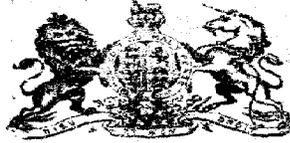


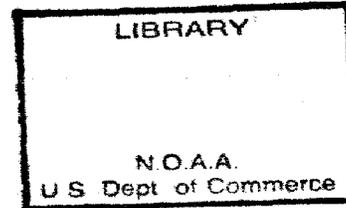
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REPORT

ON



THE DEPARTMENT

OF

AGRICULTURE,

BARBADOS.

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**REPORT OF
THE DEPARTMENT OF AGRICULTURE,
BARBADOS.**

FOR THE FINANCIAL YEAR 1916-1917.

STAFF.

Superintendent of Agriculture	...	JOHN R. BOVELL, I.S.O., F.L.S., F.C.S.
Assistant Superintendent	...	J. SYDNEY DASH, B.S.A.
First Field Assistant	...	MILTON S. GOODMAN.
Second Field Assistant	...	ERNEST H. BARROW.
Assistant in Charge of Nurseries	...	J. R. BAILEY.
Chief Clerk	...	HUGH O. RAMSEY.
Second Clerk	...	M. ESTELLE B. SHEPHERD.
Third Clerk	...	G. E. LAURIE SPENCER.

ESTABLISHMENT.

At the beginning of 1917 the Governor of Guadeloupe asked the Governor of Barbados to allow the Superintendent of Agriculture to visit that island in order that he might investigate and report on the sugar industry, which was causing considerable anxiety there. His Excellency was pleased to grant the request, and the Superintendent was absent on duty leave from February 26 to April 2. Since his return a number of planters and sugar factory directors from that island have visited Barbados to see for themselves the agricultural conditions and the methods adopted in some of the best factories. Arrangements have been made for two of the planters to spend a year in this island so as to become acquainted with the best agricultural methods in use. It may be here stated that the day after Mr. Bovell's return from Guadeloupe, the Governor of Martinique telegraphed the Governor of Barbados asking that he be allowed to go to that island on a similar mission. During Mr. Bovell's absence Mr. J. Sydney Dash, the Assistant Superintendent, acted as Superintendent of Agriculture.

The Assistant Superintendent was also absent from the island on vacation leave from June 26 to October 4, 1916.

On March 28, 1917, Mr. C. N. Reece, who had been appointed Assistant in Charge of the Nurseries on October 12, 1916, resigned his post to accept the management of Lemon Arbor Factory. On Mr. Reece's resignation Mr. J. R. Bailey, the Head Master of Southborough Elementary School, was appointed on probation.

EXPENDITURE.

Salaries	...	...	...	£1,644	5	10
Incidentals for sugar-cane, cotton and other experiments	...	...	...	409	8	11½
Upkeep of Botanic Station	...	...	...	114	18	3
Fumigation of plants	...	...	...	2	14	2
Purchase of goats	...	...	...	1	4	2½
Purchase of apparatus, books, &c	...	...	...	5	0	0
Exhibition (local)	...	...	...	50	11	6½
Total	...	...	...	£2,228	2	11½

RECEIPTS.

Plants in pots	...	...	...	£33	9	8
Cane, cotton, cassava, yams, &c., grown on lands rented from Waterford Plantation	...	...	...	58	4	8
Sundries :—Collecting and drying mahogany seeds, tamarinds sold from trees at Pavilion, &c.	...	...	...	4	5	11½
Total	...	...	...	£96	0	3½

REPAIRS TO BUILDINGS, ETC.

During the year minor repairs were executed to Codrington House and to some of the outbuildings there, where the nurseries for the seedling sugar-canes and other plants are situate. The two plant houses were badly in need of repainting and the worst and more exposed portions were painted. Owing to the increase in price of practically all supplies it was impossible to complete

this work ; it is hoped, however, that it will be finished during the next financial year. Minor repairs were also executed to the office and outbuildings in Bridgetown. It was mentioned in the last report that owing to the land to the west of Codrington House sloping very abruptly in some places, thus causing considerable erosion when heavy rains fell, a retaining wall had been built in the worst place, and that it was proposed to continue the work when possible.

It may now be stated that during the year under review, another retaining wall was built, but there are still portions of the slopes on which these walls have to be built.

DISTRIBUTION OF ECONOMIC PLANTS.

The receipts for the sale of plants, &c., for the year 1916-17 amounted to £96 0. 3½.

The plants and seeds distributed locally and abroad for the year are as follows :—

Breadfruit	...	...	...	1 plant
Cane plants (of these ninety-nine barrels, seventy-five tin cylinders and twenty cases, containing approximately 26,840 cuttings were packed in damp powdered charcoal)	...	...	...	41,830 cuttings
Cherry	...	...	...	5 plants
Ficus benjamina	...	...	...	7 "
Ficus nitida	...	...	...	2 "
French Guava	...	...	...	25 "
Fig	...	...	...	6 "
Grape Vine	...	...	...	1 "
Lemon	...	...	...	8 "
Lime	...	...	...	17 "
Mango plants grafted	...	...	...	110 "
Miscellaneous	...	...	...	52 "
Palms and ornamental plants	...	...	...	433 "
Papaw	...	...	...	16 "
Pears, grafted Avocado	...	...	...	16 "
Plants for Arbor Day	...	...	...	2,000 "
Sapodilla	...	...	...	2 "
Shaddock, budded	...	...	...	14 "
SEEDS, ETC.				
Bengal beans	...	...	...	24 lb.
Cane seeds	...	...	...	5 packets
Canada beans	...	...	...	8 "
Cherry seeds	...	...	...	3 "
Eddoe suckers, White Seal Top	...	...	...	6 lb.
Grape fruit seeds	...	...	...	1 packet
Ground nuts	...	...	...	100 lb.
Indian corn	...	...	...	2 bushels & 12 ears
Lyon beans (unshelled)	...	...	...	100 lb.
Mahogany seeds	...	...	...	2 barrels
Mammee apple	...	...	...	5 seeds
Mango	...	...	...	25 "
Miscellaneous seeds	...	...	...	13 packets
Stizolobium pachylobium beans	...	...	...	19 lb.
Stizolobium pachylobium beans	...	...	...	2 packets
Seeds of ornamental plants	...	...	...	16 "
Tannias	...	...	...	81 heads & 4 lb.
Yams	...	...	...	2 barrels & 171 yams.

PLANTS, ETC., IMPORTED AND DISTRIBUTED LOCALLY.

Coconuts	...	...	...	162 plants.
Grape fruit	...	...	...	1 plant.
Juno Peas	...	...	...	1 quart.
Oranges	...	...	...	6 plants.
Tobacco seed	...	...	...	2 lb.

EXPERIMENTS WITH SUGAR CANES.

The results obtained with the different varieties of the sugar-cane as well as with the different chemical fertilizers are specially referred to in

a separate report: there is, therefore, no necessity to do more than briefly refer to them here. For the period under review experiments were conducted at fifteen estates with the different varieties of the sugar-cane grown from seed obtained locally, and from cuttings of seedling and other varieties obtained from other countries and tested in comparison with the White Transparent and B. 6450, as the two standards. These experiments were carried out in duplicate with the better varieties at Carrington, Coverley, Pine, Waterford and Pickerings estates in the black soil districts; at Clifton, Clifton Hall, Henley and Lemon Arbor estates in the red soil districts; and at Walkers in the Scotland district. Single experiments with the older and some of the newer varieties were carried out at Dodds, Sunbury, Hampton, Hannays and Brighton estates. These estates are representative of the black soil districts, the red soil districts and the Scotland districts of the island. At Dodds a portion of the estate that is fairly level is occupied with seedlings in various stages of experimentation. At Summervale canes are grown chess-board fashion to enable natural hybrids to be obtained, and some special varieties are grown in rows for the purpose of carrying on the artificial hybridisation experiments. The new seedling varieties are first grown on lands rented from Waterford plantation, and when about two years old the best of them are sent to Dodds and cultivated there for some time, and as any of them prove worthy of extended cultivation they are sent to various plantations to be grown under normal conditions. If the results of these latter experiments justify it, the planters are recommended to grow them in small areas in comparison with the varieties found to do best on their estates, and to gradually extend the cultivation of these newer varieties if they prove suitable.

Occasionally when any new seedling gives promise of being of exceptional value, a number of the planters, who have from time to time assisted the Department, are asked to take a few cuttings or sometimes a few stools and plant them so as to obtain cuttings for extending their cultivation. In some instances these varieties have proved to be better than some of the older ones, and in others the reverse has happened. In these latter cases the planters have lost little financially.

Sometimes owing to the fact that sugar-canes obtained during one season have to be grown in fields of different fertility, owing to the difficulty of finding sufficient level land in the fields at Dodds, the tables given in the Report on the Sugar-cane Experiments do not bring out clearly the results of the better seedlings when compared with the White Transparent and the B. 6450, the two standard canes. Further, owing to various reasons, seedling sugar-canes often give returns at first which are not borne out by subsequent results. I have therefore been rather chary in the past in calling special attention to any seedlings unless the average results for five years warranted my doing so. As, however, at the present time there are three seedlings which appear worthy of being tried under ordinary plantation conditions, I give the results obtained with them so that planters may, if they think fit, cultivate them tentatively on their estates. These varieties are: B.H. 10 (12), B. 6032 and B. 7924.

There are also four new varieties, seedlings of the B. 6450, which have been cultivated for the past two years in comparison with the White Transparent and B. 6450, and which appear to be worthy of extended cultivation. These varieties are:—B.S.F. 12 (45), B.S.F. 12 (34), B.S.F. 12 (27) and B.S.F. 12 (24). The results of these seven varieties are given in Tables II to V.

As will be seen from these tables, B.H. 10 (12) has given in the same fields on the average for four years from twenty-one plots 2,478 lb. of saccharose per acre more than the B. 6450 and 4,239 lb. more than the White Transparent; B. 6032 from forty-nine plots 1,308 lb. of saccharose per acre more than the B. 6450 and 3,222 lb. more than the White Transparent; B. 7924 from sixteen plots 1,057 lb. of saccharose per acre more than the B. 6450 and 2,788 lb. more than the White Transparent.

Of the four Barbados self fertilized seedlings obtained from B. 6450, B.S.F. 12 (45) on the average from two plots during the last two seasons has given 1,892 lb. of saccharose per acre more than the B. 6450 and 2,875 lb. more than the White Transparent; B.S.F. 12 (34), 2,416 lb. of saccharose per acre more than the B. 6450 and 3,399 lb. more than the White Transparent; B.S.F. 12 (27), 3,506 lb. of saccharose per acre more than the B. 6450 and 4,489 lb. more than the White Transparent; B.S.F. 12 (24), 4,500 lb. of saccharose per acre more than the B. 6450 and 5,483 lb. more than the White Transparent.

In addition to the experiments carried out at Dodds with different varieties of the sugar-cane, experiments were carried out with different chemical

fertilizers, the same fertilizers having now been applied each year for the past twenty-four years, i.e., twelve times in Bay Tree field and twelve times in Summerville field, and the results were becoming more and more valuable as each year went by, up to four years ago, and were indicative of the lines on which sugar-canes grown under similar conditions to those obtaining at Dodds should be manured. Unfortunately, however, during the past four years the sugar-canes on the manurial plots have been attacked by the grubs of the root borer *Diaprepes abbreviatus*, L., and the brown hard-back *Phytalus smithi*, Arrow, to such an extent that it is impossible to draw any very definite conclusions from them. This year before the canes were fully matured some were seen to be withering, and these clumps, amounting altogether to thirty-three, had to be reaped or they would have died and been lost. From the basal portions of these clumps 223 larvae of the root borer and twenty-one larvae of the brown hard-back were obtained. As soon as the remainder of the canes were mature they were reaped in the usual manner, and as quickly as possible after this the basal portions of each clump were dug up, cut into pieces, and the larvae extracted and killed. At the same time the old cane holes were dug two feet square and ten inches deep, and all the larvae found in the soil were killed. The following table shows the number of larvae of the root borer and the brown hard-back found in each plot. As will be seen from this table 7,217 larvae of the root borer and 1,010 larvae of the brown hard-back were killed.

As will also be seen from the table, the number of larvae of root borer and brown hard-back attacking the sugar canes in each plot varied from sixty-seven in the case of Plot A. 13 to 771 in the case of Plot B. 3. It will thus be understood how impossible it is to compare the results of the manurial experiments for the year under review.

TABLE I.

TABLE SHOWING THE NUMBER OF THE LARVAE OF THE ROOT-BORER AND THE BROWN HARD-BACK FOUND IN EACH MANURIAL PLOT.

Plots.	Root borer.	Brown hard-back.	Total.	Plots.	Root borer.	Brown hard-back.	Total.
A. 1	221	74	295	B. 1	412	31	443
A. 2	280	36	316	B. 2	378	26	404
A. 3	320	48	368	B. 3	720	51	771
A. 4	374	43	417	B. 4	556	51	607
A. 5	296	42	338	B. 5	430	30	460
A. 6	305	37	342	B. 6	477	30	507
A. 7	226	38	264	B. 7	374	28	402
A. 8	189	15	204	B. 8	346	30	376
A. 9	336	33	369	B. 9	55	24	79
A. 10	343	41	384	B. 10	71	30	101
A. 11	182	31	213	B. 11	79	40	119
A. 12	109	46	155	B. 12	58	37	95
A. 13	29	38	67	B. 13	51	30	81
	3,210	522	3,732		4,007	488	4,495

To give some idea of the loss that is being sustained by the attacks of these pests when they are present to any extent, I may mention that the thirty-three clumps of sugar-canes at Dodds that had to be reaped before they reached maturity, weighed on the average 3.07 lb. per cane, and in spite of the fact that 7,508 larvae of these two pests were found in the remainder of canes in the manurial plots, the average weight of each cane was 3.91 lb. In other words, although a large number of canes in the remaining plots had also been attacked by the two pests, still as a smaller percentage was attacked they weighed on the average .84 lb. per cane more than those in the thirty-three clumps cut first. The average number of canes per acre of the B.6450 (the variety usually planted on sugar estates now) on the experiment plots this year was 18,640. The loss,

therefore, at this rate was 6.99 tons of canes, or in round numbers say seven tons of canes per acre. So far as I have been able to ascertain, the average price paid last year by the sugar factories to the growers for canes was \$6.57 per ton. The loss, therefore, sustained from the attacks of the larvae of the two beetles would be at the rate of \$45.99 per acre.

That these two pests are increasing it may be stated that although 8,122 larvae of the root borer and brown hard-back had been destroyed in 1915 when the 1,560 clumps comprising the manurial plots were dug out, cut into pieces and the old cane holes dug out two feet square and one foot deep, yet when the same manurial plots were reaped in 1917, 8,227 larvae of the same two pests were similarly dug out and destroyed.

Although the brown hard-back has been found in the parishes of St. Michael, Christ Church, St. Philip, St. James, St. Peter, and St. Lucy, still very little effort has been made, up to the present time, by the majority of the sugar planters to collect the beetles during the egg-laying period, or to dig up the cane stumps and destroy the grubs that may be contained therein. As showing that considerable numbers of the brown hard-back are attacking the canes in some districts of the island, I would state that the proprietor of one estate of about 500 acres, paid for the collection of 589,680 of these beetles this year.

Judging by the injury that the larvae of the brown hard-back are causing in Mauritius, and the larvae of a similar beetle in Porto Rico, every effort should be made to collect the larvae and mature insects of this pest, as well as the eggs, larvae and mature insects of the root borer, which are attacking the sugar canes here. In Mauritius, judging from the copy of a photograph of a field of plant canes five months old, given in a report of the Department of Agriculture of that colony, showing the incident of attack, it appears that practically all the canes in the field were killed by the pest. In Porto Rico, according to a report recently received, great loss is being sustained from the attacks of the larvae of certain brown hard-backs there, which are very similar to the brown hard-backs in Barbados. It is stated that its habitat on the island is at present restricted to the western end, and that within this limited territory it has reached, particularly in the Guanica district, such great abundance as to often have caused whole fields of canes to fall prone and to begin to sour in a week's time after damage first became evident. Further, that it has made the growing of ratoon canes in the Guanica and San German districts impossible, and in addition to the cost of replanting each crop has levied a tax upon the centrals for the continued hiring of boys to collect the grubs and beetles that amounts to hundreds of dollars in a single season.

Some idea may be formed of the cost of collecting these pests by the following information, given by the manager of Guanica Centrale, where actual records of the daily collection of the grubs and beetles are kept:

"In seven months of 1914 during which collection of beetles were made (February 27 to September 23) the total collections in five haciendas (estates) belonging to Guanica Centrale amounted to 2,255,000 beetles, gathered at a total cost of \$833.87.

"The collections of grubs for six months of the same year (from November 27, 1913 to May 14, 1914) amounted to a total of 1,662,000 grubs, gathered at a cost of \$1,876.73.

"In six months of the following year (March 6 to September 9, 1915) on the same haciendas of Guanica Centrale, the collections of beetles amounted to a total of 2,468,500, gathered at a cost of \$1,425.20.

"The number of grubs collected in seven months of 1914 and 1915 (from October 29 to May 27) amounted to a total of 2,425,000 gathered at a cost to the central of \$2,018.57.

"Figuring 400 beetles to the quart, and 300 grubs to the quart, this makes the rather startling figure of 369 bushels of beetles and 423 bushels of grubs collected in two years from a small district by one sugar central, at a total cost of \$6,154.37.

"And still this beetle is not held in check, but appears to continue to increase in abundance. It is small wonder that the sugar-cane growers of Porto Rico have become exercised over the depredations of the 'gusano blanca,' as the white grub is known locally."

I may here mention that when I visited Porto Rico in 1909 to report on the insect pests and fungoid diseases attacking the sugar-canes on the estates attached to Guanica Central Factory, it had only recently been noticed that these grubs were attacking the canes.

TABLE III.
WHITE TRANSPARENT AND B. 6450 COMPARED WITH B. 6082 GROWN IN THE SAME FIELDS DURING THE SEASONS
1911-13, 1918-15, 1914-16, AND 1915-17.

Name or No. of cane.	Years.	No. of experiments.	Canes, tons per acre.	Per cent. juice by mill.	NORMAL JUICE.				Increase in saccharose lb. per acre.	Increase in saccharose lb. per acre over B. 6450.
					Lib. per gallon of		Quotient of purity.	Glucose ratio.		
					Saccharose.	Glucose.				
W. Transparent	1911-18	1	16.94	61.50	1.95	.082	89.45	1.64	4,214	
	1913-15	15	20.44	58.71	1.88	.074	88.76	3.99	4,080	
	1914-16	18	30.46	63.51	1.99	.061	89.84	3.11	8,019	
	1915-17	15	28.45	59.73	1.90	.064	90.12	3.16	6,644	
	Mean		28.57	60.86	1.93	.058	89.54	2.98	5,892	
B. 6450	1911-18	1	21.72	62.75	2.01	.050	89.78	2.49	5,670	
	1913-15	15	28.20	62.51	1.88	.070	88.54	3.99	6,417	
	1914-16	18	37.67	65.26	1.99	.057	89.00	2.96	10,081	
	1915-17	15	34.67	61.77	2.06	.060	88.71	2.96	9,076	
	Mean		30.07	63.07	1.99	.059	89.00	3.10	7,811	
Ba. 6082	1911-13	1	29.04	60.25	2.09	.019	92.89	0.91	7,802	
	1913-15	15	31.77	62.08	1.87	.071	88.74	3.77	7,751	
	1914-16	18	42.69	64.06	1.92	.063	89.02	3.35	10,902	
	1915-17	15	39.36	61.52	2.00	.060	89.02	3.02	10,001	
	Mean		35.92	61.97	1.97	.058	89.92	2.76	9,114	
									3,222	1,303

TABLE IV.
WHITE TRANSPARENT AND B. 6450 COMPARED WITH Ba. 7924 GROWN IN THE SAME FIELDS DURING THE SEASONS
1912-14, 1913-15, 1914-16 AND 1915-17.

Name or No. of cane.	Years.	No. of experiments.	Canes, tons per acre.	Per cent. juice by mill.	NORMAL JUICE.				Increase in saccha-rose lb. per acre over W. Transparent.	Increase in saccha-rose lb. per acre over B. 6450.
					Lb. per gallon of		Quotient of purity.	Glucose ratio.		
					Saccharose.	Glucose.				
W. Transparent	1912-14	1	2620	67.50	2.08	.054	89.82	2.66	7,428	
	1913-15	1	2463	62.00	1.82	.147	84.26	8.08	5,760	
	1914-16	1	3485	66.25	1.98	.069	88.79	8.48	9,330	
	1915-17	13	2608	59.69	2.03	.065	89.97	3.20	6,660	
	Mean		2797	63.86	1.97	.084	86.21	4.86	7,297	
B. 6450	1912-14	1	2312	64.75	2.05	.068	89.52	3.07	6,348	
	1913-15	1	3090	64.00	1.97	.119	86.40	6.04	8,055	
	1914-16	1	4871	69.75	1.77	.089	86.76	5.03	12,535	
	1915-17	13	3514	61.81	2.05	.080	88.79	2.04	9,178	
	Mean		3447	65.08	1.96	.088	87.87	4.27	9,028	1,731
Ba. 7924	1912-14	1	3002	63.25	2.10	.020	91.70	0.95	8,240	
	1913-15	1	4180	64.00	2.08	.036	90.88	1.73	11,361	
	1914-16	1	4862	64.00	1.89	.039	90.00	2.06	12,234	
	1915-17	13	3299	61.22	2.02	.032	90.17	1.59	8,506	
	Mean		3823	63.12	2.02	.032	90.68	1.58	10,085	2,788
	Mean									1,957

TABLE V.
WHITE TRANSPARENT AND B. 6450 COMPARED WITH B.S.F. 12 (24) B.S.F. 12 (27) B.S.F. 12 (34) AND B.S.F. 12 (45) GROWN AT DODDS IN THE SAME FIELDS FOR THE SEASONS 1914-16 AND 1915-17.

Name or No. of cane.	Years.	No. of experiments.	Cane, tons per acre.	Per cent. juice by mill.	NORMAL JUICE.				Increase in saccha-rose lb. per acre over W. Transparent.	Increase in saccha-rose lb. per acre over B. 6450.
					Lb. per gallon of		Quotient of purity.	Glucose ratio.		
					Saccharose.	Glucose.				
W. Transparent	1914-16	1	2644	64.50	1.94	.086	87.00	4.43	6,852	
	1915-17	1	3020	60.50	2.02	.078	80.88	3.86	7,631	
	Mean		2832	62.50	1.98	.082	88.19	4.25	7,243	
B. 6450	1914-16	1	4086	68.25	1.82	.088	85.85	4.56	10,420	
	1915-17	1	2111	62.00	1.95	.093	86.67	4.77	6,081	
	Mean		3224	65.13	1.89	.088	86.26	4.67	8,226	
B.S.F. 12 (45)	1914-16	1	4438	64.00	2.04	.061	88.70	2.90	11,069	
	1915-17	1	8187	61.50	1.86	.104	84.16	5.50	8,266	
	Mean		8963	62.75	1.95	.083	86.43	4.20	10,118	
B.S.F. 12 (34)	1914-16	1	4870	68.00	1.98	.125	80.84	6.81	12,163	
	1915-17	1	8438	62.25	2.06	.086	87.06	3.20	9,120	
	Mean		3909	65.13	2.02	.090	87.25	4.76	10,642	
									2,875	1,892
									9,399	2,416

TABLE V.—Concluded.
WHITE TRANSPARENT AND B. 0150 COMPARED WITH B.S.F. 12 (24) B.S.F. 12 (27) H.S.F. 12 (84) and B.S.F. 12 (45) GROWN AT DODDS IN THE SAME FIELDS FOR THE SEASONS 1914-16 AND 1915-17.

Name or No. of cane.	Years.	No. of experiments.	Cane, tons per acre.	Per cent. juice by mill.	NORMAL JUICE.				Increase in saccha-rose lb. per acre over B. 0150.	Increase in saccha-rose lb. per acre over W. Transparent.
					Lb. per gallon of		Quotient of purity.	Glucose ratio.			Saccharose lb. per acre.
					Saccharose.	Glucose.				
B.S.F. 12 (27)	1914-16	1	58.84	65.80	1.92	.104	83.11	5.71	13,370	3,506
	1915-17	1	44.88	58.50	2.05	.089	86.86	4.34	10,094	
Mean	..		49.84	62.15	1.94	.097	84.99	5.08	11,732	4,489
B.S.F. 12 (24)	1914-16	1	49.90	66.75	1.98	.098	88.13	4.82	13,320	5,488
	1915-17	1	44.98	64.25	2.03	.071	88.65	3.50	12,128	
Mean	..		47.44	65.50	1.98	.082	88.89	4.16	12,720	4,500

The experiments started during the reaping season of 1912 for the purpose of ascertaining what is the probable error incident to carrying out the sugar-cane experiments in Barbados were continued this year. For this purpose the two centre rows of the four four-row plots of Ba. 6032 alongside one another in Upper Garden field at Summervale plantation, where the whole field had been treated alike, were reaped separately, the juice analysed, and the results calculated to the acre like all the seedling variety experiment plots. The results are given in Table VII.

As will be seen from the table, the difference in the yield of the plot which was highest and that which was lowest amounted this year to 2,535 lb. of saccharose per acre or 29.89 per cent. Further, the difference between the highest yield and the average of the four plots was 18.66 per cent., and between the average yield of the four plots and the lowest 8.29 per cent. As these experiments have now been carried on for five years, it may not be without interest if the mean results obtained for the five years are calculated. These results are given in Table VI.

TABLE VI.

MEAN RESULTS OF THE EXPERIMENTS STARTED TO ASCERTAIN THE PROBABLE ERROR INCIDENT IN CARRYING OUT THE SUGAR-CANE EXPERIMENTS IN BARBADOS.

	Canes, tons per acre.	Saccharose lb. per gallon.	Glucose lb. per gallon.	Saccharose lb. per acre.	Per cent. above or below the average which is 7195 lb. sac- charose per acre.
Plot I	27.41	1.95	.068	7,163	- 0.44
Plot II	28.88	1.95	.062	7,481	+ 3.82
Plot III	27.58	1.97	.068	7,248	+ 0.73
Plot IV	26.90	1.96	.064	6,886	- 4.29

As will be seen therefrom the difference for the five years between the mean yield of the plot which was highest and that which was lowest amounted to 595 lb. saccharose per acre, a difference of 8.64 per cent. Further, that the difference between the highest and the average of the four plots for the five years was +286 lb. or 3.82 per cent., and between the lowest and the average -309 lb. or 4.29 per cent. Taking the relative yields for the five years, Plot I which has given the highest yield, in two years out of the five gave higher yields than the other three plots, in one instance giving as much as 42.20 per cent. more than Plot IV. During the other three years it gave somewhat decreased yields although never the lowest. In one year it was 27.85 per cent. less than Plot IV, which was the lowest on the average for the five years, and which gave the highest yield for that year. These results confirm what has been repeatedly stated in the reports of the sugar-cane experiments, that too much reliance cannot be placed on the results of one year's sugar-cane experimental work.

TABLE VII.

SUMMERYALE PLANTATION.

UPPER GARDEN FIELD.

Plant Cane.

1915--1917.

