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METRIC CONVERSION FACTORS

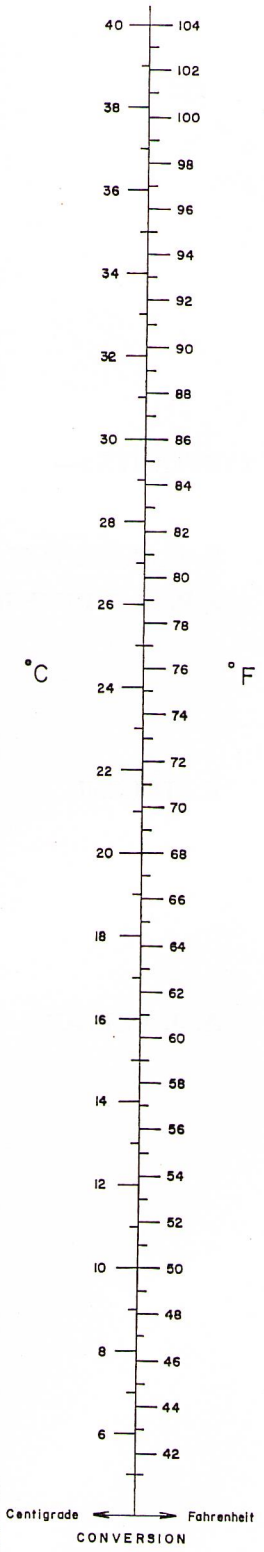
A	B	To convert A to B multiply by	To convert B to A multiply by
inches (in)	centimetres (cm)	2.54	0.394
feet (ft)	metres (m)	0.305	3.28
yards (yd)	metres	0.914	1.09
chains	metres	20.1	*
chains	kilometres (km)	0.0201	49.8
miles	kilometres	1.609	0.621
ounces (oz)	grams (g)	28.35	0.035
pounds (lb)	grams	454	*
pounds	kilograms (kg)	0.454	2.205
hundred-weights (cwt)	kilograms	50.8	*
tons	kilograms	1016	*
tons	metric tons (tonnes) (mt)	1.016	0.984
square in (sq in)	square cm (cm^2)	6.45	0.155
square ft (sq ft)	square metres (m^2)	0.0929	10.8
square yd (sq yd)	square metres	0.836	1.196
square chains	square metres	405	*
square chains	hectares (ha)	0.0405	24.7
acres (ac)	hectares	0.405	2.47
square miles	hectares	259	*
square miles	square km (km^2)	2.59	0.386
fluid ounces	millilitres (ml) †	28.4	*
pints	litres (1)	0.568	1.76
gallons	litres	4.55	0.22
cubic feet	cubic metres (m^3)	0.0283	35.3
cubic yards	cubic metres	0.765	1.31
lb/ac	kg/ha	1.12	0.89
cwt/ac	kg/ha	125.5	*
ton/ac	mt/ha	2.51	0.398
pint/ac	1/ha	1.40	0.712
gall/ac	1/ha	11.2	0.089

$$°C = 5\,(°F - 32)/9$$

$$°F = [9\,(°C)/5] + 32$$

* These factors will seldom be needed.

† For practical purposes 1 ml = 1 cubic centimetre.



Fiji agric. J. (1974) 36, 23-27

PASSIONFRUIT PRODUCTION IN FIJI

by

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SUMMARY

First grown commercially in Fiji in 1960, passionfruit now occupies about 70 ha in the district near two processing factories at Sigatoka, for which about 380 mt of fruit worth $25,000 have been produced annually in recent years. Research has shown that yield can be trebled by hand pollination. This is highly economic and now recommended, so that some growers have achieved over 30 mt/ha; but few farmers hand pollinate diligently hence the much lower mean yield. Well grown, hand pollinated passionfruit responds well to N, less to K. Collar rot is the most serious disease restricting the life of a planting to 30 to 35 months.

INTRODUCTION

Since 1960 growing of passionfruit for processing has become an established industry in the Sigatoka area with production worth $25,000 (average 1969-72 at 3c/lb). The purpose of this article is to review briefly the growth of the industry and to summarise the results of research on passionfruit at Sigatoka Research Station. Many of these results are hitherto unpublished except in the Annual Reports of the Specialist Officers for 1963 and 1964, which were not widely circulated.

COMMERCIAL CULTIVATION

History

The Hawaiian, or yellow passionfruit *Passiflor edulis flavicarpa* on which the present industry is based was introduced in November 1958, from Hawaii. Commercial cultivation began with the distribution of surplus seedlings from the Sigatoka Research Station to farmers in the lower part of the Sigatoka valley in 1960. The development of contract growing for passionfruit was undertaken by the Land Development Authority (LDA) in 1962, with the approval to spend up to $5000 on the establishment of 4 hectares at Naduri, Nadroga. Contracts to purchase the fruit were signed by a Suva based company Can-pac Ltd.

Before the first fruit were harvested Can Pac Ltd., went into receivership, and in looking for markets a sample of fruit was sent to an Australian firm, Mangrove Mountain Fruit Juice Pty Ltd. This company then established a local subsidary, South Pacific Foods Ltd., to take up the Can-pac contracts.

In 1964 another Australia company (Cottees Ltd) formed a local subsidary who arranged passionfruit contracts with the LDA and established a processing factory at Sigatoka in early 1965. Valley Industrial Co-operative Association (VICA) a local growers organization played an important role from 1967 when it took over from the LDA in arranging and financing passionfruit plantings. VICA made contracts with farmers for processor. VICA also joined Davis Consolidated Industries of Australia and Mr H. Cottee in a consortium, Tropic Isles Ltd, which took over the Cottees Ltd factory. The growers during this time were being paid 6.6ckg (3c/lb) by VICA who were then selling fruit to both processors at a slightly higher price to cover transport and administrative costs.

At the start of the 1972-73 fruit season the previous system of fruit purchase and payment broke down, and as a result the two processors made their own contracts with farmers for fruit. Farmers are currently being paid 9.9c/kg (4.5c/lb) at the farm gate.

Based on the sale of passionfruit seedlings from the Sigatoka Research Station (33,800 in 1973) it is estimated there are 70 hectates (175 acres) of passionfruit planted in the Sigatoka Area. Many of the new plantings are being made in blocks of 0.3 to 0.5 ha in area, whereas previously production had been confined mainly to 0.1 ha blocks to allow for easier management.

Commercial yields

Table 1, taken from VICA purchase records, shows the big variation in yield from year to year and farm to farm among a group of farms in the upper Sigatoka valley. The overall average yield of this sample is about 10mt/ha. The average yield of all growers at this time was probably a little less. Factory purchases averaged 380 tons a year during 1969-72, and although the area in bearing them was less than the current 70 ha it was probably more than 38 ha.

Under Fiji conditions, the passionfruit plant usually starts flowering in the first week of October, and continues until first week of June. The flowers are normally only open for one day, and then only during the afternoon and early evening. Fruit matures 70-80 days after pollination, which means the fruit harvesting is from late November through until end of July or early August.

