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In winding up the proceedings the President, Mr. R. C. Broadfoot, thanked all the members of the Union and the members of the various committees for the successful conduct of the College Day and Conference. He also suggested that in asking Government for subvention for the Journal the necessity for increasing the number of pages for inclusion of more popular articles may be emphasised. Sri C. R. Srinivasa Ayyangar then proposed a hearty vote of thanks to Mr. R. C. Broadfoot for evincing keen interest in the affairs of the Union.

An Economic Survey of the Anakapalle Jaggery Market*

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Introduction. Among the manufactured products of sugarcane, jaggery takes the first place. Its consumption is about two to two and a half times that of white sugar (both indigenous and imported). This shows that jaggery making as a cottage industry is very important in Indian rural economy. In recent years, it has been observed that the cane cultivator is an adept in the art of jaggery manufacture but is uncertain of his legitimate returns owing to the several disabilities he is suffering from, such as chronic indebtedness, want of ready money to meet cultivation charges, high rates of interest charged by money lenders, etc. Besides the wide and unsteady prices for jaggery, the existence of a host of middlemen in jaggery trade, the chaotic system of weights and above all want of properly organised marketing facilities makes jaggery making, as a cottage industry, a risky proposition.

With a view to study the present system of marketing and to find out the possibilities of improvement in the same, an enquiry was carried out at the Anakapalle jaggery market. With the limited facilities available to the author the enquiry was confined to this one important trade centre and the results are presented in this paper.

Area under sugarcane. Sugarcane is an important money crop in the Vizagapatam district and the largest areas are concentrated in Veeravalli, Anakapalle and Sarvasidhi taluks. The Vizagapatam district ranks first in sugarcane area in the Presidency of Madras, Veeravalli taluk taking the first place with an area of 10,000 acres and Anakapalle and Sarvasidhi taluks closely following with 4000 and 1500 acres respectively.

Methods of cane disposal. Out of the total amount of cane produced in the three taluks about 8 to 10 per cent is estimated to go towards seed

* Ramasastrulu—Munagala Prize essay, 1941.

material, 5 to 6 per cent is consumed by the factory at Thummapala and the rest converted into jaggery. The cane used for chewing is a negligible percentage.

Jaggery season. The jaggery season commences with the beginning of December and usually extends to May. The peak transactions in this commodity usually take place during February and March. Ryots from certain villages like Chuchukonda and Ganaparti sell their jaggery during the months of October and November. Thus practically throughout the whole year jaggery will be coming to the market but an active period may be said to last from January to March.

Methods of transport. Ryots within easy reach of the market (within five miles) send the jaggery prepared on the previous day to the market the next day, and women coolies usually bring the jaggery in baskets. Each woman can carry two moulds or one slab. Ryots situated beyond five miles distance engage a cart for transport. Each cart can carry 50 to 60 maunds (1 maund = $22\frac{1}{2}$ lb.) Recently it has been a practice for a group of ryots (8 to 10) to engage a cart on a co-operative basis to send their produce every day to the market.

Market and traders. Anakapalle has been well known as a place from which large quantities of jaggery are exported every year to other Provinces and the States. There is a big jaggery market in the heart of the town. The principal dealers in this trade are the big individual merchants of Anakapalle. Besides these merchants there is at present a Co-operative Loan and Sale Society, which shares a fairly appreciable part of the trade. Supplies of the commodity are made by the ryots in the neighbourhood for sale in the market. Ordinarily the wholesale merchants do not store the commodity for any considerable length of time in their godowns, but try to dispose off their stocks at the earliest possible opportunity. Most of the merchants and the society are only commission agents but there are a few who actually do some speculative business by stocking the product in the hope of getting higher prices at a later date. The Society does not take any part in speculative business but disposes off the commodity received on the same day as far as possible. About a dozen merchants are engaged in the export trade.

Shapes of Jaggery. There are only three different shapes in which jaggery is cast and sold at the Anakapalle market.

1. Moulds (Tel. *Dimmalu*), cast in baskets.
2. Slabs (Tel. *Chakkilu*), cast in shallow pits lined with mats.
3. Buckets (Tel. *Balchilu*), cast in buckets.

The slabs cast in mat-lined pits are said to have particularly good market in Godavari, Kistna, Guntur and Nellore districts as well as locally the 'moulds' and 'buckets' are reputed to be particularly liked in the markets of Northern India and Hyderabad. Each 'mould' weighs 1 to $1\frac{1}{4}$ mds., the 'slab' 3 to 4 mds. and 'bucket' 2 to $2\frac{1}{2}$ mds.