Name or No. of cane.	No. of canes per acre.	Cane, tons per acre.	Per cent. by number of rotten canes.	Per cent. juice by mill.	Sp. Gr.		NORMAL JUICE.				Gallon juice per acre.	Saccharose lb. per acre.	Percentage above or below the average which is 0.404 lb. saccharose per acre.
					30° C.	16° C.	Saccharose.	Glucose.	Solids not sugar.	Quotient of purity.				Glucose ratio.
Ba. 6082 Plot I.	18,850	40.44	8.07	64.77	1.0881	2.06	.048	.152	91.15	2.33	5,417	11,150	+ 18.66
Ba. 6082 Plot II.	14,694	32.96	0.40	61.48	1.0858	2.40	.048	.172	90.52	2.29	4,899	9,049	- 8.77
Ba. 6082 Plot III.	16,027	32.02	1.78	68.50	1.0826	2.05	.045	.155	91.11	2.29	4,207	8,624	- 8.29
Ba. 6082 Plot IV.	17,189	34.22	1.00	62.25	1.0818	1.99	.054	.176	89.61	2.71	4,413	8,782	- 0.61

As it is most important to the sugar-cane growers as a whole that the results obtained with the better seedling varieties should be compared with the White Transparent, the standard cane, so as to obtain some idea of their comparative values, forms were sent to 172 out of the 328 estates in the island asking for a return of the results obtained with the seedling and other sugar-canes grown for the crop of 1917. Replies this year were received from fifty-seven estates. Of these, for various reasons, three were of no value, so that the comparative results could only be compiled from fifty-four estates. Of these thirty-five were from the black and nineteen from the red soil districts. The number of forms sent out this year was considerably less than in previous years. This was due to the fact that so few replies were received in the past in comparison with the number of forms sent out, that this year forms were sent only to those planters who in the past had returned them filled in, together with others who it was thought might possibly this year supply the information asked for.

Owing to the fact that all the estates supplying the information did not have scales for weighing the canes, the results in some instances have had to be given in gallons of juice per acre. Before comparing the results it might be as well if attention is called to the fact that the root borer and the brown hard back are found on a number of the estates supplying the information. It is therefore, probable that the yields per acre of some of the different varieties of sugar-canes have been affected, and so must be accepted with a certain amount of reserve. As has been already pointed out, the injury caused by these two pests on the manurial plots at Dodds was considerable, and resulted in a loss of practically seven tons of canes per acre.

PLANT CANES.

As will be seen from the tables giving the results, in the black soil districts the average yields of the plant canes were as follows, viz., B.6308 from 29.5 acres 35.81 tons of canes per acre, Ba. 6032 from 194.78 acres 32.94 tons of canes per acre, W. No. 2 from 18 acres 31.18 tons of canes per acre, B. 6450 from 2085.34 acres 28.64 tons of canes per acre, White Transparent from 107.25 acres 23.38 tons of canes per acre, B.376 from 283.75 acres 28.26 tons of canes per acre, and B.147 from 75.5 acres 25.99 tons of canes per acre, differences in favour of the B.6308, Ba. 6032, W. No. 2 and B.6450 over the White Transparent of 7.43, 4.56, 2.80 and 0.26 tons per acre, respectively. The B.376 and B.147 yielded less than the White Transparent by 0.12 and 2.39 tons per acre, respectively. On those estates where the plant canes were not weighed but where the juice was measured, the average yields were as follows, viz., Ba. 6032 from 1 acre 4,600 gallons, B.6450 from 136.41 acres 4,429 gallons of juice per acre, B.6308 from 8.98 acres 4,400 gallons of juice per acre, B.4578 from 10.70 acres, 3,906 gallons of juice per acre, B. 147 from 21.12 acres 3,820 gallons of juice per acre, W. No. 2 from 8 acres 3,700 gallons of juice per acre, B.376 from 9.64 acres 3,700 gallons of juice per acre, and the White Transparent from 38 acres 3,805 gallons of juice per acre, differences in yield over the White Transparent of 1,295, 1,124, 1,095, 691, 515, 395, and 395 gallons of juice per acre, respectively. In the red soil districts the average yields of the plant canes were as follows, viz., Ba. 6032 from 15 acres 37.39 tons of canes per acre, B. 6450 from 473.22 acres 31.18 tons of canes per acre, B.376 from 360.26 acres 28.12 tons of canes per acre, Rappoe from 9 acres 27.61 tons of canes per acre, B. 3412 from 11 acres 25.18 tons of canes per acre, White Transparent from 38 acres 22.76 tons of canes per acre, and B.147 from 18 acres 18.15 tons of canes per acre, differences in favour of the Ba. 6032, B.6450, B. 376, Rappoe, and B. 3412 over the White Transparent of 14.63, 8.42, 5.33, 4.88, and 2.42 tons per acre, respectively. In the case of B. 147 there was a decrease of 4.61 tons per acre compared with the White Transparent. On those estates where the juice was measured the average yields were as follows, viz., B. 6450 from 3 acres 5,133 gallons of juice per acre, B. 376 from 18.5 acres 3,463 gallons of juice per acre, and the White Transparent from 4.5 acres 3,440 gallons of juice per acre, differences in yield over the White Transparent of 1,693 and 23 gallons of juice per acre, respectively.

FIRST RATOONS.

On the black soils the average yields of the first ratoons were as follows, viz., Ba. 6932 from 1.82 acres 22.53 tons of canes per acre, W. No. 2 from 9.5 acres 20.14 tons of canes per acre, B.376 from 130.5 acres 20.12 tons of canes per acre, White Transparent from 100 acres 19.54 tons of canes per acre, differences in favour of the Ba. 6932, W. No. 2, and B. 376, when compared with the White Transparent, of 2.99, 0.60 and 0.58 tons per acre, respectively, and in the case of B. 6450, a decrease of 0.31 tons per acre when compared with the White Transparent. On the red soils the average yields were as follows, viz., B. 376 from 367.98 acres 21.73 tons of canes per acre, B. 6450 from 320.67 acres 21.68 tons of canes per acre, W. No. 2 from 5 acres 21.20 tons

of canes per acre, and the White Transparent from 31 acres 17.26 tons of canes per acre, differences in yield over the White Transparent of 4.47, 4.42 and 3.94 tons of canes per acre, respectively. On those estates where the juice was measured the average yields were as follows, viz., B. 6450 from 14.25 acres 3,650 gallons of juice per acre and B. 376 from 10 acres 2,919 gallons of juice per acre. No returns were received for the White Transparent. The difference, therefore, could only be calculated between the B. 6450 and the B. 376 and this was an increase in favour of the B. 6450 of 731 gallons of juice per acre.

SECOND RATOONS.

On the red soils the average yields of the second ratoons were as follows, viz., B. 376 from 130.78 acres 19.28 tons of canes per acre, B. 6450 from 156.97 acres 17.92 tons of canes per acre and the White Transparent from 19 acres 12.84 tons of canes per acre, differences in yield over the White Transparent of 6.54 and 5.08 tons of canes per acre, respectively. In those instances where the juice was measured the average yields were as follows, viz., B. 6450 from 21.25 acres 2,622 gallons of juice per acre, B. 376 from 5.5 acres 1,878 gallons of juice per acre, and the White Transparent from 1.75 acres 3,451 gallons of juice per acre, decreases when compared with the White Transparent of 829 and 1,573 gallons of juice per acre, respectively.

Although the above gives the results as obtained from the returns sent in of each of the varieties grown either in the black or red soil districts as compared with the White Transparent, it would perhaps be fairer in the interest of each variety if it was compared with the White Transparent or B. 6450, where those canes were grown on the same estates and under the same conditions. The following are a few instances of how the results obtained with say two varieties, grown on the same estates vary when compared with the same varieties grown on different estates. In the black soils as plant canes the White Transparent and the B. 6450 were grown on three estates. The mean average weight of the former from 107.25 acres was 28.11 tons per acre, and of the latter from 100.0 acres 30.10 tons per acre, a difference in favour of the B. 6450 of say 2.00 tons of canes per acre. On two estates on which the White Transparent and Ba. 6032 were grown, the mean average yield of the White Transparent from 100.25 acres was 26.70 tons of canes per acre, and the Ba. 6032 from 8.88 acres 37.08 tons of canes per acre, a difference in favour of the Ba. 6032 of 10.88 tons of canes per acre. On the estate where the W. No. 2 and the B. 6450 were grown, the mean average yield of the B. 6450 from 18 acres was 33.98 tons of canes per acre, and the W. No. 2 from 18 acres 31.18 tons of canes per acre, a difference in favour of the B. 6450 of 2.80 tons of canes per acre.

On the red soils as plant canes, the White Transparent and the B. 6450 were grown together on one estate only. The mean average yield of the White Transparent from 38 acres was 22.76 tons of canes per acre, and the B. 6450 from 22 acres was 30.55 tons of canes per acre, a difference in favour of the latter of 7.79 tons of canes per acre.

On the black soils as first ratoons, the White Transparent and the B. 6450 were grown together only on one estate. The average yield of the White Transparent from 100 acres was 19.54 tons per acre and the B. 6450 from 7.5 acres was 21.81 tons per acre, a difference in favour of the latter of 2.27 tons of canes per acre. On the estates where the B. 6450 and W. No. 2 were grown together, the average yield of the B. 6450 from 7.5 acres was 21.81 tons of canes per acre, and the W. No. 2 from 9.5 acres 20.14 tons of canes per acre, a difference in favour of the former of 1.67 tons of canes per acre. On the red soils as first ratoons the White Transparent and B. 6450 were grown together on one estate; the average yield of the former from 31 acres was 17.26 tons of canes per acre and of the latter from 25 acres 22.28 tons of canes per acre, a difference in favour of the B. 6450 of 5.02 tons of canes per acre. In the case of the B. 6450 and W. No. 2, grown together on one estate, the average yield of the B. 6450 from 16.5 acres was 24.33 tons of canes per acre, and of the W. No. 2 from 5 acres 21.20 tons of canes per acre, an increase in favour of the former of 3.13 tons of canes per acre. As stated above on those estates where the juice was measured, no returns were received for the White Transparent.

On the red soils, as second ratoons returns of the White Transparent and the B. 6450 were only received from one estate. The average yield of the former from 19 acres was 12.84 tons per acre and the latter from 20 acres 15.65 tons of canes per acre, an increase over the White Transparent of 2.81 tons of canes per acre. On those estates where the juice was measured, the average yield of the White Transparent and B. 6450, grown together on the same estate, was, for the White Transparent, from 1.75 acres 3,451 gallons of juice per acre, and for B. 6450 from 8.75 acres 3,377 gallons of juice per acre, an increase in favour of the White Transparent of 74 gallons of juice per acre.

In the reports for the four previous years, estimates were made as to the value to the island of the B. 6450, which has for the past several years given such satisfactory results as compared with the White Transparent, the standard cane, and it may not be without interest if a similar estimate is made again this year. Owing to the increase in the price of sugar due to the war, on a great deal of the land on which cotton was cultivated canes are now grown, therefore the area of canes reaped in 1917 would probably be about 32,000 acres. If in comparing the yields of the plants and ratoons in the black and red soil districts, the fact that there were more plants than ratoons is taken into consideration, it will be seen that the B. 6450 yielded on the average about four and a half tons of canes per acre more than the White Transparent. As no factory has this year, so far as we know, taken ten tons of canes to make a ton of dark crystal sugar, and as several have taken less than nine, it may be assumed that the increase of the B. 6450 over the White Transparent for 32,000 acres is equal to about half a ton of dark crystal sugar per acre. This would be, if the 32,000 acres were all planted in B. 6450, an increase to the island of about 16,000 tons of dark crystal sugar. In previous years it has been customary to calculate the increased yield at the average price at which dark crystals sold for the previous twenty years, and at that price, viz., £11 2s. 1½d., the increase to the island would be not less than £177,700. If, however, the increase was calculated at the price obtained for dark crystal sugar this year, viz., £19 6s. 5d., the increase would be not less than £309,133 6s. 8d.

TABLE VIII.

SUMMARY OF RESULTS OF LARGE VARIETY EXPERIMENTS FOR THE SEASON 1915—1917.

Black Soils.

Name or No. of cane.	Number of estates.	Number of acres.	Total number tons canes.	Average tons canes per acre.	Increase or decrease compared with W. Transparent.
PLANT CANES.					
B. 6308	4	29.50	1056.43	35.81	+ 7.43
Ba. 6032	21	194.78	6415.71	32.94	+ 4.56
W.No. 2 (a)	1	18.00	561.16	31.18	+ 2.80
B. 6450	32	2085.34	59725.57	28.64	+ 0.26
W. Transparent (b)	3	107.25	3044.17	28.38	...
B. 376	16	283.75	8019.80	28.26	- 0.12
B. 147	4	75.50	1962.35	25.99	- 2.39
FIRST RATOONS.					
Ba. 6032	1	1.32	41.00	22.53	+ 2.99
W. No. 2 (c)	1	9.50	191.30	20.14	+ 0.60
B. 376	7	130.50	2625.84	20.12	+ 0.58
W. Transparent	1	100.00	1953.90	19.54	...
B. 6450	19	464.39	8932.25	19.23	- 0.31

(a) The B. 6450 on the estate on which the W. No. 2 plant canes were grown, yielded from the same area, viz., 18 acres, 33.98 tons per acre.

(b) The B. 6450 on the three estates on which the White Transparent as plant canes were grown, yielded from 100.5 acres an average of 30.16 tons per acre as compared with an average yield, from 107.25 acres of White Transparent of 28.11 tons per acre.

(c) The B. 6450 on the estate on which the W. No. 2 ratoons were grown, yielded from 7.5 acres an average of 21.81 tons per acre as compared with an average yield from 9.5 acres of W. No. 2 of 20.14 tons per acre.

TABLE IX.

SUMMARY OF RESULTS OF LARGE VARIETY EXPERIMENTS FOR THE SEASON 1915—1917.

Black Soils.

Name or No. of cane.	Number of estates.	Number of acres.	Total number gallons juice.	Average gallons juice per acre.	Increase over W. Transparent.
PLANT CANES.					
Ba. 6032	1	1-00	4,600	4,600	+ 1,295
B. 6450	5	130-41	604,150	4,429	+ 1,124
B. 6308	1	8-98	39,550	4,400	+ 1,095
B. 4578	1	10-70	41,750	3,906	+ 601
B. 147	1	21-12	80,700	3,820	+ 515
W. No. 2	1	8-00	29,600	3,700	+ 395
B. 376	1	9-64	35,700	3,700	+ 395
W. Transparent... ..	1	38-00	125,600	3,305	...

TABLE X.

SUMMARY OF RESULTS OF LARGE VARIETY EXPERIMENTS FOR THE SEASON 1915—1917.

Red Soils.

Name or No. of cane.	Number of estates.	Number of acres.	Total number tons canes.	Average tons canes per acre.	Increase or decrease compared with W. Transparent.
PLANT CANES.					
Ba. 6032	4	15-00	560-91	37-39	+ 14-63
B. 6450	17	473-22	14753-84	21-18	+ 3-42
B. 376	13	360-26	10180-25	28-12	+ 5-36
Rappoe	1	9-00	248-80	27-64	+ 4-88
B. 3412	1	11-00	276-97	25-18	+ 2-42
W. Transparent	1	33-00	864-00	22-76	...
B. 147	1	18-00	326-63	18-15	- 4-61
FIRST RATONS.					
B. 376	12	367-98	7995-49	21-73	+ 4-47
B. 6450	15	320-67	6953-54	21-68	+ 4-42
W. No. 2	1	5-00	106-00	21-20	+ 3-94
W. Transparent	1	31-00	535-00	17-26	...
SECOND RATONS.					
B. 376	8	130-78	2534-77	19-38	+ 6-54
B. 6450	11	156-97	2812-27	17-92	+ 5-08
W. Transparent	1	19-00	244-00	12-84	...

TABLE XI.

SUMMARY OF RESULTS OF LARGE VARIETY EXPERIMENTS FOR
THE SEASON 1915-1917.*Red Soils.*

Name or No. of cane.	Number of estates.	Number of acres.	Total number gallons juice.	Average gallons juice per acre.	Increase or decrease compared with W. Transparent.
PLANT CANES.					
B. 6450	1	3-00	15,899	5,183	+ 1,693
B. 376	2	18-50	64,064	3,463	+ 23
W. Transparent...	1	4-50	15,480	3,440	...
FIRST RATOONS.					
B. 6450	2	14-25	52,019	3,650	...
B. 376	2	10-00	29,193	2,919	...
SECOND RATOONS.					
W. Transparent...	1	1-75	6,039	3,451	...
B. 6450	2	21-25	55,711	2,622	- 829
B. 376	1	5-50	10,329	1,878	- 1,573

THE COTTON INDUSTRY.

The experiments for improving the quality and increasing the quantity of lint obtained from the Sea Island cotton grown in Barbados were continued this year. These experiments were carried out in two series. In the first series an effort is being made by a selection of the best formed plants giving heavy yields of good quality lint to improve the Sea Island, certain indigenous and other varieties of cotton. In the second series an effort is being made in the same manner to improve a number of hybrid cottons that have been obtained by crossing some of the improved varieties with some of the indigenous cottons. The method by which these plants are selected has been so often given in previous reports that it is unnecessary to include it here. The method by which the lint is examined has also been referred to in previous reports so that it is unnecessary to reproduce it. The experiments in the first series, of which there were sixty-five, were carried out on lands rented from Waterford plantation, and at Dodds and Summervale; and are given in Tables XII to XV. To give some idea of the value of each variety as a crop producer, the quantity is calculated to the acre. Any variety that fails to give satisfactory results is discarded; and during the past season thirty varieties have been discarded. With regard to the cotton grown on the large experiment plots on the lands of the Government Industrial Schools from hybrid and Sea Island cottons, it may be stated that it continues to improve under the system of selection pursued. As was mentioned in last year's report, seed of a special Sea Island cotton obtained by selection over several years was distributed to the following persons with the understanding that it was to be grown under proper conditions and that the Superintendent of Agriculture was to be supplied with the weight obtained per acre, &c.

Mr. W. C. Smith, Government Industrial Schools, St. Philip.

Dr. C. E. Gooding, M.C.P., Stirling, St. Philip.

Mr. J. G. Kirton, Seswell, Christ Church.

Hon. Sir F. J. Clarke, K.C.M.G., Coverley, Christ Church.

Mr. J. F. Clarke, Ruby, St. Philip.
 Mr. W. L. Haynes, Ventnor, Christ Church.
 Mr. J. Puckerin, Harrow, St. Philip.
 Mr. C. Crichtlow, Spooners Hill, St. Michael.
 Mr. H. C. Marshall, South Point Lighthouse, Christ Church.

Owing to a variety of causes it has been found impossible to give the weight obtained from the areas planted, but as in some instances the cotton was picked and kept free from any admixture with other cottons it was possible to gin three bales containing 1,706 lb. of lint. At the time of writing this report owing to the difficulty of obtaining tonnage due to the war, these three bales of cotton have not yet been shipped to England. It may, however, be stated that it is of excellent quality. It is proposed to ship this cotton, when an opportunity arises, to the British Cotton Growing Association for sale, and also to ask Mr. J. W. McConnell, a member of the Fine Cotton Spinners and Doublers Association, Ltd., who was good enough to report on the cotton from which this seed was taken, to purchase it if possible and to report on it after he has worked it up.

The five lock cotton, a small quantity of seed of which was presented by Mr. J. L. Fonda as mentioned in last year's report, is still being grown with the object of ascertaining whether greater yields of an equally good cotton cannot be obtained than from the ordinary three lock cottons under experimental cultivation. The five lock cotton obtained from one of the indigenous cottons, L. C. 85, and also mentioned in last year's report, is still under cultivation. Table XII gives the average results of the selected plants.

COTTON HYBRIDS.

In the second series of experiments the cotton hybrids were regrown from seeds of the best plants obtained in previous years.

As will be seen from Table XVI showing the results obtained with the hybrids, H.0944 has, for the season under review, given on the average for the two plants selected, a lower yield and very slightly inferior lint than the average for the seven previous years. H. 131 has this year given on the average a lower yield but a better quality lint than for the last two years. The lower yields obtained this year are, I am of the opinion, due to the very unfavourable weather conditions that prevailed during the time the plants were bolting, causing numbers of them to drop. H. 132, mentioned in last year's report, not proving of much value, its cultivation has been discontinued.

INDIGENOUS COTTONS.

As has been pointed out in former reports, owing to the deterioration that has taken place in the varieties of exotic cotton introduced during recent years, it has been decided to improve some of the best of the cottons that have survived from by-gone years when cotton was grown on a commercial scale. These have been designated Indigenous Cottons so as to distinguish them from the other cottons under experimental cultivation. Of these cottons 131 lots were planted in 1912, but have been gradually reduced until for the season under review only nineteen lots were planted. The improvement of these indigenous cottons is a slow process and it will probably be some time before a really good variety of cotton giving heavy yields of good quality lint will be obtained. As will be seen from Table XV some of the varieties retained have greatly improved and are practically free from insect pests and fungoid diseases, while exotic varieties in the same field are often attacked by the leaf blister mite and other pests.

In addition to the indigenous cottons mentioned above, there were also plots covering an area of one acre of an improved variety of cotton grown at Summerville from seed of an indigenous cotton obtained in 1908. That some of this cotton is of fairly good quality may be judged from the description of it given in Table XIV.

NATIVE COTTON.

In addition to the indigenous cottons mentioned above, there is a cotton, that so far has kept true to type, which was obtained from Dr. C. E. Gooding, M.C.P., who had grown it from a wild cotton. This cotton has so far been, practically free from insect pests and fungoid diseases and the quality of the lint is improving under cultivation.

Before concluding the report on the cotton industry, I should again like to place on record my appreciation of the kind help given me by Mr. C. M. Wolstenholme, of the firm of Messrs. Wolstenholme and Holland, Cotton Brokers of Liverpool, in examining and reporting on samples of cotton that have been sent him.

TABLE XII.

REPORT ON THE EXAMINATION OF COTTON FROM THE SELECTION EXPERIMENT PLOTS OF THE DEPARTMENT OF AGRICULTURE, BARBADOS, 1917.

Name or No. of cotton.	Description of plant, habit, height, &c.	Prevalence of insect attack.	Prevalence of fungoid disease.	Lint per acre lb.	Average length of staple mm.	Weak fibres per cent.	Per cent. of lint.	Average diameter of fibre.	Strength of fibres.
Stirling S. 1 (S.S. 1 a II)	Reclining; height 4' 6"; stem, medium size; basal laterals, 4; bolls, medium size, long, round and pointed; distribution general.	Cotton caterpillar, very slight.	Angular leaf-spot and round-spot, moderate.	208	46.1	7.8	82.1	.0184	Str.
Fonda (five lock).	Slightly reclining; height 4' 8" to 5' 9"; stem, medium size; basal laterals, 1 to 3 and several small; bolls, medium size, long, round and pointed; distribution, fairly general.	Cotton caterpillar, very slight.	Angular leaf-spot and round-spot, slight.	98	44.6	11.8	25.5	.0164	Str.
Fonda (four lock).	Slightly reclining; height 4' 8" to 5' 2"; stem, medium size; basal laterals 2 to 4; bolls, medium size, long, round and pointed; distribution, general.	Cotton caterpillar, slight.	Angular leaf-spot, round-spot and mildew, moderate.	188	44.2	15.9	25.5	.0160	Str.
I.C. 85 (five lock).	Slightly reclining; height 6' to 7'; stem, medium size; basal laterals, 3 to 4; bolls, medium size, round and pointed; distribution, general.	Free.	Angular leaf-spot and round-spot, very slight.	478	42.0	19.2	22.5	.0162	F. Str.
I.C. 85 (four lock).	Slightly reclining; height 6' to 7'; stem, medium size; basal lateral, 3 to 4; bolls, medium size, round and pointed; distribution, general.	Free.	Angular leaf-spot and round-spot, very slight.	218	41.2	17.1	22.0	.0162	F. Str.

TABLE XIII.
REPORT ON THE EXAMINATION OF COTTON FROM THE SELECTION EXPERIMENT PLOTS OF THE DEPARTMENT
OF AGRICULTURE, BARBADOS, GROWN AT SUMMERVALE DURING THE SEASON 1916-1917.

PLEASANT VALE FIELD.

Name or No. of variety.	Description of plant, habit, height, &c.	Lint per acre, lb.	Average length of staple mm.	Weak fibres per cent.	Per cent. of lint.	Average diameter of fibres.	Strength of fibres.
Dodds Sea Island 6 ..	Upright; height 5' 6" to 6'; stem, medium size; basal laterals, 3 and several small; bolls medium size, long, round and pointed; distribution, general.	186	49.7	11.4	30.6	.0146	Str.
Dodds Sea Island 10 ...	Upright; height 6' to 6' 6"; stem, medium size; basal laterals, 1 to 3; bolls, medium size, long, round and pointed; distribution, general.	100	50.1	12.8	28.4	.0157	Str.
Dodds Sea Island 11 ...	Upright; height 6' to 8'; stem medium size; basal laterals, 1 to 2 and several small; bolls, medium size, long, round and pointed; distribution, general.	98	40.4	11.8	25.8	.0158	Str.
Dodds Sea Island 16 ...	Upright; height, 6' to 6' 6"; stem, medium size; basal laterals, 3 to 4; bolls medium size, long, round and pointed; distribution, general.	88	49.9	10.8	25.5	.0168	Str.
Dodds Sea Island 17 ...	Upright; height, 6' to 7'; stem, medium size; basal laterals, 2 to 4; bolls, medium size, long, round and pointed; distribution, general.	124	50.2	9.8	27.0	.0157	Str.
Dodds Sea Island 21 ..	Upright; height, 6' to 6' 6"; stem, medium size; basal laterals, 2 to 3 and several small; bolls, medium size, long, round and pointed; distribution, general.	84	52.0	10.4	38.4	.0156	Str.
Dodds Sea Island 25 ...	Upright; height, 6'; stem, medium size; basal laterals, 2 to 4; bolls, medium size, long, round and pointed; distribution, general.	68	40.2	9.7	25.0	.0159	Str.
Dodds Sea Island 31 ...	Upright; height, 6' to 7'; stem, medium size; basal laterals, 1 to 3 and several small; bolls, medium size, long, round and pointed; distribution, general.	127	50.3	11.0	25.0	.0156	Str.
Dodds Sea Island 42 ..	Upright; height, 5' 6" to 6' 6"; stem, medium size; basal laterals, 2 to 4; bolls, medium size, long, round and pointed; distribution, general.	109	48.6	11.6	24.5	.0162	Str.
Dodds Sea Island 54 ...	Upright; height, 6' 6" to 8'; stem, medium size; basal laterals, 3 to 4; bolls, medium size, long, round and pointed; distribution, general.	270	47.5	13.1	24.0	.0164	Str.
Dodds Sea Island 116 ...	Upright; height, 7'; stem medium size; basal laterals, 3; bolls, medium size, long, round and pointed; distribution, general.	68	48.2	10.0	22.8	.0169	Str.

TABLE XIV.

REPORT ON THE EXAMINATION OF COTTON FROM THE SELECTION EXPERIMENT PLOTS OF THE DEPARTMENT OF AGRICULTURE BARBADOS, GROWN AT SUMMERSVALE DURING THE SEASON 1916-1917.

NORTH STABLE FIELD.

Name or No. of cotton.	Description of plant, habit, height, &c.	Prevalence of insect attack.	Prevalence of fungoid disease.	Lint per acre lb.	Average length of staple mm.	Weak fibres per cent.	Per cent of lint.	Average diameter of fibres.	Strength of fibres.
Grant C 7 (a)	Slightly reclining; height 5' 6"; stem, medium size; basal laterals, 4 small; bolls, medium size, long and pointed; distribution, general.	Cotton caterpillar, very slight.	Angular leaf-spot, very slight.	408	430	122	20.8	.0168	F. str.
Grant C 7 (b)	Upright; height 6'; stem, medium size; basal laterals, 2; bolls, medium size, long, round and pointed; distribution general.	Cotton caterpillar, very slight; leaf-blister mite, slight.	Round-spot and mildew, slight.	327	457	113	22.2	.0169	F. str.
Grant C 7 (d)	Upright; height 7'; stem, medium size; basal laterals, 3; bolls, medium size, long, round and pointed; distribution, general.	Cotton caterpillar and leaf-blister mite, slight.	Mildew and angular leaf-spot, slight.	122	430	83	21.6	.0175	F. str.
Grant C 7 (e)	Upright; height 5'; stem, medium size; basal laterals, 2, and 2 small; bolls, medium size, round and pointed; distribution, general.	Cotton caterpillar, very slight; leaf-blister mite, slight.	Mildew, slight.	204	446	140	16.7	.0158	F. str.
Grant C 7 (f)	Upright; height 6'; stem, medium size; basal laterals, 4 small; bolls, medium size, round and pointed; distribution, very general.	Cotton caterpillar, very slight; leaf-blister mite, slight.	Round-spot, slight.	490	430	135	25.5	.0163	F. str.
Grant C 7 (g)	Upright; height, 5' 6"; stem, medium size; basal laterals, 2; bolls, medium size, round and pointed; distribution, very general.	Cotton caterpillar, very slight; leaf-blister mite, slight.	Mildew and angular leaf-spot, slight.	204	413	180	27.9	.0177	Str.

