

FROM MOSQUITO FLEET TO BULK HANDLING IN THE SUGAR INDUSTRY

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A colourful chapter in the history of the Queensland sugar industry that deserves to be preserved before it fades from human memory is the part played by the mosquito fleet of sugar lighters in North Queensland ports until the transition of the sugar industry to mechanised bulk handling in recent years.

From the early nineties a succession of sturdy little craft rendered excellent service to the Australian sugar industry by transporting raw sugar from shallow draught ports for transshipment to larger vessels sailing to the four corners of the world. Through the march of time, and the establishment of bulk handling terminals at several northern ports, these 'little ships,' which were a significant factor in the development of Queensland, must now be relegated to the pages of history.

C.S.R. Company Comes to Queensland

In compiling this paper on the North Queensland sugar lighters operated by the Adelaide Steamship Company Ltd., I received very valuable assistance from the company, which supplied me with data from its records. These, so far as Queensland is concerned, begin on June 1, 1893, following the completion of a contract with the Colonial Sugar Refining Co. Ltd. to undertake the whole of its lightering work on the Queensland Coast.

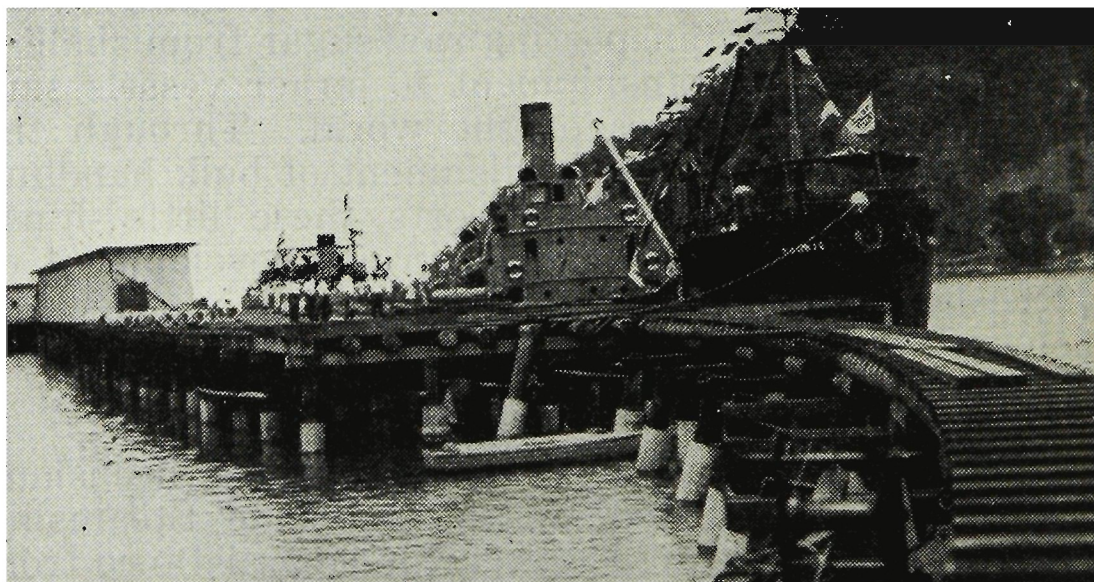
It was necessary to lighter sugar from a number of shallow water ports to places where large ships could safely lie at anchor or in port, and for this purpose the company acquired a fleet of lighters or small steamers.

The C.S.R. company, which had established itself on the Macleay and Clarence Rivers of New South Wales in 1870, crushing at its mills cane purchased from local farmers, extended its operations to Queensland in 1881. To permit the Company to acquire land, the Queensland Parliament passed the **Colonial Sugar**

Refining Company's Act of 1881, and C.S.R. undertook to spend £200,000 within five years on the clearing and cultivation of land and the erection of buildings and plant for the manufacture of sugar. Victoria Mill, in the Ingham district, commenced operations in 1883.⁽¹⁾

Early Units of the Fleet

From 1893 to 1899 eight vessels were acquired by the Adelaide Steamship Company for sugar lightering work. S.S. **Brinwarr**, 114 tons, acquired in 1893, was in the company's fleet until it was lost during a cyclone in January, 1918. Also in 1893 the company chartered several vessels for sugar work. These included the small steamer **Vlissingen** and the ketches **P. Palfrey** and **Isabel**. S.S. **Muriel**, 108 tons, was added to the fleet in 1894, and served until 1926, in which year she



The "Toorie" at Mourilyan Wharf, October 13, 1929.

was sold to Hayles Magnetic Island Ltd., Townsville. Other vessels which became units of the company's fleet in subsequent years were:

1894 to 1901 S.S. **Mary**, 89 tons; 1895 to 1941 S.S. **Pelican**, 82 tons; 1896 to 1910 S.S. **Wakefield**, 79 tons; 1896 to 1932 S.S. **Herbert**, 233 tons (sold to S. W. Davids & Sons, Townsville 9/8/32); 1897 to 1954 S.S. **Carroo**, 180 tons (sold to Hopewell Steam Shipping Co. Ltd., Maryborough). The **Carroo** had left England for Townsville on June 28, 1897, arriving at Townsville on November 2, 1897. The ship was described in the Chairman's Report of July 28, 1897 as a steam lighter of shallow draught.

