THE DISTRIBUTION OF CITRUS FRUIT GROWN ON THE MURRUMBIDGEE IRRIGATION AREA.

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1. INTRODUCTION.

The Murrumbidgee Irrigation Area, with over 6,000 acres of irrigated farm lands devoted to the cultivation of citrus fruits, grows nearly 30 per cent. of the annual Valencia and Navel Crops of New South Wales. In the light of this significant status the Division of Marketing and Agricultural Economics has undertaken, at the request of the District Council of M.I.A. Extension Groups, an investigation into a number of phases of the distribution of these fruits from the Area.

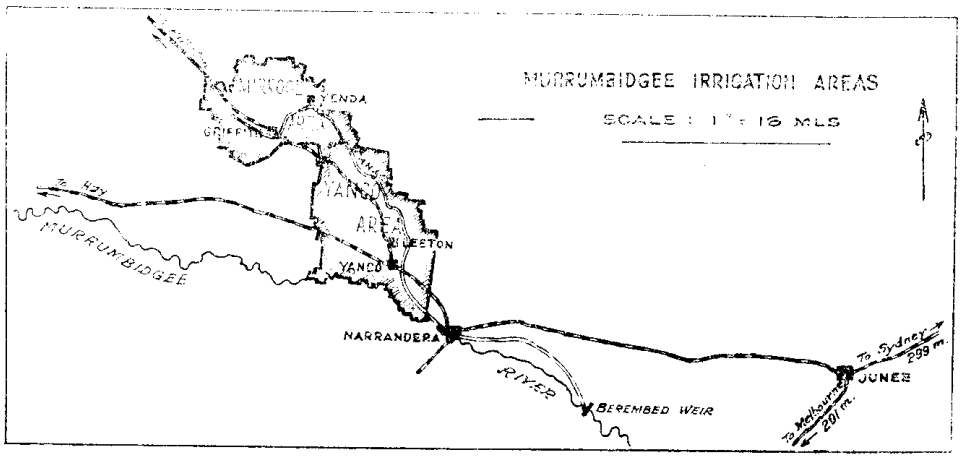
The investigation has been hampered by the inadequacy of local statistical records but the present report is as complete as available data will allow. As the Navel and Valencia crops comprise just over 90 per cent. of the total citrus production of the M.I.A. attention has been confined mainly to these varieties.

It will be readily appreciated that the prosperity of citrus growers on the M.I.A. is to be a very large extent dependent on the stability and prosperity of the citrus industry of New South Wales, and indeed of the Commonwealth, as a whole. Production and distribution in the coastal districts of New South Wales[1] and the irrigation areas of Victoria and South Australia are of particular importance. Any discussion of planting trends, for example, in the M.I.A. is apt to lose perspective if considered in isolation.

[1] For further information regarding the citrus industry in New South Wales coastal districts see C. J. King and T. M. P. McKeon, "Report on Coastal-Grown Orange Prices," *Review of Marketing and Agricultural Economics*, Vol. 17, No. 3, September, 1949, pp. 226-268.

2. PRODUCTION.

Annual citrus production on the M.I.A. varies considerably from year to year according to seasonal conditions. In the past five years, as can be seen in Table I, the production of Navels has fluctuated between 157,000 bushels in 1946-47 and 337,000 bushels in 1949-50. In the same period Valencia production was as low as 220,000 bushels in 1946-47 but rose to 443,000 bushels in the following year when New South Wales established a new record for citrus production surpassing the previous state record, of 1938-39, by 22 per cent. The production of other citrus varieties is not particularly significant in the M.I.A.



The M.I.A. is composed of the Yanco and Mirrool irrigation areas. The area of land under occupation totals approximately 346,000 acres, of which about 21,000 acres are devoted to horticulture. Water flowing along the Murrumbidgee River from the Burrinjuck Dam is diverted into the main irrigation canal at the Berembed Weir.

While production varies widely from year to year, productive capacity, as evidenced in the number of citrus trees planted, has shown a steady increase over the past ten or fifteen years and is readily apparent in the censual surveys of tree plantings which have been published since 1943. Of greater significance than this increase in total productive capacity has been the change which has taken place in the relative importance of the two major orange varieties which are grown on the Area. In the late war years the number of bearing Valencias increased by 6,000 to 10,000 trees each year while the number of bearing Navels was diminishing by 3,000 to 5,000 per year. In the post-war years to 1948 the number of bearing Valencias increased by about 15,000 per year while the number of bearing Navel trees was still slightly diminishing.

That the trend towards increased Valencia plantings is being maintained is made obvious by the fact that in 1950, 6,372 Valencias (on Trifoliata stock) were planted in the Yanco area as against only 196 Washington Navels. Similarly in the Mirrool area Valencia plantings in 1950 numbered 4,128 as against 416 Navels. The present position is clearly indicated by the statistics in Table II which show that bearing Valencias now number 239,000 as compared with 142,000 Navels. In 1943 there was approximate equality in the numbers of bearing trees of the two varieties. The dominance of the Valencia variety is much more outstanding in respect of the non-bearing trees, *viz.*, 118,000 Valencias to 13,000 Navels.

It will be some years before the full effect of this changing relationship is felt. It is estimated that by 1955 the number of bearing Valencias will approximate to 272,000 and will then outnumber the bearing Navel trees by about three to one. The fact that Navels can now be planted on Trifoliata stock may result in growers giving more favourable consideration to Navel planting in the future, but if the present decisive trend towards Valencias continues the consequences will be of some significance to the citrus industry of the M.I.A.

TABLE I.

Citrus Production—M.I.A., N.S.W. and Australia, 1945–50.

Year.*a*	Washington Navel.	Valencia.	All Other Citrus.	Total.
	'000 bush.	'000 bush.	'000 bush.	'000 bush.
	M.I.A.			
1945–46	286	316	78	680
1946–47	157	220	63	440
1947–48	304	443	80	827
1948–49	267	423	71	761
1949–50	337	416	67	820
	N.S.W.			
1945–46	872	982	752	2,606
1946–47	872	1,185	957	3,014
1947–48	1,255	1,553	986	3,794
1948–49	1,180	1,625	918	3,723
1949–50	1,101	1,418	837	3,356
	AUSTRALIA.			
Average 5 years— 1945–50	2,320	2,100	1,784	6,204

Sources: New South Wales Bureau of Statistics and Economics and Commonwealth Bureau of Census and Statistics.

a Year ended 31st March.