TABLE XIV. — Concluded.
REPORT ON THE EXAMINATION OF COTTON FROM THE SELECTION EXPERIMENT PLOTS OF THE DEPARTMENT OF AGRICULTURE
BARBADOS, GROWN AT SUMMERVALE DURING THE SEASON 1916—1917.

NORTH STABLE FIELD.

Name or No. of cotton.	Description of plant, habit, height, &c.	Prevalence of insect attack.	Prevalence of fungoid disease.	Lint per acre lb.	Average length of staple mm.	Weak fibres per cent.	Per cent of lint.	Average diameter of fibres.	Strength of fibres.
Grant C 7 (h)	Upright; height, 5' 6"; stem, medium size; several small basal laterals; bolls, medium size, round and pointed; distribution, general.	Leaf-blisters mite, slight.	Mildew, very slight.	164	42.6	12.1	28.5	.0155	Str.
Grant C 7 (i)	Upright; height, 6'; stem, medium size; several small basal laterals; bolls, medium size, long and pointed; distribution, general.	Cotton caterpillar and leaf-blisters mite, slight.	Free.	77.6	39.6	15.9	84.2	.0168	Str.
Grant C 7 (k)	Upright; height 5' 6"; stem, medium size; several small basal laterals; bolls, medium size; long and pointed; distribution, general.	Cotton caterpillar and leaf-blisters mite, slight.	Angular leaf-spot, very slight.	531	41.6	16.0	26.5	.0152	Str.
Grant C 7 (l)	Upright; height 8'; stem, medium size; several small basal laterals; bolls, medium size, round and pointed; distribution, general.	Leaf-blisters mite, slight.	Mildew, slight.	286	42.7	11.7	24.2	.0164	F. str.
Grant C 7 (m)	Upright; height 7'; stem, medium size; basal laterals, 2; bolls, medium size, round and pointed; distribution, general.	Cotton caterpillar very slight; leaf-blisters mite, slight.	Mildew, very slight.	204	43.9	16.6	21.8	.0161	F. str.
Grant C 7 (n)	Upright; height, 5'; stem, medium size; basal laterals, 8; bolls, medium size, round and pointed; distribution, general.	Cotton caterpillar and leaf-blisters mite, slight.	Mildew, slight.	490	47.8	8.4	26.1	.0156	F. str.
Grant C 7 (o)	Upright; height 5'; stem, medium size; basal laterals, 2; bolls, medium size, round and pointed; distribution, general.	Cotton caterpillar and leaf-blisters mite, slight.	Round-spot, slight.	618	47.1	19.2	24.2	.0157	F. str.

TABLE XV.

REPORT ON EXAMINATION OF INDIGENOUS COTTON FROM THE SELECTION EXPERIMENT PLOTS OF THE DEPARTMENT OF AGRICULTURE, BARBADOS, 1917.

Name or No. of variety.	Lint per acre. lb.	Average length of staple mm.	Weak fibres per cent.	Per cent of lint.	Average diameter of fibres.	Strength of fibres.
I. C. 12 A. ...	203	38.9	18.4	25.0	.0165	F. str.
I. C. 12 B. ...	158	41.9	23.4	20.7	.0176	F. str.
I. C. 12 C. ...	158	39.2	20.1	23.4	.0169	F. str.
I. C. 12 D. ...	185	41.7	20.6	21.5	.0155	F. str.
I. C. 12 E. ...	90	36.8	25.0	25.4	.0168	F. str.
I. C. 12 F. ...	180	36.1	14.7	25.9	.0189	F. str.
I. C. 12 G. ...	540	37.4	20.1	23.1	.0167	F. str.
I. C. 13 A. ...	135	38.5	21.8	21.5	.0176	F. str.
I. C. 13 B. ...	248	39.9	22.9	23.4	.0164	F. str.
I. C. 35 A. ...	923	34.5	17.5	26.8	.0169	F. str.
I. C. 35 B. ...	518	41.3	17.0	21.3	.0173	F. str.
I. C. 102 ...	473	35.1	20.7	22.9	.0180	F. str.
I. C. 113 ...	338	36.4	16.1	23.1	.0169	F. str.
I. C. 128 ...	563	37.4	24.0	28.3	.0176	F. str.

TABLE XVI.

TABLE SHOWING THE CHARACTER, FREEDOM FROM DISEASE, YIELD, ETC., OF THE COTTON HYBRIDS NOW UNDER CULTIVATION.

Name or No. of plant.	Generation.	Year.	Insect pests.	Fungoid and bacterial diseases.	Seed cotton per acre lb.	Lint per acre lb.	Average length of staple mm.	Per cent. of weak fibre.	Per cent. of lint.	Strength.
H. 0944 ...	F1	1910	Free.	Angular leaf-spot, slight...	2,804	615	48.8	20.2	22.9	Str.
H. 0944 ...	F2	1911	Free.	Angular leaf-spot, slight...	2,606	584	44.9	24.8	22.4	Str.
H. 0944 ...	F3	1912	Aphis and cotton caterpillar.	Angular leaf-spot and round spot, slight...	4,118	944	38.9	18.5	22.9	Str.
H. 0944 ...	F4	1913	Leaf blister mite, bad.	Angular leaf-spot and round spot, moderate	2,880	945	39.1	25.8	32.8	Str.
H. 0944 ...	F5	1914	Leaf blister mite, moderate.	Angular leaf-spot; round spot, moderate	1,868	518	44.2	16.9	27.7	Str.
H. 0944 P. 1	F6	1915	Cotton caterpillar, slight.	Mildew and round spot, slight	1,411	388	40.6	28.8	28.9	F.str.
H. 0944 P. 2	F6	1915	Cotton caterpillar, slight.	Mildew, slight...	1,555	388	44.7	20.5	24.6	Str.
H. 0944 P. 4	F6	1915	Cotton caterpillar, slight.	Mildew, slight...	2,218	608	44.7	28.8	27.8	Str.
H. 0944 P. 5	F6	1915	Cotton caterpillar, slight.	Mildew, slight...	1,948	450	44.2	28.8	24.4	Str.
H. 0944 P. 6	F6	1915	Leaf blister mite, slight.	Mildew, slight...	1,210	315	45.8	22.8	25.9	Str.
H. 0944 (a)	F7	1916	Cotton caterpillar, slight.	Round spot, slight	2,363	608	48.9	12.7	25.7	Str.
H. 0944 (b)	F7	1916	Free.	Round spot, slight	4,354	1,114	48.9	16.2	25.6	F.str.
H. 0944 (c)	F7	1916	Cotton caterpillar, slight.	Angular leaf-spot, slight...	2,025	574	47.7	10.7	28.4	F.str.
H. 0944 (a)	F8	1917	Free.	Angular leaf-spot and round spot, very slight	968	248	40.5	9.0	25.6	F.str.
H. 0944 (b)	F8	1917	Free.	Angular leaf-spot and round spot, moderate	1,598	428	42.4	7.7	29.6	F.str.

TABLE XVI. — Concluded.

TABLE SHOWING THE CHARACTER, FREEDOM FROM DISEASE, YIELD, ETC., OF THE COTTON HYBRIDS NOW UNDER CULTIVATION.

Name or No. of plant.	Generation.	Year.	Insect pests.	Fungoid and bacterial diseases.	Seed cotton per acre lb.	Lint per acre lb.	Average length of staple mm.	Per cent. of weak fibre.	Per cent. of lint.	Strength.
H. 131 P. 6	F	1915	Free.	Mildew and round-spot, slight	1,354	349	48.7	12.7	25.9	F.str.
H. 131 P. 10	F	1915	Free.	Mildew and round-spot, slight	1,368	349	48.2	14.5	25.4	F.str.
H. 131 P. 11	F	1915	Free.	Mildew, slight...	1,757	461	49.7	12.0	26.3	F.str.
H. 131 (a)	F1	1916	Free.	Round-spot, slight	1,575	383	45.4	14.4	21.3	F.str.
H. 131 (b)	F1	1916	Free.	Mildew and round-spot, slight	1,778	540	45.1	11.2	30.4	F.str.
H. 131 (c)	F1	1916	Free.	Mildew, slight...	1,440	270	50.1	17.6	18.7	F.str.
H. 131 (a)	F2	1917	Free.	Angular leaf-spot and round-spot, slight	270	68	48.0	14.3	25.2	Str.
H. 131 (b)	F2	1917	Free.	Round-spot, very slight	360	90	49.0	11.4	25.0	Str.
H. 131 (c)	F2	1917	Free.	Free	248	68	43.1	12.6	27.4	Str.
H. 131 (d)	F2	1917	Cotton caterpillar, moderate.	Angular leaf-spot and round-spot, moderate	360	68	49.2	11.7	18.9	Str.

CASSAVA EXPERIMENTS.

The experiments with the varieties of cassava obtained from different countries, as well as a number of seedling varieties obtained in previous years from the cassava under cultivation in Barbados, were continued this year. The average weights obtained from a number of varieties for the six years previous to the one under review as well as those for the one under review, are given in Table XVII. As will be seen from the table there are three varieties of the Barbados Seedlings, Nos. 101, 1012 and 1010 which continue to give excellent results. A number of other varieties having proved poor yielders, their cultivation has been discontinued.

TABLE XVII.

Variety.	Mean results per acre for six years, 1909—15. lb.	Results per acre for 1916—17. lb.
SWEET VARIETIES.		
Trinidad No. 1 ...	7,322	8,177
Trinidad No. 2 ...	7,045	9,257
Paloma ...	5,709	6,480
Panama* ...	6,016	6,158
Helada ...	4,734	8,499
Pacho No. 3 ...	3,499	9,382
Special ...	...	7,566
BITTER VARIETIES.		
White Greenaway ...	14,740	15,240
Blue Top ...	14,107	12,233
BARBADOS SEEDLINGS.		
Mean results for four years, 1911—15.		
Barbados No. 101 ...	10,960	11,280
Barbados No. 1012 ...	9,604	7,858
Barbados No. 1010 ...	8,947	11,211
Barbados No. 103 ...	5,924	11,649
Barbados No. 1104 ...	5,418	10,543
Barbados No. 108 ...	3,913	9,122
Results per acre for 1914-15		
Barbados No. 1224 ...	11,520	7,776
Barbados No. 1215 ...	8,640	6,720
Barbados No. 124 ...	11,520	5,400
Barbados No. 129 ...	11,520	5,280
Barbados No. 1213 ...	10,080	4,800
Barbados No. 1216 ...	1,440	4,800
Barbados No. 121 ...	4,320	3,840
Barbados No. 1217 ...	8,640	3,600
Barbados No. 1214 ...	12,240	3,360
Barbados No. 127 ...	8,640	3,120
Barbados No. 126 ...	12,960	2,880
Barbados No. 1220 ...	5,760	2,880
Barbados No. 1211 ...	5,760	2,640
Barbados No. 1218 ...	10,080	2,400
Barbados No. 1222 ...	2,880	2,160
Barbados No. 122 ...	4,320	120
Barbados No. 128 ...	4,320	120

* For three years only, 1912—15.

EXPERIMENTS WITH ECONOMIC COLOCASIEAE.

Experiments with the varieties of Caladiums and Xanthosomas that have given the best results were continued during the season under review. Table XVIII gives the results obtained with the Caladiums and Table XIX the results

obtained with the Xanthosomas. As will be seen from these tables the best results were obtained when the Caladiums were grown from rhizomes; but in the case of the Xanthosomas better results were obtained when corms were used for "seed" purposes. The results obtained with the Caladiums show that there was an increase of 189 per cent. from the use of rhizomes and with the Xanthosomas an increased yield of 80 per cent. from the use of corms.

TABLE XVIII.

EXPERIMENTS WITH ECONOMIC CALADIUMS, 1911-17.

Names.	Weight per acre lb. corms.		Weight per acre lb. rhizomes.		Mean weight per acre for 6 years, lb.	
	Total for 5 years 1911-1916	1916-17.	Total for 5 years 1911-16.	1916-17.	Corms.	Rhizomes.
China Eddoe ...	4,627	720	12,963	1,440	891	2,301
White Seal Top...	*1,440	1,337	*5,421	3,137	1,889	†4,279

* Total for one year only, 1915-16.

† Mean for two years only, 1915-17.

TABLE XIX.

EXPERIMENTS WITH ECONOMIC XANTHOSOMAS, 1911-17.

Name.	Weight per acre lb. corms.		Weight per acre, lb. rhizomes.		Mean weight per acre for 6 years, lb.	
	Total for 5 years, 1911-16.	1916-17.	Total for 5 years, 1911-16.	1916-17.	Corms.	Rhizomes.
Blanca ...	* 15,638	2,160	* 14,900	2,777	3,560	3,535
Nut Eddoe ...	† 6,013	2,331	† 8,955	2,880	2,791	3,915
Grey Jack ...	20,008	1,887	19,453	1,986	3,649	3,573
Banana Tannia ...	20,381	2,448	14,786	3,168	3,888	2,992
Rolliza ...	21,004	2,592	18,208	4,032	3,938	3,707
Barbados Roasting Eddoe	19,515	2,736	11,220	3,398	4,450	3,655
Mistletoe Tannia ...	21,890	2,575	† 12,965	2,298	4,078	3,053
Genebrilla ...	18,650	2,462	† 12,544	1,858	3,517	2,880
Prieta ...	14,809	1,344	12,769	1,728	2,692	2,416
Punzera ...	20,286	3,102	12,620	3,323	3,898	2,657
Button Tannia ...	26,037	3,200	11,549	1,417	5,023	2,161
Belembe ...	23,457	2,507	7,730	1,387	4,327	1,520
White Leftman ...	22,876	3,137	† 9,290	3,086	4,336	2,475

* Total for four years only, 1911-12 and 1913-16.

† " " two " " 1914-16.

" " four " " 1911-14 and 1915-16.

" " four " " 1912-16.

" " three " " 1912-13 and 1914-16.

EXPERIMENTS WITH VARIOUS LEGUMINOSAE.

This year the cultivation of various leguminosae both for edible purposes and for green manuring was continued. A number of packets of seed of different kinds of the edible varieties were distributed to various planters, peasant proprietors and others. The cultivation of the improved variety of the *Canavalia ensiformis*, that was presented to the Department by Dr. David Fairchild, Agricultural Explorer in Charge of the Bureau of Plant Industry of the United States Department of Agriculture, has been extended, and it is now used as a green dressing for the field in which the new seedling sugar-canes are to be planted. The results obtained with the different varieties, so far as they can be obtained, are given in Table XX. I regret to state that again this year the returns as shown by the tables are not strictly accurate, owing to the depredations of the prædial thief. This constant raiding of the Experiment Plots militates greatly against the usefulness of the Department in its efforts to improve the food crops of the Island.

TABLE XX.

RESULTS OF EXPERIMENTS WITH LEGUMINOUS CROPS 1911-17.

Name.	Weight per acre unshelled. lb.		Weight per acre shelled lb.		Mean weight per acre unshelled for six years, lb.	Mean weight per acre shelled for six years, lb.
	Total for 5 years 1911-16.	1916-17.	Total for 5 years 1911-16.	1916-17.		
Canada No. 1 ...	4,313	422	1,794	240	789	339
Canada No. 2 ...	3,806	446	1,995	210	709	368
Gub-Gub ...	* 1,231	432	* 582	271	+++ 555	+++ 284
Cocal Pea ...	* 1,187	341	* 566	162	+++ 509	+++ 243
Porto Rico No. 4 ...	4,494	1,002	2,072	514	916	431
Increase Pea ...	4,677	344	2,034	230	837	377

* Total for 2 years only. 1914-16.

† Mean for 3 years only. 1914-17.

YAMS.

The cultivation of the different varieties of yams obtained locally and from Dahomey, West Africa, some years ago has been continued; and the results are given in Table XXI. A number of yams have again been distributed this year to persons interested in the cultivation of good varieties and it is proposed to continue this until the cultivation of the good varieties is fairly well established. A promise is extracted from each person to whom the yams are given to the effect that when their crop is reaped they should distribute a similar quantity on the same conditions. As two of the varieties that were under cultivation, viz., Male and Male Blanche, have not given satisfactory results their cultivation has been discontinued.

TABLE XXI.

RESULTS OF EXPERIMENTS WITH YAMS.

Name.	Weight per acre, lb.		Mean weight per acre for 6 years, lb.
	Total for 5 years 1911-16.	1916-17.	
Blanche Femelle	44,261	13,348	9,602
Femelle	37,605	16,615	9,037
Bottle Neck Lisbon	23,570	11,520	5,848
Greçada	21,132	7,311	4,741
Male Blanche	15,589	1,200	2,798
Lisbon	*13,846	15,508	14,677
Red Yam	†11,451	27,028	12,826
Crop... ..	‡24,752	6,284	6,207
White Yam	*5,040	3,545	4,293
Antigua	§12,567	6,259	3,765

* Total for one year only, 1915-16.

† Total for two years only, 1914-16.

‡ Total for four years only, 1912-16.

§ Total for four years only, 1911-15.

SWEET POTATOES.

An effort was made during the season under review to grow a number of new varieties of the sweet potato, obtained from seed under similar conditions with a number of the varieties usually cultivated, with the object of ascertaining whether it would not be possible to get varieties giving larger yields. It is thought that some variety may also be obtained which is practically immune to the attacks of the Scarabee (*Euscepes batatae*, Waterh). These experiments had, however, to be abandoned owing to the depredations of the prædial thief, the experiment plots having been raided no less than four times, once during a night on which 1.56 inches of rain fell.

FODDERS.

For the last three years three fodder grasses, viz., *Panicum divaricatissimum*, Rhodes grass and Johnson grass, have been grown together under similar conditions and the results are given in Table XXII. As will be seen on the average for the three years the *Panicum divaricatissimum* has given very much better results than either the Rhodes grass or the two lots of Johnson grass. The cultivation of these two latter grasses has therefore been discontinued and *Panicum divaricatissimum* is now cultivated with Soudan grass, which is said to give excellent results in California where experiments have been carried out with it. This grass is said to be related to the sorghums, and yields as much as six and a half tons of hay per acre. As it is stated that the animals take readily to it, it is to be hoped that its introduction into the island will be a success.

TABLE XXII.

RESULTS OF EXPERIMENTS WITH FODDERS.

Name.	No. of times cut during 1916-17.	Weight per acre, lb.		Average weight per acre for 3 years. 1914-17.
		Total for 3 years, 1914-17.	1916-17.	
Panicum divaricatissimum ...	3	40,054	7,026	13,351
Rhodes Grass ...	3	26,119	7,592	8,706
Johnson Grass (grown in Barbados, December 1913) ...	3	28,251	7,026	9,417
Johnson Grass (imported July 1913)	3	25,971	7,592	8,657

ONIONS.

As usual with the kind help of the Editors of some of the local newspapers an offer was made to import onion seed from Messrs Hamilton & Co., of Tenerife for persons desirous of obtaining it, and orders were received for 3½ lb. of white and 3½ lb. of red onion seed. Unfortunately, owing to the war, the onion seed was received too late in the season for satisfactory results to be obtained. This is greatly to be regretted as even at 8d. per pound with a fairly good yield, the cultivation of onions is profitable. It may be of interest to state that onions sold in Barbados in 1917 for as much as 1s. 3d. per lb.

MANGOES.

At the present time there are twenty-three varieties of mangoes being grown at Dodds, and 110 grafted plants of the better varieties were distributed during the year under review. As in the past a number of grafted mango plants of good varieties have been sold, there ought soon to be a number of good mangoes on the market for sale; unless the experience of the purchasers is like that of "D. Mitchell" who contributes a letter to the *Standard* newspaper in which he states: "I have over one hundred fruit trees planted and doing well (all grafts purchased from the Government Station, Codrington House). Quite a number of the trees have borne fruit, but I have been sadly disappointed in having half of the fruit stolen before it was quite ripe."

SHADDOCKS.

Owing to the dry and wind-swept position of the nurseries at Codrington, where the young shaddock stock are grown, it is somewhat difficult to get the buds of good varieties growing there to take. Consequently the Gootee method of layering which was started some years ago has been continued and has resulted in success. During the year fourteen plants obtained by this method were sold.

INTRODUCTION OF VARIOUS SPINELESS CACTI.

The various varieties of spineless cacti obtained by Professor Burbank and others have continued to make satisfactory growth. Arrangements had been made to have some of them planted at a dry and sandy estate where cattle are reared, but as this estate has been sold twice since, the cacti have not yet been planted there.

LIVE STOCK.

The larger donkey sire, El Rey, which the Governor-in-Executive Committee presented to the Barbados Agricultural Society, continues to be stationed at Long Bay Castle where a number of jenny donkeys imported from the United States are kept.

The smaller donkey sire, Don Cavalero, which belongs to a syndicate of planters, has been on service in certain districts in the island.

A number of foals have been born to these two animals, but it is practically impossible to get an accurate statement of their number. Judging, however, from the number of donkeys of improved breed now to be seen, their importation has been fully justified.

With regard to the twenty pure-bred Holstein bulls and cows and the seven pure-bred Guernsey bulls and cows which were introduced in 1910 through the auspices of this Department, it may be stated that their progeny has now become so numerous that it is impossible to obtain any accurate account of them. As in the case of the donkeys, however, the number of cattle of improved breed to be seen about the island clearly demonstrates that their importation has been a success.

As has been mentioned in previous reports, since 1911 an effort has been made to reduce the high infantile mortality of the peasantry by improving the milking capabilities of their goats by stationing in the various districts of the island bucks of improved breed. At the present time there are seven such bucks stationed, one each, at Bourbon, St. Lucy; Farm and Castle, St. Peter; Seawell, Christ Church; Bayleys, St. Philip; Pine, St. Michael; and Bissex Hill, St. Joseph. Letters have been written to the various gentlemen, who have been so good as to keep these animals, asking for any information they can give with regard to the progress of the scheme, but so far only two replies have been received. One gentleman writes: "I do not keep any account of the services of the goat I am keeping for your Department, but judging from the number of ewes I see coming to him I should think he is being appreciated by the peasants around here....." "I am beginning to see his kids about the district." From what the other gentleman, to whom I sent a young buck to replace one that had been in that district for some time, so as to prevent inbreeding, writes, this goat is apparently sterile and will have to be sold.

ARBOR DAY.

For some time now it has been customary to observe a day in the year as Arbor Day, on which young trees are distributed free of cost to those desirous of having them. This year Arbor Day was observed on the August Bank Holiday (the 7th). A list of the plants available for free distribution was published as usual in the *Official Gazette* and the Editors of some of the local newspapers were good enough to call attention to the fact that anyone desirous of observing Arbor Day could obtain plants by applying to the Superintendent of Agriculture. Two thousand plants were distributed this year. The following is a list of the various plants offered for distribution:—

Achras sapota, Linn.	Garcia nutans, Rohr.
Adenantha pavonina, Linn.	Guaiacum officinale, Linn.
Azalia quanzensis, Welw.	Guaiacum sanctum, Linn.
Albizia stipulata, Boiv.	Haematoxylon campechianum, Linn.
Andira inermis, H. B. & K.	Kleinhovia Hospita, Linn.
Anona muricata, Linn.	Lagerstroemia Flos-reginae, Retz.
Bauhinia malabarica, Roxb.	Lonchocarpus violaceus, H. B. & K.
Beaumontia grandiflora, Wall.	Melicocca bijuga, Linn.
Blighia sapida, Koc.	Mimusops Elengi, Linn.
Caesalpinia pulcherrima, Sw.	Mimusops sp.
Carapa guianensis, Aubl.	Pandanus utilis, Bory.
Cassia Fistula, Linn.	Parmentiera cereifera, Seem.
Cassia grandis, Linn.	Passiflora sp.
Cassia (pink)	Paullinia barbadensis, Jacq.
Cassia multijuga, Rich.	Peltogyne paniculata, Benth.
Cassia bacillaris, Linn.	Peltophorum ferrugineum, Benth.
Cassia siamea, Lam.	Peltophorum linnaei, Benth.
Casuarina equisetifolia, Linn.	Piptadenia peregrina, Benth.
Cedrela odorata, Linn.	Pithecolobium Saman, Benth.
Chlorophora tinctoria, Gaudich.	Plumbago capensis, Thunb.
Combretum laxum, Roxb.	Prosopis juliflora, DC.
Copaifera officinalis, Linn.	Pterocarpus indicus, Willd.
Cordia Sebestena, Linn. (Orange variety)	Pterocarpus jackianum
Cordia Sebestena, Linn. (Scarlet ,,)	Sterculia alata, Wall.
Cordia sulcata, DC.	Sterculia carthaginensis, Car.
Cryptostegia madagascariensis, Boj.	Sterculia fulgens, Wall.
Eperua grandiflora, Benth.	Swietenia Mahagoni, Jacq.
Eucalyptus alba, Reinw.	Tectona grandis, Linn.
Euntumia elastica, Stapf.	Terminalia arjuna, Wight.

HERBARIUM.

During the year a few additional specimens of the indigenous plants of the island were added to the collection in the Herbarium.

A few specimens were sent to Kew for identification, and the Director was good enough to have them named. Appended hereto is a list of the names of the specimens at present in the Herbarium.

LIST OF SPECIMENS IN THE HERBARIUM OF THE DEPARTMENT
OF AGRICULTURE, BARBADOS.

MAGNOLIACEAE.

Michelia Champaca, Linn.

ANONACEAE.

Anona muricata, Linn. (Soursop)

Anona palustris, Linn. (Monkey or alligator apple)

MENISPERMACEAE.

Cissampelos Pareira, Linn. (Pareira-brava)

NYMPHAEACEAE.

Nymphaea sp.

Nelumbium speciosum, Willd.

PAPAVERACEAE.

Argemone mexicana, Linn. (Yellow thistle, poppy)

CRUCIFERAE.

Brassica alba, Boiss. (White mustard)

Brassica juncea, Coss. (Wild mustard)

Lepidium virginicum, Linn. (Wild pepper grass)

CAPPARIDEAE.

Cleome viscosa, Linn.

Gynandropsis pentaphylla, DC. (Stinking miss)

Capparis Breynia, Linn. (Black willow)

Capparis jamaicensis, Jacq. (Black willow)

Capparis Cynophallophora, Linn. (Dog willow)

BIXINEAE.

Bixa Orellana, Linn. (Anatto, or roucou)

POLYGALEAE.

Securidaca volubilis, Linn. (Climbing *Securidaca*)

PORTULACAEAE.

Portulaca oleracea, Linn. (Purslane)

Talinum triangulare, Willd.

TAMARISCINEAE.

Tamarix gallica, Linn.

GUTTIFERAE.

Clusia alba, Jacq. (Wild fig)

MALVACEAE.

Malvastrum spicatum, A. Gray (Monkey bush)

Sida acuta, Burm.

Sida jamaicensis, Linn.

Sida spinosa, Linn.

Sida rhombifolia, Linn.

Sida urens, Linn.

Sida cordifolia, Linn.

Abutilon litum, G. Don

Malachra fasciata, Jacq. (Wild okra)

Pavonia spinifex, Cav.

Malvaviscus grandiflorus, H. B. & K.

Hibiscus schizopetalus, Hook. (Garden hibiscus)

Hibiscus Abelmoschus, Linn. (Musk-okra)

Hibiscus vitifolius, Linn.

Hibiscus tiliaceus, Linn. (Mahoe)

Hibiscus sp.

