AGRICULTURAL EXPORTATION IN NEW GUINEA.

The Report to the Council of the League of Nations on the Administration of the Territory of New Guinea for the year ending 30th June, 1939, has now been published. Certain portions, which are of particular interest to planters, are reproduced in this article.

In Table I., the quantities and values of all exports during 1938-39 are presented. Copra was the largest single agricultural export and Table II. shows the countries to which it was shipped.

The commencement of the present war concludes a period in the development of this Territory which began during the Great War and it is interesting to review the agricultural exports during this period. The major exports are tabulated in Table III. In addition, a shipment of coco-nut fibre was exported last year, small quantities of galip nuts were exported during 1933-34, 1935-36 and 1936-37; in 1931-32, 1932-33 and 1933-34 some Massoia bark and Massoia bark oil were exported; in 1932-33 a little coco-nut oil and in 1923-24 small quantities of cotton and cotton seeds were among the exports.

From Table III., it is seen that the major exports have been copra and cocoa, each having been exported consistently since 1915.

Figure I. shows diagrammatically the amount of cocoa exported during the period 1915-16 to 1938-39. By drawing a smooth curve through all the points plotted, a better idea of the general trend of the exportation is obtained. It is seen that the exportation slowly decreased until 1929-30 when the amount of cocoa exported was only 58 tons. After this date, exportation rose steadily, and with increasing rate of increase, and last year, the amount of cocoa exported was 56 tons greater than the year previous and nearly double what it has been for any other year.

The general trend of copra exportation is shown by the broken-line curve in Figure II. It is only this general trend which is of value, for the annual variations in exportation are more the result of an irregular shipping service, than a sudden change in production. Figure II. cannot be easily interpreted by casual observation, but it can be readily interpreted after mathematical analysis. Let y be the exportation in tons and x the number of years since the termination of the Great War (i.e. 1918-19 = 1, 1919-20 = 2, etc.) then it can be shown that,

$$y = 5.8x^3 - 316x^2 + 7300x + 5640 \dots\dots\dots\dots\dots\dots (1)$$

and by giving x any value from 1 to 21, a value for y is obtained which gives the approximate exportation for that year.

Differentiating (1) twice we have,

$$\frac{dy}{dx} = 17.4x^2 - 632x + 7300 \dots\dots\dots\dots\dots\dots (2)$$

and

$$\frac{d^2y}{dx^2} = 34.8x - 632 \dots\dots\dots\dots\dots\dots\dots (3)$$

For any value of x, $\frac{dy}{dx}$ is equal to the slope of the curve of the corresponding point or, in other words, the rate of exportation at that point. When $\frac{d^2y}{dx^2} = 0$, that is, when $x = 18$, there is a point of inflection on the graph. This means

that the portion of the curve from 1918-19 to 1935-36 is concave downwards and the rate of increase of exportation is decreasing, while from 1935-36 to 1938-39 the curve is concave upwards and the rate of increase of exportation is increasing.

Now, if in equation (2), x is given every value from 1 to 21, 21 values of $\dfrac{dy}{dx}$ are obtained, that is, 21 values for the rate of increase of exportation, and it is seen that these figures decrease from 6685 when $x = 1$ to 1562 when $x = 18$ and increase from 1573 when $x = 19$ to 1701 when $x = 21$. From this it is seen that the decreasing rate of increase of exportation immediately after the Great War was much greater than the present increasing rate of increase of exportation.

This decreasing rate of increase in the exportation is interpreted as being the result of a decreased rate of increase in production of earlier planted properties, particularly, the large areas planted by the Germans before the Great War.

The recent increasing rate of increase in exportation is probably due to areas coming into full bearing which were planted after the taking over of expropriated properties, the yields from these properties more than compensating for the falling off of the earlier planted properties.—*R.C.H.*

TABLE I.—TOTAL EXPORTS DURING 1938-39.

Article.	Quantity.	Value.	Article.	Quantity.	Value.
	Tons.	£			£
Copra ..	73,345	727,949	Shell (marine) ..	176 tons	10,560
Desiccated coconut	1,590	69,960	Trepang ..	27 tons	2,025
Copra refuse ..	114	570	Gold ..	400,672 oz.	2,129,263
Cocoa beans ..	235	6,580	Tortoiseshell ..	89 lb.	89
Coffee beans ..	38	843	Timber (logs) ..	1,718,916 sq. ft.	6,544
Coco-nuts ..	259	1,554	Timber (sawn) ..	31,986 sq. ft.	367
Peanuts ..	7	105			
Rubber ..	54	4,050			
Coco-nut fibre ..	38	190			
Total ..	.. ..	811,801	Total ..	.. ..	2,148,848

TABLE II.—COUNTRIES TO WHICH COPRA WAS EXPORTED DURING 1938-39.

