

# PUMPER

## YALE & TOWNE

THE YALE & TOWNE MANUFACTURING CO., STAMFORD, CONN.

### PIPE LINES



Gail E. Cogan

#### DISTRIBUTORS OF YALE AND TOWNE PUMPS

in many midwestern and Rocky Mountain states will be seeing much of Gail E. Cogan from now on. He has just been appointed sales representative for Colorado, Idaho, Illinois, Indiana, Iowa, Kansas, Minnesota, Michigan, Missouri, Montana, Nebraska, New Mexico, North Dakota, Ohio, South Dakota, Utah, Wisconsin, and Wyoming.

Gail has been connected with the pumping field for more than twenty-five years. During the past five years he has represented Yale and Towne. He takes up his new duties on his return from a brief leave of absence.

Gail Cogan has many friends in the industry. He will be happy to hear from every one of them. Write to him at Yale & Towne, 205 W. Wacker Drive, Chicago, Illinois. Or phone Dearborn 2-7072 when you are in Chicago.

#### SINCE THE FIRST ISSUE

of the TRI-ROTOR PUMPER, we have received several interesting letters from distributors suggesting applications of Tri-Rotor Pumps. Two of them formed the basis for the articles in this issue on pumping corn syrup. Others discussed uses which will be described in later issues.

Meanwhile, let us have the story of some interesting sales *you* have made.

Write

EDITOR, Tri-Rotor Pumper  
Yale & Towne Manufacturing Co.  
Stamford, Connecticut

## TRI-ROTOR PUMPS PERFECT FOR CORN SYRUP SERVICE

### YALE PUMP SALES RISE UNDER NEW REGULATIONS

Wherever sweeteners are used in food processing, pumps will be bought for syrup service. New food processing regulations have increased the need for pumps in fruit canneries. And syrup handling and mixing calls for the Yale Tri-Rotor Pump.

The new pure food laws allow canneries to use up to 20% corn syrup in processing fruit which until recently had to be preserved in syrups made exclusively of cane or beet sugar.

Shields, Harper & Company, Tri-Rotor Pump distributor on the West Coast, has been highly successful in introducing Yale pumps into fruit canning plants. They have found that cannery operators are eager to take advantage of the savings which result from handling sugar in liquid form. Naturally, these same operators wish to use the less expensive corn syrup to the full extent allowed by the law.

That is where Yale pumps enter the picture. They are particularly efficient for unloading such viscous liquids as syrups, and can be depended upon to deliver exact amounts of each component in mixing corn and cane sugars.

But, as Shields, Harper points out, it is a good idea to look at the physical properties of the product to be pumped before considering the pumps themselves. The measurable qualities are

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### BOSTON DISTRIBUTOR PROFITS BY CHANGE FROM PAILS TO PUMPS

Tri-Rotor Pump distributors will find a profitable market wherever liquids are still moved by hand in pails or drums. The largest single field still needing more modern methods in this respect is food processing. Here, accurate measuring, absolute cleanliness, and efficiency with high-viscosity liquids are strong selling points for Yale & Towne pumps.

Harold Fox of the Fox Engineering Company, Tri-Rotor Pump distributor in the Boston, Massachusetts, area, recently made a sale to the Cushman Bakery Company illustrating these points.

The Cushman Bakery Company operates an up-to-date bakery at Lynn, on the North Shore of Massachusetts Bay. Despite their generally modern equipment, Cushman bakers had to haul corn syrup in pails from the storage tank to the kettles. This procedure was unsanitary, involved some spillage, and used unnecessary labor.