Thespesia populnea, Soland (Seaside mahoe, anodyne)

Gossypium barbadense, Linn. (Sea Island cotton)

Gossypium herbaceum, Linn. (Upland cotton)

Adansonia digitata, Linn. (Baobab)

STERCULIACEAE.

- Sterculia carthaginensis*, Cav.
Waltheria indica, Linn. (Buff-coat)
Guazuma tomentosa, H. B. & K. (Bastard cedar)

TILIACEAE.

- Triumfetta semitriloba*, Jacq. (Bur-bark)
Corchorus acutangulus, Lam. (Papsaw okra)
Corchorus siliquosus, Linn. (Broomweed)
Corchorus hirtus, Linn.

MALPIGHIACEAE.

- Byrsonima lucida*, DC.
Byrsonima martinicensis, Kr.
Malpighia urens, Linn. (Stinging cherry)
Bunchosia glandulosa, DC.
Bunchosia nitida, Juss.
Galphimia glauca, Cav.
Brachypterys borealis, Juss.
Stigmaphyllon ciliatum, Juss.

ZYGOPHYLLEAE.

- Tribulus maximus*, Linn.
Guaiacum officinale, Linn. (Lignum vitae)

RUTACEAE.

- Zanthoxylum tragodes*, DC. (Fingrigo)
Zanthoxylum ternatum, Sw.
Zanthoxylum monophyllum, P. Wilson

MELIACEAE.

- Melia Azedarach*, Linn. (Barbados lilac)
Swietenia Mahagoni, Linn. (Mahogany)

RHAMNEAE.

- Zizyphus Jujuba*, Lam. (Dunk tree)
Gouania domingensis, Linn. (Chew stick)

AMPELIDEAE.

- Vitis sicyoides*, Miq. (Poison wyth)

SAPINDACEAE.

- Serjania nodosa*, Radlk. (Bastard supple jack)
Cardiospermum Halicacabum, Linn. (Wild parsley)
Cardiospermum sp.
Paullinia barbadensis, Jacq. (Barbados supple jack)
Melicocca bijuga, Linn. (Genip tree)

ANACARDIACEAE.

- Mangifera indica*, Linn. (Mango)
Anacardium occidentale, Linn. (Cashew tree)
Spondias lutea, Linn. (Fog plum tree)

MORINGEAE.

- Moringa pterygosperma*, Gaertn. (Horse-radish tree)

LEGUMINOSAE.

- Crotalaria verrucosa*, Linn. (Blue shake-shake)
Crotalaria retusa, Linn. (Yellow lupin)
Crotalaria pumila, Orteg.
Crotalaria incana, Linn.
Crotalaria quinquefolia, Linn.
Crotalaria spp. (2)
Medicago sativa, Linn. (Alfalfa)
Lotus Tetragonolobus, Linn.
Cyamopsis sp.
Indigofera Anil, Linn. (Wild indigo)

- Tephrosia purpurea*, Pers.
Tephrosia sp.
Sesbania aculeata, Pers.
Aeschynomene americana, Linn. (Hairy Aeschynomene)
Stylosanthes procumbens, Swtz. (Creeping trefoil)
Arachis hypogaea, Linn. (Ground nut)
Desmodium triflorum, DC.
Desmodium incanum, DC. (Sweetheart vine)
Desmodium tortuosum, DC. (Beggar weed of Florida)
Desmodium spirale, DC. (Iron vine)
Alysicarpus vaginalis, DC.
Abrus precatorius, Linn. (Crab's eye vine)
Clitoria Ternatea, Linn. (Blue vine)
Teramnus uncinatus, Sw. (Rabbit vine)
Teramnus labialis, Spreng. do.
Mucuna pruriens, DC. (Cowitch vine)
Mucuna spp. (2)
Galactia longiflora, Arn.
Canavalia obtusifolia, DC.
Canavalia ensiformis, DC. (Horse bean)
Phaseolus helvolus, Linn. (St. Helena cowpea)
Phaseolus semierectus, Linn. (Dark red kidney bean)
Phaseolus lunatus, Linn. (Lima bean)
Vigna Catjang, Walp. (Cowpea)
Vigna glabra, Sav. (Rouncival pea)
Dolichos Lablab, Linn. (Bonavis bean)
Dolichos formosus, Hochst.
Rhynchosia minima, DC. (Burnmouth vine)
Flemingia strobilifera, R. Br.
Dalbergia lanceolaria, Linn.
Ecastaphyllum Brownei, Pers.
Lonchocarpus violaceus, H. B. & K. (Spanish ash)
Lonchocarpus sericeus, H. B. & K.
Piscidia Erythrina, Linn.
Andira inermis, H. B. & K. (Walnut)
Sophora tomentosa, Linn.
Peltophorum Vogelianum, Walp.
Caesalpinia Bonducella, Flem. (Horse nicker)
Caesalpinia pulcherrima, Sw. (Barbados Pride)
Caesalpinia Crista, Linn.
Caesalpinia sp.
Haematoxylon campechianum, Linn. (Logwood)
Poinciana regia, Boj. (Flamboyante)
Poinciana elata, Linn.
Parkinsonia aculeata, Linn. (Jerusalem thorn)
Cassia Fistula, Linn. (Purging Cassia)
Cassia javanica, Linn.
Cassia grandis, Linn.
Cassia glauca, Lam.
Cassia occidentalis, Linn. (Stinking weed, bitter root)
Cassia Tora, Linn.
Cassia Sophera, Linn. (Puppy dog's tail)
Cassia polyadena, DC. (Goat weed)
Cassia sp.
Bauhinia Vahlia, W. & A. (Maloo climber of India)
Bauhinia Kappleri, Sagot (Napoleon's cap)
Bauhinia tomentosa, Linn.
Bauhinia spp. (2)
Brownea sp.
Tamarindus indica, Linn. (Tamarind)
Detarium senegalense, Gmel.
Neptunia plena, Benth. (Water thistle)
Desmanthus depressus, H. & B.
Leucaena glauca, Benth.
Acacia Farnesiana, Willd.
Acacia arabica, Willd.
Albizzia Lebbek, Benth. (Ebony)

Pithecolobium Unguis-cati, Benth. (Bread-and-cheese)
Pithecolobium Saman, Benth. (Saman tree, rain tree)
Inga laurina, Willd.

ROSACEAE.

Chrysobalanus Icaco, Linn. (Coco plum, fat pork)
Prunus sphaerocarpa, Sw.
Photinia japonica, Benth. & Hook.

CRASSULACEAE.

Bryophyllum calycinum, Salisb. (Wonder-of-the-world)

RHIZOPHOREAE.

Rhizophora Mangle, Linn. (Red mangrove)

COMBRETACEAE.

Terminalia Catappa, Linn. (Almond tree)
Terminalia Euceras, Wright (Antigua whitewood)
Terminalia Arjuna, Wight & Arn.
Laguncularia racemosa, Gaertn.
Quisqualis indica, Linn.

MYRTACEAE.

Eucalyptus citriodora, Hook. (Eucalyptus)
Psidium Guajava, Linn. (Guava)
Pimenta officinalis, Lindl.
Pimenta acris, Kostel. (Bay leaf, bay berry)
Eugenia Jambolana, Lam. (Java plum)
Eugenia Jambos, Linn. (Rose apple)
Eugenia virgultosa, DC. (Rodwood)
Eugenia ligustrina, Willd.
Eugenia sp.

MELASTOMACEAE.

Miconia laevigata, DC.

LYTHRARIEAE.

Lawsonia alba, Lam. (Mignonette)
Lagerstroemia indica, Linn. (King of flowers)
Lagerstroemia Flos-reginae, Retz. (Queen of flowers)
Punica Granatum, Linn. (Pomegranate)

ONAGRARIEAE.

Jussiaea suffruticosa, Linn. (Loosestrife)

SAMYDACEAE.

Cassaria parvifolia, Willd.

PASSIFLOREAE.

Passiflora foetida, Linn. (Love-in-a-mist)
Passiflora quadrangularis, Linn.
Passiflora suberosa, Linn.
Passiflora spp. (4)

CUCURBITACEAE.

Peponia sp.
Momordica Charantia, Linn. (Maiden apple)
Cucumis Anguria, Linn. (Wild cucumber)

CACTEAE.

Nopalea coccinellifera, Salisb-Dyck (Cochineal)
Nopalea sp.

FICOIDEAE.

Sesuvium Portulacastrum, Linn. (Seaside purslane)

UMBELLIFERAE.

Eryngium foetidum, Linn. (Fitweed)
Apium Ammi, Urban.
Foeniculum vulgare, Mill. (Fennel)

CAPRIFOLIACEAE.

Sambucus canadensis, Linn. (Elder)

RUBIAOCEAE.

Portlandia grandiflora, Linn.
Rondeletia sp.
Mussaenda pubescens, Ait.
Gonzalesa spicata, DC.
Randia aculeata, Linn. (Dog wood)
Chomelia fasciculata, Sw. (Dart wood)
Erithalis fruticosa, Linn.
Chiccocca racemosa, Linn. (Candle wood)
Ixora coccinea, Linn. (Scarlet Ixora)
Ixora tenuiflora, Roxb.
Ixora parviflora, Vahl.
Ixora sp.
Coffea liberica, Hiern. (Liberian coffee)
Strumpfia maritima, Jacq.
Morinda citrifolia, Linn. (Pain killer, wild pine)
Faramea odoratissima, DC.
Psychotria undata, Jacq. (St. John's bush)
Spermacoce laevis, Lam.
Spermacoce latifolia, Aubl.

COMPOSITAE.

Vernonia cinerea, Less.
Elephantopus spicatus, Aubl. (Spiked elephant's foot)
Ageratum conyzoides, Linn. (White cap)
Eupatorium odoratum, Linn. (Christmas bush)
Mikania latifolia, Sm.
Mikania sp.
Egletes domingensis, Cass.
Erigeron spathulatus, West.
Erigeron canadensis, Linn.
Pluchea odorata, Cass.
Lagascea mollis, Cav. (Velvet bush)
Parthenium hysterophorus, Linn. (White head)
Ambrosia hispida, Pursh.
Eclipta erecta, Linn.
Wedelia gracilis, Rich.
Wedelia bupthalmoides, Griseb.
Melanthera deltoidea, Michx.
Synedrella nodiflora, Gaertn. (Porter bush)
Bidens pilosa, Linn.
Bidens bipinnata, Linn.
Tagetes erecta, Linn. (African marigold)
Pectis humifusa, Sw. (Trailing Pectis)
Artemisia sp.
Emilia sonchifolia, DC.
Chaptalia nutans, Hemsl.
Sonchus oleraceus, Linn. (Sow thistle)

CAMPANULACEAE.

Isotoma longiflora, Presl. (Star of Jerusalem)

PLUMBAGINEAE.

Plumbago scandens, Linn.
Plumbago capensis, Thunb.
Plumbago sp.

MYRSINEAE.

Ardisia sp.
Clavija longifolia, Ruiz & Pav.

SAPOTACEAE.

Chrysophyllum Cainito, Linn. (Star apple)
Dipholis salicifolia, A. DC.

OLEACEAE.

Jasminum pubescens, Willd.
Jasminum bahiense, DC.
Jasminum sp.

APOCYNACEAE.

- Allamanda cathartica, Linn.
 Rauwolfia canescens, Linn.
 Rauwolfia ternifolia, H. B. & K.
 Thevetia nereifolia, Juss. (Good luck)
 Vinca rosea, Linn. (Old maid)
 Tabernaemontana sp.
 Nerium Oleander, Linn. (Oleander)
 Beaumontia grandiflora, Wall.

ASCLEPIADEAE.

- Cryptostegia grandiflora, R. Br.
 Calotropis procera, Ait. (French cotton)
 Asclepias curassavica, Linn. (Wild ipecacuanha)
 Metastelma sp.
 Hoya carnosa, R. Br. (Wax plant)

LOGANIACEAE.

- Spigelia Anthelmia, Linn. (Water weed)

BORAGINEAE.

- Cordia Sebestena, Linn. (Cordia)
 Cordia Collococca, Linn. (Clammy cherry)
 Cordia tremula, Griseb.
 Cordia sulcata, DC.
 Cordia cylindristachya, R. & S. (Black sage)
 Tournefortia gnaphalodes, R. Br. (Seaside lavender)
 Tournefortia caribaea, Griseb.
 Heliotropium indicum, Linn. (Wild clary)
 Heliotropium parviflorum, Linn.
 Heliotropium curassavicum, Linn. (Wild lavender)

CONVOLVULACEAE.

- Argyrea speciosa, Sweet (Cephalic vine)
 Ipomoea Batatas, Poir. (Sweet potato)
 Ipomoea sinuata, Ort. (Noyeau vine)
 Ipomoea sidnefolia, Choisy (Christmas wreath, bell flower)
 Ipomoea triloba, Linn.
 Ipomoea umbellata, Mey.
 Ipomoea biloba, Forsk.
 Ipomoea Quamoclit, Linn. (Sweet William)
 Ipomoea pentaphylla, Jacq.
 Jacquemontia pentantha, G. Don
 Porana paniculata, Roxb. (Coralilla)
 Cuscuta sp. (Dodder, love vine)

SOLANACEAE.

- Solanum nigrum, Linn.
 Solanum Seaforthianum, Andr.
 Solanum igneum, Linn. (Canker berry, bitter berry)
 Solanum torvum, Sw. (Wild egg-plant)
 Solanum mammosum, Linn.
 Solanum aculeatissimum, Jacq.
 Solanum fuscatum, Linn.
 Solanum spp. (2)
 Physalis peruviana, Linn.
 Physalis pubescens, Linn. (Horse pop)
 Physalis minima, Linn. (Cow pop)
 Physalis angulata, Linn.
 Physalis sp.
 Capsicum baccatum, Linn. (Bird pepper)
 Solandra sp.
 Datura Metel, Linn.
 Datura fastuosa, Linn.
 Datura Stramonium, Linn. (Night shade)
 Cestrum latifolium, Lam.
 Cestrum vespertinum, Linn. (Lady of the night)
 Nicotiana Tabacum, Linn. (Tobacco)
 Nicotiana glauca, Graham

Petunia sp.
Brunfelsia sp.

SCROPHULARINEAE.

Russelia juncea, Zucc. (Antigua heath)
Scoparia dulcis, Linn.
Capraria biflora, Linn. (West Indian tea)

BIGNONIACEAE.

Bignonia Unguis-cati, Linn. (Cat's claw)
Catalpa longissima, Sims.
Tecoma leucoxyloa, Mart. (White cedar, whitewood tree)
Tecoma stans, Juss. (Yellow cedar)
Spathodea campanulata, Beauv.
Jacaranda ovalifolia, R. Br.
Crescentia Cujete, Linn. (Calabash)
Kigelia pinnata, DC.

ACANTHACEAE.

Thunbergia fragrans, Roxb.
Thunbergia alata, Boj.
Ruellia tuberosa, Linn. (Many-roots)
Blechum brownei, Juss.
Sanchezia nobilis, Hook.
Barleria Prionitis, Linn.
Barleria lupulina, Lindl.
Asystasia coromandeliana, Nees
Eranthemum sp.
Andrographis paniculata, Nees
Beloperone violacea, Planch.
Dianthera secunda, Griseb.
Dianthera pectoralis, Gmel. (Garden balsam)
Graptophyllum hortense, Nees
Thyrsacanthus nitidus, Nees

MYOPORINEAE.

Bontia daphnoides, Linn. (Wild olive)

VERBENACEAE.

Lantana Camara, Linn.
Lantana involucrata, Linn. (Rock sage)
Lantana trifolia, Linn.
Lantana sp.
Lippia reptans, H. B. & K.
Bouchea Ehrenbergii, Cham.
Stachytarpheta cajanensis, Vahl.
Stachytarpheta indica, Vahl. (Vervain)
Priva echinata, Juss. (Velvet bur)
Verbena spp. (3)
Petrea volubilis, Linn. (Petrea)
Citharexylum quadrangulare, Jacq. (Fiddlewood)
Duranta Plumieri, Jacq.
Tectona grandis, Linn. (Teak)
Clerodendron aculeatum, Griseb. (Wild coffee)
Clerodendron Siphonanthus, R. Br. (Aaron's rod, chandelier plant)
Holmskioldia sanguinea, Retz.

LABIATAE.

Ocimum micranthum, Willd. (Wild basil, mosquito bush)
Ocimum viride, Willd.
Coleus sp.
Hyptis capitata, Jacq. (Wild hops)
Hyptis pectinata, Poit.
Salvia occidentalis, Sw. (Hop-weed)
Salvia sp.
Stachys arvensis, Linn.
Leonurus sibiricus, Linn.
Leonotis nepetaefolia, R. Br. (Lion's tail)

PLANTAGINEAE.

Plantago major, Linn. (Wild plantain, English plantain)

NYCTAGINEAE.

- Mirabilis Jalapa*, Linn. (Four o'clock)
Boerhaavia erecta, Linn. (Hog weed)
Boerhaavia repens, Linn. (Hog weed)
Bougainvillea glabra, Choisy
Pisonia aculeata, Linn. (Black thorn)
Pisonia obtusata, Jacq.

AMARANTACEAE.

- Amaranthus polygonoides*, Linn. (Green caterpillar weed)
Amaranthus viridis, Linn. (Red " " "
Amaranthus spinosus, Linn. (Prickly caterpillar weed)
Amaranthus gangeticus, Linn.
Amaranthus sp.
Achyranthes aspera, Linn.
Mogiphanes brasiliensis, Mart.
Telanthera versicolor, Regel.
Telanthera Bettzichiana, Regel.
Alternanthera sp.
Gomphrena globosa, Linn. (Bachelor's button)
Iresine portulacoides, Moq.

CHENOPODIACEAE.

- Chenopodium ambrosioides*, Linn. (Wormweed)

PHYTOLACCACEAE.

- Rivina humilis*, Linn. (Cat's blood)
Villamilla octandra, Hook. f.
Petiveria alliacea, Linn.

POLYGONACEAE.

- Fagopyrum esculentum*, Moench. (Buckwheat)
Coccoloba uvifera, Linn. (Seaside grape)
Coccoloba grandiflora, Jacq. (Leather-coat tree)
Coccoloba excoriata, Linn. (Chigery grape)
Antigonon leptopus, H. & A. (Coralita)

ARISTOLOCHIACEAE.

- Aristolochia* sp.

PIPERACEAE.

- Piper peltatum*, Linn.
Piper dilatatum, Rich.
Peperomia pellucida, H. B. & K.
Peperomia acuminata, R. & P.
Peperomia obtusifolia, A. Dietr.

LAURINEAE.

- Cinnamomum Cassia*, Blume
Cinnamomum Camphora, T. Nees (Camphor tree)
Persea gratissima, Gaertn. f. (Avocado pear)

EUPHORBIACEAE.

- Pedilanthus tithymaloides*, Poit. (Milk bush)
Euphorbia buxifolia, Lam.
Euphorbia serpens, H. B. & K.
Euphorbia prostrata, Ait. (Poverty weed)
Euphorbia pilulifera, Linn. (Milk weed)
Euphorbia hypericifolia, Linn. (Milk weed)
Euphorbia lasiocarpa, Klotz.
Euphorbia heterophylla, Linn.
Euphorbia sp.
Phyllanthus Niruri, Linn.
Phyllanthus epiphyllanthus, Linn. (Seaside laurel)
Phyllanthus barbadensis, Urb.
Phyllanthus nivosus, Bull. (Snow plant)
Jatropha gossypifolia, Linn. (Belly-ache bush)
Jatropha multifida, Linn. (French Physic-nut)

Jatropha Curcas, Linn. (Physic-nut)
Aleurites triloba, Forst.
Croton flavens, Linn. (Balsam, or senside sage)
Croton Tiglium, Linn.
Caperonia palustris, St. Hil. (Pond weed)
Manihot palmata, Muell. (Bitter cassava)
Acalypha Poir etii, Spreng.
Acalypha marginata, S. reng.
Ricinus communis, Linn. (Castor oil plant)
Tragia volubilis, Linn.
Hippomane Mancinella, Linn. (Manchineel tree)
Sapium Aucuparium, Jacq. (Poison tree)
Sapium sebiferum, Roxb. (Tallow tree)
Eura crepitans, Linn. (Sand-box tree)

URTICACEAE

Broussonetia papyrifera, Vent. (Paper mulberry)
Chlorophora tinctoria, Gaudich. (Fustic tree)
Morus nigra, Linn. (Mulberry tree)
Ficus retusa, Linn. (Evergreen tree)
Ficus pumila, Linn. (Barbados ivy)
Ficus laurifolia, Lam. (Bearded fig)
Ficus elastica, Roxb. (Rubber tree)
Castilloa elastica, Cerv. (Rubber tree)
Cecropia peltata, Linn. (Trumpet tree)
Fleurya aestuans, Gaud. (Nettle)
Pilea muscosa, Lindl.
Boehmeria nivea, Gaud. (China grass)
Boehmeria nivea var. tenacissima, Gaud. (Ramie)

CASUARINEAE

Casuarina equisetifolia, Forst. (Casuarina)

CONIFERAE

Juniperus bermudiana, Linn. (Bermuda cedar)

CYCADACEAE

Cycas sp.

SCITAMINEAE

Maranta arundinacea, Linn. (Arrowroot)

BROMELIACEAE

Bromelia Pinguin, Linn. (Pinguin)

Aechmea sp.

HAEMODORACEAE

Sansevieria guineensis, Willd.

Sansevieria Kirkii, Baker

AMARYLLIDEAE

Zephyranthes tubispatha, Herb. (Snow drop)

Hippeastrum equestre, Herb. (Red lily)

Orinum sp.

Agave rigida, Mill. (Silk grass)

Agave americana, Linn. (Maypole)

Agave hexapetala, Jacq.

DIOSCOREACEAE

Dioscorea sativa, Linn. (White yam)

LILIAEAE

Smilax sp.

Aloe vera, Linn. (Aloes plant)

Yucca gloriosa, Linn. (Yucca)

Dracaena sp.

Dasyllirion Wheeleri, S. Wats.

Allium a-calonicum, Linn. (Eschalot)

Gloriosa superba, Linn.

PONTEDERIACEAE.

Eichhornia speciosa, Kunth.

COMMELINACEAE.

Commelina nudiflora, Linn.
Commelina virginica, Lion. (Pond grass)
Tradescantia geniculata, Jacq.
Rhoeo discolor, Hance.
Zebraia pendula, Schnizl.

PANDANEAE.

Pandanus utilis, Bory. (Screw pine)

AROIDEAE.

Anthurium sp.

ALISMACEAE.

Echinodorus rostratus, Engelm. (Water plantain)

NALADACEAE.

Ruppia maritima, Linn.

CYPERACEAE.

Cyperus elegans, Linn.
Cyperus rotundus, Linn. (Nut grass)
Cyperus malaccensis, Lam.
Cyperus alternifolius, Linn.
Mariscus brizaeus, Clarke (Bull grass)
Kyllinga brevifolia, Rotth.
Eleocharis capitata, R. Br.
Eleocharis mutata, R. Br. (Rush)
Eleocharis sp.
Dichromena ciliata, Vahl. (Star grass)
Fimbristylis monostachya, Haask.
Fimbristylis ferruginea, Vahl.
Fimbristylis diphylla, Vahl.
Scleria pterota, Presl.

GRAMINEAE.

Paspalum conjugatum, Berg. (Crab grass)
Paspalum distichum, Linn. (Binding grass)
Paspalum caespitosum, Fluegge
Paspalum fimbriatum, H. B. & K.
Paspalum sp.
Eriochloa punctata, Ham.
Panicum sanguinale, Linn. (Hay grass)
Panicum colonum, Linn. (Purple panic grass)
Panicum prostratum, Lam. (Running grass)
Panicum flavescens, Sw.
Panicum laxum, Sw.
Panicum maximum, Jacq. (Guinea grass)
Panicum latifolium, Linn.
Panicum muticum, Forsk. (Para grass)
Panicum Isachne, Roth.
Ischnanthus pallens, Munro
Setaria sulcata, Raddi.
Setaria viridis, Beauv.
Setaria setosa, Beauv.
Cenchrus echinatus, Linn. (Burr grass)
Pennisetum setosum, Rich.
Pharus glaber, H. B. & K. (Wild oats)
Coix Lacryma-Jobi, Linn. (Job's tears)
Tripsacum dactyloides, Linn.
Zea Mays, Linn. (Maize, Indian corn)
Oryza sativa, Linn. (Rice)
Anthephora elegans, Schreb.
Saccharum officinarum, Linn. (Sugar-cane)
Erianthus saccharoides, Mich. (Wild cane)
Andropogon intermedius, var. *acidulus*, Stapf. (Sour grass)
Andropogon squarrosus, Linn. f. (Khus-khus grass)

- Andropogon Nardus*, Linn. (Lemon grass)
Andropogon caricosus, Linn. (Antigua hay grass)
Antibistria ciliata, Linn. l.
Sporobolus indicus, R. Br. (Wire grass, bed grass)
Cynodon Dactylon, Pers. (Devil's grass)
Chloris radiata, Sw. (Plush grass)
Bouteloua bromoides, Lag. (Hay grass)
Eleusine aegyptiaca, Desf.
Eleusine indica, Gaertn. (Dutch grass)
Leptochloa mucronata, Kunth
Arundo Donax, Linn. (The reed)
Eragrostis pilosa, Beauv.
Eragrostis ciliaris, Link. (Dog's grass)
Eragrostis Purshii, Schrad.
Bambusa vulgaris, Schrad. (Bamboo)

FILICES. (Ferns)

(Arranged according to Grisebach)

- Adiantum tetraphyllum*, Willd.
Adiantum tenerum, Sw. (Maiden hair)
Taenitis lanceolata, R. Br.
Blechnum occidentale, Linn.
Acrostichum aureum, Linn.
Gymnogramme calomelanos, Kaalf. (Silver fern)
Asplenium dentatum, Linn.
Polypodium tetragonum, Linn.
Polypodium aureum, Linn.
Polypodium lycopodioides, Linn.
Polypodium Phyllitidis, Linn.

LOCAL AGRICULTURAL SHOW.

