

A FOOD PRODUCTION AND SERVICE PORTION CONTROL PROGRAM IN A MICHIGAN STATE UNIVERSITY RESIDENCE HALL

> Thesis for the Degree of M.S. MICHIGAN STATE UNIVERSITY Marian Ruth Emerson 1964

THESIS

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### A FOOD PRODUCTION AND SERVICE PORTION CONTROL PROGRAM

By

Marian Ruth Emerson

### A PROBLEM

### Submitted to the Dean of the College of Home Economics Michigan State University in partial fulfillment of the requirements for the degree of

### MASTER OF SCIENCE

Department of Institution Administration

### ACKNOWLEDGMENTS

The author wishes to express her appreciation to Professors Katherine Hart and Mildred Jones for assistance and guidance during the progress of this problem.

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### TABLE OF CONTENTS

	Page
INTRODUCTION	1
BRODY RESIDENCE HALLSA DESCRIPTION	4
A STANDARDIZATION PROGRAM	6
The Plan	6
Menu Pattern	6 7
Recipe Selection	. 7
The ProceduresProduction	8
Preparation	Ř
Measurement	ğ
Panning	ر م
The ProceduresService	10
Portion Size	10
	10
The Chandendierd Design Further	10
	12
EPILOGUE	29
BIBLIOGRAPHY	32
APPENDIX	33

-

### LIST OF EXHIBITS

Exhib	Page Page
1.	Serving Information: Selected Casserole Items 11
2.	Counter Pan Yields: Typical Casserole Items 13
3A.	Original Recipe: March 1, 1957 Johnny Marzetti
В.	Modifications: March 10, 1957
С.	Modifications: December 15, 1958
D.	Modifications: January 20, 1959
Ĕ.	Modifications: February 10, 1959
F.	Modifications: March 3, 1959
4.	Revised Recipe: September 1, 1959 Johnny Marzetti
5A <b>.</b>	Men's Residence Halls Menus, Winter Term, 1959, Cycle I, Tuesday
Β.	Men's Residence Halls Menus, Winter Term, 1959, Cycle II, Tuesday
с.	Men's Residence Halls Menus, Winter Term, 1959, Cycle III, Tuesday

### INTRODUCTION

The increased enrollment in colleges and universities is multiplying many problems not only in the academic area but in all areas of campus life. Solutions must be found for handling bicycle and motor traffic. Utility and disposal plants must be enlarged. Land must be used more economically. Parking ramps and buildings of many stories are changing the appearance of many campuses. All the problems of a large urban population must be met.

In the so-called resident university, a university providing housing and meals for a large number of students, the administration is greatly concefned with keeping student costs at a reasonable figure. Most residence halls are built with borrowed funds. Interest and principle must be paid over a period of years from room and board fees.

It is recognized by university officials that food service contributes substantially to student morale. Therefore, it is important to offer meals of quantity and quality that please the students. It is also important that menus offer a selection of items allowing student choice within various dietary restrictions imposed by health, religion or individual preference. To meet such requirements within a limited budget demands strict control of cost. Waste of food and labor must be kept at a minimum since both are expensive commodities.

Forecasting methods have been developed to allow the needed number of portions of each menu item to be estimated with a high degree

of accuracy. The size of each portion must be standardized and recipes must be developed that will produce the desired quality and quantity of food items. Overproduction is costly and underproduction results in customer dissatisfaction.

A review of the literature indicated that many food service organizations have undergone the rigors of portion planning control. All successful operators and authorities recognize the need for standardization and portion control, but few have documented the orderly, step-by-step procedure for establishing these controls. Aldrich and Miller (1), Greer (4), and Callahan (3) have presented clearly defined, detailed information that could be applied to any food service operation.

The author has been associated with Brody Food Service, Michigan State University since 1958, first in the capacity of Assistant Food Manager and later as Food Service Manager. Prior to coming to Michigan State, she had five years' food production experience with the Greenfield Restaurant Company in Detroit and Cincinnati stores, and three years' managerial experience with a Continental Can Company cafeteria. The Greenfield Restaurants are well organized and successful cafeterias operating within the framework of recipe standardization and portion control. The company is one of many that has found precision production and service to be the key to financial success.

In 1958, Brody Food Service was operating in a permissive framework; recipe standardization and portion control were unknown. To one well disciplined in food production control methods it was obvious that similar controls were needed for a more efficient and economical operation. The author had the food production acumen essential to initiate, control, conduct, and evaluate the Brody project.

This paper presents the sequential steps of a recipe standardization and portion control program conducted in the Brody Residence Hall Food Service during winter and spring terms, 1959.

### BRODY RESIDENCE HALLS--A DESCRIPTION

The Brody Group is part of the Residence Hall Division at Michigan State University. The group consists of six residence halls with a total capacity of 3,000 male undergraduate students. Operation of three of the six residence halls and the central food service unit was initiated during the 1954 academic year. Construction of the remaining three residence units completed the entire Brody Group as of September, 1956.

The residents of the group dine in a central building. Six cafeteria style serving lines and six dining rooms constitute the food service core within this building. A seventh serving line and dining room simultaneously accommodate administrative staff, employees, and guests attending special events. The seven lines are serviced from a central production area and dishroom.

As the University expands its residence halls system, adaptation of operating procedures is necessary. This is customarily achieved by drawing heavily from existing units in areas of management personnel and regular employees for each new unit. Since Brody accommodated a greater number of students than any other residence hall, adaptation of operating procedure suitable for its unique operation was difficult. In 1958, management was aware that greater procedural precision in the production and service of food was requisite to maximize both net return on investment and benefits for the Brody Group residents.

In September 1958, the Brody Group housed 2,400 residents; the board contract was based on twenty-one meals a week. Absenteeism was a

factor in determining board contract charges, since no refunds were made for meals. Accurate forecasting of each meal count was necessary to maintain all costs within the established fee structure.

### A STANDARDIZATION PROGRAM

### The Plan

The joint program of recipe standardization and portion control was scheduled for winter and spring terms, 1959. The program was concentrated in two areas of the Brody Food Service, production and line service. The menu items selected for standardization included casseroles, salads, desserts and breads; the method of standardization was similar for all items. Extensive testing time was given the casseroles since they presented more problems in standardization than other menu items. The developmental procedure for casseroles will be reported in this paper.

