of our men, frequent ailments, also the lowered power of resistance ~~of~~ to wounds, etc.

In collaboration with the Police Auxiliaries, the coolies have been advised to cultivate every available inch of ground, to rear poultry, to consume in larger quantities a variety of weeds and other common vegetables that are available in the area, and also to eat frequently the cakes made of slightly fermented tapioca or cereals. (This last contains a large quantity of Vitamin B.)

The surroundings of the Coolie Lines were cleaned officially 4 times during the month so as to reduce the danger from mosquitoes, flies, etc.

However, it would be a great boon if green gram (Kachang Hijau) could be made available to our people at controlled price, at least at the rate of one katie per head.

7. Sultana: Most of the time of the coolies available was used in maintaining the existing economic plants. However the following plants were planted:

Blumea --	5 beds	Indigofera --	4 beds
Hibiscus		Erythroxylon -	2 beds
(Roselle)	2 beds		

The following were harvested:

Sesamum indicum - 5 katies
Castor oil seeds - 1 Katie

Also about 5 katies of the branches of Akar Chireta (Andrographis) and 2 katies of Orthosiphon (Kumis Kuching) were given away to visitors to be used medicinally.

8. General Work: Motor Mowers were worked in Lawns C, A, X & O, and babats and scythes were worked in Lawn D, X & C.

The plants in Lawns C, A, B, E & O were weeded.

The drains in Maranta Avenue, Dalvey Gate Road and in Lawn Z were cleaned and weeded.

The attap roof of the Jagas Quarters was mended with new attaps.

The bullock cart was repaired and was used to transport compost, sweepings, etc.

The show of plants in Plant houses was maintained as usual.

9. Forest Reserves: Both the Reserves were maintained as usual, One NGADIMAN making frequent visits to both these places.

10. Propagating Yard:

Seeds Sown -- *Datura*, *Mucuna* sp., *Arrabidaea rotundata* (Goss.)

Cuttings taken -- *Rondeletia odorata*, *Petrea nigosa*, *Hibiscus* Nos. 40, 49, 51, 4, 42, *Juniperus conferta*.

Plants potted -- *Piper nigrum*, *Hibiscus* 81, 85, 78, 102, *Lycopodium squarrosum*, *Rhododendron* No. 47, *Livistona*, *Woodfordia*, *Spathoglottis*, *Begonias* and Maiden-Hair Ferns.

In the Glass House many *Begonias* and Maiden Hair ferns were propagated.

Three plants of *Ravenia spectabilis* and 1 *Bougainvillea* (Lord Willingdon) were planted in the Lawns.

11. Orchids: Maintenance of the Collections was continued as usual.

B) Mr. HOLTUM'S BOTANICAL WORK

Mr. Holtum continued his study of Malayan grasses, preparing new descriptions of all species. He completed his account of the large tribe *Andropogoneae* and then dealt with the miscellaneous smaller tribes; the only remaining large tribe is the *Bambuseae*.

C) Mr. CORNER'S BOTANICAL WORK

Mr. CORNER continued his studies on the structure of the fruit, seed and flower in the *Leguminosae*, with a view to preparing an adequate introduction to this important family of tropical plants. He also continued his researches on the arillate seeds of flowering plants in general, making use of the living material in the Botanical Gardens as flower and fruit were produced. Thus, the field of study varied enormously from *Michelia* to *Delonix* and *Podocarpus*. Many ~~ex~~ paintings and drawings of microscopic structure were made.

Holtum
1/10/05

SYONAN BOTANICAL GARDENS

Monthly report for April 2605

A) Dr. Furtado's REPORT

1. Administrative & Technical Staff: There was no change in the administrative or technical staff of the Department.

Mr. Especkerman and Mr. Bonamis were ill with malaria, the former for 11 days and the latter for 10 days.

2.

2. Herbarium: CHE NUR rearrange 6926 herbarium specimens belonging to Cyperaceae and Gramineae. He also incorporated in the general herbarium the Hong K Kong specimens of these two families.

Che KIAH was busy collecting mostly seeds of economic plants, living specimens for demonstration and preparing seed packages for distribution.

In all 165 specimens were identified for Nipponese Officials who wanted to learn either the local edible weeds or the local medicinal plants. There was also a request to be shown the the most poisonous plants available in the locality.

3. Library: The books were cleaned by Messrs. BONAMIS, JURAIMI, ESPECKERMAN BAJURI, and the two attendants. Rats had come to the library to make nests and ~~was~~ were trapped and killed. No damage was done to the books, but some newspapers wrappings were bitten off in order to make nests.

