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SOME CHANGES IN NAVAJO DIET<sup>1</sup>

by

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The Navajo are a culturally flexible people. One of the indices of this is the thoroughness and comparative ease with which they have changed their food habits during their history. This report presents an analysis of some of the major changes in Navajo diet in the past, and the present, with some predictions regarding their possible future food habits.

What the Navajo diet was when they migrated from the north has been lost in pre-history. By the time they were contacted by Europeans, they had a whole complex of food elements that they could not have had prior to their entry into the southwest, but which was so well integrated into their culture that their traditions dealt with it instead of with whatever they had had prior to migration. It is probable that certain elements were carried over into the new dietary pattern, but it is impossible to be certain what the elements, if any, were. Some hypotheses can be made. In all probability, Navajos were a hunting and gathering people prior to migration. Their diet therefore most likely consisted of plants, seeds and game which they could obtain from the environment. One would expect a heavy reliance on seeds, nuts, roots, berries and small animals such as rabbits, squirrels, prairie dogs, etc.

The first major change in Navajo diet came with the Navajo introduction to agriculture. Corn, beans and squash became staples. Some continuation of food gathering doubtless continued, and animal protein continued to come from game animals. Navajos may have traded for some food (Elmore 1938:151).

In the next major change, Navajos either added items imported from the old world, or substituted them for other items. Sheep, goats, horses, mules and burros were quickly added to the Navajo menu (Elmore 1938:153). Peaches and melons also spread rapidly - even faster than actual direct contact with Europeans.

The conquest by the North Americans and the captivity at Fort Sumner introduced coffee, tea and milled wheat flour (Kluckhohn & Leighton 1946:48). After some initial difficulty (Dyk 1938:73), coffee and wheat flour became staple items of the diet, wheat flour even rivaling corn in importance.

Since that time, the Navajo food complex has changed more or less continually as certain items have dropped out and other items have been added. Attention in this report is focused on the most recent of these changes.

There has probably always been a certain amount of variation in Navajo diet from one group to another. At least early writers have been by no means uniform in the diet items

they have managed to record. Bailey made this quite clear. She pointed out that Matthews mentioned twenty-one ancient foods in his article on the Night Chant, eleven of which were mentioned by Bailey's informants. He mentioned six additional items which were also known to Bailey's informants. The Franciscan Fathers listed 120 foods, of which thirty-six were mentioned by Bailey's informants. Hill mentioned fourteen items, of which seven were known to Bailey's informants. Bailey herself listed seventy-eight items, of which only forty had been previously mentioned in the literature (Bailey 1940:272). Thus there is no real correspondence in the lists obtained by various researchers. In no case did Bailey's informants know more than half of the items mentioned on any other list and almost half of the items they themselves knew were foods which did not appear on any other list. To account for this one must either postulate a considerable amount of change in Navajo food pattern within a forty year period, or else a variability from one group of Navajos to another. Both factors may actually apply.

Several writers have recorded what Navajos considered their traditional diet. The food items listed in these reports are traditional, of course, only in one sense: they were eaten by one or two generations preceding that of the informant. For the purposes of this paper, the Navajo diet of the late 1800's is considered as a base line. This diet

included items adopted as a result of Fort Sumner, such as coffee, tea and milled flour; post-columbian items such as sheep, goat, horse, mule, burro, peaches, melons; and pre-columbian items, such as corn, beans, squash, plus the many wild foods which continued to be gathered, and some game.<sup>2</sup>

Data for the analysis of present day food habits among the Navajo were collected while the author was resident anthropologist at the Navajo-Cornell Field Health Research Project, Many Farms, Arizona, during 1958-59. This project supported a clinic for the purpose of investigating Navajo medical problems and attitudes. The medical clinic served people from an area thirty miles long by thirty-three miles wide (Young 1957:39). The area included the low-lying Chinle Valley, the slightly higher Carson Mesa and Rough Rock plateau, and parts of the high Black Mountain mesa. The population in the area at the time of the study was 2,371, according to a census taken in April, 1958 (Young 1958:43). Family menus are taken from this population.

Four main approaches to the study of Navajo diet were used.

1) A food inventory was taken in the three trading posts within the geographical boundaries of the area served by the Many Farms Clinic. The trader in each was subsequently interviewed for his estimate of the quantities sold to Navajos of each item on the inventory list. Since none of the traders

had a record of purchases available, this was the only way some estimate of quantities sold could be obtained. All of the area traders cooperated fully in this boring and time consuming task.

2) The traders made available for examination purchase records of families. The purchases of six families from each trading post were examined. All three traders followed the same basic system in granting credit. The purchases made by a family were listed and the bill was placed in the family's account until it was paid. Once the account was paid off, the bills were returned to the family. Consequently, the trader had no record of purchases that had been paid. He did not have records of purchases made by people who paid cash, so he did not have records of purchases made by families without accounts, nor did he have records of occasional cash purchases made by members of families which did have accounts. Two of the traders did not permit bills to get very large or to remain unpaid for more than about a month; the third trader advanced about twice as much credit. The difference was obvious in the time period covered by the purchase records of each family, and in the amount of goods recorded.

3) Menus of Navajo meals were recorded. Data for this were collected two ways: a) five families were visited long enough to get a complete twenty-four hour record of diet; b) a Navajo staff member, Mr. William Morgan, the assistant

and interpreter for the anthropologist, visited a sample of Navajo families with a questionnaire on diet in summer and in fall.

