

APPENDIX—SUGARCANE CROP STATISTICS 1947-48

According to the "Special Census of Sugarcane Plantations, 1947-48—European Planters Only," 4,172,915 tons of 2,000 lbs. sugarcane were harvested from 170,532 acres. The average yield of cane per acre was therefore 24.47 tons, which is still low but appreciably better than the previous year when it was only 21.99 tons per acre. Although the rainfall for 1947 was somewhat above the average and was fairly well distributed, the yield of the two-year-old crop was adversely affected by the drought of 1946 and the two preceding years. The average yield for the years 1943 to 1947 were as follows: 30.87, 29.08, 25.70, 21.99 and 24.47 tons per acre. The yield of cane per acre for 1948 is, of course, not yet available but judging from the total amount of cane milled, 5,216,144 tons in 1948 as against 4,543,255 tons for 1947, it appears that the average yield per acre will be much better than the year now under review.

As usual the census returns do not include any data concerning the non-European planters, but from returns obtained from the Sugar Industry Central Board, they were responsible for about 8 per cent. of the total crop and one miller-cum-planter company made up 6.1 per cent. of their returns. Miller-cum-planter companies produced 38.6 per cent. of the total European crop. The contribution to the total crop is as follows:—

	per cent.
Non-Europeans (including 1 miller-cum-planter company)	8.1
European miller-cum-planter companies	35.5
European planters	56.4
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Total crop	100.0

The P.O.J. canes again gave the best average yield per acre, 35.49, followed by Co. 331 with 30.70 tons per acre, but the P.O.J. varieties are of course almost entirely confined to fertile alluvial flat conditions, most of them being grown in the Hlabisa and Lower Umfolozi areas.

In the Hlabisa district 12.2 per cent. of the area under cane on the 30th April 1948, were P.O.J. varieties and the percentage for Lower Umfolozi was 6.3, whereas the average for the industry was only 1.6 per cent.

Co.301, with 27.78 tons per acre, again outyielded Co.281, which averaged 22.68 tons per acre. Only in the Lower Umfolozi and Piet Retief districts was Co.281 better on the average than Co.301. The difference in favour of Co.301 was particularly marked in the area south of the Tugela. N:Co.310, which is this year for the first time reported as a separate variety, averaged 29.73 tons per acre, but only 15 acres of this variety were harvested and the

yield is therefore not necessarily a true reflection of this variety. It must be pointed out that a comparison between varieties can only be approximate for not only are some varieties planted on selected areas, but the newest released varieties are necessarily favoured in such a comparison because the older and lower yielding ratoons are non-existent in their case.

An examination of the varieties of cane grown on the 30th of April, 1948, shows 61.9 per cent. of the plant cane on the North Coast was Co.301 and only 26.2 per cent. Co.281, but north of the Tugela Co.281 still formed 66.8 per cent. of the plant cane and Co. 301 as yet only 19.6 per cent. On the South Coast there was not much difference between the percentages of plant cane of Co.281 and Co.301, but in the Port Shepstone area 96.4 per cent. of all plant cane was still Co.281. The following table gives the percentages of the various varieties as plant cane in the different areas on 30th April, 1948 —

Variety.	South Coast.	North Coast.	Zululand including Piet Retief	Total for Union.
Uba... ..	0.1	0.2	0.0	0.1
Co.281	47.7	26.2	66.8	47.3
Co.290	0.2	0.7	0.9	0.7
Co.301	46.7	61.9	19.1	41.1
Co.331	4.4	6.6	7.3	6.5
N:Co.310	0.8	4.3	1.9	2.7
P.O.J.'s	0.1	0.1	3.4	1.5
Other varieties	0.1	0.1	0.0	0.0

Hardly any Uba is now being planted and only in the Inanda district does it form as high a percentage as 0.4 per cent. Very little Co.290 is being planted either, but in Eshowe district it forms 3.0 per cent. of all plant cane. Eshowe also has the highest proportion of Co.331 in plant cane, 12.7 per cent. Inanda with 6.0 per cent. of plant cane leads in the percentage of N:Co.310, followed by Lower Tugela with 3.6 per cent. In the Hlabisa district 13.9 per cent. of plant cane is P.O.J. and in Lower Umfolozi the percentage is 3.6.

