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COMMONWEALTH OF AUSTRALIA.

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DEPARTMENT OF HEALTH
AUSTRALIAN INSTITUTE OF ANATOMY.

CANBERRA, A.C.T.

DIETARY SURVEY OF ABORIGINALS IN
THE NORTHERN TERRITORY.

By Winifred Wilson, Commonwealth Department of Health.

PARTS A, C and D: in full

PART B. omitted.

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DIETARY SURVEY OF ABORIGINALS
IN THE NORTHERN TERRITORY

By Winifred Wilson
Commonwealth Department of Health.

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DIETARY SURVEY OF ABORIGINALS IN THE
NORTHERN TERRITORY.

A. INTRODUCTION.

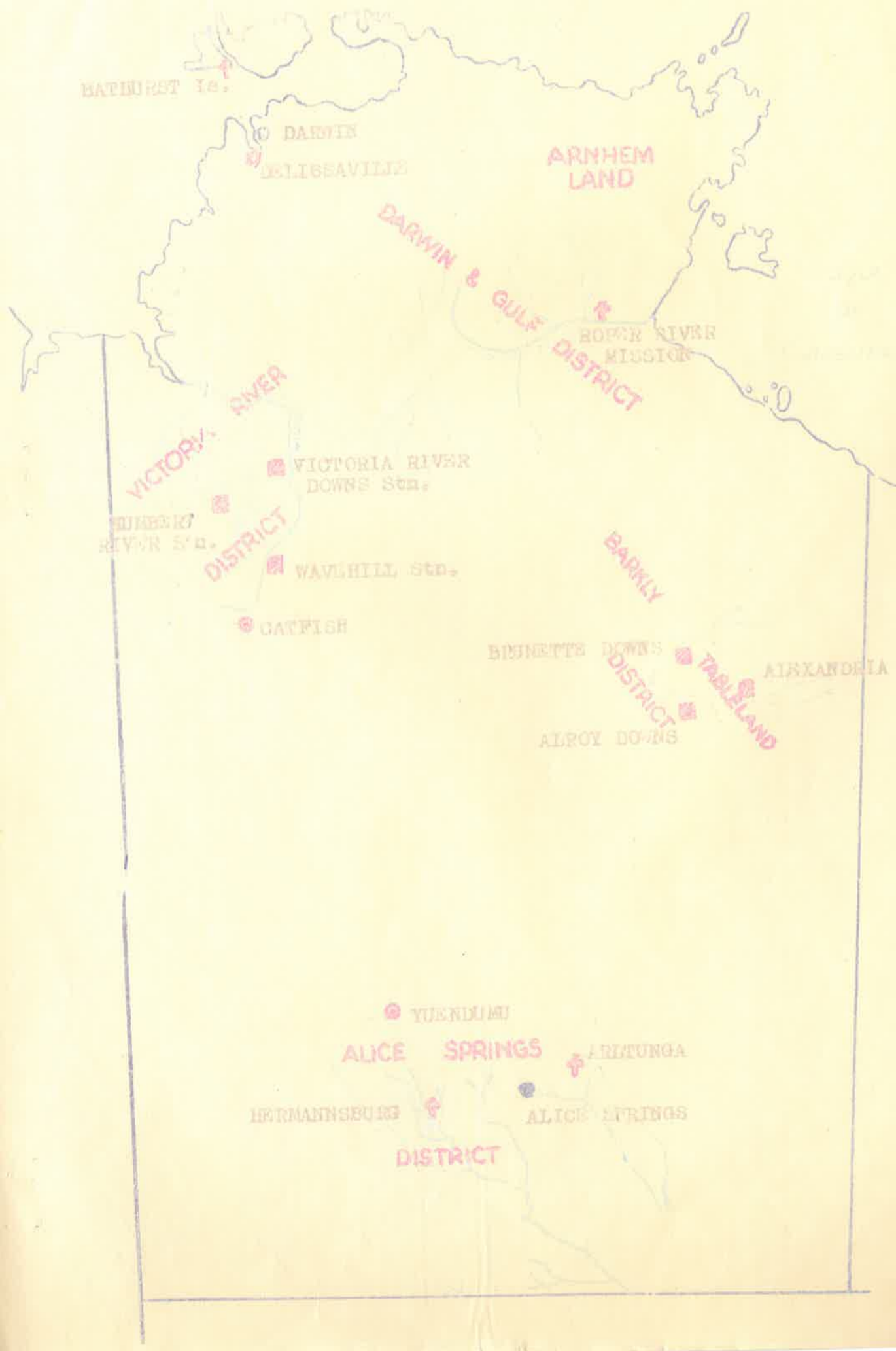
One of the resolutions of the Conference of Health and Native Affairs Officers held in Canberra in 1950 was "That ration scales for natives of all age groups living on mission or government stations be drafted for the guidance of the appropriate health authorities. These scales should take into account seasonal variation in food supply and should provide for the inclusion as far as possible of foods which the balanced economy of the area can provide".

The survey was undertaken primarily to investigate (a) the present dietary intake, food patterns and eating habits of aboriginals living on mission and government stations and on cattle stations in the Northern Territory, and (b) the sources of supply, transport, distribution and storage of foodstuffs available to aboriginals in this area. The ration scales subsequently formulated were based on the information obtained from this survey.

The survey was carried out between 19th August and 15th October, 1951, i.e. towards the end of the "dry" season. Within this limited period only 1-3 days could be spent with each group or settlement. The itinerary and period of time spent in each area were also regulated to a large extent by the transport available. Subject to these limitations, representative settlements were chosen at random to cover the four districts of the Northern Territory and to include mission stations of different denominations, cattle stations controlled by large companies and private lessees, and large and small government native settlements.

ABORIGINAL SETTLEMENTS SURVEYED.

- † Mission
- Station
- ⊙ N.A.B. Settlement



GROUPS SURVEYED.

