Report of the Work of The Rubber Research Board in 1944

THE present report is the fourteenth annual report of the Rubber Research Scheme (Ceylon) as constituted under the Rubber Research Ordinance (Chapter 302).

CHAIRMAN'S REPORT

Board Membership—The three-year period of the following nominated members of the Board terminated during the year and appointments to fill the vacancies were made as indicated below :—

Mr. L. P. Gapp, 1st April—Renominated.
Mr. E. W. Whitelaw, 14th December—Renominated.

The following additional changes in the membership of the Board occurred during the year :—

Mr. L. J. de S. Seneviratne assumed duties as Chairman of the Board on 14th February.

Mr. S. F. H. Perera resigned on 23rd December.

The personnel of the Board at the end of 1944 was as follows :—

Ex-Officio Members

The Director of Agriculture—(Mr. L. J. de S. Seneviratne, C.C.S.), Representing the Financial Secretary—The Deputy Financial Secretary (Mr. C. E. Jones, C.C.S.).

Unofficial Members of the State Council nominated by H.E. the Governor :

The Hon'ble Mr. G. E. de Silva, M.S.C.
Mr. R. C. Kannangara, M.S.C.
Mr. G. R. Whitby, M.S.C.

Members nominated by the Ceylon Estates Proprietary Association :

Mr. W. H. Attfield.
Mr. L. P. Gapp.

Members nominated by the Planters' Association of Ceylon :

Mr. F. H. Griffith, M.S.C.
Mr. R. C. L. Notley.

Members nominated by the Rubber Growers' Association :

Mr. R. J. Hartley.
Mr. E. W. Whitelaw.

Members nominated by the Low Country Products Association of Ceylon:

Mr. T. Amarasuriya, M.S.C.
Mr. W. N. Gunawardena, J.P.
Mr. J. L. D. Peiris.
(Vacant).

Members nominated by H. E. the Governor to represent smallholders :

Mr. W. P. H. Dias, J.P.
Mr. F. A. Obeyesekere.

Meetings—Meetings of the Board were held in Colombo on 6th March, 5th June, 21st August, 23rd October and 18th December.

Committees—

Experimental Committee—Mr. S. F. H. Perera resigned in December and Mr. R. C. L. Notley was appointed in his place. The personnel of the Committee at the end of the year was as follows :—

Mr. F. H. Griffith, M.S.C., (Chairman)
Mr. W. P. H. Dias, J.P.
Mr. R. C. Kannangara, M.S.C.
Mr. F. A. Obeyesekere
Mr. R. C. L. Notley
The Director, (Convener)

Meetings of the Committee were held on 8th February, 1st May, 15th July and 23rd October.

Smallholdings Committee—There were no changes in the membership of the Committee which, at the end of the year, was as follows :—

Mr. W. P. H. Dias, J.P.
Mr. F. A. Obeyesekere
The Smallholdings Propaganda Officer
The Director (Chairman and Convener).

Meetings of the Committee were held on 8th February, 1st May and 27th November.

Ad hoc Committee—A committee consisting of Messrs. T. Amarasuriya, L. P. Gapp, C. E. Jones, R. C. L. Notley and J. L. D. Peiris was appointed to consider memoranda on future development and the appointment of Research Assistants. Meetings were held on 18th October and 6th November.

London Advisory Committee for Rubber Research (Ceylon and Malaya)—The Board contributed equally with the Imperial Institute to the cost of research on the quality and utilisation of raw rubber carried out at the Imperial Institute under the control of the London Advisory Committee for Rubber Research (Ceylon and Malaya). Meetings of the Advisory Committee and of the Technical Sub-Committee were held on 30th June.

Future Development—On the Board's instructions the Director submitted proposals for a 10-year programme of development. The proposals were considered by a Committee and adopted by the Board, with minor modifications, on 18th December 1944. A memorandum embodying the proposals will be published as a special circular, and associations representing local rubber producers will be invited to express their views.

The proposals provide for a progressive policy of research, an expansion of staff by the appointment of 4 graduate assistants who will later be sent overseas for further training if suitable, and an increase in the research cess from 12½ to 19½ cents per 100 lbs. of rubber for a period of 10 years.

FINANCE

Income—The Board's main income was derived from the cess of 1/8 cent per pound on exports of rubber under Section 6 (1)*a* of the Rubber Research Ordinance. Income from this source fell short of the estimate for the year. Monthly cess collections were as follows :—

January	.. Rs.	24,583	Brought Forward	.. Rs.	136,797
February	.. ,,	29,430	July	.. ,,	23,194
March	.. ,,	26,023	August	.. ,,	18,985
April	.. ,,	18,532	September	.. ,,	22,576
May	.. ,,	17,471	October	.. ,,	30,947
June	.. ,,	20,758	November	.. ,,	16,681
			December	.. ,,	26,912
Carried Over	.. Rs.	136,797		Rs.	276,092

A profit of Rs. 40,733/- was derived from the normal working of Dartonfield Estate and Rs. 35,592/- from Nivitigalakele.

Expenditure—Current expenditure amounted to Rs. 317,645/- leaving a surplus for the year of Rs. 57,745/-.

Capital expenditure amounting to Rs. 28,358/- was incurred mainly in respect of Agricultural Development Rs. 11,983/-, Construction of labourers' cottages and 1 junior staff bungalow Rs. 7,202/-, Water and Power Supply Rs. 5,827/- and Tracing Hedigalla Cart Road, etc. Rs. 1,686/-.

Accounts—The accounts of the Scheme have been audited by the Auditor General and his report, together with a Balance Sheet and Income and Expenditure Account, are attached.

Technical Reports—The Director's report, which embodies the reports of the other officers, is attached. The report of the London Advisory Committee for Rubber Research (Ceylon and Malaya) will be submitted when available.

(Sgd.) L. J. SENEVIRATNE,
Chairman of the Board,
RUBBER RESEARCH SCHEME (CEYLON)

March 20th, 1945.

DIRECTOR'S REPORT FOR 1944

Work was continued in accordance with the war-time policy previously followed, *viz.* : To maintain the continuity of experimental work as far as possible, whilst giving every assistance to the authorities on matters relating to the war effort.

The present abridged report includes a short summary of the work of each department, compiled by the officer concerned.

Staff

Director—Mr. T. E. H. O'Brien was in charge of the work of the Scheme during the year.

Chemical Department—Mr. M. W. Philpott, Chemist, left for U.K. by air on combined leave and duty, on October 8th.

Botanical Department—Mr. C. C. T. Sharp, Temporary Botanist, returned from overseas leave on 26th September, 1944.

Dr. C. E. Ford, Geneticist, was released from military service and resumed duties on 11th January, 1944. Dr. Ford's service agreement was renewed for 4 years and 8 months from 6th January, 1945.

Mr. C. A. de Silva, Assistant Botanist, was on duty during the year.

Soils Department—Dr. L. A. Whelan, Soil Chemist, was on duty during the year.

Smallholdings Department—Mr. W. I. Pieris, Smallholdings Propaganda Officer, was on duty during the year.

Estate Department—Mr. G. P. N. de Silva, Estate Superintendent, was on duty during the year.

Head Quarters Office—Mr. C. D. de Fonseka, Secretary-Accountant, was in charge of administrative work during the year.

CHEMICAL DEPARTMENT

(In the absence of the Chemist, the following brief summary has been compiled by the Director)

The small scale vulcanising equipment at Dartonfield was in regular use during the year for the manufacture of products for essential purposes which could not readily be imported. Among other items a substantial quantity of rubber tubing was made for use in hospitals and laboratories. Approximately 15,000 lbs. of softened rubber was prepared for use by a local firm engaged in essential work, using a process developed by the Rubber Research Institute of Malaya and described in B.P. 536,301. This probably represents the first use of the process on a commercial scale. Advice on technical problems was given to several Service and Civilian departments, and to local firms engaged in tyre retreading and the manufacture of vulcanised products.

Improvement of Hevea by Selection—In last year's report it was stated that work would be undertaken in 1944 to study the scope for improving the quality of Hevea rubber by selection and breeding. The method which has been adopted for the first stage of the investigation is to study the plasticity of the rubbers derived from large numbers of individual trees, both in mixed seedling populations and the selected material available at Nivitigalakele. This work was in progress during the year, together with a study of the relationship between plasticity and the non-rubber constituents. Work on the relationship between plasticity and other properties which are of technical interest awaits the arrival of special equipment which is on order. It is not proposed to report on the work at this stage except to mention that the plasticity of the rubbers from a number of individual trees at Dartonfield have been found to remain relatively constant over a period of two years, and that a correlation coefficient of +0.472 has been found between the plasticities of the rubbers from a group of Prang Besar Isolation garden seedlings and the clones derived from them by budgrafting.

Interpretation of plasticity data—Consideration was given to the method to be adopted for presenting the data derived from tests made with the parallel plate plastimeter. Data from tests of typical hard and soft rubbers were examined from the point of view of the equations which various authors have put forward to describe compressiontime relationships. The results, which are based on samples with a wider range of plasticity than has been available to other workers, are under discussion with colleagues in U.K. and will not be commented on in this report.

Tackiness of crepe rubber—Arising from a war-time enquiry, experiments were undertaken to determine the extent to which crepe rubber can be protected against the effects of exposure to sunlight and heat by the addition of chemicals to the latex

before coagulation. Samples of crepe containing the chemicals were examined after (*a*) 14 days storage in the dark (control), (*b*) 14 days exposure to the weather, (*c*) 10 days heating in the dark at 70°C. Conclusions reached from the trials were as follows :—

(1) Under the conditions of the test the onset of tackiness was completely arrested by sulphur (0·05 to 0·1%) and by phenyl B-naphthylamine (0·1 to 0·2%).

(2) Sodium bisulphite had no protective effect.

(3) Raw rubber which had been exposed to sunlight yielded softer (lower modulus) and weaker vulcanisates than the unexposed controls. This loss of tensile strength was not prevented by the presence of protective agents.

(4) Unprotected rubber softened (D10) considerably on exposure to sunlight. Sulphur prevented this softening and in some instances caused a slight hardening. Phenyl B-naphthalamine also effectively prevented softening.

(3) Whether the rubber contained protective agents or not heating in the dark at 70°C for 10 days had very little effect on hardness and none on tackiness.