Except for the Piet Retief area, which only sent in one return, Inanda is again leading with a yield of cane per acre, averaging 30.42 tons per acre, and Lower Umfolozi is second with 27.39 tons per acre. The yields in tons per acre have improved in every district except Piet Retief compared with the previous season. The South Coast still had the lowest yield per acre of the three main areas, and the North Coast the highest.

YIELD IN TONS CANE PER ACRE.

	1945	1946	1947
South Coast	19.59	18.01	20.12
North Coast. ...	28.57	24.23	26.72
North of Tugela	26.30	22.15	24.54

On the South Coast cane is still allowed to ratoon longer than in the rest of the industry and this is particularly noticeable if the returns of the South Coast are compared with those of the North Coast. For the year under review 6.1 per cent. of the area cut was cane older than third ratoons on the North Coast, but on the South Coast the percentage is 18.0. The average age of the cane ploughed out is 7.62 years on the South Coast, 7.04 years on the North Coast and 7.38 years for the whole industry.

During the year ending 30th April, 1948, there were 9,821 acres of virgin land planted to cane, with a further 81,328 acres of suitable virgin land still not planted up in the 726 returns in the census covering a total area of 749,896 acres of which 355,890 acres were under cane on 30th April, 1948.

Experiment Station,
South African Sugar Association,
Mount Edgecombe.
March, 1949.

During the year 65,660 acres of old cane were ploughed out and 24,724 acres replanted again so that 62.3 per cent. of the area ploughed out was given a long fallow. At Port Shepstone 95.1 per cent. of cane lands ploughed out were given a long fallow.

As usual Lower Tugela is the district with the biggest total production of cane, having produced this year 1,195,584 tons, or 28.7 per cent. of the total crop. Lower Tugela is followed by Inanda with 17.1 per cent. and Lower Umfolozi with 16.2 per cent. of the total crop. The South Coast was responsible for 18.3 per cent. of the total crop, the North Coast for 45.8 per cent. and Zululand for 35.9 per cent.

AREA OF CANE HARVESTED AND YIELDS FOR DIFFERENT VARIETIES AND RATOONS.

(EUROPEAN PLANTERS ONLY) 1947—48.

COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.

VARIETY.	PLANT CANE		FIRST RATOON		SECOND RATOON		THIRD RATOON		FOURTH RATOON		OTHER RATOONS		TOTAL	
	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.
Uba	86	13.21	84	23.52	50	26.42	70	17.70	252	16.01	851	12.73	1,393	14.74
Co.281	24,194	26.16	24,350	23.95	31,646	21.75	17,625	19.73	8,269	19.43	5,358	21.42	111,442	22.68
Co.290	310	28.35	409	23.41	210	19.60	549	17.26	572	20.03	688	24.70	2,738	22.06
Co.301	18,727	31.98	13,927	26.95	10,491	23.90	3,962	22.02	1,166	23.23	370	32.82	48,643	27.78
Co.331	1,479	31.71	673	29.12	97	25.52	69	32.54	9	13.00	5	51.80	2,332	30.70
NiCo.310	15	29.73	—	—	—	—	—	—	—	—	—	—	15	29.73
P.O.J.2725 and 2878 .	675	53.44	292	33.46	491	28.58	375	24.40	392	33.46	1,728	33.64	3,953	35.49
Other Varieties	4	40.00	7	38.71	5	30.00	—	—	—	—	—	—	16	36.31
Total	45,490	29.14	39,742	25.15	42,990	22.35	22,650	20.18	10,660	20.31	9,000	23.68	170,532	24.47

AREA OF CANE HARVESTED AND YIELDS BY DISTRICTS (EUROPEAN PLANTERS ONLY) 1947—48.

COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.