NOTE.—Comparable production figures for the Coastal Division are as follows :—

Year.	Washington Navel.	Valencia.	All Other Citrus.	Total.
	'ooo bush.	'ooo bush.	'ooo bush.	'ooo bush.
1945–46	262	439	495	1,196
1946–47	453	743	686	1,882
1947–48	528	767	663	1,958
1948–49	496	850	611	1,957
1949–50	407	698	554	1,659

The preference that growers have been, and are, showing towards the Valencia variety may be explained partially by the fact that in the past returns have tended to be better for this variety than for Washington Navels. From the point of view of the packing sheds also the Valencia is apparently to be preferred to the Navel because it comes on the market during the warmer months of the season when the demand for oranges is greater and prices more buoyant than in the winter months.

TABLE II.

M.I.A. Citrus Trees.

Variety.	Mirrool.		Yenda.		Yanco.		Total.	
	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.
	'000 trees.	'000 trees.	'000 trees.	'000 trees.	'000 trees.	'000 trees.	'000 trees.	'000 trees.
Valencias	133	66	10	1	96	51	239	118
Navels	78	11	11	...	53	2	142	13
Other Oranges	3	1	...	...	3	...	6	...
Lemons	16	2	...	...	4	1	21	3
Grapefruit	14	5	...	...	3	1	17	5
Other Citrus	3	1	...	...	2	...	5	1

Source: M.I.A. Fruit Tree and Grape Vine Census, 1950 (Subject to Revision).

Notwithstanding the rationale of the grower's behaviour, an overwhelming preference for one variety of tree as against another could have quite significant long-term effects in so far as the distributive system of the citrus industry is concerned. It is for that reason that attention is drawn to the matter in the present context.

One of the main aims of an efficient shed management is to maintain, as far as the exigencies of the season will permit, an even and manageable flow of fruit through the packing shed for the greater part of the year, thereby gaining the most economic use of labour and equipment and simultaneously ensuring the most careful and efficient handling of the fruit. At the present time, although they experience one or two slack months and also several particularly busy months, the packing sheds at Leeton and Griffith have the advantage of citrus harvests spread over about ten months of the year. March and April, when the Valencia season is drawing to a close and the Navel harvest has not commenced, are usually fairly slack months, but in June and July the receivals of Navels are at their heaviest, and remain heavy, if the season is favourable, during August. Valencias predominate during September when the Navel season is drawing to a close and are particularly heavy in supply towards the end of the year and may remain in heavy supply till the end of February. As great difficulty is being experienced in obtaining skilled shed hands, it is customary to retain the labour force even during the slack periods. Of course, opportunity is taken at this time to put the shed employees on to maintenance work or case assembly, but the hiatus in production is a matter of some import to the shed manager anxious to keep his labour and equipment in profitable employment.

When the over-riding dominance of the Valencia begins to assert itself these difficulties must inevitably be accentuated. Instead of the two peak periods of production at present experienced there will be a pronounced concentration of production during the summer months and probably a lengthened slack period.

The possible effect of the change in production of the two major orange varieties upon their relative market prices will depend largely upon the extent to which similar changes are taking place in other citrus growing areas, not only in New South Wales but also in other

States, particularly Victoria and South Australia. A marked increase in total citrus production in these States would also have some effect on prices.

In the main coastal areas [2] of New South Wales where production, which fluctuates widely from year to year, dropped from 492,000 bushels of Navels and 920,000 bushels of Valencias in 1948-49 to 403,000 bushels of Navels and 676,000 bushels of Valencias in 1949-50, new citrus planting by private growers have been fairly heavy and apparently Valencias have outnumbered Navels by about two to one.

The trend towards Valencias does not appear to have been so pronounced elsewhere. Most of the new plantings on the Murray Valley and in South Australia and Victoria have been under the War Service Land Settlement Scheme which generally speaking provides for about 60 per cent. Valencias, 35 per cent. Navels and 5 per cent. Grapefruit.[3] Production in these southern States also varies widely according to seasonal conditions. Average production in Victoria appears to be of the order of 370,000 bushels of Navels and 280,000 bushels of Valencias. The dominance of the Navel variety is more marked in South Australia where production in 1948-49 was 799,000 bushels of Navels and 290,000 bushels of Valencias.

From the foregoing evidence it would seem that any change in the Valencia-Navel price relationship is more likely to be witnessed on local New South Wales markets, particularly Sydney, rather than as a ubiquitous phenomenon.

3. THE PACKING SHED.

On the basis of 1950 planting statistics it can be assumed that the Mirrool area will produce on the average about 58 per cent. of all the citrus grown on the Murrumbidgee Irrigation Area while the Yanco and Yenda areas should provide approximately 38 per cent. and 4 per cent. respectively. There appears to have been little change in the relative importance of these three areas in recent years except that Yenda, never an important citrus producer, is showing signs of further decline in citrus production.

Five packing sheds are located in the town of Griffith to pack and market the fruit grown in the Mirrool section. Two of these sheds are owned by a co-operative concern, the other three being privately owned. Two sheds, one co-operative and one privately owned, are located in the town of Yenda but a considerable portion of the citrus crop produced in this area appears to be packed and marketed through the Griffith sheds. In Leeton there are three sheds, two of which operate on a co-operative basis.[4]

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[2] Hunter-Manning and Cumberland Statistical Divisions.

[3] G. O. Gutman, "Industry Expansion," *Citrus News,* May, 1951, p. 73.

[4] The Griffith Producers Co-operative Company Ltd., Josling and Snaith, A. M. Nugan and Miranda Bros., operate packing sheds in Griffith. The sheds in Leeton are the Riverina Growers Packing House and the sheds operated by the Producers' Co-operative Distributing Society Ltd. and the Leeton Co-operative Cannery Ltd.

In addition to these main sheds there are a large, and apparently increasing, number of packing sheds owned and operated by growers. Some of these smaller sheds pack up to 5,000 bushels of citrus in a season, a few have packed over 5,000 bushels. The figures for the bulk loading of citrus at Griffith in recent seasons give some indication of the growing numbers and strength of this group.

