

FROZEN GOLD:

A STUDY OF THE IN-STORE  
FINISHING OF FROZEN BAKERY

Thesis for the Degree of M. B. A.  
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Neal T. Jansen  
1962

THESIS



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FROZEN GOLD:  
A STUDY OF THE IN-STORE  
FINISHING OF FROZEN BAKERY

By

Neal T. Jansen

A THESIS

Submitted to the College of Business and  
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## PREFACE

The purpose of this thesis is to examine the in-store finishing of frozen bakery products, in order to come to some definite conclusion as to the feasibility of installing such a program in supermarkets. This involves a comparison with the complete in-store bakery and with commercial bakery to determine if the bake-off of frozen products is a superior method of merchandising bakery foods.

The subject of frozen bake-offs has been described in numerous articles to date; however, these articles have been very limited in size and scope. No one has published an extensive examination of the subject. Among the many people from the baking industry who have aided me in obtaining information on the subject, I am particularly indebted to Kingston L. Howard, James W. Pence, Mr. H. L. Hoffman, and Mr. Graybon Young.

Coordination of the baking industry to the needs of the modern supermarket was aided greatly by the assistance of Mr. S. A. Jansen and Mr. Clarence E. Denham.

I wish to make acknowledgment to the faculty of the Department of Mass Marketing Management, and in particular to Dr. Daniel M. Slate and Dr. Edward M. Barnet, for their kind assistance in the preparation of this thesis.

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## CHAPTER I

### INTRODUCTION

#### Profit Squeeze

The food retailing industry has historically been keenly competitive and, in recent years, food retailers have been beset by increasing pressures from the "profit squeeze." A slowdown in profit gains has resulted from higher operating costs and lower retail prices. Overall operational costs have increased greatly in such areas as advertising, equipment, rent, and particularly in the expenditures for labor. At the same time, keener competition has resulted in a general lowering of profit margins. The discount method of selling is just one example of the rise of price competition through volume.

The "profit squeeze" has forced retailers to take a long look at departments that previously were either forgotten or taken for granted.<sup>1</sup> Grocers are interested in departments that will give extra service, increase volume and store traffic, and at the same time bring larger profits. As a result, many supermarkets now have delicatessens, candy shops, and soft goods lines.

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<sup>1</sup>Robert Coburn, "Super Market Bakery Department Can Boost Sagging Profit Margin," Yankee Grocer, April 10, 1954, p. 27.

Price competition is met by obtaining higher earnings through increased volume. The goal is greater store traffic through better one-stop shopping. At the same time, the store has the opportunity to build prestige and a quality image through a new source of profit-impulse goods.

### Renewed Interest in Bakery Department

The bakery department is receiving much attention from store owners. Innovations include in-store baking and rearrangement of the commercial baked goods section so that more traffic passes the section.<sup>2</sup> Super Valu Stores, Inc. of Hopkins, Minnesota, had only one store with a bakery in 1950. By 1959 the number had increased to 51, with 38 of them added since 1957. Ten more were installed in 1960 and Super Valu Stores plans to increase in-store baking by 50 per cent in 1961.<sup>3</sup> Many stores have visible ovens and there are even scent-machines to simulate the aroma of fresh bakery.<sup>4</sup>

The reason that the bakery department is receiving much of the new "profit squeeze" attention is that it is a high profit item and a great traffic builder. The Dillon Study revealed the following important facts about the bakery department:

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<sup>2</sup>Coburn, Yankee Grocer, p. 27.

<sup>3</sup>Bruce E. Chapman, "A Comprehensive Study of On-Premise Bakery Operations in Super Markets" (unpublished Master's thesis, School of Business and Public Service, Michigan State University, 1961), p. 137.

<sup>4</sup>Coburn, Yankee Grocer, p. 27.

Almost all bakery items are bought on impulse except white bread and sandwich bread. Baked foods do 31.47% more unit sales than the highest grocery mover--candy. The bakery department also topped the dollar sales of the grocery department's highest (cigarettes-tobacco) by 27.87%.

The dollar gross profit (5.7% of store total) is 49% more than the grocery's top section--health and beauty aids. The bakery dollar margin per shelf foot per week is exceeded only by soft drinks-beer. The annual turnover is 185 times while produce is next with 79 and the overall grocery average is 16.5 turns.

An extremely important finding is that baked foods ranks first in annual return per dollar invested--38.97% higher than produce, 1000% higher than the all-grocery average and 503.7% higher than the overall store figure.<sup>5</sup>

The fact that a good bakery is a great traffic builder is recognized by all in the grocery retail business. Just one example of the importance placed upon bakery by Mrs. Consumer is shown in a "tape recording" survey used by Applebaum's Food Markets of the Minneapolis-St. Paul area. Applebaum's taped discussions of seven housewives on their grocery likes and dislikes. One housewife remarked: "That brand X market has the best bakery. Their baked goods just plain taste better--they have that homemade flavor I like so much." The panel complained of the store's poor check-out service, bagging, and lack of cleanliness, yet one woman shopped there all the time and several women shopped there often. The panel indicated that the bakery section was the store's chief drawing card. There were many similar

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<sup>5</sup>"Baked Foods: Super Market Profit Sleeper?," Progressive Grocer, XXXX (May, 1961), p. 55.



comments and, as a result, Applebaum's decided once and for all to put on-premise bakeries in their stores.<sup>6</sup>

### Problem

How can the supermarket bakery department take full advantage of the profit possibilities?

The two major systems in use at the present time are: (1) the complete in-store bakery and (2) the commercial bakery section which uses baked goods prepared at a whole-sale level.

### In-Store Bakery

Experience has shown that in most instances a department offering freshly-baked goods does an outstanding job of attracting customers and building sales. However, even the most aggressive stores would have to think twice about the large investment in space and money required by conventional in-store bakeries. Even where store location is judged suitable, the risk is mostly against the operation because of high operating costs and profit-consuming leftovers.

A great deterrent to in-store bakeries is the large amount of labor difficulties which seem to be present in these operations. Besides the fact that the labor costs are very high, it is also extremely difficult to find personnel who possess the bakery skill and managerial

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<sup>6</sup>"Do It Yourself Research," Progressive Grocer, XXXX (November, 1961), p. 50.

abilities necessary to maintain both the quality and profit margin required.<sup>7</sup>

### Commercial Bakery

At the same time, commercial bakery sections have many disadvantages. It is no exaggeration to say that few supermarkets have succeeded in setting up a commercial baked goods department that competes in quality or aesthetic appeal with a good independent bakery store.<sup>8</sup>

The reason supermarkets sell a sizeable amount of baked goods, other than bread, is due to the convenience of one-stop shopping and a captive purchaser. Alone, the commercial bakery department would die quickly.<sup>9</sup>

The bakery products often lack freshness. Because they are baked far in advance, preservatives must be added. The baked goods must often be shipped many miles to the store. An old pie just does not taste as good as one that has just been taken out of the oven. The completeness of selection is not available and adaption to the needs of a particular consumer area is much more difficult. Even more important than these is the fact that the store having a commercial bakery is unable to take advantage of the magnetic appeal a fresh bakery provides with its "hungry" aroma drifting through the store.

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<sup>7</sup>"Baked Foods: Super Market Profit Sleeper?," p. 54.

<sup>8</sup>"Like Mother Used To Bake," Quick Frozen Foods, XXIII (December, 1960), p. 72.

<sup>9</sup>"Like Mother Used To Bake," p. 72.

### Objectives

A new approach is needed to utilize the full value of the bakery department--one that will combine the advantages of both fresh and commercial bakery and at the same time eliminate the major drawbacks of each.

A recent development in the bakery field has been the introduction of baking pre-frozen products. The idea itself is not new. For a number of years housewives have frozen dough products and then baked them right before eating. The first commercial bakery appeared on the market as early as 1945 in the form of frozen fruit pies.<sup>10</sup> At the present time, not only pies, but a large number of all bakery products can be frozen in the raw state and then baked at a later time.

This approach may be the answer to the bakery problem. In other words, grocery stores may be able to bake-off frozen, raw bakery products which have been previously mixed and shaped at some other location. Frozen bakery may be more profitable and of greater value to the store than the conventional bakery systems.

### Null Hypothesis

Supermarkets can profitably bake-off frozen bakery products in the store. The in-store finishing of frozen

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<sup>10</sup>Willis A. Gortner, Frederick S. Erdman, and Nancy K. Masterman, Principles of Food Freezing (New York: John Wiley and Sons, Inc., 1950), p. 14.

bakery is the answer to the bakery problem.

The first part of the paper explains just how the frozen bakery system operates. It shows the feasibility of the operation and the extent to which it is possible. Next, its advantages and limitations are compared with those of both a complete in-store bakery and a commercial type bakery. A breakdown of costs is given in this comparison. The third major part of the paper sets up a model of the system, advances possible policies, and suggests methods for operation.

### Data

The data given to support the conclusions of the paper have been taken from well-known trade publications and are the most current available at this time. Of course, when percentages or costs are quoted, it must be realized that these are relative to particular stores and times, and must be adapted to each particular situation. They do, however, give as close a general answer as is possible.

### Methods

Much of the information has been taken from recent trade publications, but because of the newness of the subject and a lack of statistical results on how it operates, competent bakers were consulted to obtain their ideas and opinions. Likewise, men in managerial positions were questioned regarding costs, transition problems, and potential values.

## CHAPTER II

### BAKERY RELATION TO SUPERMARKETS

#### Retailing Revolution

The retailing revolution taking place today is an acceleration of a trend toward merchandise overlapping among retailers which actually began prior to World War II. In the late '30s, grocery stores began expanding into supermarkets and the old apothecary shop turned into a so-called drugstore, both carrying merchandise traditionally sold by other retailers.<sup>1</sup>

Following the war, one-stop shopping arrived with food as the drawing card. Supermarkets offered variety, service, and parking in conjunction with reduced prices. The meat market and the neighborhood bakery began to succumb to the loss of trade and were absorbed into the supermarkets.

#### Supermarkets Increase Bakeries

If the current interest shown by retailers is any indication, this trend will continue and the number of complete bakeries will increase. Over two out of five

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<sup>1</sup>Sylvia Porter, "Retailing Revolution Analyzed by Expert," Green Bay Press-Gazette, September 28, 1961, p. 30.



supermarkets (41%) now have "complete" bakeries. On-premise baking is done in 16 per cent of the supermarkets.<sup>2</sup>

Some forecasters predict that by 1965, 90 per cent of all bakery products will be sold in supermarkets. This may be over-optimistic, but there is no doubt that the bulk of the bakery goods will be sold in the supermarket.<sup>3</sup>

### Lag of Bakery Industry

Baked foods have a significant story to tell, but bakers have had a hard time getting food retailers to listen. Bread is the cornerstone of every family meal. A store's bread customers are regular, frequent customers and usually buy more products per shopping visit than non-bread shoppers.<sup>4</sup>

Yet, the dynamics of the supermarket were wholly modern (high speed, minimum cost) while baking was geared to fifty years ago when the corner store was in flower. The food store operators, a wholly new and practical race of merchandisers, could not understand and would not accept such approaches.

The bakery industry has been in a rut the last ten years. Except for corporate chains who owned bakeries, the industry was interested only in the space they could get in a store. During this time, larger bakeries should have been

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<sup>2</sup>The Super Market Industry Speaks, 1960 (Chicago: Super Market Institute, Inc., 1960), p. 20.

<sup>3</sup>Chapman, p. 137.