### Preliminary Planning

The over-all objective of the program was explained to employees. Since all recipe testing was an integral part of daily operation, complete understanding and cooperation of all personnel were necessary for normal food service operation. The cooks visualized advantages from participation in developing consistently yielding recipes. They recognized their own meal period frustrations and cooking problems caused by fear of not having prepared enough of any item. The serving personnel were to receive adequate demonstration and practice in dishing standard portions. The food service supervisor's acceptance of this standardization program compensated for the anticipated extra effort necessary for successful completion.

### Menu Pattern

The menu pattern at Brody was similar to that in all Michigan State University residence halls. It offered the students a choice between two luncheon entrees; one, both or neither being a casserole type item.

For each twelve-week term a set of three separate weekly menus was written, described as Cycle I, Cycle II, and Cycle III. During the course of the term these menus were prepared and repeated in cycle rotation four times. Records for the actual "sale" of each menu item were maintained to aid in predicting the amounts to be prepared as each cycle menu was repeated. The popularity of each item could not be accurately predicted since student choice of menu items varied from cycle to cycle. Appendix Exhibits 5A, B, and C indicate Tuesday menus for Cycle I, Cycle II, and Cycle III, winter term, 1959.

### Recipe Selection

Before January 1, 1959, cycle menus were prepared and existing recipes for casserole items appearing on the winter term menus were assembled. Due to many inconsistencies, the current file recipes were checked against three recognized institutional sources to verify proper ingredient proportions. Existing recipes for eleven items with established student acceptance were used for testing since they had already been adapted to meet the kitchen equipment needs. Five recipes from other sources were also selected in an attempt to encourage acceptance of a few previously unpopular products and thus bring a wider variety of casserole items to the students. The list of casserole items scheduled for testing during winter term, 1959, follows:

Baked Beans	Goulash
Baked Spaghetti	Johnny Marzetti
Beef Stew	Macaroni and Cheese
Chicken Pie	Scalloped Ham and Potatoes
Chili Con Carni	Shrimp Creole
Chop Suey	Spanish Rice
Creamed Chipped Beef	Tuna Noodle Casserole
Eggs a la King	Welsh Rarebit

In an attempt to control standardization variables, the number of casserole recipes was limited to sixteen.

### The Procedures--Production

Achieving standard production methods was more time consuming than achieving standard serving methods. Casserole replications were not identical since forecasted volume fluctuated between 75 and 90 gallons from one cycle to another. Consequently, the standardization of preparation procedure variables presented a number of problems.

### Preparation

Each day the supervisor and cook who was assigned to actual preparation reviewed the recipe for anticipated production problems. For casseroles requiring chopped vegetables and reconstituted non-fat dry milk, advanced preparation of such items was completed the day previous to production. The cook combined the casserole ingredients under close supervision and the entire production procedure was recorded. Quality checks for taste and appearance were made throughout the preparation sequence. Any change in procedure or in ingredients was recorded at this time.

Basic production equipment for the casseroles consisted of two 90 and two 70 gallon steam-jacketed kettles.

### Measurement

Upon completion of the casserole, the total volume yield was measured in the steam-jacketed kettle with a stainless steel measuring stick. Two sticks were available, fabricated with specific gauges for each size steam-jacketed kettle. Production of some casseroles required combining the ingredients of one steam-jacketed kettle with those in another, such as cooked macaroni in one kettle and cheese sauce in another. This involved recording the volume yield in each kettle before combining, followed by recording the combined yield.

### Panning

The casserole item was next transferred to stainless steel counter pans, 20.75 inches long, 12.75 inches wide and 4.12 inches deep. If the item (fairly firm in consistency) was to be served by serving spoons, a weight was established for the filled counter pan. This was done by first weighing the empty counter pan and then filling the pan to approximately one inch from the top and recording the weight of the filled pan. A Toledo scale model #4644 was used for all scaling. The weight established for most "firm" items was either 23 pounds 12 ounces or 25 pounds. If the item was to be served by ladle (not firm in consistency), three gallons was established as the full counter pan requirement.

### The Procedures--Service

Service procedures entailed the determining of a portion size for each casserole item and instruction of all serving personnel in standard serving practices.

### Portion Size

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After the baking of the panned casserole item, a weighed portion was determined with the use of a portion scale, Toledo model #3011. The weighed portion was established by estimating the size portion of the item as it had previously been served. A larger than average portion size was chosen due to all male student clientele. When the casserole required service with a ladle, the size ladle (either a 6 ounce or 8 ounce) was selected and the number of ladle portions per gallon was determined. The serving spoon for "firm" items was 13 inches long with a tapered bowl with maximum measurements of 3.75 inches long, 2.5 inches wide and .75 inches deep. The liquid volume measurement of the spoon was 2 ounces. The estimated counter pan yields which were established from the weighed or measured portions are shown in Exhibit 1.

### Service Control

Before the cafeteria lines opened for the noon meal, seven weighed or measured portions were prepared in the kitchen and one was taken to each serving area. A measured portion remained in front of each line server as a visual aid throughout the meal period. Portion scales were also located near the serving area. Each person assigned to serving the casserole item was instructed in the use of the portion scale to determine

Casserole Item	Serving Utensil	FOLLION SIZE	Lounter Pan Yield D.C.P.* Half D.C.P.**
Baked Beans	Ladle (6 ounce)	l ladle	50
Baked Spaghetti	Spoon (13 inch) ****	2 spoons	45
Beef Stew	Ladle (8 ounce)	l ladle	42
Chicken Pie	Ladle (8 ounce)	l ladle	42
Chili Con Carni	Ladle (8 ounce)	l ladle	42
Chop Suey	Ladle (8 ounce)	l ladle	42
Creamed Chipped Beef	Ladle (6 ounce)	l ladle	47
Eggs à la King	Ladle (6 ounce)	l ladle	30
Gou l ash	Spoon (13 inch)	2 spoons	46
Johnny Marzetti	Spoon (13 inch)	2 spoons	46
Macaroni and Cheese	Spoon (13 inch)	2 spoons	42
Scalloped Ham and Potatoes	Spoon (13 inch)	2 spoons	22
Shrimp Creole	Ladle (8 ounce)	1 ladle	24
Spanish Rice	Spoon (13 inch)	2 spoons	017
Tuna Noodle Casserole	Spoon (13 inch)	2 spoons	46
Welsh Rarebit	Ladle (6 ounce)	l ladle	30

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SERVING INFORMATION: SELECTED CASSEROLE ITEMS

EXHIBIT 1

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4 inches deep. \*\*\*\* Spoon (13 inch) Specification: Tapered bowl maximum of 3.75 inches long, 2.5 inches wide, .75 inches deep.

the proper portion size and told the planned number of portions per counter pan.