4) A survey questionnaire was mailed to the 108 trading posts listed on Tribal rolls asking about food sales.

This report does not attempt to present the full findings obtained by these methods. Rather than concentrating on a description of present day Navajo diet which is complete with quantities, this report presents information on the changes which are occurring in Navajo food habits. The admonition must be made at this point that the focus of this paper will inevitably tend to give a somewhat distorted picture of Navajo eating habits. New foods have not entirely nor even importantly replaced more traditional items in many cases. The fact that there has been a striking increase in the use of a particular item does not mean that all Navajos now consume the item at every meal, every day, or even every month. It does mean that an item not formerly eaten by Navajos is now being consumed by some Navajos, presumably the more acculturated ones, who have had opportunities to acquire new tastes in food, and who have sufficient financial capital to indulge those tastes.

With that caution in mind, let us examine the data obtained from the techniques outlined above.

1) Inventory and estimated sales to Navajos.

The items in the inventory list from each trading post were classified as good sellers, moderate sellers, poor sellers and items stocked but seldom or never purchased by Navajos.

Good sellers were those which sold at least two cases a week or the equivalent per one hundred families - a family being defined by the traders as parents and unmarried offspring living with them.

Moderate sellers were those items which sold at a rate of one-half to two cases or the equivalent per week per one hundred families.

Poor sellers were those items which sold at a rate of less than one half case or the equivalent per week per one hundred families.

Some variation occurred between trading posts on the classification of various items. The two traders in the Chinle Valley generally made similar classifications, although some items were reported to sell better in one store than the other. The Rough Rock trader, however, often reported quite a different selling pattern for specific items. One possible reason for this was the different accessibility of the three trading posts. The stores in the Chinle Valley were on a major transportation route within the reservation. People traveling from the north central part of the reservation to

Gallup or Flagstaff passed along this road. This advantage was increased in the case of the southernmost trading post, called Valley Store. A major transportation branch road from the west joined the Chinle Valley road north of the trading post so that Valley Store sold to transients not only from the north central part of the reservation, but also from C'rson Mesa, Kayenta, and north eastern parts of Black Mountain. Another possible reason for the different pattern of sales was the amount of cash available in the two areas. More credit generally had to be extended at Rough Rock than at the other two posts, indicating that there was probably less money available to Rough Rock Navajos.

Following is a list of the items classified as good sellers (at least two cases of the equivalent per week per hundred families) in all three of the area trading posts. The best sellers in this list are in the first two columns.

flour	fresh meat	evaporated milk
bread	lard	cookies
soda pop	shortening*	oranges
candy	melon (seasonal)	onions
pastry	coffee	apples
		sugar
		potatoes
		potato chips

"Shortening\*" refers to hydrogenated vegetable shortening. All of the area traders stock both lard and various brands of vegetable shortening.

Of interest are items which were reported as good sellers at one trading post but not at the other two. Red Ridge (in the Chinle Valley) classified as good sellers:

- canned Torrido peppers
- fried chicken
- salt
- canned whole chili peppers
- canned Vienna sausage
- peanuts
- canned peaches

The Red Ridge trader was able to sell fried chicken because he had installed a barbecue machine. Neither of the other traders had one.

Only Valley Store classified as good sellers:

- bananas
- canned luncheon meat
- canned orange juice
- peanut butter
- dry cereal (such as Cornflakes)
- baking powder

The last item on the list, baking powder, was given away by the trader with each sack of flour weighing twenty-five pounds or more.

Rough Rock alone classified cabbage and chewing gum as good sellers. The trader stated that his trading post sold more cabbage than any other trading post on the reservation. He had no idea why, he said, nor what it was used for (animal or human food).

A few additional items were reported as good sellers from two stores but not the third. Red Ridge and Valley

Store, the two Chinle Valley trading posts, reported canned baby food, jams, jellies, syrup and Kool-aid on the high selling list. They were classified as moderate or poor sellers at Rough Rock. Crackers were classified as good sellers at Rough Rock and Red Ridge, but only moderate at Valley Store.

Items classified as moderate sellers (selling from one-half to two cases or the equivalent per week per one hundred families) are also of interest. It is on this list that some of the newer items in the Navajo diet can be found. Items reported as moderate sellers by all three traders were:

corn meal	oatmeal	corned beef
canned pears	ice cream	canned tomatoes
eggs	fresh milk	canned pork & beans

There were some items classified as moderate sellers at one trading post which did not sell enough to reach that category at the other trading posts in the area. Only Red Ridge classified tomato juice, lemons, applesauce and canned soup in the moderate selling category. The other two traders did not stock lemons regularly and classified the rest of the items as either poor sellers or as having no sale to Navajos.

Rough Rock alone reported as moderate sellers dried pinto beans, which the other two traders did not even have when the inventory was taken; and sardines, which the other two traders reported as poor sellers.

Valley Store reported the greatest number of items as moderate sellers which the other traders either did not stock or which had a poor sale. Items classified as moderate sellers by the Valley Store trader which were not present in the inventory of either Red Ridge or Rough Rock were:

celery	dog food	peach nectar
fresh chili	gelatin	fresh carrots
tropical punch	pear juice	

Dog food was a cheap source of protein for people. It was seldom if ever fed to dogs.