(1) South Pacific Enterprise, the Story of the C.S.R.

In 1899, **Croydon**, 68 tons, was added to the fleet, and saw service until 1905. In the same year, **Herbert** was lengthened by 30 feet to render her more adaptable for lightering from creeks "which had the effect of increasing the carrying capacity and at the same time reducing the draught of water."

Lighterage at Flat Top

Several of these vessels were engaged in lighterage activities at Mackay. The company in 1894 purchased a wharf on the Pioneer River at Mackay for the loading of sugar into lighters for transshipment to large vessels at the anchorage at Flat Top Island. Commenting on the Mackay wharf in his speech to shareholders on January 29, 1895 the Chairman said the wharf "has been of great use and the lighters purchased for the transport of sugar thence have proved efficient and work cheaply."

From the early years of the 1900's the carriage of bananas on the bunch was an important part of the Company's Queensland trade. In 1911 an interest was acquired in the Maria Creek (Johnstone River district) railway, a feeder line formerly owned by the saw-millers, Chapman and Co., which ran from the Japoon Mills and surrounding farms to the mouth of Maria Creek. From Maria Creek, the Company's lighters loaded the bananas for transshipment at Townsville to the company's steamers, which sailed for Brisbane and Sydney every Thursday night. In 1917 the Queensland Government resumed the line, and with few passenger vessels running in the 1920's to provide regular transport for the crop, and the planting of bananas in southern Queensland and northern New South Wales, banana farming was replaced to an increasing extent by sugar. Old records of the company show that between July 1904 and January 1905, **Herbert** and **Carroo** traded between Townsville and Cairns and North Queensland river ports. Early in 1905 **Herbert** left North Queensland to trade between Port Adelaide and Spencer Gulf ports. In May and August 1905 **Carroo** ran from Townsville to river ports. Additional vessels in the trade were **Palmer**, chartered by the company from A.U.S.N. Co. Ltd. from July 30 to November 5, 1910; and **Herbert** from 1915 to 1918. In February 1918, **Carroo** and **Herbert** returned to trade out of Townsville, but from this time onward, Cairns

was included in the itinerary and calls were made at Mourilyan Harbour.

The tugboat **Dumaresq** was purchased in 1918 to replace the **Brinwarr** lost during a cyclone at Mackay in January of that year. Early in 1919, the company purchased the hopper dredge **Neptune** and she was converted into a lighter to augment the lighterage plant at Mackay.

On March 6, 1920, an explosion occurred on board the steam lighter **Carroo** between Townsville and Cairns, resulting in serious damage and the loss of one



The "Carroo" berthing at Goondi Mill Wharf, October, 1952.

man. The **Carroo** was subsequently abandoned to underwriters, but was bought from them at auction. She was reconditioned and again placed in commission.

The Famous Wortanna

The most famous of the North Queensland mosquito fleet was the small motor vessel **Wortanna**. The colourful and chequered career of the **Wortanna** was described in a paper I gave on Australia's Merchant Navy in the World Wars in October 1957.⁽²⁾ She was originally built by Barclay Curle & Co. Ltd., Glasgow in

(2) Journal **Royal Historical Society** Vol. V No. 5 1957.

1875 as a two-masted square rigged paddle steamer, named the **Albatross**. Built of Norwegian iron, the **Albatross** served as a paddle steamer in Glasgow for many years. At the turn of the century, an auxiliary engine was installed in the vessel which travelled out to Melbourne under her own power, and was at first used as a pleasure craft on the Yarra. Subsequently she was converted into a twin screw motor vessel and in 1922, was purchased from a Tasmanian owner by the Adelaide Steamship Company, and re-named **Wortanna**.

Service in Pacific War

After many year of service in the North Queensland lighterage trade, **Wortanna** at the outbreak of the Second World War was requisitioned with other ships, by the United States small ships section. She was re-converted into a freighter, modern diesel engines being installed, and used between Milne Bay and other New Guinea ports. At the end of the War **Wortanna** returned to the company's lighterage service between Cairns and Mourilyan harbour. On November 18, 1957 she grounded on rocks at the entrance to Mourilyan Harbour and was declared a constructive total loss, being abandoned to underwriters. The **Wortanna** was then an old lady of 82, and the oldest vessel serving on the Australian Coast. Her long service was a tribute to her builders and the quality of iron they used in her hull.