Meteorological Observations

The weather summary for 1944 is shown below :—

	1944	1943
Rainfall (ins.)	197·72	176·58
Highest monthly rainfall (ins.)	49·39 (May)	28·03
Highest daily rainfall (ins.)	7·37 (23—24 May)	5·19 (14—15 Oct.)
Highest shade temperature (day)	93·2°F (21-3-44)	92·5° F (25-2-43)
Lowest temperature (night)	60·7°F (26-1-44)	66·5° F (30-11-43)
Number of rainy days	254	245

Regular daily weather records were forwarded to the authorities during the year.

BOTANICAL AND MYCOLOGICAL DEPARTMENT

Twenty-four specimens of diseased Rubber trees were received for identification. Ten of these were identified by the staff of the Research Scheme and in the absence of a Mycologist the remainder was sent to the Plant Pathologist of the Department of Agriculture.

Diseases and Pests

Oidium—Oidium leaf disease was again very severe in all districts, and heavy rains during the refoliation season prevented effective control by sulphur dusting. Leaf-fall on some low-country estates was reported to be the worst that had been experienced. Damage was also reported on estates which had not previously been affected (particularly in the Kurunegala district). Fortunately the attack was of short duration (in contrast to the attack in 1943) and the trees on some estates put out fresh foliage which escaped infection. There were further reports from mid-country estates of severe damage to young budded trees being caused by Diplodia dieback after attack by Oidium. Considerable damage from this cause was seen on one low-country estate.

Brown Bast—During the year an increase in the number of Brown Bast cases in young budded areas was reported. Some preliminary investigations were made on the symptoms of the disease, the factors influencing onset, and methods of treatment.

Bark Rot—The experiments set up in 1943 to compare the efficiency of different disinfectants in the control of Bark Rot were terminated in September. The results, which were published in the Quarterly Circular, confirm that the Phytophthora diseases of the newly tapped bark were effectively controlled by all the disinfectant treatments used in the experiment.

Two series of inoculations with the Phytophthora strain isolated from a diseased tree of clone MK. 3/2 in 1943 were made in budgrafts at Nivitigalakele by an officer of Division of Plant Pathology, Department of Agriculture. The results were indecisive.

Planting Material

Studies of Clones and Seedling Families—A total of 1,641 trees were test tapped at Nivitigalakele during the tapping year 1944—5 consisting of 35 local and imported clones, Tjikadoe and Prang Besar isolation garden seedlings, and new clones derived from the Prang Besar seedlings. Six of the latter have been selected for testing on a large scale in 1945 with Tjirandji 1 as control clone. The local clones in the 1935 clearing, Nivitigalakele, were disappointing and it is now very doubtful whether any will be worth testing on a larger scale. The original budgrafts of clones MK. 3/2, WG. 6278, and HC. 28 continued to yield well.

New Trials—The 1944 small-scale Clone Trial, Nivitigalakele, was planted in June with ninety new clones derived from the 1940 hand-pollinated seedlings with WG. 6278 as control. The trial is split up into 15 balanced incomplete block experiments with 3 single-tree plots per clone each to test 6 new clones against the control. The remainder of the 1943—4 small-scale Clones Area, Hedigalla, was planted in June. Five tree plots of 269 new clones derived from the 1941 hand-pollinated seedlings are included in this area together with 57 similar control plots of clone WG. 6278 and 1 plot of a clone derived from a high-yielding estate tree. One-hundred and twenty-three plots had been planted in November, 1943.

The 1944 small-scale Clone Trial, Hedigalla, was planted in June to test 16 clones, 10 of which were derived from high-yielding Tjikadoe seedlings at Nivitigalakele. This trial comprises a single balanced incomplete block experiment with four single-tree plots per clone.

Breeding—The results of the breeding work carried out in 1944 were again very disappointing. From the 12,422 pollinations made 162 fruits were harvested, an average success of 1·30 per cent. Eighty-three per cent. of the seed germinated and 405 seedlings were finally planted in the nursery. The parents used included local clones planted in the series of experimental seed gardens, imported clones known to be good seed parents, and Prang Besar New Series Clones. The great majority of pollinations were done on trees of PB. 86, though TKD. 113 (a high-yielding Tjikadoe seedling tree at Nivitigalakele) and PB. 5/139 were also used. In contrast to the results as a whole, the latter clone gave 20·4 per cent. successes from 304 pollinations.

No. 3 Replanting Experiment, Dartonfield (1936)—In this experiment three methods of establishing budgrafts in the field are compared. The girth measurements taken in May, 1943, and 1944 are summarised in Table I.

The stumped buddings and budded stumps were taken into tapping in March, 1942 and December, 1942 respectively and the field buddings in December, 1943.

TABLE I

	Age May, 1944	Mean Girth in Inches		
		1943	1944	Increase
Stumped buddings ..	8 years	23·33	25·26	1·93
Budded Stumps ..	8 ,,	21·85	23·72	1·87
Field buddings ..	7¾ ,,	17·87	20·39	2·52
Sig. diff. 99 to 1 odds ..		1·40	1·46	·45

Stock-Scion Relationship

Stock Experiment, Dartonfield, 1941—In this experiment 5 different illegitimate seedling families and unselected seedlings were budded with 5 clones of the R.R.M. 500 series and planted in a randomised block experiment with single tree plots in June, 1941. Unbudded seedling stumps of the same origin were planted at the same time.

Girth measurements taken in June, 1944 show that at 3 years of age there are small but significant differences in growth between the scion budded on to different stock families. At the present stage of the experiment there is no evidence that the seedling families which have shown the best growth as unbudded stumps have also produced the best grown scions.

Seedling-type Budgrafts—It is known that budgrafts derived from buds taken low down on the seedling stem tend to resemble seedlings much more than normal budgrafts. The stem is corky and more conical and the union is not so well marked. Most of the budgrafts planted in the Scheme's recent small-scale clone trials may be of this type. Though this property is unlikely to be of any commercial significance it may introduce a bias into the selection results. A small-scale experiment was, therefore, set up at Hedigalla to compare budgrafts derived from buds on high and low sections of the main stem below the first branch with budgrafts derived from branch buds. Ten hand-pollinated seedlings from the 1940 breeding programme were used as bud-mothers. A split plot design was adopted with single tree sub-plots in the following manner :—

Clones (bud-mother)	.. .. ..	10
Source of budwood	.. .. ..	3
Replications	.. .. ..	5

Tapping Experiments

1. Mature Seedling Rubber—The seventh year of the main tapping experiment was completed in February and the results have been reported in the Quarterly Circular. The double-three system 2S/2, d/3, 133% which has been widely adopted throughout the country as a means of increasing the output of rubber showed an increase over the control of 20·6% for the year with an average increase over the whole period of seven years of 20·4 per cent.

2. Tapping Experiment No. 11—Intensive Tapping. This experiment came to an end in November after two years tapping and the results are summarised in Table II.

TABLE II

Intensive Tapping Experiment, December 1942 to November 1944

Tapping Systems	Yield lb. per acre			
	1st Year		2nd Year	
	Lb/acre	%	Lb/acre	%
Double 1·2S/2, d/1,400% ..	1,098	156·6	1,085	146·3
Double 2·2S/2, d/2,200% ..	902	128·7	881	118·8
Double 3·2S/2, d/3,133% ..	701	100·0	742	100·0
Double 4·2S/2, d/4,100% ..	562	80·2	631	85·0

During the first half of the second year trees in the double-one and double-two system which had gone dry or had no tappable bark left at the usual heights were tapped upwards. During the remainder of the second year upward tapping was extended to all trees which yielded less than 10 gm. rubber per tapping (about one ounce of latex) from either cut. The yield of the double-one plots responded so well to this treatment that the yield during the second year was only a little less than in the first year.

When upward tapping was first adopted only 6 per cent. of the trees in the double-two system were completely dry although there was a much larger number of very low yielding trees. It was not until the low yielding trees were also tapped upwards that there was any improvement in yield. There can be no doubt that an earlier and more extensive use of upward tapping would have produced a considerable improvement in the yield of this system.

3. Tapping Experiment No. 14 (Ladder Tapping).—This experiment was set up in August to compare the double three system with (*a*) double-three plus a half-circumference V cut at 8 feet from the ground tapped with the aid of a ladder and (*b*) double-three plus a half-circumference V cut opened on virgin bark just above the tapping panel and tapped upwards. There are 46 single tree plots in each treatment. The yields for the first five months of tapping as a percentage of the control 2S/2, d/3,133% are given in Table III.

TABLE III

Month	2S/2—V/2 (ladder) d/3, 200%			2S/2—V/2 (upwards) d/3, 200%		
	Lower cuts	Upper cut	Total	Lower cuts	Upper cuts	Total
August ..	100	60	160	100	60	160
September ..	95	62	157	89	65	154
October ..	93	57	150	88	64	152
November ..	92	57	149	84	61	145
December ..	90	54	144	84	59	143
Mean ..	94	58	152	89	62	151

The increased yields are very satisfactory. It was found that tapping the upper cut with a ladder took about twice as long as tapping the upward cut.

4. A New Intensive Tapping Experiment—On the completion of the experiment described in (2) above a new intensive experiment was set up in the same area on the trees which had previously been tapped on the double-three and double-four system to compare the following tapping systems :—

(*a*) Four half-circumference cuts, two at usual tapping heights tapped downwards and two on virgin bark just above the tapping panels tapped upwards. The trees were tapped daily, the upper cuts one day and the lower cuts the next. 400%.

(*b*) As in (*a*) but the trees were tapped alternate-daily and the cuts every fourth day. 200%.

(*c*) Double two. 2S/2, d/2, 200%. Tapped downwards in the usual manner but upper cuts to be opened when the yield of the lower cuts falls below 10 gm. per tapping.

5. Tapping Experiment No. 13. Yield Stimulation.—Unpublished reports by the Rubber Research Institute of Malaya showed that applying oils to the bark below the tapping cut after a preliminary scraping or grooming had produced an increase in yield. The fourth of a series of experiments to investigate the effect on yield of grooming and the application of oils was started in January, 1944. The treatments used and the yields are shown in Table IV.