<sup>4</sup>"Baked Foods: Super Market Profit Sleeper?," p. 53.

interested in in-store baking. The larger bakeries had the know-how, equipment, and distribution facilities.<sup>5</sup>

Present day practices of bakery operations force automation and mass production of perishable baked goods too far in advance of table use in the home. To meet distribution needs, the production and technical personnel must resort to the use of materials and methods that produce or simulate oven freshness.<sup>6</sup>

### Revival of Interest

The great potential of bakery has just begun to be recognized. Super supermarkets with all types of departments have arrived and this year the bakery department is receiving the attention. The following are just some of the reasons for this renewed interest:

1. The great traffic pulling power of the bakery department is finally being recognized.
2. The retailer knows the value of personal service afforded by this operation.
3. The bakery department has become a high profit source as operational costs increase.
4. Bakery aids greatly to further the concept of one-stop shopping.<sup>7</sup>

Since satisfaction of the customer is a prime goal of

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<sup>5</sup>Earl L. Wallace, "In-Store Baking Can Rejuvenate Department," Yankee Grocer, April 10, 1961, p. 27.

<sup>6</sup>W. E. Broeg, "Why In-Store Baking Is Becoming A By-word," Baking Industry, September 17, 1961, p. 104.

<sup>7</sup>Kingston L. Howard, "Frozen, Raw Product Bake-Off Programs Offer Vast Distributor Opportunity," Quick Frozen Foods, XXIII (November, 1960), p. 29.

store management, first chains, then voluntaries and co-ops, have taken steps to keep their baked foods customers happy.

Step One was to establish controlled bakeries, whose products, delivery procedures, and prices were geared to store needs.

Step Two, still in process, is the sudden mushrooming of new approaches to baked foods merchandising. Operators are cashing in on the appealing odors which emanate from their own baking ovens and on the obvious visual attractions of such goods.

Step Three, just starting, is the relocation of the baked goods department into a spotlighted position in the traffic pattern, where customers cannot miss seeing it and can respond by buying impulse items as well as staples.<sup>8</sup>

#### Volume Traffic Builder

According to one survey, the baked goods department reaches an annual total of \$46.00 in sales for every dollar invested--nearly 40 per cent higher than the number two department and 500 per cent higher than the overall store figure of \$7.58.<sup>9</sup>

The recent period of high-income levels has undoubtedly increased the consumption of sweet yeast products and pastries. This has meant a shift toward the products of

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<sup>8</sup>"Baked Foods: Super Market Profit Sleeper?," p. 30.

<sup>9</sup>Fred J. Grenier, "Baked Goods Location Can Raise Total Sales," Yankee Grocer, April 10, 1961, p. 30.

retail bakeries and away from consumption of wholesalers' products. By capitalizing on high traffic location, chain retail shops are beginning to tap markets that other chain bakeries have not effectively reached--the impulse-purchasing consumer.<sup>10</sup>

One can quote survey results from Maine to Madagascar, but the logical conclusion which must be drawn from all of them is that the baked goods department is not only a very profitable department, but a great traffic builder for the rest of the supermarket.<sup>11</sup>

#### Relocation of the Bakery Department

Bakery departments are being relocated so that the traffic pulling qualities will be reflected in overall sales in other departments. Even relatively small changes have resulted in immediate sales gains. Minor rearrangements to add eye-appeal and convenience have frequently been followed by surprisingly large gains in baked foods sales.

Selection of the proper location installation for a baked goods department in a supermarket is not an easy problem to solve. It has only been within the last few years that an appreciation of the complexity of the problem and the need for its solution has arisen. Previously, most retailers were content to estimate bread sales, figure shelf

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<sup>10</sup>"Sell It Today," Chain Store Age, XXIII (October, 1957), p. 141.

<sup>11</sup>Grenier, p. 30.

requirements, and let it go at that. Wholesale bakers, by the same token, did little to impress the importance of bakery on the grocery retailer.<sup>12</sup>

In 1950 some large manufacturers of bakery equipment felt that they had just about reached the saturation point as far as the sales of medium and small baking devices were concerned. They experimented and looked for future ideas and possibilities.

### Frozen Pies

The resulting idea was the baking of frozen pies and pizzas by unskilled help in the stores. The ovens were placed in plain sight of the customer. The idea immediately became a success. From this experiment several important facts became evident:

1. The sales of the pies often increased the sales of frozen pies sevenfold.
2. Operators found new flexibility and noticed new sales and the traffic potential of hot baked goods.
3. Freshness, an old selling fundamental, received new emphasis.
4. The pies were not only profitable in themselves, but total store sales increased with this added feature.<sup>13</sup>

The manager of a store in a town of only 21,467 stated:

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<sup>12</sup>Grenier, p. 30.

<sup>13</sup>"In-Store Baking Is Not New," Baking Industry, September 17, 1961, p. 106.



We sold 4,965 pies in our first baking week. Since then our pie sales have never averaged less than 2,200 per week. The large sale for the first week was due to a strong merchandising program. From the standpoint of the profit factor, women shoppers have told us that ours are the first store-bought pies that their husbands have enjoyed or would allow to be purchased again.<sup>14</sup>

### Additional Sales

Coupled with the value of such a location was a noticable increase not only in the impulse buying of pies and similar on-premise baked foods, but also the general supermarket merchandise sales were reported to increase proportionately through the store traffic building benefits of the in-store baking program.

One of the amazing factors brought out was that frozen pie sales, considered normal whether the pies were frozen ready to serve, or frozen ready to bake, increased in practically all instances from 1200 pies a week as reported by one most successful operator.<sup>15</sup>

### Drawing Power of Pies

The proof remains that the public seeks freshness as well as convenience and nothing appears to be more attractive to the impulse buyer than warm or hot bakery goods. The fact that twelve times as many pies are being sold today on the in-store baking premises in suburban and small city stores

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<sup>14</sup>"In-Store Baking Is Not New," p. 106.

<sup>15</sup>"In-Store Baking Is Not New," p. 106.

serves to substantiate the above conclusion.

Figures also show that the total store sales mount with the traffic that develops through the baked pies. The magnet of hot, freshly baked pastry seems to be irresistible. It draws clients from all over the city, not just from the immediate neighborhood. In addition to the sales of the fresh pies, when quality has been established, customers have been known to take home cases of frozen unbaked pies to bake at home or to place in freezers to be baked at a later date. The sales potentials are great for a wholesale baker who supplies the supermarkets with these products.<sup>16</sup>

When customers know that the pies being baked on the premises are the same as those that are in the frozen food cases, people who have never bought frozen pies become confident and steady customers for frozen items.

### Summary

This chapter has attempted to demonstrate two specific facts. First, that the bakery department has become an extremely important and valuable part of the supermarket today; secondly, that the bake-off of frozen pies was very successful. Customers have indicated that the system of baking-off frozen bakery products appeals to them. It is an indication that there are excellent possibilities in the area of frozen bake-offs.

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<sup>16</sup>"In-Store Baking Is Not New," p. 107.

## CHAPTER III

### THE NEW DIMENSION IN SUPERMARKET BAKERIES

The newest element of the supermarket is in-store baking using frozen, raw bakery products. The great success realized in the baking-off of frozen pies was just the beginning of a significant, though thus far admittedly small, trend towards a new type of in-store baking by supermarkets. Increasing interest has been shown on the part of market operators in the possibility and practicality of purchasing from wholesale bakers frozen unbaked items for actual bake-off before the customers' eyes.

#### Definition

In-store frozen baking is the baking of frozen, raw bakery products in retail stores. Throughout the paper the definition of in-store frozen bakery will be expanded and clarified. Certain aspects have different solutions depending on the particular situation.

Frozen baking is not on-premise baking of the sort where a complete bakery is present in the store, but is rather a central-plant bakery operation with certain products delivered to various stores in a frozen state for baking and finishing in the store. Some products (pies, cookies, and

muffins) require no work at the store other than baking. Others require the additional step of proofing. Proofing, or rising, is accelerated by a proof box so that the operation takes only thirty minutes. The products are then baked in the store and sold warm to the customer.<sup>1</sup> The frozen line is supplemented by a commercial line of white bread and other high volume items.

### Explanation of System

The system will be clarified throughout the paper, but the following explanation outlines the overall operation:

At a central plant, either a commercial bakery or a chain store bakery, bakery products are mixed and shaped. Master bakers are available to insure that high quality is maintained. A minimum amount of labor can provide the bakery needs for a large number of stores. Immediately after shaping, the raw products are frozen. Here the preparation ceases for a while as the raw products lie dormant in a frozen state.

Orders are sent in by the stores serviced through the central plant. Frozen products are then removed from the freezer, placed in a refrigerated truck, and delivered to the store. The frequency of deliveries depends upon the amount of bakery sold by the store.

At the store the frozen products are again placed in a freezer in the bakery work area. As the frozen products

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<sup>1</sup>Interview with S. A. Jansen, October 29, 1961.

are needed, they are removed from the freezer and baked in an oven which is visible to the customer. Some of the items may require the application of either icing or filling after they have been baked. The finished baked goods are placed in the service case to be sold warm to the customer.

As the supply decreases through customer purchases, more is baked. The bakery products are replaced as needed. A detailed explanation of the exact procedure is given in Chapter VI of the paper.

Appendix I contains the history and operational procedures employed by Dorothy Muriel's, a large bakery in New England. Dorothy Muriel's is one of the pioneers in the field of frozen bakery. Included in Appendix I is a chart of the Dorothy Muriel's products and the extent of bake-off necessary for each item.

#### Freezing of Bakery Is Possible

Frozen bakery itself is not new. Frozen unbaked goods were first marketed commercially in Chicago in 1936. Due to a lack of cabinets the venture failed. In 1938 United Airlines became interested in keeping pastry dough overnight. The dough was placed at a temperature of 38-40 degrees. Later United Airlines kept dough in a frozen state ninety days or more in perfect condition.<sup>2</sup>

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<sup>2</sup>Olive Margaret Botcher, "The Comparison of Quality of Plain Cakes Prepared From Dry and Frozen Mixes" (unpublished Master's thesis, School of Agriculture, Michigan State College, 1950), p. 3.



Freezing can actually be shown to improve some kinds of dough and, in consumer reports, frozen pies have rated very high.<sup>3</sup>

Although many of the products are baked in the store, others come completely finished from the central bakery. High turnover items, such as white bread or items which do not lend themselves well to the frozen process, are baked before they are delivered to the store. The illusion that all goods are baked in the store is given by visible ovens and an open finishing area where the products are iced and filled.

#### Advantages of Frozen Bakery

The advantages and disadvantages of the frozen bakery process are discussed fully in the following chapters. However, at this point a few of the advantages of the system will be mentioned to show the great potential available.

The process makes available the many advantages of a complete in-store bakery. Fresh bakery is available to the customer and the store is filled with the aroma of freshly baked goods. It is difficult to measure the exact value of aroma, but it is one of the greatest contributions that a bakery department makes to a store.

With a supplementing commercial line, the variety offered is both extensive and flexible enough to meet the

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<sup>3</sup>"Like Mother Used To Bake," p. 72.

needs of various localities. Customers are able to do more complete one-stop shopping and the sale of related frozen food items to be baked at home will add additional sales.

### Additional Advantages

Besides taking advantage of the benefits which accrue only to a complete in-store bakery, frozen bakery eliminates the many drawbacks which have made in-store baking impossible for many stores.

1. The costs of equipment are reduced about one-third.
2. The store area required is much less. Thus smaller stores would be able to have bakeries.
3. Labor is greatly reduced as one or two full-time women can do the job of a complete bakery section in the store.
4. Quality is uniform because all products are formed at the central plant by master bakers.
5. Extra supplies are stored in the freezer, reducing the problem of resupply.
6. The profit-absorbing stale bakery is eliminated because items are baked only as they are needed.
7. At the same time, a complete line is always available from the supply stored in the freezer.
8. Lower costs allow prices to be correspondingly lowered.
9. Customers are able to buy the products in a frozen state to be baked at home.
10. Sales of related items should expand.

11. A whole new market is available by selling frozen products to restaurants and institutions.<sup>4</sup>

The frozen bakery system offers the answer to many problems and its potential is just beginning to be recognized. The sale of related items alone shows promise of greatly expanded sales. However, development in various areas depends largely on the initiative of those who spearhead the operation.

