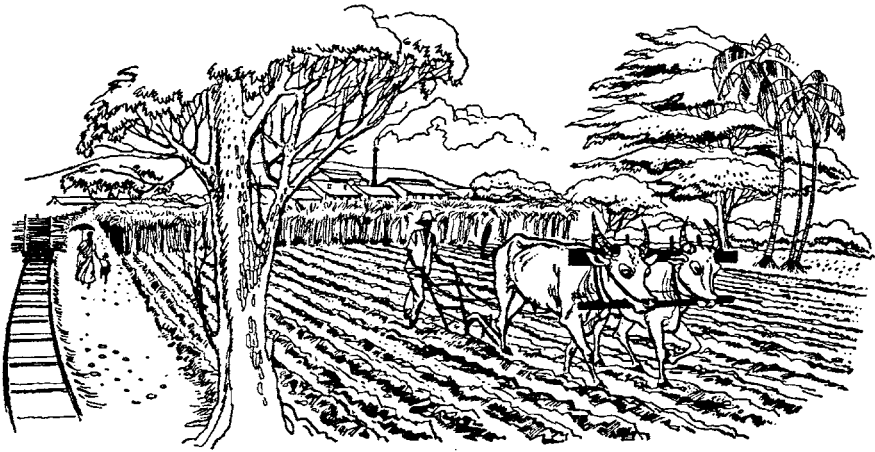




CHAPTER 4

The Sugar Industry of Fiji

A. G. LOWNDES

The Colonial Sugar Refining Company together with the growers who supply cane to its mills constitute virtually the whole of the sugar industry in Fiji. There is no refining industry and almost the entire production is exported. There is little government supervision or participation, except through the inevitable taxes. Thus the industry here is relatively simple to understand and it is possible to get an uncomplicated picture of a major activity of the company and of a raw sugar-producing industry. This may help, too, in understanding the more complex Australian situation described later.

I was commissioned by the company to write a description of the industry in Fiji, partly because most of my background and interests lie in land utilization and the economics of agriculture. I realize that the picture painted is eulogistic of the company and the farmers, but I make no apology for that; I have tried to give an impartial description without adornment.

March 1955

THE Fiji Islands are a beautiful and prosperous British Crown Colony in the South Pacific Ocean some 1,800 miles from Sydney. They comprise two main islands, Viti Levu and Vanua Levu, and over three hundred smaller islands, with all the charm of the tropics in beautiful mountains, villages set among coconut palms, and coral reefs and lagoons. The proud and lovable Fijian people, who ceded their land to the British Crown only eighty-one years ago, today number 140,000. They are now outnumbered by a large Indian population of 160,000, largely descended from indentured labourers introduced between 1880 and 1916. These Indians are the main farmers and workers in the sugar industry.

The sugar industry provides the principal economic strength of the colony, with copra and gold next in that order. Exports of sugar and molasses in the three years 1951-1953 averaged £5,351,419 f.o.b. Fijian port, considerably more than the value of all other exports combined.

The Colonial Sugar Refining Company not only operates the five sugar mills, transports all cane to the mills, markets the whole output of sugar, and ships the exportable sugar, but also plays an intimate part in the growing and harvesting of cane by individual farmers. Its achievement is quite unique for an Australian organization, for no other has played such a major role in colonial development. The company has grown with the sugar industry in Fiji since 1880; it has guided and shaped the pattern of land settlement and farming methods; it has survived the difficult times when all other mills failed; and has steadily built up assets in Fiji with a replacement value, if installed new at today's costs, of about £15,000,000.

Fiji is fortunate in having achieved "peaceful co-existence" between her diverse races—native inhabitants, Indians and Europeans. Colonial administration has been wise and far-sighted, and the company has made an important contribution to the gradual evolution of a happy social balance between people of many races and religions.

Progress has been made in the difficult matter of sharing the proceeds of the sugar industry by negotiation between farmers, employees and the company, although there has been strife, especially in the long years when sugar prices allowed none to make a reasonable return. The company was, perhaps, slow in changing its dominating attitude towards the Indians as they developed from indentured labourers to relatively prosperous farmers and mill workers. At the same time, the Indians and their leaders had a good deal to learn in acquiring experience and responsibility in the working of their associations and trade unions. Today the relations are good. Any Australian must be

THE SUGAR INDUSTRY OF FIJI

impressed with the good working basis which has been evolved for solving industrial problems by collective bargaining between the company and the Sugar Workers' Union. This has worked so well that neither side avails itself of arbitration. These are achievements of which a company and a people may well be proud.

The Environment

The two main islands are the only ones with suitable areas for growing sugar cane on a sufficient scale to supply a modern mill. These two islands have pronounced "dry" and "wet" sides. On the "wet" or south-east coasts the average rainfall exceeds 140 inches; in one cane-growing district on the Rewa River 262 inches were recorded in 1949, with 271 wet days. Heavy rainfall of this order presents drainage and cultivation problems to the farmer and is not conducive to the ripening of the cane. As a result only one mill, at Nausori near Suva, has survived on the "wet" coasts. The others are all located on the "dry" northwest coasts, which have average rainfalls of 70 to 85 inches.

There is a pronounced wet season, between November and April, when hurricanes and cyclonic storms occasionally occur, and the remaining months are relatively dry. Combined with favourable temperatures, these climatic conditions are reasonably well suited to cane-growing, although a high level of farming skill is required to cope with the occasional very dry or very wet years.

Both islands are mountainous with very restricted areas sufficiently level for agriculture. Probably less than one-third of the total areas under sugar cane would be described as first-class soils, and these better areas occur mainly in half a dozen widely separated river valleys. The remainder of the cane lands are on undulating to hilly areas, strung out along the foothills and small valleys within a few miles of the ocean.

One result is an unusually high capital and maintenance cost in railways, locomotives and rolling stock, all of which are provided by the company. It has constructed over 400 miles of permanent railways, mainly along a hilly coast fringed with mangrove swamps or ending abruptly in the ocean, and this alone was a considerable engineering achievement.

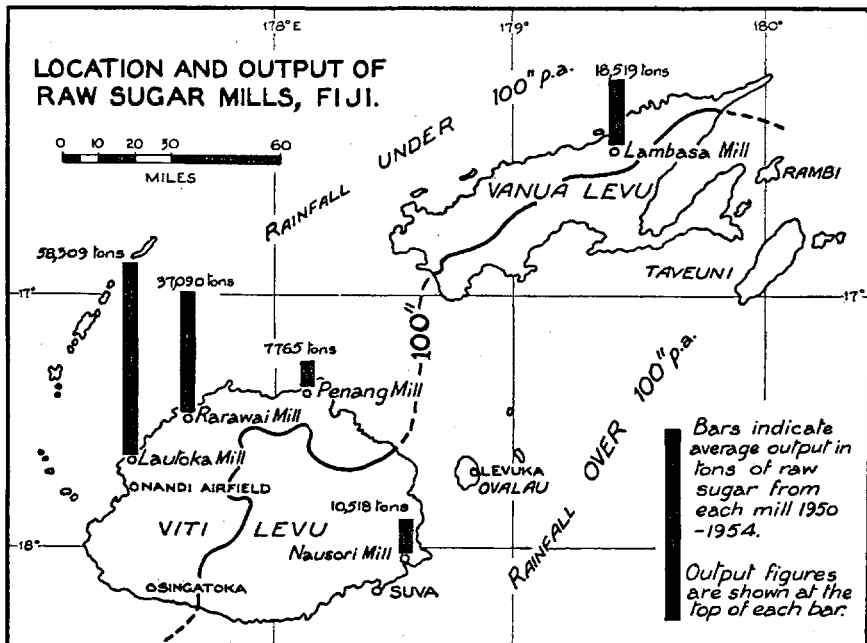
On the dry sides of the islands, where over 90 per cent of the cane land occurs, there was one advantage in that there was very little forest to clear; new areas could be brought under cultivation mainly by ploughing in the native grasses. Nevertheless, some of the cultivated

SOUTH PACIFIC ENTERPRISE

area would be regarded in many countries as too poor for the commercial production of sugar cane. The area cultivated for cane has been increased by nearly 20 per cent in the last 5 years. This extension has been achieved mainly by small farmers on hilly marginal lands. The potential appears relatively small for further extension of cane-growing areas which would be readily accessible to existing rail transport and mills but, if markets become available, production could be increased by an extension of the lorry delivery of cane to main lines. There are good prospects, too, of increasing yields per acre.