Fruit production is continuous during the season although there are three peaks: late December — early January, late February — early March, and a longer duration peak in May — June.

RESEARCH

Further Introductions

Yields from plantings made with the initial introduction of the yellow passionfruit ranged from nil to 9.9kg average 2.2kg per plant. As the initial import was of seed from a single fruit, a further importation was made in 1961, of 1 kg seed from the clonal passionfruit nursery at the University of Hawaii.

In 1963 cuttings of the clonal lines C37, 39, 77 and 80, were introduced from the University of Hawaii. These lines were originally selected for their outstanding fruit and juice yields. Lines C37, 77 and 80 are mutually incompatible, while C39 is mutually compatible with the other three (Akamine and Gerolami (1) P.8).

TABLE 1

YIELDS IN THREE AREAS DURING 1969-1972

Area	Season	Number of farms	Yield in tonnes/hectare		
			Mean	Lowest	Highest
Nasaucoko	1969-70	10	12.0	0.9	33.7
	1970-71		20.9	3.0	41.9
	1971-72		13.0	0.3	33.9
	Mean		15.3		
Wavosi	1996-70	6	12.8	4.4	21.2
	1970-71		15.8	14.0	26.5
	1971-72		12.5	5.5	23.5
	Mean		14.5		
Nasivikoso	1969-70	13	7.4	1.1	20.8
	1970-71		12.2	3.5	28.5
	1971-72		3.7	0.0	20.8
	Mean		7.8		

The purple (black) passionfruit *Passiflora edulis* was introduced in 1964 and although it grew well, has not become a commercial prosposition to date.

Passiflora ligualris (sweet Grandilla) was introduced in November 1968 but did not grow satisfactorily, and all plants died.

Pollination studies

The need for cross pollination of flowers to overcome self incompatibility, as found by Gilmartin (2), was also shown in Fiji. In 1959-60 season 25 flowers were hand pollinated with pollen from flowers on the same vine, and none set fruit.

During the 1962-63 season a comparison was made of natural and hand pollination. (6) The latter was effected by collecting pollen from anthers of flowers on a number of different plants, mixing together in a dry container, and transferring to the stigmatic surface open flowers with a camel hair brush. One person can pollinate 600 flowers per hour. At the time of the study the normal insect population was boosted by the presence of

TABLE 2. FRUIT SET AND YIELD FROM NATURAL AND HAND-POLLINATED FLOWERS

	Polination method	
	Natural	Hand
Fruit set	15%	72%
Yield, tonnes/ha	5.2	24.1
lb/acre	4.650	18,900
Weight/100 fruit	6.8kg	10.0kg
	15 lb	22 lb

beehives in the block. The honey bee according to T. Nishida (4) is not an efficient pollinator of the yellow passionfruit. Table 2 shows the results.

Akamine and Girolami (1) suggested C39 had highly compatible pollen, but the results obtained with C39 pollen at Sigatoka, as shown below, were little better than those obtained with random pollen, as shown in Table 2.

Female parent,	% fruit set using C39 pollen.	
	Sigatoka	Hawaii (1)
C37	67	92
C80	81	97
Local seedlings C77	74	97

Diseases

According to Graham (3) the recorded diseases of passionfruit in Fiji are :

Disease	Pathogen
Collar rot	*Phytophthora cinnamoni*
Brown spot	*Alternaria passiflora*
Thread blight	*Corticum Solani*
Anthracnose	*Glomerella phomoides*
	Woodiness virus

The record of the virus, however, is doubtful: the 'Woodiness' symptoms were seen only in fruit harvested immediately after floods in 1964 and 1965, and may have been due to the wet conditions rather than to virus.

Of the other diseases, the most serious is collar rot. This was first noted on two-year old plants at Sigatoka Research Station during the 1962-63 season. By September 1963 only 49 plants from 143 planted in 1961 were still growing, and showing no outward sign of the disease. It is now universal on passionfruit in Fiji. In any planting random deaths occur from the first year onward until, typically by the end of the third year, about half the plants are dead and the block uneconomic.

The use of clonal line at the Sigatoka Research Station has not reduced the incidence of the disease, nor has the grafting of plants on the hard-shelled species, *P. malliformis*. In a study in which dead plants were replaced, seedling replacements appeared to be as good as grafted plants (Table 3).

TABLE 3. THE EFFECT OF DIFFERENT SCIONS AND GRAFTING ON THE INCIDENCE OF COLLAR ROT

Scion	Rootstock	Planted	First Death	All Dead
Local	Pas. Malliformis	15/ 8/67	18/ 3/68	14/11/68
C39*	" "	15/ 8/67	18/ 4/68	5/ 6/68
Local	Local seedling	18/11/67	9/ 5/68	20/11/68
Local	seedling not grafted	18/11/67	22/ 4/68	20/11/68

*Plants comprised mixture of C39, C37, C77 and C80 but there was no difference between the clonal lines.

Fertilizer

The efiect of fertilizer application on yield was observed during early plantings. The first recommendations (6) of 5.4 kg per vine per year of a 10:5:20, N,P_2O_5,K_2O mixture was based on Hawaiian findings. In 1963 the recommendation was altered to a 15:5:20 mixture used at 0.45 kg per vine applied in November, February, May and August. This recommendation was based on later work from Hawaii, and was to replace the nutrients used in the production of a 22400 kg ha crop with additional nitrogen for vine growth. In a comparison of this recommendation with (a) no fertilizer and (b) twice the recommended rate, in unreplicated blocks at the Research Station, there was no response to the fertilizer; but in a later replicated trial by Partridge (5), under a better level of husbandry there was an 85% response to N and a 30% response to K, although no response to P. This has led to the current recommendation of 0.25 kg of Urea and potassium sulphate per vine every three months.

Plant spacing

The present plant spacing, rows 3.05 m apart with plants 6.1 apart in the row is the same as that used in several plantings in Hawaii, and was originally the spacing recommended by the University of Hawaii. Following a report that closer spacing could be advisable in the first year, two plant spacings were compared in the 1963-64 season with the following result:

Spacing	Yield mt/ha	
	Hand pollinated	Open pollinated
3.05m x 6.1 m	13.6	4.9
3.05m x 3.05m	6.8	1.8

The Trellis currently used is based on one of the forms used in Hawaii. No other forms have been tried in Fiji.

Fruit quality

Hand pollination gave fruit averaging 100gm, compared with 68 gm for open-pollinated fruit. The fruit: pulp and pulp: juice ratios were the same for both types of fruit.

Akamini and Girolami (1) found a similar increase in fruit size with hand pollination, which they attributed to the number of pollen grains on the stigma.

In a sample of fruit from 16 farmers in 1965 the average percentage pulp obtained was 43.3% with a range from 25 to 56%. A sample of fresh fruit place in a commercial cool store at 2-3°C showed weight loss of 6% over a 12 day period. There was however rapid deterionation of the fruit during the next three days following removal from the cool store.