<u>District.</u>	<u>Missions.</u>	<u>Government Settlements.</u>	<u>Cattle Stations.</u>	<u>Total.</u>
Darwin and Gulf.	3	2	-	5
Victoria River	-	1	3	4
Alice Springs.	3	2	-	5
Barkly Tableland	-	-	3	3
	6	5	6	17

<u>SETTLEMENT</u>	<u>CONTROL</u>	<u>DISTRICT.</u>
<u>MISSIONS AND INSTITUTIONS.</u>		
Arltunga.	Roman Catholic Church.	Alice Springs.
Bagot Children's Home.	United Aborigines Mission.	Darwin.
Bathurst Island.	Roman Catholic Church.	Darwin.
Hermannsburg.	Lutheran Church.	Alice Springs.
St. Mary's Hostel Alice Springs.	Church of England	Alice Springs.
Roper River.	Church Missionary Society (C.of E).	Gulf.
<u>GOVERNMENT SETTLEMENTS.</u>		
Bagot Reserve.	Native Affairs Branch/	Darwin.
Catfish.	"	Victoria River.
Delissaville.	"	Darwin.
The Bungalow	"	Alice Springs.
Yuendumu	"	" "
<u>CATTLE STATIONS.</u>		
Alexandria.	Northern Australia Pastoral Co.	Barkly Tableland.
Alroy Downs.	Private Lessee	" "
Brunette Downs.	Gulf Cattle Co.Prop. Ltd.	" "
Humbert River.	Private Lessee.	Victoria River.
Victoria River Downs.	Bovril Australian Estates Ltd.	Victoria River.
Wavehill	Northern Agency Ltd. (Vesteys)	Victoria River.

Settlements are broadly classified as (a) Cattle Stations (b) Native Affairs Branch Settlements and (c) Missions. Where groups within a settlement consumed different rations, they were regarded as separate units and their food consumption and dietary analyses were calculated separately. Within the 17 settlements separate estimates were made for 38 groups.

CATTLE STATIONS.

Natives on Cattle Stations generally fell into three distinct groups. Stock Camps are the working outposts of the station; they may be settled on a permanent site, or move camp as required. They usually consisted entirely of native stockmen, supervised by a white head stockman, and sometimes with a white man as cook. Stocks of food were sent out periodically from the head station and within the range available supplies of food were plentiful and varied compared with the rations of natives of other groups. Native stockmen, who are the main working force of the station, are covered by regulations under the Aboriginals Ordinance 1918-1947, which state that "The scale of rations to be supplied shall be at least equal as far as practicable to that to which station employees in the N.T. are entitled under any award for the time being in force". The appropriate award at present in force is the Cattle Station Industry (Northern Territory) Award 1951, which in Clause 17, "Food", lists a scale of rations to be supplied "where reasonably procurable". Types of food, but not amounts, are stipulated in the schedule.

Station workers - Both men and women, did all kinds of jobs around the homestead or head station, including stock work, gardening, domestic duties and general odd jobs. Some of these are covered by the Cattle Station Industry Award; their first wives, employed or not employed, are covered by Regulation 4, Third Schedule which stipulates the following rations per week as an alternative to the rations provided for the men.

14 lb. beef.
7 lb. flour.
1 lb. sugar.
3 oz. tea.
1 lb. jam or syrup.
Baking powder or alternative.
2 lbs. potatoes or rice.
1 lb. onions or peas.

Dependants- Wives and children of men working in the stock camp or at the head station were usually given a separate ration. All rations were supplied by the station; the station paid for one wife and one child of each working man, and Native Affairs Branch paid for the other wives and children and for old people who were not working, classified as "indigent".

NATIVE AFFAIRS BRANCH SETTLEMENTS:

These were administered by the Native Affairs Branch of the Dept. of Territories. Dry stores were ordered through the head office of the Branch in Darwin and delivered periodically at intervals which varied according to the location of the settlement. Set ration scales were not followed; a scale drawn up by a former officer of the Branch, Lois Cherry, was used as a guide. Settlements were staffed by a superintendent who might have one or more assistants and a nurse on his staff.

MISSION SETTLEMENTS:

These included settlements for adults and children, and also homes or hostels exclusively for children, and they were controlled by various denominations. Some depended entirely on church supporters for financial aid; others received a government subsidy. Child endowment may be collected by the mission on behalf of dependent children.

TABLE 1.

ESTIMATED NATIVE POPULATION OF GROUPS SURVEYED.

	Over 60.	ADULTS		Total	CHILDREN.			Total	TOTAL
		Male.	Female.		0-6	7-10	11-14		
<u>MISSIONS & INSTITUTIONS.</u>									
Arltunga Mission	55	32	35	122	34	35	31	100	222
Bagot Children's Home, Darwin.	-	-	-	-	21	26	34	81	81
Bathurst Is. Mission.	7	35	35	70	106	64	26	196	266
Hermannsburg Mission.	16	28	41	85	62	53	45	160	245
St. Mary's Hostel Alice Springs.	-	-	-	-	10	11	37	58	58
Roper River Mission.	2	30	45	77	66	19	25	110	187
Total	73	125	156	354	299	208	198	705	1059
<u>N.A.B. SETTLEMENTS.</u>									
Bagot Reserve.	15	73	56	144	7	17	16	40	184
Catfish	2	28	13	43	1	2	2	5	48
Delissaville	26	25	29	80	25	18	8	51	131
The Bungalow	20	14	30	64	20	20	20	60	124
Yuendumu	44	52	99	195	46	44	16	106	301
Total	107	192	227	526	99	101	62	262	788
<u>CATTLE STATIONS.</u>									
Alexandria	5	25	16	46	19	6	1	26	72
Alroy Downs	2	21	15	38	8	5	3	16	54
Brunette Downs	1	31	28	60	14	4	1	19	79
Humbert River	5	6	8	19	2	2	0	4	23
Victoria River Downs.	13	53	62	128	34	4	2	40	168
Wavehill	20	63	93	176	44	7	16	67	243
Total	46	199	222	467	121	28	23	172	639
TOTALS.	226	516	605	1347	519	337	283	1139	2486.

These figures represent the native population in each group for which the dietary intake was investigated. In some cases the total population exceeds these numbers.

PROCEDURE

The procedure adopted had to be varied according to the local conditions and methods of providing rations. The basic aim in each case was to determine the total food intake for the current week.

The aboriginals relied on issued rations for most if not all of their food supply. These were in the form of (a) prepared and cooked food, issued at meal times, or (b) uncooked rations issued at regular times and prepared and eaten by natives as they desired. Some aboriginals received a combination of (a) and (b).

Data was obtained where possible by a modified "food list" method. The person responsible for rationing the group was questioned so that a list of all foods supplied during the week could be compiled. In some cases detailed and accurate records of ration issues were kept. These lists were checked by inspection of stores and other records, observation of meals served and the weighing of sample meals. Where rations were issued in bulk, usually once a week, samples were taken at random and weighed. Where the person responsible could not estimate the amounts used and no accurate records were kept, an estimate of the average intake was made by measuring or weighing as many individual meals or ration issues as possible. The ration was almost invariably standardised and individual variations were negligible.

Data was also obtained relating to the water supply, cooking and storage facilities, variations in food supplies, types of food produced locally, and types of indigenous foods consumed. Information was sought regarding food supplies during other periods of the year when there are considerable variations.