The Farmers and the Land

When planters began to grow cane in Fiji, their first problem was labour supply. The Government of the colony strongly resisted any coercion of the Fijian people and also frowned on the continuation of recruiting other Pacific Islanders for work on plantations. In spite of opposition by many planters, a solution was found by bringing indentured immigrants from India under contract to the Government of Fiji. They had to work where directed for five years, could work for another five years for whom they pleased, and were then entitled to a free passage back to India with their families.



CANE-GROWING AREAS SUPPLYING LAUTOKA AND RARAWAI MILLS—FIJI



THE SUGAR INDUSTRY OF FIJI

The first ship carrying Indians under this system arrived in 1879. The last arrived in 1916, after a total immigration of 62,837 people, of whom only one-third exercised their right to repatriation. From these people have come the great majority of the 160,000 Indians in Fiji today, and Indians cultivate about 92 per cent of the cane lands. These people have largely done away with the caste system, they have freed their women of many of the restrictions of their homeland, they are improved in health and stature, and they have attained a level of economic prosperity which probably exceeds that of any other rural group of Asian people.

The Indian Government had terminated the indenture system in 1916. When all existing indentures expired in 1920, there was a drastic shortage of labour. Many Indians had already acquired their own farms; those who were now released from indenture scattered widely and many refused further work. C.S.R. had been encouraging independent planters and, since 1906, had been leasing plantation areas to ex-officers who wished "to strike out for themselves". Some of them had become very prosperous during the period of high prices immediately after the World War but were faced with a collapse in sugar prices and were now unable to work their estates.

C.S.R. was faced with the same disastrous position on the plantations it was still working, as well as on the leased areas now reverting to it as the European planters relinquished them. Its big investment in mills would be in danger if cane supplies could not be maintained. It had, however, been making efforts for several years to find a method of working its holdings by Indians, under some form of tenancy agreement. It was able to draw on its experience in Australia where, over a period of fifty years, it had subdivided its estates in northern New South Wales and in Queensland into small farms and where many wage-earners had been settled as farmers. The experience gained in Australia was to prove vital to Fiji and the company's overall financial strength allowed it to survive difficult times in the colony.

Two schemes were tried without success before the present "Tenant System" was evolved. Under this system the company's lands were subdivided into farms of eight to fourteen acres, according to the quality of the soil, with an average area of eleven acres. Each comprised sufficient land for a man with his family to farm for sugar, to grow their vegetables and rice and to graze a cow. These farms were leased at low rentals to Indians who were assisted to establish themselves in many ways, by cash advances, loan of implements, the delivery to the farm of imported fertilizers at cost, the supply of seed cane, and technical advice—forms of assistance many of which are

continued today. Although the system was evolved by officers of the company with a wide knowledge and appreciation of field matters, there was some scepticism at high levels about the wisdom of placing so much independence and responsibility on the shoulders of people with limited experience and finance.

But the system has worked and has rightly been described by H. Martin Leake, an English authority on tropical agriculture, as "the boldest experiment in Colonial agriculture during the present century". By 1925 Indian tenants were cultivating 10 per cent of the cane lands compared with the company's 52 per cent; by 1934 Indian tenants cultivated 53 per cent compared with the company's 6 per cent and today the company cultivates less than 3 per cent. Half of the total cane land today is not C.S.R. leasehold or freehold; it is occupied by Indian and Fijian "contractors", or independent farmers, as their own freehold or on leases from the Native Lands Trust Board and other landlords.

The decision on the desirable size of a tenant's farm was based on experience of the area which could be properly worked by an Indian family. It has proved to be eminently sound. At the same time, the company has continued to exercise close control over the transfer of the leases, the way in which the land is used, and the financial position of its tenants. These things have caused some dissension but are now generally agreed to be beneficial to all parties. Early in 1955 the company concluded, after negotiations with the farmers' representatives, a new tenancy agreement which extends the tenure period to 21 years with option of renewal for a further 21 years. This consolidated the situation, which had already existed in practice, that a good farmer has continued security of tenure for himself and his family.

The policies of the company have also had a big influence on the contractors' farms. A pattern of land utilization has been established with at least four major advantages for Fiji and for the industry as a whole.

First, there is the social and economic stability which comes from the creation of a body of small, independent farmers, secure on their individual farms.

Secondly, individual farm areas are held at a sound and economic size, compared with the fragmentation of holdings which has, over the centuries, impoverished so much of Asia and would otherwise very soon develop with Indian farmers in Fiji.

Thirdly, there is supervision and a considerable degree of insistence on farming practices which will maintain and build soil fertility.

THE SUGAR INDUSTRY OF FIJI

Finally, there is some control, only partially successful though it must be, over the centuries-old tendency of many Indians to get themselves into a hopeless position with the moneylenders.

This close relation between C.S.R. and the farmers has been accompanied by the growth of many interesting social responsibilities for the company's field officers. They are all obliged to study Indian customs and traditions and to be able to converse with reasonable fluency in Hindustani, which is the *lingua franca* of the Indian community in Fiji. Field officers are frequently asked for advice on domestic and family matters, even for help in making out a "Last Will and Testament" on a form supplied by the company. Many company officers are elected by the Indians as managers of their community schools, largely because of their integrity and their impartiality in solving the problems which arise between families and groups.

All these activities, directly affecting cane production and also concerned with social conditions in the community, may be criticized at first sight as too paternalistic. But the company is essentially, in Fiji, a sugar miller; the miller must have assured and adequate supplies of cane; and these supplies are more likely in circumstances where the farmers realize that their social and economic conditions are steadily improving, with the help of the milling company to enhance their own efforts. Many C.S.R. activities, which at first appear to be well outside the field of a commercial organization, are better interpreted as examples of enlightened self-interest which have benefited all partners in the industry.

Fijians cultivated only 6,298 acres of the 108,727 acres under cane cultivation in 1954. They are not generally attracted by the demanding and constant work of cane farming. Their communal traditions are also opposed to the essence of the one-man farm—the acceptance of the labour and trials of constantly tending a crop in return for the individual's end reward in money. The clan quite frequently expects the sharing of a member's cane proceeds; even the sacrifice of his working bullock has sometimes been required for a feast given to visitors.

From the days of the first British Governor the policy has been to assist the Fijian to meet the problems of adaptation to a money economy. The company has played its part, although the return for effort expended must have been most disappointing. It conducts a training farm at Drasa, one of its main estates, solely for training Fijian youths in cane farming. There is a three year course with 80 trainees under the direction and instruction of a field officer and a Fijian supervisor

who is a "Ratu", or chief. The trainees are provided with clothing and pocket money, and deferred pay is accumulated to help them make a start on their own farms. Through Drasa have passed 358 Fijian trainees and 71 of them are now on C.S.R. farms as tenants. The company maintains close liaison with the Government's District Commissioners in selecting trainees and assisting them later.

Experiments are also being made with community cane-growing by Fijians. A few magnificent Fijians, including at least one with the status of Ratu, who was, incidentally, a successful cane farmer and ex-champion heavyweight boxer, are also employed as assistants to field superintendents, with the special task of guiding and helping their own people in cane farming.