Grading. Systematic grading purely on scientific basis involving the determination of the sugar content and combined impurities is not in practice at the market. However few grades are clearly recognised and these actually govern the ruling prices for different types of jaggery coming to the market. The main factors that have a bearing on the grades are :—

1. Hardness and consistency (Tel. *Ganithamu*)
2. Crystalline structure (Tel. *Ravvakattu*)
3. Colour (Tel. *Rangu*)

Of the three, hardness is the vital factor as the keeping quality of jaggery is entirely dependent on it. This is tested by the sharp metallic sound produced by tapping the block with finger tips. Also the blunt end of a pencil when pressed against the block should not penetrate or leave any mark or impression of the impact. Granted that there is hardness, the crystalline appearance and colour determine the superiority or otherwise of the sample. Observance of a crease made on the surface of the jaggery with the aid of a penknife point will indicate its crystalline nature. The application of the above tests is utilised to differentiate the three grades of jaggery noted below :—

Grade designation.

1st grade

2nd grade

3rd grade

Definition of quality.

Hardness, crystalline appearance and creamy yellow colour.

Hardness plus any one of the other two.

All the rest of the jaggery.

It may be noted that the local market grades described above do not involve any tests for degrees of sweetness or the variety of cane from which it is prepared—all jaggeries being regarded as sweet enough. There is a small quantity of extra special type of jaggery getting into the market and it will always fetch a special price in the market. This is not to be included under any one of the three grades described. This is the jaggery that is made from B 208 at Mamidipalli. During the course of the enquiry with the Secretary of the local Co-operative Loan and Sale Society the writer came to understand that unless confidence is created in the traders for certified quality of the graded commodity the dealers would insist on testing the jaggery in accordance with their own standards for determination of the quality and ultimately to fix up the market price.

Fixation of market price. Out of the 42 shops in the market there are about 36 shops mainly engaged in jaggery business including the Co-operative Loan and Sale Society. The total quantity of jaggery that comes to each of these shops is assembled on the verandahs of each shop. Experienced coolies grade the commodity into three grades as per standards described. The market dealers go from shop to shop for bidding at the auctions. A reasonable price for the first grade of jaggery is provisionally fixed. The merchants then begin to bid over the standard price and the highest bid struck off will be the price for the first grade of jaggery for the

day. From the price thus fixed for the first grade, the price for the other two grades will accordingly be reduced and fixed. The price on a particular day depends upon the following factors, and their relative influence will be in the order mentioned :—

1. The quantity of jaggery that comes to the market.
2. The demand from merchants that come from other Provinces and States.
3. The quality of jaggery.
4. The particular shape of the jaggery.

TABLE I. Statement showing the monthly average prices of jaggery per maund (22½ lb.) at the Anakapalle market.

Month.	1935	1936	1937	1938	1939
January	1 4 10	2 10 0	0 11 2	0 11 3	1 6 2
February	1 2 7	0 14 3	0 9 8	0 12 10	1 9 6
March	1 3 5	0 13 5	0 8 4	0 14 4	1 11 1
April	1 5 7	0 12 8	0 9 6	0 15 11	1 15 9
May	1 4 9	0 10 7	0 9 7	1 3 9	2 0 9
June	1 5 4	0 10 6	0 8 0	1 3 1	2 0 2
July	1 4 6	0 11 5	0 11 2	1 5 10	1 13 10
August	1 4 5	0 11 0	0 11 0	1 8 5	1 13 0
September	1 5 9	0 11 5	0 11 2	1 7 1	1 6 1
October	1 7 0	0 13 10	0 11 5	1 11 11	2 0 0
November	1 4 8	0 15 5	0 9 7	1 9 0	1 14 9
December	1 2 5	0 12 11	0 11 4	1 8 11	1 9 5
Yearly average.	1 4 8	0 11 8	0 11 0	1 4 0	1 9 4

Price movements. A close study of the monthly average prices of jaggery per maund (22½ lb.) at the Anakapalle jaggery market from 1935 to 1939 as shown in Table I has warranted the following inferences.

1. The market generally maintains remarkable stability and steadiness in prices in the period from December to February, the fluctuations being negligible.

2. Slight fall in prices during the months of March and April indicate the relatively huge supply in comparison to the low demand. At this part of the year the market generally displays uncertainty and prices decline.