Black passionfruit

Two blocks of 0.2 ha were planted in the central highlands of Viti Levu. One at Navai was subsequently damaged by hurricane and floods. Details of the other on block 33 Nadala are as follows:

Date planted	December 1964
Date of first flowering	9/7/65
Date harvesting commercial	20/11/65
Date harvesting completed	4/3/66
Yield	8.2 mt/ha (2785 doz from block)

In the following season a further 2280 doz fruit were harvested from both blocks, an estimated 2000 dozen from block 33 and the remainder from the other planting at block 3 Navai.

Evidence suggested that hand pollination may not be necessary as an 80% natural fruit set was being obtained.

Although the fruit processors were not impressed with the juice content of the fruit, a market for fresh fruit developed at Emperor Gold Mines. Collor rot was evident in the plantings and through this they died out, and no further development of this crop was undertaken.

DISCUSSION

While the yellow passionfruit is a satisfactory crop, the main problems associated with its expansion have been

(1) The initial cost of establishment.

(2) The labour requirement for hand pollination.

(3) The loss of plants due to collor rot.

The initial cost of establishment was calculated in early 1974 to be about $1430/ha ($570/acre), and at the time of going to press (April 1975) must be at least 20% higher. Thus, although assistance from the Government is available through its Crop Production Loan Scheme, funds available will not allow large expansions in plantings. The two processors are, however, now advancing funds to help in the establishment of new plantings; and this has resulted in a substantial increase in new plantings: 33,800 plants in 1973 compared with 7,600 plants in 1972, sold by the Research Station. The active participation of the processors in obtaining fruit has thus been a stimulus to the industry.

The labour requirement for hand pollination is a further restriction; pollination can be carried out only in the afternoons, and an individual flower is open for only the one day. But economically hand pollination is a feasible proposition. Assuming a person can pollinate 600 flowers an hour, a 70% fruit set, with 60% of fruit reaching maturity, and a 100 fruit weighing 10 kgs. at 9.9c/kg then one hour spend pollinating results in a return of at least $2.50.

Fiji agric. J. (1974) 36, 29-31

THE EFFECT OF AGE AT PUTTING OUT TO PASTURE ON THE GROWTH RATE OF CALVES

by

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SUMMARY

In a trial at Koronivia there was no difference in growth rate, up to 30 weeks old, between calves put out to pasture 1 week after birth and those put out at 4 and 12 weeks. Indoor rearing for 12 weeks or more has been recommended in the past, chiefly because of the high death rate, due to parasitic worms, of calves put out early. In this trial, with rotational grazing and occasional drenching, there were no deaths of calves put out at one week.

INTRODUCTION

The problem of rearing dairy calves in the dairy region of Fiji is very complex. Factors such as high rainfall, high temperatures and humidities, internal parasites and relatively poor level of management all too often result in poor calf survival and growth.

Compared with outdoor rearing from birth, indoor rearing of dairy calves to 24 weeks of age has been observed to reduce calf mortality from up to 40% to negligible proportions, mainly due to a reduction in the level of internal parasites (1). Some farmers have reduced mortality rates simply by keeping their calves off the ground in wooden cages for only the first two to three weeks after birth and thereafter rotationally grazing them on pastures.

The main possible advantage of indoor rearing of calves is reduced mortality rate. There is little or no evidence to suggest that growth is better when calves are kept indoors. It would be desirable to avoid the capital investment in special buildings and additional buildings and additional labour for cutting and carting fodder to, and waste away from, the animals involved in indoor rearing.

This paper reports observations on the growth rates and mortality rates of calves put onto pasture at three different ages: 1 week, 4 weeks and 12 weeks.

EXPERIMENTAL DETAILS

Animals and Management

Ten Friesian and two Jersey calves were allocated randomly at birth to each of three treatments. The animals were kept in three pens in a roofed shed with a concrete floor which was washed twice daily. Facilities for individual feeding of milk and group feeding of coconut meal and fodder were provided.

All calves were kept with their mothers for 48 hours after birth, then moved into their respective pens where they received whole milk at the rate of 10% body weight in two feeds daily. Whole milk feeding was gradually changed to skim milk in the third week. Coconut meal was offered at 454 gm/head/day after the first week. Para grass (*Brachiaria mutica*) from ungrazed areas was given to the calves from two weeks of age while in the calf shed.

At one week old, calves of the first treatment were put onto pasture in between milk feeding. They were rotationally grazed at 3 calves/acre on well drained paddocks growing para grass and Batiki blue grass (*Ischaemum indicum*). The other calves were put onto pasture at 4 and 12 weeks of age respectively. During heavy rain and strong winds, grazing calves were taken into the calf shed for shelter, but these occasions were few. All

calves were weaned at 12 weeks of age and coconut meal was fed at the rate of 908gm/head/day thenceforth. Drenching was carried out when necessary.

Recording

Calves were weighed at birth, then weekly until 30 weeks old, as far as possible at the same time of the day throughout the experiment.

Faecal samples were collected at two weekly intervals and the number of worm eggs per gram of faeces were counted by the method of Roberts and O'Sullivan (3).

RESULTS

Mortality

There were no deaths in the 1 week treatment but two each in the 4 and 12 week groups respectively. Deaths in three cases were caused by worm parasites and in one by pneumonia.

Calf weights

The mean liveweight gains during the intervening periods are shown in Table 1. The means have been adjusted by covariance analysis on birth weights, and by making due allowance (by fitting constants) for breed variation.

DISCUSSION

It seems that, under the trial conditions, housing for longer that one week does not promote greater growth rate. This is in accord with previous opinion: the major claimed advantage of housing has been not increased growth rate, but decreased mortality.

This mortality, as reported by Campbell (1), is generally due to heavy worm burden. As appeared in this trial, this burden can be substantially reduced by housing for 12 weeks, of which the first four weeks are the most critical. This is supported by observations on some farms where newborn calves are housed for 1 to 2 weeks after birth on slatted floors and then rotationally grazed on pasture. The mortality rates are reduced dramatically when this is done.

But Donald (2) pointed out that such measures merely delay the acquisition of a potentially pathogenic worm burden. He suggested, therefore, that, ideally, calves should be allowed to acquire infection up to, but not grossly exceeding, primary threshold level as early as possible in life. The same principle has essentially been suggested by Taylor (5).

The trial results suport this hypothesis. Although at the age of 12 weeks the calves continuously housed until then had an egg count only about 13% of that of the calves put out earlier, at 16 weeks and again at 30 weeks they had about double the count of the others. It seems that the latter had acquired, during their early weeks at pasture, a certain measure of resistance.

The differences in worm egg counts did not account for any differences in liveweight gain between treatment groups. *Cooperia spp* were predominant in the experimental calves and this perhaps explains the negligible differences in liveweight gain. The calves did not show any clinical symptoms of worm infestation. It is interesting to note that liveweights for the respective periods in the described trial are very similar to comparable group in a previous trial by McIntyre and Singh (1971), although the calves in their trial were drenched monthly. The worm egg counts in the present trial were slightly higher but by 30 weeks of age the worm burden was light. Internal parasitism can be an important cause of the relatively slower growth of calves, but in the context of the present trial it is more likely that nutrition is the major limiting factor to growth.