Generally speaking, each of the packing sheds in Leeton and Griffith handle between 50,000 and 100,000 bushel cases of citrus in a season. Only one organisation, apparently, has packed over 200,000 bushel cases in a season. It is obvious from these facts that packing sheds in the M.I.A. have no opportunity to avail themselves of any benefits and economies associated with really large-scale operation, such economies as might, for example, be available to the larger Californian packing sheds, packing anything up to 600,000 bushel cases of citrus annually.

Sorting Bench in a Griffith Packing Shed.

As one would expect, the packing sheds have grown with the expansion and development of the fruit-growing industries of the M.I.A. and the extent and success of their operations reflect the prosperity of the fruit growers. The rate of the industries' growth quickened somewhat in the last decade or so, thus enabling a number of new packing sheds to open up. This has meant that much of the packing equipment and its lay-out in the sheds is quite modern, being only recently installed. But it has also meant that the comparatively long-established sheds, obstructed by the shortage of materials and space, have had to reconcile themselves to the task of handling increasing quantities of fruit with existing, and possibly already inadequate, facilities.

Modern equipment and the efficient lay-out of the packing shed are pre-requisites to development in the fruit-packing industries. Most of the sheds on the Area have, or are in the process of installing, modern grading equipment but in some cases the lay-out of sheds is not up to modern standards.

In Leeton each of the three main packing sheds is located on a rail spur and can load the packed fruit direct from the shed to the railway trucks. Two of the Griffith packing companies have this advantage which would effect considerable economies in the course of a season. In addition, all packers in the Mirrool area have access to a bulk loading organisation which enables them to take full advantage of the cheapest rate of railway freight for the consignment of their fruit. The freight is loaded at a siding owned by a co-operative packing company and the total cost of the freight apportioned among the various consignors in proportion to the amount they have loaded. This service is is of particular benefit to the smaller packing sheds and the individual grower wishing to despatch relatively small consignments on his own account. Over 100,000 bushels were freighted from Griffith in this way during 1949-50.

No such organisation exists in the Yanco area. Firms have been set up in the past to provide a similar service at Leeton but apparently have met with little, or no, financial success. However, most growers in Yanco and Leeton have been able to freight the greater part of their fruits crops at rates applicable to bulk freighting.

Citrus fruit that is not handled by the co-operatives is for the most part purchased outright by the shed manager and packed and consigned by him for the profit of the shed. From an examination of available statistics it can be said that about half of all cirtus grown on the M.I.A. is now handled on this, or a similar, basis although the co-operative sheds continue to receive fruit, without discrimination, and grade, pack and consign it on the grower's behalf. In one case, both the Valencia and Navel crops are handled by running a number of pools. All receipts being paid into the pool, and after expenses have been met, final payment is made for each 100 lbs. of export, good or factory grade of fruit delivered to the shed on the basis determined by the directors of company and its citrus committee.

4. DISTRIBUTION PATTERN.

It is unfortunate that complete statistics of the distribution of M.I.A. citrus fruits over a reasonable period of time are not available. For this reason any statement regarding the overall pattern of distribution must be read with reservation. An additional handicap has been that such statistics of exports and local disposals as are available are for different periods. For these reasons it has not been possible to provide a summarised schedule of production and distribution.

Table III gives an indication of the quantity of Navels and Valencias either packed by the sheds in Leeton, Griffith and Yenda or packed and consigned through the bulk loading system at Griffith, in which case a proportion of grower-packed fruit would be included.

TABLE III.

Navels and Valencias Packed in Bulk, 1945-50.

Season.	Quantity. '000 bus.
1945-46	530
1946-47	320
1947-48	710
1948-49	580
1949-50	620

The figures show that of the total production listed in Table I 82 per cent. to 95 per cent. of the Navels and Valencias passed through these channels. Additional quantities, of which no record exists, would be consigned by road or rail, particularly from Leeton, by the growers to city markets or country towns. Allowance must also be made for the possibility that some of the fruit grown would not be harvested and sold.

Notwithstanding the incompleteness of the statistical data it can be said with reasonable confidence that the larger portion of M.I.A. production is disposed of to Sydney, Brisbane and other local fresh fruit markets and to factories.

No definitive pattern of distribution has as yet emerged. Supplies to individual markets have varied widely from one year to the next indicating that, apart from fluctuations in production, the industry is to some extent adjusted to take advantage of market opportunities as they occur. The most important single factor which prevents the formulation of a stable pattern of distribution has been the obtrusion of supplies to the United Kingdom in 1950. In that year 17 per cent. of the M.I.A. Navel production listed in Table I, and 8 per cent. of the Valencia production was shipped to this market. In addition, the export of canned segments to the same market in late 1950 absorbed heavy quantities of Valencias. Such shipments to the United Kingdom may not be a regular feature of M.I.A. distribution in the future.

On the basis of the three seasons from 1947-50 (when production did not vary as widely as in some previous periods) it can be said that between 20 and 25 per cent. of the M.I.A. Navel crop was shipped to New Zealand and a further 3 per cent. went to the Near East. About 30 to 40 per cent. was sold on Sydney markets and smaller quantities (about 5 per cent. of total production) was sold through country order channels. Only small quantities of Navels (about 5 per cent.) were marketed in Queensland and very little appears to have been sent to the factory. Wastage at the packing shed was probably in the vicinity of 10 per cent.

In the same period it can be said that 12 to 18 per cent. of M.I.A. Valencia production was consigned to New Zealand and 3 per cent. to the Near East. Local marketings of this variety were much heavier. Queensland received about 25 per cent. of total Valencia production and Sydney about 20 per cent. Approximately 10 per cent. was sold through country order channels and a similar proportion was lost as waste. Factory disposals fluctuated considerably, something like 20 or 30 per cent. of the Valencia production may have found its way into factories for canning, or extraction of juice or pectin.

Consignments of other citrus fruits are of relatively little importance. Small quantities of lemons and commons have been consigned mainly to New Zealand, Brisbane and Sydney. Grapefruit have been marketed in Sydney and Brisbane and a fairly large consignment was shipped to the United Kingdom in 1950. The main marketing areas for M.I.A. citrus fruits are therefore New South Wales, Queensland and New Zealand.