3. The slackening in supply during the period from August to October will make the prices rise to a very favourable limit and *ryots* who stored their commodity during the on season derive much profit at this time.

4. In exceptional years like 1937 the price fell as low as 8 annas per maund and *ryots* could not make both ends meet.

Trade commissions. A detailed statement of the different trade commissions charged at the Anakapalle market is shown in Table II. The average commission per maund (22½ lb.) of jaggery varies from 9 pies to 1 anna depending on the price of the jaggery. Taking the price of jaggery per maund to vary between 8 annas and Rs. 2 the commission varies from 4 to 9 per cent of the total price of the jaggery. The local market terms are duly explained under Table II.

TABLE II. Statement showing the Trade Commissions charged at the Anakapalle Jaggery Market.

Items.	Paid by seller.		Paid by buyer.		Remarks.
	Rate.	To whom paid	Rate.	To whom paid.	
Market tolls	0 2 0	Market contractor	...	...	Per cart load.
"	0 0 3	do	...	...	Per head load.
<i>Kolagaram</i>	Average co. of one vis jaggery	<i>Kalasis</i>	...	...	Per 22½ Mds.
<i>Tolai</i>	...	...	0 3 0	<i>Kalasis</i>	Per cart load of 60 mds. (including charges for services for sweeper, water carrier, etc.).
Stitching moulds and charges for twine	...	...	1 0 0	<i>Kalasis</i>	Per 100 basket moulds.
			1 8 0	"	Per 100 bucket moulds.
Commission*	0 0 9	Buyer	...	...	Per maund; (if the price of jaggery is Rs. 1-8-0 or above the commission is Re. 0-1-0 per maund.)
Weighing charges	0 0 1	<i>Kalasis</i>	...	...
<i>Vaida</i> Interest	...	...	0 0 9	Seller	Per day for 18 days.
<i>Valtar</i>	...	...	0 8 0	"	For every Rs. 100.
<i>Chesti</i> mudra	...	...	0 0 3	"	do.

*The commission charged depends on the ruling price of jaggery per maund (22½ lbs.)

Explanation of Market terms.

1. *Market tolls.* A nominal fee charged for getting the jaggery into the market compound for sale.

2. *Kolagaram.* This is the wages paid for *kalasis* (coolies) for the labour involved in the process of unloading the carts, grading jaggery, etc.

3. *Tolai.* A small donation to meet the incidental charges for the facilities provided at the market like keeping clean water to drink.

4. *Vaida* interest. This is a kind of discount made from the amount due from the buyers to the sellers. Payment of cash for the amount of jaggery purchased would effect remission @ 9 pies per Rs. 100 per day until 18 days thereafter, after which period interest shall be calculated at the same rate for the due amount.

5. *Vattar*. This is also called "Hindu discount". In olden days when some of the important banks had not their branches established at Anakapalle it was customary to pay an additional sum of 8 as per every Rs. 100 due from the buyer to the seller (merchants at Anakapalle). This is to meet the incidental charges towards getting the cheques issued by the buyers cashed on the banks of Vizagapatam or Vizianagaram. Now that the banks are established at Anakapalle, payment in cash is being resorted to as a result of which a sum at the said rate is being deducted from the amount due from the buyer to the seller.

6. *Cheeti mudra*. Whenever payments are made as cheques on banks at Anakapalle, a sum @ 3 pies for every Rs. 100 is paid in addition to the seller. This is to cover the charges of labour involved in getting those cheques cashed.

Produce Movements. The jaggery from the Anakapalle market go as far as Bihar and the United Provinces in the North, and Hyderabad and Travancore in the south. The recently laid out railway line connecting Raipur and Vizagapatam has greatly facilitated the movement of the commodity to Raipur and its surroundings. Besides this, jaggery was known to have been transported to Nagpur and Bombay also. The exact stations to which the commodity is being exported is not known to people other than those who are mainly dealing with the export part of the business. This is a trade secret with the export merchants.

Co-operative Loan and Sale Society. In spite of the sincere efforts of the Co-operative Loan and Sale Society, the local *sowcars* still continue to be the principal money lenders for the cane growers. The *sowcar* will always keep the *ryot* in his clutches and will never bring the money transactions with the *ryot* to a close. Despite the existing visible disadvantages such as high interest and false weighment in transactions with the local *sowcars*, most of the *ryots* continue their dealings with *sowcars* only for the undermentioned reasons :—

1. The *ryot* is always indebted to the *sowcar* and it is his chronic indebtedness that prevents him from clearing his debts.
2. Any amount of money is procurable at a moment's notice without involving any immediate worry on the part of the *ryot*
3. The cordial reception that the *sowcar* gives to the *ryot* with pleasing words and at times with small tips in the form of presents attracts the *ryots* to him.