Items classified as moderate sellers by the trader at Valley Store, as having poor or no sale to Navajos at Rough Rock, and missing from the inventory at Red Ridge were:

beef stew	canned beans	tomato sauce
marshmallows	salad dressing	apricot nectar

Items stocked by all three traders but classified as moderate sellers only by the trader at Valley Store, and as poor sellers or having no sale to Navajos in the other stores were:

mayonnaise	hot sauce	baby cereal
cake mix	raisins	pancake mix
tea		

Fresh tomatoes were classified as moderate sellers at Valley Store, poor sellers at Red Ridge, and were not stocked at Rough Rock at the time of the inventory, although they were later.

Items which were moderate sellers at both Red Ridge and Valley Store but not at Rough Rock included:

margarine	fruit cocktail	canned creamed corn
cheese	corned beef hash	canned spaghetti
lettuce	cream of wheat	canned sweet potatoes
tenderoni	sandwich spread	pineapple juice
Hi-C Orange		

Lettuce and pineapple juice were not present in the inventory of the Rough Rock trading post. The other items were but were classified as having poor or no sale to Navajos.

Red Ridge and Rough Rock reported moderate sales of crackerjacks while Valley Store did not have any in the inventory at the time it was taken. Valley Store and Rough Rock reported corned mutton among the moderate sellers but it was not present in the Red Ridge inventory.

The poor sellers (selling less than one half case or the equivalent per hundred families per week) are also of interest since at least some Navajos were buying these items occasionally.

All three of the Clinic area trading posts reported canned spinach, canned peas, tamales & sauce, Spanish rice and uncooked rice as poor sellers.

Red Ridge reported yeast as a poor seller, the other two trading posts did not report it at all.

Rough Rock reported V-8 juice, popcorn, hot cherry peppers, potted meat, canned chicken and prune juice as poor sellers. The first three items were not on the inven-

tory list at Red Ridge or Valley Store. Canned chicken was not on the inventory list at Valley Store, and prune juice was not on the inventory list at Red Ridge.

Once again Valley Store reported the greatest number of items which were sold to Navajos, but slowly, and which the other traders either did not stock or did not sell to Navajos. This list included:

Wheatena	canned weiners	canned apricots
apple butter	spiced peaches	canned chopped chili
pickles	Hawaiian punch	canned fruit salad
mustard	Beanie weenies	Salsa de chili fresca
cocoa	canned pumpkin	chocolate syrup
hominy	canned carrots	dried apricots
Bisquick	pudding mix	Jalapenas
bean dip	apple cider	dried prunes
dried milk		

Red Ridge and Rough Rock sold sliced pineapple, chili and tomato, tunafish and salmon which were not sold to Navajos or not stocked at Valley Store. Valley Store and Rough Rock sold canned plums, which were not on the inventory at Red Ridge.

Some items were stocked by traders which were never purchased by Navajos, so far as the traders knew. Oysters and vinegar were stocked by all three posts but the traders said they did not sell any to Navajos. Red Ridge and Valley Store stocked pie filling, powdered sugar, canned white potatoes, boned chicken, ripe olives and canned sauerkraut. All three of the area traders stocked some items which none of the other trading posts in the area stocked, and which had little or no sale to Navajos.

Only Red Ridge stocked: baking soda, chopped olives, vanilla extract, instant potatoes, fresh grapefruit.

Only Valley Store stocked:

apple juice	chocolate bits	canned lima beans
Mexicorn	fruit sections	enchilada sauce
gingerale	canned shrimp	canned asparagus
brown sugar	canned tongue	Tom Collins mix
corn niblets		

Only Rough Rock stocked:

honey	instant coffee	canned kidney beans
dried beef	Spanish olives	instant chocolate
tapioca	Kadota figs	Baker's chocolate
Minute rice	corn starch	barbecue sauce

All three traders had a small but steady non-Indian trade. Presumably they stocked the items mentioned above, which they did not sell to Navajos, for the non-Indians and for their own use. The list is of interest because it indicates to some extent what food items were available in the immediate environment of the Navajos if any cared to experiment. The traders apparently had not tried to encourage Navajos to use any of the items mentioned above. It is interesting to speculate what might happen if any trader made systematic attempts to introduce a particular item, for example corn niblets, through a series of giveaways.

The traders themselves made a few comments on changes in Navajo buying habits. The trader at Red Fidge had previously had a trading post on Black Mountain. He said that there people bought a lot of condensed milk and salt pork, but that in the Chinle Valley neither of those items sold even moderately well.

The trader from Rough Rock commented that the sale of raisins had recently dropped to about one fourth its former volume because bootleggers had turned to smuggling liquor into the reservation instead of making it themselves. Canned milk had increased tremendously in sales, It was being used, however, not for human consumption but for feeding spring lambs since the ewes did not have enough milk because of a dry year which resulted in poor forage. This reveals the Navajo values towards lambs, since the economic value of lamb, mutton, or even wool cannot equal the cost of raising a lamb on canned milk.

The trader at Rough Rock did not stock lard during the summer months because it was messy and hard to handle in the heat. Patrons of this trading post then had to make a forced shift to vegetable fats. The trader said there were no complaints and people continued to buy shortening even though it was not the type to which they were accustomed. The trader may have been unaware of dissatisfaction because of Navajo reluctance to complain to him. Certainly not all Navajos regarded lard and vegetable shortening as equally acceptable. Several complained to the author that vegetable shortening simply melted away in the frying pan and there never seemed to be anything left. Therefore, they said, they had to use much more vegetable shortening than they did lard. Some also complained that vegetable shortening did not seem to fry food so well.