TABLE IV

Yields as a Percentage of Control Tapping System 2S/2, d/3, 133%

Period in 1944—45	Extent of grooming		Frequency of application of oils		Oils		Sign. Diff. 19 : 1 odds
	6 ins.	12 ins.	6 weekly	12 weekly	C'nut oil	Mineral oil	
1st Quarter ..	120	144	135	129	138	125	
2nd ,, ..	108	121	118	111	120	109	
3rd ,, ..	108	120	114	114	121	108	
4th ,, ..	100	108	106	102	108	100	
Mean ..	109	123	118	114	122	110	11

Better results were obtained from Coconut oil than from mineral oil and grooming to a depth of 12 inches was more effective than 6 inches. For the tapping year increased yields of 1·8 lbs. per tree over the control were obtained by grooming the trees to 12 inches below the tapping cut and applying coconut oil. The incidence of dry bark was confined to the poorest yielding trees and the total numbers for the year were not unduly high.

The condition of the bark at the end of the year was not however altogether satisfactory owing to the formation of a hard outer crust which flaked off and caused some difficulty in tapping.

The decline in yield during the fourth quarter will make a further grooming of the trees necessary before the next application of oils.

Although a good increase in yield was obtained the adoption of these treatments cannot be recommended until the full effect on the untapped bark is known.

7. Budded Rubber. Tapping Experiment No. 5, Dartonfield. Clones GL. 1, AV. 256, PB. 25—This experiment was started in 1941 on trees planted as budded stumps in 1934. There is a separate randomised block experiment with single tree plots within each clone. The yields for the first three years in lb. per tree per annum and the tapping system employed are shown in Table V.

TABLE V

Yields in pounds per tree per year and as percentages of S/2, d/2, 100%

Clone	Tapping system	1941—2		1942—3		1943—4	
		Yield	%	Yield	%	Yield	%
GL. 1	S/2, d/2, 100%	5·47	100	6·57	100	8·26	100
	S/3, d/2, 67%	4·44	81	5·37	82	6·84	83
	S/2, d/3, 67%	4·07	74	6·02	92	8·33	101
	2S/2, d/4, 100%	5·07	93	6·30	96	10·18	123
AV. 256	S/2, d/2, 100%	3·13	100	4·39	100	5·37	100
	S/3, d/2, 67%	2·40	77	3·39	77	4·22	79
	S/2, d/3, 67%*	2·24	72	3·26	74	8·93	166
	2S/2, d/4, 100%	3·39	108	4·96	113	6·73	125
PB. 25	S/2, d/2, 100%	3·70	100	5·56	100	6·30	100
	S/3, d/2, 67%	2·77	75	4·28	77	4·69	74
	S/2, d/3, 67%*	2·66	72	4·12	74	10·26	163
	2S/2, d/4, 100%	3·50	95	6·00	108	7·61	121
GL. 1 excluding B. B. trees	S/2, d/2, 100%					9·15	100
	S/3, d/2, 67%					7·14	78
	S/2, d/3, 67%					8·41	92
	2S/2, d/4, 100%					10·58	116
Mean number of tappings on S/2, d/2		125		138		150	

*Changed to 2S/2, d/3, 133% in March 1943

A sharp increase in the incidence of Brown Bast was recorded in the GL. 1 Experiment. Since this was most marked in the two tapping systems with alternate daily tapping a considerable change in the relative yields of the four systems has occurred. In the third tapping year a change was made in the AV. 256 and PB. 25 experiments, the double three system 2S/2, d/3, 133% being substituted for third daily on a half circumference system S/2, d/3, 67%. A very big increase in yield

resulted from this change without any appreciable increase in the number of cases of Brown Bast. On the other hand there was a big drop in the rate of growth of the trees, the increase in girth in AV. 256 being 0·6 inches compared with 1·6 inches in the control plots and in PB. 25 0·9 inches compared with 1·6 inches.

SOILS DEPARTMENT

The supervision of field trials and the statistical examination of results that are mainly of interest to the soils department were taken over from the Assistant Botanist on 1st January.

(1) **Fertiliser Rationing**—Quotas for 1945 were calculated and forwarded to the Organiser, Fertiliser Rationing, by 22nd December. A total of 1,297 applications was dealt with. The allotments were calculated as follows :—

Mature Rubber :	(1)	As for 1944 except as affected by (2*a*) below.
Immature Rubber :	(2*a*)	Areas planted in 1937 were transferred from the immature to the mature class, except areas budded in the field after 31st December, 1937.
	(2*b*)	The balance of immature areas. Quota as for 1944 plus 25%.
Nurseries :	(3)	Existing nurseries. As for 1944.
New Planting :	(4)	New nurseries and new clearings (to be planted 1945). Special application to be made and the planting permit number given.

(2) (*a*) Field Experiments on Mature Rubber

Dartonfield Experiment on Mature Rubber—Tapping was on the double-three system (2S/2, d/3, 133%) and was continued over the " winter rest " period. In March the method of plot collection of latex was replaced by cup coagulation of the biscuits and weighing of the crepe after milling and drying. The mean yields for the year in kilograms of dry rubber per plot of 20 trees on the basis of one sample tapping per month were :—

	O	N	NP	NK	NPK
Actual yield	5·73	7·12	6·69	7·45	7·42
Adjusted yield	6·19	7·09	6·74	7·25	7·14
Adjusted yield as per centage of control 1944 ..		115	109	117	115
Adjusted yield as per centage of control 1943 ..		115	110	116	118
Standard error			·256		
Significant difference (odds 19 : 1)			·74		

The manured plots N, NK and NPK show significant increases over the control. Differences between manurial treatments are not significant.

Bark renewal for the 12 months has shown no response to manure. Girth increments over the 7 years of the experiment show highly significant responses to NP and NPK but t he increases were small, indicating that manure has little effect on the growth of 30 years old Rubber.

A survey of the cover crops was made in January and showed a response to phosphate manuring. There was no difference between forked and broadcast plots.

(2) (*b*) **Field Experiments on Young Rubber**

No. 2 *Manuring Experiment* (*Budded Rubber*), *Dartonfield* 1938—The 1944 girth measurements for this and the No. 3 experiment were reported in the Quarterly Circular. Girth measurements taken in June showed a mean response to P of 2·77 inches for the 6 years of the experiment, or a saving of approximately one year in time required to reach tappable size. The January measurements showed highly significant responses for the previous 6 months of ·28 inches to N and ·34 to P indicating that at this stage nitrogen may be of some importance for growth. In March plots with

an average girth of 17·5 ins. or over were marked for tapping and trees of 18 ins. or over in those plots were taken into tapping. Further trees were taken into tapping in September. The number of tappable trees (18 inches), irrespective of plot mean, in September is given below as a percentage of total trees per treatment :—

O	N	P	K	NP	NK	PK	NPK	Compost
18·8	16·7	49·9	17·7	67·7	35·4	64·6	68·8	59·4

Observations made in January 1944 indicated that potash tends to advance wintering and NP and NPK mixtures to retard it. The clearing suffered a sharp attack of Oidium early in the year, the plots most affected being NP, NPK and Compost. Manuring appeared to have led indirectly to increased Oidium owing to the late wintering of manured trees.

No. 3 *Manuring Experiment* (*Budded Rubber*), *Dartonfield* 1936—The yields for the period January-December, 1944 expressed as grams per tree per tapping were :—

First taken into tapping	Stumped Buddings March 1942	Budded stumps December 1942	Field Buddings December 1943	Mean
Methods of opening—				
(1) Platforms ..	17·8	14·5	12·4	14·9
(2) Trenches ..	18·0	14·8	11·7	14·8
(3) Pitted drains ..	18·3	13·8	12·5	14·9
Manures—				
(1) Organic ..	18·0	14·1	12·2	14·8
(2) Inorganic ..	18·0	14·7	12·2	15·0

There are no differences in yield between the different methods of opening or between the two kinds of manures.

Other Experiments—Two experiments showed no response to fertilisers applied to nursery seedlings growing in well prepared beds.

Application of " Seekay " soil fumigant at normal and double rates of application showed no damage to 9 months old nursery seedlings. (The effect on pests was not studied).

A new experiment was put down to study the effect of different levels of Saphos phosphate on young Rubber.

(3) **Storage Tests on Fertilisers**—Sample bags of ammonium nitrate from two shipments were stored under different conditions of humidity. The conclusion arrived at was that this material if suitably packed and not roughly handled can be kept in its original packing for at least 2 months under local conditions.

SMALLHOLDINGS DEPARTMENT

Smallholders went all out for maximum production in view of increased market price of Re. 1/05 per pound paid since April. They attribute the fact that higher crops were not secured to weather conditions and other causes beyond their control, and have been discouraged by the reduction in price as from January, 1945.

Staff—The Department lost the services of two of its Instructors, Messrs. H. B. Wijesundera (Avissawella) and N. T. M. C. de Silva (Galle), who tendered their resignations in November and December respectively. These officers who had served the Department for 6 and 7 years respectively resigned to take up appointments with better prospects. The vacancies were advertised and will be filled in early 1945.

Mr. F. I. Pathirage was appointed on April 1st to fill the vacancy caused by the departure of Mr. H. K. Wijesinghe (Horana) in 1943. After a short course of training he took charge of the Horana range as from May 15th.

Mr. L. A. Peiris (Ratnapura) was transferred to Matugama and Mr. B. D. Pedrick who was at Matugama was sent to Ratnapura as from September 11th.

Maximum Production—Although the increased market price was sufficient inducement to make smallholders tap their trees to the utmost that was safe and possible, propaganda was carried out by the Department, by means of tapping demonstrations and talks, on the correct methods to adopt and in teaching more than one member of a family to tap so as to avoid losses due to the absence of regular tappers.

The importance of regular tapping and, when necessary, afternoon tapping was also stressed. A total of 102 tapping demonstrations was given. The method of 'upward tapping' was demonstrated as suitable for diseased or badly nodular trees with no bark reserves below the tapping cut.

New Areas—There is a general tendency for smallholders to start tapping young budded trees too soon. Advice on the correct stage to open cuts and the correct method of tapping was given by Instructors to a number of owners of replanted holdings, whose trees were reaching or had just reached tappable age. Similar advice was given by Instructors to new planting permit holders, by arrangement with the Land Commissioner.

Replanting—There was little replanting activity owing to the inadvisability of cutting down any tree capable of giving latex. The 7 demonstration replanted blocks in the different ranges have all made good progress and tapping was commenced on the Kahatapitiya and Ratmalgoda blocks in the Horana range. The blocks at Matugama, Kandy and Ratnapura will be tapped in 1945, though a portion of their trees could have been tapped this year. The yields of clone PB. 86 in the Galle block were recorded throughout the year and continued to be promising, the average yields in grams per tree per tapping for the 12 months January to December being 23·49(2), 21·02(12), 14·9(6), 18·97(10), 19·63(2), 28·96(9), 21·62(12), 24·5(4), 23·69(8), 20·83(5), 28·63(9) and 26·33(9) and 26·33(13). The figures in brackets denote number of tappings per month. The trees (budded stumps) were planted in November, 1938 and have been tapped since September, 1943.