The Local Agricultural show for peasant proprietors and others was held this year, with the kind permission of Mr. J. A. Mahon, the attorney, at Highland plantation, St. Thomas, on Wednesday, December 6. Two hundred and eighty-eight prizes, amounting to £30 18s. 4d., were offered for exhibits of young oxen milch cows, small stock, vegetables, fruit, starches, Sea Island cotton, budded and grafted citrus and mango plants, &c. In the classes provided for the children of the elementary schools, ninety-eight prizes were offered for plants grown by them in school gardens, half barrels, tubs, pots, and boxes. As usual, seeds of the various vegetables cultivated in Barbados such as beet, cabbage, carrots, lettuce, tomatoes, beans, &c., were imported and were (with the kind assistance of the Committee of Management and others) distributed free of cost to the peasants, small proprietors and to teachers for the children of the elementary schools. The Education Board was good enough to contribute a sum of 18s. 9d. for the purchase of this seed. Two hundred and ninety-two exhibits were sent in from the elementary schools competing, and from these one hundred were awarded prizes from the following fourteen schools, viz., Southborough twenty-three, Holy Innocents twelve, St. Joseph eleven, St. James eleven, St. Matthias seven, St. George six, Boscobel six, Mount Tabor five, Mount Hilloby four, Greenwich four, St. Albans three, St. Judes three, St. John Baptist three, St. Bernards two. As Barbados is mainly an agricultural colony, it is felt that every effort should be made to encourage the children to take an interest in agriculture. Therefore during the year under review, in addition to offering prizes to children of the elementary schools for articles grown in half-barrels, tubs, pots, and boxes and in school gardens, the Committee of Management offered prizes in Class VIII for various agricultural operations, such as digging cane holes, making sweet potato beds, digging corn holes and forking land. As the funds at the disposal of the Committee of Management were limited, only first and second prizes were offered, but through the generosity of Mr. F. A. C. Collymore the values of these were increased and third prizes were offered. In addition to prizes being offered to children of the elementary schools, prizes were also offered to the head teachers of these schools for collections of plants grown in half-barrels, tubs, pots, and boxes and for articles grown in school gardens and exhibited by the children of these schools. The winners of the prizes offered for the best collections of plants grown in half barrels, tubs, pots, and boxes were: first prize, Mr. F. A. Williams of St. James Boys'; second prize, Mr. W. A. Byer of St. George Boys' and third

prize, Mr. J. R. Bailey of Southborough. The winners of the prizes offered for the best collections of articles grown in school gardens were: first prize, Mr. J. R. Bailey of Southborough; second prize, Mr. O. Walcott of St. Joseph Boys' and third prize, Mr. P. W. Jones of Holy Innocents Boys'. Diplomas of Merit of the Barbados Department of Agriculture were offered for competition to the large cultivators for the best stool of sugar-canes, samples of Sea Island cotton, yams, sweet potatoes, eddoes, Indian corn, &c. Diplomas of Merit were also offered to the Head Teachers of the elementary schools for the best collection of exhibits grown in school gardens and in tubs, pots and boxes, as well as to the small proprietors for exhibits of special merit. The Diplomas were awarded as follows:—

LARGE CULTIVATORS.			
Plant Sugar-canes	...	...	Hopewell Plantation
Sweet Potatoes	...	...	Hopewell Plantation
HEAD TEACHERS OF THE ELEMENTARY SCHOOLS.			
School Garden Exhibits	...	...	Mr. F. A. Williams, St. James Boys' School.
"	"	...	Mr. W. A. Byer, St. George Boys' School.
"	"	...	Mr. J. R. Bailey, Southborough School.
"	"	...	Mr. O. Walcott, St. Joseph Boys' School.
"	"	...	Mr. P. W. Jones, Holy Innocents School
SMALL PROPRIETORS.			
Ox	...	...	Mr. Elliott Forde
Ox	...	...	Mr. Albert Leslie
Yams	...	...	Mr. Claudens Thompson
Yams	...	...	Mr. A. W. Laurie

Highland being situate in the centre of the island where fruit and vegetable such as turnips, beet, cabbages, and onions are easily grown there was a fair number of exhibits of these articles and they were as good as, or better than, any of the exhibits that have been staged for a number of years. The exhibits sent in from the elementary schools too were if anything better grown than usual, and were in greater numbers than in previous years, the number sent in being 292 as compared with 161 at Hannays in 1915 and 226 at Fisherpond in 1914. As was pointed out in last year's report Hannays is situate on the southern side of the island where very few fruit and vegetables grow. On the other hand, Fisherpond, like Highland, is situate in the centre of the island.

In the afternoon Sir Leslie Probyn, K.C.M.G., accompanied by Lady Probyn, Miss Fell and Miss Schofield, inspected the exhibits, and His Excellency was good enough to distribute the prizes. This having been done, the Superintendent of Agriculture said that before asking those present to show their appreciation of His Excellency's and Lady Probyn's presence by acceding them a hearty vote of thanks, he would first of all say for himself, and he was sure he was but voicing the feelings of all those present, when he said how greatly he missed the cheery manner and kindly presence of their late friend and helper, the Reverend Joseph A. Carrington. Every year, from the inauguration of these Shows, some seventeen years before, Mr. Carrington had always rendered whatever assistance he could with them. Knowing as he did how very essential it was in an agricultural community like Barbados for the peasants to possess a knowledge of agriculture, he always interested himself in the school children's exhibits and did all he possibly could to encourage them to participate in these Shows. And he felt sure that those present would join with him in placing on record their deep regret at the great loss sustained. He therefore begged to move the following Resolution, viz:—"Be it Resolved that the Committee of Management of the "Highland Local Exhibition for Peasant Proprietors, Tenants on Sugar Estates, " &c., together with those present here to-day who know of the very valuable "help rendered by the late Reverend Joseph Carrington with each of the past "sixteen Shows, do hereby place on record their regret at the great loss they "have sustained by his death. Be it further Resolved that the Honorary Secretary of the Committee of Management be requested to forward a copy of the

" resolution to his widow, together with an expression of the sympathy of those present with her in her grief."

This Resolution was seconded by the Hon. Sir Frederick Clarke, K.C.M.G., President of the Agricultural Society, and for many years President of the Local Show Committee, who also testified to the zeal exhibited by the Reverend Carrington in all matters pertaining to agriculture.

The Reverend J. R. Nichols, who had worked with the Reverend Carrington for many years, in supporting the Resolution, also bore testimony to the keen interest that gentleman took in agricultural matters, and said that what he and others who came in contact with him admired in the Reverend gentleman was " his overflowing enthusiasm : his love of hard work : his absolute integrity. " What he said he meant ; and what he meant to do he did well."

Mr. Bovell then referred to the exhibits which he said were very creditable on the whole, having been well selected and carefully cleaned, with the exception of one or two which he spoke about specially with the object of endeavouring to make the exhibitors more careful in future. Referring to the agricultural operations he said that the Committee had extended their efforts to interest the children of the elementary schools in agriculture by instituting for them in the Prize List a section for what might be termed practical agriculture, that was, in inducing them to compete in preparing a portion of land for growing crops. He pointed out that at the present time there were about 14,000 peasant proprietors each of whom owned about five acres of land and under, and it was in the best interests of the children of these peasants, most of whom attended the elementary schools, to be taught how to cultivate the soil so that when they in their turn become possessors they would get the most out of it. To furnish an instance of what he meant he said that in the neighbourhood where he lived there were several acres of land which when in possession of the former owner — a peasant — was cultivated in an admirable manner, but which after falling into the hands of his children at his death was cultivated in a deplorable manner. It was very evident from its condition that the person who owned it knew nothing of agriculture. At the present time the potato vines in it could hardly be seen for the devil's grass ; and simply for the want of a little knowledge of agriculture a great deal of labour and money had been wasted on the land. Such knowledge the Committee were now trying to inculcate in the children who took part in the Shows. Mr. Bovell then asked His Excellency and Lady Probyn to accept their most grateful thanks for their presence, and called for three cheers which were heartily accorded. He also extended a vote of thanks to the President and Vice Presidents of the Agricultural Society, and the other gentlemen of the Committee of Management, especially to Mr. J. A. Mahon, his son, Mr. Gerald Mahon, and to the many others who had helped to make the Show the success it was.

Reverend Nichols next drew attention to the advance in the number of exhibits sent in by the school children and said that what was worth special notice was that the exhibits this year were better grown and better exhibited than those of previous years.

His Excellency in acknowledging the vote of thanks which had been accorded him so heartily, in a humorous speech referred to the ridiculous rumour which had been circulated, and which he had taken the trouble to refute, viz., that he had ordered the destruction of all the breadfruit trees in the island.

CANADIAN EXHIBITION.

The Permanent Exhibition Committee did not think it advisable again this year, owing to the very unsettled conditions prevailing due to the war, for the colony to take part in the National Exhibition that was held at Toronto, Canada. The Royal Mail Steam Packet Company, however, sent exhibits to the Exhibition and for this purpose were loaned framed photographs of the views of the island, bottles and other containers and a certain number of exhibits such as manjak, infusorial earth, petroleum, ornamental seeds, Sea Island seed cotton, Sea Island lint, etc., by the Permanent Exhibition Committee.

FUMIGATION OF PLANTS.

From April 1st 1916 to March 31st 1917, 221 consignments of plants and seeds other than cotton seed were examined. Of these eleven were either fumigated or disinfected, and twenty-three consignments which had been imported in contravention of the order promulgated by the Governor-in-Executive Committee were destroyed. During the period under review forty-eight consignments of cotton seed amounting to 80,386 bags were fumigated.

INSECT PESTS AND FUNGOID DISEASES, ETC.

As in previous years considerable attention has been given to the various insect pests and fungoid diseases attacking the economic crops of the island. A resumé of this work is given in the report of the Assistant Superintendent of Agriculture, included herewith. As will be seen therefrom, special attention has been given to the two principal pests of the sugar-cane, the root borer, *Diaprepes abbreviatus*, Linn. and the brown hard-back, *Phytalus smithi*, Arrow. The effort to free the land in which the First Year Seedlings are grown from these two pests has been continued during the year under review. The following table shows the number of larvae and imagoes of *Diaprepes abbreviatus* and *Phytalus smithi* collected during the past three years from that land:

COMPARATIVE TABLE SHOWING THE NUMBER OF DIAPREPES ABBREVIATUS AND PHYTALUS SMITHI COLLECTED FOR THE YEARS 1915, 1916 AND 1917, ON LANDS RENTED FROM WATERFORD AND USED FOR THE FIRST YEAR SEEDLING SUGAR CANES.

Year.	Diaprepes abbreviatus.		Phytalus smithi.	
	Larvae.	Imagoes.	Larvae.	Imagoes.
1915	6,266	93	79	15,298
1916	2,772	4	41	11,794
1917	605	49	2	19,601

Although, as will be seen from the table, considerable numbers of imagoes of the brown hard-back, *Phytalus smithi*, were collected during the three previous years, there has been so far no diminution in their numbers owing to the imagoes coming in from adjoining lands. As the authorities of one of the estates adjoining the experiment plots collected a number of imagoes of the brown hard-back this year, it is to be hoped that the attacks of these pests will be reduced in the near future. This is particularly desirable as the sugar-canes attacked are the First Year Seedlings, and it is quite possible for a considerable number of the best of the seedlings to be so affected as to render nugatory to a great extent the efforts to raise better seedling sugar-canes than exist at present. As will be seen from the portion of the report dealing with the sugar-cane manurial experiments at Dodds, the attacks of these two pests have for the past four years rendered it practically impossible to draw any definite conclusions from them, the loss incurred being on the average practically seven tons of canes per acre. In some few instances the planters are now collecting the egg batches and mature insects of the root borer and the imagoes of the brown hard-back beetle. Some are also digging up the bases of the sugar-canes that have been attacked by the root borer, cutting them into pieces and killing all the larvae found in them. As has been already mentioned, as many as 589,680 brown hard-back beetles were collected on one estate in a few nights. In a few instances planters are also growing crops other than the sugar-cane in the fields in which the sugar-canes were attacked by these two pests, thereby causing the death of numbers of them. It is however much to be regretted that the vast majority of planters are still making no effort to reduce the numbers of these two pests.

For many years now collections have been made of the insect fauna of the island, and as a large majority of them have been named, it is thought desirable to publish a list for general reference, and it is appended hereto.

ACARINA AND INSECTA OF BARBADOS.

The following is a preliminary list of the Acarina (ticks and mites) and Insecta of Barbados (exclusive of the Coccidae, which were published in Report for 1914-15) with remarks concerning their habits where known. The system followed in the arrangement is that given in the Cambridge Natural History.

ACARINA (Ticks and Mites).

FAMILY—ERIOPHYIDAE.

Eriophyes gossypii, Banks. (Cotton blister mite)

FAMILY—ARGASIDAE.

Argas persicus var *miniatus* (Fowl tick)

FAMILY—IXODIDAE.

Margaropus australis (Cattle tick)

FAMILY—TARSONEMIDAE.

Tarsonemus spinipes, Hirst. (Sugar-cane mite)

FAMILY—TROMBIDIIDAE.

Tetranychus telarius, Linn. (Red spider—sweet potato)**INSECTA (Insects).**

ORDER—APTERA (Wingless insects).

FAMILY—LEPISMIDAE.

The members of this group usually live in concealment, feeding on dried or decaying vegetable matter.

Lepisma sp. (Silver fish)

Infests books, papers, photographs, etc.; a common household pest.

ORDER—ORTHOPTERA (Earwigs, Cockroaches, Grasshoppers, Crickets.)

FAMILY—FORFICULIDAE (Earwigs).

Earwigs principally live on vegetable substances and dead insects.

Forficula aculeata

Found in leaf-beaths of sugar-cane and also in stems of old canes badly damaged by moth borer.

FAMILY—BLATTIDAE (Cockroaches).

Cockroaches are chiefly pests of household articles.

Ectobia Germanica (German cockroach)

Common in cupboards, drawers, etc.

Leucophaea maderae, Fabr. (Knocker)

Found in trash heaps, canefields, outhouses, etc.

Periplaneta americana, Linn. (American cockroach)

Frequents houses and ships.

Periplaneta australasiae, Fabr.

Frequents houses and ships.

Phyllodromia rufescens, P. de B.

Found in canefields occasionally.

Pycnoscelus surinamensis, Linn.

Frequents canefields.

FAMILY—MANTIDAE (Preying insects).

Members of this family feed on living insects, being very voracious.

Musonia surinama, Sauss.

Found in houses.

FAMILY—PHASMIDAE (Stick insects).

These insects feed on plant leaves.

Bostra maxwelli (Godhorse)

FAMILY—ACRIDIDAE (Locusts and grasshoppers).

These are well known as plant feeders.

Orphulella balloui, Rehn. n.sp.

Frequents grass lands.

Schistocera pallens, Thunb. (Common grasshopper)

Eats leaves of sugar-cane, cotton, etc.

FAMILY—PHASGONURIDAE (Green grasshoppers).

Habits similar to the Acrididae, but not so destructive.

Conocephalus macropterus, Redt.

Frequents grass pastures.

Conocephaloides maxillosus, F.

FAMILY—GRYLLIDAE (Crickets).

Crickets usually feed on plants but are sometimes predaceous, living on other insects.

Amphiacusta caribea, Saus. (House cricket)

Gryllus assimilis, Fabr. (Field cricket)

Scapteriscus variegatus, Burm. (Mole cricket)

Specimens taken under a dripping tap, also in a muddy situation.

ORDER—NEUROPTERA (Biting Lice, Termites, Pond Flies, etc.).

FAMILY—MALLOPHAGA (Biting lice).

The members of this family infest the skins of birds or mammals.

Lypeurus polytrapezius, N.

Taken from domestic fowl.

FAMILY—TERMITIDAE (White ants, wood ants).

"Wood ants" must not be confused with the true ants, to which they are not related.

Eutermes hartiensis, Holmg.

Found attacking sugar-cane on a fairly large area on one plantation, where old megass, which was attacked, had been placed on the fields; also found in buildings on the same plantation.

Leucotermes tenuis, Hag.

Attacks woodwork of buildings.

Rhinotermes nasutus, Perty.

Attacks woodwork of buildings.

Coptotermes marabitanus, Hag.

Taken from a single sugar-cane sent to the office badly eaten into by large numbers of the species.

FAMILY—ODONATA (Dragon flies).

"Pond flies" is the local name of this group; for a part of their life they are aquatic. The adults are insect feeders.

Erythrodiplax umbrata, L. (Common pond fly)

Ischnura ramburi, Selys. (Small pond fly)

Leptemis vesiculosa, (Green pond fly)

Orthemis sulphurata, Hagen.

Pantala flavescens, Fabr.

Tramea abdominalis, Ramb. (Red pond fly)

FAMILY—HEMEROBIDAE (Lacewing flies).

The members of this family live chiefly on other insects.

Chrysopa sp.

Feeds on plant lice, white flies, etc.

ORDER—HYMENOPTERA (Bees, Wasps, etc.).

FAMILY—MYMARIIDAE.

This is a family of very small insects, mostly egg parasites of other insects.

Anagrus flavescens, Waterh.

Egg parasite of "cane fly" (*Delphax saccharivora*, Westw.).

FAMILY—CHALCIDIDAE (Chalcid "flies").

The habits of this group are variable, some being injurious to plants; a very large number are parasitic forms and are thereby beneficial.

Chalcis ovata, Say.

Pupal parasite of *Alabama argillacea* Hubn. and *Anticarsia gemmatalis*, Hubn.

Trichogramma pretiosum, Riley.

Egg parasite of sugar-cane moth borer (*Diatraea saccharalis*, Fabr.).

Zalophotrichia mirum

Parasitic on black scale (*Saissetia nigra*, Nistn.).

FAMILY—ICHNEUMONIDAE (Ichneumon "flies").

This is another parasitic group.

Hemicospilus purgatus, Say.

FAMILY—EVANIIDAE.

This family also has parasitic habits.

Evania appendigaster, Linn.

Egg parasite of cockroach.

FAMILY—APIDAE (Bees).

The bees form a very industrious group of insects; some are distinctly beneficial to man.

Apis mellifera, L., (Honey bee)

Centris versicolor, F.

Centris sp.

Occupies nests of *Pelopoeus cementarius* which it stores with a mixture of honey and pollen.

Halictus cyaneus, Ashm.

Megachile binotulata, D. T.

Leaf-cutting bee.

Megachile lanata, F.

Leaf-cutting bee.

Xylocopa fimbriata, F. (Large carpenter bee)

Builds in old posts, old tree branches, etc.

Xylocopa aeneipennis (Small carpenter bee)

Builds in decayed branches, posts, etc.

FAMILY—EUMENIDAE.

These are known as the solitary wasps, because they do not live in social assemblies.

Odynerus grenadensis, Ashm.

Occupies cells of *Pelopoeus*, stocking them with caterpillars.

Odynerus (Ancistrocerus) sp.

Habits similar to above.

FAMILY—VESPIDAE.

This group is known as the social wasps, because they live in societies.

Polistes annularis (Jack spaniard, wild bee)

Predaceous on cotton worm.

Polistes bellicosus (Cow bee)

Habits similar to preceding.

FAMILY—SCOLIIDAE.

Mostly parasitic in habit, digging in search of their prey.

Campsomera (Dielis) dorsata, F.

Parasitic on larva of *Ligyris tumulosus*, Burma.

Tiphia parallela, Smith.

Parasitic on larva of *Phytalus smithi*, Arrow.

FAMILY—POMPIDAE.

This is another family of diggers and prey principally on spiders.

Pompilus cubensis, Cress.

Pompilus juctus, Cress.

FAMILY—SPHEGIDAE.

This forms a large family of diggers, some nesting in the ground, others in buildings, etc.

Notogonia luteipennis, Cress.

Burrows in marlholes.

Notogonia vinulenta, Cress.

Burrows in marlholes.

Pelopoeus cementarius (Mason bee)

Makes mud nests in outbuildings.

Sphex dubitatus, Cress.

Burrows in marlholes.

Tachytes argentipes, Smith.

Once observed in the act of catching a small grasshopper.

FAMILY—FORMICIDAE (True ants).

Ants are remarkable for their social habits; as pests they are well known.

Brachymyrmex spp.—2

Camponotus (Myrmosphincta) sexguttatus, F. var. *grenadensis*, For.
Cardiocondyla sp.
Cremastogaster sp. (Acrobat ant)
Monomorium sp.
Prenolepis (Nylanderia) longicornis, Latr.
Rhizomyrma sp.
Solenopsis geminata, Fabr.
Tapinoma melanocephalum, F.

ORDER—COLEOPTERA (Beetles).

FAMILY—SCARABAEIDAE (Hard-backs).

This is a very large group with varied habits ; the larval or grub stage is usually very long, in many cases extending over a year ; some are very destructive to plants.

Bigyrus tumulosus, Burm. (Black hard-back)
 Larvae found in decaying vegetable matter. Adults fly to the lights in houses.
Phytalus smithi, Arrow. (Brown hard-back)
 Larvae injure roots of sugar-cane, rose trees, citrus, palms, bananas. Adults found at night on sugar-cane, rose trees, cassava, bananas. The leaves of rose trees are often badly eaten by the adults.
Ataenius frater, Arrow. (sub-family *Aphodiidae*)
Trox suberosus, F. (sub-family *Trogidae*)
 Feeds on carcasses, hides, hoofs, etc.

FAMILY—CICINDELIDAE (Tiger beetles).

This is a group of very predaceous insects.
Cicindella dorsalis var. *suturalis*
 Found on the sea beach, Maxwell coast.

FAMILY—CARABIDAE.

These are carnivorous and predaceous both in the larval and adult stages.
Cymindis marginalis, Dej.
 Taken at light.
Galerita unicolor, Dej.
Harpalus sp.
 Taken at light.

FAMILY—DYTISCIDAE (Water beetles).

These insects live in pools chiefly ; they are very voracious, attacking not only other insects but sometimes small fish.
Eumectes occidentalis
Megadytes giganteus, Cast.

FAMILY—HYDROPHILIDAE.

These beetles feed principally on decayed vegetation in ponds.
Hydrophilus ater

FAMILY—STAPHYLINIDAE.

The habits of this group are very varied ; some feed on small insects while many are found in fungi.
Oligota oviformis, Csy.
 Larva feeds on eggs of red spider.

FAMILY—NITIDULIDAE.

Most of these feed on decaying vegetable substances.
Curpophilus mutilatus, Erich.
 Collected on imphée leaves around decayed material.

FAMILY—MYCETOPHAGIDAE.

This is a small family ; the members usually live under bark.
Typhaea stercorea, L.

FAMILY—COCCINELLIDAE (Ladybird beetles).

This is a very beneficial group, feeding on aphids, scale insects, etc.
Cycloneda sanguinea, L. (Red ladybird)
 Feeds on aphids, etc.

Hyperaspis trilineata, Muls.

Found associated with the sugar-cane mealy bug (*Pseudococcus calceolariae*, Mask.) on which it feeds.

Megilla maculata, De Geer. (12 spotted ladybird)

Feeds on aphids, etc.

Scymnus ochroderus, Muls. (Small ladybird)

Feeds on aphids and whiteflies.

FAMILY—BOSTRICHIDAE.

The members of this family attack dry wood.

Schistocerus cornutus, Pall.

Specimens from a wood dealer.

Tetrapriocera tridens, F.

FAMILY—PTINIDAE.

The members of this family are small but very destructive principally to household articles, food, books, etc.

Cathorana herbarium, Gorb.

Eats into books, upholstered furniture, provisions, etc.

FAMILY—LYMEXYLONIDAE.

These bore into hardwood.

Atractocerus brasiliensis, Serv.

Black borer of ebony (*Albizzia Lebbeck*, Benth.).

FAMILY—ELATERIDAE.

These are the snapping bugs or click beetles; many live in rotten wood while in northern countries the larvae of some species (wire worms) are destructive to corn and grass roots.

Chalcolepidius porcatus

FAMILY—BUPRESTIDAE.

The adults of this family have a metallic colour; the larvae are wood borers.

Chrysobothris splendens, Voet.

Imported in firewood.

FAMILY—TENEBRIONIDAE.

This is a large family, most of which feed on vegetable matter; the adults avoid the light.

Alphitobius diaperinus, Fz.

Found in decaying cotton seed.

Hoplatrinus gemellatus, Oliv.

Said to injure young cotton plants in the other islands.

Schoenicus antillarum, Champ.

Some specimens found in a cellar; some also found under the bark of a tree.

Tribolium ferrugineum, Fab.

Attacks stored maize, flour, etc.

Zophobus morio, Fabr.

Occurs frequently in houses.

FAMILY—OEDIMERIDAE.

These are mostly found on plants.

Cofidita lateralis, L.

Frequently found at lights.

FAMILY—RHIPIPHORIDAE.

The adults are flower visitors; the larvae are parasites.

Macrosiagon octomaculatus, Gerst.

Parasite of *Campsomeris dorsata*, F.

FAMILY—BRUCHIDAE.

These live principally in seeds.

Bruchus spp. (3)

Attacking stored seeds, etc.

FAMILY—CHRYSMELIDAE.

Most of the members of this family live on foliage.

Chaetocnema amazona, Boky.

Flea beetle of sweet potato.

Haltica satellitia, Jac.

Feeds on weed *Jussiaea suffruticosa*, L.

Homophoeta aequinoctialis

Sometimes very numerous on the common weed *Stachytarpheta indica*, Vahl.

Lema sharpi, Jac.

Found on various weeds.

Myochrous armatus, Bailey.

Larvae found at roots of sugar-cane; adults on sugar-cane shoots and corn leaves.

FAMILY—CERAMBYCIDAE (Long horned beetles).

These live principally in wood.

Achryson surinamum

Bores into ebony (*Albizzia Lebbek*, Benth.).

Chlorida festiva, Linn.

Bores into ebony (*Albizzia Lebbek*, Benth.).

Cylindera Pilicornis, F.

Eburia decemmaculata

Ibidion quadrinaculatus, Fab.

Leptostylus praemorsus, Fab.

Bores into bark of lime and other citrus trees.

Polyrraphis spinosa, Drury.

Phryneta verrucosa, Drury.

Bores into *Ficus laurifolia* and *F. nitida*.

Trachyderus succinctus, L.

FAMILY—CURCULIONIDAE (Weevil).

This is an enormous family, most of which derive their food from plants.

Artipus corycaeus, Sahlb.

Found in pods of *Cassalpinia* sp. and among seeds of *Abrus precatorius*, L.

Calandra linearis, Herbst.

Euscepes batatae, Waterb. (Scarabee)

This is a very bad pest of sweet potato.

Diaprepes abbreviatus, L. (Root borer)

This is a very bad pest of sugar-cane; the larvae bore into the cane bases, sometimes completely severing them.

Diaprepes famelicus barbadosis, Subsp. n.

Adults found in Barbados feeding on epidermis of *Agave* leaves.

Promecops lunatus, Fbs.

Attacks leaves of bean (*Phaseolus lunatus*).

Sphenophorus sericeus, Oliv. (Weevil borer)

Attacks sugar-cane after fermentation has begun.

FAMILY—SCOLYTIDAE.

Most of these are wood and bark feeders.

Pycnarthrum pallidum, Chap.

Found in bark of *Artocarpus incisa* and *Ficus nitida*.

Xyleborus confusus, Eichh.

Xyleborus perforans, Weill. (Shot borer)

Attacks acid sugar-cane.

ORDER—LEPIDOPTERA.

This group comprises the moths, butterflies and skippers, the caterpillars of which are for the most part injurious to plants, though some of the smaller species are injurious to clothing and other household articles.

FAMILY—NYMPHALIDAE.

Anosia plexippus, Linn. (Monarch butterfly)

Larva feeds on weed *Asclepias curassavica*.

Dione vanillae, Linn.

Larva feeds on *Passiflora* spp.

- Hypolimnas misippus*, Linn.
Larva feeds on *Portulaca* sp.
Junonia genoveva, Cramer.
Larva feeds on *Stachytarpheta indica*, Vahl.
Vanessa cardui, L. (Painted lady)

FAMILY—LYCAENIDAE.

- Hemiargus hanno*, Stoll.
Small blue butterfly, larva feeds on *Phaseolus* sp.

FAMILY—PIERIDAE.

- Catopsilia eubule*, Linn. (Sulphur butterfly)
Larva feeds on *Cassia* spp.
Pieris sp.
Larva feeds on cruciferous plants.

FAMILY—PAPILIONIDAE.

- Papilio polydamas*, Linn.
Larva feeds on *Aristolochia*.

FAMILY—HESPERIIDAE (Skippers).

- Calpodus ethlius*, Cram.
Attacks *Canna*, Arrowroot, and Tous-les-mois plants.
Epargyreus zestos, Hubn.
Eudamus proteus, Linn.
Attacks bean plants (*Phaseolus* sp.).
Eudamus retracta
Hylephila phyleus, Druce.

FAMILY—SPHINGIDAE.

- Cocytius antaeus*, Drury. (Giant sphinx)
Feeds on plants of N. O. *Anonaceae*.
Epistor lugubris, Linn. (Mourning sphinx)
Feeds on *Vitis* spp. and *Datura* spp.
Erinnyis alope, Drury.
Feeds on *Hippomane* and *Jatropha*.
Erinnyis ello, L.
Feeds on cassava (*Manihot*); periodic outbreaks occur.
Erinnyis obscura, Fabr.
Pachylia ficus, L.
Feeds on *Ficus nitida* and *Chlorophora tinctoria*.
Pholus fasciatus, Sulz.
Feeds on water primrose (*Jussieua*).
Pholus labruscae, Linn.
Feeds on weed *Cissus sicyoides*.
Protambulyx strigilis, L.
Feeds on hog plum (*Spondeas lutea*).
Protoparce cingulata, Fabr.
Pest of sweet potato; periodic outbreaks occur.
Protoparce rustica, Fabr.
Feeds on wild coffee (*Clerodendron aculeatum*).
Protoparce sexta, Jon.
Feeds on Solanaceous plants, e. g. tomato, pepper, etc.
Pseudosphinx tetrio, L.
Feeds on *Allamanda*, *Plumeria*.
Sesia tantalus, L. sub. sp. *zonata*.
Xylophanes pluto, Fabr.
Feeds on *Erythroxyton*.
Xylophanes tersa, Linn.
Feeds on rose.