Before the cafeteria opened, the line servers participated in a period of trial serving, assisted by the visual aids and the portion scales. The portion scales were used during the actual serving period for check weighing. Each line server recorded the total number of actual portions for each counter pan of casserole served.

Personnel orientation to the joint program produced acceptable service standards sooner than production techniques could be standardized. Exhibit 2 shows consistency of counter pan yields for two casserole items served during winter term, 1959. Uniformity resulted from the favorable interaction of two factors:

- The number of portions (approximately 1,500) served each meal allowed for repetition of uniform service.
- Serving personnel resisted cumbersome portion scale checks during the meal period and soon were aware that prompt learning of the new skill removed the source of irritation, the portion scale.

The Standardized Recipe--Evolution

The formal standardization program was initiated in January 1959 and continued through winter and spring terms of that year. A description of the procedural sequence follows.

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# COUNTER PAN YIELDS: TYPICAL CASSEROLE ITEMS

Casserole ltem	1959 Serving Date	Serving Utensil	Pan Portion Established	Yield Actual*
Chop Suey	January 5	Ladle	42	42.0
	January 26	(b ounce)		42.3
	February 16			42.0
	March 9			42.5
Spanish Rice	January 6	Serving spoon	0†	40.6
	January 27	(13 inch)		40.8
	February 17			40.5
	March.10			39.2

\* Actual Pan Portion Yield: Average from approximately 30 pans

At the end of the meal period, data relating to portion counts per pan were collected and tallied. The information was checked against the initial prepared amounts to determine accuracy of the yields.

The trial recipe was re-evaluated after the meal period. The production procedure, total volume yields, and pan and portion count were reviewed with service and production supervisors. If there was an agreement on the known results of the particular trial, the recipe was then calculated for three or four yields, e.g., 60 gallon, 80 gallon, 100 gallon, 120 gallon. During the period of developing standards, food service management assumed that the selective menu would necessitate a need for three to five yields for each recipe.

When preparation of each casserole was repeated, the same detailed procedure from production through service was followed. If a forecasted yield was not achieved on a second trial, data were collected on the second yield. If no known reason for the difference in yields was apparent, the second trial results were used to calculate new recipe yields. Some pastee items were being recalculated on the fourth and fifth tests. All casserole results were filed and if a later replication was similar to any previous test, the recipe was typed and accepted as reasonably accurate.

No results were finalized until the end of spring term, 1959. At that time, recipe testing had continued for two full terms with the possibility of six or eight replications (75-90 gallon yields) for each casserole.

The original Johnny Marzetti recipe (Exhibit 3A) was included in all Michigan State University residence hall recipe files for range

cooks, March 1, 1957. From March 10, 1957 to December 15, 1958 two series of modifications were incorporated in the basic recipe. See Exhibits 3B and C. The progressive steps in standardization of ingredient amounts and procedures during winter and spring terms, 1959 are shown in Exhibit 3D, E, and F. The revised recipe for Johnny Marzetti, September 1, 1959, is shown in Exhibit 4.

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ORIGINAL RECIPE: March 1, 1957 Johnny Marzetti ٠

INGREDIENTS	AMOUNT 100 Serv.	AMOUNT	AMOUNT	PROCEDURE
Ground Beef	12 lbs.			l. Brown meat, pepper and
Green Pepper, Chopped	9			ONIONS IN A HILLIE TAL.
Onions, Medium, Chopped	9			2. Add cooked noodles, celery,
Broad Noodles	10 lbs.			commercy paste, water, sait and pepper.
Celery, Chopped	2 lbs.			2 Dan jato compter and
Tomato Paste	1/2 gal.			<ol> <li>ran into counter pans and sprinkle top with grated</li> <li>choose Babo is a hot anot</li> </ol>
Water	l qt.			Cheese, bake in a hot oven 20 minutes.
Salt	1/2 C.			
Pepper	To Taste			
Sharp Cheese, Grated	3 lbs.			

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Portion Size - 4 oz. Serving Note: For men's halls, serve 6 ounces per portion.

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COMMENTS:

Exhibit 3A represents the basic Johnny Marzetti recipe developed for all Michigan State University residence halls in 1957.

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Each food service unit established approximate standardized yields for the basic recipe to meet individual unit needs.

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MODIFICATIONS: March 10, 1957 Johnny Marzetti

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\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

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COMMENTS:

Exhibit 3B shows revision in original Johnny Marzetti recipe (Exhibit 3A) for use from March 10, 1957 - December 15, 1958. Most ingredient amounts in Johnny Marzetti 3A were multiplied by 11 to give amounts shown in 3B. Although this recipe consistently yielded 60 gallons, actual portions were difficult to determine due to lack of uniform serving standards.

MODIFICATIONS:

Ingredient Information

- 1. Optional inclusion of tomato juice.
- 2. Reduction in amount of noodles.
- 3. Conversion of celery from pounds to individual stalks.

Procedure Information

1. More specific cooking instructions.

Yield Information

1. Addition of approximate yield by gallons, and deep counter pans in amount column heading.

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MODIFICATIONS: December 15, 1958 Johnny Marzetti

I NGRED I ENTS	APPROX. AMOUNT	APPROX. AMOUNT	APPROX. AMOUNT
	30 Gal.	60 Gal.	75 Gal.
	450 Portions	900 Portions	1125 Portions
	10 D.C.P.*	20 D.C.P.	25 D.C.P.
Ground Beef	67 1/2 lbs.	135 lbs.	168 lbs.
Green Pepper, Chopped	32	64	80
Onions, Medium, Chopped	32	- <b>6</b> 4	80
Celery, Chopped	21 stalks	42 stalks	52 stalks
Salt	2 1/2 C.	5 C.	6 1/4 C.
Pepper	2 1/2 T.	5 Т.	6 1/4 T.
Tomato Paste	2 1/2 gal.	5 gal.	6 1/4 gal.
Water	1 1/2 gal.	, 3 gal,	3 3/4 gal.
Broad Noodles	35 lbs.	70 lbs.	87 lbs.
Tomato Juice, #5 Can	7	14	17
Sharp Cheese, Grated	20 lbs.	40 lbs.	50 lbs.