TABLE IV.

Australian Exports of Oranges, 1945–50.

Quantities ('000 bushels) and Average Price per bushel.

Importing Country. *a*	1945–46.		1946–47.		1947–48.		1948–49.		1949–50.	
	Quantity.	Price/bus.*a*	Quantity.	Price/bus.*a*	Quantity.	Price/bus.*a*	Quantity.	Price/bus.*a*	Quantity.	Price/bus.*a*
	'000 bus.	s. d.	'000 bus.	s. d.	'000 bus.	s. d.	'000 bus.	s. d.	'000 bus.	s. d.
Aden	...	...	1	33 5	1	27 0	2	21 4	2	26 8
Australian Territories ...	...	...	1	24 4	2	18 0	2	22 9	4	18 5
Burma	...	...	...	...	2	25 2	...	...	...	...
Hong Kong	...	...	...	...	1	25 2	38	23 0	7	26 8
Malaya	2	33 3	100	33 0	3	38 6	3	24 0	3	24 0
Mauritius	...	...	1	33 1	...	...	...	...	...	...
New Zealand	131	18 6	201	21 5	303	18 6	371	16 4	393	23 0
Pacific Islands	...	...	1	30 10	...	...	...	...	...	...
Singapore	...	...	...	...	202	25 0	157	19 8	107	24 0
United Kingdom ...	...	...	...	...	...	...	10	17 0	14	17 5
Other British	6	19 8	...	...	1	27 11	2	25 4	3	25 0
Japan	...	...	28	19 10	14	24 0	...	...	...	...
Philippines Republic ...	...	...	...	...	...	...	6	23 8	...	...
Other Foreign	...	...	...	...	...	...	1	27 5	2	26 7
Total	139	18 10	333	24 10	529	21 5	592	18 0	535	23 0

Source : Commonwealth Bureau of Census and Statistics.

a Average value (Australian currency) F.O.B. Australian ports of shipment.

5. EXPORT MARKETS.

The statistics in Tables IV and V, giving the quantities of Australian citrus shipped to various overseas markets and the quantities exported from each State, show the general expansion in this section of the citrus industry which has taken place since the war. These statistics also bring out two notable features of the Australian export trade in citrus fruits; firstly, the wide variations in the prices realised on different overseas markets, and secondly, the differences in prices realised by the various States.

Among the more important overseas markets it seems that those of the Near East offer prices consistently more attractive than the New Zealand or United Kingdom markets. A firm foothold on such markets would be of considerable benefit to an expanding Australian industry.

The differences which can be observed between the prices realised by the various States largely reflect differences in the quality of export fruit, in incidental packing costs or in the proportion of the State's crop going to the various markets.

The quantities of oranges of M.I.A. origin exported to the various overseas markets in 1949 and 1950 are given in Table VI.

New Zealand.

New Zealand represents Australia's largest and most reliable overseas outlet for citrus fruits. Trade has expanded considerably since 1945 and exports of Navels and Valencias from Australia now total nearly 400,000 bushels annually.

The bulk of these exports have been provided by an affiliation of three groups or associations of citrus growers and packers on irrigation areas in New South Wales, Victoria and South Australia. Until the end of 1950 the Murray Citrus Growers Co-operative Association, the Victorian Central Citrus Association and the co-operative packing sheds of the M.I.A. negotiated with the New Zealand Department of Marketing through their agent in that country. Since January, 1951, however, negotiations for the import of citrus fruits into New Zealand have been in the hands of a private company, formed in New Zealand to take over the functions previously performed by the Marketing Department. However, New Zealand continues to purchase in bulk on much the same basis as previously.

Over the past six years the M.I.A. appears to have been, generally speaking, the largest single contributor to New Zealand's orange supplies. In 1950, as can be seen in Table VII, Navel and Valencia exports from this area to New Zealand were almost 150,000 bushels, at an average price of about 23s. 8d. per bushel. In the same year South Australia shipped 95,000 bushels of Navels at an average of 28s. 0d. per bushel and 38,000 bushels of Valencias at 29s. 2d. per bushel while Victoria shipped 61,000 bushels of Navels at 25s. 1d. per bushel and 43,000 bushels of Valencias at 29s. 0d. per bushel.

If seasonal conditions had been more favourable and the requisite shipping space available it is probable that Australian exports of citrus fruits to New Zealand would have been considerably higher over the past three or four years. It is understood that New Zealand could absorb 500,000 bushels, possibly more, of Australian citrus fruits each year.

TABLE V.

Australian Exports of Oranges by States, 1945 to 1950.

Quantities ('000 bus.) and Average Price per Bushel.

State.	1945–46.		1946–47.		1947–48.		1948–49.		1949–50.	
	Quantity.	Price/bus.*a*	Quantity.	Price/bus.*a*	Quantity.	Price/bus.*a*	Quantity.	Price/bus *a*	Quantity.	Price/bus.
	'000 bus.	s. d.	'000 bus.	s. d.	'000 bus.	s. d.	'000 bus.	s. d.	'000 bus.	s. d.
New South Wales ...	41	17 8	122	21 5	218	20 0	241	15 9	142	22 0
Victoria	96	18 10	124	23 2	152	21 2	187	18 4	205	22 2
Queensland	...	...	...	...	16	22 9	41	20 0	3	24 0
South Australia	...	...	48	31 10	101	23 4	97	20 6	152	24 5
Western Australia ...	2	35 2	41	32 8	47	26 0	29	25 8	32	27 0
Australia	139	18 10	335	24 10	534	21 5	596	18 0	534	23 0

Source : Commonwealth Bureau of Census and Statistics.

a Average value (Australian currency) f.o.b. Australian ports of shipment.

It is likely that New Zealand will continue to look to Australia for the greater part of her citrus imports. Alternative sources of supply do not at this stage offer any serious competition to Australia. Imports of citrus from the Cook Islands may increase in the near future, following an extensive replanting scheme, which is reported to be at present

TABLE VI.

M.I.A. Exports of Oranges—1949 *and* 1950.