FAMILY—SYNTOMIDAE.

- Syntomeida Syntomoides*, Boisd.
Feeds on *Ipomoea*.

FAMILY—COSSIDAE.

- Duomitus punctifer*, Hamp.
Larvae tunnel into certain trees, shrubs, etc.—*Ipomoea* sp., *Anona muricata*, *Codiaeum* spp., *Tecoma leucoxyton* (white wood), the last named tree being specially favoured by it, causing large limbs to break off.

FAMILY—ARCTIIDAE.

Utetheisa ornatrix, L.
Feeds on *Crotalaria retusa*.

FAMILY—GEOMETRIDAE.

Semiothisa ochrata, Warren.
Synchlora frondaria, Guen.

FAMILY—NOCTUIDAE (Owlet moths).

Alabama argillacea, Hubn. (Cotton worm).
This is a common pest of cotton; it has many natural enemies however.

Aletia luridula, Guen. (Smaller cotton worm)
This is not as bad a pest of cotton as the preceding.

Anticarsia gemmatalis, Hubn.
Attacks beans, bonavist, woolly pyrol and other related leguminous plants.

Cerespa famelica, Guen.
Feeds on *Leucaena glauca*.

Cerespa fasciolaris, Hb.
Feeds on the leaves of the Lignum vitae (*Guyacum officinale*).

Chloridea virescens, F.
Feeds on pigeon pea (*Cajanus indicus*).

Cirphis multilinea, Walk.

Cydosia hystrix, Fabr.
Feeds on *Spigelia antheimia*, L.

Erebus odora, Linn.

Euthisanotia amaryllidis, Sepp.
Feeds on lily (*Crinum* sp.).

Feltia malefida, Guen. (Cutworm)
Feeds on cotton, sweet potatoes.

Feltia subterranea, F. (Cutworm)

Heliothis obsoleta, Hubn. (Boll worm)
This is a pest of both cotton and corn.

Laphygma frugiperda, S. and A. (Corn ear worm)
Besides being a bad pest of Indian corn, is also a minor pest of cotton, injuring the bolls.

Litoprosopus sp.

Micrathetus triplex, Wlk.

Mocis repanda, Fabr.
Attacks Guinea grass (*Panicum maximum*); periodic outbreaks occur.

Phurys immunitis, Guen.

Phytometra oo Cram.
Feeds on sweet potato, woolly pyrol.

Prodenia dolichos, F. (Cutworm)
Attacks cotton, sweet potatoes and many garden plants.

Xylomyges sunia, Guen.
Feeds on *Zephyranthes* sp.

FAMILY—URANIIDAE.

Urania leilus (Green page moth)
Occurs sometimes in Barbados after a gale.

FAMILY—PYRALIDAE.

Diaphania hyalinata, L. (Melon moth)

Diatraea saccharalis, Fabr. (Moth borer)
Larvae tunnel shoots and stems of sugar-cane.

Fundella pellucens, Z.

Pachyzancla bipunctalis, F.
Feeds on many plants—Canna, garden beans, sword beans, etc.

Phakelluria hyalinata

Pronea cervinalis, Warren.

Pyrausta nallalis, Hubn.
Attacks fiddlewood (*Citharexylum quadrangulare*).

Sylepta gordialis, Guen.
Feeds on *Bougainvillaea*.

Sylepta helcitalis, Wlk.
On sweet potato.

FAMILY—TINEIDAE.

Pyroderces stigmatophora, Wesm.
Bred from sorghum seeds.

ORDER—DIPTERA (Flies).

FAMILY—CECIDOMYIIDAE.

These are very small flies; in the larval stage they usually injure plants forming galls or deformations.

Asynaptura mangiferae, Felt.

Attacks mango twigs and also leaves.

Porricondyla gossypii, Coquillet. (Cotton red maggot)

Gets into bruises on the stems, lives under the bark and finally causes death of the attacked branches.

FAMILY—CULICIDAE (Mosquitoes).

The larvae are aquatic and the adults are blood suckers.

Culex fatigans (Filaria mosquito)

Stegomyia fasciata (Yellow fever mosquito)

FAMILY—CHIRONOMIDAE.

This is another family of blood suckers.

Chironomus spp.

FAMILY—STRATIOMYIDAE.

The habits of this family are very variable; the adult flies are found on leaves and flowers.

Hermetia lucens

Frequently found on imphee leaves, okra leaves, etc., evidently following honey dew of aphids.

FAMILY—BOMBYLIIDAE.

These flies principally feed on the nectar of blossoms.

Geron sp.

FAMILY—DOLICHOPODIDAE.

The adult flies are predaceous and occur in damp places.

Psilopus chrysoprasinus, Wlk.

Frequently seen on plant leaves.

Pelopus unifasciatus, Say.

Habits similar to the preceding.

FAMILY—SYRPHIDAE.

In the larval stage these are predaceous on aphids and other insects

Allograpta dimensa, Walk.

Eristalis vinetorum, F.

FAMILY—TACHINIDAE.

Many of this family are parasitic in the larval stage, chiefly on caterpillars.

Lucilia ruficornis, Mcq.

Taken on leaves.

Sturmia distincta

Parasitic on *Protoparce cingulata*.

FAMILY—SARCOPHAGIDAE.

Sarcophaga chrysostrama, Wied.

Sarcophaga tripartita, Wulp.

Sarcophaga trivittata

FAMILY—MUSCIDAE.

This is a very large family, the house-fly being a typical member

Chrysomya macellaria, F. (Screw-worm fly)

Taken on sorghum with honey dew of aphids.

Musca domestica, Linn. (House fly)

Stomoxys calcitrans, Linn. (Stable fly)

FAMILY—MICROPEZIDAE.

Calobata annulata, F.

Occurs along grassy paths.

FAMILY—URTALIDAE.

Eucesta annonae, F.
Common on plant leaves.

FAMILY—MILICHIIDAE.

Ophthalmomyia lacteipennis, Lw.
Taken on leaves of papaw (*Carica papaya*).

ORDER—THYSANOPTERA (Thrips).

The members of this group are very small insects with narrow wings delicately fringed. Most of them live on vegetation.

Euthrips insularis, Frank.
Attacks leaves of many plants.
Euthrips sp.
Attacks leaves of sweet potato.
Heliothrips haemorrhoidalis, Bouche.
Attacks leaves of siddlewood (*Citharexylum*).
Heliothrips rubrocincta, Giard.
Attacks grape vine, croton, mango.
Thrips tabaci, Lind.
Attacks onion and eschalot.

ORDER—HEMIPTERA (Bugs).

FAMILY—PENTATOMIDAE.

The members of this family emit a strong odour when touched; most of them are plant feeders.

Edessa mediatubunda, Fabr. (Brown bug)
Found on many plants, including cotton.
Nezara viridula, L. (Green bug)
Habits similar to the preceding.

FAMILY—COREIDAE.

In this family the members are principally plant feeders.

Leptocoris filiformis, F.
Caught on *Coccoloba uvifera*.
Phthia picta, Drury.
This is a reddish bug sometimes a pest of tomato plants; it commonly occurs on various weeds in large numbers during June and July.

FAMILY—HYDROMETRIDAE.

This is an aquatic family.

Gerris marginata, Say.

FAMILY—REDUVIIDAE.

This family comprises a large number of mostly predaceous forms; they take their nourishment principally from the animal kingdom.

Conorhinus sanguisuga
This is the blood-sucking cone-nose bug, sometimes found in houses.

FAMILY—CIMICIDAE.

Cimex lectularius, L. (Common bed bug).

SUB—ORDER HOMOPTERA.

FAMILY—FULGORIDAE.

These are mostly plant feeders.

Peregrinus maidis, Ashm. (Corn leaf hopper).
This is a minor pest of maize, sorghum, etc.
Delphax saccharivora, Westw. (Cane "Fly")
This is a minor pest of sugar-cane, its eggs being parasitized to a very large extent by the Mymarid *Anagrus flavescens*, Waterh.

FAMILY—APHIDAE (Aphids or plant lice).

This is a very destructive family to plants, the juices of which the aphids suck out.

Aphis gossypii, Glover.
Attacks cotton, melon.

**REPORT OF THE ASSISTANT SUPERINTENDENT OF AGRICULTURE ON
THE ENTOMOLOGICAL AND MYCOLOGICAL WORK CARRIED OUT
DURING THE SEASON UNDER REVIEW.**

Before proceeding to outline the work under the above heading, it may be stated that the writer was away on vacation leave from June 25 to October 7, 1916. Also, that a great deal of time during the remainder of the period has been given to the arrangement of the herbarium, identifying of specimens and to the completion of the card catalogue of plants started last year. In this work, the arrangement of the families and genera in Bentham and Hooker's *Genera Plantarum* has been followed, while for the species, the names given in *Index Kewensis* have been used and the order of Griesbach adhered to as far as possible. Further reference is made to this work under Herbarium.

The following are the principal divisions of the work with insect pests and plant diseases for the season under review:—

- (1) Plant inspection and fumigation.
- (2) Upkeep of collections.
- (3) Crop pests and diseases.
- (4) Preliminary list of the Acarina (ticks and mites) and Insecta (insects) of Barbados, vide page 46.

PLANT INSPECTION AND FUMIGATION.

The Orders made by the Governor-in-Executive Committee from time to time providing for the inspection, fumigation, disinfection and where necessary destruction of plants and seeds brought into the island have been carried out in the usual way. On two occasions insects have been intercepted which so far as is known do not occur in the island.

All cargoes of cotton seed imported for the extraction of oil have been fumigated with sulphur dioxide generated by the Clayton Disinfector mounted on the barge *Hygeia*. The area planted in cotton in the island having diminished to a great extent, due more recently to the high prices ruling for sugar, the two oil factories have had to import more largely than ever cotton seed from other countries. In the past most of the importations came from the smaller West Indian islands; during the season, however, a large quantity of seed has been brought in from Colombia, Hayti and Porto Rico, principally from the first named place. Many of these cargoes have been found on arrival to be insect infested. At least two species of Microlepidoptera and a Tenebrionid beetle have been obtained. These have, in every case, survived fumigation with the method in vogue, thereby showing the necessity for the erection of an up-to-date fumigatorium if the cotton industry is to be protected from dangerous imported insects such as pink boll worm, boll weevil, etc. The pink boll worm is now in Brazil and every effort should be made to prevent its introduction into a country where cotton forms a paying subsidiary crop to sugar cane.

UPKEEP OF COLLECTIONS.

Several specimens have been added to the collection during the year, and the Imperial Bureau of Entomology must again be thanked for making identifications of many forms sent them. These include the following:— 1 Orthoptera, 2 Isoptera, 13 Hymenoptera, 12 Coleoptera, 9 Diptera, 4 Lepidoptera, 1 Mallophaga, and 1 Rhyncota. The necessary indexing in connection with the card catalogue of insects and fungi has also received attention.

CROP PESTS.

Sugar Cane:—The old pests continue to cause a great deal of injury. The root-borer, *Diaprepes abbreviatus*, of which so much has been said in past reports reduced the yields on many estates during the year under review. Fortunately, favourable growing weather again prevailed in 1916 or losses may have been more serious. This pest is increasing in the island generally and it is to be regretted that planters do not seem to co-operate in the collection of adults and egg batches. By collection and proper crop rotation, the insect can be controlled, as has been done in the south-eastern portion of Christ Church. Fighting insect pests constitutes a problem to be reckoned with in agricultural practice; it is one that should be considered and allowed for in the planning of operations as much as any other part of the work. A certain outlay is necessary in this connection, the benefits of which are reaped year after year, although perhaps not always noticed by the planter.

The brown hard-back, *Phytalus smithi*, has increased this year in St. Michael's parish; the collection of adults on one estate has amounted to 589,680. From reports it would appear that there is also an increase in numbers of this pest in some other parts of the island where it is known to occur.

The moth-borer, *Diatraea saccharalis*, continues to cause a great loss every year. It is a matter for regret that general action is not taken against it. In Demerara, on a certain group of estates, collecting the caterpillars and egg batches and destroying them (the parasitized eggs of course being preserved) constitutes a regular practice. There seems no reason why the same policy could not be followed here. The black egg batches, it must be remembered, are those parasitized and should be preserved so that the parasites may escape to continue their good work.

The other pests of sugar-cane which the writer has observed are those usually of minor importance, the mealy bugs *Pseudococcus walceolariae* and *P. sacchari*, and the scale *Aspidiotus sacchari* being the chief. Another species of termites has been obtained this year attacking cane but not to any extent. It has been identified as *Coptotermes marabitanus*, Hag., at the Imperial Bureau of Entomology. The other species of termite recorded in a previous report as attacking sugar-cane locally is *Eutermes haitiensis*, Holmg.

No "cane fly," *Delphax saccharivora*, has been observed by the writer since 1914 when a quantity of infested cane leaves examined showed that the eggs were heavily parasitized by the mymarid *Anagrus flavescens*. There had been no record of this parasite locally until that time. It used to be thought that the enemies of this pest were principally "lacewing flies" (*Chrysopa* sp.) and coccinellid beetles. In a recent report of the Department of Agriculture, Jamaica, the entomologist states that "cane fly" is a very serious pest there. The egg parasite noted above does not seem to exist in Jamaica.

It may be interesting at this point to refer to the report of a Select Committee of the House of Assembly appointed to consider the question of taking measures for the extermination or reduction of the numbers of mongoose, it being the opinion of many persons that the mongoose is indirectly responsible for the increase of the root borer and other pests in the island. In this report it is stated that the mongoose preys on insect-eating birds, lizards and toads, all of which were plentiful in the cane fields before the arrival of the mongoose and used to keep the root borer and other pests in check. The Committee recommended that steps be taken to make it generally known throughout the island that the Mongoose and Rat Destruction Act 1909, is still in operation, as they found that the impression generally prevails that this Act has ceased to exist; to make it also known that the sum of 3d. for the head of every mongoose is still payable from the Public Treasury, and to call upon the Vestries of the island to make the appointment of persons to carry out the provisions of the Act. It is further recommended that the Police Sergeants in charge of the Districts of the Island should be added to the list of persons to receive and pay for mongoose heads and that the sum of 1d. per head be paid to receivers instead of 10% as at present. It is to be hoped that planters will appreciate the efforts of the Committee; at the same time they should not remain inactive waiting a reduction in the numbers of mongoose to help them get rid of root borer, etc., where present. It must be quite clear that such insect feeders as toads, lizards, etc., which the Committee's report points out are being destroyed by mongoose will have a long distance to cover before they can catch up. Our advice to planters is not to wait but to fight the root borer with the present means at their disposal, viz., rotation of crops on badly attacked fields, collection of adults and egg batches. These are well-known and tried remedies and will reward those who use them consistently. Meanwhile, the forces in the other direction will have time to gather strength.

Cotton :—No new pest is to be recorded on growing crops. Blister mite, *Eriophyes gossypii*, has been present in some places while small attacks of cotton caterpillars, *Alabama argillacea* and *Aletia luridula*, in some fields were soon kept in check with Paris Green. Specimens of stem injury due to red maggot, *Porricondyla gossypii*, were received from one place during the year. Reference has been made under the remarks on fumigation to the taking of moths and beetles in cargoes of cotton seed imported for the extraction of oil.

Provision Crops :—Complaints have been received concerning the prevalence of Scarabee (*Euscepes batatas*) attacking sweet potatoes in several districts. No sound action as a rule is taken against this pest, although the necessity for doing so must be more obvious this year than ever before, so many

potatoes having been planted to supplement imported foodstuffs. It is imperative that slips for planting be taken from clean fields. To accomplish this with certainty, planters should aim at establishing nurseries from absolutely sound tubers and to plant from these only. Tubers should not be kept in the fields any length of time after they have matured. Such fields usually become a breeding ground for "Scarabee." Care should be taken to remove all infested material, e.g., pickings, vines, etc., from a field after it has been harvested and to dispose of them satisfactorily. Feeding such material to pigs would be a fairly safe practice.

The red spider (*Tetranychus telarius*) was also present to some extent during the dry months. Plants usually throw it off with the advent of good rains. In very bad attacks dusting with flowers of sulphur and lime in about equal parts will help to control it.

On one estate visited during March, young potato plants which had followed cane in a field badly attacked by *Diaprepes abbreviatus* were observed to be also severely attacked by the same pest. The grubs bored into the stems below ground which resulted in the death of the plants thus attacked. A crop such as cotton or cassava which is less liable to attack by this pest should be used as a rotation crop.

The leaf hopper, *Peregrinus maidis*, Ashm., was collected from sorghum leaves during the year.

Coccidae:—Specimens of garden plants and citrus received and observed during the year were found to be attacked by the following:—*Lepidosaphes beckii*, Newm., *Chionaspis citri*, Comst., *Pseudococcus citri*, Risso., *Coccus viridis*, Green. A quantity of the scale fungus, *Cephalosporium lecanii*, was sprayed on the star apple and other trees at one place where *C. viridis* was much in evidence. A parasite of *Chrysomphalus dictyospermi*, Morg. was bred out and sent on for identification. A species of *Diaspis* which may prove to be *D. echinocacti* was collected on *Cactus* during the season. This scale has been recorded for Barbados but is not in the local collection. An *Aspidiotus* which may very likely be *A. rapax* has been collected on Oleander. This has not been noted for Barbados in previous records.

Miscellaneous:—Two Cerambycids, *Achryson surinamum* and *Chlorida festiva*, were bred in large numbers from portion of the trunk of an ebony tree apparently killed by them.

During the season an eschalot grower experienced much trouble from Thrips, apparently *Thrips tabaci*. These insects seriously infested the leaves causing them to appear white and "blasted." Proper sanitary measures are essential in the control of this pest.

Cathorama herbarium, Gorb., a Ptinid, has been found eating into books and upholstered furniture.

Two interesting Curculionids identified by Dr. Marshall are *Promecops lunatus* which attacks bean leaves and *Artipus corycaeus* which was found attacking seed pods of *Abrus precatorius*. A similar insect to the last has also been found eating lime leaves.

Xyleborus confusus and *Pycnarthrum pallidum* are two Scolytids obtained, the latter from the bark of *Ficus nitida*.

The green bug, *Nesara viridula*, has been responsible for some injury to tomato plants belonging to a gardener during the season. The bugs suck the juices of the leaves and fruit. Often they appear in considerable numbers; certain weeds too they frequent. The eggs are laid on the foliage in clusters; they are easily observed due to their glassy appearance and should be picked off and destroyed. Placing a bag under the plants, and shaking off the bugs on it and destroying them will also help to control this pest.

The stems of some young mango plants were observed to be dying back from the attacks of a small Scolytid beetle working under the bark and boring into the wood.

Two fairly common insects which have been detected doing a great deal of injury to the foliage of certain ornamental plants were the larvae of *Prodenia dolichos* and *Pachyzancla bipunctalis*.

The ends of mahogany shoots received at the office and reported to be dying back were examined and found being bored into by a small lepidopterous larva. An attempt to breed this out was not successful.

Another species of termite (see previous reports) infesting wooden buildings has been identified by Dr. Marshall of the Imperial Bureau of Entomology as *Rhinotermes nasutus*, Perty.

The Tenebrionid, *Hoplatrinus gemellatus*, has also been added to the collection this insect is recorded as attacking young cotton plants in some of the other West Indian Islands.

Among the Lepidoptera which have recently been identified is a species of *Litoprosopus*. This Dr. Marshall states may possibly be a new species and that there are only two specimens in the British Museum, which are from San Domingo.

Among the Hymenoptera sent to the Imperial Bureau of Entomology has been a collection of ants. The names of these are given as far as possible in the list of insects published in another place.

A specimen of *Peripatus* sp. was collected on rotten stuff during last November after heavy rains.

DISEASES.

Sugar Cane:—During the year the root fungus *Marasmius sacchari* was by far the most troublesome disease, particularly in young ratoon canes. Many instances of this came under notice, especially in districts where very long ratooning is practised. In the black soils, plant canes in some fields also suffered from the disease. It is often thought that this fungus is only a product of dry weather. As a matter of fact any unfavourable environment will induce it. In very wet seasons such as have been experienced in the last two or three years, the disease frequently makes its presence felt in heavy fields which have not been sufficiently drained. The yields of cane from such fields are often considerably reduced and planters are unable to explain the cause satisfactorily, yet an examination of some of these apparently good fields during November and December will reveal the presence of many holes with few canes, and these thin and poorly developed. It is not necessary for the leaf sheaths to be all matted together for the disease to be detected; at this stage there may be hardly any cane to reap at all. Good drainage, proper tillage, and the use of healthy plants, in other words, conditions which keep up the vitality of the plant, make the losses from root disease very small in most seasons.

Colletotrichum falcatum, the fungus causing Red Rot, has been noticed in one or two isolated instances.

Thielaviopsis paradoxa, the fungus causing Pineapple disease, continues to be a very troublesome disease of cane cuttings. The necessity of using good material for planting and thoroughly disinfecting the cuttings with properly made Bordeaux has been dwelt on over and over again in these reports.

The leaf sheath red spot fungus, *Cercospora vaginæ*, has been fairly common during the season.

The fungus, *Cephalosporium sacchari*, which was discovered during the previous season attacking sugar cane and with which much work was done last year (Report 1915-1916), has not appeared this year to any extent at the estate on which most of the attack was noticed in 1915-1916. It will be remembered that the disease was noticeable only on canes whose growth had been interfered with in some way, being most apparent on the outer rows of certain fields, which had suffered somewhat from the effects of a strong southerly gale. A few examples of cane possessing this fungus, have been sent to the laboratory during the season from different places, and isolated specimens have been observed in several canefields. In most of these cases *Cephalosporium* had followed an attack of *Marasmius sacchari* or had gained an entrance through a borer hole.

Miscellaneous:—The writer knows of no instance where cotton suffered much from any particular disease. Mildew and leaf spots are always present in most cotton fields and there has been no report or observation that these were more prevalent than usual during the season.

Tobacco is grown by one or two persons locally. During the season two diseases have come to the attention of the writer. One appears to be a bacterial disease causing a wilt of old plants by attacking them just above ground, a cankered area from which there is much exudate being formed, which gradually extends up the stem. The other is caused by a fungus, a species of *Fusarium*, which has been found attacking the roots of young plants and in many cases the bases of the plants. The injury causes the young plants to wither and finally die. The damping off fungi, *Pythium* sp. and *Rhizoctonia* sp., were not present in this case. The recommendations made for dealing with the former disease were first, to pull up all plants showing the affection and to burn them; then, if the trouble persisted, to grow some crop other than tobacco on the soil for a few years. For the second disease, the destruction of all dead or dying plants was advocated, this to be followed by a liberal application of lime to the soil, which should be given a rest for several months.

An example of tomato fruit attacked with the malady known as Blossom end Rot came under observation during the period under review. The disease is recognized by the hard, black, sunken areas appearing on the blossom end of half grown fruit. It is a physiological trouble which is often responsible for a great deal of loss in places where tomatoes are grown to any extent. The cause of the disease has been attributed to various fungi by many different workers. Recent work by Dr. Brooks of United States Department of Agriculture has clearly established the fact that it is not due to bacteria or fungi, although these frequently develop in the spots. Some other conclusions are that the disease is induced by high temperature, heavy organic fertilizing, continued excessive watering or a sudden check in the water supply.

Mango leaves obtained from a small graft have been collected recently with a small, reddish, discoid alga living on them and producing dead spots. This seems to be a species of *Cephaleuros*, probably the same as that recorded as being injurious to lime leaves in Grenada. What seems to be another alga has been noticed growing thickly on the branches and trunk of mango trees in a moist shaded situation.

J. SYDNEY DASH.

INFORMATION ON VARIOUS AGRICULTURAL MATTERS SUPPLIED TO THE PRESS.

The following subjects of agricultural interest were brought to the notice of the public through the courtesy of the Editors of the local newspapers, who are always willing to render any assistance they can in this connection.

On July 11 informing the public that His Excellency had appointed August 7 to be observed as Arbor Day; and inviting applications for young trees to be supplied by the Department of Agriculture for planting on that day.

On November 24 calling attention to the Peasants Local Agricultural Exhibition and Show of Stock to be held at Highland Plantation, St. Thomas, on Wednesday, December 6.

On January 7, 1917, informing the public that the Superintendent of Agriculture was prepared to import onion seed from Teneriffe for those desirous of obtaining it for planting purposes.

SUGAR AND MOLASSES CROPS.

According to the Customs Returns the exported sugar and molasses crops of 1916 were 38,192.7 tons of vacuum pan crystals, 17,264 tons of muscovado sugar and 9,816,015 wine gallons of molasses, equal at 110 gallons per puncheon, to 89,236.5 puncheons of molasses of all grades, of the total value of £1,641,082 made up as follows:—

		1.2 tons	valued at	£	s.	d.	£	s.	d.
White Crystal sugar				25	0	0	30	0	0
Dark " "	88,191.5	"	"	20	0	0	763,830	0	0
Muscovado " "	17,264	"	"	19	10	0	336,648	0	0
	55,456.7	"					1,100,508	0	0
Fancy molasses	6,887,387	gals.	"	1	1		401,764	0	0
Choice " "	2,879,741	"	"	1	0½		123,945	0	0
Vacuum Pan " "	548,887	"	"	0	6½		14,865	0	0
	9,816,015	"					540,574	0	0

Fancy molasses is concentrated cane juice from which most of the impurities have been removed, and owing to the impossibility in the ordinary muscovado sugar factories of concentrating each taylor or panful of Fancy molasses to the same density, it is difficult to say how many gallons of this molasses are equivalent to a ton of muscovado sugar. From data obtained from various sources it would appear that 380 wine gallons of Fancy molasses at 41° Baume are equivalent to one ton (2240 lb.) of centrifugal muscovado sugar and 115 wine gallons of Choice molasses. At this rate the Fancy molasses manufactured in 1916 is equivalent to 18,125 tons of sugar. The total sugar crop therefore, if no Fancy molasses had been made, would have been 73,581 tons, i.e., 83,778 tons more than the previous year.

COTTON CROPS.

For the "Cotton Year", i.e., from October 1, 1915 to September 30, 1916, there were exported from 1,078 acres 244 bales of lint, weighing 182,733 lb. of the estimated value of £8,889. In addition there were 326,551 lb. of seed of the estimated value of £250, all of which was, with the exception of that used for planting purposes, manufactured locally into oil and undecorticated cotton seed meal. It may be mentioned that for the previous year there were 2,828 acres of cotton which yielded 538 bales of lint, weighing 303,681 lb., of the estimated value of £16,841. The yield of lint per acre for the season 1915-16 was 128 lb. as compared with 131 lb. for 1914-15.

METEOROLOGY.

The following are summaries of the observations recorded at the Government Meteorological Station for the year 1916, the details of which are given in Appendix I.

Barometric Pressure. During 1916 the mean pressure, corrected for temperature and gravity and reduced to sea-level, was at 9 a.m. 29.964 inches and at 3 p.m. 29.893 inches; the highest recorded being 30.080 inches on January 13, and the lowest 29.721 inches on December 8. In 1911 for the first time the barometric pressure was corrected for gravity. For the ten years 1906-1915 the average barometric pressure was at 9 a.m., 29.935 inches and at 3 p.m., 29.872 inches. The highest pressure at 9 a.m. during the ten years was on February 16, 1908, when it was 30.088 inches, and the lowest at 3 p.m. on November 2, 1914, when it was 29.675 inches.