The methods used have obvious limitations in scope and accuracy. Because of the short period spent with each group and because of transport difficulties the sampling was not as extensive as could be desired. In the compilation of quantitative data seasonal variations were disregarded as they could not be assessed with any degree of accuracy. In general the quantitative data are based on the amount of food issued rather than the amount actually consumed. No allowances were made for waste or for inequitable distribution within a group as these factors could not be accurately estimated. In the computation of nutrient intake no allowances were made for losses in cooking, which would vary according to the methods used. The data obtained, however, is sufficient to give a broad picture of the dietary intake and general food pattern of distinct groups, thus fulfilling the primary purpose of the survey.

- DIETARY SURVEY OF ABORIGINALS IN
THE NORTHERN TERRITORY -

PART C:

GENERAL DIETARY PATTERN.

Part C: General Dietary Pattern.

(1) CONSUMPTION OF FOODS.

The food consumed by the aboriginals studied consisted almost entirely of rations issued on the settlement. As the selection of foods depended mainly on their availability, cost and ease of storage, the variety was limited. In general the aboriginals ate all of the rations readily, despite the monotony and the difference in character from their former natural diet. Although the aboriginal showed preferences for some foods, these did not have much influence on his diet pattern. As he is seldom over-fed and sometimes short of food he is not likely to acquire the fads and dislikes that are typical of a community over-supplied with food. Even if he is not particularly fond of some types of food issued it is easier to eat them than to hunt and collect native foods. Unwillingness to work hard for it does not indicate a dislike of any type of food; for instance, most aboriginals ate milk and eggs if they were provided, but few bothered to milk goats or keep fowls of their own accord.

Settlement Stores.

On some settlements, natives were able to purchase extra food from the store. These purchases were limited and would not contribute much to the general food consumption pattern, although they would provide a little variety.

USE OF LOCALLY PRODUCED FOODS.

Meat. All settlements had regular and adequate supplies of meat produced locally with the exception of Bathurst Island, Roper River and Arltunga Missions. Bathurst Island natives caught a considerable amount of fish and occasionally used beef from their small herd. The Roper River Mission used their own beef, but supplies were not plentiful. Arltunga obtained irregular supplies from neighbouring stations.

Milk. Twelve of the seventeen settlements produced cow's or goat's milk in limited amounts, usually sufficient only for the staff. No settlements produced enough for all natives stationed there.

Eggs. Thirteen of the seventeen settlements kept a small number of fowls which produced only enough eggs for the staff or special cases.

Fruit and Vegetables. Fourteen of the seventeen settlements grew small amounts of vegetables. Eight of these provided only sufficient for the staff; six were more extensive and provided some of the natives with vegetables during the dry. None grew sufficient to supply all natives and none provided any supplies during the wet. Relatively little fruit was grown on any settlements.

Peanuts and Coconuts. These were produced on Bathurst Island and distributed periodically to the natives.

Thus with the exception of meat, no foodstuffs were produced locally in sufficient amounts to provide regular supplies for all natives. To increase the production of eggs may not be practicable at present. As milk and vegetables have been produced in all areas to a limited extent, and in some parts in relatively larger amounts, there is surely some prospect of increasing the local supplies. Although there are many difficulties, advice and practical assistance from the authorities should help to overcome some of them.

IMPORTED FOODS.

As only small amounts of locally produced foods were available for natives (with the exception of meat), a considerable part of their rations consisted of food transported from other States (viz. flour, cereals, sugar, jam, tea, potatoes, onions), thus adding to their cost.

INDIGENOUS FOODS.

No quantitative assessment has been made of indigenous foods eaten. There was not sufficient time for this and it is generally agreed that the contribution that these goods make to the diet is not significant. Among the reasons for this is the substitution of a more settled life for their former nomadic existence; no longer can a tribe move camp when an area is eaten out. These employed on a cattle station cannot go far away and also the use of the area for cattle reduces its value as a hunting and food collecting ground. Natives fed by missions and N.A.B. settlements are not likely to move away from the hand that feeds them. There are marked local and seasonal variations in the type and amounts of "bush tucker" available; all types become scarce towards the end of the dry. The following are the main types of indigenous food eaten by the natives, usually during the week-end days off on the annual "walkabout".

Game . Wallaby, kangaroo, porcupine, goanna, rats, rabbits, "pussy cat", crows, cockatoos, chickenhawks, wild turkey, wild geese, duck, emu, fish, cockles, oysters, other shellfish, grubs, frogs.

Eggs. Duck, ibis, goanna, turtle.

Roots, tubers, Yams, water lily roots, yelka bulbs.

Fruit. Seeds, berries, wild figs, bush banana, wild plum, wild orange, passionfruit, water lily stems and seeds.

Miscellaneous. Bush nuts, green leaves and grasses, bloodwood "apple" "sugar bag", sweet gum.

NUTRITIVE VALUE OF SOME BUSH FOODS.

Per 100g. Fresh Weight, Uncooked Edible Portion.

NAME	WATER %	PROTEIN g	FAT g	CARBO HYDRATE g	CALORIES	CALCIUM mg	VITAMIN B1 gamma	VITAMIN C mg
Long Yam	63.0	3.4	1.8	63.3	278	45	59	-
Short Yam	71.4	3.0	2.2	58.3	259	26	46	-
Taro	64.0	3.9	0	23.9	107	109	36	-
Water Lily Roots.	43.9	4.0	1.4	33.3	157	62	101	-
Water Lily Fruits.	-	-	-	-	-	-	30	11.5
Vila Nuts	4.1	15.1	68.7	5.4	644	85	153	-
Potato X	78	2.0	0	19.6	80	8	120	15-30
Peanuts X	4.0	28.1	49.0	16.2	564	61	240	0

- indicates no figures available.

X for comparison.

TABLE 11.

MEAN WEEKLY CONSUMPTION OF FOODSTUFFS PER HEAD.