DISTRICTS.	UBA.		Co.281.		Co.290.		Co.301.		Co.331.		N:Co.310		P.O.J.2725 and 2878.	
	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.	Acres.	Tons/ acre.
PORT SHEPSTONE	—	—	3,382	22.84	20	8.70	73	19.07	—	—	1	20.00	3	17.00
UMZINTO	609	11.94	18,967	18.22	706	16.45	6,276	24.98	346	26.91	—	—	135	16.15
DURBAN AND PINETOWN	3	11.33	5,081	18.77	50	33.26	2,323	23.97	20	17.45	—	—	—	—
Total South of Umgeni River ...	612	11.93	27,430	18.89	776	17.33	8,672	24.66	366	26.39	1	20.00	138	16.17
INANDA	541	17.02	13,290	28.87	56	23.07	9,149	33.12	404	38.70	2	42.00	14	35.43
LOWER TUGELA	111	13.95	23,723	22.31	854	20.28	22,626	27.64	582	28.83	12	28.50	98	49.67
Total for North Coast between Umgeni and Tugela Rivers...	652	16.50	37,013	24.67	910	20.45	31,775	29.22	986	32.87	14	30.43	112	47.89
Total for Natal South of the Tugela	1,264	14.29	64,443	22.21	1,686	19.01	40,447	28.24	1,352	31.12	15	29.73	250	30.38
MTUNZINI	48	20.33	15,864	21.03	270	34.23	2,935	25.26	276	28.01	—	—	133	30.38
ESHOWE	—	—	8,392	20.07	177	26.14	1,423	24.29	328	29.73	—	—	261	32.53
LOWER UMFOLOZI	69	19.22	18,563	26.84	228	24.29	3,379	25.64	249	30.82	—	—	2,144	35.13
HLABISA	12	14.42	4,008	22.25	377	23.72	304	25.85	50	27.30	—	—	1,074	38.96
PIET RETIEF	—	—	172	40.59	—	—	155	38.26	77	38.99	—	—	91	32.67
Total North of the Tugela	129	19.19	46,999	23.33	1,052	26.95	8,196	25.51	980	30.12	—	—	3,703	35.83
TOTAL FOR UNION	1,393	14.74	111,442	22.68	2,738	22.06	48,643	27.78	2,332	30.70	15	29.73	3,953	35.49

YIELDS OF CANE HARVESTED BY DISTRICTS (EUROPEAN PLANTERS ONLY).

COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.

DISTRICT.	PER CENT. OF TOTAL TONNAGE.												
	1935.	1936.	1937.	1938.	1939.	1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.
PORT SHEPSTONE	1.7	1.5	1.8	1.8	1.8	1.7	1.2	2.0	2.0	1.6	1.3	1.8	1.9
UMZINTO	15.6	14.8	17.0	15.7	15.4	15.3	12.7	13.7	14.1	14.9	12.6	13.9	12.8
DURBAN AND PINETOWN	3.9	3.9	3.0	4.4	4.4	4.0	4.7	4.5	4.0	3.4	3.2	3.9	3.7
Total South of Umgeni River..	21.2	20.2	21.8	21.9	21.6	21.0	18.6	20.1	20.1	19.9	17.2	19.6	18.3
INANDA	19.0	16.5	15.1	16.2	16.7	17.0	17.4	18.2	16.8	16.8	17.6	16.4	17.1
LOWER TUGELA	29.2	31.1	27.9	26.5	26.5	27.1	25.6	26.3	27.5	26.7	27.2	27.9	28.7
Total for North Coast between Umgeni and Tugela Rivers ..	48.3	47.6	43.0	42.7	43.2	44.1	43.0	44.4	44.3	43.5	44.8	44.3	45.8
Total for Natal South of the Tugela	69.5	67.8	64.8	64.6	64.8	65.1	61.6	64.6	64.4	63.4	62.0	63.9	64.1
MTUNZINI	11.4	10.9	10.7	10.9	10.9	10.6	11.8	10.7	11.0	11.4	11.1	9.6	10.3
ESHOWE	3.6	3.2	3.7	4.6	5.0	5.0	6.0	5.7	5.5	6.0	5.6	5.7	5.4
LOWER UMFOLOZI	14.1	16.2	17.5	16.6	16.0	16.0	16.7	15.4	15.6	15.7	17.7	16.6	16.2
HLABISA	1.4	1.9	3.3	3.3	3.2	3.3	3.8	3.6	3.5	3.5	3.7	3.9	3.6
PIET RETIEF	—	—	—	—	—	—	—	—	—	—	—	0.3	0.5
Total North of the Tugela	30.5	32.2	35.2	35.4	35.1	34.9	38.4	35.4	35.6	36.6	38.0	36.1	35.9
GRAND TOTAL FOR UNION	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