Temperature. The mean maximum temperature for the year 1916 was 85.2°F. and the mean minimum 71.3°F. The maximum extreme for the year, which was 89.1°F., was registered on September 21, and the minimum extreme, which was 63.0°F., was registered on January 9. The mean average temperature was 78.8°F.; the highest monthly range for the year was 22.9°F., the lowest was 17.1°F., and the mean monthly range 19.7°F. For the ten years 1906-1915 the average maximum temperature was 84.2°F. and the average minimum 75.7°F. The average maximum extreme during the ten years was 87.2°F., the average minimum extreme 68.0°F., the average mean temperature was 79.9°F., and the average range 19.2°F. During the ten years the maximum extreme was 90.1°F. on September 28 1912, and the minimum extreme 61.0°F. on February 20, 1911.

Tension of Vapour and Relative Humidity. The mean tension of vapour for the year 1916 was at 9 a.m. .718 and at 3 p.m. .716. For the ten years 1906-1915 the average tension of vapour was at 9 a.m. .732 and at 3 p.m. .723. The mean relative humidity for the year 1916 was at 9 a.m. 68 and at 3 p.m. 66. For the ten years 1906-1915 the average relative humidity was at 9 a.m. 69 and at 3 p.m. 66.

Wind. The mean velocity of the wind during 1916 was 10.5 miles per hour, the maximum being 20.3 miles per hour on August 17, and the minimum 2.3 miles per hour on October 13. The average velocity for the ten years ended 1915 was 11.7 miles per hour.

Rainfall. The rainfall measured at the Government Meteorological Station during 1916 amounted to 63.00 inches. This fell on 190 days, the greatest fall being 3.76 inches on August 14, and the lowest .01 of an inch on January 28, March 3, June 4, 22, 25, September 10, October 10, November 17, 28, December 16 and 27. For the ten years 1906-1915 the average rainfall was 44.96 inches and the average number of days on which rain fell was 167.

Rainfall of the Island. The total mean rainfall for the year 1916 from 143 stations was 70.78 inches which fell on 168 days and was 9.19 inches above the average for the sixty-six years ended December 31, 1915, which was 61.59 inches. The details with respect to the number of days on which rain fell at each of the stations during each month of the year, the total rainfall for each month, and in a number of instances, the height of the rain-gauge above sea-level, are given in Appendix II.

JOHN R. BOVELL,
Superintendent of Agriculture.

APPENDIX I.
METEOROLOGICAL REPORT FOR 1916.
 DEPARTMENT OF AGRICULTURE, BARBADOS.
 HEIGHT ABOVE SEA LEVEL, 181 FEET.

Months.	Barometric Pressure reduced to sea-level, 32° Fahrenheit, and corrected for gravity.						Temperatures.										Tension of Vapour.			Humidity.		Wind.		Rainfall for 1916.	Number of days on which rain fell.
	9 a.m.	3 p.m.	Mean.	Highest.	Lowest.		Maximum Mean.	Minimum Mean.	Maximum Extreme.	Minimum Extreme.	Maximum blackened bulb & feet from ground in vacuo.	Mean for month.	Range for month.	Dew point 9 a.m.	Dew point 3 p.m.	9 a.m.	3 p.m.	Mean.	9 a.m.	3 p.m.	Mean.	Velocity miles per hour.			
January	30.005	29.932	29.969	30.080	29.859	88.2	69.4	85.7	63.0	145.1	77.6	22.7	67.3	69.8	.670	.732	.701	.68	72	70	12.3	2.21	18		
February	29.990	29.917	29.954	30.048	29.837	88.6	69.7	85.7	61.0	148.3	77.8	21.7	67.3	68.0	.666	.689	.678	.68	66	67	11.4	1.33	15		
March	29.970	29.905	29.942	30.044	29.831	84.9	69.9	87.5	64.6	149.8	78.8	22.9	67.2	66.4	.667	.650	.659	.66	60	68	11.2	2.02	18		
April	29.978	29.906	29.942	30.032	29.806	85.7	70.0	87.9	67.6	152.4	78.2	20.3	67.3	67.4	.670	.682	.676	.63	62	68	10.4	2.86	13		
May	29.970	29.913	29.946	30.020	29.854	87.3	72.6	88.7	69.8	152.8	80.0	18.9	69.4	68.0	.720	.688	.704	.63	58	61	10.2	3.19	10		
June	29.958	29.900	29.929	30.022	29.830	86.9	73.3	88.7	68.8	148.5	80.1	19.9	69.9	69.7	.737	.729	.733	.65	64	65	11.9	4.25	10		
July	29.973	29.916	29.945	30.039	29.851	86.9	73.3	88.7	70.0	146.1	80.1	18.7	70.3	70.1	.750	.740	.745	.67	65	66	10.2	5.12	15		
August	29.959	29.901	29.932	30.048	29.810	85.8	73.6	87.7	69.6	150.4	79.7	18.1	71.8	71.5	.778	.771	.775	71	72	72	9.7	4.27	19		
September	29.946	29.878	29.912	29.997	29.808	86.0	72.9	89.1	70.6	147.5	79.5	18.5	71.7	71.4	.781	.771	.770	70	71	71	7.6	4.73	18		
October	29.913	29.823	29.868	29.978	29.768	85.3	73.4	87.7	69.8	150.6	79.4	17.9	72.4	71.9	.794	.786	.790	72	72	72	7.7	13.47	20		
November	29.917	29.838	29.878	29.993	29.766	83.5	72.5	85.5	68.4	149.3	78.0	17.1	70.6	70.2	.749	.742	.746	74	73	74	11.1	9.03	20		
December	29.909	29.837	29.871	30.034	29.721	82.9	69.8	84.5	64.4	144.2	76.4	20.1	65.5	64.3	.632	.609	.621	64	59	62	11.8	1.52	8		
	339.566	358.719	359.145	360.330	357.781	1022.0	861.0	1047.4	810.6	1785.0	945.6	286.8	831.0	828.7	8.614	8.569	8.604	811	794	806	125.5	63.00	190		
	29.964	29.893	29.926	30.028	29.815	85.2	71.8	87.3	67.6	148.8	78.8	19.7	69.3	69.1	.718	.716	.717	68	66	67	10.5	63.00	190		

BARBADOS RAINFALL

FROM

JANUARY TO DECEMBER

1916.

APPEN
BARBADOS RAINFALL FROM

Name of Station.	Elevation. Feet.	January.		February.		March.		April.		May.		June.	
		Days.	Inches.	Days.	Inchs.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
	I. DISTRICT "A."												
St. Michael.													
<i>Lowlands.</i>													
Bank Hall	...	16	2-79	13	1-42	17	2-16	14	2-75	14	3-12	17	3-77
Strathmore	...	10	2-26	7	.80	11	2-19	11	2-85	9	2-41	14	4-08
Lower Estate	237	14	2-92	16	1-97	12	2-05	11	2-12	8	2-92	10	6-38
Clapham	216	7	1-97	4	.30	9	1-51	10	2-59	7	1-62	12	3-34
Government House	90	11	1-92	6	.77	7	2-03	10	3-17	7	1-86	13	3-08
District "A"	97	16	3-12	19	1-57	17	2-36	14	3-05	15	2-97	18	3-54
Central Police Station	...	11	1-54	8	1-04	12	2-25	8	1-75	10	2-82	14	3-37
Bush Hall	110	11	3-30	4	1-60	5	1-69	8	3-29	6	3-31	9	4-01
Grazettes	...	9	1-68	9	1-49	7	1-08	9	2-85	10	2-78	8	4-20
Dayrells	...	16	3-56	10	2-68	9	2-39	8	3-06	7	2-87	14	7-68
Waterford	...	14	3-31	12	1-21	14	2-06	9	2-80	10	2-80	16	3-84
Windsor Cot	...	16	2-83	14	.98	12	2-17	13	3-55	11	2-48	16	3-43
Warrens	...	9	2-09	11	1-57	13	1-37	13	4-15	8	3-06	15	4-68
Neils	...	11	4-54	11	1-67	11	2-85	9	4-13	6	2-84	14	6-65
Pine	...	13	2-29	7	.71	12	2-09	11	3-00	9	2-09	12	3-21
Canewood	...	2	.96	12	3-16	12	2-85	9	2-75	7	3-84	12	5-91
Codrington House	...	18	2-21	15	1-33	18	2-02	13	2-86	10	3-19	7	4-25
Goodland	...	14	2-27	11	.92	13	1-65	10	2-64	14	3-14	16	3-10
Penlee	...	14	1-88	8	.70	13	1-48	10	2-44	10	1-95	18	3-82
		232	47-44	197	25-89	224	38-25	200	55-80	178	52-02	255	82-34
		12-21	2-50	10-37	1-36	11-78	2-01	10-53	2-94	9-37	2-79	13-42	4-83
II. DISTRICT "B."													
Christ Church.													
<i>Lowlands.</i>													
Woodbourne	150	17	2-52	13	2-07	15	1-76	10	2-90	11	1-77	15	5-63
Seawel	...	10	2-93	16	2-28	17	1-87	13	3-15	13	2-07	15	4-84
Hannays	...	14	2-53	13	1-92	16	3-19	9	2-86	10	2-19	19	6-70
Coverley	254	7	1-70	6	1-23	13	2-20	10	2-75	9	2-67	11	5-18
Searles	233	17	2-73	14	1-62	18	2-20	13	2-80	11	2-34	17	5-50
Lower Greys	...	16	2-09	14	1-09	15	3-16	11	3-46	11	3-42	17	6-77
Newton	...	14	2-65	13	1-75	14	2-20	14	3-50	12	3-25	13	5-38
Bannatyne	207	12	2-34	19	1-65	13	2-43	9	3-69	16	3-79	12	7-65
Maxwells	20	16	2-41	15	1-80	13	2-04	15	2-99	11	2-79	12	4-12
Ridge	362	7	1-95	12	1-84	12	2-74	14	4-22	12	2-86	14	5-61
Bentley	169	17	2-59	19	1-55	16	3-25	12	3-29	11	2-81	19	6-97
Spencers	...	10	2-50	10	2-10	15	2-12	8	1-61	6	1-00	9	3-17
Hope	...	10	2-10	7	1-24	11	2-13	11	3-01	11	3-29	16	4-95
Isleworth (Hastings)	...	13	1-93	12	.60	15	1-44	15	1-66	12	1-54	17	3-55
Pilgrim Place	...	15	2-62	8	2-03	11	2-91	12	3-90	7	2-69	13	5-69
Frere Pilgrim	...	14	2-34	14	1-68	16	3-12	11	4-32	9	3-00	14	7-11
Graeme Hall	...	16	1-38	14	.67	16	1-46	13	1-75	12	3-01	16	3-17
Yorkshire	...	19	2-55	15	1-93	12	2-06	9	3-00	7	2-12	13	6-74
		244	41-86	234	29-05	259	42-28	209	54-86	191	46-61	262	98-13
		13-56	2-33	18-00	1-61	14-39	2-35	11-61	3-05	10-61	2-50	14-56	5-45

DIX II.

JANUARY TO DECEMBER 1916.

July.		August.		September.		October.		November.		December.		Total.	
Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
18	4.16	20	14.81	18	5.66	23	12.43	22	9.82	10	1.91	202	64.80
13	3.64	19	11.24	12	9.30	20	12.29	16	9.44	6	1.66	148	62.16
12	6.28	19	13.50	21	13.66	21	13.66	16	10.48	9	1.77	169	77.66
6	3.01	12	11.05	5	7.90	16	10.10	15	8.53	1	1.33	104	53.25
13	3.84	17	12.86	11	5.58	20	11.50	19	8.89	5	1.74	139	57.24
17	4.65	21	14.14	18	5.13	22	12.46	20	8.00	6	1.49	208	62.54
14	3.21	16	12.09	12	6.99	19	12.06	16	8.93	3	1.42	143	57.47
9	4.70	14	16.17	9	5.86	18	15.97	18	10.65	3	1.66	114	72.21
9	4.22	16	11.88	13	6.21	14	13.15	13	8.00	4	1.14	121	58.63
12	7.81	17	16.78	10	6.07	16	18.35	18	13.56	3	2.15	135	87.06
15	4.13	16	11.98	14	4.78	16	11.48	15	8.21	4	1.56	155	58.16
15	4.06	19	13.17	14	5.03	23	10.86	21	8.37	10	1.93	184	58.86
12	5.82	14	13.91	14	8.59	16	16.69	15	10.66	5	2.68	145	74.67
13	5.92	13	11.97	14	4.56	19	14.28	17	9.55	6	1.90	144	71.16
12	3.92	17	13.34	15	6.92	20	10.43	21	9.14	5	1.54	154	58.68
12	8.13	14	14.59	9	5.35	18	17.76	9	11.16	8	1.88	124	78.29
15	5.12	19	13.27	18	4.73	20	13.47	20	9.03	8	1.52	181	63.00
17	3.13	15	12.60	15	5.81	15	12.69	15	7.97	4	1.25	159	57.17
12	3.71	20	9.57	13	9.94	20	10.68	17	9.14	5	1.49	160	56.80
246	88.96	318	248.92	255	128.97	356	250.31	318	179.54	105	31.37	2884	1229.81
12.95	4.68	16.74	13.10	13.42	6.79	13.74	13.17	16.74	9.45	5.52	1.65	151.79	61.73
20	4.42	17	9.70	15	5.99	16	7.74	19	10.51	8	2.01	176	57.62
15	3.31	16	8.98	17	5.51	19	8.12	19	11.46	9	2.53	179	56.99
15	4.42	20	10.88	19	6.88	20	9.79	20	11.83	7	2.27	182	65.46
16	4.25	14	11.55	13	8.56	15	10.43	16	11.32	6	2.03	136	63.87
15	4.06	21	12.23	19	11.07	20	10.31	19	11.84	9	2.46	193	69.10
14	6.47	16	11.27	11	5.28	17	11.08	14	10.53	5	1.84	161	66.16
13	4.11	17	11.29	17	11.37	18	10.64	17	11.01	7	2.12	169	69.27
11	5.65	18	13.55	14	9.09	23	9.65	19	12.35	9	2.54	175	73.78
14	4.08	15	8.03	15	9.13	16	9.21	16	11.65	7	2.17	165	69.42
14	5.04	19	12.04	17	7.18	22	12.09	16	10.01	9	2.35	168	67.93
15	4.70	22	11.56	17	6.14	20	8.15	17	9.92	11	2.40	196	63.33
8	1.65	9	8.52	10	6.31	14	6.85	13	11.42	5	2.94	117	50.19
11	4.04	17	12.18	13	6.94	19	10.61	17	9.26	6	1.94	149	61.69
15	3.35	20	8.04	16	8.43	20	6.96	15	8.59	6	1.61	176	47.70
18	4.76	16	10.03	12	8.97	16	9.28	13	12.18	11	2.73	152	67.79
13	5.36	20	12.68	14	6.85	18	12.11	19	10.59	7	2.42	169	71.58
15	4.65	21	9.23	19	9.16	21	9.02	13	9.85	8	1.68	184	55.03
9	4.15	15	10.76	16	8.12	20	9.21	20	10.50	7	1.93	163	63.07
251	78.47	318	192.52	274	140.92	334	171.25	302	194.76	137	39.97	3010	1130.68
13.94	4.36	17.39	10.70	15.22	7.83	13.56	9.51	16.78	10.82	7.61	2.22	167.22	62.82

BARBADOS RAINFALL FROM

Name of Station.	Elevation. Feet.	January.		February.		March.		April.		May.		June.	
		Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
	St. George. (a) Highlands. Ashbury ... 720 ... 18 ... 3.67 ... 20 ... 3.27 ... 19 ... 3.47 ... 12 ... 3.29 ... 14 ... 4.07 ... 17 ... 4.54 Cottage ... 720 ... 18 ... 4.49 ... 17 ... 3.24 ... 17 ... 3.23 ... 18 ... 4.05 ... 15 ... 3.70 ... 18 ... 3.27 Woodland ... 720 ... 15 ... 2.04 ... 19 ... 2.36 ... 19 ... 3.07 ... 12 ... 2.94 ... 12 ... 2.72 ... 16 ... 5.11 Ellesmere ... 720 ... 19 ... 4.07 ... 15 ... 2.84 ... 18 ... 3.40 ... 12 ... 3.06 ... 15 ... 4.35 ... 14 ... 5.39 ... 70 ... 14.27 ... 71 ... 11.71 ... 73 ... 13.17 ... 49 ... 12.94 ... 56 ... 14.84 ... 65 ... 23.31 ... 17.50 ... 3.57 ... 17.75 ... 2.93 ... 18.25 ... 3.29 ... 12.25 ... 3.49 ... 14.00 ... 3.71 ... 16.25 ... 5.83												
St. George. (b) Lowlands. Valley ... 162 ... 18 ... 3.55 ... 14 ... 1.91 ... 14 ... 2.51 ... 12 ... 3.14 ... 10 ... 2.73 ... 14 ... 6.73 Windsor ... 162 ... 15 ... 3.40 ... 10 ... 1.23 ... 14 ... 3.08 ... 13 ... 3.50 ... 10 ... 3.68 ... 11 ... 7.32 Salters ... 162 ... 15 ... 3.53 ... 11 ... 1.39 ... 14 ... 2.64 ... 12 ... 3.67 ... 10 ... 2.96 ... 14 ... 6.20 Hyde Mill ... 162 ... 16 ... 2.21 ... 17 ... 1.68 ... 18 ... 2.09 ... 15 ... 3.07 ... 15 ... 3.25 ... 15 ... 5.05 Brighton ... 162 ... 11 ... 2.80 ... 12 ... 1.52 ... 13 ... 2.31 ... 13 ... 4.07 ... 11 ... 3.61 ... 17 ... 6.80 District " B " ... 162 ... 17 ... 3.16 ... 18 ... 1.33 ... 19 ... 4.17 ... 15 ... 4.84 ... 13 ... 3.28 ... 22 ... 8.45 ... 87 ... 18.65 ... 82 ... 9.56 ... 92 ... 16.80 ... 80 ... 22.29 ... 69 ... 19.61 ... 93 ... 40.55 ... 14.50 ... 3.11 ... 13.67 ... 1.59 ... 15.33 ... 2.80 ... 13.33 ... 3.72 ... 11.50 ... 3.27 ... 15.55 ... 6.76													
III. DISTRICT " C." St. Philip. (a) Highlands. District " C " ... 505 ... 16 ... 1.86 ... 18 ... 2.34 ... 19 ... 2.03 ... 12 ... 3.18 ... 12 ... 2.73 ... 19 ... 5.14 Hill View ... 507 ... 11 ... 2.36 ... 12 ... 2.11 ... 12 ... 2.27 ... 9 ... 3.17 ... 12 ... 3.36 ... 15 ... 6.37 Mount Pleasant ... 562 ... 8 ... 1.29 ... 14 ... 1.69 ... 14 ... 2.08 ... 10 ... 3.32 ... 12 ... 3.44 ... 11 ... 3.69 ... 35 ... 5.51 ... 44 ... 6.14 ... 45 ... 6.38 ... 31 ... 9.67 ... 36 ... 9.53 ... 45 ... 15.20 ... 11.67 ... 1.84 ... 14.67 ... 2.05 ... 15.00 ... 2.13 ... 10.33 ... 3.22 ... 12.00 ... 3.18 ... 15.00 ... 5.07													
St. Philip. (b) Lowlands. Three Houses ... 135 ... 10 ... 1.69 ... 16 ... 2.13 ... 17 ... 2.30 ... 13 ... 3.57 ... 9 ... 3.42 ... 17 ... 4.22 Fortescue ... 150 ... 5 ... .95 ... 7 ... 1.25 ... 7 ... 1.70 ... 6 ... 2.26 ... 9 ... 3.03 ... 8 ... 3.78 Bushy Park ... 161 ... 10 ... 2.34 ... 12 ... 2.00 ... 14 ... 2.71 ... 8 ... 2.86 ... 7 ... 2.35 ... 13 ... 5.55 Oughterson ... 291 ... 9 ... 1.65 ... 13 ... 2.12 ... 16 ... 2.32 ... 12 ... 3.21 ... 10 ... 2.18 ... 12 ... 5.40 Government Industrial School ... 210 ... 16 ... 2.43 ... 17 ... 1.82 ... 18 ... 2.29 ... 14 ... 2.81 ... 17 ... 3.15 ... 21 ... 6.10 Sunbury ... 210 ... 11 ... 1.95 ... 12 ... 1.28 ... 10 ... 1.73 ... 8 ... 2.17 ... 7 ... 3.07 ... 13 ... 5.42 Hampton ... 103 ... 8 ... 1.79 ... 7 ... 1.33 ... 11 ... 1.94 ... 8 ... 2.54 ... 7 ... 2.46 ... 12 ... 5.61 Carcington ... 110 ... 10 ... 2.78 ... 14 ... 1.68 ... 13 ... 3.28 ... 10 ... 3.41 ... 10 ... 3.29 ... 15 ... 6.76 Chapel ... 228 ... 14 ... 2.13 ... 16 ... 1.91 ... 16 ... 1.95 ... 11 ... 2.79 ... 15 ... 3.89 ... 18 ... 5.91 Edgcombe ... 207 ... 12 ... 2.43 ... 7 ... .97 ... 10 ... 2.61 ... 7 ... 3.25 ... 9 ... 2.71 ... 14 ... 6.12 Summervale ... 210 ... 17 ... 2.37 ... 18 ... 2.07 ... 21 ... 2.17 ... 13 ... 3.00 ... 14 ... 2.60 ... 22 ... 5.30 Stirling ... 210 ... 10 ... 2.54 ... 15 ... 1.81 ... 14 ... 1.74 ... 14 ... 3.37 ... 9 ... 1.88 ... 16 ... 5.73 Palmers ... 210 ... 7 ... 1.14 ... 15 ... 1.26 ... 16 ... 2.68 ... 10 ... 2.39 ... 10 ... 3.39 ... 8 ... 3.14 Rayleys ... 125 ... 9 ... 1.70 ... 10 ... 1.66 ... 10 ... 1.83 ... 8 ... 3.08 ... 8 ... 2.63 ... 10 ... 3.61 Ruby ... 125 ... 14 ... 2.91 ... 19 ... 2.07 ... 19 ... 1.97 ... 11 ... 3.09 ... 13 ... 3.51 ... 18 ... 5.70 ... 162 ... 30.80 ... 198 ... 25.36 ... 212 ... 33.22 ... 153 ... 43.80 ... 154 ... 43.56 ... 217 ... 78.38 ... 10.80 ... 2.05 ... 13.20 ... 1.69 ... 14.13 ... 2.21 ... 10.20 ... 2.92 ... 10.27 ... 2.90 ... 14.46 ... 5.23													

JANUARY TO DECEMBER 1916.

July.		August.		September.		October.		November.		December.		Total.	
Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
13	3-04	19	11-97	18	8-58	21	16-18	17	14-47	4	4-01	192	85-56
22	6-55	23	13-58	21	7-38	25	14-49	24	14-69	14	4-30	227	87-97
13	4-74	16	9-84	17	6-90	20	10-47	19	13-83	5	2-45	183	66-47
12	6-45	21	10-78	18	7-67	18	11-19	19	15-08	5	2-92	186	77-80
00	25-78	79	46-17	74	30-53	84	52-33	79	58-07	28	13-68	788	317-80
15-00	6-45	19-75	11-54	18-50	7-63	21-00	13-08	19-75	14-52	7-00	3-42	179-00	79-45
11	6-46	17	14-54	11	4-58	17	13-47	18	9-97	5	2-16	156	71-75
11	5-16	17	12-59	13	6-50	14	9-93	14	9-86	5	2-31	147	68-56
17	6-03	22	14-49	12	4-64	21	14-16	18	10-41	4	1-96	170	72-08
17	3-12	22	10-32	19	5-63	23	9-63	22	9-15	8	1-91	207	57-26
12	5-61	15	11-66	13	6-08	17	10-66	14	10-24	4	2-12	152	67-48
19	6-90	21	14-80	16	6-13	25	13-47	20	10-76	8	2-31	213	80-40
87	33-28	114	78-40	84	33-61	117	71-32	106	60-39	34	18-07	1045	417-53
14-50	5-55	19-00	13-07	14-00	5-60	19-50	11-39	17-67	10-07	5-67	2-18	174-17	69-59
11	3-36	21	8-87	17	5-98	22	9-60	22	12-57	11	2-33	200	59-99
12	4-32	14	10-40	14	5-84	21	10-93	19	11-76	8	2-65	159	65-51
14	3-67	19	9-23	13	6-94	18	10-21	15	14-14	5	2-38	153	62-03
37	11-35	54	28-50	44	18-76	61	30-74	56	33-47	24	7-36	512	187-61
12-33	3-78	18-00	9-50	14-67	6-25	20-33	10-25	18-67	12-82	8-00	2-45	170-67	62-54
16	4-19	20	10-36	12	7-54	21	9-84	21	14-93	8	2-13	180	66-37
8	3-39	12	7-68	11	6-27	11	6-50	14	11-65	4	2-12	102	50-58
10	3-60	17	10-39	12	5-04	15	7-96	14	9-51	6	2-36	138	56-07
8	3-62	18	9-54	15	5-81	17	9-13	17	11-96	7	1-98	154	58-92
18	3-73	25	11-88	17	5-33	21	9-27	21	11-24	11	2-67	216	62-72
10	3-42	18	9-84	13	3-68	18	8-85	12	8-29	5	2-05	137	51-75
11	3-76	18	12-36	14	5-40	15	8-54	14	10-55	7	2-66	132	58-94
14	5-18	20	11-57	11	5-07	15	9-67	15	10-24	8	2-67	155	65-60
14	3-92	20	11-27	18	4-88	19	10-10	17	10-79	11	2-14	189	61-68
11	4-68	18	11-34	14	5-81	18	8-25	17	10-10	7	2-21	144	60-48
22	3-73	23	10-01	19	5-76	25	11-13	23	12-10	13	2-19	230	62-43
15	3-38	21	10-60	17	4-74	18	7-85	17	8-59	9	1-94	175	54-17
9	2-92	18	8-03	14	6-10	17	8-08	17	12-14	6	2-11	147	53-38
7	3-00	16	9-87	12	6-18	12	8-30	14	11-26	4	2-12	120	55-27
13	3-43	17	9-56	14	3-75	16	7-23	14	8-97	5	2-37	173	54-56
186	55-95	231	154-30	213	81-36	258	130-70	247	162-32	111	33-11	2392	873-52
12-40	3-73	12-07	10-29	14-53	5-42	17-20	8-71	16-47	10-82	7-40	2-25	159-47	58-23

BARBADOS RAINFALL FROM

Name of Station.	Elevation. Feet.	January.		February.		March.		April.		May.		June.	
		Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
	St. John. <i>(a) Highlands.</i>												
Society	570	7	1.81	18	2.74	18	2.91	12	3.06	8	3.90	9	4.34
Cliff	584	14	2.72	16	2.58	16	3.15	13	4.19	12	3.79	16	5.23
Ashford	606	16	2.46	15	3.12	18	3.59	14	3.83	11	2.91	16	5.14
Pool	716	15	2.28	18	4.00	16	3.88	9	3.51	11	3.60	14	5.50
Henley	553	17	3.44	18	2.91	20	3.96	17	4.06	15	3.99	20	6.20
Hothersal	742	14	1.64	19	3.72	13	2.63	9	2.30	15	5.41	15	5.05
Wakefield	707	15	2.32	21	3.89	7	3.68	9	3.72	11	5.60	13	6.03
Malvern	900	17	2.98	15	3.23	10	2.60	8	3.08	11	5.21	10	5.00
Kendal	544	17	2.64	18	3.08	17	3.65	16	3.95	14	3.79	17	5.79
Claybury	750	12	3.20	14	4.54	13	4.03	9	3.72	11	5.70	13	6.29
Clifton Hall	...	7	1.27	13	2.62	12	2.93	9	2.69	12	4.42	11	4.28
Lemon Arbor	720	20	3.81	21	3.51	19	3.71	13	3.54	16	4.63	16	3.90
		171	30.66	206	39.96	179	41.72	138	42.55	147	53.04	170	62.84
		14.25	2.56	17.17	3.33	14.92	3.48	11.50	3.55	12.25	4.42	14.17	5.24
St. John. <i>(b) Lowlands.</i>													
Codrington College	...	12	2.10	17	2.77	17	3.41	13	4.23	11	3.83	15	4.61
College	...	14	2.03	16	2.90	19	3.44	14	3.26	16	3.78	11	3.57
Newcastle	288	13	1.20	18	2.03	19	2.28	15	2.78	13	3.91	21	3.77
		39	5.33	52	7.70	55	9.43	42	10.27	40	11.50	47	11.95
		13.00	1.78	17.00	2.57	13.33	3.04	14.00	3.42	13.33	3.83	15.67	3.98
IV. DISTRICT "D." St. Thomas. <i>(a) Highlands.</i>													
Mount Wilton	987	18	3.36	19	3.73	13	3.34	13	3.90	14	5.12	14	7.73
Lion Castle	900	16	3.16	22	3.40	19	3.86	16	3.77	20	4.73	19	7.08
District "D"	678	21	2.04	22	3.24	20	2.89	19	3.86	17	4.39	19	5.59
Farmers	903	15	3.06	16	2.91	16	2.89	15	4.57	12	3.86	19	7.19
Cane-field	1,024	5	2.43	13	2.53	7	2.52	11	4.52	7	4.22	13	6.33
Bloom-bury	...	15	2.97	16	3.86	11	3.14	10	3.24	11	4.78	13	5.44
Vaocluse	...	17	3.52	18	2.68	15	3.02	12	4.03	11	5.14	19	7.12
		107	21.44	126	22.35	101	21.66	96	27.89	92	32.24	116	46.42
		15.20	3.06	18.00	3.19	14.43	3.09	13.71	3.98	13.14	4.61	16.57	6.63
St. Thomas <i>(b) Lowlands.</i>													
Fisherpoed	725	16	3.20	15	4.06	16	3.73	10	3.31	10	4.51	16	6.92
Olive Branch	680	20	3.34	20	4.45	19	3.59	15	2.79	15	4.81	21	6.31
Hop-well	534	21	4.41	24	3.91	21	3.71	16	3.62	18	5.72	24	7.43
Welches	398	14	3.46	12	2.10	9	2.04	11	4.08	9	3.06	13	5.96
Bennetts	350	15	2.97	17	2.03	15	2.46	13	4.72	11	4.56	20	5.45
Basstille	...	17	2.68	22	2.09	16	2.67	19	4.33	14	4.92	21	5.67
Clifton	...	20	4.07	18	4.85	16	3.88	13	3.57	13	5.37	17	6.88
Cane Garden	360	17	3.07	17	2.01	15	2.07	13	3.02	11	3.15	21	5.60
Appelwhaites	...	15	3.08	18	3.34	14	2.85	11	2.23	15	4.83	20	6.92
		155	30.37	163	28.84	141	27.00	121	31.70	116	40.93	173	57.14
		17.22	3.37	18.11	3.20	15.67	3.00	13.44	3.52	12.89	4.55	19.22	6.35

JANUARY TO DECEMBER 1916.