The annual manuring with cattle manure and leaf loppings was carried out on all blocks. Annual girth measurements were taken and an average increase varying from 1½" to 3½" per tree was observed. This is less than the increase obtained during the previous 12 months.

Sheet-making and Smokehouses—The increase in the margin between the prices paid for grade 1 and grade 2 sheets by the Rubber Commissioner's depots provided a good opportunity for furthering the Department's efforts to improve the quality of smallholders' sheets, and a total of 160 sheet-making and rolling demonstrations was conducted by Instructors. The demand for better type smokehouses was steady and 53 private and 13 demonstration houses were started, 20 private and 14 demonstration (including one started in 1943) were completed and 14 improved. Assistance was given in recommending applications for cement for smokehouses and curing sheds after inspection of the site by an Instructor. A number of applicants received their cement and put it to good use. Sixty-seven wooden latex pans and 15 sieves were issued free to small owners who made good sheets and otherwise followed the recommendations of the Department.

There was a general shortage of mesh for smallholders' latex strainers towards the latter half of the year. Representations were made to Rubber Commissioner who arranged for brass mesh (Monel being unobtainable) to be sold through the Commissioner's depots, and also supplied mesh for sale by the Rubber Instructors. 35 sq. feet of Monel (balance from 1943) and 66 sq. feet of brass mesh were sold by Instructors.

Food Production—Instructors continued to give assistance to the Emergency Assistant Government Agents in their ranges in connection with the food drive but, owing to the appointment of special staff for this work, to a more limited extent than in 1943. Assistance was given in lining food allotments for contour drains and

terraces, supervising and advising regarding agricultural operations on Government state farms, general advisory visits to food allotments, issue of implements and making of payments, &c. A total of 19 allotments (86 acres) were lined and drains were cut on 205 allotments (222 acres) including some that were lined the previous year. 1,268 holdings and allotments (1,526 acres) were visited for advice and 75 allotments (545 acres) were planted with food crops under the Instructors' supervision.

Hataraliyadda State Farm, whose work is being supervised by the Rubber Instructor, Katugastota, supplied useful information regarding the suitability of different crops for this particular type of soil which is a sandy loam, in an area of moderate rainfall. Chillies did well, onions and green gram and kurakkan were fair and hill paddy proved a failure. 2,245 lbs. green chillies were harvested from one acre. The manioca crop of 10 acres was sold by tender for Rs. 1,000/-, uprooting and removal by buyer.

Manure—Small proprietors evinced considerable keenness in obtaining the standard Rubber fertilisers for their budded as well as seedling plantations, and assistance was given in filling the prescribed application form and in applying the manure when received. Cattle manure was recommended generally where obtainable, but this has been costly and difficult to get owing to the increase in food planting.

Co-operative Work—The Hataraliyadde Rubber Co-operative Society has worked very satisfactorily and was regularly supervised by the Rubber Instructor, Katugastota. Top-grade sheet was produced throughout, but contamination of latex by a few tappers was suspected towards the latter part of the year and investigations are being made.

The possibility of the Board giving assistance for the formation of a Rubber Co-operative Society at Galagedera on similar lines to the one at Hataraliyadda was broached by the Co-operative Department. It was decided that technical advice and assistance would be given by the Department but that financial aid should be sought from Government. The site for the proposed society was inspected and other requirements gone into and found to be favourable.

Nurseries—An average of 3—4 demonstration nurseries were maintained in each range for giving budding demonstrations and issuing small quantities of budded plants. 1,588 nursery plants were budded and 1,876 budded plants sold. 146 yards of budwood were issued to Instructors for budding nurseries. 40 budding demonstrations were given. 9 demonstration and 4 private nurseries were opened.

General—Oidium was unusually severe in most areas during the refoliation period. A good many late wintering trees were deprived completely of their new foliage.

The Warakapitiya Rubber allotments in the Matara district which have been taken over by Government and given out to small allottees were visited periodically by the Rubber Instructor, Galle, at the request of the A.G.A., Matara, and reports submitted. Various improvements in tapping, disease-treatment &c. were recommended.

Latex from a rubber producing vine (*Landolphia kirkii*), found in the jungles in the Galagedera area, was obtained under the supervision of the Rubber Instructor, Katugastota, and sent to the Chemist for report. The rubber was found to be satisfactory in quality, but the number of vines was too small to be of commercial interest. They had spread from an estate where they were introduced from Africa many years ago.

Ninety-nine disease control and 113 other demonstrations were given by Instructors in addition to those previously mentioned. 25 demonstrations and 33 private compost pits were opened.

No Departmental competitions were held, but 3 prizes were presented and judging done in the competition for the best smallholder's sheet at the Raigam Korale Agricultural Show at Horana in February.

ESTATE DEPARTMENT

Dartonfield Estate

ACREAGE STATEMENT

	A.	R.	P.
Rubber : mature areas	114	1	23
do replanted areas	44	3	22
Buildings and roads	14	3	08
Scrub, etc.	2	2	19
Newly acquired land	2	1	22
Total	179	0	19

Rainfall :—197·72 inches.

Rainfall was substantially higher than in 1943, mainly due to a record rainfall of 49·39 inches in May. Tappings lost owing to rain were about the same as in 1943.

	1943	1944	5 year average
January ..	4·12 ins.	4·58 ins.	4·19 ins.
February ..	4·09 ,,	14·20 ,,	7·69 ,,
March ..	9·49 ,,	9·70 ,,	7·98 ,,
April ..	13·53 ,,	13·14 ,,	14·60 ,,
May ..	28·03 ,,	49·39 ,,	33·48 ,,
June ..	21·16 ,,	15·60 ,,	17·05 ,,
July ..	8·42 ,,	8·01 ,,	10·13 ,,
August ..	10·34 ,,	9·45 ,,	14·17 ,,
September ..	6·12 ,,	28·02 ,,	16·57 ,,
October ..	27·61 ,,	21·59 ,,	25·45 ,,
November ..	23·51 ,,	19·64 ,,	21·27 ,,
December ..	20·13 ,,	4·40 ,,	10·93 ,,
	176·58 ins.	197·72 ins.	183·51 ins.

Crop—Crop for the year was 85,049 lbs. compared with 89,278 lbs. in 1943, and an estimate of 85,000 lbs. The reduction of crop, amounting to 5·9% based on comparable acreages, may be due to severe Oidium, or possibly to several small factors such as a difference in the average heights of cuts or the quality of the bark in the two years, higher proportion of substitute tappers employed in 1944 etc. The out-turn of labour (proportion of tasks tapped) exceeded 99% in both years.

Yield records for individual fields are as follows :—

Field No.	Date of planting	Total crop lbs.	Acreage tapped	Yield per acre lbs.
1 ..	1910	18,440	28½	647·0
2 ..	1913	906	1	906·0
3 ..	1917	17,295	24	720·6
4 ..	1911	1,081	1½	720.7
5 ..	1934	5,212	7½	694·9
6 ..	1913	38,758	58½	662·5
7 ..	1936	2,316	8¾	264·7
8 ..	1938	1,041	7¾	134·3
		85,049	137½	618·5

Tapping—Tapping of commercial areas was continued on the 2S/2, d/3 system. Bark consumption was approximately 5 inches on each cut. Upward cuts were opened on otherwise worthless trees. Tapping of half the estate tasks, and the tapping experiment area, was stopped for 1 month from 10th February. Other areas were tapped without rest. Tapping of experimental areas was under the supervision of the Estate Superintendent. The Visiting Agent reported favourably on the quality of tapping.

Average daily intake per tapper was 6·4 lbs. compared with 7·6 lbs. in 1943. It should be noted that the averages include experimental and young areas. Average daily pay amounted to Re. 1/15.

Manufacture—A summary of the grades prepared during the year is given below :—

Grade			lbs.	Per cent.	Total
Smoked Sheet	No. 1	..	27,828	32·72	32·72
Latex Crepe	No. 1	..	23,099	27·16	
do	No. 2	..	4,163	4·89	38·61
do	No. 3	..	5,582	6·56	
Scrap Crepe	No. 1	..	18,341	21·57	
do	No. 2	..	2,948	3·47	28·41*
do	No. 3	..	2,869	3·37	
Latex	..	..	219	·26	·26

*includes test-tapping biscuits from experimental areas.
Normal scrap grades amounted to 12%

Machinery—The Consulting Engineers, Messrs. H. W. Hammond & Co. inspected the machinery and equipment on 25th February, and reported satisfactorily on their condition.

Bearing trouble developed in the 52—57 H.P. Ruston Hornsby Engine on 22nd December, and the engine was under repair at the end of the year.

The 26" grooved crepe mill was re-grooved after 10 years use (equivalent to about 2½ years normal estate use).

Factory Water Supply—A separate water supply for the factory was provided by damming a stream and laying a 850 ft. pipe line. This has reduced pumping and relieved the shortage of water which was previously experienced during dry spells.

Oidium—A severe attack of Oidium developed in the latter part of February. Three full and one partial round of sulphur dusting were done with good results, in spite of interference by rain. An average of 5 lbs. of sulphur per acre was used for each round.

Phytophthora—There was a mild attack of pod and leaf disease. Wet weather in September led to an increase in bark rot. Regular applications of water-soluble and water proof disinfectants were made to the tapping panels during the year.

Root Diseases—Eighteen cases of Fomes lignosus, 3 of Fomes noxious and 6 of Ustulina zonata were detected.

Wind Damage—Twenty-seven mature trees and 5 trees in replanted areas were uprooted by wind.

Manuring—R. 400 mixture was applied in mature areas, excluding the manuring experiment and the intensive tapping experiment, at the rate of 200 lbs. per acre. Immature and experimental areas were manured according to requirements.

Cover Crops—Supplying with Desmodium ovalifolium was continued.

Labour—Labour was adequate for tapping but there was a shortage of village labour for weeding and general work.