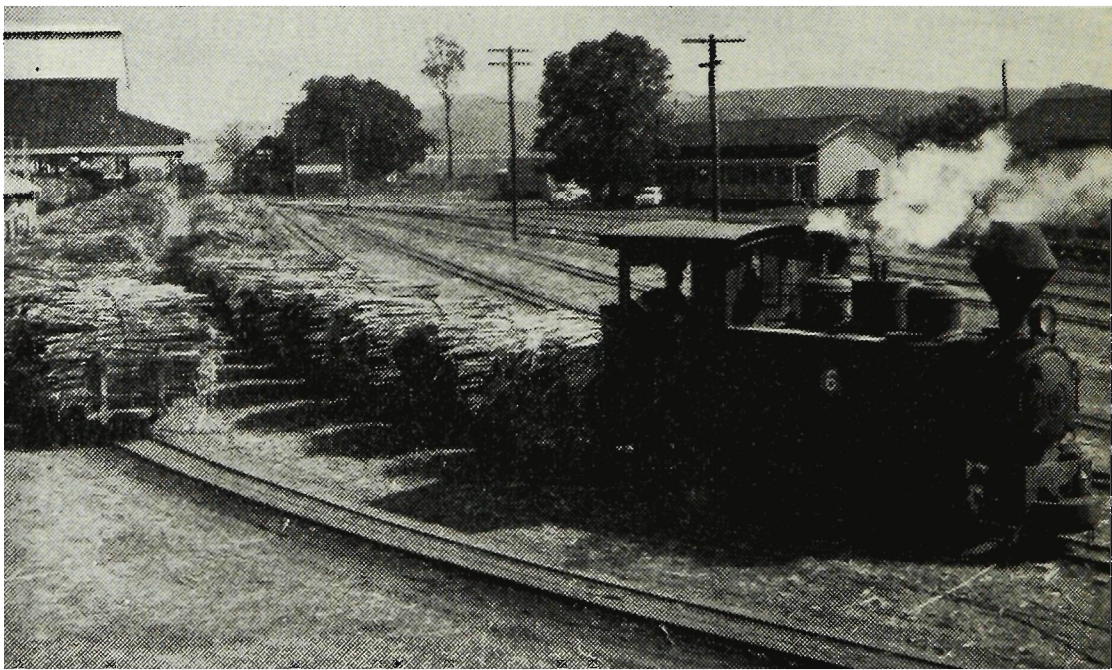
On March 31, 1926, two small steamers **Goondi** (ex **Gartmore**) and **Tully** were acquired from the liquidator of J. Broadfoot and Sons Ltd., Townsville. **Goondi** was sold to Wilson Hart & Co. Pty. Ltd., Maryborough on August 4, 1955. **Tully** ran aground at Flying Fish Point, Johnstone River, on September 1, 1927, was wrecked and abandoned.

The motor vessel **Katoora**, 327 tons, built by G. Brown & Co. of Greenock in 1927 for the company, did excellent service. On November 8, 1960 she was sold to Keith Hollands Shipping Co. Pty. Ltd., of Cairns. Her usefulness as a sugar lighter came to an end when the mills of the Johnstone River district began shipping their sugar output direct from the bulk terminal at Mourilyan Harbour.

Three Useful Little Ships

Three particularly useful vessels for the company's sugar lighterage at Mackay entered the

fleet as **Tuka** (1928), **Toorie** (1928), and **Tolga** (1930). These vessels were built in 1925 at the Government Dockyard, Newcastle, N.S.W. to carry stone for the construction of the approaches to the Sydney Harbour Bridge, and were named respectively, **Sir Dudley de Chair**, **Sir Arthur Dorman**, and **Sir T. Hugh Bell** (ex **Dorlonco**), the contractors for the bridge being the well-known engineering firm of Dorman Long & Co. **Tuka** was lost as the result of an accident whilst under charter to the Navy, on March 26, 1945. **Toorie** was sold to a Hongkong firm in 1956 at the end of her useful life. **Tolga** was sold to the Australian Naval Board on April 8, 1946. The tug **Uta** was built in Sydney by



Cane Trucks, Proserpine Mill.

Morts Dock and Engineering Company in 1927 for towing lighters between Mackay and Flat Top Anchorage.

The tribulations of the lighterage trade are illustrated by an extract from the Chairman's address on February 20, 1934: "The barge Neptune, loaded with sugar, got out of control during heavy weather whilst alongside a steamer at Flat Top and unfortunately sank. Through continuous unsettled weather the compulsory removal of the Neptune wreck from navigable waters has been long and costly."

Mundalla's First Shipment

On August 26, 1948, the new outer harbour at Mackay was officially opened, and the company's motor

vessel **Mundalla** loaded the first shipment of raw sugar from the Harbour in September. The lighters, which for many years had handled cargo between Mackay and Flat Top Anchorage, were transferred to Cairns to augment the North Queensland lighterage plant. The motor vessel **Katoora**, which had grounded in the Johnstone River in July 1939, was brought to Sydney for repairs in January 1949. She was subsequently chartered to the A.U.S.N. Company for their Queensland coastal trade. The steam lighters, **Tuka**, **Tolga**, and **Toorie** and the barges **Oura** and **Quasha** were transferred to Cairns to assist with the sugar lighterage. **Oura** was sold in 1942. The small tug **Pelican** which had been employed towing these barges to Flat Top Anchorage, and for which the company had no further use, was sold.