4. Forest Reserves: The two reserves were maintained as usual, Che NGADIMAN making regular visits to both these areas.

5. Sultana; As a part of the area is being handed to the Bats, the economic plants in the area are being transferred to another one. All seeds were sown in 16 beds with Ingofera, 6 beds with Andrographis, nearly 50 small beds with Ricinus (castor Oil plant), 2 beds of Lemon grass.

6. Vegetable Plots: The vegetable plots were maintained as usual, firstly with the purpose of growing the seeds of common, easily growing vegetables and secondly with the purpose of supplying vegetables to the staff, both the Romusyas and others.

About 6 katies of leafy vegetables and 10 katies of Tapioca were supplied free of cost to all the Romusyas and others.

7. Labourers: The health of the Romusyas was on the whole good. On Tentyo Setsu day (29th) the entire staff both male and female were provided, gratis, with two packets of Kooa cigarettes, 1 cake of soap.

8. General Work: Motor Mowers worked in Lawns D, E, J, O, W, X & A and babats and scythes were worked in Lawn O, (bandstand), W and near the office.

The drains near the office and bandstand were cleaned and weeded, and the plants in Lawns B, D, X and O were weeded and manured with compost.

The plants in the plant and the Orchid Houses and near the office were changed from time to time.

The attap roofs of some houses in Tyresall (Sultana) and some roofs of the clericle quarters were repaired by the Gardens' carpenters assisted by the coolies.

The trees or branches broken down during the heavy showers were cut off and the wood distributed to staff for fuel.

Many trees had to be pruned either because the branches obstructed the traffic or because they were a danger to the telephone wires or to the plant houses.

9. Distribution of Seeds and Plants: The seeds of the commonest vegetables as Basella, Erectitites, Talinum, Bayams, Celosia and Cosmos were distributed to the local Public and more specially to the Nipponese Military or Naval Officers. Cuttings of Tapioca were supplied to some schools. Seeds of Andrographis, Datura Erythroxyton coca were supplied to some military, and so also some cuttings of Strophanthus gratis and Orthosiphon stamineus.

10. Potting Yard: General maintenance and routine continued as usual.

Cuttings taken -- Poinsettia (dwarf), Russelia, Dalbergia Dalbergioides
Brunfelsia undulata, Petria rugosa.

Plants potted: -- Mucuna sp. Rhododendron indicum, Hibiscus (15 kinds)
3 Polciemia Hodginsii.

Prunus racemiflora, Marsewiczia coccinea.

A few aerial orchids were furnished with new fern root. Five Rhododendrons were planted in the Plant House. Two Ipomoea Horsfalliae and four Ravenia spectabilis were also planted in the lawns.

In the Glass House general maintenance and propagations were continued.

11. Orchids: The orchid collection was maintained as usual. The Dendrobium white were repotted last year made good growth in the wet season and are now beginning to flower. The only plants pollinated were Dendrobium macrophyllum and a D. formosum-Dearei hybrid which produce perfect flowers for the first time.

B) Mr. HOLTUM'S BOTANICAL WORK:

Mr. Holtum continued his study of Malayan grasses dealing mainly with bamboos, preparing new descriptions of all species. The Malayan bamboos need to be studied in the field before a satisfactory account of them can be written, but the present account should be a considerable help to anyone who is able to undertake field observations.

C) MR CORNER'S WORK:

Mr CORNER continued his research on the structure and development of leguminous fruits and seeds. He has nearly completed the study of this family and has begun that of the Myristicaceae, Connaraceae and others with arillate seeds. As the opportunity arises, MR. CORNER is making a collection of drawings and paintings to illustrate the structure of the tropical Leguminous group of the Caesalpinoideae.