Details of labour on check-roll at the end of the year were as follows :—

	Resident	Non-resident
Ceylonese	12	51
Non-Ceylonese	54	—
Average daily out-turn	79	
do pay	Re. 1/12	
	(including Dearness Allowance)	

Health—A resident dispenser was appointed in August. Mass inoculation against Typhoid was carried out by the Field Medical Officer among the staff and labourers at Dartonfield and Nivitigalakele. There was an outbreak of measles (33 cases) among the staff and labour force, and several outbreaks of Influenza during the year (262 cases).

Visiting Agent—The Visiting Agent, Mr. P. R. May, inspected the estates twice during the year and reported favourably on their condition, having regard to the shortage of labour.

Nivitigalakele

Acreage Statement

Rubber, Mature areas (1926—1935)	88¼ acres
do Clearings (1939—1942)	41 „
do Nurseries	19¼ „
Food Clearing 1942	5 „
Uncultivated	16 „
Total ..	169½ acres

Rainfall—185·28 inches. (1943—159·06 inches)

Crop—Crop for the year was 66,382 lbs., compared with 59,773 in 1943. The older fields in commercial tapping continued to give very high yields. The following is a summary of yield records for each field :—

Clearing	Acreage in tapping	Crop lbs.	Yield per acre lbs.
1926 Clearing ..	12½	14,818	1,185·4
1927 do ..	16¼	18,818	1,158·0
1928 do ..	31	21,795	703·1
1935 do ..	25½	10,951	429·5
Total ..	85¼	66,382	778·7

Tapping—The Research Scheme withdrew from the Capital Compensation Scheme, but tapping was continued on the 2S/2, d/2 system in the area of 20 acres (parts of 1927 and 1928 clearings) scheduled for slaughter tapping. Other commercial areas were tapped on the 2S/2, d/3 system : test-tapping was on the S/2, d/2 system. Tapping was again continued during the wintering period.

A statement of trees in commercial and test-tapping is given below :—

Clearing	Test-tapping	Commercial tapping	Immature	Total
1926 Clearing ..	—	1,112	—	1,112
1927 do ..	73	1,484	—	1,557
1928 do ..	190	2,355	—	2,545
1935 do ..	1,402	869	284	2,555
	1,665	5,820	284	7,769

Manufacture—Crop from commercially tapped areas was manufactured in the form of Smoked Sheet. Test-tapping samples were milled at Dartonfield and sold mainly as scrap crepe. The distribution of grades is as follows :—

Grade			lbs.	Per cent.	Total
Smoked Sheet	No. 1	..	45,701	68·85	
do	No. 2	..	3,057	4·61	74·20
do	No. 3	..	488	·74	
Scrap Crepe	No. 1	..	13,925	20·97	
do	No. 2	..	1,852	2·79	25·64
do	No. 3	..	1,247	1·88	
Pale Crepe	No. 3	..	112	·16	·16

Machinery—The 5 H.P. Petter engine continued to give trouble and was out of action during the greater part of the year. Arrangements have been made to instal a new engine.

Oidium—Three full rounds of sulphur dusting were done in the mature areas, and 2 to 3 extra rounds were given to late wintering clones.

Bark rot and canker—A number of trees were affected by bark rot and tapping canker, but damage was not extensive. Disinfectants were regularly applied.

Ustulina—Four trees were removed.

Wind Damage—Forty-four trees were uprooted by wind.

Grooming—Two rounds of grooming were done.

Manuring—Mature areas (excluding the slaughter tapped area) were manured with R. 400 mixture at the rate of 200 lbs. per acre. Immature areas and nurseries were manured according to standard recommendations.

Immature Areas—Growth in the 1939—1943 clearing was satisfactory, but pruning of indigenous covers in the " No burn " clearings was behind schedule owing to scarcity of labour. An area of 5 acres, which was cleared for food production in 1942, was planted with budded Rubber stumps in June, 1944, according to experimental requirements. The area has been interplanted with manioc.

Nurseries—Budwood nurseries were manured and pruned according to requirements. Fourteen obsolete clones were removed, and plots of the following clones were established for multiplication by the Research Scheme as agents for the Proprietors :—PB. 5/122, PB. 5/139, PB. 6/5, PB. 6/9, LUN. N. Small plots of six experimental clones were also planted.

Vacant seedling nursery beds were planted with approximately 49,000 germinated seed, after the application of 5 tons of cow-dung and 100 lbs. of Saphos phosphate per acre.

389 yards of budwood and 7,500 budded stumps were issued during the year, including 4,357 budded stumps for planting at the Government Seed Garden Walpita.

Labour—Labour for tapping (mostly non-resident Ceylonese) was adequate except during the paddy harvests, but there was a shortage for weeding and other general work.

Hedigalla

		A.	R.	P.
Area No. 1	.. ..	17	2	32
do No. 2	.. ..	15	3	06
do No. 3	.. ..	13	3	01
Chena Clearing	.. ..	7	0	00
		54	0	39

New Planting—An area of 11 acres was planted with budded rubber stumps, experimentally in June, 1944. Holes 3 ft. × 2½ ft. × 2½ ft. deep were cut at a spacing of 12 ft. on contours 30 ft. apart, and two stumps were planted per hole. Early growth of the plants is satisfactory.

Immature Areas—Growth in the areas planted in 1943 is particularly satisfactory in view of the very poor yield of food crops obtained from the land after clearing for food production in 1942.

Manuring—The young areas were manured according to experimental requirements.

Labour—Labour was extremely scarce during the year. Cutting of drains has not yet been completed, and weeding was restricted to 6 ft. strips along the contours in the planted area.

Food Production

Areas under cultivation for food crops were as follows :—

DARTONFIELD :	1941 Replanted area	6½ acres
	Deniya land	1 acres
NIVITIGALAKELE :	1942 Clearing	5 acres
HEDIGALLA :	1942, 1943 and 1944 Clearings	55 acres

Crops harvested during the year :—

Paddy	12	bushels
Dhal	44	measures
Sweet potatoes	742	lbs.
Manioc	5,489	,,
Other yams	394	,,
Onions	42	,,
Pineapples	371	

ADVISORY SERVICES, ETC.

Advisory correspondence on the botanical side covered a variety of subjects, the most important being the choice of planting material, and the tapping of budded and seedling Rubber. Pathological enquiries dealt mainly with Bark Rot, Oidium, and Brown Bast. In the Soils Department there was an increase in enquiries of a general nature and concerning fertiliser rationing, and a marked reduction in correspondence on food production. The Chemist supplied a number of copies of smokehouse plans and dealt with several enquiries regarding the respective merits of the R.R.S. 3-storey smokehouse and the tunnel smokehouse. A number of samples of acetic and formic acid were examined : the quality was usually satisfactory but some of them were below the usual strength.

An analysis of enquiries and advisory visits to estates is given below :—

	Enquiries	Estate visits
Chemical Department	133	1
Botanical and Mycological Department ..	260	36
Soils Department : General	58	—
Food Production ..	2	—
Fertiliser Rationing	136	—

Advice was given to the Rubber Commissioner on various technical matters. Among these it may be mentioned that the Commissioner agreed to accept responsibility for any claims arising from the adoption of " upward " tapping on local estates, and to prohibit the adulteration of rubber latex by the addition of any substance not normally used in the preparation of plantation rubber. Advice was also given to several other Government and Service departments.

A revised edition of the handbook " The Preparation of Plantation Rubber in Ceylon " was issued, also several new or revised Advisory Circulars. Particulars are given under the heading of publications.

MEETINGS, COMMITTEES, ETC.

The Director attended meetings of the Rubber Research Board, and served on the Experimental Committee, the Smallholdings Committee, and the Development Committee.

The Director also served on the Central Board of Agriculture (ex officio), the Maximum Rubber Production Advisory Committee, the Fertiliser Rationing Committee, and the Scientific Advisory Committee.

The Director attended the Annual General Meetings of the Planters' Association of Ceylon and the Low Country Products Association, four general meetings of the Kalutara Planters' Association, and one general meeting of the Sabaragamuwa Planters' Association.

An address on " Planting Material " was given by the Geneticist at meetings of the Kalutara Planters' Association and the Southern Province Planters' Association, and an address on " Tapping " by the Botanist at a meeting of the Kalutara Planters' Association.

CO-OPERATION WITH OTHER RESEARCH ASSOCIATIONS

It is now three years since the sister Research Institutes in Malaya and the Nederlands East Indies were overrun by the Japanese. It is sincerely hoped that the staffs of the Institutes have successfully overcome the hardships and indignities of captivity, and that they will be restored to freedom during the coming year.

The Chemist proceeded to U.K. in October, partly on leave and partly for the purpose of consultations on current research problems with the staffs of the London Advisory Committee for Rubber Research (Ceylon and Malaya), the British Rubber Producers Research Association, and the Research Association of British Rubber Manufacture.

There was close co-operation with the Tea Research Institute in connection with Fertiliser Rationing.

PUBLICATIONS

Publications of the Research Scheme are issued without charge to the Proprietors (resident in Ceylon), Superintendents and Local Agents of Rubber estates over 10 acres in extent, who apply for registration. Extra copies are supplied for the use of Assistants on large estates. Particulars of issues of publications are given below :—

	1943	1944
Estates and Agencies	875	916
Subscribers	56	54
Exchange List	56	56

Publications issued during the year were as follows :—

Report of the Work of the Rubber Research Board in 1943.
Combined Quarterly Circulars for 1943.
Advisory Circular No. 3—Notes on Rubber Seedling Nurseries (Revised September, 1943)
do No. 21—The Control of Bark Rot and Canker (April 1944)
do No. 22—Oidium Leaf Disease (April, 1944)
do No. 22—1st Supplement (October, 1944)
do No. 20—Recommended Planting Material, 1944. (Revised May, 1944)
The Preparation of Plantation Rubber in Ceylon (Revised 1943)

Research Laboratories,
Dartonfield, Agalawatta,
12th March, 1944

(Sgd.) T. E. H. O'BRIEN,
Director

ACTING AUDITOR-GENERAL'S REPORT FOR 1944

The Chairman,
Board of Management,
Rubber Research Scheme,
Peradeniya.

The accounts of the Rubber Research Scheme (Ceylon) for the year ended December 31, 1944, have been duly audited and found correct. The financial statements—

(*a*) Dartonfield Estate Working Account ;
(*b*) Nivitigalakele Experiment Station Working Account ;
(*c*) Revenue Account, Capital Account and General Balance Sheet ; and
(*d*) Provident Fund Working Account,

were compared with the books and accounts and found to agree. The statements are returned herewith duly certified.