	Unit	Cattle Stations.			N.A.B. Settlements.	Missions.	Mean all Aborigines.	(a) N.T. 1948.	(b) All Australia. 1944.
		(Stock Camps.)	Station Workers.	Dependants.					
Cereals, Bread } Flour etc. }	lb.	11.52	6.28	4.78	10.64	6.82	8.00	3.84	4.49
Milk-fresh equiv.	pts.	2.61	1.02	0.09	2.38	2.32	2.01	5.19	4.99(c)
Butter	lb.	.004	-	-	0.19	0.09	0.10	0.51	0.46
Fats -other than butter.	lb.	-	-	0.14	-	0.02	0.03	0.03	0.10
Eggs.	no.	0.27	2.13	-	0.55	0.79	0.68	6.15	4.80
Meat or Fish (e.p. raw).	lb.	14.00	8.12	4.48	4.03	2.62	4.06	4.20	3.03
Potatoes	lb.	0.52	0.58	-	0.25	1.07	0.62	1.97	2.00
Vegetables	lb.	1.14	1.90	0.28	0.79	1.04	0.93	2.80	2.57
Fruit & Tomatoes	lb.	0.89	0.49	0.04	0.62	1.92	1.14	5.00	3.19
Sugar, syrup, jam.	lb.	4.23	1.76	2.43	1.89	1.76	1.97	1.53	1.34
Tea, coffee	oz.	4.85	1.75	2.64	2.83	1.48	2.21	3.92	2.40

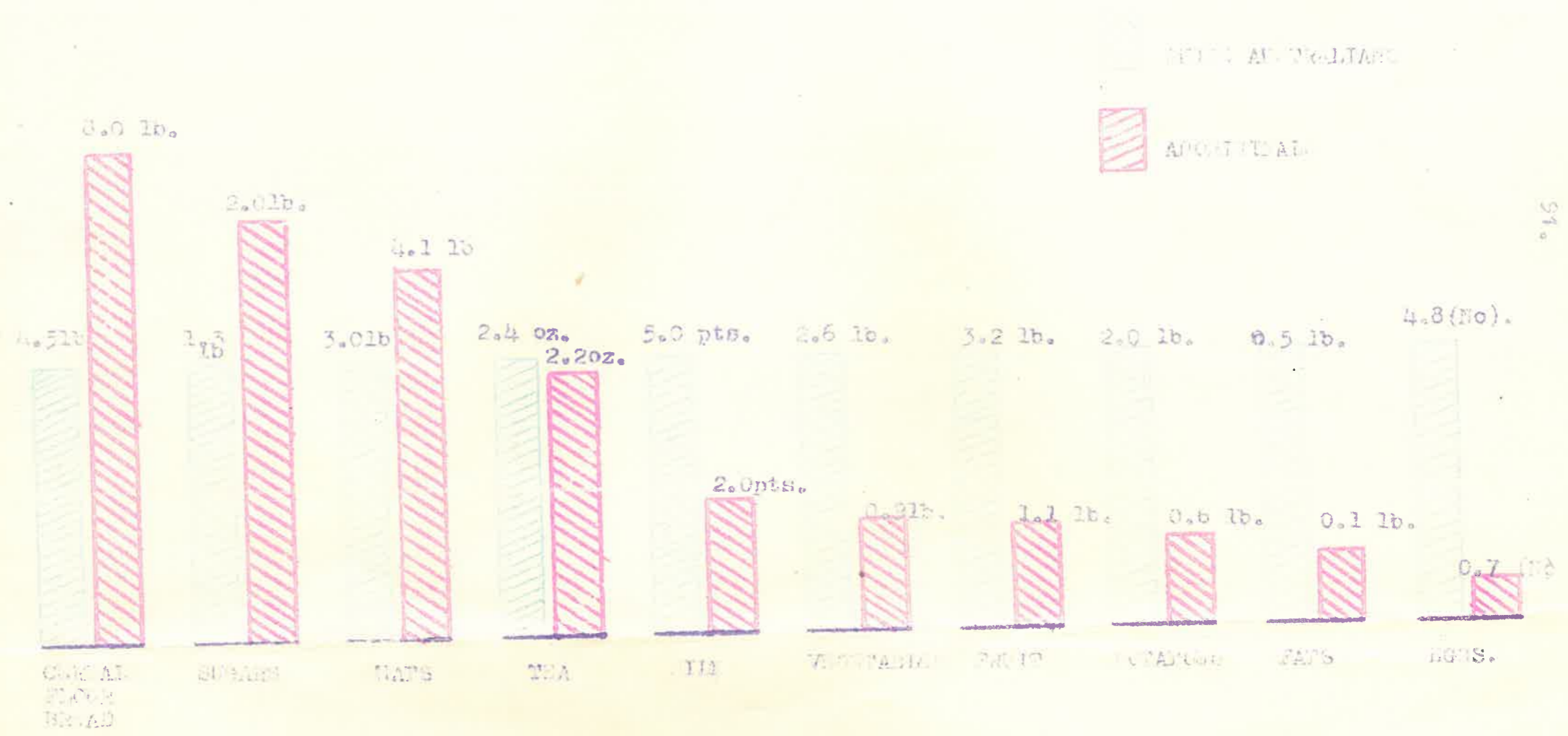
(a) Report of a Food Consumption Survey of Northern Australia during 1947-48. Northern Australia Development Committee.

(b) The Food Consumption and Dietary Levels in 2730 Australian Family Households in 1944. NH and MRC Special Report Series No.1.

(c) Figures for preserved milk consumption for 1944: C'1th Bureau of Census and Statistics.

CONSUMPTION OF FOOD BY RICH-HEADS IN 1948

Average weekly consumption per head compared with average consumption in Australia (1948 Survey)



MEAN WEEKLY CONSUMPTION OF FOODSTUFFS PER HEAD.

Although the average native's diet consisted of the same kind of food as the average Australian's, the relative proportions of the types of foodstuffs eaten were different. The main items in the native's diet were meat, flour or bread, sugar and tea.

Meat.

The consumption of meat was ^{than} 30% higher than that of the average Australian diet, which is one of the highest in the world. The natives ate as much meat as they could get. In their natural state game formed a large part of their diet and the habit of meat eating has persisted. On cattle stations and some other settlements beef was easily available and at 4d. lb. (carcase weight) it was a cheap source of calories as well as protein.

In a few settlements, however, the consumption of meat was low, either because there was no beef for sale close at hand or because the settlement could not afford it. In these cases goat's meat was often used but supplies were usually not plentiful. On the coast and on island settlements where beef was scarce fish and other sea-foods were eaten, but not in such large quantities as beef on cattle stations.

Cereals.

The consumption of cereal foods was 8.00 lb. per head compared with 4.49 lb. in the average Australian diet.

White flour and bread are the staple cereal foods.

On the cattle stations, stockmen and most station workers are issued with bread made by the cook. When there was no stove available, or no room in it, bread was baked in other ways. A common type of bread oven was an old oil drum embedded in ant bed. A fire was lit inside the oven and when the oven was hot the fire was removed and the bread placed inside. Bread was also baked in camp ovens covered with hot ashes.

Bread was also issued in most settlements and some missions; it was bought from the town bakery when a town was close to the settlement.

Dependants on cattle stations and natives in some other settlements and missions were issued with rations of flour, which they made into damper or flour soup. In some settlements a proportion of wholemeal was mixed in with the white flour, but this did not keep well except in the dry centre and it was not popular with either natives or whites.