It was with the main purpose of avoiding these *sowcars* as principal dealers in the jaggery market a Co-operative Loan and Sale Society was started as early as 1930. The society was mainly instrumental in diverting considerable part of the business (15 to 20 per cent) from the hands of the *sowcar* to the society during the short period of nine years of its working.

Table III shows the extent of business done during a period of nine years. Though some of the *ryots* appreciate the correct weightments and the minimum commission charged, they do not see eye to eye with the society in the matter of dispensing the loans. The *ryot* seldom gets a loan at the time he is in most need. At times he has to wait for two or three months after putting in his application by which time the jaggery season would be over. The delay to provide him a loan easily makes him forget the benefits of the society.

TABLE III. Statement showing the Progress in the Jaggery business done by Anakapalle Co-operative Loan and Sale Society during 1930 to 1939.

Year.	Quantity in Maunds. (Md. 22½ lbs.)	Value in Rs.	Commission Rs.
1930—31	13045	16053	1315
1931—32	39681	45543	2568
1932—33	65283	50566	3999
1933—34	87439	68992	4118
1934—35	113056	138626	5411
1935—36	145116	119049	6689
1936—37	141151	90737	6585
1937—38	115797	95741	5447
1938—39*	117572	187525	6762

*Business of this year (1938—39) is about 15 to 20% of the entire business in the market.

Defects of the present marketing system. This paper would be incomplete without the mention of the inherent defects of the present marketing system which are calculated to prejudice the interests of the producer as against the interests of the merchants who occupy a decidedly advantageous position. In the first place the whole business of the market is completely in the hands of a few merchants who are experienced in transacting their business for the best part of a century. Secondly the vital aspect of business which has a direct bearing on the net gains of the producer namely the ruling price of the commodity on a particular day is in the hands of merchants, for even at the premises of the society the bidders are only the merchants. Thus the producer ultimately depends for the disposal of his produce on these merchants.

Conclusion. Though the cultivator is an expert in the art of jaggery manufacture, he has no voice in the disposal of his produce and is at the mercy of the merchants who take a disproportionate share of the consumer's price. The formulation of a future marketing policy should be such as to improve the present marketing system in two important directions namely the proper organisation of markets and the systematic grading of the produce.

The lines of organisation of the markets are the inauguration of regulated markets under the Agricultural Produce Marketing and Grading Act, standardisation of weights, licensing of commission agents, regulation of

market charges and allowances and provision of suitable ware-houses. The definite advantages of high premium and the large profits involved in the grading of the produce for the *ryots* needs no special mention. The establishment of grading centres at important jaggery trade centres with definite standards would go a long way in increasing the returns of the jaggery manufacturer.

To make the jaggery manufacturer independent of the loan giving middlemen, a sound marketing policy indicated should be coupled with provision of cheap credit. Co-operation appears to have great potentialities in this direction. The middlemen advance loans before the crop is sown and unless the co-operative societies can furnish to cultivators all the facilities that the middlemen offer them the progress of co-operative effort cannot be rapid or certain. In Baroda, it is learnt, the state has recently commenced the issuing of crop loans for sowing improved types of cotton at $4\frac{1}{2}$ per cent interest. It is obligatory for the farmer who receives the loan to market his produce through co-operative agency. Such a scheme modified to suit the conditions of this Presidency may be tried till co-operative endeavour is able to take up the whole work. A scheme that provides for regulated markets and systematic grading of the produce coupled with the provision of cheap credit through co-operative societies would make jaggery making more paying and would secure for the cane cultivator his due share of the consumer's price which at present is denied to him by innumerable middlemen and unscrupulous traders.

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Cropping Behaviour In Mangoes.*

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The fairly frequent occurrence of lean years in mango production and the shy bearing tendencies of many reputed varieties are well-known to form the limiting factors in the successful mango culture all over the world. It is commonly assumed that there is alternate bearing or a definite periodicity of bearing in mangoes. Hartless (1914), Burns and Prayag (1921), Sen (1939) and Singh and Khan (1939) have maintained that lean and good years alternate with each other without exception, while Popenoe (1917 and 1927) states that heavy production in *mulgoa* occurs once in

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