YIELDS OF CANE HARVESTED BY DISTRICTS (EUROPEAN PLANTERS ONLY).

COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.

DISTRICT.	TONS CANE PER ACRE.												
	1935.	1936.	1937.	1938.	1939.	1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.
PORT SHEPSTONE..	14.78	13.51	21.53	29.33	26.52	18.15	13.73	23.08	31.32	22.95	19.18	19.26	22.68
UMZINTO	18.20	18.22	22.41	23.50	25.94	23.02	16.47	20.20	24.68	24.18	19.51	17.59	19.70
DURBAN AND PINETOWN	20.27	19.77	20.42	27.65	31.76	24.74	20.28	25.63	24.01	24.16	20.11	19.05	20.47
Total South of Umgeni River	18.21	18.02	22.04	24.65	27.00	22.83	17.05	21.48	25.07	24.07	19.59	18.01	20.12
Ratio to 1926 (= 100)..	98.75	97.72	119.52	133.68	146.42	123.81	92.46	116.49	135.95	130.53	106.24	97.67	109.11
INANDA	26.76	25.95	26.19	31.27	36.57	33.24	28.20	32.94	40.45	37.51	32.32	27.20	30.42
LOWER TUGELA	20.83	22.61	22.90	25.19	29.51	27.35	21.30	24.42	31.10	29.49	26.58	22.77	24.90
Total for North Coast between Umgeni and Tugela Rivers	22.83	23.67	23.96	27.19	31.89	29.35	23.64	27.31	34.09	32.14	28.57	24.23	26.72
Ratio to 1926 (= 100)..	122.68	127.19	128.75	146.10	171.36	157.71	127.03	146.75	183.18	172.70	153.52	130.20	143.58
Total for Natal South of the Tugela	21.19	21.65	23.27	26.27	30.07	26.87	21.18	25.18	30.64	29.08	25.35	21.90	24.43
Ratio to 1926 (= 100)..	114.23	116.71	125.44	141.62	162.10	144.85	114.18	135.74	165.18	156.77	136.66	118.06	131.70
MTUNZINI	18.75	18.85	20.97	24.67	27.86	27.06	22.67	24.96	30.71	27.19	23.73	18.02	22.01
ESHOWE	17.64	17.26	20.69	28.03	29.89	26.62	23.53	25.11	27.46	27.27	22.68	20.27	21.35
LOWER UMFOLOZI	18.28	23.04	28.81	34.40	33.25	31.00	26.10	26.51	33.45	31.47	30.07	25.83	27.39
HLABISA	12.72	18.60	25.36	30.91	28.81	29.60	26.31	29.84	30.79	29.00	25.52	23.68	25.64
PIET RETIEF	—	—	—	—	—	—	—	—	—	—	—	39.16	38.15
Total North of the Tugela	18.00	20.52	24.68	29.62	30.51	28.91	24.55	26.09	31.28	29.08	26.30	22.15	24.54
Ratio to 1926 (= 100)..	75.54	86.11	103.57	124.30	128.03	121.32	103.02	109.48	131.26	122.03	110.37	92.95	102.98
GRAND TOTAL FOR UNION	20.10	21.27	23.75	27.37	30.22	27.55	22.36	25.49	30.87	29.08	25.70	21.99	24.47
Ratio to 1926 (= 100)..	98.34	104.06	116.19	133.90	147.85	134.78	109.38	124.71	151.03	142.27	125.73	107.58	119.72
Rainfall of all Districts (inches) <i>(Average from 44 centres).</i>	45.83	50.13	39.57	40.33	47.68	43.48	26.18	49.40	53.31	36.45	31.99	32.02	44.83

YIELDS OF CANE HARVESTED BY DISTRICTS (EUROPEAN PLANTERS ONLY).