Sugars.

The consumption of sugar was higher than the average Australian's. Practically all the sugar consumed was taken in tea as very few made-up dishes were issued. Syrup, treacle, and less often, jam, were also issued.

Tea.

The consumption of tea was only slightly less than that of the average Australian. The natives enjoyed their tea and on their own camp fires there was usually a billy of tea brewing continuously.

The consumption of milk, potatoes, other vegetables and fruit was less than half the average Australian consumption.

Milk.

The supply of fresh milk, (cow's or goat's) was very limited and dried milk was relatively expensive. Where milking cows were kept the supply dwindled towards the end of the dry, and goat herds were usually not well managed, especially when the supervision was left to the natives. Stockmen were

usually issued with milk, but other workers and dependants on cattle stations consumed very little or none. Children in NAB settlements and in most missions received some milk regularly. In schools controlled by the Commonwealth Office of Education milk was distributed daily under the supervision of a teacher. The figures given include fresh milk, dried and condensed milk, and cheese. Relatively little cheese was eaten; tinned cheese keeps well, but it is fairly expensive.

Vegetables and Fruit.

The consumption of all types of vegetables and fruit was less than half that of the average Australian. Potatoes and onions were usually imported from the southern states and other vegetables and fruit were grown locally, but not in adequate amounts. The supply fluctuated according to the season and the condition of the gardens, which were generally not large enough to supply natives as well as whites except for a period after the wet. In most stock camps, and in some NAB settlements, tinned vegetables were used when fresh were not available. In other settlements there was no substitute when fresh supplies ran out.

The natives liked all fruit and tomatoes, and raw vegetables such as chinese cabbage. After the wet, some bush fruits and yams were eaten but not in significant amounts.

Fats and Eggs.

The consumption of eggs, butter and other fats was extremely low. Any fowls kept were usually fed on imported feed, so that on a large settlement eggs were not a practical proposition; meat is a cheaper source of protein and iron. The low intake of fats is not of great consequence, although some is desirable for palatability and for cooking purposes. Most natives did not bother to save dripping from the meat even when it was plentiful. Butter is a good source of vitamin A, but its use in the Northern Territory is limited because of its cost and poor keeping qualities.

CONSUMPTION BY GROUPS.

The food consumption in each type of settlement follows a fairly definite trend. In general the food supply in stock camps was varied and plentiful; dependants on cattle stations and some missions had the least satisfactory diet.

Because of their remoteness most of the Stock Camps could not be investigated personally. The figures obtained from records and other sources, however, are considered to give a fairly accurate picture of the rations supplied. In some stock camps the whole of the rations issued were probably not consumed. Some wastage was observed in one stock camp and it probably occurred in others where there was not much supervision. The consumption of meat was arbitrarily recorded as 14 lb. per head per week for all stock camps. The practice was to kill a beast whenever fresh meat was required and the consumption was high. In some camps the consumption was known to be even higher than that recorded, but it could not be accurately assessed.

In the stock camps extra items were supplied which could add variety and interest to the basic diet. These extras - items such as flavourings, sauces, pickles, tinned foods and sweet spread - were seldom issued to station workers or dependants.

For most Station Workers and Dependants the diet consisted of meat, flour or bread, and tea with sugar, without variation. Dried fruits were sometimes used; dried peas and beans were eaten if they were well cooked, but the natives seldom cooked them for themselves. Fresh fruit, tomatoes or vegetables were a rare luxury, available when there was an excess in the station garden. On only one station visited was milk issued to dependants; on others free access to milking goats was allowed.

The rations issued in N.A.B. Settlements and Missions were in general inferior to those in stock camps, but better in some respects than those issued to station workers and dependants. The consumption of cereals, milk, potatoes, vegetables and fruit was higher than for dependants on cattle stations; the consumption of meat, sugar and tea was lower. On the cattle stations no special rations were issued to pregnant and lactating women or children; in other settlements these groups usually received special rations which, although inadequate, did contribute something to their diet.

COST OF RATIONS.

Table III. shows the estimated cost of the rations supplied. As some stores were taken from old stock and some were recent purchases, a similar foodstuff may be costed differently in different places. Where records were available the actual cost, including freight, has been used. When there were no records, an estimated cost based on current prices was used. An arbitrary value was assigned to foods produced on the settlement.

The figures recorded for each group are therefore not strictly comparable; they do, however, give some indication of the relative costs of the rations, which ranged between 3.72 and 40.44 shillings per head per week. There is no correlation between cost and other factors. The most satisfactory diets, rated C, were those of children at Hermannsburg, Bagot Children's Home and St. Mary's Hostel; these were costed at 8.00, 18.66 and 20.85 shillings respectively. The costs of E grade diets ranged between 3.72 and 28.80 shillings.

TABLE III.

Estimated Cost of Foodstuffs per Head Per Week in Shillings.

<u>CATTLE STATIONS.</u>	<u>STOCK CAMP.</u>	<u>STATION WORKERS.</u>	<u>DEPENDANTS.</u>
Alexandria.	40.44	11.08	9.33
Alroy Downs.	14.80	16.60	3.72
Brunette Downs.	28.80	28.25	8.47
Humbert River	---	15.42	6.34
Victoria River Downs.	29.13	9.08	6.79
Wavehill.	16.41	6.75	7.70.
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N. A. B. SETTLEMENTS.

Bagot	13.36
Catfish	14.56
Delissaville	10.36
The Bungalow	11.64
Yuendumu	14.25
-----00000-----	

Frequency Distribution of Cost of Diet.

<u>Shillings.</u>	<u>Number of Groups.</u>
0 - 4	1
4 - 8	7
8 - 12	7
12 - 16	5
16 - 20	3
20 - 24	1
24 - 28	0
28 - 32	3
32 - 40	0
40 - 44	1
Range: 3.72 - 40.44	
Median: 11.75	

MISSIONS.

Arltunga	Children	8.29
.. ..	Dependants	7.00
.. ..	Mean	7.43
Bagot Children's Home		18.66
Bathurst Island		4.90
Hermannsburg.	Children	8.34
.. ..	Hospital	8.46
.. ..	Camp	7.61
.. ..	Mean	8.00
St. Mary's Hostel		20.85
Roper River		6.97.

DIETARY LEVELS

TABLE IV.

MEAN DAILY INTAKE OF NUTRIENTS PER HEAD.