Procedure:

- Brown meat for 15 minutes. .
- Add green pepper, onions, celery, salt and pepper.
- Add tomato paste and water. ... ...
- Simmer until tomato paste is cooked.
  - Cook noodles in well salted water. 4 6 2 4
- When noodles are done, drain and mix with meat sauce.
  - If too dry, add tomato juice. Pan mixture.
    - Cover top of mixture with grated cheese.
- Bake in oven for approximate 20 minutes at 350° F.

\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

COMMENTS:

Exhibit 3C shows two additional yields, 30 gallons and 75 gallons.

MODIFICATIONS:

Ingredient Information

1. Salt and pepper listed with measured amounts.

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2. Reduction in amount of celery.

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Procedure Information

No change.

Yield Information

No change.

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MODIFICATIONS: January 20, 1959 Johnny Marzetti

I NGRED I ENTS	APPROX, AMOUNT 30 Gal. 450 Portions 10 D.C.P.*	APPROX, AMOUNT 50 Gal. 750 Portions 17 D.C.P.	APPROX, AMOUNT 60 Gal. 900 Portions 20 D.C.P.	APPROX, AMOUNT 75 Gal. 1125 Portions 25 D.C.P
Ground Beef	67 1/2 lbs.	112 lbs.	135 lbs.	168 lbs.
Green Pepper, Chopped	32	53	64	80
Onions, Medium, Chopped	32	53	64	80
Celery, Chopped	21 stalks	35 stalks	42 stalks	52 stalks
Salt	2 1/2 C.	4 C.	5 C.	6 1/4 C.
Pepper	2 1/2 T.	4 T.	5 Т.	6 1/4 T.
Tomato Paste	2 l/2 gal.	3 3/4 gal.	5 gal.	6 1/4 gal.
Water	1 1/2 gal.	2 1/2 gal.	3 gal.	3 3/4 gal.
Tomato Juice, #5 Can	7	12	14	17
Broad Noodles	35 lbs.	58 lbs.	70 lbs.	87 lbs.
Sharp Cheese, Grated	20 lbs.	33 lbs.	40 lbs.	50 lbs.

Procedure:

Brown meat for 15 minutes. .-

Add green pepper, onions, celery, salt and pepper.

Add tomato paste, water and tomato juice; simmer. 6.0. <del>f</del>. . . .

Cook noodles in well salted water.

When noodles are done, drain and mix with meat sauce. Cover top of mixture with grated cheese. Bake in oven for approx. 20 minutes at 350° F.

\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

COMMENTS:

Exhibit 3D shows a fourth yield (50 gallons) which was calculated prior to January 20, 1959. Fifty gallons was selected as the probable amount for the forecasted needs.

MODIFICATIONS:

Ingredient Information No change.

Procedure Information No change.

Yield Information

No change.

I NGRED I ENTS	AMOUNT	AMOUNT	AMOUNT	AMOUNT
	30 Gal.	50 Gal.	60 Gal.	75 Gal.
	450 Portions	782 Portions	<b>920</b> Portions	1150 Portions
	10 D.C.P.*	17 D.C.P.	20 D.C.P.	25 D.C.P.
Ground Beef	67 1/2 lbs.	112 lbs.	135 lbs.	168 lbs.
Green Pepper, Chopped	32	31 1/2 lbs. or 1 1/2 D.C.P.	64	80
Onions, Medium, Chopped	32	21 lbs. or 1 D.C.P.	64	80
Celery, Chopped	<b>21</b> stalks	5 1/2 lbs. or 2/3 gal.	42 stalks	52 stalks
Salt	2 1/2 C.	4 C.	5 C.	6 1/4 C.
Pepper	2 1/2 T.	4 T.	5Т.	6.1/4 T.
Tomato Paste	2 1/2 gal.	4 1/2 #10 Cans	5 gal.	6 1/4 gal.
Water	1 1/2 gal.	2 1/2 gal.	3 gal.	3 3/4 gal.
Tomato Juice, #5 Can	7	12	14	17
Broad Noodles	35 lbs.	58 lbs.	70 lbs.	87 lbs.
Sharp Cheese, Grated	20 lbs.	33 lbs.	40 lbs.	50 lbs.
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MODIFICATIONS: February 10, 1959 Johnny Marzetti

EXHIBIT 3E

Procedure:

Brown meat for 15 minutes.

Add green pepper, onions, celery, salt and pepper.

Add tomato paste, water and tomato juice; simmer.

Cook noodles in salted water, drain and add to meat mixture.

Pan mix scaling 23 lbs. 12 oz. per D.C.P. Top each pan with 1 lb. grated cheese. Bake at 350<sup>0</sup> F. for 20 minutes. Size portion - 8 1/2 oz. Amount mix per D.C.P. - 24 lbs. 12 oz. 

Number portions per D.C.P. - 46.

\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

COMMENTS:

Exhibit 3E indicates the same four yield columns as 3D, but the 50 gallon column reveals the ingredient conversions resulting from January 20 production. Fifty gallons was selected as the amount to be prepared for February 10. No other yield columns were converted until the 50 gallon amount could be verified by repetition.

During the January 20 preparation of 3D, the counter pan amount (D.C.P.) was determined as 24 lbs. 12 oz. and the total counter pan yield was 17 deep counter pans for 50 gallons of mix. The size portion, 8 1/2 oz., and the number of portions per pan, 46, were established.

MODIFICATIONS:

Ingredient Information

- 1. Green peppers and onions were converted from individual count to
  - a. weight
  - b. amount per deep counter pan (D.C.P.).
- Celery was converted from individual stalk to

   weight
  - b. measured amount.
- 3. Tomato paste was changed from gallon to number ten can measure.

Procedure Information

- 1. Revised for clarity.
- 2. Grated cheese allowance of one pound per counter pan for topping.
- 3. Yield information included in procedure.

Yield Information

- 1. Size portion 8 1/2 oz.
- 2. Amount mix per D.C.P. 24 lbs. 12 oz.
- 3. Number of portions per D.C.P. 46.