COMPILED FROM UNION DEPARTMENT OF CENSUS RETURNS.

DISTRICT.	YIELD OF CANE IN TONS.										
	1937.	1938.	1939.	1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.
PORT SHEPSTONE..	75,028	74,856	89,585	81,811	43,704	84,444	97,113	79,993	57,630	67,743	78,890
UMZINTO	692,159	663,609	744,981	733,332	457,518	582,516	682,713	728,879	528,593	515,571	532,675
DURBAN AND PINETOWN	124,109	188,183	213,958	193,938	167,970	191,737	195,923	165,164	136,253	146,087	153,073
Total South of Umgeni River	891,296	926,648	1,048,524	1,009,081	669,192	858,697	975,749	974,036	722,476	729,401	764,638
Ratio to 1926 (= 100)..	199.9	207.9	235.2	226.3	150.1	192.6	218.9	218.5	162.1	163.6	171.5
INANDA	615,227	683,261	807,094	816,215	627,454	774,840	812,986	823,041	737,413	608,736	714,066
LOWER TUGELA	1,138,342	1,122,528	1,285,888	1,299,769	921,709	1,120,740	1,331,681	1,310,186	1,144,887	1,035,855	1,195,584
Total for North Coast between Umgeni and Tugela Rivers	1,753,569	1,805,789	2,092,982	2,115,984	1,549,163	1,895,580	2,144,667	2,133,227	1,882,300	1,644,591	1,909,650
Ratio to 1926 (= 100)..	211.7	218.0	252.7	255.5	187.1	228.9	259.0	257.6	227.3	198.6	230.6
Total for Natal South of the Tugela	2,644,865	2,732,437	3,141,506	3,125,065	2,218,355	2,754,277	3,120,416	3,107,263	2,604,776	2,373,992	2,674,288
Ratio to 1926 (= 100)..	207.6	214.5	246.6	245.3	174.1	216.2	244.9	243.9	204.5	186.3	209.9
MTUNZINI	435,154	462,271	525,787	507,644	426,608	457,698	533,560	556,524	465,147	358,378	429,676
ESHOWE	151,020	193,847	243,829	240,962	217,695	243,392	264,198	293,602	236,115	211,170	225,903
LOWER UMFOLOZI	713,675	703,527	777,371	765,381	601,315	655,366	758,217	769,436	741,972	618,269	674,790
HLABISA	136,249	140,794	155,775	158,176	138,416	154,945	168,982	171,555	153,689	145,062	149,372
PIET RETIEF	—	—	—	—	—	—	—	—	—	9,321	18,886
Total North of the Tugela	1,436,098	1,500,439	1,702,762	1,672,163	1,384,034	1,511,401	1,724,957	1,791,117	1,596,923	1,342,200	1,498,627
Ratio to 1926 (= 100)..	158.0	165.1	187.4	184.0	152.3	166.3	189.8	197.1	175.7	147.7	164.9
GRAND TOTAL FOR UNION	4,080,963	4,232,876	4,844,268	4,797,228	3,602,389	4,265,678	4,845,373	4,898,380	4,201,699	3,716,192	4,172,915
Ratio to 1926 (= 100)..	187.0	193.9	221.9	219.8	165.0	195.4	222.0	224.4	192.5	170.3	191.2

The PRESIDENT said that unfortunately we published no records from the other sugar producing countries, but hoped that some would be available in the future from Portuguese East Africa and West Africa, from Somaliland and from Egypt.

He pointed out that there was a serious drop in our recovery on mixed juice during what should be the optimum period of the season. He was aware, as Mr. Dymond had pointed out before, that there was often such a drop, but was under the impression that during the last few years it had been more marked. There was, of course, as Dr. Dodds had said, a corresponding fall in purity of mixed juice, but he felt this was not the only explanation, for the fall in mixed juice purity had occurred before the fall in boiling-house recovery.