Agricultural Methods

The "seed" cane is planted from February to May in drills or deep furrows on carefully cultivated land, so that it is well established before the dry season comes. It is fourteen to eighteen months before it is ready for harvesting as the "plant" crop. After being cut to the ground, a second growth or "ratoon" develops and provides a harvest in a further twelve months, though this ratoon crop yields less than the plant crop. Second and even third ratoon crops will grow but are not normally worth while in Fiji and the roots are usually ploughed out after the first ratoon crop is harvested. Harvesting takes place between June or July and December, a period when the cane is well grown and its sugar content is high after the cooler and drier months.

During the last few years a 33 per cent crop cycle has been generally adopted. The recommended practice is for the farm area to be divided into three parts, with one-third under plant cane, one-third under a ratoon crop, and the rest under short-term fallow sown to a leguminous green manure crop.

This is the general system of farming recommended by C.S.R. and it is striking evidence of the company's influence to see the extent to which the system is adopted by both tenants and contractor farmers. The legume crop is of great importance in the rotation, not only for its value, when ploughed in, to improve soil texture and fertility but also for the protection it gives to the otherwise bare soil during the rainy season.

Before World War II, most of the colony's rice was imported. During the war rice-growing increased, due to difficulties in importing rice and to its high price, and today the colony is practically self-sufficient. The introduction of rice to cane farms has been bad for maintenance

of soil quality and cane production. It replaces the legume crop on at least part of the fallow area. It also delays the planting of seed cane on this area until after the rice harvest in April-May so that there is insufficient time for proper preparation of the soil and for good establishment of the plant cane before the dry months. The rice-growing which supplies their staple food is regarded by many cane farmers, however, as more important than their cane crop or the maintenance of soil fertility and it must now be accepted as part of farming practice. The company limits the area of rice grown by its tenants to one or two acres, ample for the family's needs. Wherever possible, too, areas of marginal land, of lesser value for cane but quite satisfactory for rice, are made available to farmers so that they will retain their more suitable soils entirely for cane cultivation.

The company exercises its guidance of and influence on farmers through its field superintendents and field officers. Their recommendations are based on experience and contact with research in Australia and other countries, on the results of methods tried on the company's own sugar cane estates in Fiji (which have now been reduced to less than 3,000 acres and are used primarily as training grounds for field officers) and on the observation of results obtained by the best Indian farmers themselves.

There are eight field superintendents and sixty-one field officers. Fifty of these field officers control sectors each containing from 150 to 490 farmers and cutting about 25,000 tons of cane per season. They live in their sectors, which may extend for several miles, and have continual contact with the farmers, travelling on horseback or by road, launch or railway. These men have a fascinating range of responsibilities. Through them the company has, theoretically, great powers of direction and control. In practice, their work is done mainly by leadership and persuasion. In the last five years the company has removed only three of its 4,742 tenants from their farms and then it was for flagrant abuse or neglect of their farms.

One of the main C.S.R. contributions to Fiji has been in the vital field of introducing and breeding varieties of cane to suit the various conditions there. Of the cane harvested in Fiji, over 60 per cent is of varieties bred by the company, either in Fiji or in Queensland, and all varieties have been introduced by the company. Following earlier work at various mills it established a plant breeding station at Rarawai in 1904. Another was started at Lautoka in 1950 as part of an accelerated drive to improve varieties in Fiji. The company's experience in Australia, its plant breeders, and its facilities for quarantine and research are assets to the Fijian industry which can hardly be assessed.

The individual farmer is paid for tons of cane delivered, but the overall price is based on the average yield of sugar per ton of cane for the whole mill for the season. Thus, a few farmers benefit if they grow a variety which gives high tonnage but low sugar content but the farmers as a whole suffer because of the lower overall yield of sugar. Moreover, the mill is faced with higher costs of transport and extraction. Here is a situation which is clearly full of problems and imperfections, but nevertheless the practical results are far better than one might expect, due largely to the influence of the field staff and the co-operation of most farmers and their associations.

Cane diseases have been fatal or crippling to sugar industries in some countries and constant vigilance must always be exercised. In Fiji, these essential precautions have been almost entirely the responsibility of C.S.R. Today, control is primarily by the company prohibiting the growing of non-resistant varieties. There is a further check by "roguing" the crops, or digging out and destroying infected plants. The company's field staff organizes and supervises gangs to do this work. The company pays the wages of the workers, later debiting the wages against the farmers' individual accounts in proportion to their areas under cane, while supervision, transport and other items are provided by C.S.R.

The field officers also organize drainage gangs to dig and clean drains affecting several farms. Many problems arise with farmers who do not wish to supply labour and with the individual farmer who does not wish to co-operate or has a private feud with neighbours. All of these human problems are handled by the company.

The use of fertilizers has been encouraged by C.S.R., which organizes and finances nearly all supplies to the farms. Coral sand is used in lieu of lime and is essential on many soils for healthy crops. In 1954, 39,000 tons of coral sand were quarried or dredged with company equipment, distributed over the company's permanent railways and then over portable lines right onto the farms. A total area of 5,474 acres was thus treated at an average rate of slightly more than 7 tons per acre. The cost to the farmer averaged about ten shillings per ton delivered on the farm, an extraordinarily low figure when it is realised that some of the sand is carried up to 50 miles by rail.

The company also buys in bulk and imports all artificial fertilizers used in the cane industry. The quantities used have steadily increased to 5,908 tons of sulphate of ammonia and 2,085 tons of superphosphate in 1955. These are supplied at cost and financed by the company, to be recovered months later from the cane payments. Again the end link in the chain is a field officer travelling on a company locomotive

THE SUGAR INDUSTRY OF FIJI

and collecting signatures and thumb marks in his field book as the bags are delivered to the farmers in his sector.

Most of the cultivation of the crop is done with bullocks or horses drawing ploughs, scarifiers and harrows. In the last three years, however, there has been a striking development with tractors. Each year the number of tractors has almost doubled, until now there are about 400 in use on cane farms. The advent of efficient, low-priced tractors and the better cane prices have combined to produce a minor agricultural revolution which could hardly have been foreseen ten years ago.

Very few farmers have sufficient area to warrant a tractor for their exclusive use, but most tractor-owners are doing ploughing on a contract basis for their neighbours. This allows the small farmer to take advantage of good soil and weather conditions to finish ploughing more thoroughly and far more quickly than with his animal-drawn equipment. At the right time, especially when operations have been delayed by bad weather, the headlights blaze and the tractors work around the clock.

The Harvest

Harvest time in sugar country is "the crush". It is a time for mighty physical effort and calls for the utmost in organization and co-ordination. Today Fiji produces a tonnage of cane greater than the whole wheat crop of New South Wales. Every stalk is harvested by hand and nearly all of it is handled by rail from the field where it is grown to the mill, some of it being hauled as much as 82 miles.

Once the cane is cut it is desirable that it be crushed as quickly as possible and at most within two days. This introduces major traffic problems, especially at a mill fed by a single main railway track from areas more than a hundred miles apart. From this main track and its branches, portable lines have to be laid up the valleys and into the individual fields where cane is being cut, and sometimes these lines have to be laid twice in a cutting season, first for the plant cane and later for the ratoon crop.

Cane cutting is always done by gangs of men for it involves laying portable lines into the fields, cutting anything from 15 to 40 tons per acre, loading the cane on trucks, and getting this done quickly for each farm and locality while the portable line is available.

In Fiji there has developed a unique system of co-operative cutting by gangs composed of the farmers or their substitutes. All the farmers in a locality, in groups varying from thirty to eighty, sign an agreement among themselves that they will serve as cutters or supply substitutes.

In effect they have to supply to the gang, over a season, labour equivalent to what would be required to cut their own cane. Each farmer agrees to forfeit a bond if he fails to contribute his share. The agreements vary in slight details but in many of them the farmer is fined three times the amount by which his contribution of labour falls short of his agreed share. These sums are placed in a pool and paid out to the men who have contributed extra work.

The farmer who works in the cutting gang can usually earn as much in wages as it costs him to have his cane cut but, in practice, there has been a tendency for many years for farmers to employ substitutes in the gang.