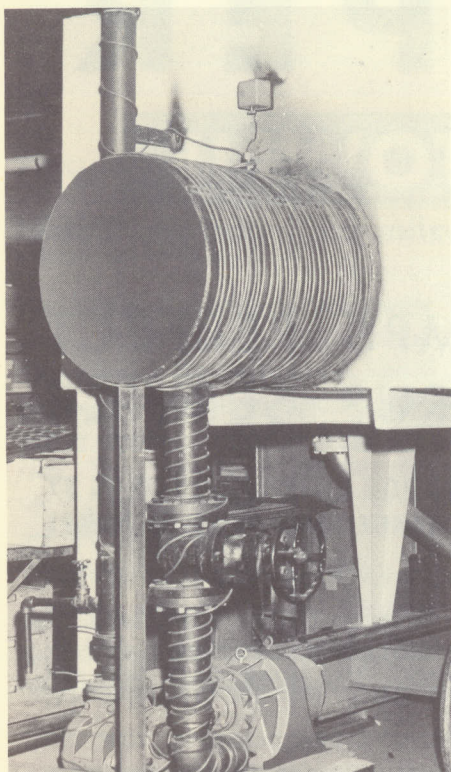
In cooperation with H. Turck of the Massachusetts Engineering Company of North Quincy, Fox recommended pumping the corn syrup directly to the kettles.

The customer agreed to the installation of a single discharge line about 100 feet long between the storage tank and the kettles. A branch takeoff di-

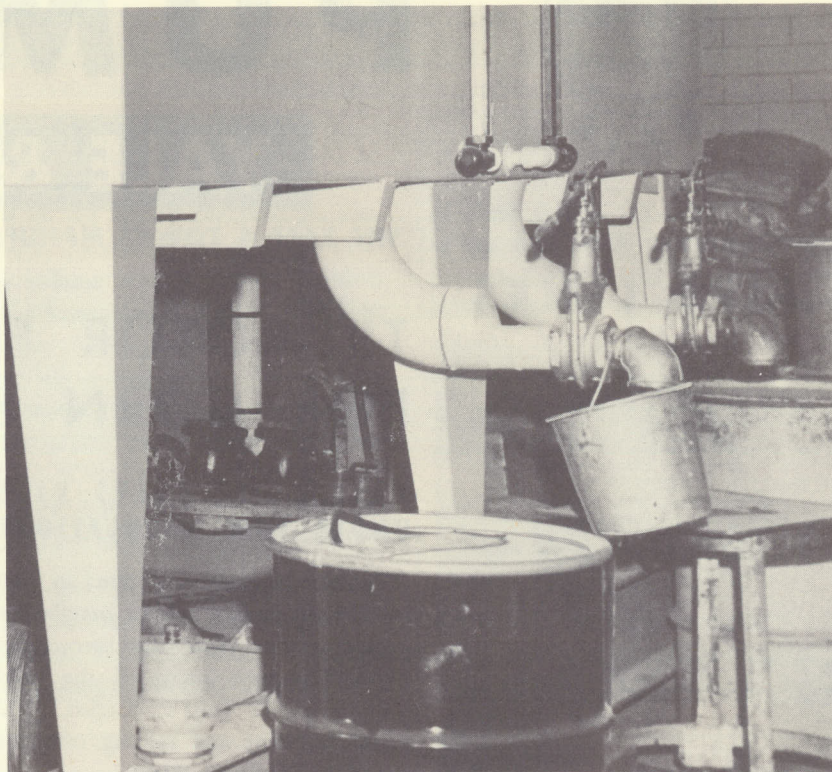
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## TRI-ROTOR PUMPER



Tri-Rotor Pump type 100CXM installed in the Cushman Bakery. Note the electric heating line on the intake line, pump, and discharge line. This pump, with sanitary preparation and food packing, delivers any required amount of syrup to each kettle.



Handling corn syrup in the Cushman Bakery at Lynn, Massachusetts, before installation of Yale Tri-Rotor Pumps required measuring and carrying of the syrup in pails and drums. This old-fashioned process was time and labor consuming, inaccurate and unsanitary.

### PAILS TO PUMPS

rectly above each kettle eliminates waste. A meter in each branch line places the exact amount of syrup at the operator's fingertips.

Serious consideration was given to the selection and placing of the Tri-Rotor Pump to feed the discharge line. Fox and Turck helped the Cushman management to select a model 100CXM, iron fitted, 70 p.s.i. pump with controlled by-pass head directly connected to a gear-head motor. The pump was given a sanitary preparation and provided with food packing. The rotor group was relieved slightly and a steel piston and heavy duty by-pass spring installed in view of the high viscosity of the corn syrup to be moved.