	MODI	FICATIONS: Marc Johnny Marzet	ch 3, 1959 tti		
INGREDIENTS	AMOUNT 828 Portions 18 D.C.P.*	AMOUNT 966 Portions 21 D.C.P.	AMOUNT 1104 Portions 24 D.C.P.	AMOUNT 1242 Portions 27 D.C.P.	AMOUNT 1380 Portions 30 D.C.P.
Ground Beef	120 lbs.	140 lbs.	160 lbs.	180 lbs.	200 lbs.
Green Pepper, Chopped	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Onions, Medium, Chopped	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Celery, Chopped	<b>3 1/4 qt.</b>	3 3/4 qt.	4 1/4 qt.	4 3/4 qt.	5 1/4 qt.
Salt	4 1/3 C.	5 C.	5 2/3 C.	6 1/3 C.	7 C.
Pepper	4 1/3 T.	5Т.	5 2/3 T.	6 1/3 Т.	7 Т.
Tomato Paste, #10 Can	4 1/2	5 1/4	ę	6 3/4	7 1/2
Tomato Juice Concentrate, 36 oz. Can	10	12	14	16	18
Water	9 gal.	11.1/2 gal.	13 gal.	14 1/2 gal.	16 gal.
Broad Noodles	66 lbs.	77 lbs.	88 lbs.	99 lbs.	110 lbs.
Sharp Cheese, Grated	18 1bs.	21 lbs.	24 lbs.	27 lbs.	30 lbs.
Procedure: 1. Brown meat in steam- 2. Add green pepper, or 3. Add tomato paste, to 4. Cook noodles in salt 5. Pan mix scaling 23 1 6. Top each pan with 1 7. Bake at 350° F. for 8. Size portion - 8 1/2 9. Amount of mix per D. 10. Number portions per	-jacketed kettle nions, celery, s omato juice and ted water; drain lb. l2 oz. per lb. grated chee 20 minutes. C.P 24 lbs. D.C.P 46.	alt and pepper; water; simmer. and add to meat D.C.P. se. 12 oz.	cook for 30 minu : mixture.	tes.	
* Deen Counter Pan (D C	P) Specificati	on. 20.75 inche	s long 12.75 ir	ches wide 4 12	inches deen

EXHIBIT 3F

incnes deep 1.16 אומני. n ווכופ c/ • 7 1 , ניוטו zu./> inches ueep counter ran (u.t.r.) specification:

COMMENTS:

Exhibit 3F indicates 18 deep counter pans as the initial amount column instead of 17 (Exhibit 3D) in order to maintain a more uniform weight of ground beef for ordering purposes. Additional amount columns were increased proportionately by three deep counter pans.

MODIFICATIONS:

Ingredient Information

- 1. Green peppers and onions
  - a. Converted from D.C.P. to gallon measure
  - b. Decreased peppers and increased onions to equalize measures (3 1/3 gallons each). This change did not alter flavor.
- Tomato juice substituted concentrated tomato juice and water for tomato juice (MSU food store request).
- 3. Tomato paste was changed from gallon to number ten can measure for all amount columns.

Procedure Information

1. Revised for clarity.

### Yield Information

1. Elimination of gallon measure in amount columns.

COMMENTS:

Exhibit 3F indicates 18 deep counter pans as the initial amount column instead of 17 (Exhibit 3D) in order to maintain a more uniform weight of ground beef for ordering purposes. Additional amount columns were increased proportionately by three deep counter pans.

MODIFICATIONS:

Ingredient Information

- 1. Green peppers and onions
  - a. Converted from D.C.P. to gallon measure
  - b. Decreased peppers and increased onions to equalize measures (3 1/3 gallons each). This change did not alter flavor.
- Tomato juice substituted concentrated tomato juice and water for tomato juice (MSU food store request).
- 3. Tomato paste was changed from gallon to number ten can measure for all amount columns.

Procedure Information

1. Revised for clarity.

### Yield Information

1. Elimination of gallon measure in amount columns.

	REV I SED	RECIPE: Septer Johnny Marzet	nber 1, 1959 :ti		
INGREDIENTS	AMOUNT 828 Portions 18 D.C.P.*	AMOUNT 966 Portions 21 D.C.P.	AMOUNT 1104 Portions 24 D.C.P.	AMOUNT 1242 Portions 27 D.C.P.	AMOUNT 1380 Portions 30 D.C.P.
Ground Beef	120 lbs.	140 lbs.	160 lbs.	180 lbs.	200 lbs.
Green Pepper, Chopped	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Onions, Medium, Chopped	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Celery, Chopped	3 1/4 qť.	3 3/4 qt.	4 1/4 qt.	4 3/4 qt.	5 1/4 qt.
Salt	4 1/3 C.	5 C.	5 2/3 C.	6 1/3 C.	7 C.
Pepper	4 1/3 T.	5Т.	5 2/3 T.	6 1/3 Т.	7 Т.
Tomato Paste,#10 Can	4 1/2	5 1/4	6	6 3/4	7 1/2
Tomato Juice Concentrate, 36 oz. Can	10	12	14	16	18
Water	9 gał.	11 1/2 gal.	l3 gal.	14 1/2 gal.	16 gal.
Broad Noodles	66 lbs.	77 lbs.	88 lbs.	99 lbs.	110 lbs.
Sharp Cheese, Grated	18 lbs.	21 lbs.	24 lbs.	27 lbs.	30 lbs.
Procedure: 1. Brown meat in steam- 2. Add green pepper, or 3. Add tomato paste, to 4. Cook noodles in salt 5. Scale 23 lbs. 12 oz. 6. Scale 1 lb. grated c 7. Bake at 350° F. for 8. Size portion - 8 1/2 9. Amount of mix per D. 10. Number portions per	-jacketed kettle nions, celery, s mato juice and ed water; drain per D.C.P. heese per D.C.P 20 minutes. C.P 24 lbs. D.C.P 46.	alt and pepper; water; simmer. and add meat mi . for topping. 12 oz.	cook for 30 minu ixture.	tes.	
* Deep Counter Pan (D.C.	.P.) Specificati	on: 20.75 inche	ss long, 12.75 in	ches wide, 4.12	inches deep

EXHIBIT 4

### EPILOGUE

The standardization and control program for Brody Residence Hall Food Service was initiated and completed during a six-month period, winter and spring terms, 1959. The finalization of the program's objectives produced a variety of future implications. These implications became realities as a result of employee involvement in the initial program and enthusiastic acceptance of controlled operating procedure. All personnel displayed visible and verbal signs of job confidence. They had participated in a program that crystallized each employee's role in the operation and the combination of individual roles for a successful operation. Without the possessive acceptance of the program on the part of the employees, further managerial refinements could not have materialized.

### Short Range Results

Brody Residence Hall

\* Forecasting meal counts for individual line service. 1959-1960 academic year.