The Mackay lighterage enterprise, as functioning in 1939, was a closely co-ordinated operation. The steam lighters **Tuka**, **Tolga**, and **Toorie**, and the barges were loaded with bagged raw sugar, with the assistance of conveyors at the company's wharf in the Pioneer River. The lighterage craft moved out on the tide to be ready for the arrival of overseas and interstate cargo vessels at Flat Top Anchorage.

It was an impressive sight to see this small armada bobbing up and down in the swell in the lee of Flat Top Island awaiting the arrival of an overseas freighter. Waterside workers were aboard the small vessels to accomplish the task of transferring the bagged sugar by slings into the hold of the waiting ship. A shuttle service was thereafter run backwards and forwards until the ship had received its full quota of sugar.

Lighters in War Effort

The North Queensland fleet of sugar lighters made a notable contribution to the war effort in World War II. The 327 ton sugar lighter **Katoora** in 1942 made five trips from North Queensland ports to Thursday and Horn Island,⁽³⁾ an air force station being estab-

(3) Horn Island, in World War II was the tactical base for air operations in the Torres Strait area. It was the first part of the Queensland coast to be raided by Japanese planes. This was on March 14, 1942. Nine American P40's (Kittyhawks) based there, shot down two Zeros and one bomber for the loss of one P40 shot down and one damaged. Horn Island received its heaviest raid on July 7, 1942, about 200 bombs falling in the R.A.A.F. camp area, damaging buildings and equipment, and wounding three airmen.

lished on Horn Island, and around to Darwin with stores for the services.

Toorie made a trip from Cairns to Thursday Island with supplies in June 1943.

These tiny ships, which served both the British and American forces, rendered sterling service in the Allied Cause. The authorities who requisitioned the various vessels and the periods during which they exercised control were:

Australian Naval Board

Tuka October 7, 1940 to March 26, 1945.

Tolga November 1, 1940 to April 1, 1946.

Toorie November 13, 1940 to January 28, 1943.

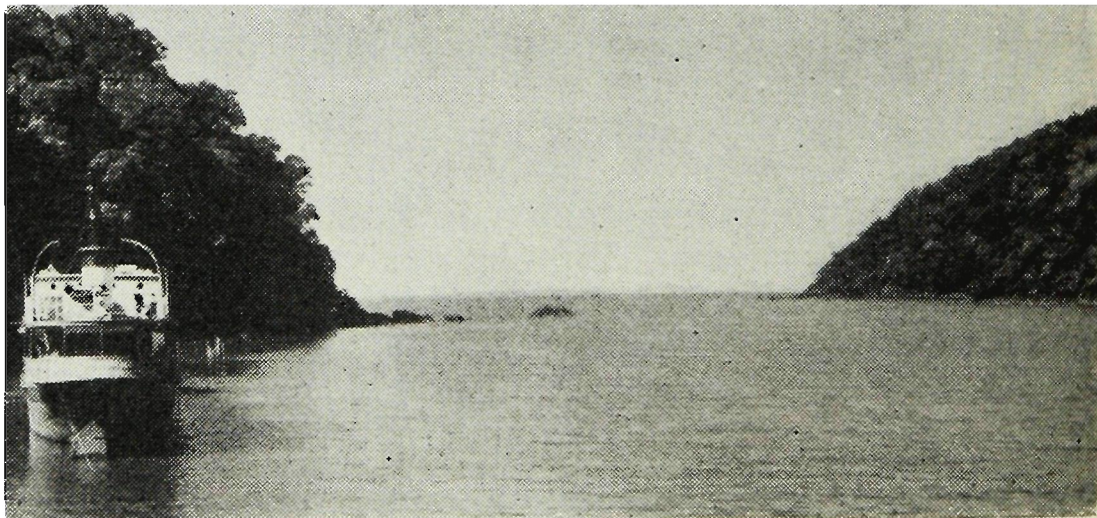
Carroo June 9, 1942 to December 23, 1944.

In addition, three coal hulks **Apa**, **Quasha**, and **Rona** were taken over.

United States Army — Small Ships Section

Katoora November 7, 1942 to July 19, 1946.

Wortanna November 12, 1942 to September 12, 1945.



The "Wortanna" aground in Mourilyan Harbour,

Very little can be gleaned from the Company's records of the part played by the small ships under American control, for they were manned almost entirely by U.S. Personnel, but their size and light draught made them very useful at the ports and islands in the New Guinea area.

Similarly, the full stories of the four sugar lighters operated by the Royal Australian Navy are at present known only to the Navy; the official history of the Navy, when it is published will no doubt make some reference to these gallant little ships. It is known that **Tuka** sank in Madang Harbour on March 26, 1945, and

the Government purchased **Tolga** on April 1, 1946, as she then lay far from Australia in such a poor condition that it was considered too dangerous to attempt the long voyage home. When they were not required for war service, the **Katoora**, **Carroo**, **Wortanna**, **Tuka**, **Toorie** and **Tolga**, also the **Goondi**, operated as lighters between Cairns as the main transshipping port and the loading outports of Port Douglas, Goondi (on the Johnstone River, above Innisfail) and Mourilyan Harbour.