2) Family purchases.

Since the purchases of only six families from each trading post were studied, a certain amount of bias is inevitable. In addition, the families who had bills at trading posts were not randomized within the area. Families who could afford or who preferred to pay cash did not have any bills. Families which had a reasonable cash income did not have a large account, and therefore the record of their purchases did not cover a long period of time. Consequently, one bias is that the purchase records studied came from families which were poorer and probably also less acculturated. Considering the wide variety of items offered by all of the trading posts, it is not surprising that many items were not represented on any of the purchase records. If the assumption is correct that the families represented in the purchase list sample were the poorer families of the area, one would not expect them to spend their scarce capital on luxury items.

One hundred and thirty-nine bills were examined from eighteen families - a bill was considered the record of one day's purchases, not the entire account. The largest number of bills from any one family was twenty-two, from a family trading at Rough Rock. The smallest number was two, from a family trading at Red Ridge. The median number of bills per family was six. Tables 3 and 4 list the items purchased and the number of families who purchased them.

A total of eighty-seven items was recorded on these bills. Some items, such as oranges and orange juice, or jams and jellies were combined. Tables 5 through 8 break down the general categories meat, fruit, vegetables and table spreads into the specific items purchased in each category. Some items were listed as "unspecified" because they were not fully identified on the bills. Fruit, for example, was often recorded with no indication of what type it was, or whether it was canned or fresh. Canned goods and candy were also often recorded by the general term, with the exception of crackerjacks. What was recorded on the bills as "lard" is in the table as "fat-unspecified" because all of the traders recorded any kind of shortening as lard, even when it was hydrogenated vegetable shortening. Milk was not identified as canned, fresh or powdered. The traders when asked said they thought most of it was canned. Quantities were not listed on the bills at any of the trading posts. Fresh and canned vegetables were never distinguished. Both fresh and canned tomatoes and chili peppers were stocked at Valley Store and Red Ridge. Rough Rock did not stock fresh tomatoes at the time of the inventory but did at other times.

All traders gave "due bills" or their equivalent to their customers. These due bills were used as cash and so no record was made of the items purchased with the due bill. The sale was either recorded as "due bill" or "merchandise" with the total amount of money spent.

All of the melon sales were from Valley Store. That is due to the time when the data were collected. The other two trading posts were not yet stocking melons when they were visited. Had the visit to Valley Store been earlier, or later after the local melon crop had ripened, the melon sales would probably have been lower.

The high consumption of soda pop as shown on Table 3 comes as no surprise to anyone familiar with Navajo. It is of interest, however, to note that (judging on the basis of the amount of money spent), cases of soda pop or even quart bottles to take home were only purchased on nine bills out of ninety. The rest of the purchases were individual bottles or cans. This observation coincides with the report of Adams. He notes that soda pop seems to serve the same function among the Navajo as tea does among the Chinese. "It is the lubricant of Navaho commerce."(1963:210).It is purchased immediately upon entering the store, it is usually the last item purchased, it is purchased to call a halt to trading procedures, particularly when trading becomes heated, it is given as a reward for paying off a bill, or in apology by a trader who was in the wrong in an argument (ibid).

The psychology of treating helps to explain a number of Navajo purchases. Soda pop, ice cream, and cigarettes were in the class of treats in the Many Farms Clinic area.

These items were purchased in small amounts for immediate consumption when the trading post was visited - which once had been a rare and exciting event, and still was to many families. Even when quart bottles of soda were purchased to take home, there was rarely enough to last until the next trading post visit, except in the case of families who lived within walking distance of the trading post. Cigarettes, like soda pop and ice cream, were purchased by the pack rather than by the carton or case, and were shared with friends and acquaintances.

Trading posts in the Many Farms Clinic area were comparatively well stocked, if the trading post at Shonto is taken as a standard. Except for graham crackers, whole wheat flour, and pepper (which was probably overlooked by the author during the inventories), area traders had all of the items stocked by Shonto (Adams 1963:177) and over one hundred additional ones.

### 3) Family menus

Some of the best ways to find out what food people eat are to eat with them, observe them eating, or to ask them what they have eaten at a particular meal. All three procedures were followed in the Many Farms Clinic area. Most of the reported or observed items were familiar ones - mutton, coffee, wheat flour fried bread and potatoes. Some items were new, however, and some items appeared in unexpected contexts - such as hot peppers on a breakfast menu.

Tables 9, 10 and 11 list less common items observed or reported on dinner, breakfast and luncheon menus, with the frequency of occurrence. The observed menus generally had more of the less common items than the reported menus. There are various possible reasons for this:

a) Families tried to impress the observer. The author attempted to avoid this by arriving unexpectedly and giving the family no opportunity to visit the trading post; by explaining the purpose of the study and asking that the family cooperate by maintaining their regular diet; by remaining long enough or coming often enough so that it would have been difficult for a family to maintain an unusual diet; and by attempting to establish enough rapport with the family so that they did not feel the need to impress.

b) Families failed to report items because they forgot them or did not regard them as relevant or significant. Probing indicated that this occurred in at least some cases. Individuals forgot to mention table spreads, condiments, candy and some side dishes. Some items were not reported because they were not actually eaten at meal time. Observed items consumed between meals included: bread, cookies, candy, dry cereal, coffee, watermelon, other types of melon, peanut butter, soda pop, pastry, pinyon nuts, meat, raisins, bananas, wild berries (*Rhus canadensis* M. according to the identification of Bailey 1940:288), apples and oranges.