The seven serving lines served three meals per day. The number of students served at each line for each meal was consistent on a day-to-day basis. Since the individual line counts represented specific living units, these counts varied as an aggregate for each meal. A precise method of forecasting individual line service per meal was made possible by using total number of portions prepared and established individual line meal counts. This provided close control of the food distribution. \* Increased casserole portion sizes. January 1960 through June 1961.

The original control program resulted in decreased operating costs. Top management wishes to return some of the profit to the student in the form of larger casserole portions. The increased portions were handled systematically with the necessary individual recipe alteration and retraining of service personnel.

\* Extra casserole portions allowed on request. 1961-1962 academic year.

In an effort to achieve greater student satisfaction, extra portions of casserole items were served only as students went through the serving lines. Students were not allowed to return to the lines after being served.

Residence Halls Expansion Program

- \* Case Hall, first coeducational undergraduate residence hall, serving 1,200, opened in September 1961. The Brody standardized recipes and portion control procedure were followed as a basic operating guide.
- \* Wilson Hall opened in September 1962. Since the residence hall was similar to Case, transfer of operating procedure resulted.
- \* Wonders and McDonel Halls operations were initiated in September 1963. Both halls were identical to Wilson and incorporated duplicate procedures.
- \* Fee and Akers Halls are scheduled for completion in September 1964. Both halls will be identical to Wonders and McDonel and will adapt similar practices.

Long Range Implication

### Computer Based Management

Marston has indicated potential application of computers to food services at Michigan State University (5). The existing facilities of the University Computer Laboratory with particular reference to a CDC 3600 computer system and an IBM 1401 data processing system could be utilized in residence halls food service operations.

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MODIFICATIONS: January 20, 1959 Johnny Marzetti

INCREDIENTS	APPROX AMOUNT	APPROX AMOUNT	APPROX AMOUNT	APPROX AMOUNT
	30 Gal.	50 Gal.	60 Gal.	75 Gal.
	450 Portions	750 Portions	900 Portions	<b>1125 Portions</b>
	10 D.C.P.*	17 D.C.P.	20 D.C.P.	25 D.C.P.
Ground Beef	67 1/2 lbs.	112 lbs.	135 lbs.	168 lbs.
Green Pepper, Chopped	32	53	64	80
Onions, Medium, Chopped	32	53	64	80
Celery, Chopped	21 stalks	35 stalks	42 stalks	52 stalks
Salt	2 1/2 C.	4 C.	5 C.	6 1/4 C.
Pepper	2 1/2 T.	4 T.	5Т.	6 1/4 T.
Tomato Paste	2 1/2 gal.	3 3/4 gal.	5 gal.	6 1/4 gal.
Water	1 1/2 gal.	2 1/2 gal.	3 gal.	3 3/4 gal.
Tomato Juice, #5 Can	7	12	14	17
Broad Noodles	35 lbs.	58 lbs.	70 lbs.	87 lbs.
Sharp Cheese, Grated	20 lbs.	33 lbs.	40 lbs.	50 lbs.
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Procedure:

Brown meat for 15 minutes. -

Add green pepper, onions, celery, salt and pepper.

Add tomato paste, water and tomato juice; simmer. 6.0. <del>f</del>. . . .

Cook noodles in well salted water.

When noodles are done, drain and mix with meat sauce. Cover top of mixture with grated cheese. Bake in oven for approx. 20 minutes at 350° F.

\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

COMMENTS:

Exhibit 3D shows a fourth yield (50 gallons) which was calculated prior to January 20, 1959. Fifty gallons was selected as the probable amount for the forecasted needs.

MODIFICATIONS:

Ingredient Information No change.

Procedure Information

No change.

Yield Information

No change.

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MODIFICATIONS: February 10, 1959 Johnny Marzetti

I NGRED I ENTS	AMOUNT	AMOUNT	AMOUNT	AMOUNT
	30 Gal.	50 Gal.	60 Gal.	75 Gal.
	450 Portions	782 Portions	920 Portions	1150 Portions
	10 D.C.P.*	17 D.C.P.	20 D.C.P.	25 D.C.P.
Ground Beef	67 1/2 lbs.	112 lbs.	135 lbs.	168 lbs.
Green Pepper, Chopped	32	31 1/2 lbs. or 1 1/2 D.C.P.	64	80
Onions, Medium, Chopped	32	21 lbs. or 1 D.C.P.	64	80
Celery, Chopped	21 stalks	5 1/2 lbs. or 2/3 gal.	42 stalks	52 stalks
Salt	2 1/2 C.	4 C.	5 С.	6 1/4 C.
Pepper	2 1/2 Т.	4 Т.	5Т.	6.1/4 T.
Tomato Paste	2 1/2 gal.	4 1/2 #10 Cans	5 gal.	6 1/4 gal.
Water	1 1/2 gal.	2 1/2 gal.	3 gal.	3 3/4 gal.
Tomato Juice, #5 Can	7	12	14	17
Broad Noodles	35 lbs.	58 lbs.	70 lbs.	87 lbs.
Sharp Cheese, Grated	20 lbs.	33 lbs.	40 lbs.	50 lbs.

rocedure:

Brown meat for 15 minutes. -

Add green pepper, onions, celery, salt and pepper. Add tomato paste, water and tomato juice; simmer.

Cook noodles in salted water, drain and add to meat mixture.

Pan mix scaling 23 lbs. 12 oz. per D.C.P. Top each pan with 1 lb. grated cheese. Bake at 350<sup>o</sup> F. for 20 minutes.

Size portion - 8 1/2 oz. Amount mix per D.C.P. - 24 lbs. 12 oz. Number portions per D.C.P. - 46. 0 0 8 7 6 7 F 9 7

\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

COMMENTS:

Exhibit 3E indicates the same four yield columns as 3D, but the 50 gallon column reveals the ingredient conversions resulting from January 20 production. Fifty gallons was selected as the amount to be prepared for February 10. No other yield columns were converted until the 50 gallon amount could be verified by repetition.

During the January 20 preparation of 3D, the counter pan amount (D.C.P.) was determined as 24 lbs. 12 oz. and the total counter pan yield was 17 deep counter pans for 50 gallons of mix. The size portion, 8 1/2 oz., and the number of portions per pan, 46, were established.

MODIFICATIONS:

Ingredient Information

- 1. Green peppers and onions were converted from individual count to
  - a. weight
  - b. amount per deep counter pan (D.C.P.).
- Celery was converted from individual stalk to

   weight
  - b. measured amount.
- 3. Tomato paste was changed from gallon to number ten can measure.