Shuttle Service with Cairns

After the war, **Toorie**, **Katoora**, **Wortanna**, **Carroo**, and **Goondi** continued their peace-time operations, carrying on a shuttle service between Cairns, Port Douglas, Goondi, and Mourilyan at full pressure from the commencement of the sugar crushing season in June each year until all sugar was cleared, following which the lighters were shipped and overhauled at either Townsville or Cairns.

In more recent years, with an augmented sugar crop, the lighterage season often extended into the second quarter of the following year. In the loading of sugar at Goondi Mill, on the Johnstone River, the sugar lighters had to negotiate the bar at Flying Fish Point, carefully working the tides. At outports, sugar chutes were used to expedite loading into the lighters' holds.

On arrival at Cairns, sugar was transhipped over-side from the sugar lighter to the overseas or interstate vessel. On occasions when direct transshipment was not possible, sugar was off-loaded from lighters into sugar sheds for later shipment interstate and overseas.

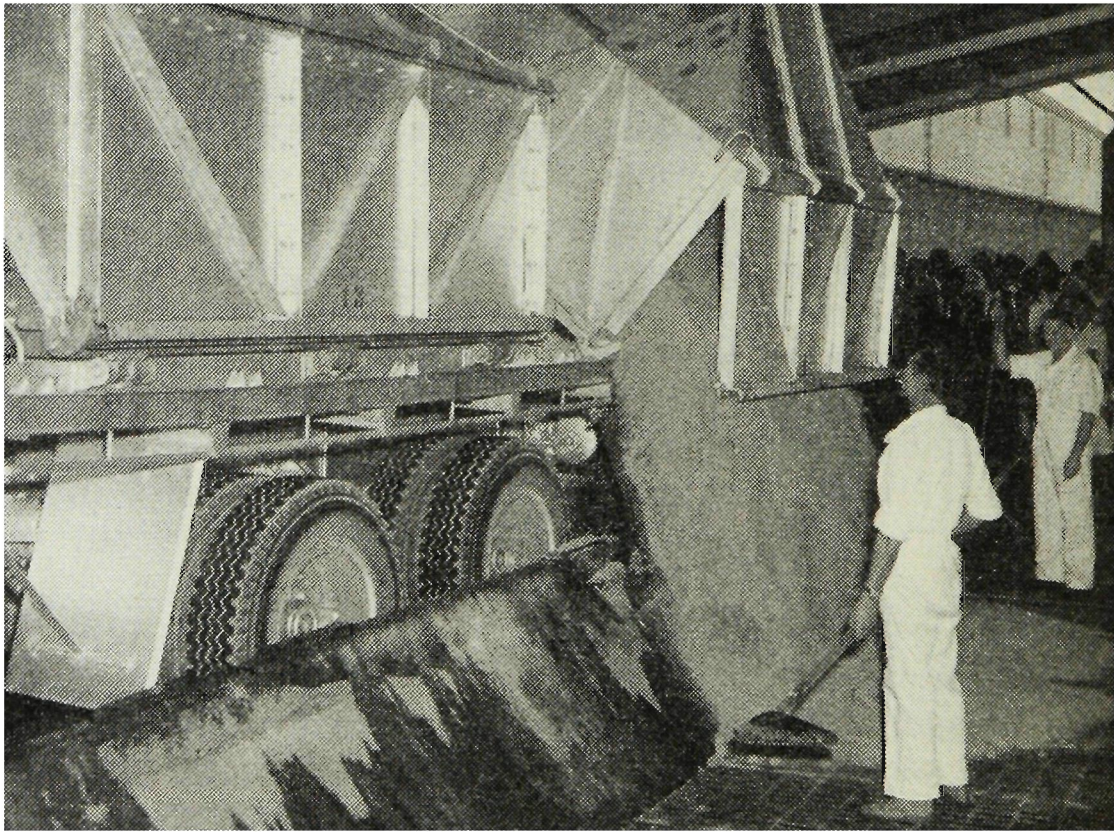
In 1954, consequent on the advancing age of **Wortanna**, **Carroo**, and **Goondi**, the motor vessels **Korara** (ex **Quirina**) 388 tons, and **Karalta** (ex **Tusna**) 389 tons, were acquired in Holland, and in 1955 the motor vessel, **Konanda** 414 tons, which was built in Holland.

The opening of the Mackay bulk sugar terminal in August 1957 was followed by the construction of similar shipping terminals at Townsville, Lucinda Point, and Mourilyan Harbour, the latter opening in time to cope with the 1960 season's output.

Final Mourilyan Shipment

Direct shipments from Mourilyan Harbour, which also included the production of Goondi Mill, meant that the services of North Queensland lighters were not required by an earlier date than had been expected. The final shipment of sugar from Mourilyan Harbour was made in January 1960, and **Korara** loaded the final cargo from Goondi Mill on April 9, 1960.