The frequency with which eggs appeared on breakfast menus is interesting. Writers disagree on whether or not Navajos are likely to eat eggs. Kluckhohn and Leighton (1946:48) have said they are, Carpenter and Steggerda (1939:303) and Bailey (1940:277) have said they are not. Considering the poverty of the Many Farms Clinic area, the lack of refrigeration and the difficulty of transporting eggs over reservation roads without breaking them, the frequency with which they appear on menus indicates a fairly high level of desire for egg consumption.

The variety of items listed generally comes as a surprise to people who have been working with Navajos for years. One Navajo working at the Clinic told the author she should not list a particular item since "Navajos don't eat those things". He was astonished when informed that the item was on the list because it had been observed.

None of the reported or observed menus included wild or gathered food, with the exception of pinyon nuts eaten for dinner by one family. Some pinyon nuts and some wild berries were eaten between meals by another family. The wild berries were gathered specifically to show the author. The family had not eaten any for some time, they said. Individuals knew of many dishes based on gathered food, or game, and some claimed they had eaten such foods within a few years, but no one reported recent consumption.

In computing the frequency with which certain items appeared on the menus, it is apparent that in the Many Farms area, variety in the diet pattern is expectable. No item appeared on all of the menus except some form of bread. Out of one hundred and forty menus, some kind of wheat bread appeared one hundred and twenty-two times, biscuits appeared nineteen times, some form of corn bread, cake or pancakes thirteen times. More than one variety of bread was served occasionally. Coffee was recorded one hundred and twenty-seven times; mutton seventy-four times. These were the only items which appeared more than fifty percent of the time. Out of forty-seven discrete items recorded on the menus, twenty-nine of them had a frequency of less than five percent. Items with a frequency of ten percent or over, (excluding coffee, mutton and bread, mentioned above) were: potatoes (35%), milk (32%), meat other than mutton (17%), vegetables (16%), tea (15%), eggs (11%) and fruit (10%). Items with a frequency of between five and ten percent were: beans (09%), cereal (06%), Torrido peppers (06%) and jam (05%).

According to Adams, the Navajos in the Shonto area had a basic diet of mutton, potatoes, fry-bread, canned fruits, coffee, tea and candy (1963:81). The diet of the Navajos in the Many Farms area varied slightly from this. Candy did not appear so frequently (which may have been due to reporting error), milk appeared almost as often as potatoes, vegetables

and meat other than mutton appeared more frequently than tea, and eggs appeared slightly more frequently than fruit.

Even though the items which appeared most frequently on menus were those which were expected, the frequency of unexpected items was significant. There is no reason to assume new items will occur less frequently in the future than they did at the time of this study, nor that traditional items will make a major comeback.

#### 4) Trading post mail survey

Fifty-seven usable replies were obtained from the mail survey sent to one hundred eight reservation trading posts. The survey questionnaire was personally administered to the three trading posts in the Many Farms Clinic area.

On the questionnaire, twenty-five food items were listed, and the trader was asked to indicate whether he felt sales of each item had decreased, increased or stayed the same during the three years prior to the time of the survey. A space to be checked was also provided for traders who did not stock the item listed.

It was apparent from a preliminary glance at the returned questionnaires that most traders felt the sales of most items on the list were increasing. That is logical when the increased population of the Navajo reservation and the increased prosperity of the Tribe as a whole are considered. Not all of the items on the list were reported as increasing

in sales with the same frequency, however. The difference in this frequency appeared to be significant.

The responses are listed in Tables 1 and 2. Some traders left all columns after particular items blank, and did not even check the category "do not stock". Some of these traders subsequently answered later questions about the same item, indicating that they did stock the item in question, but others did not. It is not possible, therefore, to say with any assurance whether those who did not answer the comparative sales question for a particular item did or did not stock the item. The percentage responding to the question of change in sales of a particular item at least represent a minimum number of traders who stock it. For this reason the items are divided into two tables. Table 1 contains those items which other sources of information indicate are widely or universally stocked by reservation traders. The second table consists of items less likely to be universally stocked. Two items are not on either list because they are seldom stocked by reservation traders. These items will be dealt with separately in the text below.

Widely stocked items for which eighty percent or more of the traders answering reported increased sales during the last three years were: fresh eggs, canned milk, bananas and bread. It is possible that, as at Rough Rock, the increase in canned milk sales was due to the shortage

of feed, and that the milk was being consumed by lambs rather than by humans.

Less frequently stocked items for which eighty percent or more of the traders answering reported increased sales were lettuce and tomatoes.

No traders reported that any of the above items were decreasing in sales.

Seventy percent or more of the traders answering reported increased sales of the following widely stocked items: peanut butter, margarine, oranges, apples and pastry.

Seventy percent or more of the traders answering reported increased sales of the following less frequently stocked items: mayonnaise, vegetable shortening, cabbage and fresh milk.

Four out of nine of the above items were reported as decreasing in sales by a few traders (less than six percent of those responding).

On the other hand, over ten percent of the traders answering reported a decrease in sales of the widely stocked items flour and corn meal - which were reported to be increasing in sales by fifty-one and forty-seven percent of the traders responding respectively. The less frequently stocked item, lard, was also reported as decreasing in sales by over ten percent of the traders responding.