Procedure Information

- 1. Revised for clarity.
- 2. Grated cheese allowance of one pound per counter pan for topping.
- 3. Yield information included in procedure.

Yield Information

- 1. Size portion 8 1/2 oz.
- 2. Amount mix per D.C.P. 24 lbs. 12 oz.
- 3. Number of portions per D.C.P. 46.

Ground Beef Green Pepper, Chopped	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Ground Beef Green Pepper, Chopped	828 Portions 18 D.C.P.*	966 Portions 21 D.C.P.	<pre>1104 Portions 24 D.C.P.</pre>	1242 Portions 27 D.C.P.	1380 Portions 30 D.C.P.
Green Pepper, Chopped	120 lbs.	140 lbs.	160 lbs.	180 lbs.	200 lbs.
	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Onions, Medium, Chopped	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Celery, Chopped	3 1/4 qt.	3 3/4 qt.	4 1/4 qt.	4 3/4 qt.	5 1/4 qt.
Salt	4 1/3 C.	5 C.	5 2/3 C.	6 1/3 C.	7 C.
Pepper	4 1/3 T.	5Т.	5 2/3 T.	6 1/3 Т.	7Т.
Tomato Paste, #10 Can	4 1/2	5 1/4	Q	6 3/4	7 1/2
Tomato Juice Concentrate, 36 oz. Can	10	12	14	16	18
Water	9 gal.	11.1/2 gal.	l3 gal.	14 1/2 gal.	l6 gal.
Broad Noodles	66 lbs.	77 lbs.	88 lbs.	99 lbs.	110 lbs.
Sharp Cheese, Grated	18 1bs.	21 lbs.	24 lbs.	27 lbs.	30 lbs.
Procedure: 1. Brown meat in steam-j	acketed kettle				
<ol> <li>Add green pepper, oni</li> <li>Add tomato paste, tom</li> </ol>	ions, celery, s mato juice and	alt and pepper; water; simmer.	cook tor 30 minu	tes.	
<ul> <li>4. Cook noodles in salte</li> <li>5. Pan mix scaling 23 lb</li> </ul>	ed water; drain os. 12 oz. per	and add to meat D.C.P.	: mixture.		
6. Top each pan with 1 1 7. Bake at 350 <sup>0</sup> F. for 2	lb. grated chee 20 minutes.	se.			
8. Size portion - 8 1/2 9. Amount of mix per D.C	oz. .P 24 lbs. .C B _ 1.6	12 oz.			

EXHIBIT 3F

COMMENTS:

Exhibit 3F indicates 18 deep counter pans as the initial amount column instead of 17 (Exhibit 3D) in order to maintain a more uniform weight of ground beef for ordering purposes. Additional amount columns were increased proportionately by three deep counter pans.

MODIFICATIONS:

Ingredient Information

- 1. Green peppers and onions
  - a. Converted from D.C.P. to gallon measure
  - b. Decreased peppers and increased onions to equalize measures (3 1/3 gallons each). This change did not alter flavor.
- 2. Tomato juice substituted concentrated tomato juice and water for tomato juice (MSU food store request).
- 3. Tomato paste was changed from gallon to number ten can measure for all amount columns.

Procedure Information

1. Revised for clarity.

Yield Information

1. Elimination of gallon measure in amount columns.

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REVISED RECIPE: September 1, 1959 Johnny Marzetti

I NGRED I ENTS	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
	828 Portions 18 D.C.P.*	966 Portions 21 D.C.P.	1104 Portions 24 D.C.P.	1242 Portions 27 D.C.P.	1380 Portions 30 D.C.P.
Ground Beef	120 lbs.	140 lbs.	160 lbs.	180 lbs.	200 lbs.
Green Pepper, Chopped	3 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Onions, Medium, Chopped	<b>3</b> 1/3 gal.	4 gal.	4 2/3 gal.	5 1/3 gal.	6 gal.
Celery, Chopped	3 1/4 qť.	3 3/4 qt.	4 1/4 qt.	4 3/4 qt.	5 1/4 qt.
Salt	4 1/3 C.	5 c.	5 2/3 C.	6 1/3 C.	7 C.
Pepper	4 1/3 T.	5Т.	5 2/3 Т.	6 1/3 Т.	7 Т.
Tomato Paste,#10 Can	4 1/2	5 1/4	6	6 3/4	7 1/2
Tomato Juice Concentrate, 36 oz. Can	10	12	14	16	18
Water	9 gal.	11 1/2 gal.	l3 gal.	14 1/2 gal.	l6 gal.
Broad Noodles	66 lbs.	77 lbs.	88 lbs.	99 lbs.	110 lbs.
Sharp Cheese, Grated	18 lbs.	21.1bs.	24 lbs.	27 Ibs.	30 lbs.
Procedure: 1. Brown meat in steam-	jacketed kettle				

Add green pepper, onions, celery, salt and pepper; cook for 30 minutes.

Add tomato paste, tomato juice and water; simmer.

Cook noodles in salted water; drain and add meat mixture. Scale 23 lbs. 12 oz. per D.C.P. Scale 1 lb. grated cheese per D.C.P. for topping. Bake at 350° F. for 20 minutes. Size portion - 8 1/2 oz. Amount of mix per D.C.P. - 24 lbs. 12 oz.

Number portions per D.C.P. - 46.

\* Deep Counter Pan (D.C.P.) Specification: 20.75 inches long, 12.75 inches wide, 4.12 inches deep

### EPILOGUE

The standardization and control program for Brody Residence Hall Food Service was initiated and completed during a six-month period, winter and spring terms, 1959. The finalization of the program's objectives produced a variety of future implications. These implications became realities as a result of employee involvement in the initial program and enthusiastic acceptance of controlled operating procedure. All personnel displayed visible and verbal signs of job confidence. They had participated in a program that crystallized each employee's role in the operation and the combination of individual roles for a successful operation. Without the possessive acceptance of the program on the part of the employees, further managerial refinements could not have materialized.

### Short Range Results

Brody Residence Hall

\* Forecasting meal counts for individual line service. 1959-1960 academic year.

The seven serving lines served three meals per day. The number of students served at each line for each meal was consistent on a day-to-day basis. Since the individual line counts represented specific living units, these counts varied as an aggregate for each meal. A precise method of forecasting individual line service per meal was made possible by using total number of portions prepared and established individual line meal counts. This provided close control of the food distribution. \* Increased casserole portion sizes. January 1960 through June 1961.