Mr. FELTHAM stated that while the quantity of Uba crushed last year was small, it was delivered throughout the season at a fairly consistent rate, and its sucrose content could therefore be compared with Co.281 and Co.301. On the equal Java Ratio basis used last year in testing cane, Uba showed up very favourably against most of the other varieties, although the two predominant varieties were slightly higher in sucrose content. He would be interested to learn from engineers how Uba and Co.281 compared with Co.301 from the point of view of steaming and other factory performance.

Mr. DODDS asked Mr. Rault to comment on the fact that Natal Estates Ltd. apparently crushed nearly five times as much Uba as did the average factory.

Mr. RAULT explained that while the Natal Estates Ltd. had only one per cent. or less of their own fields bearing Uba, in the case of some of their planter-suppliers Uba comprised as much as 15 per cent. of their total deliveries. This season the Natal Estates Ltd. were trying a new experiment and about 70 per cent. of all plantings were N:Co.310.

He thought it was not right for people, when talking of cane varieties, to drop the initial letters Co., as this seemed to indicate that we were thus forgetting our debt of gratitude to India. The very fact of keeping the initials Co. in use, was some kind of memorial of that debt.

Mr. DYMOND said that, as he had often stated before, he had grown good Uba at Darnall. He had grown it now for eleven years and had it distributed to his Company's estates, and had heard wonderful reports of it.

He reminded the meeting of a paper he wrote twenty-five years ago in which he stated that the troubles of Uba were due to the mealie bug. The mealie bug caused difficulty in clarification, and he maintained that the troubles of Uba, as far as manufacturing difficulties were concerned, were due to the mealie bug.

The drop in recovery in the peak purity period he had also written about before. The figures showed that during that period we had difficulties in Natal which had not yet been explained. One major factor at the peak of the sucrose period was lack of factory capacity, and he thought that the figure, "tons of sucrose per hour entering the factory," should be shown in this report every year. In 1934 he was sent up to the Zambesi to study the effects of locusts on sugar manufacture. He found that trouble had been experienced, but after locust attack on cane the sucrose content fell and the trouble disappeared. In this country also we similarly had no trouble that year.

The production of white sugar, too, limited capacity, and might account for the drop in recovery noticed. He also believed that there were other substances in the juice which showed as sucrose, but which were not, and these occurred at that time of the year. Last year and the previous year he used the invertase method of analysis, but could not prove this point. However, he had looked for low sucrose and low purity, and thought he should have considered the high sucrose juices. When high sucrose figures occurred again he would investigate to see if they were incorrect, using the invertase method to check this point.

The PRESIDENT stated that Mr. Feltham had mentioned that during the past season for the first time a common Java Ratio had been used for all varieties, but had not expressed an opinion as to whether there should be a common Java Ratio or not. He himself, thought that N:Co.310 had a Java Ratio higher than average.

Mr. FELTHAM was in agreement with the views held by Mr. Dymond when the relative merits of Uba as compared with other varieties were debated. To label a variety purely by its name and credit it with any particular qualities was, in his opinion, wrong.

Uba had served the South African sugar industry very ably for a great number of years, and while he did not try to underrate the efforts of the Experiment Station, he felt that it would have to find a cane variety which closely resembled Uba, to withstand our conditions. Furthermore, the Experiment Station would have to find the particular environment best suited to certain varieties. The releasing of new varieties on the Experiment Station tests would not produce practical results, for the reason that environmental conditions at the Experiment Station were entirely different from those in any other locality. Although Uba was speedily dying out, he agreed with Mr. Dymond that a species of Uba should be retained and tested with other varieties in any particular area, until the best variety could be found for that area.

He again asked engineers present to pass opinions on the steaming quality of Co.281 as compared with Co.301. As far as he knew, Co.301 was a very bad steaming cane, while Co.281, with its high percentage of fibre and the tenacity of this fibre, was a more suitable cane for producing steam.