### Summary

The entire baked goods section is built around the baking and finishing of the frozen products. Pre-baked items help supplement the bakery line. All major preparations are done in a central plant and a minimum of labor provides a complete bakery with products that are actually fresh.

Frozen bakery incorporates the benefits of a complete in-store bakery and eliminates many of the disadvantages. The profit potential is excellent although the system has never been tried on a real large scale.

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<sup>4</sup>Interview with S. A. Jansen, October 29, 1961.

## CHAPTER IV

### THE FEASIBILITY OF FREEZING

Before explaining the specific operations of the frozen bake-off program, it is necessary to discuss the extent to which the freezing of bakery foods is possible. If, after all, it is impossible to freeze most bakery items and still maintain high quality, then the entire program of frozen bakery is unfeasible.

There is nothing new about freezing bakery foods, as it was first introduced in 1944 by the Research and Merchandising Department of the American Retail Bakers Association. The first bakery freezer was introduced nationally in 1951 and the freezing of bakery has grown until today about 80 per cent of all retail bakers use freezing to some extent in their operations.<sup>1</sup>

#### Different Methods Used

New methods of freezing are constantly being developed and, as a result, there are no hard and fast rules that must be followed to make freezing successful. Hardly two bakers can be found who use freezers in the same way, and probably

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<sup>1</sup>Freezing Bakery Foods (Cincinnati: The C. Schmidt Company, 1962), p. 2.

every system of freezing has been worked satisfactorily by someone. Consequently, each baker develops his own methods of freezing bakery products. There are no standard formulas that can be used by everyone.

The U. S. Department of Agriculture and the American Institute of Baking have done extensive research in the freezing of bakery foods and today, products that would not freeze successfully a year ago, are giving excellent results. On the whole it can be said that almost all bakery products lend themselves in some way to the freezing process.

The freezing of bakery foods is indeed feasible and even white bread lends itself well to freezing. However, certain products are more adapted to freezing than others. The following discussion gives a brief outline of the freezing procedures for the main types of bakery. The different methods used are the result of the studies of many different people.<sup>2</sup>

### Bread

Almost all types of bread will freeze well, either before or after baking. If the bread is baked before freezing, it is important to freeze it as rapidly as possible because it becomes firm much faster between 50° F. and 20° F. than at either higher or lower temperatures. To maintain crumb softness, it is therefore important to freeze and

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<sup>2</sup>Complete information on freezing processes is available from the American Institute of Baking, 400 E. Ontario Street, Chicago 11, Illinois.

defrost it rapidly so that it will pass through this temperature range as quickly as possible.<sup>3</sup>

Bread may be frozen either wrapped or unwrapped. When it is wrapped, lower temperatures are required so that freezing takes place within a few hours. It can be stored for 24 days at 0° F. with no noticable firming. In a recent test by a wholesale baker, loss of moisture from unwrapped frozen bread was only  $\frac{1}{2}$  of 1 per cent after seven days storage.<sup>4</sup>

When raw dough is frozen, even better results are obtained. The bread dough is mixed, raised, kneaded down, and then shaped. The dough is next frozen in the actual baking tins. Before baking the dough may be thawed and raised one more time. Less time is required to freeze the dough than the baked bread. Many bakers report that frozen dough makes a larger finished product than normal methods, has a better texture, and stays fresh longer.<sup>5</sup>

Specialty breads, such as Boston Brown, French, Raisin, Gluton, etc., freeze equally as well as white. Caution must be used when freezing genuine rye bread, particularly if not wrapped, as moisture leaves the bread and does not return during thawing.

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<sup>3</sup>American Institute of Baking, The Freezing of Bakery Foods (Chicago: American Institute of Baking, 1961), p. 1.

<sup>4</sup>Freezing Bakery Foods, p. 9.

<sup>5</sup>Freezing Bakery Foods, p. 9.

## Cakes

The most practical method of freezing cakes is to freeze baked, uniced layers that have been stuck together. Layers will settle down making a more uniform product. This provides a maximum of varieties with a minimum inventory, as any icing can be applied to the cakes in stock. Icing can be applied to frozen cakes and when put on warm, speeds up thawing.

Unlike bread, cake does not increase in firmness as the temperature is lowered; therefore, the speed of freezing and defrosting is not important.

Many shops freeze decorated cakes. Icings are applied and allowed to set before freezing. Cakes containing custard or cream filling should not be baked before freezing. Sheet cakes used for cutting squares, petite fours, or specialty cakes slice smoother with less crumbling when frozen.<sup>6</sup>

In a taste panel test, frozen yellow and chocolate cakes stored at 0° F. could be distinguished from fresh cakes only after three to four weeks, and after five weeks they were preferred to one-day-old cakes stored at room temperature. At the same time angel food and chiffon cakes were inferior after one to two weeks. Different kinds of cake differ greatly in their stability to frozen storage.<sup>7</sup>

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<sup>6</sup>Freezing Bakery Foods, p. 8.

<sup>7</sup>American Institute of Baking, p. 2.

### Sweet Doughs and Danish

These products adapt well to freezing. Rates of freezing and defrosting within reasonable limits have been found to have little effect on freshness or firmness. At 0° F. they maintain their freshness and softness over eight weeks. In fact, Danish items frequently improve after the raw dough has been frozen either in bulk or made up. Coffee cake dough should not be frozen in bowls because it recovers too slowly.

It is the opinion of many that these richer products stale less rapidly than leaner products. However, this does not mean that sweet dough products do not require careful treatment.

### Doughnuts

Doughnuts, included in the sweet dough category, are probably the most controversial subject in bakery freezing. Many bakers do not think that a frozen doughnut is as good as one that has not been in the freezer. This applies in most cases to glazed doughnuts. On the other hand, many bakers have built a good doughnut business by freezing both glazed and unglazed and report excellent results with filled doughnuts, bismark, long john, crullers, jelly filled, sugar twist, and fried cinnamon rolls.<sup>8</sup>

In a recent study at the American Institute of Baking, a taste panel found that, after eight weeks storing at

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<sup>8</sup>Freezing Bakery Foods, p. 4.



0°F., both cake doughnuts and yeast-raised doughnuts maintained a high degree of freshness and softness.<sup>9</sup>

### Pies

Bakers have had excellent success freezing unbaked pies. Unbaked pies can be taken from the freezer and put in the oven without thawing. Pies frozen before baking have a flakier crust and at 0° F. or below the pies retain their good quality for several weeks. Practically all pies freeze satisfactorily except lean cream fillings. Coconut-custard, pecan, pumpkin, cheese, and chiffon pies all freeze satisfactorily both baked and unbaked. Frozen fruit pies must be baked rapidly to prevent the forming of large crystals in the fruit which causes a breakdown of the fruit after thawing.<sup>10</sup>

### Other Items

Cookies freeze successfully, and can be stored indefinitely when frozen. They can be frozen either baked or unbaked.

Egg white meringues do not freeze satisfactorily. However, meringues made from whipped cream or whipped topping freeze satisfactorily.

Puff pastry, cream rolls, patty shells, and neapolitans are frequently frozen unfinished and unbaked. They are

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<sup>9</sup>Special Bulletin Number 99 (Chicago: American Institute of Baking, 1961), p. 4.

<sup>10</sup>Freezing Bakery Foods, p. 4.

taken directly from the freezer to the oven. Necessary finishing is done before or after baking.<sup>11</sup>

### Icing

It is important to know the freezing qualities of icings. Icings can be thus stored in the freezer and used as needed or applied to baked items before they are frozen. Icings with a relatively high proportion of fat freeze best. They look better than fudge icings after thawing as there is less tendency to sweet. Almost all icings freeze well, but many of them need some kind of stabilizer or special ingredient added to aid against cracking, discoloring, loss of color.<sup>12</sup>

### Bake: Before or After Freezing?

In applying the freezing characteristics of bakery foods to the frozen bake-off operation, the question arises as to whether the products should be baked before freezing or after freezing.

High volume bread, such as white and sandwich, are brought fresh to the store daily, so these are not included in the bake-off operation. Other breads which are of the specialty type or those which serve a particular neighborhood ethnic group would be frozen unbaked at the central warehouse and then baked-off in the individual stores.

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<sup>11</sup>Freezing Bakery Foods, p. 4.

<sup>12</sup>Freezing Bakery Foods, p. 8.

Almost all cakes are baked and then frozen. Fancy cakes have the icings applied before freezing because of the special skill required in cake decorating. This can then be done at the central plant. Regular cakes and cupcakes are frosted at the store. Different icings are available at the store and cakes are frosted to meet the wishes of the customers.

Pies and cookies are frozen unbaked as are all sweet dough rolls. The pies require no extra work at the store. Cookies can have frostings or coatings applied in the store while the sweet doughs will require either filling or icing.

Specialty items vary as to whether they are frozen baked or unbaked, or whether they are frozen at all. The variety of specialty items is up to the ingenuity of the bakers. Pizza pies make excellent bake-off specialties as do ethnic varieties and seasonal specialties.

### Storage Length

One of the most important factors in determining whether the freezing of bakery is feasible depends upon the length of the time that the frozen items can be held in the freezer. Most items can be held long enough to be sold under normal conditions. Items like hard rolls and dinner rolls should only be held for a week. Almost all other items can be held for two or three weeks and cakes have been held for months. Space in a freezer is too valuable for indefinite storage, however, and for this reason turnover

is an important factor. Turnover for most items is at least once a week, thereby eliminating any problems resulting from too long a storage time.<sup>13</sup> To be sure that items are rotated properly all packages must be dated.

#### Can Items Be Refrozen?

Contrary to popular belief, bakery foods once frozen can be refrozen. Many multiple unit bakeries ship merchandise to branch stores in nonrefrigerated trucks. Some of the merchandise thaws or is partially thawed during transit. It is again frozen on arrival and impartial test panels have been unable to detect any difference in flavor or freshness.

When planning to refreeze, it is necessary to keep in mind that freshness in bakery foods begins to leave the product as soon as it is removed from the oven. Loss of freshness is like sand flowing through an hour glass. When the product is frozen, the outgoing flow of freshness is stopped just as sand is stopped when the hour glass is placed on its side. However, none of the original freshness is returned to the product. When it is thawed, freshness begins to flow out again just as the sand flows through the hour glass when placed in an upright position.<sup>14</sup>

While the answer to whether merchandise can be re-

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<sup>13</sup>Freezing Bakery Foods, p. 12.

<sup>14</sup>Freezing Bakery Foods, p. 13.

frozen is "Yes," good judgment must be used to determine the condition of products before they are put back into the freezer.

### Special Problems

Sometimes merchandise has a tendency to dry out in the freezer. The reasons for this are many, but most of them stem from poor handling techniques. The problem of drying out can be remedied by following instructions carefully, freezing as soon as possible, and by keeping freezer temperature near 0° F. at all times. Good air flow in the freezer also helps.

Items should be frozen quickly to preserve freshness. For this reason a temperature of -20° F. is recommended for original freezing. Once the products are frozen, a freezer temperature of 0° F. is sufficient.

Most unbaked items must be thawed before baking; pies are an exception.

Dough can be frozen in molds, but some items do not thaw out well in molds. This can be corrected by putting some kind of flour bag in the mold before freezing and keeping them there through the thawing process.

Frost forms on some merchandise because of high humidity in the freezer. This can be eliminated by covering the products affected with plastic liners or putting them in boxes. The frost then forms on the covering rather than on the product.

### Thawing

Special attention to thawing is needed. Where humidity is low, merchandise can be thawed on racks at room temperature. When humidity is high, ways must be found to eliminate condensation. Thawing with heat shortens the thawing time and the warm air absorbs the moisture caused by condensation. The proof box can be used for thawing. This gives enough dry heat to absorb condensation. Thawing in the oven is also possible. A small thawing cabinet can be made with electric lighting supplying the heat. The temperature should be around 130° F.

### Summary

The purpose of the chapter has been to point out that the freezing of bakery foods is very feasible. Of course, some specific procedures must be followed, but this is true in any quality operation. Almost any bakery product can be frozen with good results. Some broad freezing procedures were included to aid in explaining the operation and answer general questions about the freezing process.