The original control program resulted in decreased operating costs. Top management wishes to return some of the profit to the student in the form of larger casserole portions. The increased portions were handled systematically with the necessary individual recipe alteration and retraining of service personnel.

In an effort to achieve greater student satisfaction, extra portions of casserole items were served only as students went through the serving lines. Students were not allowed to return to the lines after being served.

Residence Halls Expansion Program

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- \* Wilson Hall opened in September 1962. Since the residence hall was similar to Case, transfer of operating procedure resulted.
- \* Wonders and McDonel Halls operations were initiated in September 1963. Both halls were identical to Wilson and incorporated duplicate procedures.
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Long Range Implication

Computer Based Management

Marston has indicated potential application of computers to food services at Michigan State University (5). The existing facilities of the University Computer Laboratory with particular reference to a CDC 3600 computer system and an IBM 1401 data processing system could be utilized in residence halls food service operations.

<sup>\*</sup> Extra casserole portions allowed on request. 1961-1962 academic year.

The IBM 1401 is designed to facilitate the processing of all business data such as billing operation, invoice numbering, central inventory control and summary punching. The food service industry operates with variations of all the listed processes. The IBM 1401 is currently processing limited food service payroll data, but could be further extended to process sales analysis, inventory control, ordering, accounts receivable and payable. At the present time, preliminary investigation is being conducted to incorporate some food service control data to an IBM 1401 program.

Marston has indicated the applicability of the CDC 3600 computer for menu planning (5). In September 1964, all Michigan State residence hall food services will be operating with standard cycle menus. The supervisory participation in processing all the food service unit variables into standard menus has indicated the need for a less costly and time consuming method of menu planning. The program developed by Joseph Balintfy at Tulane University may have practical application to the menu planning needs at Michigan State University (2).

Prior to any computer program planning, basic recipe standardization is essential. The initial recipe standardization and portion control program in operation at Brody Hall could be reviewed and revised as a basis for the type of recipe standardization necessary for computer programming.

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- Balintfy, Joseph L. "Mathematical Programming for Menu Planning." Paper read at the Industrial Engineering Hospital Seminar, Ann Arbor, February, 1964.
- 3. Callahan, James F. "Recipe Expansion Made Easy," <u>Institutions</u>, XXXXVI, No. 2 (February, 1960), pp. 10, 116-118.
- 4. Greer, Thelma. "Setting Up a Recipe File," <u>American Restaurant</u>, XLV, No. 16 (August 15, 1961), pp. 41-43.
- 5. Marston, Linda M. "Application of Computer Programming." Unpublished master's thesis, Michigan State University, 1964.

APPENDIX

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EXHIBIT 5A

## MEN'S RESIDENCE HALLS MENUS Winter Term, 1959

Cycle |

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Mar.	
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Feb.	
27.	
Jan.	
6,	
Jan.	
Tuesday,	

BREAKFAST	LUNCHEON	DINNER
Blended Juice	Cream of Celery Soup, Crackers	Roast Pork, Gravy
or Applesauce	Hot Dogs and Buns	Grilled Beef Patties
Assorted Cereals	Chopped Onions, Catsup, Mustard, Relish	Parsley Buttered Potatoes
Cream of Wheat	Spanish Rice	Rice
Sausage Links and Pancakes	Salads	Whole Grain Corn
Hot Cross Buns	l. Gracie's Coleslaw	Salads
Svrup	2. Apricot Cream Cheese Salad	l. Blushing Pear
		2. Celery Cabbage Salad
loast, Marmalade, Butter	Assorted Breads, Butter	Assorted Breads, Butter
Coffee, Tea, Cocoa, Milk	Desserts	Desserts
	l. Butterscotch Brownies	l. Butter Pecan Slices
	2. Half Grapefruit	2. Chocolate Cream Pie
	Coffee, Tea, Milk	Coffee, Tea, Milk

Tuesday, Jan. 13, Feb. 3, F	<sup>-</sup> eb. 24, Mar. 1 <u>7</u>	
BREAKFAST	LUNCHEON	DINNER
Apple Juice	Cream of Corn Soup, Crackers	Veal Cutlets, Tomato Sauce
or Whole Orange	Hamburgers and Buns	Roast Pork, Gravy
Assorted Cereals	Western Scrambled Eqgs and Buns	Oven Browned Potatoes
		Rice
Uatmeal	catsup, mustard, rickies, Sliced Onions	Baked Mashed Squash
Eggs, Any Style	Salads	Buttered Broccoli
Sweet Rolls	-	Salad Dressings, Catsub, Vinegar
Toast Butter, Marmalade	I. Lettuce, Iomato	
	2. Peach and Prune Salad	Salads
Coffee, Tea, Milk, Cocoa	Desserts	l. Waldorf
		2. Head Lettuce, Assorted Dressings
	l. Coconut Cookies	Assorted Breads, Butter
	2. Whole Banana	Desserts
	Coffee, Tea, Milk	l. Pineapple Upside Down Cake
		2. Blue Plums
		Coffee, Tea, Milk

EXHIBIT 58

### MEN'S RESIDENCE HALLS MENUS Winter Term, 1959

Cycle ||

	Lycie III	
Tuesday, Jan. 20, Feb. 10, Ma	r. 3	
BREAKFAST	LUNCHEON	DINNER
Orange Juice	Vegetable Soup, Crackers	Country Fried Steaks, Gravy
Royal Ann Cherries	Hero Sandwiches	Corned Beef Hash
Farina	Johnny Marzetti	Mashed Potatoes
Assorted Cereals	Salads	Rice
Ecc. Any Stulo		Cabbage Wedges
Eggs, Any Style		Buttered Mixed Vegetables
Sweet Ralls	2. Molded Fruit Cocktail	Salads
Toast, Jelly, Butter	Desserts	l. Banana and Pineapple
Coffee, Tea, Milk, Cocoa	l. Cherry Square	2. Tossed Salad
	2. Canned Peaches Slices	Assorted Bread, Butter Corn Bread
	Coffee, Tea, Milk	Desserts
		l. Strawberry Ice Cream
		2. Prune Whip, Custard Sauce
		Coffee, Tea, Milk

EXHIBIT 5C

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## MEN'S RESIDENCE HALLS MENUS Winter Term, 1959

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### SCHOOL OF HOME ECONOMICS MICHEGAN STATE COLLECE EAST LANSING, MICHIGAN

### M.S. 1964 Problem

### Emerson, Marian Ruth

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