Country.	1949.	1950.
	'000 bushels.	'000 bushels.
New Zealand	132.0	148.1
Hong Kong	9.3	4.3
Malaya	6.9	9.4
United Kingdom	.....	88.0
Sweden	.....	18.0
Total	148.2	267.8

under way. New Zealand is apparently obliged to accept all available fruit from this area but supplies seem to be variable; they totalled 56,000 bushels in 1949 but only half that quantity in 1950. Supplies from Jamaica have risen steadily over the past five years, and were equal to 80,000 bushels in 1950. However, both Jamaica and South Africa, which supplied a small quantity of citrus in 1950, are handicapped by a shortage of shipping space.

Near East.

The main markets for M.I.A. oranges in the Near East are Hong Kong and Singapore, both of which offer good prospects for trade at attractive prices. However, it is questionable whether the M.I.A. could retain a significantly large share in these markets on a permanent basis. Competition from South Africa and the United States of America is keen. Both these countries have the considerable advantage of a regular shipping service to Near Eastern ports and furthermore the American exports to this area are heavily subsidised.

In 1950, 600 bushels of Navels and 3,700 bushels of Valencias of M.I.A. origin were shipped to Hong Kong, while Malaya in the same year received 3,400 bushels of M.I.A. Navels and 6,000 bushels of Valencias. In 1949 the M.I.A. shipped 4,400 bushels of Navels and 2,500 bushels of Valencias to Malaya. Hong Kong received 8,500 bushels of Navels and 800 bushels of Valencias from the M.I.A. in 1949. The 1949 exports of Navels to Hong Kong included a small quantity, 45 bushels, sent by air.

Europe.

Australia does not figure as an important supplier of citrus fruit to European countries. They can obtain supplies much nearer at hand. However, there are short periods of the year in which citrus supplies from countries in the Northern Hemisphere are scarce, thus presenting an opportunity for citrus exporters in the Southern Hemisphere. As

against this small and temporary advantage Australia has the disadvantage of a very long sea voyage and an unfavourable reputation, inherited from past export efforts, which has not been improved by the experience of 1950. Moreover, in any opportunities which do occur Australia can expect some competition from South Africa.

Following a few small consignments in 1948 and 1949, shipments of Australian citrus to England on a substantial basis began in 1950. In that year New South Wales shipped 118,000 bushels of oranges to the United Kingdom and 22,000 bushels of oranges to Sweden. Most of this fruit was of M.I.A. origin.[5]

Exports from other States were negligible. Victoria shipped only 10 bushels of oranges to the United Kingdom and Queensland sent 2,000 bushels to Sweden. Small quantities of lemons (3,000 bushels) and grapefruit (10,000 bushels) were also exported to the United

TABLE VII.

M.I.A. Exports to New Zealand, 1945–1950.

Year.	Navels.		Valencias.	
	Quantity.	Average f.o.b. Value.*b*	Quantity.	Average f.o.b. Value.*b*
	'00 bushels.	s. d.	'00 bushels.	s. d.
1945	21.8	17 5	20.4	21 1
1946	24.8	20 8	31.8	25 8
1947	71.0	16 1	75.9	19 8
1948*a*	79.2	15 6	70.4	22 1
1949	71.0	21 10	60.5	34 8
1950	65.0	23 9	83.1	23 7

Source: Computed from statistics supplied by the New Zealand Marketing Department through the courtesy of the New Zealand Government Senior Trade Commissioner in Australia.

a New Zealand currency moved to parity with sterling in August, 1948.

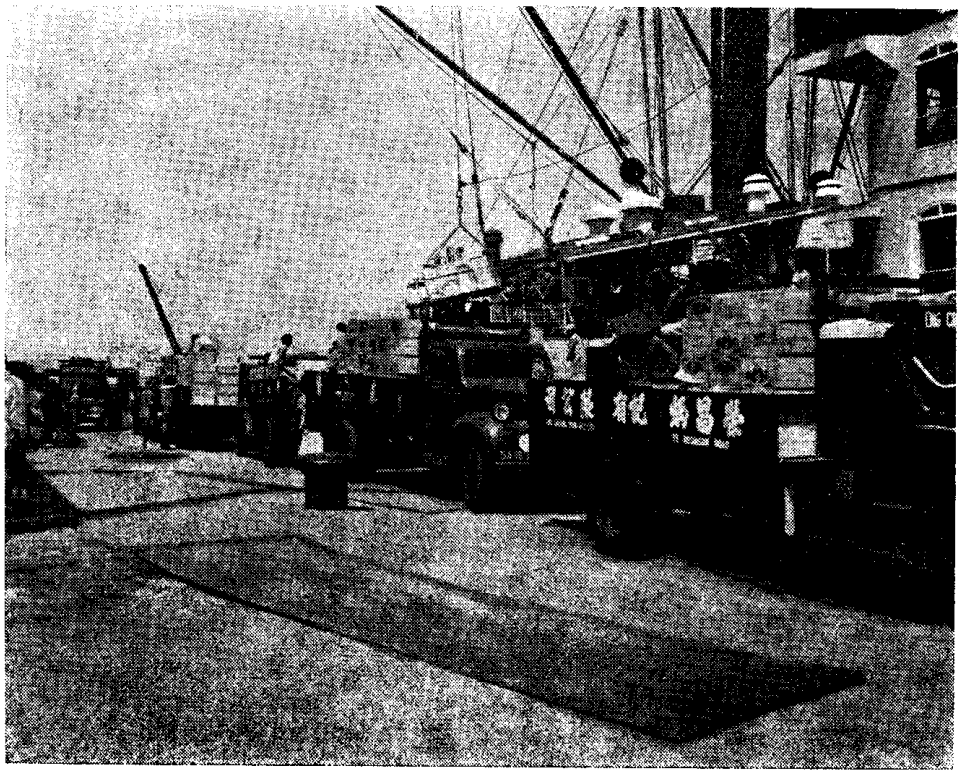
b Australian currency.

Kingdom. Some of these consignments unloaded in England in very good condition. Others, however, suffered very heavy losses. As they were the first really large consignments of citrus fruits from Australia to England for over ten years, considerable significance can be attached to their outturn and the reaction of British importers.

Although the future prospects for M.I.A. citrus fruits on European markets are not entirely discountenanced the experience of 1950 does not augur well for the future.