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SYONAN BOTANICAL GARDENS

Monthly Report for May 2605

A) Dr. FURTADO'S REPORT

1. Administrative and Technical Staff: There was no change in the administrative or technical staff of the Department.
2. Herbarium: The NUR rearranged 5657 specimens in the general herbarium incorporating in it the specimens from the Hong Kong herbarium; the families concerned being Gramineae and Dilleniaceae.
The KIAM devoted most of his time to cleaning the cases of spirit collections, all of which had started to develop moulds on the pages and boards. He also devoted some time to collecting seeds of economic plants.
In all 145 specimens were identified mostly of common weeds, of which the Military Authorities wanted to know the edible ones.
3. Library: The BASURI, the JURAIMI, Mr. BONANIS and Mr. BESPICARMAN assisted in cleaning the books and inspecting them inside, killing the borers when present.
4. Forest Reserves: The NGADIMAN continued to be in charge of the two forest reserves. In the Bukit Timah Reserve vigilance had to be increased in order to prevent the neighbouring Butais from encroaching on the reserves unknowingly. The coolies carried on regularly the duties both of patrolling the area and of cleaning the paths.
5. Vegetable Plots: These plots, as usual, are maintained, firstly, to grow, for the purpose of demonstration, as many common, easily-growing local vegetables as possible, and secondly, to provide for the entire staff, including the Romuayas, as much leafy vegetable as possible. The seeds were also collected for the purpose of supplying them to the public.
6. Communal Tapioca Plots: An attempt is being made to increase the area of the communal plantings under tapioca. For this purpose more people are being released from general work. During this month about 9 katis of tapioca tubers were distributed to every Hojoia and Romuaya in the Gardens.
7. Sultana: Owing to the requirements of a Butai, the plots of Indigo and Castor oil had to be changed. Hence these two crops are now being planted in a new area. In addition the following were planted:

Orthosiphon (Kualis Kuching)	34 beds (cuttings)
Andrographis (Akar Chireta)	16 beds (seedlings)
Datura metel (Kechubong)	4 beds (seeds)
Cannabis indica var (Ganja)	2 beds (seeds)
8. General Work: Motor Lawn Mowers were worked in Lawns B, D, E, X and W, and babets in Lawns E, O, C & A.
Weeding was done in drains and around plants in Lawns A, B, D, O and Sunrockariae.
The cut grass, fallen leaves, etc. were collected and removed to the vegetable plots for composting.
Owing to many thefts of tapioca, the Tyersall grounds have been closed in many parts by barbed wires; this fence will be extended in the next month. The carpenter and his assistant repaired some of the huts in the Tyersall, soldered old watering cans and repaired the Palm and the Plant houses and a decent water tank, that is, in addition to doing their usual duties of working out the motor pump, making labels, etc.
The orchids and the show plants in plant-houses and at the office were changed from time to time.
9. Labourers: The condition of the labour force has considerably

deteriorated owing to the high rise in the cost of living, and now that the supply of bread has been stopped they will feel the pinch all the more, specially those persons who have a large number of members of the family who are not able to work and thus contribute towards the reduction of the family expenses. It is with this view in mind that the Department is doing its best to assist its staff by extending the plots under tapioca and vegetables and giving something extra to those who have large families.

10. Potting Yard: General maintenance and routine were carried on as usual.

Seeds sown:- *Cannabis sativa*

Cuttings taken:- *Oleander* (pink), *Petrea rugosa*, *Callistemon phoeniceus*, *Cuppressus pisifera* var *squarrosa*, *Cuppressus sempervivens* var *pyramidalis*, *Plumbago rosea*, *Brunfelsia undulata*, *Plumbago capensis*, *Rhododendron indicum*.

Plants potted:- *Verbena tenera*, *Hibiscus* Nos. 74, 78 & 85, *Elaeis guineensis*, *Arabisiaea rotundata*.

In the Glass House propagation of begonias was continued, and most of the maiden hair ferns were supplied with bone meal fertiliser.

About a dozen aerial orchids were furnished with fern roots. Also two *Lycopodiums* from the Plant House.

A few attempts at crossing Cannas were tried. ~~Five lots of Hibiscus were planted at the nursery.~~ Grafts of *Rhododendron* hybrid on to *Rhododendron indicum* were attempted.

11. Orchids: Maintenance of orchid seedlings and older plants continued as usual. The young seedlings are kept in flasks as long as possible, so that they may be safer for transplanting. Few new seeds were planted. The *Dendrobium* plants reported some months ago are now well grown and some are flowering. More have been repotted during the month.

B) Mr. HOLTUM'S BOTANICAL WORK

Mr. HOLTUM completed his account of the Malayan Gramineae (grasses) by preparing descriptions of the bamboos. The bamboos in cultivation in the Gardens were very useful in this work. The plan and list of cultivated bamboos were checked and some wrong identifications corrected. There are now about thirty species of bamboos in the Gardens, including three from Taiwan which are growing very vigorously. Towards the end of the month, Mr. HOLTUM began a study of the family Cyperaceae.

C) Mr. CORNER'S BOTANICAL WORK:

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Mr. CORNER nearly completed his research on the seed and flower of the Leguminosae, particularly the Caesalpinioideae. He also studied the fruits and seeds of several Myristicaceae, Connaraceae and Steruliaceae and made detailed drawings and paintings of their structure. He has prepared a draft of the first volume of a work on the primitive fruit of the Angiosperms, which deals entirely with the Leguminosae.