Lard makes an interesting contrast with vegetable shortening. No trader reported shortening decreasing in sales, and seventy-four percent of those answering reported sales were increasing. For lard, on the other hand, sixteen percent reported a decrease in sales in the last three years, while only fifty-two percent reported an increase. This comparison would seem to suggest that lard was losing out to hydrogenated vegetable shortening among the Navajos much as it has in the Anglo world. This is a point of some concern to nutritionists since lard has a different nutritive value from hydrogenated vegetable oil.

It is also instructive to compare bread, pastry and flour. Bread and pastry were reported as increasing in sales by eighty-two and seventy-one percent of the traders responding respectively. Six percent of the traders responding reported pastry sales had decreased, no one reported that bread sales had decreased. For flour, on the other hand, sixteen percent of the traders reported a decrease in sales while only fifty-one percent reported an increase. This would suggest that Navajos were doing less bread making at home and were beginning to depend increasingly on processed food - again like non-Indians in the United States.

The two items left out of the tables (because they were so seldom stocked), cooking oil and baby food, also presented a contrast. Only ten traders responded to the baby

food item, but none of them reported decreased sales. Nine reported increased sales in the last three years, while one reported sales had stayed the same. Cooking oil, on the other hand, was reported by twenty traders, two of whom said sales had decreased, nine of whom reported sales had remained the same, and only nine of whom reported an increase.

The only item other than cornmeal on the two tables for which less than fifty percent of the traders responding reported increased sales was Bisquick, listed in Table 2. The majority of the traders responding to that item reported that sales had remained the same during the last three years.

From this survey, one might hypothesize that Navajos are eating more fresh eggs, fresh milk, fresh fruits and vegetables, hydrogenated vegetable shortening and processed foods.

It is useful to compare the items reported most often as increasing in sales in the trader survey with the categories of items by amount of sales, taken from the Clinic area trader inventories.

Canned milk, bread, oranges, apples, pastry and vegetable shortening are all reported as increasing in sales by seventy percent or more of the traders responding to the question in the survey. All of these items are in the high selling category (selling two cases or more per week per hundred families) of the three area traders.

Bananas, cabbage and peanut butter are reported as increasing in sales by seventy percent or more of the traders responding to the survey question. Bananas were in the high selling category of one of the traders in the Clinic area, the other two traders did not have bananas in the inventory at the time it was taken. Cabbage was in the high selling category list of one of the area traders, and in the moderate selling category (one-half to two cases a week per hundred families) of the other two. Peanut butter was in the high selling category of one trading post, in the moderate selling category of another, and in the poor selling category (less than one-half case per week per hundred families) of the third trader.

Eggs and fresh milk - reported as increasing in sales by more than seventy percent of the traders responding to the item in the survey - were in the moderate selling category of the area traders.

Lettuce and margarine - also reported as increasing in sales by more than seventy percent of the traders responding to the item in the survey - were in the moderate selling category of two of the area traders, and either not in the inventory or else in the poor selling category of the third.

Fresh tomatoes and mayonnaise - reported as increasing in sales by more than seventy-five percent of the traders

responding - were in the moderate selling category of one area trader, the poor selling category of another, and not in the inventory of the third.

The response of the area traders to the survey differed somewhat from the majority response on some items, and did not differ on others. All of the area traders agreed with the majority that they sold more eggs, lettuce and fresh milk during the last three years. Two agreed with the majority that they sold more canned milk, vegetable shortening, bananas, cabbage and fresh tomatoes - the other trader said he sold the same amount of those items.

Only one of the area traders agreed with the majority that he sold more bread, margarine and mayonnaise. One of the area traders did not even stock mayonnaise. Two of the area traders said they had been selling the same amount of bread and margarine for the last three years.

None of the area traders agreed with the majority that they sold more oranges, apples, pastry or peanut butter. One trader said he sold less pastry, the other two said they sold the same. All of the area traders said they sold the same amount of oranges, apples and peanut butter.

It is difficult to account for the differences without resorting to local taste preferences. That there are local differences and individual differences in taste preference is indicated by the comment of the Red Ridge trader (see

above) on the use of salt pork in different areas, and in a comparison of the Many Farms area diet with that of the Shonto area, as described by Adams (1963:82). Mutton stew in the Many Farms area is rarely cooked with corn, as it is in the Shonto area; instead, it is usually made with potatoes and onions, and occasionally additional other vegetables such as carrots. Potatoes are often fried but rarely with onions as at Shonto.

People in the Many Farms area rarely eat squash - reported as popular by Dyk (1938:64), Leighton and Leighton (1944:14), Hill (1938:46,47) and Reichard (1950:343) in other areas. People of the Many Farms area seldom eat canned corn - reported as popular elsewhere by Dyk(1938:121); canned tomatoes - reported by Dyk (ibid) and Bailey(1940:278); or canned peaches - reported as popular by Bailey (ibid).

Some of these differences may be due to change through time rather than to different area preferences, since the publications mentioned above date from different periods.

It is also possible that the difference between the surveyed traders and those of the Many Farms area was caused by the fact that sales in the Many Farms area had reached a plateau and leveled off, or else that the increases that affected traders in other parts of the reservation had not yet reached the Many Farms area. In the case of oranges, apples and pastry, the first explanation seems more likely,

since all three are in the high selling category of area traders already, and in the case of pastry, one area trader actually reported a decrease.