The nominal scale of payment for cane cutting has remained virtually unchanged for over twenty years and, instead of increasing the rates, the general practice is for substitutes to demand a "bonus" of £40 to £50 before they will join a gang. This bonus system has the weakness that it is not directly related to the amount of work done by the substitute. In some districts a different basis is now in operation and the substitute is paid at the end of the season a sum equal to three times his earnings on the accepted wages scale.

The gang elects a "sirdar" who acts as foreman and makes up the pay list to be checked by the company's field officer. The company advances fortnightly wages to the gang, debits the farmer whose cane has been cut and deducts this sum from the proceeds of his cane. The order of cutting is decided by the field officer, who also organizes the supply of portable line and cane trucks. Members of the gang lay the portable line and the gang is responsible for getting the loaded trucks of cane to the permanent tramline.

Professor C. Y. Shephard in his report on the sugar industry to the Secretary of State for the Colonies in 1945, wrote:

Both the company and the farmers are to be congratulated on this highly efficient method of harvesting cane. This orderly system is vastly superior to that with which I am familiar in Trinidad, where each cane farmer cuts and carts his own cane. . . . The co-operative harvesting system, coupled with the fact that most of the cultivation is performed with animal-drawn implements, enables the typical Indian family in Fiji to cultivate 10 or 12 acres in sugar cane. The typical Indian family in Trinidad, where all the cultivation is done by hand and where the carting of cane is chaotic, can cultivate only about 5 acres of cane land.

Not the least interesting and valuable feature of the system is that, although the company's officers supervise and organize many details,



C.S.R. field officer and sirdar (foreman) of cane cutting gang discuss harvesting arrangements at Indian farmer's home.

Indian farmer.



The company's chief manager in Fiji (Mr C. Elliot) and Indian foreman.





Instructing young Fijians. The company maintains a residential training school for Fijian youths where they are taught cane farming and tropical agriculture.

Technical field officer with Indian assistant (*left*) and Fijian assistant (*right*) makes notes on development of experimental cane.





C.S.R. field officer and Indian farmer. There has been a rapid increase in use of tractors.

Fijian farmers cultivating and fertilizing young cane.





Cane farms, Fiji. Indian farmers' homes dotted along the roads. Mangrove swamps on the coast in the distance.



Harvesting sugar cane.



Cane cutting gang.



The gang's water carrier.



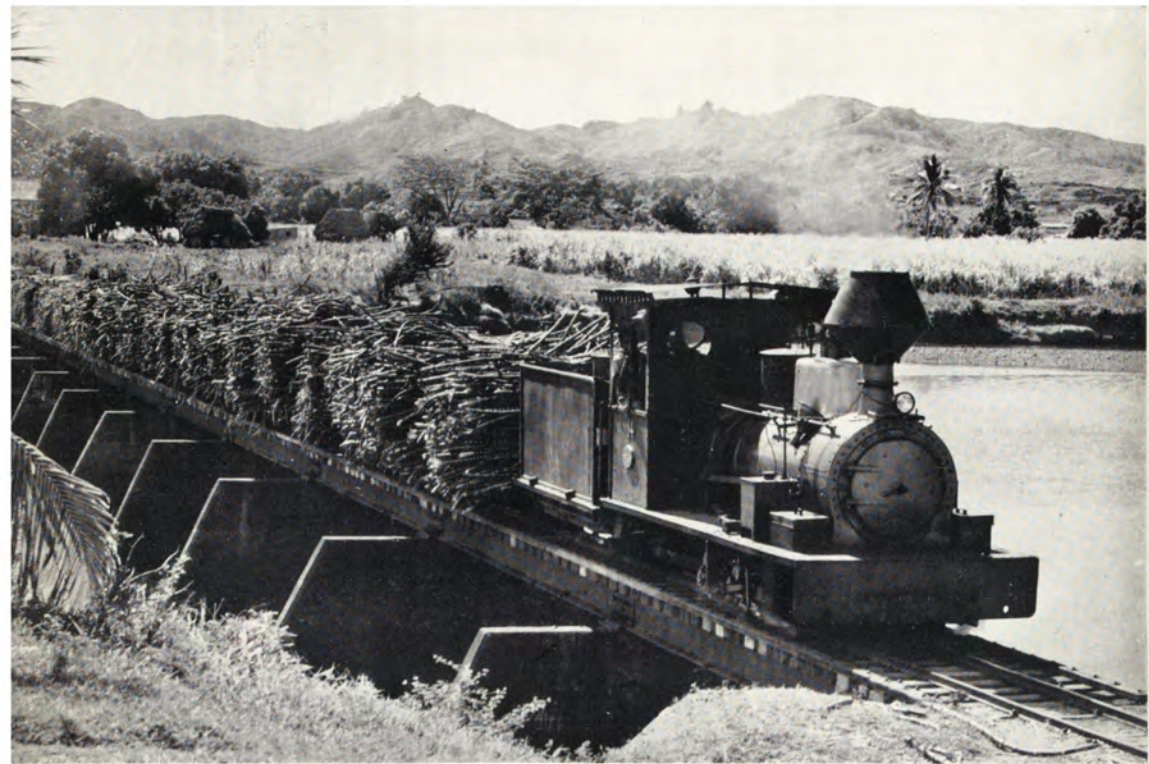
Hauling lengths of portable line to the field. *Fiji official photograph.*



Loading harvested cane. *Fiji official photograph.*



Steam locomotives at Lautoka Mill. Diesel locos are gradually replacing steam.



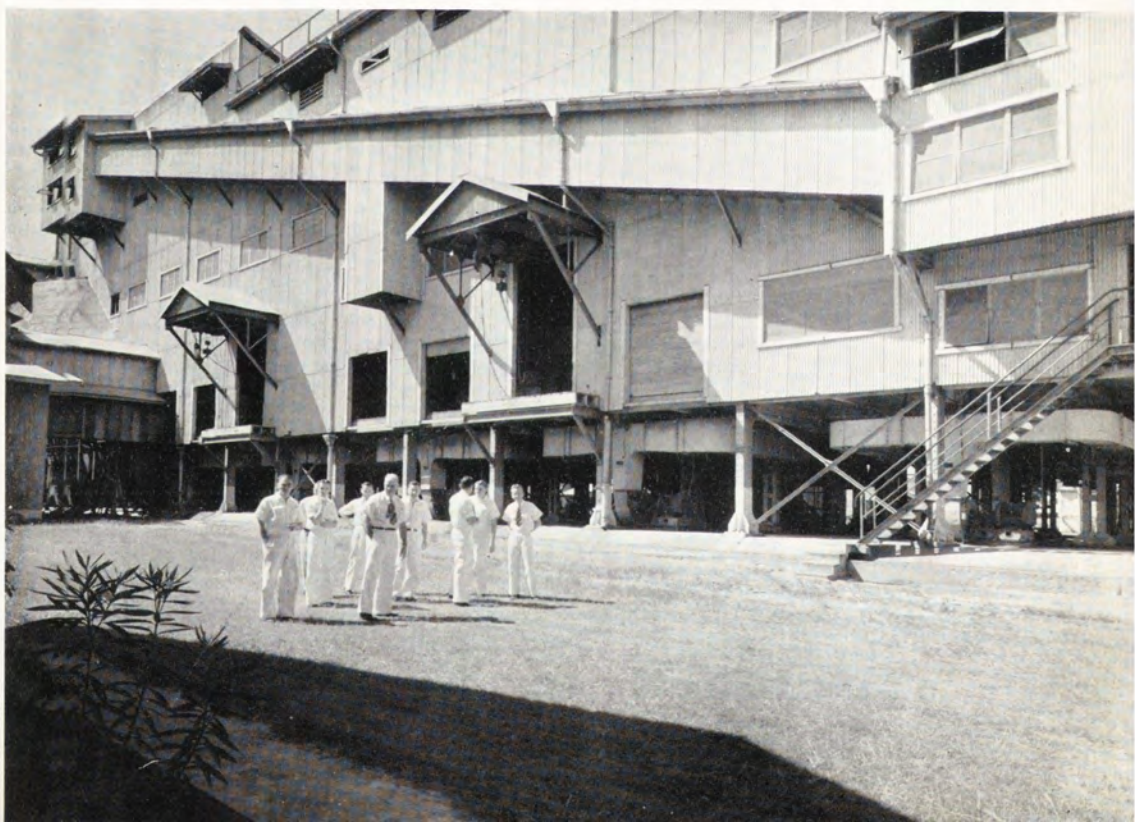
Above: Locomotive and loaded trucks. Bridges are a costly item of the cane transport service, the whole of which is provided by the C.S.R. Company. Below: Punts of cane on the Rewa River bound for Nausori Mill. *Fiji official photographs.*