## CHAPTER V

### CENTRAL PLANT OPERATIONS

A retailer who makes use of the frozen bake-off system must have a source of supply for the frozen products--a central plant operation is needed to form the raw products. An established wholesale bakery is the most logical producer for frozen bakery foods.

#### Independent Bakeries

The independent wholesale baker has almost all the equipment and personnel necessary for conversion to the frozen bake-off program. Conversion does not mean discontinuation of present operations--the frozen line is rather a supplement to the fresh line.

The wholesale baking industry has had difficulties the last few years. Per capita consumption of white breads has declined and operating profits have been narrowed considerably. Complete bakeries in supermarkets are on the increase and many food chains have their own central bakery. As a result of all this, independent wholesale bakeries have had to lower the profit margins and struggle to maintain volume. Bakers are forced to bid for shelf space in grocery stores.

The bake-off program opens a new field to the wholesale baker. As the frozen bakery supplier for retail stores, the wholesale baker can increase volume and profit margin by making his frozen products available for the bake-off program. Dorothy Muriel's of Boston, Massachusetts, is currently supplying frozen bakery products to a number of stores. Through this operation the sales of regular Dorothy Muriel bakery products to the stores have also increased

The Continental Baking Company has entered the bake-off field by leasing store space and establishing its own bake-off outlet in supermarkets. Test areas are in Detroit, Michigan, and Denver, Colorado, where supermarkets are serviced from centrally-located plants. The company expects the break-in period to extend over several years, but it reports good progress in the field.<sup>1</sup>

Independent retailers have been looking for an opportunity to compete with the chain store central bakeries. Prior to this time, the only method available was operating a complete in-store bakery.

### Chain Bakeries

The supermarket chain bakery division is in an excellent position to adopt the bake-off program. Distribution lines have already been established and all equipment and personnel are already available. There is no need to search

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<sup>1</sup>"Are You in on In-Store Baking?" Super Market Merchandising, XXVI (December, 1961), p. 50.



for retail outlets because the stores in the chain prove ready markets for the frozen products.

The bake-off supplier must be well established in the bakery field because of the complexities and coordination necessary not only in baking but also in distribution. A frozen food distributor is used by Dorothy Muriel.

### Conversion Necessary

An established wholesale bakery will require little conversion at the central plant to handle frozen products. Personnel are no problem because the present employees can be used to do the mixing and shaping. Because some products are frozen unbaked, some frozen baked, and some not frozen at all, a complete bakery operation is still necessary. Therefore, the same crews are retained.

Little additional equipment is necessary because the system itself is not changed significantly. Some products are merely removed from the production line prior to baking and are placed in a freezer to be baked at a later date. Most bakeries already have freezers, but some will need to increase the size of the present freezer or install a new one. (See Appendix I.) However, this is the only major equipment change necessary.

Of course, the present help will have to be trained in the new system. Assembly lines are still possible and, because the crews are already trained in normal bakery operations, the training required for the new system should be minor.

### The Freezer

The particular type and size of the freezer at the central plant depends upon the specific needs and volume of the bakery. As a general guide, the freezer should have an air flow rate of 1,000 linear feet per minute and have a steady freezing temperature of  $-20^{\circ}$  F.<sup>2</sup> Present freezers which do not meet these specifications can be improved by adding special attachments available for just this purpose.

A blast-freezer is necessary in the initial freezing of the dough because it is important that the dough pass through the staling temperatures as quickly as possible. (See Chapter IV, p. 23.) Once the dough has been frozen, it can be stored in any normal type freezer.

Hill's Bakery of Detroit, Michigan, which makes the Daffodil Farm products for the Continental Baking Company in the Detroit area, has a blast freezer which is 20 feet by 50 feet (1,000 square feet). It is large enough to store all the frozen bakery necessary for 100 stores selling \$500 of frozen bakery products a week. This is equivalent to 100 stores each doing approximately \$30,000 total business weekly or a total bakery volume (5 per cent of sales) per week of \$3,000,000.

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<sup>2</sup>Berkin, p. 36.

### Making the Products

The assembly line operation can be used and products merely placed in the freezer before baking. The unbaked foods can be mixed, formed, packaged in baking tins, and then placed directly in the freezer. Production schedules that require an increased working force during the week can start the week with a slightly larger force and build an inventory in the freezer for busy days. Freezing can make possible a five-day work week.

Other products are baked and then frozen. They can be packaged and stored right with the unbaked products. More advantageous production schedules are also possible. Special dinner rolls and buns are made up in large batches rather than for daily needs, thus making better use of mass production.

The vast majority of bakery products are subject to a high rate of staling and they must, therefore, be manufactured as near to the estimated time of sale as possible. In most cases sales vary greatly from Monday to Saturday and the baker is faced with the situation that his plant is too small on Friday and too large on Monday. Even where sales of some lines are more or less steady on a day-to-day basis, but nevertheless small, it is very uneconomical to make a small batch every day, instead of one larger one, once per week.

The introduction of quick-freezing and cold-storage into a bakery offers a scope for evening out daily production.

All the coffee cakes needed for a whole week can be made on a Monday and then frozen. Sweet rolls can be produced on Tuesday, etc. This way many items needed for the busy week-end can be produced ahead of time with great savings in labor costs and a stock of material will be ready for use at any time.

Mr. Graybon Young, bakery manager of Hill's Bakery and a baker with 35 years experience, says that he never realized a freezer was so important until he got into the Daffodil Farm operation. He can mass produce many items by freezing, thus saving valuable time and labor costs. He now has over 200 varieties of specialty items available every week.

Mr. Young was surprised by the ease with which items could be frozen and incurred no major difficulties in incorporating the freezing process into his normal operations. The freezing process worked so well that he now uses it for a fresh line of bakery goods which Hill's Bakery distributes under another name. Many conventional bakers use the same freezing methods at their central plant, but they bake-off in the warehouse instead of the store.<sup>3</sup>

### The Real Challenge

The actual conversion process is relatively simple. The difficulties and problems arise in the research and

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<sup>3</sup>Interview with Graybon Young, head baker, Hill's Bakery, Detroit, Michigan, March 20, 1962.

testing departments. Because of the newness of the idea, very few tested recipes are available. The success of the program depends upon the ability to maintain high quality with increasing variety. Doubtless, there will be many failures at the beginning, and constant attention will be needed to expand the program.

Mr. Young stressed the importance of maintaining high quality in the bakery products. Almost anyone can duplicate the same ingredients at the same price. All bakery products can be frozen and baked-off in the store--except that fillings or icings must be added after the item has been baked. Bread and other yeast products require the additional step of retarding before they are baked.<sup>4</sup>

### Packaging

For long time storage in freezers, merchandise should be wrapped. Finished merchandise can be wrapped or packaged as part of the production operation. Wrapped items require a longer time to freeze and need lower temperatures.<sup>5</sup>

With no protective covering, frozen bakery becomes unpalatable in a few weeks. With proper packaging it can be kept for much longer periods. Packages must exclude or minimize contact with the air besides protecting the product from dirt. Packaging helps to prevent loss of moisture

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<sup>4</sup>Graybon Young.

<sup>5</sup>Freezing Bakery Foods, p. 15.

in freezing.

Some of the characteristics of good packaging materials are:

1. They must be strong.
2. They must be flexible at low temperatures.
3. They should not absorb moisture.<sup>6</sup>

### Transportation

After the bakery foods have been formed, packaged, and frozen at the central warehouse, they must be transported to the retail outlets. Although frozen bakery products can be refrozen, the preferred method of transportation is in refrigerated trucks. This involves a definite capital outlay. However, certain actions by the government indicate that in the future all frozen food will have to be transported in trucks which can maintain a temperature of 0° F. Although frozen bakery requires refrigerated trucks, the purchase of such trucks may be necessary anyway to transport other frozen foods.

At the present time, the Cryogenic Products Department of Linde Company, Division of Union Carbide Corporation, is testing a nitrogen system of keeping temperatures low. The system requires minimum maintenance. The operating costs average only \$10 daily per truck.<sup>7</sup> The problem of

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<sup>6</sup>American Institute of Baking, p. 4.

<sup>7</sup>"Liquified Gases--New Nitrogen System Aids LTL Delivery," Quick Frozen Foods, XXIII (August, 1960), p. 129.

transportation has been eliminated by some wholesale bakeries through the employment of a commercial distributor.

Another simple solution was found to the transportation problem. Insulated metal containers are used to hold the frozen products. When the bakery is placed in the freezer, cans of quick freezing liquid (pre-cooled inserts) are placed right with it. The bakery and freezer cans are placed in the insulated metal containers as orders from stores arrive. The containers are then left on the shipping dock through the night for quick loading in the morning. These containers can maintain a temperature of 0° F. for over 24 hours. Thus the need for freezer trucks is eliminated. The insulated containers cost \$125 and will hold 50 pounds of bakery. This compares favorably with conventional wire baskets used by many bakeries. Ten wire baskets are needed to hold the same amount of fresh bakery and cost \$6 each.<sup>8</sup>

### Costs

The exact costs for central plants to produce bake-off products depends on the specific operations of the plant itself. Costs should be no more than producing bakery by the regular methods. Goods produced for supermarkets' bake-off are actually more profitable since overtime and comparatively more expensive forms of packaging are eliminated.<sup>9</sup>

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<sup>8</sup>Graybon Young.

<sup>9</sup>Berkin, p. 35.

Even though the bake-off products are not finished completely, they are sold to the retailer at prices as high or higher than regular commercial bakery products. The retailer, in turn, is able to sell bake-off items at higher prices because they are "fresh." The supermarket bakery department usually has an average of 40 per cent gross markup on bake-off items.

In fact, substantial savings should result through better scheduling and reduced labor. The fixed cost of the freezer should be returned through extra profits in a very short time.

#### Summary

The conversion for the bake-off system necessary at a central plant is relatively minor. There should be no major difficulties in integrating the bake-off process into the normal production system. Extra profits are available through the use of freezing. A competent and imaginative bakery staff is the most necessary prerequisite for entering the bake-off field.



## CHAPTER VI

### IN-STORE OPERATIONS

The specific operations needed for a bake-off system are not particularly foreign to present procedures employed at the wholesale or central plant level. The point at which the bake-off system differs the most from present bakery methods is at the retail store where the finishing of the product occurs.

The overall retail operation will now be explained in detail. A model system will be developed which is oriented towards a store which does a weekly volume of about \$30,000 and a weekly bakery sale of \$1,500.

The most effective kind of bakery department a market can have is a bakery operation where the actual baking of products is done before the customers, assuring them a high quality, fresh product baked before their very eyes. The operation must take the least amount of valuable floor space, with the most automatic, trouble-free type of equipment possible.<sup>1</sup> This is necessary because relatively untrained personnel will operate the department and do the actual baking.

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<sup>1</sup>Seymour Raubrogel, "In-Store Bakery Equipment," Yankee Grocer, April 10, 1961, p. 28.

The equipment needed for a bake-off operation where the supermarket purchases the frozen dough, stores it, and then bakes-off when needed is as follows: A freezer, proof box, oven, display cases, racks, sinks, pans, and small utensils.

### The Freezer

When frozen products arrive at the retail store they are placed in a walk-in freezer or chest freezer. The size of the freezer can vary depending upon the amount and variety of frozen products. The variety will increase as the program develops. For this reason, the suggested minimum size is 45 square feet for walk-in freezers and 36 cubic feet for chest freezers. No special type of freezer is necessary because once the dough has been frozen, it can readily be stored at temperatures up to 10° F.

The freezer should be located at one corner of the work area. Those stores which experimented with bake-offs have often used a large, sectioned freezer that also is used to store other frozen foods.

Rotation is an important factor and all products are date-coded. Those which have been stored the longest are used first. Certain products will have a longer storage life than others.