Since corn syrup flows much more easily when it is warm, the Massachusetts Engineering Company devised an electric heating system for pump and piping. A heated reservoir was installed between the storage tank and the pump. Since more heat is generally required on the input side of the pump to raise the syrup temperature than is needed to maintain the warmth along the discharge line, the pump was placed directly below the tank, where the concrete floor provided satisfactory mounting. The entire electric warming system is thermostatically controlled.

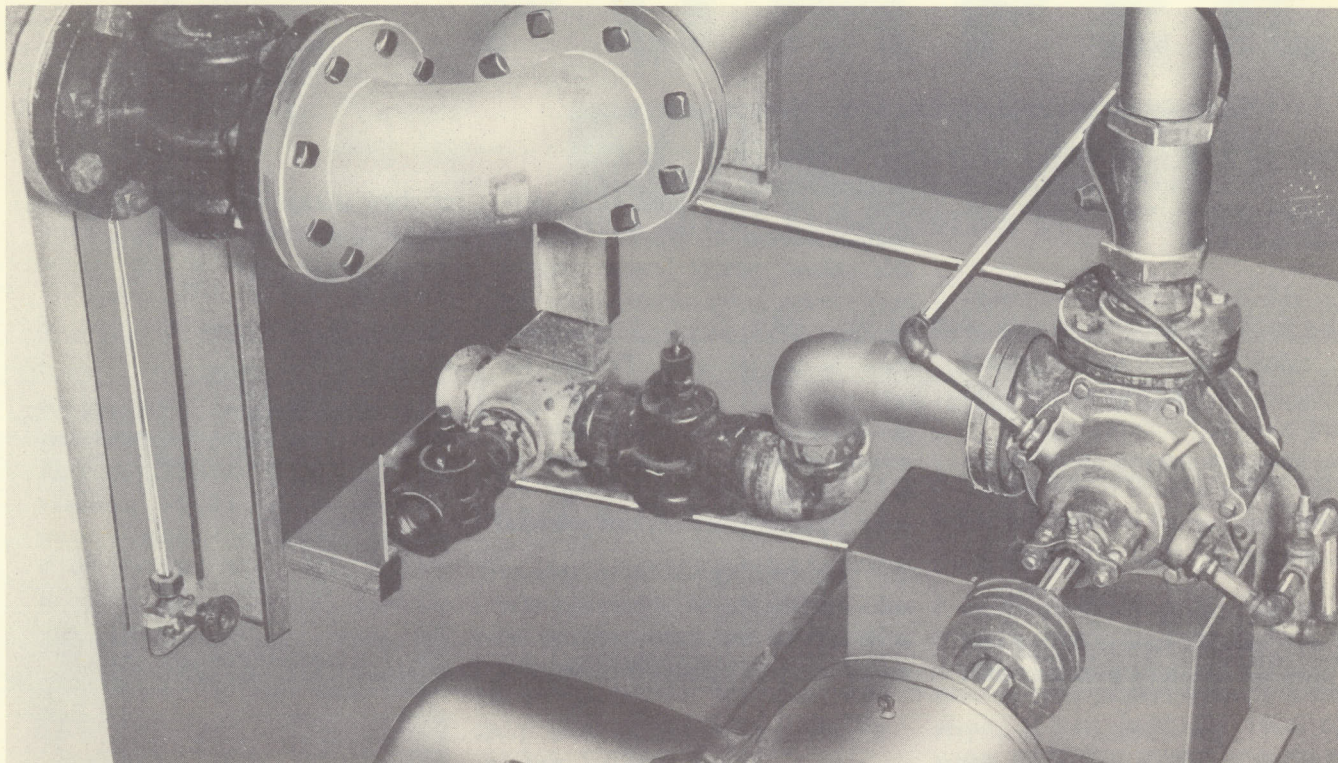
With the new system in operation, each operator can add just the right

amount of corn syrup to his dough or filling by pressing a button. There is no waste, and the system is completely sanitary. What is more, the saving in manpower alone has more than offset the original investment.

In this, as in other Tri-Rotor applications for handling corn syrup in New England, Fox has worked with the Massachusetts Engineering Company on installations and with the suppliers of the syrup. He points out proudly that in no such case where a Tri-Rotor Pump has been used has there been any need for service calls. He says, "In our opinion a properly engineered application will eliminate these calls."