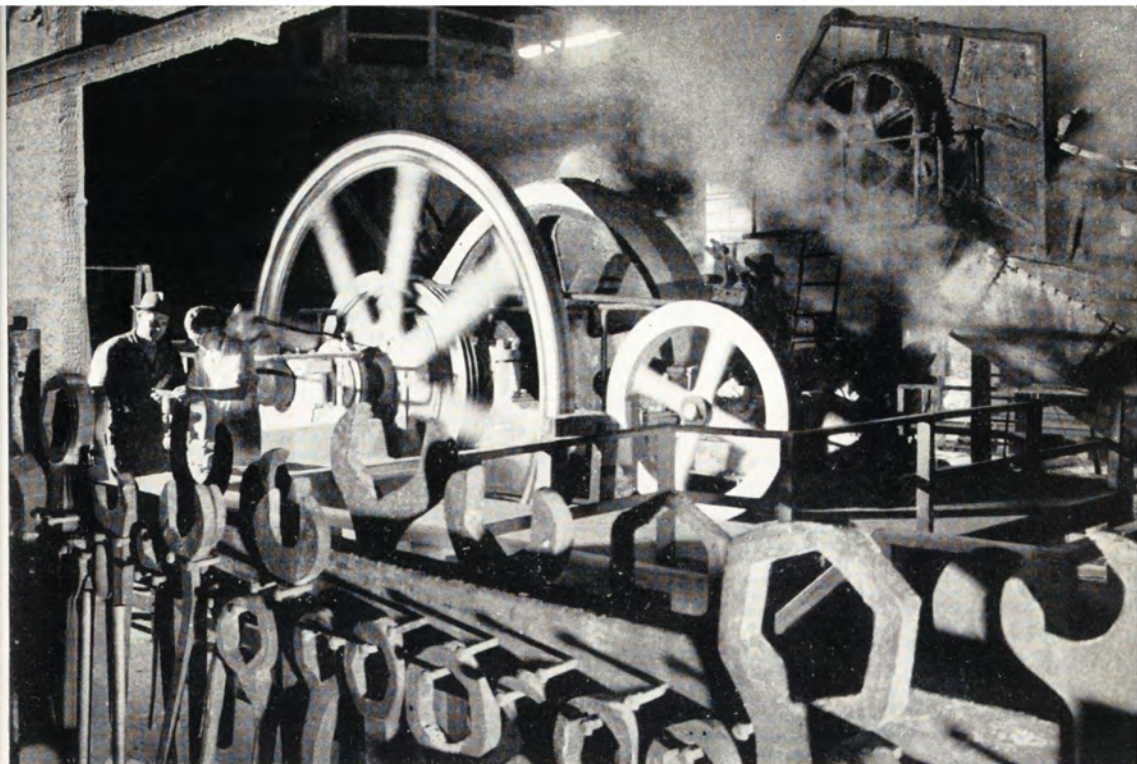
Cane train at Lautoka Mill. Residential area in background.

Boiler station, Lautoka Mill. Mill engineers after morning conference.





Rarawai Mill and Ba River.



One of the engines which drive the crushing rollers in a mill. Mill maintenance tools in foreground.

Laboratory, Rarawai Mill.



Paying mill workers.



Farmers receiving progress payments on their crops.



Young field officers, Rarawai.





Senior officers, Nausori Mill, arriving for morning conference.



Instructing workmen, Lautoka.



Administrative office, Rarawai.



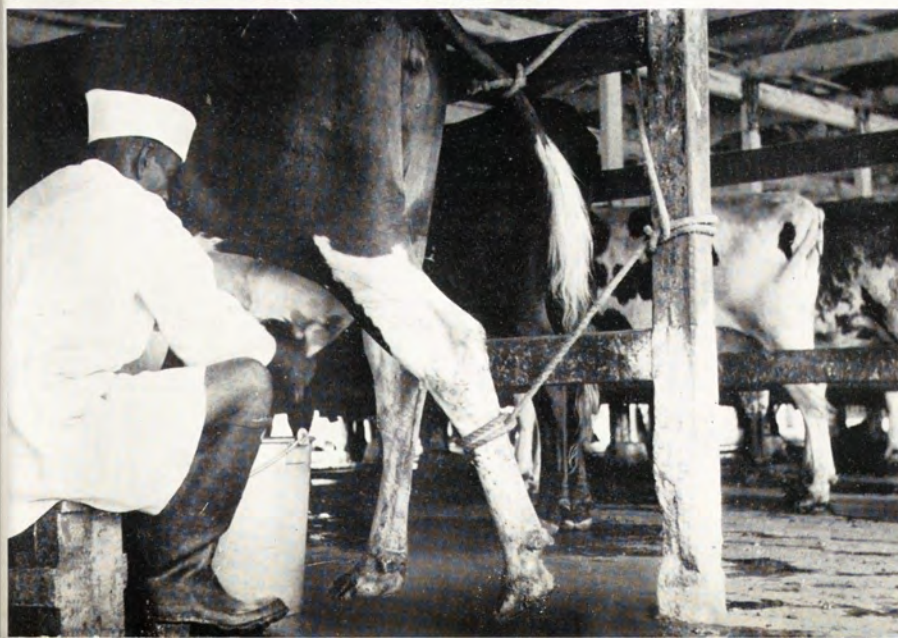
Mill officer's home, Lautoka.

Field officer's home, Navakai.





C.S.R. has developed many services for its staff on the dry north-western side of the main island of Fiji. The company subsidizes schools, and operates its own dairy, piggery, beef cattle station and butchery.





Dispensary, Lautoka Mill. The company provides free medical services to its employees and their dependants in Fiji.

THE SUGAR INDUSTRY OF FIJI

the job is essentially done by the co-operative effort of a group of farmers. The fact that the group may contain Fijians, Muslims, Hindus, Sikhs and Christians, men of different races and religions and belonging to different and sometimes opposed political organizations, all working together for several months of the year, is something of a minor social miracle achieved in the name of sugar.

Milling the Crop

The Colonial Sugar Refining Company's main investment is in the transport system and the sugar mills and it is from their operation that it gets its income in Fiji. All of the activities of the company described above are aimed basically at getting a regular supply of high quality sugar cane delivered to its mills at low cost.

There are five of these mills. Four are on the main island of Viti Levu and one, Lambasa, on Vanua Levu. The oldest mill is at Nausori on the Rewa River some 12 miles from Suva, on the "wet" side of Viti Levu. It first crushed cane in 1882. Nausori Mill has a capacity of 170,000 tons of cane in a season of 26 weeks. Its cane is delivered partly by rail, but mainly by punts. A bigger type of punt is also used for the transport of raw sugar to the port of Suva and for carrying mill requirements of coal, bags and other supplies from overseas ships. The cane produced on the Rewa River is of low sugar content.

The biggest mill in Fiji is at Lautoka, where crushing started in 1903. It has a capacity of 600,000 tons of cane per season of 26 weeks and is a big mill, by any standards. Cane is hauled as much as 82 miles from the southern limit of its supplying area, on the Singatoka River, and 22 miles from the northern limit, with an average haul of 27 miles, a feature which is probably unmatched for any mill in the world. Over its 177 miles of permanent line 24 locomotives, 2,700 cane trucks, scores of special ballast, sugar, molasses, passenger and other trucks, are operated. In addition 67 miles of portable line are used for removing the crop from the fields. The company has its own wharf and port facilities at Lautoka, the principal installation in Fiji outside Suva. Bagged raw sugar from the Rarawai Mill as well as from Lautoka is exported from here, the two mills making up 70 per cent of the colony's output of sugar.