Mr. DYMOND said that as no engineer had passed an opinion on steam-raising quality, he would say that he considered that all practical men like himself knew that Co.281, from a steam-raising and milling point of view, was excellent. Co.301 was very similar to Co.290, upon which many tests were carried out in respect to steam-raising and milling qualities. These two varieties were quite different from Co.281, which was, because it had long fibres, the best milling cane that he had seen anywhere in the world.

Mr. LEWIS had found that Co.281 was a very much better steam raiser than was Co.301. When crushing Co.301 at his factory, steam pressure dropped, and it was necessary to resort to extra fuel in the form of bagasse from Co.281 or wood. He thought that nobody would send in Co.301 to be crushed in May—it was customary to wait until September. He preferred Co.281, for it had a high sucrose content.

As an engineer, however, he realised that any cane sent in hand to be crushed, and it might be necessary to investigate improvement of the milling side with regard to steam raising.

Mr. SIMPSON was of the opinion that while with the bagasse furnaces now used, Co.281 was by far the better steaming cane, we were possibly not being fair to the other cane. Further investigation into types of furnaces was needed. Co.281 happened to suit the furnace which, as far as he knew, was largely designed here, but there was a distinct possibility that, with modification or redesign of that furnace, we might find that varieties now difficult to burn, would respond when given the chance to burn under more suitable conditions.

Mr. DUCHENNE said that, as far as chemists were concerned, Uba was not considered good from the manufacturing point of view. Compared with a variety like N:Co.310 the juice purity of Uba was low, and it therefore required more chemicals in purification. At Umfolozi last season the sucrose contents of the varieties were: P.O.J., 13.43; Co.281, 12.80; N:Co.310, 14.40; Co.290, 12.72; Co.301, 13.21. and Uba, 11.08 per cent. As far as he was concerned, he did not like Uba because of its non-sugar content.

Dr. DODDS pointed out that Co.281 was an early-ripening cane, and was therefore, as Mr. Lewis said, useful early in the season. One of the complaints he had against Uba was one not often mentioned, and this was that besides being late-ripening, it also went off very early. In fact, there were only two months in the year when Uba gave a good sucrose—August and September. He thought Uba ripened more slowly than did any other variety.

Mr. DYMOND agreed that Uba was a late-ripening cane, which also lost its sucrose soon after reaching the peak. During the last year at Darnall he had conducted an all-year-round test for maturity, and he had found that while some varieties had remained high in sucrose even until April, Uba had gone off early. With the industry's present expansion programme, it was a moot point whether, from an economic point of view, it would pay to spend more capital on increasing factory capacities, or to try to develop varieties which would keep high sucrose content over a long season.

He was sceptical of the results of his maturity tests, because as canes were cut out from stools more sunlight and air were available for those that were left, and this might have affected the succeeding tests.

The PRESIDENT referred to tests at the Experiment Station, which showed that certain varieties, for example, N:Co.349, might develop a high sucrose content early. There were big differences in the maturity curves of the various varieties. As far as the effect of sunlight on sucrose content was concerned, not much investigational work had been done as yet.

Dr. DODDS endorsed Mr. Rault's remarks about South Africa's indebtedness to India for sugarcane varieties. About 97 per cent. of the cane now grown here had its origin in India, and he did not know what we in this country would have done without Indian canes. We would probably have struggled along with P.O.J.s 36, 314 and 234, finding them some improvement on Uba, but having a great deal more trouble with smut and mosaic, to which the thin type of P.O.J. canes were very susceptible. We were very fortunate in having had a generous supply of the Co. varieties to experiment with.

Mr. CARTER remarked upon the fact that those who had crushed N:Co.310 cane considered its juice to be of excellent quality. We would know more about it next year.

Mr. RAULT drew attention to the high molasses purity in the beet sugar industry, and mentioned that this molasses invariably showed a polarization figure which was not at all due to sucrose.

The PRESIDENT asked Dr. Douwes-Dekker whether in the case of raw juice, he considered there might be found a difference between results from the Jackson and Gillis polarization and those obtained by the invertase method.