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30/5/25

SYONAN BOTANICAL GARDENS

Monthly Report for June 2605

a) Dr. FUJIMOTO'S REPORT

1. Administrative and Technical Staff: There was no change in the Administrative and Technical Staff of the Department.

Mr. ESPICKERMAN was sick for 7 days with Malaria. Mr. ALMONSO was granted 3 days vacation leave to go to Johore Bahru.

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2. Living Conditions: These have deteriorated/considerably during this month having adverse effects on some Hojoins and Romusyas, principally those who have large families to support. The Gardens Dept. is doing its very best to mitigate these difficulties by giving some extra vegetable or tapioca rations from the Communal plots, but since the purchasing power of the salary has dwindled almost to insignificance it is desirable to give some reasonable allowance in foodstuffs to every dependent member in a family. The special rations given for a picnic and the half month's bonus given for the labourers has helped to ease somewhat their difficulties in this month.

3. Herbarium: Che HUR re-arranged 3,520 specimens in the General Herbarium ~~in the~~ belonging to the Magnoliaceae and Anonaceae. Che KIAN was busy in cleaning the spirit collections.

In all 130 specimens were identified for the Nipponese Military Officers, and some Officers were shown living specimens of many medicinal plants growing wild or cultivated in the Gardens.

4. Library: Che BASURI, Mr. ESPICKERMAN, Mr. BONAMIS AND Che JURAIMI assisted in cleaning the books and killing the borers when present. A frequent inspection has to be made all round in order to prevent rats from damaging the books. The rats have become used to the traps and do not approach them.

5. Forest Reserves: Che NGADIMAN continued to make regular inspection tours in both the Reserves. A coolie has recently been engaged to cope with the work of the Bukit Timah Forest Reserve, so that now there are two guards in each of the Reserve.

6. Vegetable Plots: These plots, as usual, are maintained, first, to show the visitors as many common, easily grown local vegetables as possible, and secondly, to provide for the entire staff including the Romusyas, as much leafy vegetables as possible. The seeds were also collected for the purpose of supplying them to the public.

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7. Communal Tapioca Plots: During this month, nearly 2 acres of new plots have been planted, this ~~is~~ in addition to the new planting. During this month nearly 14 katis of tapioca tubers were distributed in two lots to every Hojoin and Romusya in the Gardens.

8. Sultans: ~~Many~~ seeds of Datura Metel sown last month failed to germinate and so fresh seeds were sown which ~~were~~ germinating now. Beans were planted with Cardiospermum Halicacabum, with Indigo, Ocimum sanctum and Castor Oil plants. A good deal of labour was used to weed the existing plants, one Cocoa plant raised by layering was transplanted.

9. General Work: Motor Lawn Mowers were used in A, B, E, O, X and W and Babats in Lawn A, B, C, D, K, & O.

Weeding of the Grass and around the plants was done in Lawns A, B, E, J, H, O, and W. Several species of plants were planted in the Rockery. The cut grass and fallen leaves were removed for composting. Three new shelters were opened up. The Cattle Shed was cleaned, as it is found ~~housing~~ ~~ticks~~ harbouring ticks. The Tank in the vegetable plot was repaired, and the water pump was regularly worked. As the lorry was not available for the Gardens work, the hand-cart and the Bullock-cart were used. The fence in many parts of Tyersall has been repaired with barbed wire. The pot benches in the potting yard have been removed ~~renewed~~.

10. Orchids: The routine of maintenance of seedlings and larger plants continued as usual. An experiment was started in growing young seedlings in water culture instead of on agar-agar; if successful it should simplify the raising of seedlings. A regular display of flowering orchids was maintained in the plant house. M

B) Mr. HOLTUM'S BOTANICAL WORK

Mr. HOLTUM continued his study of the family Cyperaceae in Malaya, writing new descriptions for all species and preparing keys. About two-thirds of the family had been dealt with at the end of the month.

C) Mr. CORNER'S BOTANICAL WORK

Mr. CORNER finished his work on the seed structure of the Leguminosae and began that of the Connaraceae and Annonaceae. Much time was spent in making microscopic drawing and enlarged painting of flowers representative of the genera. An important discovery in the Annonaceae is the presence of three integuments in the ovule of some genera, such as an occurrence not having been recorded in other flowering plants. Considerable time was also given to looking over the spirit-collection of specimens, the collection of drawings and manuscript records, as part of the half yearly maintenance routine of the laboratory.

SYONAN BOTANICAL GARDENS

Monthly Report for July 2605

DUPLICATE

A) Dr. FURTADO's REPORT

1. Administrative & Technical Staff: There was no change in this staff.

Messrs T. PAKIANATHAN, A. ESPECKERMAN, P. BONAMIS and NGADIMAN were ill with influenza, beriberi or malaria.