Because the products are frozen and are baked as needed, delivery can be anytime during the day. With other bakery products, delivery is needed early every morning.

### Preparations for the Day

If the store opens at 9 A.M., the baking begins at 8 A.M. when one of the bakery women starts preparing the products for the day. The maximum time needed for baking any item is 30 minutes and several products can be baked at one time. By 9 A.M. the bakery department is ready to serve the customers.<sup>2</sup> While some items are baking, others are being finished.<sup>3</sup> During the short cooling interval, those items not completely oven finished are glazed, dabbed, or brushed with frosting, sprinkles, etc.<sup>4</sup>

### The Proof Box

The proof box is used to raise certain products which require this as a final step before baking. It can also be used to warm frozen products.

It should be of a non-corrosive material, with automatic humidity and heat controls and able to keep up with peak period requirements. It must be simple to operate for the bakery women. The proof box that meets all these requirements is the Bakers Aid 140 AE, which includes over-size heater and humidity coils, water pan, wet and dry

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<sup>2</sup>Throughout the chapter it must be kept in mind that white bread and sandwich bread are delivered daily in packaged, pre-baked form. Some frozen items are already baked and merely need thawing and/or finishing.

<sup>3</sup>The chapter described the bakery department as a service rather than self-service operation because of the benefits of personal selling and because the bakery women are already available and can be utilized to sell as well as to bake.

<sup>4</sup>"In-Store Baking Is Not New," p. 105.

controls and stainless steel interior construction.

It has a 12 gauge extruded aluminum frame, 3/16" aluminum floor plate, full 1" semi-rigid, high density fiberglass insulation, front and sides of box finished with heavy gauge aluminum on the interior and exterior. The floor space required for this box is 2'-6" wide x 2'-11" deep x 6'-3" high. It will accommodate one pan rack and also can be had with pan slides, also for two or more racks.<sup>5</sup>

### The Oven

The most important operations concern the oven and it is the most critical piece of equipment. A good example of the type of oven needed is the Despatch Baker Boy Revolving Oven. It has the ability to produce for the peak periods required by the supermarket, in an economical and trouble-free manner. The floor space needed for a 12 pan oven that has four trays, 26" x 56" is only 7'-6" wide and 7'-2" deep. The oven never needs to be lubricated in the heat zone because all bushings and bearings are of graphite bronze. It assures quiet operation and no foul aroma.

The moist master steam dome is another feature that will give the user a greater yield on each product baked because the moisture of the product is retained in the oven instead of going out the flue.

The exteriors come in white finish or in pastel shades to match color schemes.

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<sup>5</sup>Raubrogel, p. 28.

An oven of this type can be operated by anyone and allows different temperatures to be set for different drawers. Timers are also available.

The oven is placed so that it is visible to the customers. The intent is to publicize the in-store baking process. With the oven in the open, the aroma of the bakery has a better chance to permeate the store..

A master baking schedule is prepared at the central plant and posted in each bakery department. The bakery woman merely follows the schedule to determine temperature and baking time for each item. Thus quality control is extended all the way to the retail store. As new items are introduced, appropriate notations are made on the master schedule.

### Finishing

With the in-store baking oven properly placed, the attendant can quickly and easily remove the hot baked foods from the oven to be quickly inserted, after a short cooling period, into trays, envelopes or containers and then into the warm service or hot service counter.

The items that require finishing are frosted during the cooling period. The extent to which finishing can be employed on the premise is entirely dependent upon management's policies, because many items may be produced that require the application of frosting or other finishes. There can also be those items which are already baked or partially baked in the central plant which can be frosted in home

style manner to insure freshness at the point of sale.

A special work bench with sink is provided for the finishing. Almost all icings can be frozen and a large variety of icings is then kept on hand in the freezer. The finishing process allows the bakery women to express artistic aptitudes and those particularly adept at this can decorate cakes for special occasions.

### The Display Rack

The type of display racks utilized is entirely up to the imagination of management. Display cases are sold by many companies and can be adopted to any mode desired.

The bakery women place the warm bakery in the display cases and have "hot" bakery available to the customer. As supply decreases through customer purchases, more items are baked. Thus not only is the bakery "hot" in the mornings, but also all through the day.

On busy days the oven will be going continually. On slow days, items are baked only as needed. Customers are able to order specific items when they enter the store and pick them up hot only 30 minutes later. Customers can also phone the store to have special bakery products prepared and then pick them up at their leisure.

The bakery department is supplemented by the large volume bakery items prepared completely at the central plant. On days when there are storms or when business is not as good as expected, the bake-off operation is curtailed and

the prepared products are sold. Through this method, cost consuming stales are kept to a minimum.

### Area Required

A complete in-store bakery requires a minimum of 1,200 square feet of backroom space, while the bake-off system needs a maximum of 400 square feet and a minimum of 300 square feet.

Floor space used depends upon the wishes of management. If necessary, selling space can be as little as that used by commercial bakery sections in stores that have no bakery.

### Personnel

One of the major advantages of the bake-off system is that trained bakers are not necessary. For a store which does a bakery volume of \$1,500 per week, two full time bakery women and one part time woman are all that is needed. Not only do they do the baking, but they also do the selling. A one-week training period is used to acquaint them with the bake-off procedure.

In some areas of the country, people like hot rolls for breakfast. This could necessitate opening earlier in the morning to accommodate these people. Because of the good will, bakery sales, and extra store sales resulting from earlier opening, it does not seem to be a major disadvantage.

### Variety and Quality

A bake-off system will not succeed unless there is enough variety for the customer. Because almost all items can be frozen, the variety available should be almost unlimited.

Quality is of prime importance in bakery products. The sale of inferior quality items at "bargain" prices will do more harm in alienating customers than good. The quality and taste are much better than commercial type bakery products and will easily bring a higher price.

### Related Sales

Customers can also be encouraged to take home frozen items to be baked by them whenever they want. Special instruction sheets are included with "bake at home" purchases. Other frozen food items in the bakery line should increase in sales also.

### Summary

The purpose of the chapter is to explain the mechanics of the bake-off system--to show what procedures and equipment are necessary and what problems may be encountered. From the above discussion it is evident that the procedures are easy to follow and do not require an undue amount of coordination. The system also has great flexibility--it can adapt easily to varying customer demands and can be utilized in both large and small supermarkets.



## CHAPTER VII

### IN-STORE COSTS AND COST COMPARISONS

The preceding chapters have demonstrated that the freezing of bakery products for subsequent baking is not only possible, but also very feasible. The operations at retail and wholesale level have been described to show that the system is workable and that equipment is available to meet the specific needs of the bake-off program. The freezing of raw bakery products for bake-off in the retail stores does not sacrifice quality or operational flexibility. Although it is a new field with only pilot installations operating at the present time, the system will work and is adaptable to many stores.

#### Quality vs. Cost

Whether the bake-off program will be adopted by supermarkets as an operating technique depends upon several factors. Two of the most important are quality and cost. Naturally, the profits obtained through the bakery program are an important factor in determining whether the system will be a success or not. However, direct profit is not the main selling point of the bake-off program. The main advantage of the department is the increase in total store sales

resulting from better consumer service with fresh bakery. Stores report increases of 8 per cent in total store volume after installing bake-off programs.<sup>1</sup>

In order to show a true picture of the costs of the bake-off system, it must be compared with the costs of the two other methods of bakery operations now used--complete in-store bakeries and commercial bakeries. The comparison with in-store bakeries can be direct because of operating similarities. The comparison with a commercial bakery section must be in a more indirect manner, showing the advantages of fresh bakery as profit potential with its increased installation costs.

The cost figures and cost percentages that follow are as accurate as possible, but are not the "last word." The cost data for the bake-off system suffers because the program has not been in operation long enough or on a large enough scale to be truly representative. The cost data for the complete in-store bakery suffers because it is representative. The data pertains to an "average" in-store bakery, but fluctuation from one bakery department to another are so great that the "average" bakery department is difficult to find.<sup>2</sup> The great fluctuation from store to store is a major disadvantage of the in-store bakery. Profits and quality

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<sup>1</sup>George Kolovson, "In-Store Baking Increases Sales Because It 'Makes 'Em Hungry,'" Yankee Grocer, April 10, 1961, p. 31.

<sup>2</sup>See the NARGUS Bulletin for June, 1961, page 114. Other surveys have arrived at similar results.

depend largely on the caliber of bakery personnel available. Cost comparisons will be made for a store with a weekly bakery volume of \$1,500.

### Equipment Costs

#### Bake-Off System

Costs for complete set-up of a bake-off program vary with the size and quality of installation. A small operation can cost as little as \$1,000 and a large operation can cost as much as the individual operator wants to spend.

For a store with a bakery volume of \$1,500 per week, the cost of a very satisfactory set-up is \$6,000. This includes all baking equipment, all display cases and signs, and all installation costs. Examples of an operation of this type are the Daffodil Farm Bakery departments being experimented with by the Continentual Baking Company and the installations of the T. F. Naughtin Company of Omaha, Nebraska.

#### Complete Bakery

An individual breakdown of equipment costs for in-store bakeries will not be given because particular costs for specific items of equipment vary considerably. Appendix II contains a cost picture of an average bake-off system furnished by the T. F. Naughtin Company. The T. F. Naughtin Company costs are used for the bake-off operation because they contain all of the features necessary and give as representative a cost picture as possible.

Many surveys have been taken to find the costs for a complete in-store bakery. The consensus of opinion is that the costs for a bakery outfitted for a store with a weekly bakery volume of \$1,500 is \$25,000 plus plumbing, electrical, and installation costs. These add from \$1,000 to \$3,000 to the total cost.<sup>3</sup> The total cost figure used in the comparison will be \$27,000.

### Space Requirements

The back room space needed for the bake-off system is 400 square feet,<sup>4</sup> while the minimum work space required for a complete bakery is 1,200 square feet.<sup>5</sup> Commercial bakery has, of course, no equipment requirements because all bakery comes completely prepared. Some back room space is needed, however, to store boxes and cartons, but because of the small amount needed it will be disregarded.

Display space (selling space) depends upon the extent to which the bakery section is promoted by the store. It makes no difference whether the system is in-store, bake-off, or commercial bakery. The space depends upon the emphasis placed on the department. For this reason, costs of selling space used are not treated in the cost comparison.

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<sup>3</sup>Chapman, p. 33.

<sup>4</sup>Kolovson, p. 31.

<sup>5</sup>"In-Store Manufacturing Bakery," NARGUS Bulletin, XLVIII (June, 1961), p. 115.

### Fixed Cost Comparison

Using the above figures, the fixed costs of a bake-off operation are only one-fourth that of the complete in-store bakery. Because large investment is one of the major disadvantages of the complete bakery, the bake-off process has a distinct advantage in investment required.

	<u>Bake-off</u>	<u>Complete Bakery</u>
Equipment	\$6,000	\$27,000
Space	400 sq. ft.	1,200 sq. ft.

The fixed costs for commercial bakery are almost negligible, but commercial bakery does not create the customer response that fresh bakery does and grocers are realizing that commercial bakery does not satisfy customer wants.

### Ingredient Costs and Direct Labor

The ingredient cost in a complete bakery averages about 33 per cent of sales, while labor costs employed in actual preparation average about 35 per cent.<sup>6</sup> A total of 68 per cent of sale price goes into the preparation of the products. How does this compare with the bake-off system?

Because bake-off products, for the most part, are prepared before coming to the store, ingredient costs and labor costs of preparation cannot be figured. These costs are part of the central plant operation. In present operations the costs to the retailer are approximately 60 per

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<sup>6</sup>"In-Store Manufacturing Bakery," p. 114.

cent of sale price. Also included in the cost is the delivery expense and expenses for such items as icings needed, reusable baking tins, and storage boxes.