The Rarawai Mill is beautifully situated on the Ba River. It is the second biggest mill in Fiji with a capacity of 330,000 tons of cane per season. It was built by C.S.R. and started operations in 1886.

The fourth mill is at the most northerly point of Viti Levu at Penang.

This mill is the smallest owned by the company in Australia or Fiji, with a capacity of 95,000 tons of cane per season. It was started by two brothers in 1880 but was taken over by the Melbourne Trust Company in 1890. It was closed down after losing money during the sugar slump in the early 1920s, later re-opened and was finally bought by C.S.R. in 1926.

The remaining mill is at Lambasa and is the only one on Vanua Levu. It was built by the company, started to crush in 1894 and today has a capacity of 170,000 tons of cane in a normal season. Its supplying area has an interesting feature in that much of it has been reclaimed from "tiri", or mangrove swamps, and is protected by miles of sea walls.

In simple terms, the manufacture of raw sugar from cane involves crushing the cane between heavy rollers, clarification of the juices and their concentration by evaporation of water under vacuum, crystallization of the sucrose in this concentrated syrup, and the final separation of the crystallized sucrose from molasses by centrifugal force. The crystallized raw sugar is then dried and bagged, ready for shipment to the overseas refineries.

These processes involve, however, a combination of chemical and engineering skills of a high order and they demand organizational skill in handling the cane, with some 26,000 tons per week entering the largest mill. The mills are big factories which with their transport and accommodation services represent capital investments, at today's replacement cost, of about £7,000,000 in the case of Lautoka Mill and well over £1,000,000 for a small mill such as Lambasa, Nausori or Penang.

Many of the chemical and engineering controls which are maintained over every part of the milling process have been developed by the company. A vast number of detailed observations are recorded throughout the milling process—temperatures, pressures, densities and many other chemical and physical factors. These are summarized each week on four main work sheets, each of which has from 200 to 400 entries and is confined to one of the four principal operations, such as the "crushing station" or the "boiling house". These four work sheets are then summarized on a manufacture report containing about 200 separate figures from which the efficiency and overall results of the week's work are analysed. One of the end figures is the "Coefficient of Work", a figure which shows the relation between tons of P.O.C.S. (Pure Obtainable Cane Sugar), as measured by weighing and sampling the cane entering the mill, and the tons of raw sugar of standard quality actually produced. Further, there is a

THE SUGAR INDUSTRY OF FIJI

"Chemical Balance" which reveals where all the sucrose originally entering the mill in the cane finally goes: into salable products or lost or not recovered. Other sheets record the main engineering data for the week.

These reports not only provide a measure of results for the mill staff but are also sent weekly to the head office of the company in Sydney for further analysis and comparison with other mills by the company's senior technical and management executives. There is a degree of control, checking and supervision, which has brought the recovery of sugar to a very high level.

This performance is important to the growers as well as to the mill owners since the price for cane depends partly on the efficiency of the mill in extracting sugar. The reputation for honesty and efficiency of the company seems to exist almost unquestioned and it has been well-earned and is jealously guarded.

A sugar mill operates twenty-four hours a day for $5\frac{1}{2}$ days a week during the "crush". Only minor repairs and adjustments can be made during the week-end, so that major breakdowns would involve growers and millers in considerable loss. The complete overhaul of massive machinery and equipment, the replacement of defective parts and the installation of new equipment have to be carried out in the five or six months of the "slack". In recent years the steam-generating station at Lautoka, the biggest mill, was completely renewed. That at Rarawai, the next in size, is being rebuilt at the present time.

Such replacements, costing from £300,000 to £450,000, carried out at the same time as the general mill overhaul to a time-table which must be kept, in places where there are no engineering facilities other than the mill workshop, demand a high standard in engineering staff and organization. The company's workshops in Sydney and the design and purchasing facilities at the head office are also of great value. Dependable transport of equipment and supplies from Australia is provided in the company's own ships, three of which ply between Sydney and the Fijian and Queensland ports, and they carry bulk molasses back to a distillery in Australia.

As seems inevitable, the chief engineer of the mill, always known as "Chief", is usually a Scot, perhaps once removed via Australia. The other engineers, the mill manager and chemists, weighbridge clerks and transport officers are mostly Australians with a sprinkling of New Zealanders. The remaining mill personnel are Euronesians, Indians and Fijians. The productivity of labour on the milling side is about one-third of that in Australian mills but at least as good as in mills in South Africa or the West Indies. To quote one of the redoubtable

"Chiefs", "in relation to the speed and quality of the work done, labour is very little cheaper here than in Australia and, bearing in mind the extra capital in providing houses, free lighting and water, and the greater degree of supervision necessary, I think our labour costs are about the same as in Australian mills".

An interesting example of the need for self-sufficiency imposed by the isolated locations of the mills is the company's 16,000 acre cattle property at Yang-gara, with its herd of 4,000 Hereford cattle and its fine imported bulls. This was established to meet the need for a regular and cheap meat supply for the European and Euronesian employees. For similar reasons the company established dairy herds at some mills, the largest, at Lautoka, comprising over 140 cows. Both meat and milk are sold to the company's employees at low prices as some offset to the higher cost of many other essentials.

The Purchase of Cane

There must always be a clash of opinions and interests in determining the price paid to growers for their cane. Until 1940, the growers were paid a basic price for cane of standard quality, with increases or decreases according to its sugar content. A bonus was added to give growers the benefit of the Empire Tariff Preference. The millers carried the vicissitudes of fluctuating prices in world sugar markets, with good profits in some years (a long way back) and very considerable losses in other years.

Wartime sugar price arrangements removed the dangers of fluctuating prices and in 1940 a new basis was introduced whereby the farmer and the miller both shared variations in the price received for sugar. The payment to the individual farmer according to the quality of his cane was discontinued, at the request of many of the farmers. A price was determined on the season's average yield of all cane crushed at a given mill and the overall price received for sugar.

These general principles were continued in the Purchase of Cane Agreement signed between the company and the growers in 1950 to cover a ten-year period. The price per ton of cane is fixed from a scale according to the number of tons of cane required to make 1 ton of 94 N.T. (*net titre*) sugar. To this scale figure is added a bonus, which increases on a sliding scale up to 2s 1d for every £1 by which the proceeds of 94 N.T. sugar exceed £11 per ton f.o.b., and there are one or two less important adjustments.

The average price per ton of sugar cane paid to all farmers in Fiji increased from 23s 8d in 1943 to 36s 5d in 1949. Mainly due to the

THE SUGAR INDUSTRY OF FIJI

increase in the price of raw sugar, the price rose to 71s 6d in 1953 and the estimated price for the 1954 crop is 71s 0d.

The increased prosperity of the farmers can be seen on many farms where thatched grass huts are being replaced by small, attractive cottages. As mentioned earlier, tractors have been bought and are effecting a major change. Some of the Indian leaders deplore the failure of thrift to accompany this prosperity and are concerned at the continuation of the traditional tendency of the Indians to borrow heavily from Indian moneylenders, who continue to hold many farmers in their grip at 20 per cent interest, though some farmers are turning to the banks and reputable lending institutions. C.S.R. continues to provide cash advances at a low rate of interest for normal living and farming needs, but only to an amount less than the value of the crop existing on the farm.

While the farmer has prospered, the company, on the other hand, claims that at present sugar prices the sliding scale of bonus payments does not leave it a commensurate share, especially in seasons when the quality of cane is below normal. If this means that mill and transport modernization do not proceed as far as they would with bigger profits, then the industry as a whole will suffer, especially if sugar prices fall. Payment for cane on the basis of average quality and the abolition, in the existing form of cane purchase, of payment to individual farmers according to the quality of their own cane also present real problems, especially at Nausori Mill where the cane is generally of low quality and the operations are currently at a loss.