#### Summary and conclusions

None of the reported or observed menus included gathered foods or game with the exception of some pinyon nuts and some berries. Mutton, coffee, wheat flour bread and some corn dishes still proved to be popular items in the diet. The introduction of new items into the menu was significant, however. Milk, vegetables, eggs and meat other than mutton are of particular interest. Fresh fruits, soda pop and candy also play a part, the latter two apparently of more importance during visits to the trading posts than at home. It is not correct to say, however, that the Navajo diet is now more varied than it was years ago, since many of the traditional items and the wild foods and game have disappeared from the menu.

There are several interesting facets to the current Navajo diet. Dog food is apparently used as a meat substitute or cheap protein source for people, not dogs. Sardines, tuna fish and salmon are eaten by Navajos in spite of the long-standing and well documented taboo on fish. Sardines are more popular in the Many Farms area than the other two, although the others are also purchased occasionally. Adams indicates that the Shonto trading post also stocked sardines,

although it did not have salmon or tuna fish (1963:177). It has been suggested that canned fish do not really resemble fish, and so do not come under the taboo. This could easily be the case with tuna or salmon, but sardines in a can are still quite clearly piscine. Why, then, are they not subject to the taboo ?

Navajo food habits have been changing in the direction of closer conformity to Anglo patterns for some time (Carpenter & Steggerda 1939:304) and will probably continue to do so in the future. Sheep have eaten most of the uncultivated plants on which Navajos formerly depended; agriculture is becoming less and less rewarding unless factory farming is practiced; opportunities for wage work are increasing; more and more Navajos are spending time off the reservation either in school or at work; and better transportation facilities make it possible to go to cities more often. Going back to an earlier diet pattern is virtually impossible, keeping the same dietary pattern will probably become more difficult and less attractive, so additional change appears inevitable. Navajos will probably keep certain ceremonial dishes for some time, and favorite foods which are not difficult to prepare may persist indefinitely, but those foods which are not ceremonially necessary, and which are difficult or time consuming to prepare will probably not remain in the Navajo pattern much longer.

TABLE 1

TRADER ESTIMATE OF COMPARATIVE SALES  
(Items widely or universally stocked)

Item	Number of Traders who Sold less		Number of Traders who Sold same		Number of Traders who Sold more		Traders Answering of Total	
Peanut butter	3	(06%)*	10	(18%)	42	(76%)	55	(92%)
Fresh eggs	--	--	1	(02%)	53	(98%)	54	(90%)
Margarine	--	--	14	(28%)	36	(72%)	50	(83%)
Canned milk	--	--	9	(18%)	41	(82%)	50	(83%)
Cheese	2	(04%)	20	(39%)	29	(57%)	51	(85%)
Oranges	--	--	12	(24%)	39	(76%)	51	(85%)
Apples	1	(02%)	13	(26%)	36	(72%)	50	(83%)
Bananas	--	--	9	(19%)	39	(81%)	48	(80%)
Pastry	3	(06%)	12	(23%)	37	(71%)	52	(87%)
Flour	8	(16%)	16	(33%)	25	(51%)	49	(82%)
Salt	2	(04%)	16	(33%)	30	(63%)	48	(80%)
Corn Meal	5	(10%)	21	(43%)	23	(47%)	49	(82%)
Bread	--	--	9	(18%)	42	(82%)	51	(85%)

\* Percentages in the first three columns are based on the number of traders responding to the particular item. Percentages in the last column are based on the total number of responses to the questionnaire.

TABLE 2

TRADER ESTIMATE OF COMPARATIVE SALES  
(Items less likely to be stocked)

Item	Number of Traders who Sold less		Number of Traders who Sold same		Number of Traders who Sold more		Traders Answering of Total	
Mayonnaise	1	(02%)*	8	(19%)	34	(79%)	43	(72%)
Lard+	7	(16%)	14	(32%)	23	(52%)	41	(73%)
Shortening+	--	--	11	(26%)	31	(74%)	42	(70%)
Cabbage	--	--	10	(23%)	34	(77%)	44	(73%)
Lettuce	--	--	5	(11%)	39	(89%)	44	(73%)
Fresh tomatoes	--	--	4	(13%)	28	(87%)	32	(53%)
Fresh milk	--	--	10	(26%)	29	(74%)	39	(65%)
Powdered milk	3	(08%)	10	(28%)	23	(64%)	36	(60%)
Cake mix	2	(06%)	14	(39%)	20	(56%)	36	(60%)
Bisquick	2	(06%)	17	(53%)	13	(41%)	32	(53%)

\* Percentages in the first three columns are based on the number of traders responding to the particular item. Percentages in the last column are based on the total number of responses to the questionnaire.

+ Some form of shortening - either lard or vegetable shortening - was stocked by all traders, but neither one was universally stocked.

TABLE 3

FOOD ITEMS PURCHASED BY EIGHTEEN FAMILIES  
(Items purchased by half or more of the families)

<u>Item</u>	<u>Number of Families</u>	<u>Item</u>	<u>Number of Families</u>
Meat+	18	Cookies	14
Soda pop	17	Sugar	14
Fruit+	16	Cereal	11
Candy	16	Table Spreads+	11
Bread & Rolls	16	Baking Powder	10
Shortening**	16	Flour	10
Milk*	15	Salt	10
Vegetables+	15	Crackers	10
Coffee	15	Ice Cream	9
Potatoes	14		

+ See additional tables for types of meat, fruit, vegetables and table spreads purchased.