I—INCOME

2. The total income for the year amounted to Rs. 375,390. It fell short of the estimate by Rs. 15,221 but exceeded the income of the previous year by Rs. 39,254.

3. The following is a comparison between the estimate and the actual income under the different accounts : short notes of reasons for the excess or deficit are given under ' Remarks ' :—

Income for 1944

	Estimate Rs.	Actual Income Rs.	Excess Rs.	Deficit Rs.	Remarks
1. Cess Collections ..	336,000	276,092	—	59,908	Over-estimate
2. Interest ..	11,000	16,721	5,721	—	Increased investments.
3. Sale of Publications ..	750	853	103	—	Under-estimate.
4. Profit from Dartonfield ..	21,107	40,733	19,626	—	Under-estimate of selling price.
5. Profit from Nivitigalakele ..	18,714	35,592	16,878	—	Increased crop and under-estimate of selling price.
6. Sundry Receipts ..	3,040	5,399	2,359	—	Profit from sale of vulcanized products not estimated for.
	Rs. 390,611	375,390	44,687	59,908	

4. **Profit from Dartonfield Estate**—The Profit for the year under review was Rs. 40,733 as against Rs. 27,618 in the previous year.

5. **Profit from Nivitigalakele Experiment Station**—The working of the experiment station for the year under review showed a profit of Rs. 35,592 as compared with Rs. 21,115 for the previous year.

II—EXPENDITURE

6. **Revenue Expenditure**—The total expenditure on revenue account exclusive of the amounts allowed for Depreciation of fixed assets, and Audit Fee Reserve amounted to Rs. 298,682 as compared with Rs. 224,429 for the previous year. The details of this expenditure are fully set forth in the Income and Expenditure Account. The whole of this expenditure was checked with supporting vouchers and accounts.

7. **Capital Expenditure**—The expenditure incurred on fixed capital assets during the year amounted to Rs. 28,358 as compared with Rs. 25,415 for the previous year. The details of this expenditure are shown in the Capital Account.

8. A comparison between the original estimate and the expenditure incurred during the year is shown in statement ' A ' attached. The reasons for the major variations between the estimate and the actual expenditure as furnished by the Director, are shown against the respective items in the statements.

9. The total over-expenditure on Revenue Account was Rs. 15,419/73 but supplementary provision was obtained only for Rs. 14,619/73. The difference of Rs. 800 should therefore receive the sanction of the Board.

III—CAPITAL ACCOUNT

10. The total capital cost at 31-12-43 was Rs. 786,233. During the year this amount was increased by a sum of Rs. 28,358 being capital expenditure incurred less a sum of Rs. 171 being proceeds of sale of an experimental rod mill. The total Capital cost at 31-12-44 was Rs. 814,420.

IV—BALANCE SHEET

(a) Liabilities

11. **Creditors Rs.** 13,306—Of this amount a sum of Rs. 12,806 represents the amount due to creditors for goods purchased or services rendered during the year and Rs. 500 represents subscriptions for 1945 publications received in advance.

12. **Passage Fund Reserve Rs.** 15,488—The balance on December 31, 1943, was Rs. 17,958. A sum of Rs. 2,470 was utilised during the year in connection with the travelling performed by a member of the senior staff to England by air. This reduced the total to the credit of the Fund to Rs. 15,488.

13. **Depreciation Reserve** Rs. 177,079—This sum represents the amount set apart for the depreciation of the fixed assets of the Scheme. The amount transferred from Revenue to this account during the year was Rs. 18,113 made up as follows :—

DARTONFIELD—		
Buildings at 3½% on Rs. 185,989·21	Rs.	6,509·62
Furniture, fittings and office equipment at 7½% on Rs. 23,139·43	,,	1,739·21
Water and Power Supply at 7½% on Rs. 24,126·18	,,	1,809·46
Machinery and Tools at 7½% on Rs. 59,687·31	,,	4,476·55
Accumulators at 20% on Rs. 4,678·22	,,	935·64
NIVITIGALAKELE—		
Buildings at 3½% on Rs. 35,587·31	,,	1,245·56
Furniture, fittings and office equipment at 7½% on Rs. 2,904·34	,,	217·83
Water and Power Supply at 7½% on Rs. 4,182·66 ..	,,	313·70
Machinery and Tools at 7½% on Rs. 241·06	,,	18·08
HEDIGALLA—		
Buildings at 3½% on Rs. 1,917·51	,,	67·11
Laboratory apparatus at 7½% on Rs. 10,404·86	,,	780·37
	Rs.	18,113·13

14. **Provident Fund Reserve** Rs. 125,684—The balance to the credit of the Fund at the end of 1943 was Rs. 101,505 and additions during the year under review amounted to Rs. 26,307. A sum of Rs. 2,128 was paid out to officers who retired during the year.

15. **Medical Fund** Rs. 3,401—The balance to the credit of this Fund at December 31, 1943, was Rs. 1,812 and additions during the year under review amounted to Rs. 2,526. A sum of Rs. 937 was paid out to the officers during the year.

16. **Audit Fee Reserve** Rs. 1,094—The amount to the credit of this account at the beginning of the year was Rs. 830 and that provided during the year was Rs. 850. Payments during the year in respect of service for 1943 amounted to Rs. 586.

17. **Reserve for Stabilisation of Income** Rs. 170,017—The reserve as at 31-12-43 was Rs. 124,925 and the amount transferred to it in 1944 was Rs. 45,092.

18. **Surplus Account** Rs. 303,385—The surplus at the beginning of the year was Rs. 318,920. To this were added a sum of Rs. 57,744 being excess of income over expenditure during the year and Rs. 171 being amount realised by the sale of an experimental rod mill. After deducting Rs. 28,358 and Rs. 45,092 on account of contribution to Capital Outlay in 1944 and amount transferred to Reserve for Stabilisation of Income respectively, the balance in the Surplus Account at 31st December, 1944, was Rs. 303,385.

(b) Assets

19. **Debtors** Rs. 62,471—This represents cess collections outstanding for December, 1944, amounting to Rs. 26,912, and sundries amounting to Rs. 35,559.

20. **Advance Accounts Rs.** 8,420—Of this amount a sum of Rs. 7,408 represents advances to the London Advisory Committee. The advances to the Superintendent of Dartonfield, Nivitigalakele, Hedigalla and Small-holdings Propaganda Officer were for sundry expenses and the amounts shown are the balances in hand. The amount shown against the Postmaster-General represents the sum deposited with him in respect of trunk call and other telephone services.

21. **Accrued Interest on Investments** Rs. 1,676—This sum represents the amount of interest accrued for the year on the investments, but not received during the year.

22. **Payments in Advance** Rs. 1,115—This represents certain expenditure incurred in respect of 1945 during 1944 from Dartonfield Advance Account.

23. **Stocks** Rs. 14,050—The balances of the estate and rubber chemical stocks at the end of the year were Rs. 9,855 and Rs. 4,195 respectively. The balance of the estate stock was made up as follows :—

DARTONFIELD—		
Rice and provisions	Rs.	751·00
Stores	,,	3,466·03
Materials used for latex export	,,	3,628·20
Deposit with the Labour Commissioner for labour expenses	,,	51·19
Preserved latex	,,	1,329·56
Crumb rubber	,,	399·73
NIVITIGALAKELE—		
Rice and provisions	,,	229·14
	Rs.	9,854·85

These balances at the end of the year were not verified, but a test verification of the stock in hand on July 21, 1945, was made during the audit inspection.

24. **Loans to Officers** Rs. 306—This sum represents the balance outstanding from Officers in respect of loans for purchases of transport. The loans are being promptly repaid with interest in instalments.

25. **Loan to Hataraliyadde Co-operative Society** Rs. 2,400—Of the sum of Rs. 2,700 outstanding at the beginning of the year a sum of Rs. 300 was repaid during the year.

26. **Investments in Ceylon Government Loans** Rs. 490,000—Details of this amount are shown in the Balance Sheet in terms of face value. The certificates in support of the investments were seen.

27. **Cash Balances** Rs. 229,013—Details of this figure are shown in the Balance Sheet. The documents relative to the deposits have been seen. The balances in current accounts Nos. 1 and 2 have been verified by reference to Bank Certificates and Reconciliation statements. The balance of cash in hand at December 31, 1944, was not verified, but a surprise verification of the cash in hand was made on July 18, 1945.

V—GENERAL

28. The accounts were received quarterly and audited in this office. The office of the Scheme at Dartonfield Estate was visited once in respect of the accounts for the year under review and the books and accounts kept were checked and the cash in hand verified.

(Sgd.) K. KANAGARATNAM,
Acting Auditor-General

Audit Office,
Wellawatta, 24th August, 1945.

RUBBER RESEARCH SCHEME (CEYLON)

REVENUE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1944

Dr.

	Rs. C.	Rs. C.	Rs. C.
To PERSONAL EMOLUMENTS :			
Senior Scientific Staff		81,031 54	
Junior Scientific Staff		15,641 86	
Office Staff		13,152 97	
			109,826 37
,, LIBRARY & PUBLICATIONS :			
Library		762 11	
Publications		2,973 75	
			3,735 86
,, SMALLHOLDINGS WORK :			
Salaries and Allowances		21,156 01	
Travelling and General Expenses		10,972 89	
			32,128 90
,, LABORATORY :			
Equipment and Working Expenses		9,645 25	
Furniture Replacements		45 98	
			9,691 23
,, FIELD & FACTORY EXPERIMENTS :			
Field Experiments		5,784 45	
Factory Experiments		1,337 49	
			7,121 94
,, OFFICE :			
Stationery and Office Equipment		3,400 20	
Postages and Telegrams		1,805 25	
Advertising		255 76	
Telephones		1,010 00	
Audit		850 00	
			7,321 21
,, TRAVELLING :			
Expenses of Board Members		3,273 05	
Expenses of Staff		6,342 20	
			9,615 25
,, MAINTENANCE OF BUILDINGS, WATER & POWER SUPPLY :			
Laboratories and Offices		341 50	
Bungalows		1,737 14	
Water and Power Supply		2,350 27	
Bungalow Furniture Replacements		108 28	
			4,537 19
,, MISCELLANEOUS ITEMS SHARED WITH ESTATES :			
Dartonfield General Charges		14,991 89	
Nivitigalakele General Charges		8,959 48	
Hedigalla General Charges		5,212 47	
Upkeep of Roads and Grounds		401 84	
Factory Upkeep		932 49	
Power Supply		5,452 70	
			35,950 87
,, CONTINGENCIES :			
Contribution to London Advisory Committee		26,902 88	
General Charges		1,546 46	
Insurances		3,604 25	
Staff Provident Fund		15,407 71	
Entertainment Allowance		32 50	
War Allowance to Staff		28,852 03	
Contribution to Medical Fund		1,263 00	
			77,608 83
,, PLANTING FOOD CROPS AT HEDIGALLA			1,994 45
,, DEPRECIATION			18,113 13
,, BALANCE, BEING EXCESS OF INCOME OVER EXPENDITURE FOR THE YEAR, CARRIED FORWARD TO BALANCE SHEET			57,744 54
		Rs.	375,389 77

Cr.