Of the trade with Europe in 1950, the M.I.A. provided 56,000 bushels of Navels and 33,000 bushels of Valencias to the United Kingdom and 18,000 bushels of Valencias to Sweden.[5]

[5] W. J. Bettenay, Report on Shipments of Citrus Fruits to the United Kingdom and Continent, 1950. (Unpublished.)



Unloading Australian Fruit at Singapore.

6. HOME MARKETS.

The main avenues for distribution of M.I.A. citrus fruits at home are on the city markets of New South Wales and Queensland, to country towns and to the factories for processing, the remaining portion of the production being lost as waste.

Sydney, Brisbane and Melbourne.

Sydney and Brisbane figure most prominently as city markets for M.I.A. citrus production. Supplies to the former market are fairly irregular. As the market receives heavy supplies of citrus fruit from coastal areas, and shipping difficulties, plus the failure of some overseas consignments to satisfy export requirements frequently drives citrus fruit intended for export, back to the Sydney market, price realisations are often poor on that market. It is estimated that over 100,000 bushels of M.I.A. Navels and Valencias were marketed in Sydney in 1950.

Average price realisations on the Brisbane market are often 20 per cent. to 30 per cent. in advance of Sydney prices, thus offering a logical outlet for much citrus fruit from this State. Queensland's imports of oranges from New South Wales were as high as 171,000 bushels in 1949 and equalled 141,000 bushels in 1950. In the first quarter of 1951 this State received 65,000 bushels of oranges from New South Wales. The bulk of these orange exports are Valencias and it is reported from the Queensland Department of Agriculture and Stock that the M.I.A. is by far the heaviest supplier of citrus fruit to the Brisbane market. Gosford and Moorland citrus areas supply only moderate quantities.

Comparatively little fruit is sent to Victoria. Small quantities of M.I.A. citrus marketed through country order channels find their way into some of the northern country towns of Victoria, but very little is marketed in Melbourne. It is reported that all citrus fruit imported into Melbourne from New South Wales is subjected to 100 per cent. inspection. All the boxes in a consignment are tipped on to sorting tables and each individual fruit is examined and repacked at the consignor's expense. If the inspection reveals the presence of fruit fly the whole consignment of the grower in whose fruit the fly has been discovered is either returned to New South Wales or destroyed. Victorian imports of New South Wales oranges were 14,000 bushels in 1949-50 and only 3,000 bushels in 1948-49. Imports of all citrus fruits from New South Wales totalled 14,000 bushels in 1948-49 and 26,000 bushels in 1949-50.[6]

Country Order.

Each year an estimated 20,000-30,000 bushels of M.I.A. oranges are distributed by packing sheds to various country centres. It is not possible to estimate the quantity of citrus fruit consigned from the area by growers on their own account, using either rail or road transport. To handle the business in this section of the distributive system a number of firms have grown up which are located in certain major country towns strategically placed for serving the retail shops in smaller towns within a radius of perhaps 200 miles. The fruit may be purchased either from the packing shed or direct from the grower and freighted to the central town by rail or road for later distribution to the smaller towns in lots of from 6 to 10 bushel cases, or freighted direct from Leeton or Griffith to the final destination without passing through the town where the country order firm is located.

In catering for this country order trade the firms circularise a price list towards the end of one week indicating the prices which will apply during the following week. Retailers situated throughout the country districts are then able to choose between the lines of fruit and the prices offered by these firms and those offering on the Sydney market.

The packing sheds, operating on a large scale, are more anxious to deal in bulk, selling several thousand bushels to a relatively few buyers. To them the sale of 10 bushel lots to thousands of different retailers scattered throughout the country districts represents a not very attractive business proposition entailing much clerical labour for comparatively little financial return. Rising railway freights on small consignments also serve to depreciate the value of this trade. However, good opportunities for profitable business on a small scale still exist in country trading.

Some indication of the potential strength of the country order trade in citrus fruit can be gauged from the fact that there are now 13 country towns in New South Wales (outside the Newcastle-Sydney-Wollongong area) with a population in excess of 10,000 while a further 13 towns have populations ranging between 5,000 and 10,000 and 17 towns have between 3,000 and 5,000 people.

If present immigration and developmental programmes are carried through it is only reasonable to assume there will be scope for expansion in this section of the citrus distribution industry.

[6] Victorian Dept. of Agriculture.

Factory.

Considerable quantities of fruit are sent to factories for juice extraction and also for the extraction of pectin. The amount disposed of in this direction each year varies with seasonal conditions and the opportunities offering to processors. In the 1950-51 season factories appear to have absorbed 30 to 40 per cent. of the total quantity of citrus passing through the packing sheds, i.e., about 120,000-150,000 bushels. This figure was abnormally high because a contract to supply the United Kingdom with peeled, sliced oranges in 1-lb. cans enabled the local cannery to absorb an estimated 80,000 bushels of scaly, blemished Valencias in that season. Price realisations on this fruit apparently varied from £10 to £15 per ton delivered to the cannery. Acquisition of citrus fruit for this purpose has been considerably reduced in the present season so that total factory disposal may reasonably be expected to be in the more usual range of 60,000-100,000 bushels. Current prices for this fruit are about £15 10s. 0d. per ton.

It is in respect of these by-products of the citrus industry that there have been such notable developments in overseas countries in recent years. In the United States the extraction of citrus juices and the production of frozen concentrates have led to the establishment of an industry whose annual value and output rivals that of the fresh fruit trade itself.

The large scale extraction of citrus juices in the United States has meant the piling up of huge quantities of waste peel, the disposal of which was for sometime an embarrassing problem, but which led in turn to the establishment of another subsidiary industry to dehydrate citrus pulp for cattle feed. In Florida, U.S.A. this industry, which commenced in 1940, now produces 145,000 tons of feed annually and furthermore has developed another process which for the past eight years has been producing from the liquid substance, extracted in the dehydration process, a fat-building product (citrus molasses). In 1950 seven refineries in Florida produced 16 million gallons of citrus molasses and the new product appears to have had a significant effect on the Florida beef industry. Cattle are even being imported into Florida from other States for fattening[7].