Marketing Fiji's Sugar

Fiji's sugar industry depends almost entirely on export markets, for local consumption is relatively insignificant. World production of sugar had exceeded effective demand for many years before 1940 and world sugar prices had been severely depressed. Cane prices were so low that farmers had little chance of improving their living standards while the milling section of the industry had shown, at best, an inadequate return on capital. For many years the millers had faced real problems in improving their mills and, as the bodies closest to the growers, had received an undue share of criticism from the growers. The people of the industrialized nations had benefited from cheap sugar produced by people with very low standards of living.

Great Britain and Canada had helped with Empire Preference and the situation was brought nearer to equity by the signing of the British Commonwealth Sugar Agreement (B.C.S.A.) on 21 December 1951.

This agreement has already been dealt with in the chapter "The Structure of Sugar Markets", and we will here describe only its impact on Fiji.

For Fiji it meant a large measure of security for eight years ahead. Total exports were not to exceed 170,000 tons in any year, a figure considerably above its then production but not in excess of the mill capacity. Of this production an amount of 120,000 tons, later increased to 125,000 tons, was to be purchased each year by the United Kingdom at a "negotiated price". The remainder of the exports above the "negotiated price quota" were to be sold on world markets at ruling prices, with the benefit of Empire Preference when sales were effected to the United Kingdom or Canada.

The International Sugar Agreement, signed at London in October 1953, incorporated the figure for total exports from Commonwealth producers already established in the British Commonwealth Sugar Agreement.

These two agreements greatly improved the long-term economic outlook for the sugar industry in Fiji. They assured markets at far more equitable and stable prices than in the past and they presented the opportunity for a considerable increase in production.

A basic feature of the "negotiated price" to be paid by the United Kingdom was that it should be a price which "shall be reasonably remunerative to efficient producers" and which "shall be a single Commonwealth price applicable to all Exporting Territories". Production of cane in Fiji was at a high level of efficiency, while the company's mills were at least as efficient as the best mills in the world. The industry as a whole could expect to enjoy reasonable prosperity if inflation could be kept out of the picture.

The agreement has a special significance for Fiji in relation to costs and the future of the "negotiated price". This price is varied each year "to reflect changes in the level of wages and other cost factors" in *all* the exporting territories. Fiji's share of the total amount in the "negotiated price pool" is only eight per cent. Therefore if costs including wages rose more steeply in Fiji than in other Commonwealth exporting countries, the influence of Fiji costs on the "negotiated price" would be small, so that the price received by Fiji would not keep abreast of increased local costs. This is a powerful sanction against inefficiency and high costs in the Fijian industry.

The B.C.S.A. aimed to develop the production of sugar within the Commonwealth. Fiji has played its part. The area devoted to cane farming has been increased since 1950 by nearly 20 per cent to 110,854 acres. Much of this increase was by expansion of "lorry areas" not

THE SUGAR INDUSTRY OF FIJI

directly accessible by rail: cane is brought from these areas to the main line by motor trucks. At the same time, production was increased by the changeover from a 25 per cent crop cycle to a 33 per cent cycle, as described earlier. The total area of plant and ratoon crops actually to be harvested in 1955 will be about 65,000 acres, an increase of 45 per cent on 1950.

Increases of this magnitude and speed in agricultural production represent a major achievement by all parties. In the process, the standards of agricultural practice were, perhaps, not improved as much as they might have been and certainly not as much as in Australia. But the production target was reached and the task of further improving agricultural methods can now be tackled.

This expansion has staved off for some years the problems which were arising with a rapidly increasing population in an industry which was poor and had reached the limits of expansion with existing markets. Today Fiji has full employment with some minor shortages of labour in the sugar mills and for some kinds of agricultural work such as cane cutting and drainage, although these shortages are largely due to the fact that many Indians prefer a higher degree of leisure to a higher level of income.

Industrial and Social Relations

The troubled times of the early 1940s saw the rise of strong labour unions and farmers' associations in Fiji. These groups have attained strength, their leaders have shown skill in negotiation and they hold positions of great responsibility in the economy.

A single union, the Chini Mazdur Sangh (Sugar Workers' Union), represents Indian and Fijian labourers employed in the mills, on the transport system, and in allied parts of the industry. The headquarters of the union is at Ba in the Rarawai Mill area and it handles all matters generally affecting the industry in Fiji. There are branches at each mill and local matters are handled between the branch and the local company manager.

Collective bargaining and joint consultation between C.S.R. and this union have proved an outstanding success. Both parties are satisfied with the system and do not desire intervention from any outside arbitration authority. The success of the system stems mainly from mutual confidence and goodwill, with each party respecting the other's right to drive a hard bargain and also recognizing the other's problems and responsibilities. Both parties have scrupulously honoured agreements. The last strike of the Sugar Workers' Union in Fiji was in

1950, affecting one mill only, and the one prior to that was in 1943. Both were of very short duration and they were the only two strikes of C.S.R. employees in the last 30 years.

A small incident seen personally may illustrate this situation. A "roguing" gang of twenty-two Indians was sent into an area of tall cane to dig out and destroy any diseased plants. They found that hornets were bad and they refused to enter the area. A company officer then suspended them, his main concern being that the diseased cane must be destroyed for everyone's sake. He reported the matter to his manager who immediately sent word to the union officials that he would investigate and would meet them at seven o'clock next morning. In the meantime arrangements were made for special "hornet suits" to be available. At the conference the importance of the work was stressed, the manager told of his plans for extra men to burn out hornets' nests and for hornet suits to be provided, and the work went on. One cannot help contrasting this incident with scores of similar situations in certain Australian industries where there would have been widespread stoppages while the matter went to a Conciliation Commissioner or Industrial Tribunal.

The *Annual Report of the Commissioner of Labour, Fiji*, for 1953, presented to the Legislative Council, states in regard to mill labour in the sugar industry:

It is in this industry that collective bargaining has proved most successful over the last six or seven years, and in which the relations between the employer and the employees so nearly approach the ideal. In March 1953 the company's officers had their annual conference with the union delegates. The Chief Manager and eight other managers and senior officers represented the company and twenty-five delegates the Sugar Workers' Union, the latter being assisted, with the employers' concurrence, by the President of the Fiji Industrial Workers' Congress.

The union has won considerable gains for its members. Taking 1939 as the base year, with an index of 100, actual wages paid have increased by 1955 to 400, while the official cost of living index has increased to 311. Although it is the farmers who have benefited most in recent years, these figures show that the real standard of living has improved also for the union members.

Apart from wages, the company gives many concessions to its employees, such as cheap sugar and firewood, and also some items which originated in the days of indentured labour. One of these survives from the days when an Indian would take two weeks off work when



Indian cane farmers' wives.



C.S.R. training farm for Fijian youths, Drasa, Fiji.

Rarawai Mill canelands, Ba River, Fiji.





Lambasa Mill, Fiji.

Cane arriving at Lautoka Mill, Fiji.





Indian cane farm, Nandi, Fiji.

Newly developed cane farms, Sambeto Valley, Fiji.



THE SUGAR INDUSTRY OF FIJI

his wife was having a baby. If this happened at a rush period, as at harvesting, the company would pay him the equivalent of two weeks' wages to hire a nurse. This is continued even today by the token payment of a "midwife concession of £1 per accouchement" to an employee who has been with the company for at least two months.

Medical treatment and dispensary services are available at each mill. In the old days there were three medicines—quinine, a purgative, and a peppermint cough mixture. Today a full range of modern drugs is dispensed free to all Indian and Fijian employees, their wives and dependent children.

C.S.R. has for many years played an active part in education. It has conducted primary schools at its mill centres for European and Euronesian children, subsidizes mission schools and assists Indian and Fijian schools.