The central warehouse has the advantages of mass purchasing of ingredients and mass production. Oven time and more expensive types of packaging are eliminated. For these reasons the central plant makes a profit, yet only charges the retail outlet 60 per cent of sale price.<sup>7</sup>

#### Supply Costs

Supply costs depend to a large extent on whether the department is a service or self-service operation. Packaging supplies amount to  $5\frac{1}{2}$  per cent of bakery sales in a complete self-service operation. In a complete service operation from show cases, packaging costs are usually  $3\frac{1}{2}$  per cent. The difference is between the cost of trays and cellophane over the cost of paper bags and boxes.<sup>8</sup>

#### Selling Costs

In the bake-off system, labor costs are incurred in the baking and selling of the products. The labor costs of the bakery women average 10 per cent of sales. Since the women who do the baking also do the selling, the selling

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<sup>7</sup>Berkin, p. 35.

<sup>8</sup>Joseph L. Lach, "The Return of the Neighborhood Bakery" (Department of Marketing and Transportation Administration, Michigan State University, February 18, 1959), p. 12.

costs are included in the 10 per cent labor cost.<sup>9</sup> The selling is a service type operation which results in packaging costs of 3.5 per cent.

The selling expenses of a complete bakery are included in the previous labor costs of 35 per cent, but this is for a self-service operation which would require packaging costs of 5.5 per cent or 2 per cent greater than the bake-off system. If the in-store bakery uses a service operation, the packaging costs are reduced, but labor cost rises by 2 per cent.<sup>10</sup> Using either method, a 2 per cent cost is involved in the in-store bakery operation which is covered in the bake-off process by either labor or packaging. For purposes of this paper, the labor cost for in-store bakeries will be figured at 35 per cent and packaging costs at 5.5 per cent.

### Direct Costs

By adding together the various costs analyzed so far, a comparative profit margin can be obtained. The expenses involved in Contribution To Overhead are not included.

	<u>Bake-off</u>		<u>Complete Bakery</u>	
	<u>100.0%</u>		<u>100.0%</u>	
cost from central plant	60.0%	68.0%	cost of labor and ingredients	
supply costs	3.5%	5.5%	supply costs	
labor costs	<u>10.0%</u>			
Total	<u>73.5%</u>	<u>73.5%</u>	Total	
Margin	26.5%	26.5%	Margin	

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<sup>9</sup>"Are You in on In-Store Baking?" p. 48.

<sup>10</sup>"In-Store Manufacturing Bakery," p. 116.

### Indirect Expenses

Up to this point, the margins of both systems are equal--26.5 per cent. Now the indirect expenses are added. These include all indirect overhead expenses chargeable to the bakery operation, including: utilities, employment and property taxes, space rental charges, depreciation, building maintenance, and similar expenses.

For the complete bakery, the indirect expenses are 13 per cent,<sup>11</sup> while those for the bake-off are only 5 per cent. The indirect costs for the bake-off are much lower because of smaller size, less electricity, etc. The result is an operating margin of 13.5 per cent for the complete in-store bakery operation and 21.5 per cent for the bake-off system.

Throughout the above discussion the bake-off system was treated as a complete department; however, the bake-off products are supplemented by a commercial line. Although the total dollar figures are not comparable because the bake-off sales do not equal complete bakery sales at a uniform department sale, the percentage costs are comparable.

### Return on Investment

The percentage figures show an operating profit of 13.5 per cent for a complete bakery. At \$1,500 weekly sales, the dollar profit weekly is \$202.50, or yearly (50 weeks) \$10,125. For the bake-off program the operating profit is

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<sup>11</sup>Lach, p. 13.



21.5 per cent. Bake-off sales of a bakery department with large variety are 35 per cent of total sales.<sup>12</sup>

The weekly dollar profit is \$112.88 or yearly (50 weeks) \$5,644. This figure does not include the profit from 65 per cent of the sales (white and sandwich bread) which result from commercial bakery.

	<u>Bake-off</u>	<u>Complete Bakery</u>
investment	\$6,000	\$27,000
yearly profit	\$5,644	\$10,125
return on investment	94.1%	37.5%

Although there is a vast difference in return on investment certain qualifying factors must be taken into consideration. The assumption has been that the sales of the bake-off program will equal that of the complete bakery. This will only be true if the variety is large enough to satisfy the consumer. From previous chapters it is evident that variety is available, but the success will depend largely upon the imagination and leadership of the people involved. The bake-off program has the advantage of more uniform quality, more potential variety because of central baking, fresher products because they are baked as needed, and less stales.

Return on invested capital for the commercial type bakery is very high because of the limited capital required at the store. Display cases are all that are needed, but

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<sup>12</sup>"Baked Goods," Chain Store Age (Executives edition), XXXVII (July, 1961), p. 75.

consideration must also be given to reduced sales from limited variety and lack of freshness. Commercial bakery reduces sales for stores of equal size to about two-thirds that of stores with fresh bakery.<sup>13</sup> Net profit on sales is only 4 per cent.<sup>14</sup>

### Stales

A major plus factor for the bake-off process in the cost analysis is the practical elimination of stales. At the present time stales average about 4 per cent for complete bakeries and 8 per cent for commercial bakery.<sup>15</sup> Because the items are thawed or baked as needed, supply can be varied to meet demand. About 65 per cent of the sales will be commercial bakery in the bake-off system, and the elimination of stales for this group will be difficult. However, stales are not as high in bread as in sweet dough products. The stales for the bake-off portion should be only 1 per cent of stales. The freezer can also be used to hold the commercial items when business is slow.

### Labor

Perhaps the major disadvantage of the complete in-store bakery is the labor costs and difficulties incurred.

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<sup>13</sup>Interview with Ernest Meyers, December 28, 1961.

<sup>14</sup>Dennis Wuebker, "Desirability of Investing Capital in On-the-Premise Bakeries" (Food Distribution Program, Michigan State University, February, 1959), p. 7.

<sup>15</sup>Clarence Denham.

One baker is needed for every \$500 worth of bread product at retail, but at least two bakers are needed no matter what the size of the bakery. Wages for bakery production workers rank among the highest in the food industry.

A bakery department averaging \$1,500 per week would require:<sup>16</sup>

Bakery Manager
Baker
Baker
Finisher and Decorator
Wrapper-Displayer
Wrapper-Displayer
Porter
<hr/> Seven Employees

In the bake-off program only three employees are needed. Two full time women are needed plus one part time girl. However, a district supervisor is also needed to control operations and quality. The store manager must also treat the bakery department as an important part of the store operations and devote considerable time to supervising.

The basic labor problem in complete bakeries is not necessarily the high expense but the difficulty in obtaining competent bakers. There is a definite shortage of qualified bakers and many stores that want complete bakeries are unable to do so because they are unable to get needed personnel. Long and irregular hours is another disadvantage. These shortcomings are overcome by the bake-off system.

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<sup>16</sup>Chapman, p. 59.

Summary

Direct cost comparisons are difficult, but from the analysis presented in this chapter, it is evident that the bake-off operation can offer enticing profits at costs substantially lower than with a complete in-store bakery. Labor difficulties are also eliminated. The commercial bakery section has a low profit margin and does not produce a high enough volume in comparison with fresh bakery.

## CHAPTER VIII

### MERCHANDISING THE BAKE-OFF PROGRAM

The technical feasibility of the bake-off program has been pointed out, the general operating procedures have been explained, and cost comparisons have been made. The real test of the bake-off program, however, is whether or not it will generate sufficient volume to overcome the equipment and labor expenses involved. The operation definitely produces cost savings at the central plant, but the bake-off system must also result in extra profits at the retail level. Specific merchandising techniques which will aid in increasing volume or lowering costs are treated in this chapter. The following discussion does not have its basis in statistical results, but is more in the realm of personal opinion.

The bake-off program will create more than sufficient volume if it is merchandised properly. Because no set operating procedures have been established and tested thoroughly to date, food merchandisers must use their own experience and ingenuity in determining the correct approach. The recommendations given below are provided as guides and suggestions for proper merchandising of the frozen bake-off program.

### Transportation

For initial testing of the system and because of their lower cost, insulated containers should be used to maintain proper temperature during transportation. Freezer trucks can be added as the operation increases in size. The insulated containers can be shipped right along with other groceries. Thus no special transportation setup is necessary. At the beginning delivery will be necessary probably three times a week until consumer demand for a particular item has been determined. Then deliveries may be reduced to once or twice a week, depending on freezer facilities. The insulated containers can also be used as extra storage in the stores on heavy demand days and for special promotions.

### Location in the Store

The specific location of the bakery department in supermarkets has received growing attention the last few years. With the employment of the bake-off system, the bakery department can be near the end of the store traffic flow, immediately before the check-out stands. Bakery products other than bread are largely impulse items and customers tend to make these purchases after they have bought the necessity items. By having the bakery department last, customers are more inclined to buy bakery products. Customers can also order baked goods as they begin shopping and pick them up warm before leaving. Of course, by having the

bakery department at the end of the line, there is less danger of having baked goods squashed and the frozen products have less chance of thawing.

Of prime importance is the coordination of the bakery department into one section. The Daffodil Farm Bakery operations in Kroger supermarkets are placed in one part of the store while the Kroger commercial bakery line is placed in another. This is unsatisfactory because it makes the two bakery sections competitive with one another instead of complementary. The bake-off and commercial lines should be combined in the same area. Frozen bakery lines, such as Pepperidge Farm and Sara Lee, should also be included in one large bakery department.

#### Appearance and Theme

Great variations in design are possible for bakery departments. The important thing with the bake-off system is to promote it as a major department of the store. Maximum aesthetic appeal is needed and the department should be given the appearance of a complete bakery with all the trimmings. The illusion that all items are baked in the store is given by visible ovens and windows in the finishing area. To build and hold the necessary image calls for maximum showmanship. It is very necessary to have the oven in open view of the customer to publicize visually the fact that products are actually being baked in the store.

### Operations

A service type of operation is recommended over self-service for the following reasons: (1) More personal contact is needed, especially in very large supermarkets; (2) the bakery women are already present, so extra help for selling the baked goods is not needed; and (3) there are extra savings in packaging costs. A cash register should be used at the counter to keep an accurate account of sales. This will provide more accurate data while the program is new and is the method used in most complete bakery operations.

The bakery products themselves should be date-coded to insure proper rotation in the freezer. Ordering can be done twice a week and the completed order sent to the central plant so that only ordered goods need to be shipped to the store. Pre-ordering is presently used by most private label chain bakeries. Something should be baking in the oven at all times to take advantage of the magnetic aroma of baked goods.

The bakery items which are baked-off at the store can also be sold in the frozen state to be baked by the consumer in her own home. Frozen bread dough can be sold in aluminum tins. The customer merely raises the dough for two hours before she bakes it in her oven at home. Special bakery instructions can be included with these purchases. Cleanliness standards for the bakery department should be very strict.



### Store Size

The exact store size needed to maintain a bake-off program depends on many variables. To initiate the program store volume should be \$40,000 a week or more. A store this size should provide the best idea of what adjustments will be necessary for stores of higher or lower weekly sales. Adaptations of the bake-off program should be satisfactory for stores doing as little as \$25,000 per week. Costs of the program decrease considerably as department size decreases. The use of smaller ovens and freezers, less back-room space, and less help all reduce costs.

### Advertising

To promote the bake-off program adequately, a comprehensive advertising plan is needed. This includes a coordinated program of newspaper ads, special sales, and in-store signs. A weekly special will be needed to maintain customer awareness and interest.

Customers should be told that this is a frozen operation and it should be publicized to the extent that it is "fresher than fresh." This should also aid in raising sales of other frozen bakery items. Specials can be more successful due to the lack of over-ordering or under-ordering. Customer morning coffee breaks can be a real success with fresh bakery samples.



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### Training

Training is required for the supermarket personnel who are to operate the bake-off facilities in the store. A two-week training program should be sufficient. One week could be spent at the central plant learning to use ovens and proofers and gaining technical knowledge. Another week could be spent at an actual in-store installation to get practical experience.