\* The bills did not indicate whether the milk was fresh, canned, or powdered.

\*\* The bills did not indicate whether the shortening was lard, vegetable shortening, or cooking oil.

TABLE 4

FOOD ITEMS PURCHASED BY EIGHTEEN FAMILIES  
(Items purchased by less than half the families)

<u>Item</u>	<u>Number of Families</u>	<u>Item</u>	<u>Number of Families</u>
Eggs	8	Cheese	4
Nuts	8	Pork and Beans	3
Tea	7	Masa Harina**	3
Pastry	7	Syrup	3
Chewing gum	7	Catsup	3
Pasta+	7	Rice	2
Beans	7	Pepper	1
Chili*	6	Snowball*	1
Melons*	6	Marshmallows	1
Beverages*	5	Frosting Mix	1
Canned goods*	4	Tamales	1
Yeast	4	Pancake Mix	1
Popcorn	3	Cake Mix	1

+ Including macaroni, tenderoni and spaghetti.

\* Not specified further on the bills.

\*\* Corn flour.

TABLE 5

MEAT PURCHASED BY EIGHTEEN FAMILIES

Item	Number of Families	Item	Number of Families
Unspecified	15	Bologna	6
Chicken	2	Bacon	12
Sardines*	4	Salt pork	1
Canned meat	2	Vienna Sausage*	4
Beef	5	Weiners	2
Ham	2	Mutton	8
Pork	2		

\* Recorded from Rough Rock trading post only.

TABLE 6

FRUIT PURCHASED BY SIXTEEN FAMILIES\*

Item	Number of Families	Item	Number of Families
Unspecified	9	Fruit Salad	3
Raisins	6	Apples	12
Plums	1	Peaches	5
Bananas	6	Oranges	12
Pears+	3		

\* The bills did not specify whether the fruit was canned or fresh. Bananas, oranges, apples were probably fresh, the raisins were surely boxed, dried; the fruit salad was probably canned, but the others could have been either canned or fresh.

+ Reported from Rough Rock only.

TABLE 7

VEGETABLES PURCHASED BY FIFTEEN FAMILIES\*

<u>Item</u>	<u>Number of Families</u>	<u>Item</u>	<u>Number of Families</u>
Onions	10	Peas	1
Corn	6	Celery	1
Cabbage	5	Carrots	1
Tomatoes	5	Lettuce	1
Hominy	1		

\* Excluding potatoes and beans.

TABLE 8

TABLE SPREADS PURCHASED BY ELEVEN FAMILIES

<u>Item</u>	<u>Number of Families</u>	<u>Item</u>	<u>Number of Families</u>
Jam & Jelly	8	Margarine	4
Peanut butter	5	Mayonnaise	1
Sandwich spread	4		

TABLE 9

THIRTY-FOUR DINNER MENUS\*

Items	Obs.	Rept.	Total	Items	Obs.	Rept.	Total
Beans	3	1	4	Pinyon Nuts	1	-	1
Candy	1	-	1	Soda pop	1	-	1
Sandwich Spread	1	-	1	Sweet potatoes	1	-	1
Eggs	1	1	2	Vegetables	5	3	8
Melons	1	2	3	Hot peppers	2	-	2
Jam	1	-	1	Fruit	-	1	1
Milk	1	5	6	Peanut butter	-	1	1
Sandwiches**	-	1	1	Ice Cream	-	1	1

\* Excluding meat, coffee, tea, potatoes, bread, etc.

\*\* Not identified further.

TABLE 10

FIFTY-SEVEN BREAKFAST MENUS\*

Item	Obs.	Rept.	Total	Item	Obs.	Rept.	Total
Beans	1	3	4	Sweet potatoes	1	-	1
Candy	1	-	1	Canned spaghetti	1	-	1
Cereal	3	5	8	Macaroni	-	1	1
Eggs	3	7	10	Chili	-	1	1
Fruit	4	4	8	Margarine	-	1	1
Milk	6	20	26	Jam	-	3	3
Hot peppers	1	1	2	Gravy	-	2	2
Vegetables	2	7	9	Melons	-	1	1

\* Excluding meat, coffee, tea, potatoes, bread.

TABLE 11  
FIFTY-ONE LUNCHEON MENUS\*

Items	Obs.	Rept.	Total	Items	Obs.	Rept.	Total
Hot Peppers	3	1	4	Beans	3	2	5
Sweet potatoes	1	-	1	Gravy	-	1	1
Sandwich spread	1	-	1	Margarine	-	1	1
Vegetables	4	5	9	Dill pickles	-	1	1
Cheese	1	-	1	Cereal	-	1	1
Eggs	3	-	3	Peanut butter	-	1	1
Fruit	3	2	5	Sandwiches**	-	1	1
Milk	2	11	13	Soda pop	-	2	2
Mustard	1	-	1	Doughnuts	-	1	1
Catsup	1	-	1	Jam	-	3	3
Melon	1	1	2				

\* Excluding meat, coffee, tea, potatoes, bread, etc.

\*\* Not identified further.

FOOTNOTES

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2. Lists of the plants and animals on which Navajos depended can be found in Bailey 1940; Franciscan Fathers 1910; Castetter 1935; Hill 1938; Matthews 1902; and Elmore 1938.

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