There are seven different "Industrial Associations" of cane growers. Most of them were associated with a particular religious or racial group in their origin, although they are not exclusive in their membership. These associations are generally active in the colony's politics and are used by some of their leaders in seeking election to the Legislative Council. This has complicated some major matters in the past. In the negotiations over the Purchase of Cane Agreement in 1950, some of the associations were agreeable to the final details and they all played a big part in the hard bargaining which finally produced terms that eventually proved more favourable to the growers than to the company. But the associations were divided and a difficult situation arose. There was some doubt whether the new agreement would be accepted but the difficulties were finally overcome when 80 per cent of the growers signed as individuals.

In the past five years relations between the associations and C.S.R. have shown steady improvement and this is due not alone to the favourable economic position of the farmers, nor to the fact that some of their leaders have gained more experience and understanding of the quite complicated considerations which affect the well-being of the growers and industry as a whole. Equally important has been a change in the company's attitude to the leaders of the associations. Initially they were scarcely recognized as responsible representatives of their members and some of the old autocratic attitudes of senior company officials towards the Indians were slow to disappear. Today greater confidence, co-operation and understanding have been established.

The company and the farmers' associations have, in the last few years, worked out solutions to some matters which previously would have caused interminable dispute. One of these was the allocation

of surplus funds accumulated from certain export sales; another was the continuation of an industry stabilization fund. The creation of a sugar board, as previously advocated by the associations and recommended in Professor Shephard's Report of 1945, was successfully opposed by the company on the grounds that it would achieve no constructive purpose and would create new problems. Today nearly all the farmers' associations are coming to realize that consultation and negotiation with the company are possible and satisfactory. The Government of Fiji is kept fully informed of all aspects and peaceful conditions are maintained in this key industry.

The improved co-operation between the company and farmers' associations was seen at Nausori Mill in the 1954 planting season. As mentioned earlier, this mill is in a "wet" zone where the quality of the cane is low and, under the existing Purchase of Cane Agreement, the company has made substantial losses at Nausori. The position was aggravated by the fact that an inferior variety of cane called Malabar, which gave high tonnage but low sugar yield, was being planted against the advice of the company. Malabar, however, would grow on land where the drainage had been neglected and which would not grow better varieties without hard work in cleaning out and rebuilding drains. The company called a conference of the association leaders, explained the situation and sought their co-operation. As a result, the area of new planting of Malabar was reduced from 34 per cent in the previous season to 15 per cent in 1954.

In this and many other ways, it has been amply demonstrated that discussion, exchange of information, and co-operation can provide a way of peace and progress. There is some danger that the farmers' associations may be used as political weapons, although one hopes never again to the same degree as the industry was used politically by agitators from India during the struggle for India's self-government. There are still political issues which are quite separate from the sugar industry and the farmers have a vital stake in seeing that they themselves are not used for political ends.

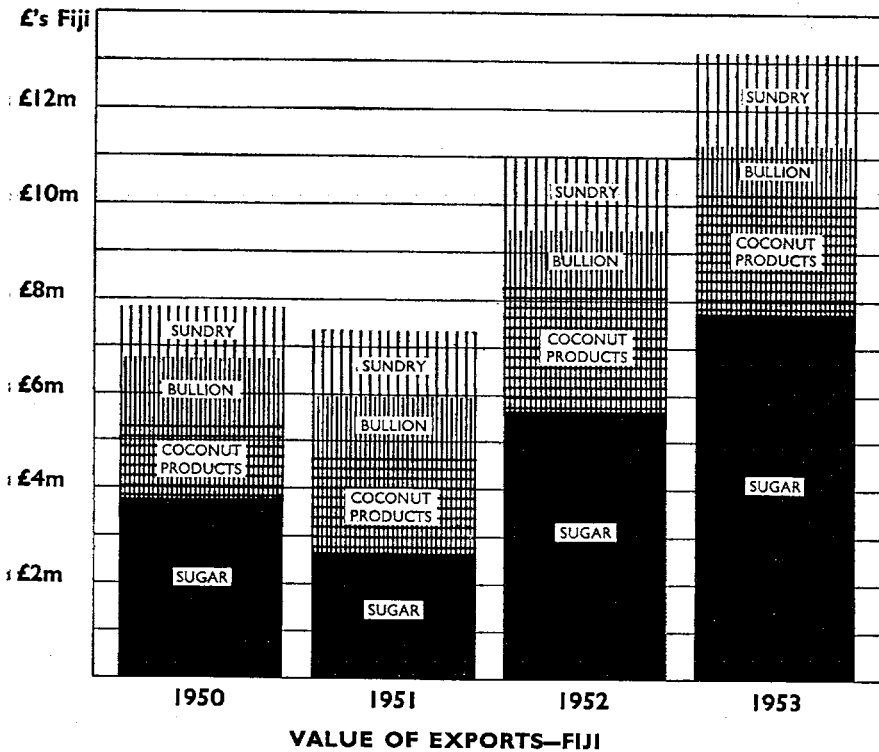
The Company's Position in the Economy of Fiji

The sugar industry is the backbone of the economic and social order in Fiji. The strength of the industry is inextricably linked with the achievements of a capitalist company which holds an apparently monopolistic position. The words "capitalist" and "monopoly" have become somewhat tainted throughout the world by the political and economic arguments of the last fifty years. Let us examine how the

THE SUGAR INDUSTRY OF FIJI

company's performance and policy in Fiji stand up to some of the standard criticisms of "monopoly".

First, there is the stock criticism that monopolies squeeze out competitors by unfair practices. There were originally a score of different milling organizations in Fiji but only three companies survived the depression of the 1880s. Two of these, although operated by substantial overseas concerns, failed in the 1920s through production and labour problems combined with low sugar prices. The Colonial Sugar Refining Company survived all the problems which defeated other mills, operating under quite equal and competitive conditions, because of its financial strength, soundness of judgment in the location of its mills, outstanding technical and managerial ability, based largely on its resources and background in Australia, and, by no means least, courage and determination to survive periods when the outlook must have seemed hopeless. Without these qualities and resources, the company might well have withdrawn from Fiji, as did other organizations, and the whole economic and social picture in the colony would have been infinitely poorer.



Inefficiency, due to the absence of competition, is a charge which no opponent of the company could reasonably raise. Its mills in Fiji have a standard as high as the best in the world. This statement is based on detailed comparisons of the many technical and scientific measurements of recovery of sugar from cane treated and on the general engineering efficiency of the plant.

Has the company used its position of single buyer to force unfair prices on its suppliers? Anyone who imagines that this would be possible must be unaware of all the social and political forces which create a balance of power in these things. The President of the Kisan Sangh, one of the leading farmers' associations, was able to say, however, in a public address on 31 December 1954 that "I believe the price paid for sugar cane is the highest in the world".

Has C.S.R. used its position to make excessive profits at the expense of other parts of the industry? About 35 years ago the company made high profits, for a short period, out of abnormally high world sugar prices—and so did the independent planters of the time. Professor C. Y. Shephard examined the company's profits in his report of 1945. He found some difficulty in assessing the capital employed, as was inevitable in dealing with a long-established company with old assets. There was also some difficulty in deciding a proper allowance for depreciation, and the inflation which followed showed that the allowance he made was too small. Professor Shephard's main conclusions were that "the profits of the company since 1930 . . . have been of the order of 3 per cent per annum" and "represent, in my opinion, an unattractive return on the capital invested". The position has improved in the last few years but the company claims that profits are still inadequate in relation to the size of its investment.

Any impartial assessment of the company's achievement in Fiji must give it high praise, not only for its physical and economic results but also for its contribution in the sphere of social and human advancement. The company's contribution has been based on a tradition of responsibility and efficiency, expressed through the high morale and *esprit de corps* of its staff which represents the company in the eyes of the farmers and sugar workers. Goodwill and sound relations have been developed between this modern capitalist organization and peoples of many races and religions in a way which might be envied in many troubled parts of the world.