Conclusion

Under the humid tropical environment of the dairy region of Fiji, it is clear that winter born dairy calves can be reared outdoors on pasture from 1 to 4 weeks from birth, with the proviso that they be rotationally gazed at a low stocking rate in well drained and well grassed paddocks, and put under shelter when very wet and windy conditions prevail. Elaborate housing facilities give no added advantage in terms of growth and economics.

ACKNOWLEDGEMENTS

I thank Mr. R. Kumar and E. Rakadrudru for technical assistance and R. H. Wimble of Rothamsted Experimental Station for statistical analyses.

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TABLE 1. RESULTS

Age of calves at turning out to pasture	Liveweight gains from birth: (a) to 12 wks Kg	(b) to 30 wks Kg	Worm egg counts per gm faeces at: 12 wks	16 wks	30 wks
1 week	39.0	69.5	1600	1630	240
4 weeks	29.0	68.6	1500	2130	180
12 weks	29.5	69.9	200	3390	500
SE	±2.3	±3.6	±100	±363	±53

A BIBILIOGRAPHY OF AGRICULTURE IN FIJI: PART 1

by

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SUMMARY

After noting the major sources of information about agriculture in Fiji from 1800 to 1905, bibliographical details are given of all the relevant serials published in Fiji, viz: the *Royal Fiji Gazette, the Blue Book,* the *Journal of the Legislative Council,* the *Annual Reports of the Departmental of Agriculture,* the *Bulletins* issued by that Department, the *Fiji Planters Journal,* the *Transactions and Proceedings of the Fiji Society* and the various journals issued by the Department of Agriculture, principally that now known as the *Fiji Agricultural Journal.*

INTRODUCTION

It is often said that scientific and technological research tends to go round in circles; many of the discoveries and dead-end studies of one generation being soon forgotten only to be re-discovered, or worked to the same dead end, by the next generation. Cynical observers of the work of the Department of Agriculture in Fiji have been among those expressing this thought. Some such repetition, that may appear wasteful, is actually a deliberate re-examination of a subject in the light of changing technology and economics; but some is inadvertent repitition due to ignorance of past work.

The purpose of this paper to to make such repitition less likely in future by drawing attention to the main sources of information about past agricultural research and development in Fiji. To some extent the references given by Twyford and Wright in their brief history of Agriculture in Fiji (31, p 169 —) do this, but these references are selective, not definitive. Some more specialized published reviews give more detailed references for particular topics; but the two most thorough are of somewhat peripheral topics — land tenure (10) and botanical studies (17). Of the more central topics only beef (27) and sugar cultivation (19) have been well reviewed.

This paper deals with all types of literature up to 1905 (the year the Department of Agriculture was established) and *serials published in Fiji* from then on. Part 2 will cover other works since 1905 including textbooks, check-lists, *ad-hoc* reports, and relevant papers published by the South Pacific Commission or elsewhere abroad.

The 'References' indicate in which of the main libraries in Fiji the cited works are held. Some reference is also made to these in the text, with the following abbreviations:—

Archives: The National Archives of Fiji. (Located in the grounds of Government House Suva).

U.S.P. The Pacific Collection of the library of the University of the South Pacific, Suva.

F.C.A.: The main library of the Department of Agriculture, kept at the Fiji College of Agriculture, (located in the grounds of Koronivia Research Station, Nausori).

Botany: The Botany Section of Research Division of the Department of Agriculture, (located at Departmental Headquarters, Suva).

Throughout this paper 'The Department' is used to mean Department of Agriculture, similarly 'departmental'.

PRE - 1905 SOURCES

Early works. Indigenous agriculture

The first written accounts of life in Fiji are brought together in a book entitled, *The Journal of William Lockerby, sandalwood trader in the Fijian islands during the*

years 1808-1809, *with an introduction and others papers connected with the earliest European visitors to the islands.* This title is misleading, particularly when abbreviated (as it usually has been in citation) to *The Journal of William Lockerby.* Lockerby's journal occupies only 86 of the book's 335 pages. The introduction by Sir E. im-Thurm is the longest item in the book and the 'other papers' include several notable items (eg. "The journal of the missionaries"). The book as a whole is a fascinating contribution to the history of Fiji, but it would take a careful reading to determine its agricultural interest as the indexing is primarly to names of persons and places. There are entries in the index for breadfruit, coconuts, mandrai, masi, sheep (introduced in 1808), yams, and yaqona; but this is by no means a complete list. On pp 144-145 alone there are remarks about the yam-harvesting season, the cultivation of pumpkin and pineapples (both introduced a few years earlier) and the indigenous shaddock.

Because Fijian farm practice changed little, particularly in the interior, for many years several much later works, eg. Brewster (5), give useful accounts of what was essentially pre-European agriculture in Fiji. But because many crop plants were introduced during the early years of European contact (eg. the above reference to pumpkin and pineapples), to know exactly what crops ante-dated these contacts it is necessary to consult the accounts of the eighteenth century explorers. None of these landed in Fiji; but their accounts of the crops of other South Pacific islands are a good guide as to what species were present in the area then.

The excellence of the work of Cook's naturalists makes his voyages of particular interest. Recent reprints of the original journals of Cook (6), Banks (3) and others are in U.S.P. A more convenient work for those interested in the origins of the crop species of the Pacific islands is the *Botany of Cook's voyages* by Merrill (14). This re-presents in detail the original observations of Banks, Solander and others concerning native food plants and discusses at length, with ample references to later authorities, the possible routes along which crop species are believed to have reached the Pacific islands.

Botanical Investigations

The earliest academic writings of any direct relevance to agriculture in Fiji were those of botanical collectors. The first substantial publications related to the US Exploring Expedition of 1838-42 and the culmination of the early work was the publication in 1869 of B. Seeman's flora (23). This is of appreciable agronomic besides botanical interest because of the remarks on the subsistence crop species. (eg. about 3,000 words on coconuts and 2,000 on yams). The whole subject of botanical investigations, not only these early ones, but continuing to 1940 has been so thoroughly reviewed by Parham (17) as to obviate the need for any further mention here. Some, but not all, of Parham's early sources are in the Botany library.

European settlement

The alienation of land for European settlement and plantation farming has also been thoroughly covered recently, by France (10). Many of the references in France's vast bibliography are of mss. and other un-published works, some in the Fiji Museum but many held overseas; and many of the published works referred to are not available in Fiji. Most of France's references that are available in Fiji, and seem likely from their titles to throw light on agricultural methods, are mentioned below. France's account goes to 1910, but 1860-1880 are the crucial years.

European Agriculture

One particular aspect of European farming before 1905 has been covered in another well-referenced work: the history of sugar in Fiji by Potts (19). A more general brief review by Harvey (11), indicates the contents of the major sources for this period i.e. the *Swanston diaries* (26) (see also Derrick, 9). Seeman's *Mission to Fiji* (22), Horne's *Year in Fiji* (13), Cooper's *Islands of the Pacific* (7), and the 1892 *Handbook of Fiji* (1). Smaller, but very informative, works mentioned by Harvey include those of Pechey (18) and Berkeley (4).