	Protein. g.	Calories.	Calcium g.	Iron. mg.	Vit.A. I.U.	Vit.B1 mg.	Vit. C. mg.
<u>Cattle Stations.</u>							
Stock Camps.	239	6079	.916	49.3	1543	2.14	57
Station Workers	117	2777	.291	24.3	1841	1.05	36
Dependants	78	2409	.226	17.9	293	0.79	0
<u>N.A.B. Settlements.</u>							
	108	3299	.486	18.7	2025	1.53	14
<u>Missions.</u>	75	2496	.538	14.3	3552	1.08	37
Mean, All Aborigines.	95	2903	.483	18.1	2485	1.23	26

All Australia, 1944	82	2597	.714	13.9	3890	1.08	97
N.T. 1948. -White Householders.	95	2703	.822	16.9	---	1.19	96

The diets of each group were evaluated in terms of the specific nutrients they provided, by means of "Tables of Composition of Australian Foods" (Osmond, 1948). No allowances were made for losses in cooking, which may amount to 50% for Vitamin B and Vitamin C. Table IV. shows the mean values for each type of settlement, and for comparison, the values obtained in other surveys for all Australia and the Northern Territory.

INTAKE OF SPECIFIC NUTRIENTS.

The intake of each group was compared with the Recommended Dietary Allowances of the Food and Nutrition Board, National Research Council, U.S. 1948. The restricted allowances were used, i.e.

- (a) The original N.R.C. Allowances of calories and protein for all groups.
- (b) The original NRC Allowances of minerals and vitamins for groups up to the age of 20 years and for pregnant and lactating women.
- (c) 70% of NRC Allowances of minerals and vitamins for adult men and women.

It is emphasised that when reference is made to a "deficiency of a specific nutrient, this simply indicates that the intake of that nutrient is below the recommended amount. The Recommended Dietary Allowances, having been laid down as "objectives towards which to aim in planning practical dietaries", can serve as a yard stick for the grading and comparison of diets, but they should not be used as a criterion for the evaluation of nutritional deficiencies. Although a dietary survey can indicate whether specific nutritional deficiencies are likely to be present in a group of people, other tests must be applied to individuals in the group to determine whether these nutritional deficiencies actually exist.

Tables V, VI and VII show the number of groups whose diets met or exceeded or failed to meet the Recommended Allowances of specific nutrients.

The diets of all groups provided the recommended allowances of calories, and very few failed to provide the recommended allowances of protein, iron or vitamin B1. This is due to the relatively high consumption of meat and flour. In this respect the aboriginals' diet is different from that of many other native peoples whose diets are unsatisfactory because of their low consumption of protein foods.

A high percentage of diets were grossly below recommended level in vitamin C, calcium and vitamin A.

Vitamin C.

Only eight of the thirty eight groups (21%) were consuming recommended amounts of vitamin C and 29 (or 74%) were consuming less than 60% of the recommended allowance. This deficiency would be at its worst at the time of the survey, i.e. at the end of the dry, and it is likely that the position would be much improved after the wet when the gardens flourish. In any season, however, this deficiency is likely to continue unless the supply of vegetables or fruit is increased, either by extending gardens, importing tinned vegetables, or persuading the natives to collect more bush fruits and plants when they are in season.

Calcium.

Only six of the thirty eight groups (16%) were consuming recommended amounts of calcium. Twenty three (or 61%) were consuming less than 60% of the recommended allowances. This deficiency is related to the low consumption of milk and cheese. As a substantial increase in the consumption of these foods is not likely for some time the question of fortifying flour with calcium should be considered.

Vitamin A.

Six of the thirty eight groups (16%) were consuming recommended amounts of vitamin A, and twenty six (68%) were consuming less than 60% of the recommended allowances. This deficiency is related to the low consumption of milk, butter, and green and yellow vegetables. When liver and other offal is

consumed this deficiency would be easily overcome. It is likely that liver was consumed periodically, when cattle were killed and game hunted. Although liver was not a regular part of the ration, it is possible that sporadic feasts of this kind provided enough of a store of vitamin A to prevent serious deficiencies.

TABLE V. INTAKE OF SPECIFIC NUTRIENTS.

Amounts by which Groups Fell Below Recommended Allowances: By Groups.

Nutrients.	Met or Exceeded Rec'd Allowances.	0-20% below R.A.	20-40% below R.A.	40-50% below R.A.	More than 50% below R.A.
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MISSIONS. NUMBER OF GROUPS: 10.

Protein	7	2	0	1	0
Calories	6	4	0	0	0
Calcium	1	1	1	2	5
Iron	8	0	1	1	0
Vit. A.	3	1	1	0	5
Vit. B ₁	8	0	2	0	0
Vit. C.	4	0	0	1	5

N. A. B. SETTLEMENTS. NUMBER OF GROUPS: 11

Protein	11	0	0	0	0
Calories	11	0	0	0	0
Calcium	1	1	4	2	3
Iron	10	1	0	0	0
Vit. A.	2	2	2	0	5
Vitm, B ₁	11	0	0	0	0
Vit. C.	1	1	0	0	9

CATTLE STATIONS: NUMBER OF GROUPS: 17.

(Stock Camps ..5
(Station Workers. 6
(Dependants 6

Protein	15	1	0	1	0
Calories	14	2	1	0	0
Calcium	4	1	1	0	11
Iron	16	0	1	0	0
Vit.A.	1	0	0	2	14
Vit.B ₁	14	1	1	0	1
Vit. C.	3	0	0	0	14

TABLE VI.

INTAKE OF SPECIFIC NUTRIENTS: GROSS DEFICIENCIES.

Number of Groups Whose Intake of Specific Nutrients
was more than 40% below Recommended Allowance.

Groups.	No. of Groups.	Protein.	Calories.	Calcium.	Iron.	Vit.		Vit. C.
						A.	B1	
Cattle Stations.	17	1	0	11	0	16	1	14
N.A.B. Settlements.	11	0	0	5	0	5	0	9
Missions.	10	1	0	7	1	5	0	6
Total number of groups.	38	2	0	23	1	26	1	29
Percentage of total.		5	0	61	3	68	3	76

TABLE VII.

INTAKE OF SPECIFIC NUTRIENTS.

Number of Groups Whose Intake Fell Below Recommended Allowances by Stated Amounts; By Nutrients.

Miss. = Mission Settlements.

N.A.B. St. = N.A.B. Settlements.