	Rs. C.	Rs. C.	Rs. C.
By BALANCES OF ESTATE WORKING ACCOUNTS :			
Dartonfield		40,733 36	
Nivitigalakele		35,591 60	
			76,324 96
,, CESS COLLECTIONS			276,091 99
,, INTEREST			16,721 11
,, SALE OF PUBLICATIONS			852 65
,, SUNDRY RECEIPTS :			
General		2,900 94	
Sale of Vulcanised products	Rs. 32,640·69		
Less Expenditure	,, 30,142·57		
		2,498 12	
			5,399 06
		Rs.	375,389 77

RUBBER RESEARCH SCHEME (CEYLON)

DARTONFIELD ESTATE

WORKING ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1944

Dr. **Cr.**

		Rs. Cts.			Rs. Cts.
To Expenditure—			By Sales—		
General Charges	Rs. 14,991·89		Manufactured rubber (85,049 lbs.) and 230 lbs. bark shavings	Rs. 81,336·04	
Upkeep, Manufacture and Distribution	,, 25,252·58		Preserved latex	,, 533·28	
		40,244 47			81,869 32
,, Planting Food Crops	Rs. 786·78		,, Sundry Receipts—		
Less Proceeds from sale of foodstuffs	,, 47·97		Creping charges on outside rubber	Rs. 264·90	
		738 81	Profit from Carting Account	,, 3·94	
,, Preserved Latex—					268 84
Value of latex	Rs. 361·20				
Incidental Expenses	,, 60·32				
		421 52			
,, Balance transferred to Revenue Account		40,733 36			
	Rs.	82,138 16		Rs.	82,138 16

NIVITIGALAKELE EXPERIMENT STATION

WORKING ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1944

Dr. **Cr.**

		Rs. Cts.			Rs. Cts.
To Expenditure—			By Sale of Produce—		
General Charges	Rs. 8,959·49		Rubber (66,382 lbs.) and 390 lbs. bark shavings	Rs. 63,157·68	
Upkeep, Manufacture and distribution	,, 16,109·82		,, Planting Material	,, 2,391·93	
		25,069 31			65,549 61
,, Upkeep of Nurseries		3,771 63			
,, Handling and distribution of budwood and budded stumps		816 17			
,, Planting Food Crops	Rs. 405·79				
Less Proceeds from sale of foodstuffs	,, 104·89				
		300 90			
,, Balance transferred to Revenue Account		35,591 60			
	Rs.	65,549 61		Rs.	65,549 61

RUBBER RESEARCH SCHEME (CEYLON)

CAPITAL ACCOUNT AS AT 31ST DECEMBER, 1944

EXPENDITURE

	To December 31st, 1943 Rs. C.	Transfers between Accounts Rs. C.	Additions in 1944 Rs. C.	Total Rs. C.
To Land including Development :				
Dartonfield	124,770 83		1,745 61	126,516 44
Nivitigalakele	131,945 03		3,817 18	135,762 21
Hedigalla	10,071 21		6,420 20	16,491 41
„ Buildings & Lines :				
Dartonfield—				
Estate	46,944 56		333 16	47,277 72
Headquarters	190,784 97			190,784 97
Nivitigalakele—				
Estate	21,604 16		1,057 35	22,661 51
Headquarters	21,903 65		89 38	21,993 03
Hedigalla—				
Estate	1,917 51		6,166 95	8,084 46
Headquarters	—	—	—	—
„ Furniture & Fixed Equipment :				
Dartonfield	38,985 64		1,384 73	40,370 37
Nivitigalakele	5,164 90	—	—	5,164 90
Hedigalla	—		400 50	400 50
„ Power & Water Supply :				
Dartonfield	38,660 11		3,635 48	42,295 59
Nivitigalakele	6,025 61		—	6,025 61
Hedigalla	—		149 50	149 50
„ Machinery & Tools :				
Dartonfield	106,074 47		2,702 35	108,776 82
Nivitigalakele	311 54		—	311 54
„ Laboratory Apparatus	29,609 83	Cr. 171 04	455 80	29,894 59
„ London Plant	11,333 34		—	11,333 34
„ Live Stock	125 75		—	125 75
Rs.	786,233 11	171 04	28,358 19	814,420 26

RECEIPTS

	Rs. C.	Rs. C.
By Revenue applied for Capital purposes at December 31, 1943	786,233 11	
Less Value of one experimental rod mill	171 04	
		786,062 07
In 1944		28,358 19
Rs.		814,420 26

GENERAL BALANCE SHEET AS AT 31ST DECEMBER, 1944

LIABILITIES

	Rs.	Cts.
Creditors :		
Sundries	Rs. 12,806·35	
Subscriptions for 1945 publications received in advance, etc.	„ 500·00	
		13,306 35
Passage Fund Reserve :		
At December 31, 1943	Rs. 17,958·09	
Less Payments in 1944	„ 2,470·35	
		15,487 74
Depreciation Reserve :		
At December 31, 1943	Rs. 158,965·54	
Add Reserve for 1944	„ 18,113·13	
		177,078 67
Provident Fund Reserve :		
At December 31, 1943	Rs. 101,505·25	
Additions during 1944	„ 26,306·86	
	Rs. 127,812·11	
Less Payments in 1944	„ 2,128·52	
		125,683 59
Medical Fund :		
At December 31, 1943	Rs. 1,812·34	
Additions during 1944	„ 2,526·00	
	Rs. 4,338·34	
Less Payments in 1944	„ 937·15	
		3,401 19
Audit Fee Reserve :		
At December 31, 1943	Rs. 830·28	
Add Reserve for 1944	„ 850·00	
	Rs. 1,680·28	
Less Payments in 1944	„ 586·48	
		1,093 80
Reserve for Stabilisation of Income :		
At December 31, 1943	Rs. 124,925·49	
Add Reserve for 1944	„ 45 091·99	
		170,017 48
Surplus Account :		
At December 31, 1943	Rs. 318,920·07	
Add Excess of Income over Expenditure for 1944	„ 57,744·54	
„ Value of 1 Experimental rod mill	„ 171·04	
	Rs. 376,835·65	
Less Contribution to Capital outlay Rs. 28,358·19		
„ Transfer to Reserve for Stabilisation of Income „ 45,091·99		
	„ 73,450·18	
		303,385 47
Rs.	809,454 29	

ASSETS

	Rs.	Cts.
Debtors :		
Cess Collection for December, 1944	Rs. 26,912·15	
Sundries	„ 35,558·61	
		62,470 76
Advance Accounts :		
London Advisory Committee	Rs. 7,408·19	
Estate Superintendent—		
Dartonfield Rs. 222·85		
Nivitigalakele „ 390·73		
Hedigalla „ 133·92		
	„ 747·50	
Smallholdings Propaganda—		
Officer	„ 108·71	
Postmaster-General	„ 160·00	
		8,424 40
Accrued Interest on Investments		1,675 72
Payments in Advance		1,115 12
Stocks :		
Estate Stocks	Rs. 9,854·85	
Rubber Chemicals Stock	„ 4,194·83	
		14,049 66
Loans to Officers		305 53
Loan to Hataraliyadda Co-operative Society at 31-12-43	Rs. 2,700·00	
Less Amount paid	„ 300·00	
		2,400 00
Investments :		
In Ceylon Govt. 3½% Loan 1957/62	Rs. 25,000·00	
do 3¼% Loan 1949/51	„ 110,000·00	
do 3 % War Loan 1956/60	„ 20,000·00	
do 3¼% Home Defence Loan, 1952	„ 65,000·00	
do 3½% National Loan, 1964/69	„ 70,000·00	
do 3¼% National Loan, 1956	„ 100,000·00	
do 3 % National Loan, 1953	„ 35,000·00	
do 2½% War Loan, 1954	„ 50,000·00	
do 3% Defence Loan	„ 15,000·00	
		490,000 00
Cash Balances :		
At Ceylon Savings Bank		9,240 00
On Fixed Deposit		40,000 00
On Savings Deposit (Bank of Ceylon)		10,658 22
In Current Account No. 1		165,488 62
In Current Account No. 2		3,541 80
In hand		84 44
Rs.	809,454 29	

In accordance with the provisions of Section 8 (2) of the Rubber Research Ordinance (Chapter 302), I have examined the above Balance Sheet. I have obtained all the information and explanations that I have required and I certify, as the result of my audit, that in my opinion the above Balance Sheet correctly sets forth the state of affairs at 31st December, 1944. My report dated 24th August, 1945, on the above Balance Sheet and Accounts is annexed herewith.

(Sgd.) K. KANAGARATNAM,
Acting Auditor-General

Audit Office,
Wellawatta, 24th August, 1945.

PROVIDENT FUND

WORKING ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1944

Dr. Cr

	Rs.	Cts.				Rs.	Cts.
To Payment to 1 officer discharged and 7 retiring officers	2,128	52	By Balance brought forward from 1943			101,505	25
„ Balance carried forward	125,683	59	„ Board's Bonus for 1944	Rs.	10,631·76		
			„ Interest on officers' contributions	„	2,062·45		
			„ Interest on Board's Bonus	„	2,639·39		
						15,333	60
			„ Bonus and interest for 1944 paid to 1 officer discharged	Rs.	28·49		
			„ Interest for 1944 paid to 7 retiring officers	„	45·62		
						74	11
			„ Members' contributions during 1944			10,899	15
Rs.	127,812	11			Rs.	127,812	11

Audited and found correct.