All the foregoing are in archives, together with three works (2, 21, 25) from which Thompson (27) took material for his history of beef, and a slender work

about tobacco (12) curious on account of its publisher "The agricultural association of Fiji", a body I have seen no other reference to.

Pre-1905 Serials

The earliest serial publications in Fiji were the newspapers, starting with *The Fijian Weekly News and Planters Journal* in 1868 and *The Fiji Times* in 1864. Potts made much use of the Archives files of the latter for his history of sugar (19) and Thompson (27) quoted from them twice in his history or beef. Otherwise this valuable nineteenth century material has been neglected by agricultural writers.

Three other serials appeared during 1874-1885, all Government publications, as now described.

THE GOVERNMENT SERIALS

Within ten years of Cession three Government serials had begun publication. Two of these — the *Royal Fiji Gazette* and the *Journal of the Legislative Council* — are still running (the latter with a recent change of name to *Journal of the House of Representatives*) while the third, the *Blue Book*, ceased in 1940. Particularly during 1805-1905 much of the contents of these serials was duplicated, and some (eg. Trade Returns) published in all three.

The following account stressess, for each serial, that part of the contents that is of agricultural interest and either unique to that serial, or most conveniently consulted therein.

The Royal Fiji Gazette

This began in 1872. Archives has a complete set, USP misses the first two years. Its unique function, and only one of appreciable agricultural interest since 1920, is as a record of legislation. Until about 1914 (the transition was not abrupt) it carried some, if not all, Legislative Council (L.C.) Papers and it may be more conveniently consulted for these than the *L.C. Journal* because the *L.C. Journals* for these early years are mostly not indexed, whereas the *Gazettes* are indexed and tend to be in better condition. Also in USP there are *Gazettes* for many early years for which *L.C. Journal* are missing. Very early issues of the *Gazette* had a wide range of items.

The Blue Book

This was the official title of the statistical digest then (1876-1940) published annually by all British Colonies in a standard form. Before 1890 the forms were evidently printed in Britain, and the entries made by hand in Fiji. Later the whole work was printed.

Amid the many sections on finance, the Civil Service, and the country's institutions, three sections are of prime importance to us: those on Imports and Exports; Agriculture; and Manufactures, Mines, and Fisheries. From 1920 onwards the two last were amalgamated in a single section.

The Import and Export section is duplicated in the *Gazette*, for most years before 1914, and in the *L.C. Journal* during 1885-1940; but is most conveniently sought in the *Blue Book* as it occurs at the same place in every volume.

The Manufactures, Mines, and Fisheries section (sub-section after 1920) comprised little more than a brief list of factories which, were mostly establishments for processing agricultural produce eg. the sugar mills and at various times and places, fibre mills, rubber mills, and tea, tobacco, butter, and dessicated coconut factories. This list becomes less helpful after 1920 because it lists only number, not location. Thus we know that there was a tea factory at Wainunu for many years (also one in Taveuni, briefly) and there was a butter factory on Taveuni, and rubber mill at Navua, in 1919. But other sources must be used to discover the whereabouts of the two butter factories that were operating in 1921, and that the two in 1925 were not the same as the two in 1921. It is interesting to note that the tea factory, and four rubber mills, kept going until 1930.

The 'Agriculture etc' section (subsection after 1920) appears at first sight to be more informative as each year it gives a table of crop acreages and production. Indeed up to 1920 this was a two-way table with a breakdown by provinces for each crop and commodity, and for

livestock numbers. But in some years (not all; although clearly the remark applies to all) there is a footnote that reveals the limitation of these figures. The wording varies a little from year to year but typically (1900) reads "The foregoing figures refer to European cultivation only and are compiled from returns furnished to magistrates. Some planters, however, refuse to furnish particulars".

After 1920 the table appears in reduced form without the break-down by provinces. By 1926 there had been a reduction in the items listed and the footnote read "The above figures do not include native cultivations or native owned stock". In 1928 it read "The above figures are in some cases only approximate. The method of collecting statistics is now under consideration, and it is hoped in 1930 to publish accurate statistics". From 1930 to 1940 only sugar-cane, bananas, pineapples, coconuts, rice and cotton were listed.

The Journal of the Legislative Council/ House of Representatives

During 1885-1905 this contained both minutes of debates and papers tabled. During 1905-1920 some annual volumes contain both, some only papers. Since then they have comprised only L.C. Papers, the records of debates being separately bound. Each annual volume since 1905 has included an Annual Report of the Department of Agriculture for the previous year, except that the report for 1907 is missing from the Archives volume of 1908 (but present in the 1908 Gazette), the reports for 1913 and 1939 seem never to have been printed, and the report for 1949 occurs, with that for 1950, as a 1951 Paper. The FCA library has a bound set of Departmental reports, but with 1940-1948 missing. Several of these missing years are also missing in the U.S.P set of *L.C. Journals* (which is otherwise complete for 1920 onwards) and so Archives must be consulted for these years. Otherwise the FCA set is more convenient to work from.

Besides the Departmental annual reports there have been many other *L.C. Paprs* of agricultural interest, including several major reports on national agricultural policy. From 1921 onwards there has been a cumulative index in the front of each journal. This now gives an index for 1921-1972, which includes 66 items under 'Agriculture', the annual reports under 'Reports-departmental', and various papers of agricultural interest otherwise indexed. It would be helpful were someone to prepare a comprehensive agricultural index including the 'otherwise indexed' papers of 1921-1972 and going back to 1885. The former include papers on, eg. coconuts, meat canning, the pineapple industry, and the Tailevu Dairy Scheme; and the pre-1921 journals include papers on the formation of the Department (1905), banana shipments (1907), dairies (1909) and 'An investigation into the workings of the Department of Agriculture (1916).

DEPARTMENTAL ANNUAL REPORTS

The Department of Agriculture began with the appointment of C. H. Knowles as Superintendent of Agriculture in 1905. During that year he made a series of tours — by boat, on foot, and swimming rivers at times — to various parts of the colony, his reports on which were collected and printed as L.C. Paper in 1905. For 1906 he wrote an Annual Report, published as an L.C. Paper in 1907, and thereafter an annual report for each year has been published in the *L.C. Journal* of the next year, with the exceptions mentioned above. Until 1969 the nominal author of each report was the Superintendant (later Director) of Agriculture at the time of writing. Since then it has been annonymous, a welcome change as it is evident that for several years the authorship could have been nominal only.