Similar developments in New South Wales would have to await favourable economic conditions, especially the large scale operation of the juice processing industry, but opportunities for expansion in such directions cannot be overlooked if the local industry is to develop on a prosperous basis. In particular the marketing of citrus juices appears to offer some hope of future expansion.

Waste.

As indicated earlier 10 per cent. can be accepted as a reasonable estimate of the average wastage at the packing shed. In addition, there would naturally be considerable losses suffered on the farm through adverse weather or pests and diseases; these factors would combine to reduce the marketable proportion of the total citrus crop grown.

[7] For further information regarding the citrus processing industries in the United States see the "Marketing and Transport Situation," December, 1950, *Bureau of Agricultural Economics, U.S.D.A.*

7. PRICE DIFFERENTIALS.

From a comparison of the prices realised for citrus consignments on the local markets with the average export prices, computed on the basis of declared value, f.o.b. Australian ports of shipment, it is noted that, generally speaking, there is a margin in favour of the exporter. But this is not always so and would not justify an entirely export-oriented attitude on the part of packers. Frequently opportunities arise to sell citrus on certain home markets with some advantage over export prices.

Price movements on the city markets have in the past shown evidence of certain characteristic features. For example, an examination of the average prices realised on the Sydney wholesale markets for oranges shows that there has been a tendency in the past few years for the price of Navel oranges to be higher towards the end of the season than during the earlier part, and certainly higher than during the middle part of the season when supplies are generally so plentiful. The final upturn of Navel prices is, however, by no means inevitable. No such tendency can be detected in respect of Valencia prices. However, some Navel growers, apparently aware of this price movement, have acquired the habit of postponing their Navel harvest as long as possible fully expecting the market price to move upward as the season draws to a close.

While the practice may bring in additional gains for shrewd anticipation of price movements it will also, assuredly, mean losses if the directives of sound horticultural practice are ignored, for it is by the standards of fruit quality—juice content, size, colour, skin texture—that the grower should decide when his fruit is ready for harvesting and despatch to the market. With a perishable product like fresh fruit the margin of permissible error is not great.

A striking example of the reversal of seasonal price movements occurred on the Melbourne market in April, 1951. Exceptionally high prices (60s. per case, and more) for Valencias during the last part of the previous season, in combination with other factors, had prompted growers to withhold supplies during February and March with the result that the market was flooded with Valencias in April. The quality of the fruit on the average was very poor—juice content, size and skin texture were very unsatisfactory—and the marketing of such quality fruit caused buyers to lose confidence in some of the more reputable packing shed labels. Consequently, the prices paid for some of the lower grade fruit was less than half the price paid on the market in March. Even in the higher grades, average prices were 25 to 33 per cent. below the March prices

8. CONCLUSION.

Future citrus production on the M.I.A. is not expected to increase to any marked extent. Given favourable weather conditions, production in 1955 will probably have increased by about 10 per cent. over the 1949-50 level. This increase, in itself, will not create any serious problems for local distributive organisations but, accompanied by the more significant change in relative quantities of Valencias and Navels, it could complicate certain phases of the distribution of citrus. Existing packing facilities should be sufficient to cope with any new summer

peak of production but the lengthening of the slack period in times of high labour costs will pose a problem of some significance to packing shed managements.

Elsewhere in the Commonwealth citrus producing areas are expanding quite rapidly and it has been anticipated that total Australian citrus production will rise to 10.5 million bushels in 1958.[8] Though profitable market outlets may be found for this increased production some adjustments in the citrus industry as a whole may well be inevitable. Distribution costs and market outlets will be important topics in future discussions of the citrus industry generally.

Distribution Costs.

Detailed evidence concerning packing costs and their relation to the size of sheds is not available but there is some reason to believe that, as far as the M.I.A. is concerned, the small shed compares not unfavourably with the very large shed in respect of both unit costs of packing and output per man-hour. There is even evidence which suggests that some growers are reducing packing costs by packing a proportion of their crop on the farm. This expedient also enables them to keep their farm labour more fully employed. It can only be assumed that excessive overhead charges and possibly an expensive, inflexible labour force are handicapping the larger shed.

It does not follow, of course, that the solution to one of the citrus industry's most important distributive problems lies in more small packing sheds, much less in packing the produce on the farm. In most cases it would be impossible for growers, with only limited labour available, to cope with both harvesting and packing during the peak part of the season. But the other extreme of confusing quantity of output with quality of performance, *i.e.*, where the large shed is driven by high operating costs to handle as much fruit as possible in order to lower unit costs of operation, is equally unacceptable. There is an optimum level of output which will eliminate the destructive mishandling of fruit while permitting the shed management to operate its labour and equipment economically.

The rationalization of packing operations is both desirable and necessary but the claim that all packing should be done in fewer, larger sheds, though plausible in itself, especially when account is taken of recent American experience and recommendations[9], must be kept in perspective.

To keep distribution charges to a minimum in a period of rapidly rising costs is not an easy task. Some economies may be effected through an improved lay-out of a shed or the installation of machinery which will reduce labour requirements but the opportunities for economies throughout the remainder of the chain of distribution are not great. Railway freights have been rising but even at their present rate, which, on an average costs less than £3 per ton for a rail journey of about 400 miles, it must be conceded they are not excessive especially when it is borne in mind that these freight charges have been subject to a special deduction since 1935. In November of that year the New

[8] G. O. Gutman, "Industry Expansion," *Citrus News*, May, 1951, p. 73.

[9] "Analysis of Packing House Costs for 31 Southern California Citrus Associations, 1946-47 and 1947-48 Seasons." Farm Credit Administration, U.S.D.A.

South Wales Government announced that the State Treasury would meet 10 per cent. of the cost of freight on a wide range of primary products, including fruit. That special benefit has remained over fifteen years although the conditions of economic stringency which prompted it have long since passed.

The increasing interest of growers generally in the packing of their fruit does not spring solely from the desire to cut costs or keep farm labour fully employed, important though these considerations are. It owes much to the belief that the grower's interest in his product does not end when it passes from his possession. As in other forms of production a successful producer wants to keep contact with his product right through the distributive processes to the final point of consumption.