Konanda has been transferred to South Australia to serve in the coastal service operated by a subsidiary, Coast Steamships Ltd., and **Katoora** was sold on November 10, 1960 to Keith Hollands Shipping Co. Pty. Ltd. of Cairns. **Korara** and **Karalta** are tied up at Townsville awaiting alternative employment or sale.



Unloading Bulk Sugar from Road Transport, Lucinda Point.

Eclipse of Port Douglas

Developments in the sugar industry have dealt a severe blow to the old established township of Port Douglas which in its hey-day was a considerable town and challenged Cairns for supremacy as a port. For 60 years a tramway from Mossman to Port Douglas was used to convey passengers, sugar, and other freight, and the long line of trucks loaded with bagged sugar snaking along Mossman's main street from the mill on its way to the wharf at Port Douglas was a

familiar sight in the crushing season each year. Practically the only employment in the little port was provided by the loading of the sugar cargoes and a number of wharf workers made their homes there, finding regular employment in the crushing season when the lighters arrived to load the bagged sugar. For many years the Mossman-Port Douglas tramway was the only outlet for the district. With the development of road construction, however, the economic future of the tramway was jeopardised. As a result of the opening of the Cook Highway in 1936, the use of the tramway, which was owned by the Douglas Shire Council, was restricted to the haulage of sugar cane to the Mossman Central Mill and the transport of bagged sugar from the mill to the wharf at Port Douglas; it meant the elimination of the lightering trade from Port Douglas and the consequent loss of employment by local residents on the wharf during the sugar season.

In November 1960, Parliament passed the Mossman Tramway Bill which validated an agreement entered into between the Douglas Shire Council and the Mossman Central Mill Company Limited. for the acquirement by the company of the tramway undertaking. The tramway (24 miles of line) is now used solely for the haulage of cane to the mill, which also operates another tramway in the district. The agreement, which vested the tramway undertaking in the mill company as from January 1, 1959, covers the sale of the whole of the Council's tramway undertakings, including lines, locomotives, rolling stock, bridges, tools and equipment, but excluding the Council's wharf and workshop building and the machines therein at Port Douglas. The agreement provided for a total cash payment of £10,000 in five annual payments of £2,000.

To-day, fleets of heavy lorries carry Mossman's sugar to Cairns, and the sugar lighters are a thing of the past. *Sic transit gloria mundi!* With the increasing use of mechanical harvesters throughout the industry, it is envisaged that motor transport will be used even more extensively in the near future. The Mossman mill is now considering carting all its cane to the mill by lorry. In fact, a considerable quantity of cane is now being carted from the paddocks straight to the mill. For these reasons, and the probability that the Mossman mill will have to meet the great

cost of constructing a new rail bridge on the line, it is likely that the tramway will not have a very long life — possibly ten years at the most.

Mechanised Bulk Loading

Times change and progress does not stand still. The introduction of highly efficient mechanised methods of handling raw sugar in bulk has been one of the most important developments in the history of Queensland. It is highly important also from a national viewpoint, because in every sense of the word the sugar industry is national in its scope and importance. About $1\frac{1}{4}$ million tons of raw sugar are produced each year—the output of 34 raw sugar



Opening Bundaberg Bulk Sugar Terminal by the Premier
(Hon. G. F. R. Nicklin), September 20, 1958.

mills. Fourteen of these mills are owned co-operatively by the farmers who supply them with sugar cane; seven of them are owned by the C.S.R. Company (three of the seven are in New South Wales); and 13 by various other companies. The fourteen co-opera-

tive mills are Mossman (Douglas Shire, 50 miles north of Cairns, N.Q.); Mulgrave (Gordonvale, 14 miles south of Cairns, N.Q.); Babinda (36 miles south of Cairns); South Johnstone (South Johnstone River, 7 miles from Innisfail); Tully (Cardwell Shire, N.Q.); Proserpine (N.Q.); Farleigh, Racecourse, Marian, Cattle Creek, Plane Creek, North Eton (all in Mackay district); Gin Gin (Burnett River, 40 miles from Bundaberg); Isis (Isis district). Proprietary mills include those owned by the giant C.S.R. Company at Goondi (Innisfail district); Hambledon (Cairns district); Victoria, the largest sugar mill in the southern hemisphere (Ingham district); and Macknade (Halifax district). The C.S.R. also owns three mills on the Northern Rivers of New South Wales — Condong, Broadwater, and Harwood. Old established proprietary mills which are unique in also having their own plantation are Fairymead (Young Bros.), and Bingera (Gibson and Howes) in the Bundaberg district. The Millaquin Refinery and the Qunaba raw sugar mill at Bundaberg are owned by the Millaquin Sugar Co. Ltd. All these mills are located at irregular intervals along 1,300 miles of Australia's north eastern coast.⁽⁴⁾ The raw sugar is shipped through eight ports.