### Variety and Quality

A large variety of bake-off items is essential to maintain customer interest. The program should not be allowed to degenerate into a "fad" section with a very limited variety. Even a coffee ring which is glazed or topped in a number of different ways easily adds variety to the display case. Prices should be identical whether the items are baked or unbaked. Cut-rate prices will merely tend to cheapen the image of the bake-off program.

Above all, quality must be maintained. Cheap ingredients or haphazard preparation can quickly eliminate any advantages gained through the bake-off.

### Summary

Merchandising techniques can be employed in many different ways to create interest in the bake-off program. Good judgment can solve many problems which arise from the

"newness" of the system. The bakery department must be given adequate attention and promoted as a major part of the store. Variety and quality are two essentials if the program is to succeed.

## CHAPTER IX

### CONCLUSION

Throughout the paper various advantages and disadvantages of the bake-off system have been explained. Yet separated from each other by discussions on special aspects of the program, they have not left a complete picture of the relative merits of the bake-off program. It is the intent of this final chapter to gather together all the major advantages and disadvantages in order to make a sound judgment and evaluation of the frozen bake-off system. The summary which follows shows that the frozen bake-off program is the answer to the bakery problem.

#### Disadvantages

The frozen bakery method is by no means a system that has all good points and no disadvantages. A certain investment in equipment is required and managerial supervision is needed to make sure the program is successful. It would take much less time and effort to stock commercial bakery on a shelf and let it sell itself.

#### Transportation

The shipment of frozen bakery requires refrigeration which is an additional expense. This disadvantage is somewhat

overcome by savings in transportation costs which result from other aspects of the bake-off program. Deliveries are only needed two or three times a week instead of daily; smaller shipping space is required for frozen products and they are less fragile than fully prepared bakery goods; delivery can be made any time during the day instead of early morning as required by commercial bakery.

### Volume Sellers

The bake-off program cannot effectively handle complete bakery production. The volume sellers--white bread and sandwich bread--must be produced by some outside method. Commercial bread is used to supplement the bake-off systems. This is not too grave a disadvantage because the severe price competition in white bread has reduced profit margins so low that it is difficult to compete in this area. White bread can be prepared through the bake-off system, but the volume must be limited at present.

### Innovation

The major disadvantages of the bake-off program is its newness. There is no set way of doing things; no master plan has yet been worked out. For those who attempt to enter the field, there will undoubtedly be a period of trial and error. The proponents of the program will need the patience, the imagination, and similar qualities that innovators in other fields have found necessary.

### Advantages

The bake-off program has all the advantages of a complete in-store bakery. The customer can buy fresh bakery with that "baked-at-home" taste. Throughout the store is the magnetic aroma of fresh bakery, enticing customers to make impulse purchases of high profit cakes and rolls. The entire sales volume of the store should rise because of new customers drawn to the store by the promise of home baked goods. Although these advantages are being passed over quickly, it does not mean that their importance is minor. Much more could be written about the value of fresh bakery to a supermarket.

### Elimination of Disadvantages

The bake-off system has retained the advantages of a complete in-store bakery but has overcome the problems which have made in-store bakeries unfeasible for most supermarkets. The required investment has been reduced to one-fourth and the amount of work space needed to one-third.

The major disadvantage of complete bakeries is the serious labor difficulties which often arise. The bake-off program has eliminated the high priced, hard-to-find master bakers and substituted non-technical labor. No specialists are needed at store level. The work force has been considerably reduced in size and no night crews are necessary.

### Quality

Uniform quality is now available for the first time.

Because all products are prepared at the central plant by master bakers, quality control is possible in every store on every day of the year. The individual bakery departments follow master time and temperature formulas devised at the central plant. A master baker's experience is extended to many stores.

Bake-off products are even fresher than fresh bakery because, throughout the day, they are baked as needed. Large batches do not have to be prepared at one time--a single danish pastry can be baked to satisfy the special wish of a customer.

### Variety

Since almost all bakery foods can be frozen there is a large variety available. The supermarket need never worry about running out of a particular item because the freezer can maintain adequate stocks of everything. The display case will always present an inviting appearance to the customer.

### Stales

Something which has plagued the bakery industry for many years has been the loss of profit because of items which become stale. This is, for all intensive purposes, eliminated with the bake-off program because items are baked to meet demand. For the first time, both peak and slack periods can be met.



### Profits

Handsome profits are available with the bake-off program because expensive labor, stales, space, and equipment have been greatly reduced. The American consumer is increasing the demand for sweet yeast products which is the high profit portion of the bakery department. With fresh bakery available, sales and profits should expand. The bake-off program allows personal contact with the customer--one of the best selling methods possible. Phone-call orders can be taken; customers can place orders when they begin their grocery shopping and pick up the warm bakery when they finish.

### Related Sales

The increase in sales would be not only in the bakery department, but in the whole store. A department which would benefit greatly is frozen food. When customers taste bakery items that have previously been frozen, their confidence in other frozen items should greatly increase. Frozen pies and bakery products from the frozen food case will increase in sales. Customers can also buy frozen bake-off products from the bakery department to be finished at home.

### One-stop Shopping

A good bakery department means better one-stop shopping for the customer. It puts the store in a better position to increase beginning-of-the-week sales. These are

days when the customer purchases higher margin items. Ten o'clock coffee breaks would be a huge success with fresh bakery for all the customers.

### Store Image

A good bakery department will aid in presenting a store image of quality and customer service. There is also something about a bakery department that gives a store a "home-town" flavor. Bakery specials can be featured in store advertising to give an image of quality and service to the entire store.

### A Bakery in Every Store

The final result of all the discussion of advantages is that now almost every store can have a bakery. Those stores doing \$25,000 business a week are definitely large enough to have a complete bake-off program, and those whose volume does not reach \$25,000 can use a modified version. Sales can even be extended to restaurants and institutions who have need of bakery products in their every day.

### Summary

The bake-off system utilizes the full value of the bakery department--it combines the advantages of both fresh and commercial bakery and at the same time eliminates the major drawbacks of each. The in-store finishing of frozen bakery is the answer to the bakery problem.

## APPENDIX I

### DOROTHY MURIEL'S

Dorothy Muriel's, a multiple-unit retail bakery, is currently supplying eight supermarkets with frozen bakery items which are baked and finished on the premises.

#### Background

Dorothy Muriel's is well known to the residents of the Greater Boston area. The company was started in the early 1920's and produces a complete line of top-quality baked foods. Operations have always been based on the premise of producing the best quality products that can be made. Dorothy Muriel's now operates 52 of its own bakeries and services 44 independent supermarkets.<sup>1</sup>

#### Entry into Supermarkets

Dorothy Muriel's did not rush into supermarkets because its business had been built on quality and, initially, quality was not identified with the supermarket. Around 1955, Ralph Tedeschi, who had a supermarket well outside Dorothy Muriel's trading area, wanted their products. Dorothy

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<sup>1</sup>Len Corlin, "In-Store Bake-Offs Add Extra Dimension to Supermarket Bakery Sales," Baking Industry, February 4, 1961, p. 50.

Muriel's agreed to furnish Tedeschi with fresh bakery and the venture proved very successful for both parties. As a result of this success, Dorothy Muriel's turned to a self-service line of bakery in an attempt to obtain greater sales through supermarkets. By 1960, 35 per cent of Dorothy Muriel's gross sales were in the supermarkets.<sup>2</sup>

Ralph Tedeschi had experienced very good success with the baking of frozen pies and wished to expand the bake-off operation to include pasteries. In 1959, he contacted Dorothy Muriel's to see if they would furnish him with a variety of frozen, raw bakery products.

#### Frozen Bakery

Dorothy Muriel's management started exploring the possibility of selling an expanded line of baked items to supermarkets for bake-off. They also examined the possibility of selling in this fashion through their own retail outlets.

A pilot installation was made at a Dorothy Muriel shop at 190 Harvard Avenue, Allston, Massachusetts, where a two-deck electric oven, freezer, and retarder were installed.<sup>3</sup> This required a certain financial outlay, but the reward was a noticable increase in sales.

In the meantime, other supermarkets who were receiving

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<sup>2</sup>Corlin, Baking Industry, p. 53.

<sup>3</sup>Berkin, p. 35.

the packaged type goods from Dorothy Muriel's also wanted to buy unbaked goods for bake-off in their stores.

### Expansion

The wholesale sales department, headed by Kingston L. Howard, becoming increasingly aware of the demand for a frozen bakery line, contacted New England Frozen Food Distributors, Inc. and a plan was worked out to sell to the supermarkets.

Although the central bakery had extensive freezing facilities of the conventional sort, Dorothy Muriel's added a blast freezer capable of handling 2,500 pounds over 12 hours at a temperature of 20 to 25 degrees below freezing.

Working with Tedeschi's supermarkets, Dorothy Muriel's developed the extensive line of bake-off items shown in Table 1.<sup>4</sup>

### Present Operations

Orders are received a week in advance, made up, and placed in the blast freezer overnight. They are then transferred to a holding freezer where they are held at zero to five degrees below. The bulk packaging operation is performed when convenient, i.e., when a sufficient force of men is free to do the job. When this is completed, the raw baked goods are returned to the holding box until picked up by the distributor's insulated trucks.

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<sup>4</sup>Berkin, p. 35.

TABLE 1

## DOROTHY MURIEL'S BAKE-OFF PRODUCTS

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Individual danish and buns		
Orange meltaways	Frozen unbaked	- Not iced
Orange pineapple	" "	- Not iced
Cinnamon twists	" "	- Finished
Assorted danish	" "	- Not iced
Sweet buns	" "	- Not iced
Old fash. coffee buns	" "	- Not iced
Raisin scones	" "	- Finished
Rings, swirls, and clusters		
Almond danish ring	Frozen unbaked	- Not iced
Plain danish ring	" "	"
Butternut swirls	" "	"
Streussel coffee cake	" "	"
Pecan sticky buns	" "	"
Cup cakes and cakes		
Large chocolate cups	Baked	- Not iced
Large yellow cups	Baked	"
Small yellow cups	Baked	"
2/7" yellow layers	Frozen baked	"
Chocolate cake	" "	"
Yellow cake	" "	"
Cookies and brownies		
Filled cookies	Frozen unbaked	- Finished
Butterscotch chip	" "	"
Chocolate chip	" "	"
Caramel chip	" "	"
Almond butter	" "	"
Molasses	" "	"
Butter wafers	" "	"
Sugar cookies	" "	"
Pan brownies	" "	"
Turnovers		
Puff turnovers	Frozen unbaked	- Not filled
Apple turnovers	" "	- Finished
Muffins		
Bran muffins	Frozen unbaked	- Finished
Corn muffins	" "	"
Shells and biscuits		
Puff shells	Frozen unbaked	- Not filled
Shortcake biscuits	" "	- Finished

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The frozen goods are then delivered to the supermarkets. Figure 1 shows the bakery department of the Tedeschi supermarket which uses the bake-off system.<sup>5</sup>

### Training

Education, too, is required for the supermarket personnel who are to operate the bake-off facilities within the stores. Dorothy Muriel offers its own facilities to train these people. The supermarket bake-off personnel are brought to the central bakery where they are instructed for two days in the handling of retarders, proof boxes, and ovens. They are also taken to the Dorothy Muriel retail outlet in Allston where they can actually observe bake-off operations as conducted in a store.<sup>6</sup>

### Fresh Line

Because the bake-off operation is too limited, Dorothy Muriel's advocates that the supermarket also stock a line of fresh bakery to provide full variety. By having a bake-off operation in conjunction with a fresh line, the supermarket receives all the major advantages of a complete on-premise bakery at a considerable saving in investment and floor space.

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<sup>5</sup>"It's Really a Woman's World," Progressive Grocer, XXXX (May, 1961), p. 54.

<sup>6</sup>Berkin, p. 37.