C. St. = Cattle Stations.

Group.	No. of Groups.	Met or Exceeded R.A.	0-20% 20-40% 40-50% . More than 50% Below Recommended Allowance.			
<u>PROTEIN</u>						
Miss.	10	7	2	0	1	0
NAB.St.	11	11	0	0	0	0
C. St.	17	15	1	0	1	0
Total	38	33 (87%)	3 (8%)	0	2 (5%)	0
<u>CALORIES.</u>						
Miss.	10	6	4	0	0	0
NAB.St.	11	11	0	0	0	0
C. St.	17	14	2	1	0	0
Total.	38	31 (82%)	6 (16%)	1 (3%)	0	0
<u>CALCIUM</u>						
Miss.	10	1	1	1	2	5
NAB.St.	11	1	1	4	2	3
C. St.	17	4	1	1	0	11
Total.	38	6 (16%)	3 (8%)	6 (16%)	4 (10%)	19 (50%)
<u>IRON</u>						
Miss.	10	8	0	1	1	0
NAB St.	11	10	1	0	0	0
C. St.	17	16	0	1	0	0
Total	38	34 (89%)	1 (3%)	2 (5%)	1 (3%)	0
<u>VIT. A.</u>						
Miss.	10	3	1	1	0	5
NAB.St.	11	2	2	2	0	5
C. St.	17	1	0	0	2	14
Total.	38	6 (16%)	3 (8%)	3 (8%)	2 (5%)	24 (63%)
<u>VIT. B1</u>						
Miss.	10	8	0	2	0	0
NAB.St.	11	11	0	0	0	0
C. St.	17	14	1	1	0	1
Total.	38	33 (87%)	1 (3%)	3 (8%)	0	1 (3%)
<u>VIT. C.</u>						
Miss.	10	4	0	0	1	5
NAB.St.	11	1	1	0	0	9
C. St.	17	3	0	0	0	14
Total	38	8 (21%)	1 (3%)	0	1 (3%)	28 (74%)

DIETARY GRADING .

The total diet of each group was classified into a grade by the method used in the 1944 survey. The total of the percentages by which the mean daily intake of each nutrient fell below the mean daily recommended allowance was used to indicate the grade of the diet, as follows:

<u>Total of percentages.</u>	<u>Grade.</u>
Less than 10	A
Between 11 and 30	B
" 31 and 60	C
" 60 and 140	D
Greater than 140	E

Grade A included diets in which the intake of all nutrients equalled or exceeded recommended allowances. Grade E, which was not calculated in the 1944 survey, was introduced as a means of differentiating between the poorer diets which ranged between 60 and 420 in total percentages.

Thirty two groups, or 84% were graded D or worse, compared with 26% of all Australian Households. 16 of 17 groups in cattle stations, 10 of 11 groups in N.A.B. settlements, and 6 of 10 groups in missions were graded D or E. Of these, 23, or 60% of the total, were graded E.

Of the better grade diets, there was one B grade, (a NAB. settlement) and five C grades (one stock camp and 4 missions). The B grade diet was that of a small group of children under 6 years at Yuendumu, who received supplementary food at the kindergarten supervised by the missionary. The C grade diets were these:-

V.R.D. Stock Camp.	Cost. 29.13 shillings.
Hermannsburg School Children.	Cost. 8.34 shillings.
Hermannsburg Infants (0-2 yrs).	Cost: 8.46 shillings.
St. Mary's Hostel	Cost. 20.85 shillings.
Bagot Children's Home	Cost. 18.66 shillings.

The low cost of the Hermannsburg diets was largely due to efficient management and to the buying of foods in quantity and at reduced rates from fellow churchmen.

TABLE VIII. DIETARY GRADING. Number of Groups in Each Grade.

Feeding Groups.	No. of Groups.	GRADING.				
		A.	B.	C.	D.	E.
<u>Cattle Stations.</u>						
Stock Camps.	5	-	-	1	1	3
Station wrkrs.	6	-	-	-	3	3
Dependants	6	-	-	-	-	6
Total.	17	-	-	1	4	12
<u>NAB. Settlements.</u>	11	-	1	-	5	5
Missions & Instits.	10	-	-	4	-	6
Total Number	38	-	1	5	9	23
Percentage		-	3	13	24	60
Percentage of Households, All Australia, 1944	2593	32	21	21	26	-
Percentage of Household, N.T. 1948.	33	65	25	4	5	-

DISTRIBUTION OF RATIONS.

The provision of adequate rations is not sufficient in itself; they must be distributed so that they reach the groups who need them, and prepared and served so that the natives will eat them. This applied particularly to native children where infants or children were fed separately, as in a kindergarten or school, the diet was usually more satisfactory than in settlements where rations were distributed in bulk to a group or a family as a whole. The natives are not neglectful of their children, but many are not aware of their special needs.

It is recommended that when supplementary foods such as milk, fruit or tinned orange juice are supplied, these foods should be issued to special groups and consumed under supervision.

THE COOKING AND SERVING OF FOOD. Cooked Meals.

Where cooked meals were provided the methods and standard of cookery depended on the ability and interest of the cook. In these respects cooks varied from the experienced station cook who also cooked for the homestead, to the inexperienced native who was selected to do the job from those on the settlement.

In all groups where a cook was employed there was no attempt to cook food in the native fashion. It was cooked more or less in the same way as for the white workers, usually less carefully and without extras. If the homestead cook considered that the natives deserved a reasonable standard their meals were well cooked. If he were not interested, the natives were more likely to get what was easiest to prepare as those in charge seldom supervised the natives' meals. In many settlements kitchens were obsolete and poorly equipped so that cooking was not easy even for the whites' meals.

The cooking and serving of meals in stock camps was not observed; however, as food was plentiful and the cook was employed solely in feeding a small number of stockmen, he probably tried to satisfy them as far as his ability went.

On the head-stations some groups were provided with well cooked food neatly served on individual plates or in large dishes. In other stations the cooking and service was more primitive and would do nothing to help the natives assimilate civilized habits. Cooked meals for workers and dependants often consisted without variation of meat, bread and sweetened tea. Meat was placed on a large slab of bread which served as a plate, and tea was drunk from billy cans.

Regulations stipulating the provision of a plate, pannikin, knife, fork and spoon for each native were seldom observed. In some places these utensils had been supplied previously but had not lasted long. Mess rooms were usually provided for working natives, with separate sections for the sexes in accordance with native custom, but they were dark and dingy and seldom used, the natives preferring to sit out in the open under a tree or leaning against a wall.

In N.A.B. settlements, too, the cooking and service varied according to the ability of the cook and the amount of supervision given. In some the food was reasonably well cooked, at others the cooking and service were very primitive. Except at Bagot, kitchen and messroom facilities were very poor.

In missions and institutions the cooking and service was of a better standard because it was usually supervised if not carried out by some of the mission staff. Kitchens in missions were primitive and poorly equipped, with some exceptions. St. Mary's Hostel was outstanding in that the dining room was pleasant and bright, and the meals well cooked and attractively served, despite limited kitchen facilities.

Uncooked Rations.