## TRI-ROTOR PUMPER



Tri-Rotor Pump type 100CXM with steam jacketed shaft housing and heated discharge line for pumping corn syrup. This unit was installed by Stainless Products Corporation in the Swift and Co. Ice Cream Plant at Holland, Michigan.

### NEW REGULATIONS

viscosity and specific gravity. Not measurable, but important to syrup pumping, is the extreme tackiness of these liquids.

Corn syrups are marketed under such trade names as *Puritose* (manufactured by Corn Products Refining Company) and *Nectose* (manufactured by Penick and Ford). These syrups have a specific gravity of about 1.4. Viscosity varies among the products of different manufacturers, and is greatly affected by temperature.

Viscosity may be as low as 12,000 SSU at 110° F. and as high as 102,000 SSU at 80° F. Corn syrups are often hard to pipe and pump because they are very tacky.

Sucrose (cane or beet) syrups are slightly lighter and flow much more easily. A typical liquid sucrose will have a specific gravity of 1.35, with viscosity varying from 260 SSU at 110° F. to 1840 SSU at 54° F.

A canner's mixture of 1/5 corn syrup and 4/5 sucrose will have a specific gravity of about 1.4 and a viscosity which may be below 450 SSU at 100° F. and above 6000 SSU at 40° F.

Specific information about syrups and mixtures are available from manufacturers of the syrups. The additional data about suction, pressures and Tri-Rotor Pumps which you will need are contained in the tables in the back of the Tri-Rotor Pump Catalog.

For unloading from tank cars and tank trucks, a separate pump for each syrup is the most practical arrangement. For unloading corn syrups, an iron fitted by-pass type Tri-Rotor Pump is best. A steam jacketed shaft housing is necessary if no other heating is provided. The high viscosity and tackiness call for relieving the rotor group about .005 inch, and for an extra heavy relief valve spring. A steel piston is also advisable. A standard iron fitted pump with an extra heavy spring will handle liquid cane or beet sugar; in some installations bronze fittings may be specified. Suction heads must be carefully estimated with heavy, viscous liquids such as these. With corn syrup,

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# TRI-ROTOR PUMPER

## NEW REGULATIONS

a 7 pound suction head must be considered maximum.

For mixing the two syrups, two pumps should be driven by a single motor. This, added to the displacement control possible in Tri-Rotor Pumps, will completely prevent variations in proportion. Thus the cannery operator can use the largest amount of the less expensive corn syrup without fear of overstepping the legal percentage.

Because the capacity of a pump equipped with variable volume control falls off when the operating pressure comes

close to the spring pressure, an economical installation including the variable volume control feature requires both a heavy spring and low operating pressure. This condition can be overcome in several ways. Perhaps the best method is to install a booster pump where the two lines come together, allowing the movement of large amounts of syrup through the mixing pumps at a fairly low pressure.

The proportioning and booster pumps and all piping should be heated to take advantage of the lower viscosity of warm syrups. Special requirements

of these pumps are similar to those of the tank truck unloading pumps. Suction heads should be kept at the minimum, and a 20% overpower allowed in estimating the size of motor required.

A properly designed installation of this kind should give excellent service. The volume control feature of Tri-Rotor Pumps will be especially valuable in proportioning. Maintenance, finally, will be held to a minimum by the rugged design of Yale pumps and by the natural lubricating qualities of liquid sugars.

## NEW EDITION OF TRI-ROTOR PUMPS CATALOG

Demand for the new Tri-Rotor Pumps Catalog has been so great that the first edition is already out of print. A new edition of the catalog is now being printed and will be available for distribution very soon.

Response to the Tri-Rotor Pumps Catalog has been so enthusiastic that very

few changes will be made in the new edition. Among the great number of favorable comments were a few good suggestions for improvements. These are being incorporated in the new edition.

Requests for additional copies of the catalog will be filled as soon as the

new edition is off the press. Any comments, or suggestions for further improvement of the catalog will be welcome.

Please write to:

**Editor, TRI-ROTOR PUMPER**  
**Yale & Towne Manufacturing Co.**  
**Stamford, Connecticut**

# YALE & TOWNE