Country.	Quantity.	Value.
	Tons.	£
United Kingdom	33,921	336,666
European ports	12,167	120,757
Australia	9,068	90,000
Sweden	8,017	79,569
Germany	3,207	31,829
Spain	2,293	22,758
China	1,478	14,669
Holland	1,255	12,456
France..	624	6,193
Denmark	600	5,955
Caroline Islands	444	4,407
Japan	271	2,690

TABLE III.—MAJOR AGRICULTURAL EXPORTS FOR THE PERIOD 1915 TO 1939.

Year.	Copra.		Copra Refuse.		Desiccated Coco-nut.		Coco-nuts.		Peanuts.		Ivory Nuts.		Cocoa Beans.		Coffee Beans.		Rubber.	
	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£
1915–16	11,062	161,119	..	..	..	..	..	..	..	..	..	109	186	9,005	..	..	..	1,720
1916–17	18,582	267,277	..	..	..	..	..	..	..	..	..	93	..	8,664	..	..	..	5,304
1917–18	19,708	369,837	..	..	..	..	..	..	..	..	..	180	144	11,159	..	..	..	1,673
1918–19	14,886	244,314	..	..	..	..	..	..	..	..	..	333	112	8,464	..	..	..	1,196
1919–20	22,708	745,057	..	..	..	..	..	..	..	..	..	271	140	15,530	..	..	..	1,104
1920–21	23,735	644,045	..	..	..	..	..	..	..	..	..	531	133	9,105	..	..	29	2,900
1921–22	25,894	474,110	..	..	..	..	..	..	..	..	..	..	152	9,465	..	..	..	..
1922–23	32,648	619,715	..	..	..	..	..	..	..	..	17	336	83	3,734	..	..	..	..
1923–24	34,974	686,519	..	..	..	..	..	..	..	..	16	192	70	3,602	..	..	..	..
1924–25	39,151	815,938	..	..	..	..	..	..	..	..	27	312	135	6,949	..	..	..	..
1925–26	45,806	1,016,930	..	..	..	..	..	..	..	..	28	456	113	6,510	..	..	..	..
1926–27	47,613	849,852	..	..	..	..	..	..	..	..	9	152	65	3,500	..	..	..	..
1927–28	65,285	1,176,040	..	..	..	..	..	..	..	..	..	..	73	3,859	..	..	..	..
1928–29	60,435	933,769	..	..	26	1,456	..	..	..	..	17	153	72	3,816	..	..	..	..
1929–30	63,832	864,358	..	..	192	8,640	..	..	..	..	9	77	58	3,074	..	..	..	..
1930–31	62,303	716,543	..	..	941	37,640	..	..	..	..	8	75	64	3,200	..	..	..	..
1931–32	59,452	618,298	..	..	1,282	64,100	..	..	..	..	56	280	102	3,060	..	..	..	..
1932–33	59,040	543,906	191	1,876	1,335	73,452	81	567	..	..	17	131	65	2,292	..	..	..	..
1933–34	62,270	283,329	392	3,528	1,463	81,562	76	532	1	21	73	566	98	3,479	..	..	..	..
1934–35	56,251	361,413	1,112	5,282	1,611	45,080	107	321	25	467	24	186	95	3,479	5	450	..	..
1935–36	66,684	761,309	557	5,013	1,647	65,880	198	594	35	653	69	552	127	3,810	11	880	..	..
1936–37	76,409	1,231,309	443	4,430	1,632	86,930	71	710	15	225	59	767	132	6,600	51	4,100	..	..
1937–38	73,716	847,734	402	1,759	1,579	73,423	147	882	4	84	18	162	179	4,475	41	1,025	4	242
1938–39	73,345	727,949	114	570	1,590	69,960	259	1,554	7	105	..	..	235	6,580	38	843	54	4,050

FIGURE I

Y-axis: COCOA EXPORTATION IN TONS.

X-axis values: 15/16 16/17 17/18 18/19 19/20 20/21 21/22 22/23 23/24 24/25 25/26 26/27 27/28 28/29 29/30 30/31 31/32 32/33 33/34 34/35 35/36 36/37 37/38 38/39

X-axis label: YEAR

FIGURE II

COPRA EXPORTATION IN THOUSANDS OF TONS

YEAR