Most dependants and some workers on cattle stations, most mission natives and some on NAB settlements were issued with rations which they prepared and cooked as they wished.

Most of the natives lived in family units in camps some distance from the main buildings. In a few settlements substantial huts had been built; more usual, however, were ramshackle humpies made of scrap iron, flattened kerosene tins, scraps of wood and pieces of sacking. Often the only shelter was a roof of tin or sacking held up by four posts. Some natives sheltered in temporary wurlies made of branches.

As there were usually no storage facilities whatever, the rations and the few kitchen utensils were kept on the ground or on the roof, together with bedding, clothing and the family's other possessions, or hanging from nails on the posts. Rations were issued weekly, sometimes daily, and dry stores, such as flour, tea and sugar were kept in calico bags or discarded tins. Meat was usually cooked and eaten soon after it was issued; any uneaten was left in the cooking pot or put on the roof or the ground, uncovered.

Water usually had to be carried some distance from a creek or dam, and it was kept in a drum or bucket, usually uncovered, near the hut or shelter.

Cooking equipment was limited; it might include billy cans, improvised from fruit or milk tins, a camp oven (a kind of covered iron dish) and sometimes a frying pan. Knives and other cutlery were scarce and much prized.

Camp fires were made in the open near the huts. Meat was roasted in hot ashes or hot stones, or cooked in a pot with water or fat. Onions, potatoes, and dried beans or peas might be added, but these were not issued regularly.

Flour was made into damper, sometimes with baking powder, but usually without, and baked in hot ashes or in camp ovens. In a few settlements flour was boiled with water to make a thin tasteless gruel.

Sugar was used to sweeten tea, and syrup or jam was eaten with damper, usually by dipping a piece of damper into the tin of syrup.

Individual plates and pabnikin and cutlery were seldom used, food being eaten with the fingers from the family pot.

Except for workers, meals were not at set times, individual families eating when they felt inclined.

Washing of dishes was not observed, although some natives may have done it. When plates were used they were usually scraped clean, or licked bare by the innumerable dogs and cats found in every camp.

- DIETARY SURVEY OF ABORIGINALS IN
THE NORTHERN TERRITORY -

PART D. Summary and Recommendations/.

SUMMARY AND RECOMMENDATIONS.

SUMMARY.

1. A survey of the dietary intake and food patterns of aboriginals living in six missions, five government settlements and six cattle stations in the Northern Territory was carried out by means of a modified "food list" and questionnaire method.
2. The mean consumption per head of ^{bread, cereals} meat and flour was approximately twice the average Australian consumption; the average consumption of milk and milk products, fruit, vegetables, fats and eggs was less than half the average Australian consumption; ^{the consumption of meat was 30% higher than the average Australian consumption.}
3. The amount of indigenous foods consumed was not significant and hunting and food collecting were enjoyed as a pastime rather than as a means of providing food.
4. The food consumption was evaluated in terms of specific nutrients, and the intake was compared with Recommended Dietary Allowances (Restricted) of the Food and Nutrition Board of the National Research Council of America. By this standard the diet of 74% of the groups was deficient in calcium, 61% in vitamin C and 68% in vitamin A. Most diets were adequate in calories and the other nutrients assessed. 84% of diets were graded D or lower, compared with 26% of the total Australian population in an earlier survey.
5. The food consumption and nutrient intake ~~was~~ in general more satisfactory for working stockmen than for other groups. Only on some missions and government settlements was provision made for the special needs of dependant women and children.
6. In groups issued with cooked meals the standard of cooking and service varied considerably according to the facilities available and the degree of supervision exercised. In general the standard was very poor.
7. Aboriginals issued with uncooked rations prepared and cooked the food in the open or in squalid shelters; storage facilities, cooking equipment and hygiene were extremely primitive.

RECOMMENDATIONS.

1. Ration Scales.

Ration scales approved by the Commonwealth Department of Health should be used as a guide by all settlements for a trial period, and eventually incorporated, modified if necessary, in the appropriate regulations.

2. Improvement in Diet.

Efforts should be made to increase the intake of vitamin C, calcium and vitamin A.

(a) Vitamin C.

Adequate amounts of potatoes should be imported and stored for use during periods when local produce is known to be scarce.

Where there is a suitable water supply gardens should be enlarged and supervised so that sufficient vegetables for all aboriginals are produced, at least during the dry. During the wet, chinese cabbage, sweet potato, and other suitable vegetables should be grown wherever possible.

As far as possible no new settlements should be established where there is no adequate water supply.

Research on the selection of suitable varieties of fruit and vegetables and on methods of cultivation is needed. An Agricultural Extension Service to advise on such problems would be of value; agricultural officers of the Native Affairs Branch and the C.S.I.R.O. should be consulted with a view to developing some kind of advisory service.

Aboriginals should be encouraged and trained to make the best use of any fruits and vegetables that are available (i) by utilising all edible parts of the plant, such as the green leaves of some varieties, and (ii) by preparing and cooking satisfactorily types that cannot be eaten raw.

(b) Calcium.

The production of milk should be increased by more careful tending of goats and milking cows. Aboriginals should be encouraged to use whatever milk, including skimmed milk, is available. As a substitute for fresh milk, dried milk and/or cheese should be supplied to children and pregnant and lactating women.

The question of adding calcium to flour issued in the Northern Territory should be investigated.

(c) Vitamin A.

Measures for increasing the supply of fruit and vegetables in (2)(a) above would also increase the intake of vitamin A.

Aboriginals should be supplied with, and encouraged to eat, liver and other organ meats.

Butter or fortified margarine would be a valuable source of vitamin A, but because of its cost and difficulties of transport and storage it is not recommended at present for most settlements.

3. Distribution and Preparation of Food.

If the aboriginals are to assimilate our cultural patterns and be accepted by the community their general living standards, of which diet is only a part, must be gradually raised. Already the aboriginals are eating the same kind of food as the whites, but in its preparation, cooking and service much improvement is needed.

Managers or supervisors or their deputies should adequately supervise the issue of rations, and, where cooked food is provided, the cooking and service of the food. This should not be the unsupervised responsibility of the cook.

Individual eating utensils should be provided; aboriginal children should be trained in their use and expected to acquire civilised eating habits.

Aboriginals who are issued with raw food will not have much chance of raising the standard of their food preparation until their general living standards are improved. As well as the provision of better living quarters and kitchen facilities, some kind of community education in elementary hygiene, cooking and nutrition is needed. This could be carried out through various agencies such as schools and missions by nurses, teachers, welfare officers and missionaries.

4. General.

More detailed recommendations are included in the Provisional Ration Scales and Suggestions for the Feeding of Aboriginals issued by the Commonwealth Health Department in 1952.

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