Mr. CHAN YORK CHYE was given permission to leave this Department from 1st August with the view of evacuating to Batam-To.

Mr. ESPECKERMAN, Mr. JURAIMI and I had to work for some days overtime in order to make returns of increased wages and salaries for the Romusyas and the Hojoins of this Department.

2. Living Conditions: As stated in my last report, these have deteriorated considerably and the health of some have in consequence begun to be affected. However, from the circulars issued to calculate the revision of wages and salaries, it is evident that the Authorities are very much alive to this question. But new salaries and wages have not been enforced yet, though the neighbouring Butais have already started paying the coolies under the new increased wage-scheme.

3. Herbarium: Che NUR rearranged 5,333 specimens in the general herbarium incorporating in it the specimens of the Hong Kong herbarium; the families concerned being Anonaceae, Menispermaceae, Berberidaceae, Nymphaeaceae, Papaveraceae, Cruciferae, Cistinae, Bixaceae, Caryophyllaceae and Hypericinaceae.

Che KIAH attended to the cleaning of the spirit collection and to collecting of seeds.

In all 85 specimens were identified for the Nipponese Military Officers.

4. Library: Che BAJURI and Mr. BONAMIS assisted in cleaning the books and killing the borers when present. The visits of rats have ~~de~~ decreased considerably.

5. Forests Reserves: Che NGADIMAN continued to make regular inspection tours in both the Reserves. A regular watch has to be kept so that Butais may not cause unnecessary felling.

6. Vegetable Plots: These plots, as usual, are maintained firstly to show the visitors as many, common, easily grown local vegetables as possible, and, secondly, to provide for the entire staff, including the Romusyas, as much leafy vegetables as possible. The seeds were also collected for the purpose of supplying them to the public. Leafy vegetables were supplied 6 times during the month to the entire staff including the Romusyas.

7. Communal Tapioca Plots: About a quarter of an acre was increased in this month. During this month nearly 10 katies of tubers were distributed to every Hojoin and Romusya.

8. Sultana: The available coolies were used to maintain the plots.

9. General Work: Motor Lawn Mowers were used in Lawns A, B, C, E, H and O, and babats were used in Lawn H. Hand Mower was used to clean the ground around the office. Weeding of the drains and around the plants was done in Lawns A, B, C, E and H.

A Kansi-Syo was erected on the roof of the Herbarium building. The Lorry and the hand cart were used to remove sweepings and cuttings to the vegetable plots for the purpose of composting.

Owing to the difficulty of getting water, most of the valuable orchids were removed to the plant house where they could be watered with lake water. The plants at the plant houses and near the office were changed from time to time.

10. Orchids: Maintenance continued as usual. The method of water-culture for seeds and young seedlings was continued experimentally, as it is much simpler than the agar-agar method. No definite report on results can yet be made.

11. Miscellaneous: Two bullocks which have been sick for a long time and which showed no signs of improvement were transferred to Syokuinka for the purpose of treatment or of slaughtering if cure is impossible. That Department slaughtered one bullock and gave to this Department 56 katies of meat which was distributed to the staff of the Gardens and the Kyoiku-Ka (Hambu). The Gardens Lorry was loaned for 5 days to the Kyoiku-Ka headquarters.

From the beginning of this month 15% of the Romusya were called upon to serve in rotation for 4-5 days for Butai work. This call was made upon the Romusyas of all the Tokubetu-Si Departments. At the beginning there was much excitement among the coolies chiefly because false rumours were spread among the coolies, and as a result many coolies gave notice to leave this Department. However, when the matter was fully explained to them, they withdrew their resignation and soon realised the futility of listening to rumours. After investigations, I have found that the coolies do not get enough rations. When this was brought to the notice of KONOMI-san of the Labour Office, he immediately brought it to the notice of the representative of the Butais, and both assured me that the matter would be attended to.

B) Mr. HOLTUM'S BOTANICAL WORK

Mr. Holtum continued his study of the Malayan members of the family Cyperaceae and had almost completed describing the species by the end of the month. There will remain a general survey of the family, and the preparation of keys, to be dealt with.

C) Mr. CORNER'S BOTANICAL WORK

Mr. Corner continued his researches on the structure and development of seeds and studied, particularly, the Annonaceae, Ebenaceae, Lauraceae, and Bixaceae. Their seeds have complicated structure for the description of which many drawings had to be made. Moreover, as the flowers of these families are little known, it has been necessary to select a few examples from each and to trace the whole sequence of development from flower rudiment to ripened seed.