Table 1 shows various details of these reports, including notes on the supplements that were printed in one form or another during 1920-1938 and again from 1948 to 1962 (except in 1955 and 1960). These supplements are more important than the main (Director's) report for most historical studies as they contain most of the detail of the work of the Department. During 1914-1920 there were also separately authored reports besides the Director's

TABLE 1. DETAILS OF DEPARTMENTAL ANNUAL REPORTS AND SUPPLEMENTS

Legco Paper No. and Year.	Principal Author	Year reported	Special sections	Supplements
13/07	C. H. Knowles	1906	—	—
22/08	"	1907	—	—
27/09	"	1908	—	—
27/10	"	1909	—	—
23/11	"	1910	—	—
34/12	"	1911	—	—
28/13	"	1912	—	—
None		1913		
24/15	"	1914	See note 1	—
29/16	"	1915	"	—
107/17	"	1916	"	—
60/18	"	1917	"	—
32/19	"	1918	"	—
65/20	"	1919	"	—
39/21	"	1920	"	—
56/22	G. M. McKeon	1921	See note 2	—
46/23	H. B. Lees	1922	"	—
53/24	A. Despeissis	1923	"	—
44/25	"	1924	"	—
36/26	J. D. Tothill	1925	"	—
90/27	"	1926	"	—
75/28	"	1927	"	—
83/29	A. C.Barnes	1928	"	—
42/30	"	1929	"	—
56/31	"	1930	—	Bulletin*
20/32	"	1931	—	"
27/33	"	1932	—	"
45/34	A. B. Ackland	1933	—	"
22/35	"	1934	—	"
27/36	"	1935	—	"
10/37	"	1936	—	"
41/38	"	1937	—	"
13/39	"	1938	—	"
None		1939		
4/41	H. W. Jack	1940	—	—
8/42	"	1941	—	—
13/43	"	1942	—	—
12/44	"	1943	—	—
8/45	C. Harvey	1944	—	—
8/46	W. J. Blackie	1945	—	—
19/47	"	1946	—	—
46/48	C. Harvey	1947	—	—
24/49	"	1948	See note 3	—
3/51	W. J. Blackie	1949	"	—
28/51	C. Harvey	1950	"	—
19/52	"	1951	"	—
33/53	"	1952	"	—
37/54	"	1953	"	—
9/55	"	1954	—	Bulletin 29
8/56	"	1955	—	—
8/57	"	1956	—	Bulletin 40
18/58	N. Lamont	1957	—	" 34
9/59	J. Watson	1958	—	" 36
21/60	"	1959	—	" 39
25/61	"	1960	—	—
29/62	"	1961	—	Bulletin 43
17/63	"	1962	—	" 47
17/64	J. Sandys	1963	—	Specialists'
27/65	"	1964	—	Stations
43/66	K. Garnet	1965	—	Stations
32/69	"	1968	—	
35/68	"	1967	—	Parts 1&2
31/67	"	1966	—	
30/70	Anon.	1969	—	Research
25/71	"	1970	—	"
27/72	"	1971	—	"
22/73	"	1972	—	"

NOTES ON SPECIAL SECTIONS & SUPPLEMENTS

Main sections most typical of years in question.

Note 1. (1914-1920)

Produce Inspection (PI) Entomology (Ent)
Plant Pathology (PP) Chemistry (Chem)

Note 2. (1921-1929)

As in Note 1 plus: Rice Mill
Veterinary (Vet) Cotton Agronomy

Bulletin* (printed; 1930-1938)

Each entitled *Annual Bulletin of Divisional Reports,* and the *year.*

Chem PI Ent Vet

and sections variously named covering work on the stations and extension.

Note 3. (1948-1953)

Senior Agric. Officer Agric. Officer (Agronomy)
" Vet. " A.O. Animal Husbandry
" Chemist Botanist or
" Entomologist Plant Pathologist

Bulletin 29 etc (Printed; 1954, '56, '59, '61, '62)

Each entitled *Annual Reports of (Divisional and Specialist Officers, followed by year.*

All yrs : Vet, Chem, Ent, Bot, Cocoa, Stations.
Some yrs: PI, Koronivia Farm Inst., Weed Cont., Plant Quarantine.
1957 : Extension Services, Soil Conservation.

Specialists (Cyclostyled; 1963)

The few bound copies in existence have no overall title but include reports for Stations, Botany, Chemistry, Cocoa, Vet, and Ent.

Stations (Cyclostyled; 1964, 1965, and 1966-68)

Reports for Koronivia, Sigatoka & Dobuilevu.

Research (Cyclostyled, bound; 1969-1973)

Entitled *Annual Research Report,* and *Year.*

reports, but they occured within the body of the latter. During 1921-1930, and 1948-1953 the supplements were appended to the Director's report, and published as part of the same *L.C. Paper*. During 1931-1938 and 1954-1962 they were published separately as Bulletins. The FCA library is most convenient for consulting these.

Also in the FCA library is one of the few surviving sets of the cyclostyled 'Specialist Officers Reports 1963' and 'Stations Reports, 1964, 1965, and 1966-1968' which are almost the only records of research during those years. Since 1969 the bound, cyclostyled Annual Research Report has supplemented the Directors Report.

During Knowles' tenure of office, 1906-1920, the Director's report was largely about the progress of work, including agronomic trial results, at Nasinu (and in some years Lautoka) Experimental Station. From 1921 to 1968 it always comprised two main topics: the state of agriculture in the country in general, including production statistics; and the work of the department. In 1969 there was a complete change of format, the main sections now being annual crops, tree crops, livestock, and fisheries. Each sub-section, for each crop etc, contains remarks on national production and on the relevant extension and research work of the Department.

DEPARTMENTAL BULLETINS

Since 1911 the Department has published an irregular series of numbered Bulletins of incredibly varied length (4 to 196 pages) style (ranging from that of a farmers' advisory leaflet to the highly academic) and format (usually monographic, but eight were symposial).

Table 2 lists these numbered Bulletins, showing subject and author and noting various peculiarites of numbering, re-issuing and dating. The Bulletins with titles abbreviated to 'Ann. Repts. (D. &) S. Os.' are refered to, with full titles, in Table 1. Bulletin 44 is mentioned below.

Several booklets very similar in style to typical *Bulletins* have been published by the Department but not numbered in the