Answer to Rising Costs

Mechanised handling of the sugar crop provided the answer to steeply rising costs in the sugar

(4) The complete list of the 31 Queensland mills and their owners are:— **Mossman**, Mossman Central Mill Co. Ltd.; **Hambledon**, Colonial Sugar Refining Co. Ltd.; **Mulgrave**, Mulgrave Central Mill Co. Ltd.; **Babinda**, Babinda Central Mill Co. Ltd.; **Goondi**, Colonial Sugar Refining Co. Ltd.; **South Johnstone**, South Johnstone Co-op. Sugar Milling Association Ltd.; **Mourilyan**, Australian Sugar Co. Pty. Ltd.; **Tully**, Tully Co-op. Sugar Milling Association Ltd.; **Victoria**, Ingham Colonial Sugar Refining Co. Ltd.; **Macknade**, Colonial Sugar Refining Co. Ltd.; **Invicta**, Haughton Sugar Co. Ltd.; **Giru**; **Pioneer**, Pioneer Sugar Mills (Pty.) Ltd.; **Kalamia**, Australian Estates Co. Ltd., Kalamia Estate, Ayr; **Inkerman**, Home Hill Pioneer Sugar Mills (Pty.) Ltd.; **Proserpine**, Proserpine Co-op. Sugar Association Ltd.; **Cattle Creek**, Cattle Creek Co-op. Sugar Milling Association Ltd., Finch Hatton, via Mackay; **Racecourse**, Racecourse Co-op. Sugar Association Ltd., Racecourse, via Mackay; **Farleigh**, Farleigh Co-op. Sugar Milling Association Ltd., Farleigh, Mackay; **North Eton**, North Eton Co-op. Sugar Milling Association Ltd., North Eton, Mackay; **Marian**, Marian Central Mill Co. Ltd., Marian, Mackay; **Pleystowe**, Amalgamated Sugar Mills Ltd., Pleystowe, Mackay; **Plane Creek**, Plane Creek Central Mill Co. Ltd., Sarina; **Qunaba**, The Millaquin Sugar Co. Ltd., Qunaba, Bundaberg; **Millaquin**, Millaquin Sugar Co. Ltd., Bundaberg; **Bingera**, Gibson and Howes Ltd., Bingera Plantation, Bundaberg; **Fairymead**, Fairymead Sugar Co. Ltd., Bundaberg; **Gin Gin**, Gin Gin Co-op. Sugar Milling Association Ltd., Wallaville, via Bundaberg; **Isis**, Isis Central Sugar Mill Co. Ltd., Childers; **Maryborough**, Maryborough Sugar Factory Pty. Ltd., Maryborough; **Moreton**, Moreton Central Sugar Mill Co. Ltd., Nambour; **Rocky Point**, W. H. Heck and Sons Pty. Ltd., Woongoolba, via Yatala.

industry, one of the major items in this connection being transport. After the war, the price of jute sacks rose steeply, and rising wages increased the cost of manhandling bagged raw sugar at mills, ports, and refineries. Another important factor in costs was the slow loading and unloading of ships, in which strikes and industrial trouble played their part, requiring the storing and holding of thousands of tons of sugar at the various mills.

Mechanised handling and loading of vessels with raw sugar in bulk began at Australian mills in 1954 when two relatively small bulk storage and loading installations commenced operating at the C.S.R. Company's mills in northern New South Wales. These were the first mechanised bulk plants in the Australian sugar industry. Raw sugar shipped in bulk from these



Lucinda Point Bulk Sugar Terminal from the air.

plants by small coastal freighters was unloaded in bulk by a grab on a coal unloading crane at the C.S.R. Company's sugar refinery in Sydney.

Investigation of bulk handling dates from 1951 when a Consultative Committee was formed to provide the Sugar Board with advice on the planning and intra-industry steps needed for the provision of loading at bulk terminals at Queensland ports. On this Committee were representatives of the Queensland Cane Growers' Council, the Australian Sugar Producers' Association, the Proprietary Sugar Millers'

Association, and the C.S.R. Company, also senior officers of the Queensland Treasury and the Departments of Harbours and Marine, and Railways. The C.S.R. Company was asked by the Sugar Board to provide an overall programme for conversion of the raw sugar industry to bulk handling and to present an appreciation of the economics of the plan. Subsequently the Company took over the task of co-ordinating the conversion programme and the integration of the various activities.

By 1955, the Company had completed a large scale mechanised bulk unloading and storage installation at its Pyrmont refinery in Sydney, and in the same year its Yarraville refinery in Melbourne commenced receiving raw sugar in bulk, grabs operated by ships' gear being used to unload the sugar. In 1957, the large bulk installation at the port of Mackay commenced operating, and it was followed in 1958 by installations at Lucinda and Bundaberg. In 1959 the Townsville terminal was opened, and in 1960, the fifth, Mourilyan, began operating.

Some overseas buyers of Australian raw sugar, principally Japan, require their sugar in bags. For this reason, a proportion of Australian production of raw sugar continues to be bagged. Cairns is the main Queensland port for bagged sugar, which is supplied by the Mossman Mill (Farmers' Co-operative), Hambledon Mill (C.S.R.) and Mulgrave Mill (Farmers' Co-operative).