(Sgd.) K. KANAGARATNAM,
Acting Auditor-General

Audit Office,
Wellawatta, 24th August, 1945

STATEMENT OF EXCESSES AND SAVINGS ON VOTES

Head of Estimate	ACCOUNT	Estimate	Expenditure Capital	Expenditure Revenue	Excess	Saving	
		Rs. C.	Rs. C.	Rs. C.	Rs. C.	Rs. C.	
1.	ADMINISTRATION OF THE BOARD : Travelling Expenses of Members	2,000 00		3,273 05	1,273 05		Mileage rate increased.
2. A—F	EMOLUMENTS OF SENIOR SCIENTIFIC STAFF	80,050 00		81,031 54	981 54		Acting allowances paid to two officers
3. A—E	EMOLUMENTS OF JUNIOR SCIENTIFIC STAFF	10,850 00 *3,148 00		15,641 86	643 86		Change in salary scales.
4.	LIBRARY & PUBLICATIONS :						
	A. Library	1,250 00		762 11		487 89	Binding of periodicals postponed.
	B. Publications	2,000 00 *1,700 00		2,973 75		726 25	Fewer publications issued.
5.	SMALLHOLDINGS WORK :						
	A-B. Salaries and Rent Allowances of Staff	20,515 00		21,156 01	641 01		Change in salary scales.
	C-D. Travelling and General Expenses	13,395 00		10,972 89		2,422 11	Less travelling done.
6.	LABORATORY :						
	A. Equipment and Working Expenses	18,500 00	700 40	9,645 25		8,154 35	Special equipment not yet paid for, and payment made for goods ordered earlier.
	B. Furniture Replacements	50 00		45 98		4 02	
7.	FIELD & FACTORY EXPERIMENTS :						
	A. Field Experiments	6,835 00		5,784 45		1,050 55	Less pollination work undertaken, and economies.
	B. Factory Experiments	5,548 00		1,337 49		4,210 51	Over-estimate and less experiments undertaken.
8.	OFFICE :						
	A-C. Emoluments of Office Staff	12,273 00		13,152 97	879 97		Change in salary scales.
	D. Stationery and Office Equipment	4,500 00		3,400 20		1,099 80	Economies.
	E. Postages and Telegrams	2,000 00		1,805 25		194 75	do
	F. Advertising	200 00		255 76	55 76		—
	G. Telephone	1,000 00		1,010 00	10 00		—
	H. Audit	850 00		850 00			—
9.	TRAVELLING EXPENSES OF STAFF	4,000 00		6,342 20	2,342 20		Mileage rates increased.
10.	MAINTENANCE OF BUILDINGS, WATER & POWER SUPPLY :						
	A. Laboratories and Offices	250 00		341 50	91 50		Higher cost of materials and labour.
	B. Bungalows	1,000 00		1,737 14	737 14		Rent of Gallawatta bungalow and caretaker's wages.
	C. Water and Power Supply	1,250 00		2,350 27	1,100 27		Unexpected repairs to motors higher repair charges, and carrying water at Nivitigalakele.
	D. Bungalow Furniture Replacements	250 00		108 28		141 72	Less replacements required.
11.	MISCELLANEOUS ITEMS SHARED WITH ESTATE :						
	A. Dartonfield General Charges	13,355 00		14,991 89	1,636 89		Change in salary scales and increased dearness allowance.
	B. Nivitigalakele General Charges	7,032 00		8,959 48	1,927 48		do
	C. Hedigalla General Charges	5,035 00		5,212 47	177 47		do
	D. Upkeep of Roads and Grounds	570 00		401 84		168 16	Work incomplete owing to shortage of labour.
	E. Factory Upkeep	787 00		932 49	145 49		Unexpected repairs to Ruston engine.
	F. Power Supply	5,676 00		5,452 70		223 30	Nivitigalakele engine out of commission.
12.	CONTINGENCIES :						
	A. Contribution to London Advisory Committee	12,000 00 *14,903 00		26,902 88			—
	B. General Charges	750 00		1,546 36	796 36		Difference in exchange and fee for transfer of funds from London. Higher legal charges.
	C. Insurance Charges	3,810 00		3,604 25		205 75	Over estimate.
	D. Staff Provident Fund	15,250 00		15,407 71	157 71		—
	E. Entertainment Allowance	150 00		32 50		117 50	Over-estimate.
	F. War Allowance to Staff	26,300 00 *1,730 00		28,852 03	822 03		Higher rate of allowance paid.
	G. Contribution to Medical Fund	1,400 00		1,263 00		137 00	Over-estimate.
13.	DEPRECIATION	18,500 00		18,113 13		386 87	do
14.	PLANTING FOOD CROPS—HEDIGALLA	2,750 00		1,994 45		755 55	do
15.	CAPITAL ACCOUNT :						
	A. Upkeep of Dartonfield Immature Areas	1,634 00	1,745 61		111 61		Weeding under-estimated.
	B. Upkeep of Nivitigalakele Immature Areas	2,473 00	2,478 70		5 70		—
	C. Planting 5 acres Pinnagoda	925 00	730 56			194 44	Fencing incomplete.
	D. Planting 33½ acres Hedigalla	7,448 00	4,734 21			2,713 79	Work incomplete owing to shortage of labour.
	E. Dartonfield Water and Power Scheme	6,494 00	5,827 38			666 62	Work and payment not completed.
	F. Dartonfield Quadruple Cottages for Peons	4,000 00	—			4,000 00	Work not undertaken.
	G. Hedigalla Cart Road (Token Vote)	100 00	1,685 99		1,585 99		Cost of tracing road and cutting path.
	H. Replanting Part of Nivitigalakele Budwood Nurseries	2,565 00	607 92			1,957 08	Work incomplete and lower cost of budwood.
	I. Extension to Nivitigalakele Smokehouse	353 00	396 92		43 92		—
	J. Water and Power Scheme—Nivitigalakele	4,300 00				4,300 00	Work not undertaken due to delay in importing engine.
	K. Addition to S.H.P.O.'s Bungalow	90 00	89 38			0 62	—
	L. Additional Servants' Latrine for Junior Staff Bungalows (Dartonfield)	100 00				100 00	Work not undertaken.
	M. Bicycle for use of Staff	225 00	223 35			1 65	—
	N. Dartonfield Carpenter's Shed	2,477 00	333 16			2,143 84	Work incomplete.
	O. Hedigalla Conductor's Bungalow	5,844 00 *622 00	4,281 95			1,562 05	do
	P. Quadruple Cottages Hedigalla	4,376 00	2,260 00			2,116 00	do
	Q. Quadruple Cottages Nivitigalakele	500 00	660 43		160 43		—
	R. Furniture and Office Equipment	*1,065 00	916 78				Payment not completed.
	S. Drying House for Tapping Samples	500 00	510 45		10 45		—
	T. Hedigalla Watcher's Hut	175 00	175 00				—

*Supplementary votes passed at meeting of 12-3-45

ESTIMATES FOR 1945

(Adopted by the Board, October 23rd, 1944)

INCOME

1.	Cess Collections	Rs.	280,000
2.	Interest	,,	18,000
3.	Sale of Publications	,,	750
4.	Profit from Dartonfield	,,	31,450
5.	Profit from Nivitigalakele	,,	32,453
6.	Sundry Receipts	,,	1,550
		Rs.	364,203

REVENUE EXPENDITURE

1. ADMINISTRATION OF THE BOARD :			
Travelling Expenses of Members		Rs.	3,000
2. PERSONAL EMOLUMENTS :			
Senior Scientific Staff ..	Rs. 82,900		
Junior Scientific Staff	,, 18,016		
	,,		100,916
3. LIBRARY & PUBLICATIONS :			
Library	Rs. 1,500		
Publications	,, 2,500		
	,,		4,000
4. SMALLHOLDINGS WORK :			
Salaries and Allowances	Rs. 22,950		
Travelling and General Expenses	,, 12,312		
	,,		35,262
5. LABORATORY :			
Equipment and Working Expenses ..	Rs. 5,000		
Furniture Replacements	,, 50		
	,,		5,050
6. FIELD & FACTORY EXPERIMENTS :			
Field Experiments	Rs. 11,447		
Factory Experiments	,, 6,069		
Budding Instruction	,, —		
	,,		17,516
7. OFFICE :			
Salaries of Office Staff	Rs. 14,510		
Stationery and Office Equipment	,, 4,500		
Postage and Telegrams	,, 2,000		
Advertising	,, 300		
Telephone	,, 1,000		
Audit	,, 850		
	,,		23,160
8. TRAVELLING EXPENSES OF STAFF :			
Officers' Expenses		,,	7,000
9. MAINTENANCE OF BUILDINGS, WATER & POWER SUPPLY :			
Laboratories and Offices	Rs. 250		
Bungalows	,, 1,750		
Water and Power Supply	,, 1,500		
Furniture Replacements	,, 200		
	,,		3,700
10. MISCELLANEOUS ITEMS SHARED WITH ESTATE :			
Dartonfield General Charges	Rs. 16,358		
Nivitigalakele General Charges	,, 10,342		
Hedigalla General Charges	,, 5,980		
Upkeep of Roads and Grounds	,, 675		
Factory Upkeep	,, 1,075		
Power Supply	,, 6,683		
	,,		41,113

11. CONTINGENCIES :				
Contribution to London Advisory Committee	Rs.	18,500		
General Charges	,,	1,000		
Insurance Charges	,,	3,850		
Staff Provident Fund	,,	18,000		
Passages	,,	5,000		
Entertainment Allowance	,,	150		
War Allowances to Staff	,,	31,600		
Contribution to Medical Fund	,,	1,450		
			,,	79,550
12. DEPRECIATION			,,	18,400
13. PLANTING FOOD CROPS—Hedigalla			,,	2,300
			Rs.	340,967

CAPITAL EXPENDITURE

BUILDINGS, ETC. :				
Dartonfield—				
Drying House	Rs.	5,000		
Alterations in Experimental Factory	,,	2,000		
School and Creche	,,	4,000		
			,,	11,000
Hedigalla—				
Cart Road			,,	45,000
EQUIPMENT :				
Typewriting Table			,,	120
IMMATURE AREAS :				
Dartonfield	Rs.	1,680		
Nivitigalakele	,,	3,467		
Hedigalla	,,	9,997		
			,,	15,144
			Rs.	71,264

SUMMARY

INCOME			Rs.	364,203
EXPENDITURE :				
Revenue	Rs.	340,967		
Capital	,,	71,264		
			,,	412,231
EXCESS OF EXPENDITURE OVER INCOME			Rs.	48,028