TABLE 2. DEPARTMENTAL BULLETINS

No	Year	Subject	Author
1	1911	Sisal hemp	C. H. Knowles (C.K.)
2	1911	Hurricanes	C.K.
3	1912	Rhinoceros beetle	F. P. Jepson (F.P.)
4	1912	Bananas	C.K. & F.P.
5	1913	Banana scale insect	C.K.
6	1913	Lemon grass	C.K.
7	1914	Biological control	C.K.
8	1915	Coconut experiments	C.K.
9	1916	Soils of Fiji	C. H. Wright (C.W.)
10	1917	Fijian plant names	C.W.
11	1919	Alluvial soils	C.W.
12	1920	Coconut leaf moth	C.K.
13	1920	Cotton cultivation	C.K.
14	1921	Coconut scale insect	H. Simmonds (H.S.)
15	1924	Coconut leaf moth	C.K.
16	1925	C'nut pests & diseases	H.S.*
17	1930	C'nut early nut-fall.	J. H. Taylor
18	1935	Sipke moth control	R. W. Paine (R.P.)
19	1935	Fruit fly studies	H.S.
20	1938	C'nut pests & diseases	H.S.*
21	1941	Rhinoceros beetle	H.S.
22	1943	Mosquitoes in Fiji 2nd.Ed.†	R.P.
23	1946	Insect pests in Fiji	R. J. Lever
24	1948	Botanic. gardens, Suva	J. W. Parham (J.P.)
25		Copra drying	S. J. Blackie
26	1953	Mechanized rice.	R. R. Mason
27	1954	Index, Cir'lar & F.A.J.	C. W. & B. V. Parham
28	1955	Soil erosion	C. E. Whitehead
29	1955	Ann. Repts. D. & S. Os: 1954	
30	1955	Grasses of Fiji	J.P.
31‡	1956	Noxious Weeds	T. W. Mune & J.P.
31‡	1957	Ditto revised Edn.	T. W. Mune & J.P.
32	1957	Copra driers	C. Gregory *et al*
33	1957	Koronivia Farm Inst.	R. W. Hartley
34	1958§	Ann. Repts. D. & S. O.s 1957	
35	1958	Weeds of Fiji	J.P.
36	1959	Ann. Repts. D. & S. Os. 1958	
37	1961	Fertilizers	J. McPaul (J. McP.)
38	1961	Coconuts in Fiji Part 1	J.McP.
39	1962	Ann. Repts. D. & S. Os. 1959	
40	1962	Ann. Repts. D. && S. Os. 1956	
41	1963	C'nuts, Fiji 2. History etc	J.McP.
42	1964	Pest control	B. A. O'Connor
43	1964	Ann. Repts. S. Os. 1961	
44	1965	Agricultural Science, 1.	
45	1965	Insect trophic records.	A. D. Hinkley
46	1966	Breadfruit varieties	D. Koroiveibau
47	1966	Ann. Repts. S. Os. 1962	
48	1967	Noxious weeds, 3rd Ed.	R. L. Mune & J.P.
49	1966	Banana leaf diseases	K. M. Graham
50		No Bulletin 50 published	
51	1969	Banana root mematode	A. L. Taylor
52	1969	Pig feeding	Anonymous
53	1970	Weed science	N. Patel & P. Rhodes
54	1970	Ann. Rept. 1968 in Fijian	
55	1971	Biological control	V. P. Rao

* Bull. 20 was in effect a 2nd Ed. of Bull 16 although title changed slightly.

† The 1st. edn. was pub. 1935, not in this series.

‡ Identical except that the latter has an appendix on Navua Sedge and the words Revised Edition added to the cover.

§ This bulletin, & several later ones, are undated. Dates given here for these are infered.

series. Some appear to have been unnumbered by oversight eg. a monograph by B.E.V. Parham, *Fijian Plant Names*, printed in 1940. (This is in its chronological place in the FCA bound set of bulletins and listed as No. 21A in the Index). The Annual Report supplements for 1931-1938 were called bulletins but were unnumbered, whereas the very similar works for 1954-1962 were numbered.

DEPARTMENTAL SCIENTIFIC JOURNALS

Ignoring minor name changes and breaks in publication, basically two journals have been published by the Department with a content partially or wholely of articles in 'scientific paper' style.

The (Monthly) Agricultural Circular

This began as the *Monthly Agricultural Circular* in Jan. 1920 and so ran for 9 issues to Sept., 1920. Volume 1 was then completed by a single issue numbered on the cover as 10-12, and the word 'Monthly' was dropped from the title for Volume 2 which had five issues in 1921.

Thereafter, three more volumes, some misnumbered, were irregularly issued until 5 (2) appeared in 1925. There are complete sets with corrected volume numbers in FCA, Botany and USP, together with an index (10) in accord. For citation in this journal give corrected volume numbers, ignore issue numbers (all volumes were continuously paginated) and abbreviate title to *Agric. Circular Dept. Agric. Fiji.*

Most of the articles are very short. Some are news items, but many are brief technical notes. There are, for example, 42 separate index entries for 'bananas'. Some articles are anonymous. Otherwise, the author is generally indicated by initials only; but the names corresponding to these can be traced from the author section of the Index (32).

(Fiji) Agricultural Journal

After a lapse of two years this took the place of the defunct *Circular*. The original title was *Agricultural Journal issued by the Department of Agriculture, Fiji,* but this was authoritatively abbreviated in the *World List of Scientific Periodicals* to *Fiji agric. J.* It continued to appear more or less regularly (see Table 3) under the original title until one issue of Vol. 31 appeared in 1961. It then lapsed until 1970 when Vol. 32 of the *Fiji Agricultural Journal* (New Series) was published. Since then one volume of two issues has been published each year.

TABLE 3. FIJI AGRICULTURE JOURNAL PUBLICATION DETAILS 1928-1961

Volume	Issue numbers*				Year	Pagination
1	1	2	3	4	1928	Separate
2	1	2	3		1929	Continuous
3	1	2	3		1930	"
4	1	2	3	4	1931	"
5	1	2			1932	"
6	1	2			1933	"
7	1	2	3	4	1934	57 pp
8	1	2	3	4	1935	Separate
		2			1936	"
			3	4	1937	"
9)					(1938	"
10)					(1939	Continuous
11)					(1940	"
12)					(1941	"
13)	1	2	3	4	(1942	"
14)					(1943	"
15)					(1944	"
16)					(1945	"
17)					(1946	"
18)					(1947	"
19	1	2	(3 — 4)		1948	"
20	1	2	3	4	1949	"
21	(1 — 2)		3		1950	"
22	1				1951	32 pp
23	1	2	(3 — 4)		1952	See footnote††
24	(1 — 2)		(3 — 4)		1953	Continuous
25	1		(3 — 4)		1954	"
26	1	2	3		1955	"
27	(1 — 2)		(3 — 4)		1956	"
28	(1 — 2)		(3 — 4)		1957	"
	No Publication				1958	
29	1	(2 — 3)		4	1959	"
30	1	2			1960	"
31	1				1961	47 pp

* (1 - 2) indicates an issue numbered '1 and 2'; etc.

†† Issue 1, pp 1-32; issue 2, pp 1-32; issue '3 and 4' pp 65-123.

As shown in Table 3 the issue irregularities of several pre-1970 volumes are most confusing; and in some issues pagination is also confused. Although most volumes are continuously page-numbered, so that issue numbers need not be given in citations, some volumes had separately paginated issues.

Wright and Tyford (32) give an Index for Vols. 1-22, and an index to Vols 23-36 follows this paper.

Agriculture Science No. 1.

Bulletin 44 was called *Agricultural Science No* 1 and comprised several academic-style papers. This may have been intended to be the first of a series, replacing the *Journal*. Whatever the intention, there has been no No. 2.

THE FIJI SOCIETY'S PUBLICATIONS

The Fiji Society of Science and Industry was founded at Suva in 1938 and has since met regularly to hear papers read by members, which have later been published in volumes as detailed in Table 4. The first three issues bore no volume or issue numbers; but as the fourth was published as Volume 2 these first must be retrospectively regarded as Issues 1, 2, and 3 of Volume 1. In 1948 the Society dropped the words 'of Science and Industry' from its name; and the journal has since appeared as the *Transactions and Proceedings of the Fiji Society*. It is probably best now in citations to ignore contemporary changes of title during Volumes 1-3 (see Table 4) and regard the final title, abbreviated *Trans. Proc. Fiji Soc.*, as applying throughout.