July.		August.		September.		October.		November.		December.		Total.	
Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
14	5.10	14	10.15	9	6.45	13	11.29	14	15.66	4	2.87	140	71.77
12	3.50	16	10.17	16	8.49	19	13.86	17	12.51	5	2.59	172	72.78
18	5.69	20	10.29	15	7.74	20	13.49	20	15.14	3	2.74	188	76.14
11	5.47	21	11.42	15	7.70	19	13.05	20	14.00	7	3.98	179	83.49
16	4.86	21	10.62	18	8.06	25	11.83	20	15.40	7	2.99	214	78.32
13	4.93	19	11.55	16	8.30	23	16.94	17	14.79	6	3.62	176	79.38
13	8.49	19	12.16	16	8.97	24	17.33	19	16.08	8	4.28	172	92.56
14	6.94	19	11.31	15	7.05	16	17.23	16	17.75	6	3.70	157	86.10
16	4.48	20	10.21	18	7.71	22	12.44	21	15.46	7	3.67	203	75.96
13	8.43	18	12.35	13	9.21	20	16.95	13	15.81	9	4.28	168	94.60
7	4.80	17	10.40	16	6.33	13	13.82	13	12.35	12	3.27	132	69.18
14	7.68	20	10.66	19	8.42	22	15.16	22	14.41	7	3.67	269	83.10
164	70.37	224	131.33	191	91.43	230	177.50	217	179.36	73	39.56	2110	963.32
13.67	5.88	18.67	10.91	15.92	7.87	19.17	14.79	18.00	14.95	6.00	3.30	175.83	80.28
13	4.67	21	11.48	15	5.88	16	10.51	20	14.43	5	1.97	175	69.80
12	3.75	21	10.21	16	6.43	17	9.24	14	11.20	6	2.59	176	62.38
21	6.11	22	10.24	17	4.96	20	12.36	19	10.65	7	2.25	206	62.54
16	14.53	64	31.93	48	17.27	53	32.11	53	36.28	18	6.81	557	194.81
15.33	4.84	21.33	10.94	16.00	5.76	17.67	10.70	17.37	12.09	6.00	2.27	185.67	61.91
18	7.27	19	13.69	16	6.82	19	14.41	17	18.34	7	4.53	187	92.24
22	7.77	25	13.42	19	6.85	25	17.67	24	16.69	13	3.82	240	92.22
22	8.00	23	10.79	19	5.54	23	12.83	25	11.08	13	3.09	243	74.15
20	6.75	19	12.17	19	6.90	20	12.70	23	15.72	10	3.26	294	82.01
12	7.87	8	5.75	10	9.60	18	15.20	21	18.80	5	4.17	130	83.47
16	6.40	25	10.58	15	4.53	18	15.44	19	14.10	9	3.65	178	77.53
17	10.78	18	11.26	17	5.48	19	15.80	17	12.86	8	3.30	188	84.99
127	54.84	137	77.66	115	45.72	142	104.05	146	107.59	65	25.25	1370	536.61
18.11	7.76	19.57	11.09	16.43	6.53	20.29	14.86	20.86	15.37	9.29	3.61	195.71	83.80
14	8.04	15	11.82	16	7.31	16	15.11	19	14.85	4	3.69	167	85.87
17	7.33	24	11.56	23	6.45	23	16.48	22	14.54	8	3.53	227	85.18
26	9.04	25	11.74	21	6.74	22	17.67	23	15.53	12	3.79	253	93.31
11	8.25	12	12.43	12	7.77	14	12.87	11	11.16	3	2.18	131	75.30
16	12.34	16	11.91	15	6.03	16	13.57	17	12.37	6	3.15	177	81.56
19	13.09	17	14.73	15	7.24	17	15.54	16	13.11	5	3.06	198	89.13
16	8.35	25	12.14	20	7.26	16	6.91	19	15.84	8	3.78	201	82.60
19	8.21	21	11.60	21	5.82	23	16.76	20	9.74	9	2.29	206	73.34
19	7.78	20	11.92	17	6.57	18	15.55	24	14.09	7	3.42	193	82.58
157	82.43	175	109.85	160	61.19	164	129.56	171	120.37	62	25.89	1758	748.27
17.44	9.16	19.44	12.21	17.73	6.70	18.22	14.40	19.30	13.37	6.89	3.21	195.33	83.14

BARBADOS RAINFALL FROM

Name of Station.	Elevation. Feet.	January.		February.		March.		April.		May.		June.	
		Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
	St. James. (a) Highlands. Springhead ... 860 19 2.90 17 2.14 14 2.68 15 3.71 9 2.85 16 5.15 Sion Hill ... 618 15 5.13 6 2.09 6 3.03 10 4.12 5 3.45 8 5.74 Apes Hill ... 14 2.64 13 3.25 9 2.99 11 5.10 7 4.86 12 6.98 48 10.67 36 7.48 29 3.70 36 12.93 21 10.66 36 17.87 16.00 3.56 12.00 2.49 9.67 2.90 12.00 4.31 7.00 3.55 12.00 5.96												
St. James. (b) Lowlands. Blowers ... 16 2.76 19 2.67 13 3.05 14 3.12 13 3.17 17 5.19 Hole Town Police Station ... 13 2.14 20 1.68 13 2.11 16 2.06 14 2.83 16 4.04 Mount Standfast ... 10 1.74 8 1.69 7 2.19 9 1.53 4 3.70 14 4.54 Trents ... 8 2.28 14 2.07 10 2.33 7 1.99 8 2.58 14 3.80 Westmoreland ... 16 2.45 13 2.48 11 3.09 10 2.33 6 3.43 15 4.50 Lancaster ... 413 17 3.72 23 3.68 17 3.67 14 3.19 15 4.06 19 6.48 Muflineux ... 9 2.07 13 2.03 9 1.87 13 3.00 8 3.72 12 4.70 Norwood ... 9 2.20 13 1.55 7 1.82 13 4.00 10 3.68 14 5.22 Husbands ... 13 1.95 8 1.45 6 .92 10 4.29 9 2.83 12 4.21 111 21.31 131 19.30 93 21.10 106 25.51 87 30.50 133 42.63 12.83 2.87 14.56 2.14 10.33 2.34 11.78 2.83 9.67 3.39 14.78 4.74													
V. DISTRICT "E." St. Peter. (a) Highlands. Nicholas Abbey ... 824 19 4.07 15 2.58 16 2.60 13 2.62 10 2.46 16 6.43 Oxford ... 836 17 2.36 16 2.60 16 2.10 11 4.13 12 2.64 12 6.43 Orange Hill ... 8 2.70 9 1.90 10 2.45 9 3.89 9 4.82 10 4.53 Mangrove ... 15 3.90 15 2.82 12 3.32 13 3.72 8 4.19 14 6.17 Castle ... 700 15 3.04 16 2.98 13 2.44 13 3.95 10 2.82 16 6.60 Elworth ... 14 3.03 14 2.59 12 2.64 13 3.86 7 3.17 15 6.04 Rock Hall ... 16 4.26 14 2.63 12 3.46 13 4.72 11 3.78 11 5.43 Mount Brevitor ... 431 7 3.30 5 1.05 6 1.30 7 3.60 4 2.90 2 3.00 Portland ... 17 3.61 15 2.73 13 2.82 12 4.37 11 2.87 17 7.14 128 30.57 119 21.88 110 23.13 104 34.83 82 29.73 114 52.92 14.22 3.40 13.22 2.43 12.22 2.57 11.56 3.87 9.11 3.30 12.67 5.88													
St. Peter. (b) Lowlands. Bakers ... 380 8 3.81 9 2.42 7 3.19 6 2.26 8 4.67 10 5.27 District "E" ... 20 4.00 18 2.05 15 2.96 16 2.58 16 4.71 17 4.17 Ashton Hall ... 10 3.48 6 1.78 7 2.62 9 2.66 5 3.44 7 4.62 Heywoods ... 50 12 3.14 11 1.62 14 2.35 11 1.06 6 3.77 12 3.86 Alleyne Dale ... 19 3.01 24 2.60 22 2.93 17 2.32 11 3.25 18 6.33 The Farm ... 16 3.73 11 1.61 12 2.31 12 2.20 12 5.99 17 5.63 The Rectory ... 16 3.53 11 2.12 17 2.97 15 2.17 17 5.39 13 4.90 101 24.70 90 14.20 91 19.83 86 16.15 78 30.22 94 34.73 14.43 3.53 12.86 2.03 13.43 2.83 12.29 2.31 11.14 4.33 13.43 4.97													

JANUARY TO DECEMBER 1916.

July.		August.		September.		October.		November.		December.		Total.	
Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
18	5.82	20	9.19	18	5.98	17	10.86	21	11.11	8	1.87	192	63.76
11	5.08	10	11.07	11	6.70	9	14.04	21	19.63	8	1.94	120	82.02
10	6.64	9	12.69	18	7.12	19	14.54	21	16.25	8	2.51	151	85.07
39	17.04	39	32.95	47	19.80	45	39.44	63	46.99	24	6.32	463	230.85
18.00	5.68	18.00	10.98	15.67	6.60	15.00	13.15	21.00	15.66	8.00	2.11	154.33	76.95
17	6.91	20	11.92	16	5.93	21	12.61	21	11.85	8	3.48	195	72.66
18	6.88	20	10.54	21	8.01	19	11.40	21	9.50	9	3.03	200	65.22
12	4.04	13	7.99	14	5.83	13	9.85	17	8.31	5	1.68	126	53.09
12	3.34	18	10.42	12	6.07	19	11.53	18	9.11	7	2.61	147	60.18
15	4.46	16	9.98	12	6.80	14	9.93	16	10.57	5	1.87	149	60.89
17	6.58	23	12.70	22	6.77	23	13.55	21	13.61	10	3.18	221	81.14
14	9.97	15	12.24	12	6.30	15	13.07	15	11.65	5	3.08	140	73.70
15	12.07	16	10.68	14	5.93	14	13.71	15	10.73	7	2.42	147	74.06
8	5.00	13	10.59	12	7.12	16	12.22	13	8.89	6	2.17	126	61.14
128	61.25	154	97.06	135	58.31	154	107.87	157	94.22	62	23.02	1451	602.08
14.31	6.61	17.11	10.78	15.00	6.48	17.11	11.99	17.44	10.47	6.89	2.56	161.22	66.90
16	3.55	19	9.75	16	7.40	16	7.43	19	11.13	7	.62	182	60.69
17	4.23	20	10.62	15	9.62	22	7.39	20	11.51	6	1.09	185	65.09
11	5.21	12	10.69	14	10.77	15	11.32	17	12.24	9	1.05	133	72.07
10	5.72	16	10.58	18	7.75	15	11.19	22	13.52	6	1.46	170	74.34
17	4.54	18	10.82	14	7.27	18	6.53	21	9.34	5	.77	176	61.16
14	4.49	19	11.61	12	8.86	19	9.22	16	11.55	6	.78	161	67.24
13	5.60	17	11.39	14	8.09	19	10.53	22	13.19	7	1.32	169	74.95
7	4.85	10	10.20	10	8.35	11	7.75	8	9.95	1	.20	78	55.95
15	4.95	19	10.60	16	10.16	18	8.15	16	11.84	6	.97	175	70.21
126	42.64	150	96.16	129	78.27	153	80.01	161	104.27	53	8.26	1429	601.70
14.00	4.74	16.67	10.68	14.33	8.70	17.00	8.89	17.89	11.59	5.89	.92	158.78	66.86
13	3.96	12	9.50	13	7.01	16	10.14	16	12.61	4	1.39	122	66.33
19	4.80	20	12.10	19	9.71	23	9.71	20	12.63	13	.83	214	70.25
12	4.64	14	11.90	16	8.82	16	12.42	14	12.31	3	.64	119	69.33
11	5.23	16	12.51	18	8.81	16	9.32	17	11.84	2	.67	146	65.63
24	5.18	19	11.56	20	8.69	25	10.36	24	10.85	9	1.03	285	67.51
18	5.08	21	12.17	18	9.08	20	11.95	18	12.82	8	.76	183	72.43
16	4.56	22	11.77	18	9.21	18	10.50	19	12.98	6	.76	188	70.86
113	33.50	124	81.61	122	60.73	134	74.40	128	86.04	45	6.08	1209	482.34
16.14	4.79	17.71	11.66	17.43	8.68	19.14	10.63	18.29	12.29	6.43	.87	172.71	68.91

BARBADOS RAINFALL FROM

Name of Station.	Elevation.	January.		February.		March.		April.		May.		June.	
		Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
	Feet.												
St. Lucy.													
<i>Lowlands.</i>													
Pickerings	71	10	2.97	13	1.91	19	1.36	9	1.35	7	2.11	14	5.03
Husbands	184	11	2.68	9	1.91	10	1.49	11	1.38	8	2.80	15	5.64
Collyns	404	11	2.02	12	2.38	11	2.07	15	2.96	11	2.73	13	5.03
Friendship	...	7	1.49	10	1.94	8	1.27	6	.58	5	2.72	13	4.11
Cove	...	8	1.65	9	1.80	8	1.11	9	1.93	7	1.68	13	2.93
Cluffs	...	4	3.27	8	2.36	7	.93	8	1.38	5	3.78	11	4.29
		60	14.08	61	12.30	63	8.23	58	9.58	43	15.82	79	27.03
		10.00	2.45	10.17	2.05	10.50	1.37	9.67	1.60	7.17	2.64	13.17	4.51
VI. DISTRICT "F."													
St. Joseph.													
<i>(a) Highlands.</i>													
Blackmans	910	19	2.39	19	3.41	15	3.44	14	2.72	14	6.21	18	6.50
Lammings	1,040	15	3.51	18	4.38	17	3.66	14	3.81	16	7.22	15	6.61
District "F"	966	14	2.09	16	1.67	13	1.67	14	2.26	15	3.25	18	4.50
Bissex Hill	723	10	2.68	8	2.02	12	2.31	13	3.65	11	4.87	13	5.47
Retreat	...	16	2.30	17	3.25	13	2.98	10	2.29	8	6.38	15	6.45
		74	12.97	78	14.73	70	14.56	65	14.73	64	27.93	79	29.53
		14.80	2.59	15.60	2.95	14.00	2.91	13.00	2.95	12.80	5.59	15.80	5.91
St. Joseph.													
<i>(b) Lowlands.</i>													
Frizers	...	13	2.64	14	3.66	12	2.61	12	3.11	6	3.71	9	4.33
St. Andrew.													
<i>(a) Highlands.</i>													
Gregg Farm	...	8	1.85	11	2.15	7	1.82	12	3.26	7	2.79	12	6.67
Cleland	...	15	3.92	11	2.04	11	2.63	14	3.55	8	3.15	13	6.06
		23	5.77	22	4.19	18	4.45	26	6.75	15	5.94	25	12.73
		11.50	2.89	11.00	2.10	9.00	2.23	13.00	3.38	7.50	2.97	12.50	6.37
St. Andrew.													
<i>(b) Lowlands.</i>													
Bruce Vale	...	9	1.66	13	2.11	14	1.98	13	3.24	10	4.26	14	5.37
Haggatts	...	15	2.93	9	1.93	11	3.32	11	3.73	10	4.69	13	6.60
Greenland	...	12	2.00	8	1.91	6	1.80	7	2.66	7	2.17	14	6.11
Baxter's House	...	17	2.14	21	2.41	16	2.08	17	2.82	16	3.31	20	3.60
Walkers	...	13	2.42	12	1.62	11	1.70	12	2.85	9	2.66	14	5.00
		66	11.15	63	9.98	58	10.88	60	15.30	52	17.09	75	26.68
		13.20	2.23	12.60	2.00	11.60	2.18	12.00	3.06	10.40	3.42	15.00	5.34

JANUARY TO DECEMBER 1916.

July.		August.		September.		October.		November.		December.		Total.	
Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
16	4.01	20	11.39	16	7.36	19	6.87	15	8.26	3	.77	170	53.39
11	4.49	15	12.39	16	7.75	18	6.73	15	8.66	5	.78	144	57.70
13	4.69	16	11.18	13	8.87	17	7.41	16	11.38	5	.95	158	62.27
11	4.88	16	11.31	16	7.03	17	8.59	15	8.05	4	.62	128	52.62
13	3.64	18	11.27	17	6.55	14	10.40	10	7.38	5	.55	131	50.89
13	6.00	13	11.52	8	4.81	11	10.34	16	7.52	2	.51	106	56.71
77	27.71	98	70.09	86	42.37	96	50.34	87	51.25	24	4.18	832	333.58
12-83	4.62	16-33	11.68	14-33	7.06	16-00	8.39	14-50	8.54	4-00	.70	138-67	66.72
18	8.53	22	12.05	20	8.33	21	16.19	18	15.03	6	2.92	204	87.72
17	8.34	21	11.69	18	7.51	22	16.73	19	17.34	6	4.13	198	94.93
22	4.92	21	6.71	17	5.76	17	10.05	21	10.08	10	2.05	198	55.01
9	5.15	15	7.80	10	5.15	14	14.94	14	12.95	4	2.48	133	69.97
15	7.12	18	10.50	8	7.28	20	16.35	16	14.49	4	3.02	170	82.41
81	34.06	97	48.75	83	34.03	94	74.26	88	69.89	30	14.60	903	390.04
16-20	6.81	19-40	9.75	16-60	6.81	18-80	14.85	17-60	13.98	6-00	2.92	180-60	78.01
11	6.50	17	11.47	11	7.95	16	12.95	16	17.91	7	2.83	144	79.67
15	6.06	12	11.29	16	6.78	14	12.11	15	14.38	4	2.18	133	71.28
18	5.07	19	11.30	16	8.52	19	11.09	17	10.62	9	.98	170	68.93
33	11.13	31	22.59	32	15.30	33	23.20	32	25.00	13	3.16	303	140.21
16-50	5.57	15-50	11.30	16-00	7.65	16-50	11.60	16-00	12.50	6-50	1.58	151-50	70.11
10	5.54	11	8.43	12	7.83	18	12.42	14	12.40	7	2.29	145	67.53
11	6.52	13	11.06	13	5.47	14	10.41	13	8.88	6	1.94	139	67.49
19	5.92	13	10.12	11	7.69	11	9.42	9	9.11	1	.04	109	58.95
22	5.35	24	7.82	19	6.12	13	9.64	24	9.71	12	1.89	126	50.89
14	4.53	18	9.72	14	7.16	15	8.88	16	7.69	7	.80	155	55.03
67	27.87	79	47.15	69	34.27	76	50.77	76	47.79	33	6.96	774	305.89
13-40	5.57	15-80	9.43	13-80	6.85	15-20	10.15	13-20	9.56	6-60	1.39	154-80	61.18

SUMMARY OF BARBADOS RAINFALL.

Name of Station.	No. of Stations.	January.		February.		March.		April.		May.		June.	
		Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
I. DISTRICT A. St. Michael. Lowlands ...	19	12-21	2-50	10-37	1-36	11-78	2-01	10-53	2-94	9-87	2-79	13-42	4-33
II. DISTRICT B. Christ Church. Lowlands ...	18	13-56	2-33	13-00	1-61	14-39	2-35	11-61	3-05	10-61	2-50	14-56	5-45
St. George. (a) Highlands ...	4	17-50	3-57	17-75	2-93	18-25	3-29	12-25	3-49	14-00	3-71	16-25	5-83
St. George. (b) Lowlands ...	6	14-50	3-11	13-67	1-59	15-33	2-80	13-33	3-72	11-50	3-27	15-55	6-76
III. DISTRICT C. St. Philip. (a) Highlands ...	3	11-67	1-84	14-67	2-05	15-00	2-13	10-33	3-22	12-00	3-18	15-00	5-07
St. Philip. (b) Lowlands ...	15	10-80	2-05	13-20	1-69	14-13	2-21	10-20	2-92	10-27	2-90	14-46	5-23
St. John. (a) Highlands ...	12	14-25	2-56	17-17	3-33	14-92	3-48	11-50	3-55	12-25	4-42	14-17	5-24
St. John. (b) Lowlands ...	3	13-00	1-78	17-00	2-57	18-33	3-04	14-00	3-42	13-33	3-33	15-67	3-98
IV. DISTRICT D. St. Thomas. (a) Highlands ...	7	15-29	3-06	18-00	3-19	14-43	3-09	13-71	3-98	13-14	4-61	16-57	6-63
St. Thomas. (b) Lowlands ...	9	17-22	3-37	18-11	3-20	15-67	3-00	13-44	3-52	12-89	4-55	19-22	6-35
St. James. (a) Highlands ...	3	16-00	3-56	12-00	2-49	9-67	2-90	12-00	4-31	7-00	3-55	12-00	5-96
St. James. (b) Lowlands ...	9	12-33	2-37	14-56	2-14	10-33	2-34	11-78	2-33	9-67	3-39	14-78	4-74
V. DISTRICT E. St. Peter. (a) Highlands ...	9	14-22	3-40	13-22	2-43	12-22	2-57	11-56	3-87	9-11	3-30	12-67	5-88
St. Peter. (b) Lowlands ...	7	14-43	3-53	12-86	2-03	13-43	2-33	12-29	2-31	11-14	4-33	13-43	4-97
St. Lucy Lowlands ...	6	10-00	2-45	10-17	2-05	10-50	1-27	9-67	1-60	7-17	2-64	13-17	4-51
VI. DISTRICT F. St. Joseph. (a) Highlands ...	5	14-80	2-59	15-60	2-95	14-00	2-91	13-00	2-95	12-80	5-59	15-80	5-91
St. Joseph. (b) Lowlands ...	1	13-00	2-64	14-00	3-66	12-00	2-61	12-00	3-11	6-00	3-71	9-00	4-33
St. Andrew. (a) Highlands ...	2	11-50	2-89	11-00	2-10	9-00	2-23	13-00	3-38	7-50	2-97	12-50	6-37
St. Andrew. (b) Lowlands ...	5	13-20	2-23	12-60	2-00	11-60	2-18	12-00	3-06	10-40	3-42	15-00	5-34
	143	259-48	51-83	268-95	45-37	254-98	49-34	228-20	61-23	200-15	68-75	273-22	102-83
	...	13-66	2-73	14-16	2-39	13-42	2-60	12-91	3-22	10-53	3-62	14-38	5-41

FROM JANUARY TO DECEMBER 1916.

July.		August.		September.		October.		November.		December.		Totals.	
Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.
12-95	4-68	16-74	13-10	18-42	6-79	18-74	13-17	16-74	9-45	5-52	1-65	151-79	61-73
13-94	4-36	17-89	10-70	15-22	7-83	18-56	9-51	16-78	10-82	7-61	2-22	167-22	62-82
15-00	6-45	19-75	11-54	18-50	7-03	21-00	13-08	19-75	14-52	7-00	3-42	197-00	79-45
14-50	5-55	19-00	13-07	14-00	5-60	19-50	11-89	17-67	10-07	5-67	2-18	174-17	69-59
12-83	3-78	18-00	9-50	14-67	6-25	20-33	10-25	18-67	12-82	8-00	2-45	170-67	62-54
12-40	3-73	12-07	10-29	14-53	5-42	17-20	8-71	16-47	10-82	7-40	2-25	159-47	58-23
13-67	5-86	18-67	10-94	15-92	7-87	19-17	14-79	18-00	14-95	6-00	3-30	175-83	80-25
15-38	4-84	21-33	10-64	16-00	5-76	17-67	10-70	17-67	12-09	6-00	2-27	185-67	64-94
18-14	7-76	19-57	11-09	10-43	6-53	20-29	14-86	20-86	15-37	9-29	3-61	195-71	83-80
17-44	9-16	19-44	12-21	17-78	6-70	18-22	14-40	19-00	13-37	6-89	3-21	195-38	83-14
13-00	5-68	13-00	10-98	15-67	6-60	15-00	13-15	21-00	15-66	8-00	2-11	154-33	76-95
14-31	6-61	17-11	10-78	15-00	6-48	17-11	11-99	17-44	19-47	6-89	2-56	161-22	66-90
14-00	4-74	16-67	10-68	14-33	8-70	17-00	8-89	17-89	11-59	5-89	9-2	158-78	66-86
16-14	4-79	17-71	11-66	17-43	8-68	19-14	10-63	18-29	12-29	6-43	8-7	172-71	68-91
12-83	4-62	16-33	11-68	14-33	7-06	16-00	8-39	14-50	8-54	4-00	7-0	138-67	66-72
16-20	6-81	19-40	9-75	16-68	6-81	18-80	14-85	17-60	13-98	6-00	2-92	180-60	78-01
11-00	6-50	17-00	11-47	11-00	7-95	16-00	12-95	16-00	17-91	7-00	2-83	144-00	79-67
16-50	5-57	15-50	11-30	16-00	7-65	16-50	11-60	16-00	12-50	6-50	1-58	151-50	70-11
13-40	5-57	15-80	9-43	18-80	6-85	15-20	10-15	15-20	9-56	6-60	1-39	154-80	61-18
273-08	107-06	330-48	210-81	290-63	133-16	341-43	223-06	335-53	236-78	126-69	42-44	3189-47	1344-80
14-37	5-63	17-39	11-16	15-30	7-01	17-97	11-79	17-69	12-46	6-67	2-23	167-87	70-78