Five Bulk Sugar Terminals

There are five bulk sugar terminals in Queensland. Bulk handling equipment at New South Wales and Queensland mills is owned and operated by the individual millowners. The C.S.R. Company owns and operates the installation at its refineries. Mackay, Bundaberg, and Townsville Harbour Boards have been responsible for the construction and financing of the terminals at their respective ports. At Lucinda and Mourilyan Harbour there are no harbour boards and the constructing authority was the Queensland Treasury. Under the Queensland Harbours Act of 1955 the Queensland Sugar Board takes over the terminals from the constructing authorities and pays the port authorities interest and redemption on the loans. The terminals are controlled, maintained, and

operated by local organisations appointed by the Sugar Board. The Queensland Treasurer administers the Harbours Act and is concerned in all with the provision of about £8 million for the five bulk installations at Queensland ports. The Minister for Agriculture and Stock is responsible for administering the Queensland sugar marketing pool. All raw sugar produced is placed in the pool under the jurisdiction of the Queensland Sugar Board.

With the introduction of bulk handling, working conditions at the sugar ports have been improved and employment stabilised. At the loading ports and at the refineries small teams of trained and permanently employed men using machines have replaced large numbers of men employed on a casual basis. An important advantage of bulk handling is the speedy turn-round of ships and consequent lower freight rates. In 1956, hand loading 10,000 ton cargoes of bagged raw sugar at Mackay averaged 21 days. In 1958, mechanical loading of 10,000 ton bulk cargoes averaged two days.

Handling the Sugar Crop

For the Townsville bulk installation, it was necessary to raze the well known Flagstaff Hill to level a site for the 150,000 ton capacity storage shed. Raw sugar from mills in the Burdekin and Haughton River districts is railed to Townsville. Bundaberg terminal at the new port created at the mouth of the Burnett River has a storage capacity of 50,000 tons, and caters for the Bundaberg mills. Lucinda, which has a storage capacity of 80,000 tons, handles the sugar from the Victoria and Macknade mills. Mackay's capacity is 150,000 tons, and it handles the output of the eight mills in that district.

Mourilyan handles the sugar from Babinda, Goondi, Mourilyan,⁽⁵⁾ South Johnstone, and Tully Mills. To allow overseas ships to use Mourilyan Harbour the channel was widened and deepened by blasting the rock shelf at the mouth of the Harbour.

(5) At Mourilyan Mill, the Australian Sugar Company Pty. Ltd., is carrying out a large expansion programme which was started in 1953, and is expected to be completed by about June, 1961. The overall project involves a capital expenditure of nearly £1 million. From 1959-60, about £51,000 was spent, the major portion of which was for plant and equipment providing for the change-over from bagged sugar deliveries to the storage and delivery of sugar in bulk.

Part of a hillside was levelled and foreshores reclaimed for the 150,000 ton capacity storage shed and wharf.

Travellers in North Queensland see at railway sidings during the sugar cane crushing season long strings of curious white boxes on rail trucks and also on road vehicles. These boxes carry the raw sugar made at the various mills, and they hold from 5 to 8 tons of raw sugar. On arrival at the bulk storage and loading installation the boxes, which are built with a flap door on one side, are weighed and tipped, the flap door opening to allow the sugar to fall out. A conveyor takes the sugar to the storage shed where it is held awaiting shipment. Other conveyors take the sugar to the wharf where the ship lies; an automatic weigher weighs the sugar on the way to the wharf, and a crane and chute feed the sugar into the ship's hold. Dozers and electric shovels are used to move sugar from the edges of the store to hoppers in the centre of the floor. The conveyors to the wharf run under the hoppers.

The crane and chute feeds raw sugar into the hold of the ship at from 450 to 700 tons an hour. The bulk handling "lift," which begins at the mills in the canelands, ends when the loose raw sugar goes into process at the refineries. The refinery in Brisbane receives sugar in bulk from Condong Mill near Murwillumbah, N.S.W. The sugar is transported in trucks and goes straight into process.

Bulk Sugar Carrier

The **Meringa**, a new bulk sugar carrier, was built by the Adelaide Steamship Company specially for the run from Lucinda to Pyrmont. The vessel went into service in February 1959, and on its first run lifted a record cargo (6,651 tons) out of Lucinda. Previous record was 5,787 tons by the **Binburra** on July 26, 1953. The **Meringa** made her first voyage to and from Lucinda in 12 days (including discharging time in Sydney). She is expected to load each voyage out of Lucinda between 6,300 tons and 6,800 tons, depending on the tides. In the past, coasters with about 5,000 tons, have been able to navigate the channel to Lucinda safely only at high tides.

The **Meringa** is built like an oil tanker with engines aft and no superstructure between hatches.

She has a speed of $12\frac{1}{2}$ knots dead weight (cargo, fresh water, stores, etc.) of 7,035 tons, and can carry 3,270 tons of ballast.

Much more could be said of the sugar industry, but I have sought to confine the paper to an account of the sugar industry's mosquito fleet and their replacement by the modern system of mechanised loading of sugar cargoes at bulk terminals.