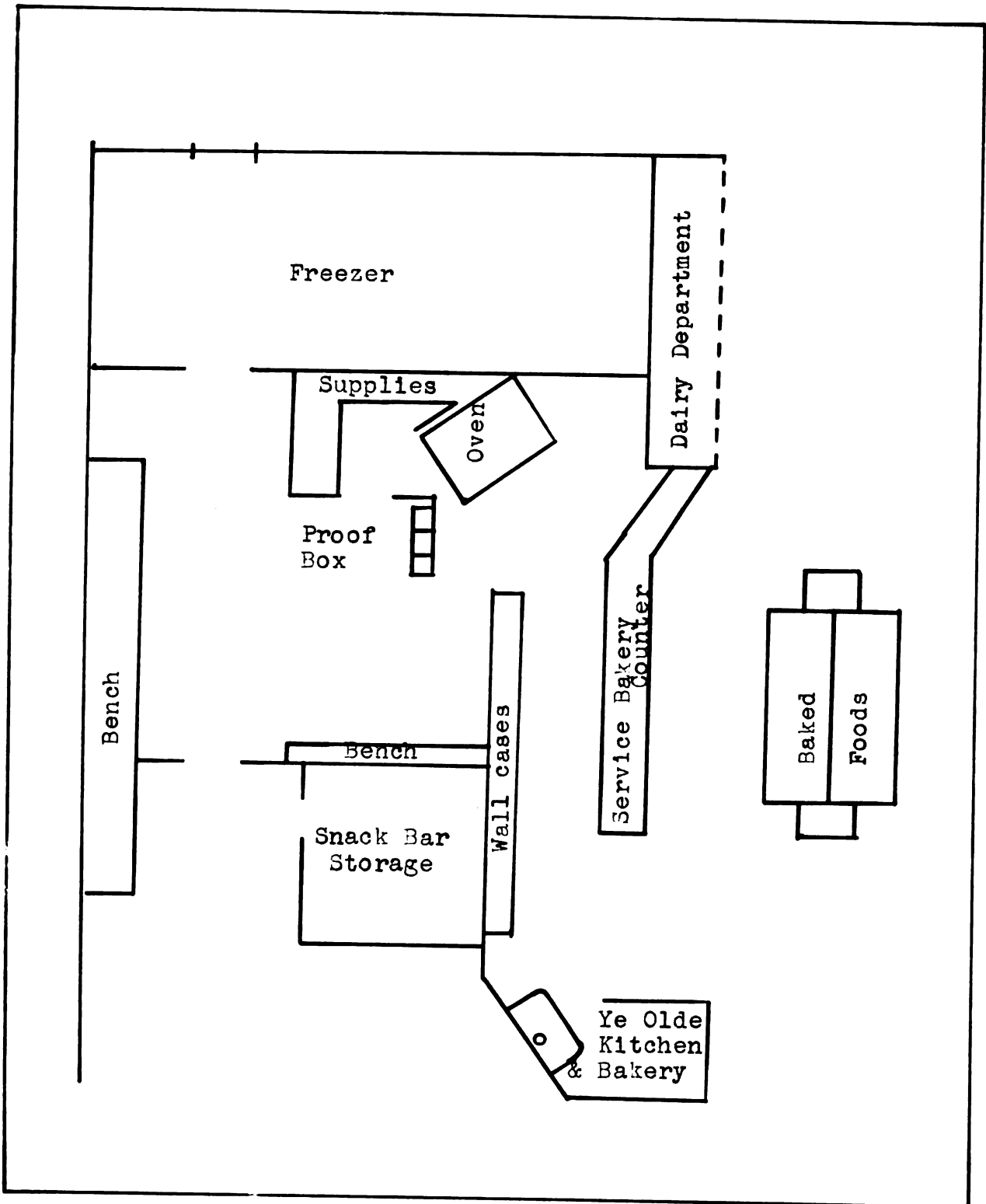


Fig. 1.--Tedeschi Bakery Department



Quality

Dorothy Muriel's has always stressed quality and bases its production and merchandising policies on this concept. As a result, they require the supermarkets who sell their bake-off items to maintain the same high standards of quality.<sup>7</sup>

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<sup>7</sup>Berkin, p. 38.

## APPENDIX II

### SPECIFIC BAKE-OFF EQUIPMENT COSTS

Specific costs for the ovens and freezers used in the bake-off system vary considerably depending upon size and type. Some examples are given below to show the range of equipment available. Other items are more standard and a complete listing of all equipment necessary for a bake-off system in stores which have a bakery volume of \$1,500 to \$2,500 a week is included.

#### Ovens

The Dutch Boy oven, described in Chapter VI, costs approximately \$3,000. It has revolving shelves and can be fired by either direct gas, indirect gas, electricity, or oil heat. It is a very "professional" type oven and is equipped to provide baking facilities for stores doing a weekly bakery volume of \$4,000 and up. It also comes in various sizes that can be chosen to match bakery volume.

The oven used by Daffodil Farm Bakery units is a two-drawer Hotpoint oven. The two shelves (drawers) do not revolve. There are many types of ovens in this same category. If they are fired by electricity, the price is about \$1,700 and if they use gas the cost is between \$300 and \$900.

This type of oven is more suitable for bakery volumes between \$1,500 and \$2,500 per week.

### Freezers

Self-contained freezers are produced by several companies. These usually have a separate section that can be used as a proofer. The temperature can be varied between -40° F. to 120° F. Costs for a 40 cubic foot chest freezer are between \$500 and \$1,500. As size increases so does price. The 40 cubic foot Glenco freezer is \$1,500 while the 56 cubic foot Glenco freezer is \$2,000. A freezer of 40 cubic feet is sufficient for bakery volumes up to \$2,000 per week.

If it is possible to use a walk-in freezer in conjunction with other frozen food departments, cost savings are realized. A separate proofer is needed with walk-in freezers. Proofers begin at \$350 and a 35 cubic foot proofer (\$350) is sufficient for bakery volumes up to \$2,500 weekly.

### Costs for Model System

The following data presents costs of equipment for a bakery volume of \$1,500 to \$2,500 weekly.

## Major Equipment for Bake-Off System

- |  |                   |
|--|-------------------|
| 1 - 5 Pan Gas Fired Oven - Stainless Steel Front<br>33 x 47 x 57 130,000 BTU per hour. 110 volt<br>3/4 H.P. Motor - Pipe legs<br>Approximate freight 560#  | \$737.00<br>16.00 |
| 1 - 20 Pan Automatic Electric Proof Box - Aluminized<br>Steel - 30 x 30 x 81 Pipe legs. 110 Volt,<br>1,000 Watt<br>Approximate freight 395#  | \$310.00<br>18.50 |
| 1 - 38 Pan Freezer Box - Stainless Steel Finish - 34<br>x 27 x 73. 110 Volt - 1/3 H.P. Motor<br>Approximate freight 477#   | \$413.00<br>19.00 |
| 1 - 20 Quart Bench type Cake Machine and Accessories<br>16 x 23 x 30. 110 Volt - 1/3 H.P. Motor<br>Approximate freight 240#  | \$500.00<br>11.00 |
| 1 - Combination Doughnut Cutter and Fryer - Chrome<br>Finish - 18 x 22 x 30 Table Model - 220 Volt<br>4,400 Watt<br>Approximate freight 88#  | \$289.00<br>5.50  |
| 1 - 3 Compartment 14 Gauge Stainless Steel Sink with<br>splash back and drain board - each compartment<br>20 x 24 x 14 - drain board 24 x 30 - overall 24<br>x 90 x 34 - Pipe legs - 110 Volt heating ele-<br>ment and control one section<br>Approximate freight 260# | \$330.40<br>19.00 |
| 2 - 15 Pan Aluminum Pan Racks - on casters - open all<br>sides - 31 x 19 x 64 \$54.00 each<br>Apprximate freight 35# each  | \$108.00<br>8.00  |
| 1 - 24 Pan Galvanized Finished Goods Storage Box -<br>22 x 30 x 75 - on casters<br>Approximate freight 200#  | \$121.00<br>12.50 |
| 3 - Masonite Work Tables - 1" thick top - pipe legs -<br>24 x 60 x 30 1-18 x 18 x 6 drawer per table -<br>1 shelf per table - \$130.00 each<br>FOB Omaha, Nebraska, 135# each  | \$390.00          |
| 1 - 4 Shelf Show Case - Formica Finish - 75 x 30 x 50<br>110 Volt Fluorescent light<br>FOB Griswold, Iowa, 300#  | \$335.00          |
| 1 - 2 Shelf Show Case - Formica Finish - 75 x 30 x 38<br>110 Volt Fluorescent light<br>FOB Griswold, Iowa, 300#  | \$315.00          |

1 - 3 Shelf Refrigerated Show Case - White Enamel Finish 43 x 35 x 50 $\frac{1}{2}$ H.P. Motor - 110 Volt Fluorescent light	\$846.00
Approximate freight, New York, 615#	31.00
1 - Bismark Filler - Echo - hand operated - table model	\$29.75
FOB Omaha, Nebraska, 15#	
1 - 2 Plate Bakers Bench Scale with beam, weights and scoop	\$20.85
FOB Omaha, Nebraska, 15#	
Total	<u>\$4,804.50</u>

## Miscellaneous Tools and Equipment

FOB Omaha, Nebraska

1 - #705 Counter Brush		\$2.80
1 - Round Peko Grease Brush		2.28
1 - Gong Scrub Brush		.95
1 - #3 Can Opener		9.18
3 - Scotch Brite Scouring Pad	\$.60 ea.	1.80
4 - Jesse Oven Pads	.60 ea.	2.40
2 - 5 $\frac{1}{2}$ " Frosting Knives	1.76 ea.	3.52
1 - 6" Palette Knife		1.93
2 - Aluminum Measures	5.30 ea.	11.60
1 - Revolving Cake Decorating Stand		8.35
2 - Standard Pastry Bag Couplings	.54 ea.	1.08
2 - 14" Lifetime Pastry Bags	1.58 ea.	3.16
1 doz - Assorted Brass Decorating Tubes	.15 ea.	1.80
2 - #3 Aluminum Scoops	3.95 ea.	7.90
2 - Heavy Plastic Bowl Scrapers	.14 ea.	.28
2 - X495 Bench Scrapers	1.19 ea.	2.38
36 - #30 12 x 18 Tin Display Pans	11.75 doz.	35.25
18 - #04 18 x 36 Tin Display Pans	20.00 doz.	30.00
12 - #125 9 x 26 Tin Display Pans	15.00 doz.	15.00
48 - #5016 Ekco Aluminum Bun Pans	4.52 ea.	216.96
12 - #043 Cup Cake Frames	1.45 ea.	17.40
12 - 6" Round Layer Cake Pans	3.90 doz.	3.90
12 - 7" Round Layer Cake Pans	4.70 doz.	4.70
12 - 8" Round Layer Cake Pans	5.50 doz.	5.50
12 - 9" Round Layer Cake Pans	6.00 doz.	6.00
1 gr. 6" Paper Cake Pan Liners		1.10
1 gr. 7" Paper Cake Pan Liners		1.45
1 gr. 8" Paper Cake Pan Liners		2.05
1 gr. 9" Paper Cake Pan Liners		2.35
1 gr. Ripco Silicone Treated Bun Pan Liners		12.00
1 gr. #150X Cup Cake Pan Liners		.45
500 - 8" Paper Cake Laces		3.90
500 - 10" Paper Cake Laces		5.94
500 - 12" Paper Cake Laces		7.40
Total		<u>\$432.76</u>

CD 50 Portable Aluminum Cabinets - 11 pan capacity 21 $\frac{1}{2}$ " wide - 28" deep - 30 $\frac{1}{2}$ " high 25 $\frac{7}{8}$ FOB Pennsylvania	\$89.75 each
Portable Cabinet Dollies - on 4" casters 22" x 29" inside FOB Omaha, Nebraska	\$19.00 each
CD 3 Aluminum Cabinets on casters - 35 pan capacity 11 $\frac{1}{2}$ " wide - 28" deep - 83" high 55 $\frac{7}{8}$ FOB Pennsylvania	\$188.50 each

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