Some fruitgrowers to-day are packing a certain proportion of their fruit under an individual label with the aim of establishing a reputation for premium quality fruit on urban markets. They feel that individual merit is lost to sight when fruit is handled in bulk through the large packing shed.

Market Outlets.

On the marketing side a programme of development for an expanding citrus industry would logically be directed towards increasing sales on existing markets and secondly to finding and exploiting new markets, but, while the industry should take advantage of every profitable market as it occurs, it must be borne in mind that long-term stability depends on fairly permanent markets not on transient opportunities.

Success in increasing sales on existing markets would probably depend in the main on a policy of competitive prices accompanied by a widespread advertising campaign publicising the industry's products.

The retail distribution of fruit is not within the scope of this article so that discussion regarding prospects in this sphere would be out of place. However, the bulk selling of fruit to consumers by packers' or growers' organisations and the establishment of supermarkets in populous centres are mentioned as two possible means of increasing consumption.

The main factor which would initially govern success on overseas fruit markets seems to be the quality of the pack, which must be of a consistently high standard. Price is also important because the world markets, particularly in fruits, which may be classed as luxury items, are keenly competitive. Even low price quotations, however, would do little to counteract an exporter's reputation for high wastage rates and poor outturn generally.

The world's main importing countries are in Europe, with the United Kingdom, until recently challenged by France, by far the greatest importer. These European imports are supplied from four principal sources the most important of which is Spain, followed by Israel, South Africa and the United States. There does not appear to be any great hope of a significant expansion of Australian trade in fresh citrus (although there may be better prospects with canned segments and concentrates) in this area. The United Kingdom has adequate sources of supply near at hand which seems to militate against drawing substantial quantities from more remote countries involving long, time-consuming voyages and unreliable outturns.

During the 1950 export season some consignments of Australian citrus arrived in England after very lengthy voyages of from 50 to 80 days showing mould wastage as high as 70-80 per cent. and severe criticism was levelled against certain consignments on account of excessive skin blemish. However, some fruit, including large consignments of 3,000 to 5,000 bushels of M.I.A. Navels, were transported as refrigerated cargo in fast, modern ships and discharged in England in very good condition, wastage through mould was almost negligible and skin blemish very light. This is an indication of what can be accomplished if the fruit is packed and transported under the right conditions.

As fruit grown in countries of the British Commonwealth is exempt from import duty in the United Kingdom, Canada and other Commonwealth countries, these markets retain potential significance for Australia. The imports and exports of oranges of countries within the British Commonwealth are given in Table VIII.

TABLE VIII.

The British Commonwealth—Exports and Imports of Oranges.

	1938.	1947.	1948.	1949.
	'000 tons.	'000 tons.	'000 tons.	'000 tons.
Importing Countries—				
United Kingdom ...	517	411	482	302
Canada	112	185	167	145
New Zealand ...	13	7	9	12
Malta	1	5	4	4
Total	643	608	662	463
Exporting Countries—				
South Africa ...	93	90	96	104
Australia*a* ...	14	7	11	12
Cyprus	10	7	9	12
Jamaica	11	3	4	7
Southern Rhodesia*a* ...	5	...	...	...
Total	133	107	120	135
Net Commonwealth Imports	510	501	542	328

Source : Commonwealth Economic Committee, *Fruit Summary*, 1950, page 5.

a Includes other citrus.

Canada, it will be noted, is a large importer of oranges and in recent times tentative proposals have been made regarding the shipment of local oranges to this market. However, the United States continues to dominate the Canadian market and, despite currency difficulties, it is unlikely that Australian exporters could make a significant inroad on what is apparently her preserve.

If local exporters are to gain a firm foothold on new foreign markets particularly those like the Near Eastern markets which are still largely dominated by the United States and have, as a result, been educated to certain standards of quality, great care will have to be taken in the selection, packing and handling, in all stages, of fruit destined for these markets.

The experience of local exporters in shipments to New Zealand should provide an object lesson in this aspect of citrus distribution. If Australia cannot maintain a high standard in its outturn on New Zealand's wharves after the short Tasman crossing it could not reasonably expect outstanding success in countries much further afield and in markets which are accustomed to expect a high quality citrus pack.

Details of wastage on citrus consignments to New Zealand are supplied regularly to Australian authorities who in turn examine the information and supply each packing shed with details showing the wastage on each shipment, shed wastage as compared with overall wastage and the wastage rate applicable to each grower's line in the consignment.

For the shipment of Navels in 1949, wastage was about 2-4 per cent. early in the season, and rose sharply in early July; wastage for the remainder of the season averaged between 4 and 11 per cent. for non-refrigerated shipments. In 1950 wastage on Navel shipments was again low early in the season; it rose to 9 per cent. in July, but after the middle of July rose as high as 40 per cent. on one shipment.

The wastage observed in 1949-50 Valencia shipments, stowed as non-refrigerated cargo, was below 2 per cent. early in the season and fluctuated between 2 and 5 per cent. from October to March.

The wastage on refrigerated cargoes seems to exhibit a similar tendency to rise as the season advances but it is for the most part about one-half the wastage rate suffered by non-refrigerated shipments and is usually about 2 per cent. or less. These figures apply to all Australian shipments, irrespective of the State in which they were packed and consigned.

Packing shed managers may consider they have cause to be satisfied if the shed wastage averages about 2 per cent. or does not go much above the overall wastage rate but the fact that wastage rates of 10 to 15 per cent. are not uncommon is an indication of the scope for improvement. Some of the wastage can, of course, be reasonably attributed to lack of refrigerated space or the inadequacy of mechanical ventilation but notwithstanding wharfside delays and shipping inadequacies a close examination of the New Zealand reports suggests that certain packing sheds and certain growers appear to be more liable to suffer a high rate of wastage on outturn from the same ship than others and this in turn implies the need for closer supervision at the packing shed and more discrimination in selecting the growers from whom to draw export fruit.

It is of some significance that the new contracts governing the supply of citrus to New Zealand contain provision for a price adjustment in the event of unreasonable wastage on outturn. Previously no such adjustment was in force.

As far as the Murrumbidgee Irrigation Area is concerned present indications suggest that New South Wales, Queensland and New Zealand will remain the major outlets for citrus fruit with smaller shipments going to Europe and the Near East as opportunities arise.