Dr. DOUWES-DEKKER replied that in Java the invertase method was never used, and they were quite content with the acid inversion method of analysis. As far as he knew, raffinose had never been detected in cane juices and occurred only in beet.

He drew attention to the fact that, as far as burning qualities were concerned, the ash content of bagasse was an important factor, especially the silicates, which greatly affected the burning properties of bagasse.

Mr. FELTHAM, referring to juice purity figures, said he would be interested to know from factory men if crusher juice purity was any indication of what mixed juice purity would result, and further, if mixed juice purity was an index of the probable recovery. At a number of factories during the past season, an increase in mixed juice purity had been associated with a decrease in recovery. We knew that purity gave an indication of quantity, but not of the nature of non-sugars, and this latter was important. He would be glad to learn, therefore, if anybody had found that when mixed juice purity increased with increase in proportion of certain varieties of cane crushed, a decrease in boiling-house recovery had been experienced.

Mr. RAULT pointed out that while at one mill the drop in purity between crusher juice purity and mixed juice purity might be 1.3°, at another it might be 4.5°. This drop was affected by a number of factors, all of which we did not know. One might be the nature of the cane. However, as far as purity was concerned, he assured the meeting that Natal Estates Ltd. would be pleased to have such a high purity as that at Esperanza.

Mr. FELTHAM said that it was understandable that there would be differences shown between factories in the drop recorded between the purities of crusher juice and mixed juice, for no two milling plants were the same. He realised that the larger the number of milling units in a train, the greater would be this drop; but he was concerned with whether, in the same plant, one would get the same drop with different varieties, and whether one could expect the same recovery at the same purity with two different varieties.

Mr. RAULT said that most milling people favoured Co.281 against Co.301, but Co.301 had other advantages. In a drought year his company was able to crush more cane by having Co.301, which grew rapidly at the right time and could be cut at twelve to fourteen months old. The crop was thus increased by 3,000 tons of sugar over what it would have been had only Co.281 been available.

Dr. DODDS, commenting on Mr. Feltham's remarks, stated that sugarcane varieties undoubtedly had characteristic properties; though they might not exhibit each property normally in every individual

case, if a sufficient number of examples were taken the existence of these special properties was obvious.

Thus over the ten years ending 1935, when the crop consisted almost entirely of Uba cane, the average yield per acre was 20.06 tons, while during the ten years ending 1947, when the total proportion of Uba was only 3 per cent., the average yield of cane per acre was 26.49 tons, an increased yield of cane of over 30 per cent. and of sucrose per acre of 33 per cent. This was manifestly due to the new varieties on the whole having better yielding powers than Uba.

He heartily agreed with Mr. Feltham that Uba served the South African sugar industry very well over many years; he attributed this to certain special qualities of Uba, although Mr. Feltham appeared to imply that special qualities did not really exist in any cane. But Uba, compared with competing varieties in this country up to about 1930, was a very hardy variety, being resistant to drought and poor soil conditions and neglected cultivation, and to most sugarcane diseases. It was, however, very susceptible to streak disease, which was certainly not cured by treatment with compost or anything else, notwithstanding periodically repeated statements to this effect.

South Africa was not the only country to be growing Uba cane twenty years ago; Puerto Rico and several other progressive countries were doing so.

But no country was growing Uba on any appreciable scale now. Many new hybrid varieties have been developed within recent years, and many others will no doubt follow; and this has resulted in the old original varieties of cane being almost everywhere displaced by improved modern types, which are in no way inferior to the older canes and in most respects are greatly superior.

It was surprising to hear Mr. Feltham suggest that new varieties were released to the industry on experimental evidence from Mount Edgecombe only. On the contrary, there were 12 established collections, each of from 12 to 42 varieties under observation, and 15 full-scale variety trials of from 7 to 30 varieties compared against the most successful variety previously established locally, in existence in various representative areas. Varieties were not released until they had given overwhelming evidence of superiority in one or more extensive cane-growing areas, of which Mount Edgecombe was one, but not so different from the others as Mr. Feltham had suggested.