Volume 1 is missing from the FCA and USP sets (also from the Suva City Council and Lautoka Sugar Research Station library sets). Probably the only library copy in Fiji is in archives. Each issue is separately paginated so issue numbers must be included in citations. The publication dates of issues 1 and 2 may be assumed as 1939 and 1940 respectively. Later volumes are continuously paginated so that the nominal subdivision of each volume into 'parts', one 'part' for each year comprised, can be ignored in citation. Note that in citation the date given should be date of publication not the date of first reading of the paper in question.

TABLE 4. PUBLICATION DETAILS OF THE TRANSACTIONS AND PROCEEDINGS OF THE FIJI SOCIETY

Volume (and issue)	Titie Key to footnotes	Publication date	Years
1 (1) *	A	?	1938 - 39
1 (2) *	B	?	1939 - 40
1 (3) *	C	1941	1940
2	B	1953	1940 - 45
3	B	1953	1945 - 47
4	B	1953	1948 - 50
5	B	1958	1951 - 54
6	B	1959	1955 - 57
7	B	1963	1958 - 59
8	B	1965	1960 - 61
9	B	1968	1962 - 63
10	B	1969	1964 - 65
11	B	1971	1966 - 67

* No contemporary numbering. These numbers assigned retrospectively.

Titles

A. Fiji Society of Science and Industry

B. Transactions and Proceedings of the Fiji Society.

C. Transactions and Proceedings of the Fiji Society of Science and Industry.

Several of the volumes contain papers of agricultural interest including the historical reviews, already mentioned, of sugar (19), botanical studies (17), and early plantings (11). Other papers reviewed animal introductions (30), tobacco (15) and cocoa (24). There have also been some papers on current studies, notably by Potts (20) on the development of the small-farm system of sugar cultivation, by Trivett (29) on sugar-cane breeding, and by *Daniels et al* (8) on Downy Mildew Disease of sugar-cane.

The journal should not be confused with the almost identically named *Transactions and proceedings of the Fijian Society*. This society flourished early this century, but is long defunct and its journal comprised papers of only sociological interest.

MISCELLANEOUS

Newspapers

According to a catalogue by S. Baksh, (pers. comm.) the Archives contain more

or less complete sets of some 17 periodicals of the 'newspaper' type published in Fiji between 1868 and 1968. Many of these are virtually amalgamations or continuations of previous ones, with a slight change of name; and others had only a brief existence, or are too recent to be of much interest in the present context. Only the following, therefore, need be mentioned here:

1. *The Fijian Weekly News and Planters Journal* (1868).
2. *The Fiji Times* (1869-)
3. *Fiji Gazette and Central Polynesian,* (1872-1874) passing in quick succession to other titles and eventually being succeeded, at Levuka, by the *Polynesian Gazette* (1884-1934+)

Searching these for items of agricultural interest would be laborious, particularly in more recent years when issues have been bigger and publication more frequent (*The Fiji Times* changed from bi-weekly to tri-weekly publication in 1910, and to daily in 1915). It would be a great service were someone to prepare an agricultural index.

The Fiji Planters Journal

This was the journal of 'The Planters Association of Fiji' which apparently flourished about 1910-1920 with branches at Rewa, Ba, Labasa, Nadi and Savusavu. There are three copies (issues 3, 19, and 38) in Archives and, in a brief note on this topic in 1952, Parham (16) tells how nine other issues came into his possession. From the volume, issue, and page numbers and publication dates of the surviving issues it seems that it was published monthly starting in July 1913. The issues were continuously numbered, but a new volume began after a year. Thus issues 13-24 formed Vol 2; 25-36 Vol 3; and No. 38 for August 1916, the last issue of which there is any record, was in Vol 4.

All the articles are very brief and much of the space is devoted to news and trivialities, so that there is little of interest to a modern agronomist. An article on ginger in issue 38 is a note-worthy exception.

The Fiji Farmer

There were nine issues of this: Vol 1, four issue, 1965; Vol 2, four issues, 1966; and Vol 3 (1) 1967). The contents were primarily advisory.

Non-printed material

In the past there has been a sharp, distinction between 'letter press' printed serials and those reproduced by cruder methods (e.g. cyclostyling). Several of the latter have been published each for a few years by the Department from time to time (e.g. *Rural News*, during the late 1960's and *Tukutuku ni Tabacakacaka ni Teitei* currently) but with the exception of the annual Research reports mentioned earlier the contents have been non-scientific. With the advent of new methods, e.g. off-set printing as used for the 1974 Research report, the distinction will be less clear cut in future.

ACKNOWLEDGEMENTS AND REQUEST

I am much indebted to various librarians, particularly Miss H. White of the Government archives and Mr. S. Baksh of the University, for their great assistance, and to the many departmental colleagues who gave helpful suggestions.

Mr. G. K. Reakes Williams of the Fiji College of Agriculture, who is now working on Part 2 of this paper would be grateful if anyone knowing of obscure works would draw his attention to these.

REFERENCES

Except in the case of works held in all the libraries mentioned in the introduction, which works are unlettered below, the following letters are used to indicate where each work can be found: A-Archives; B-Botany; U-USP.

1. Anon (1892) *Handbook to Fiji, giving some information etc.* Govt. Printer, Suva. (A)
2. Anon (1905) *Cyclopedia of Fiji.* Cyclopedia of Fiji Co., Sydney. (A)
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INDEX TO VOLUMES 23 TO 36 OF THE FIJI AGRICULTURE JOURNAL

NOTES

1. Dating

Volumes 23 to 31 were issued irregularly during 1952 to 1961. Publication re-started with Vol. 32 in 1970.

2. Issue numbers

The three issues of Vol. 23 were separately paginated, hence must be distinguished as **23(1)** etc. in following index. **23(3)** refers to the single issue that was published as '3 and 4'.

3. Excluded items

Items in the following categories, now excluded but appearing in Vols. 23 to 31, have been omited from this index:

a) Descriptions of noxious weeds, with notes on their control, that were later published, or had previously been published, in identical form in Bulletin 31, by J. W. Parham and T. L. Mune.

b) Other reprints of articles first published elsewhere.

c) Re-presentations for the benefit of Fiji readers of standard text book material.

d) News items, obituaries, reviews, and a few other ephemeral or trivial items.

4. Nomenclature

All plants and animals having generally accepted common names are indexed under these, not their scientific names: e.g. rice, not *Oryza sativa;* rhinoceros beetle, not *Oryctes rhinoceros.* Users knowing only the scientific name will find this cross-indexed with the common name now used, in either the Plants of Fiji, by J. W. Parham or Agricultural Zoology of Fiji by G. Swain.

SUBJECT INDEX

PART 1. AUTHOR INDEX

NOTES TO CONTRIBUTORS

Scope of papers. Reports and reviews of research in the fields of agriculture, veterinary science, forestry, fishery, and allied subjects in Fiji, or elsewhere if relevant to agriculture in Fiji, will be considered for publication. This will not necessarily be in order of receipt; papers that need little editing are likely to appear earlier than those that involve much.

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