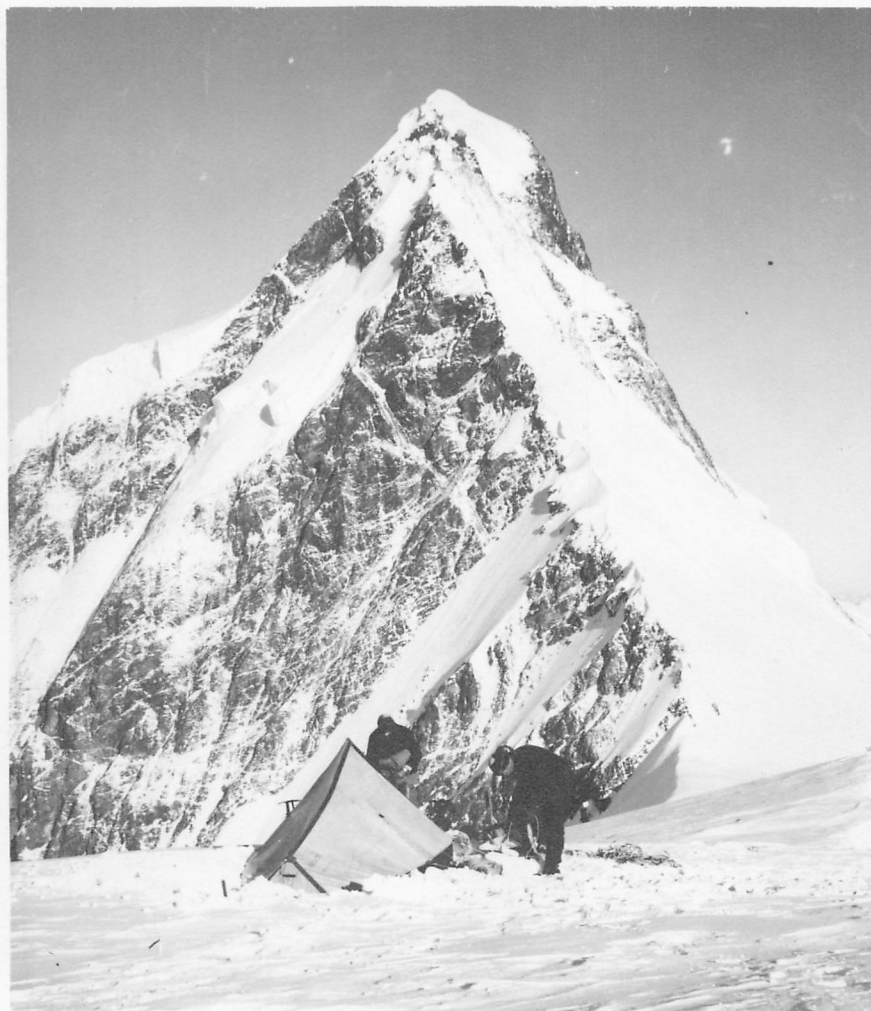


KING PEAK-YUKON
EXPEDITION
1952

SUMMARY REPORT

DECEMBER 1952



King Peak from High Camp

KING PEAK - YUKON EXPEDITION - 1952

PERSONNEL

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ACKNOWLEDGMENTS

During the phases of planning and carrying out the Expedition, we were assisted in solving the many problems that arose by others to whom we are greatly indebted. Without these guiding hands, these words of encouragement, and these sources of information our efforts to meet the climbing problems presented by the mountains of the St. Elias Range would have undoubtedly been unsuccessful and very likely impossible.

First, we want to express our appreciation to the Mountaineers, Inc., of Seattle, where for the most part we have gained the knowledge and enthusiasm required to search out and climb mountains. It is highly unlikely that our group would have developed without the acquaintances made as a result of this organization.

During the latter part of 1951, when plans were first begun for the King Peak-Yukon Expedition, we had less than vague impressions about this area. In attempting to formulate the plans which would turn our desires into reality we consulted those who had been on previous expeditions into these mountains and through their thoughtful responses we were able to build a mental picture of the objectives and plan procedures, routes, etc.

We extend special thanks to Mr. Norman Read and Col. Walter A. Wood of New York; to Mr. Henry S. Hall, Jr., and Mr. Bradford Washburn of Cambridge, Mass.; to Mr. Andre Roche of Switzerland; and to Mr. A. Baxter and Mr. Jon Lindbergh of the Sierra Club.

For help in suggestions on and the evaluation of equipment we thank Mr. Ome Daiber of Seattle; also of Seattle, Dr. Warren Spickard, who planned the first aid requirements; and Mr. Irving Herrigstad, who organized the radio equipment.

We also wish to express our gratitude to business firms and government agencies in the Northwest who helped to solve problems confronting the Expedition; to Boeing Airplane Company and Washington Ice and Cold Storage Company, who made available their facilities for advance testing of equipment and personnel, and the following for their assistance in solving food, supply, transportation and other problems: Black Bear Manufacturing Company; Imperial Candy Company (Societe Candy); Nalley's, Inc. Food Products; Grandma Cookie Baking Co., Inc.; Consolidated Dairies (Darigold); Pacific Foods Products Co. (Sunny Jim); Superior Biscuit Company (Pilot Bread); Tubbs Cordage Company of Washington (Rope); Cello Bag Company (Polyethylene containers); Alaska Steamship Company; Civil Aeronautics Administration and U.S. Weather Bureau (Yakutat, Alaska); Bellingham Canning Company (Yakutat, Alaska); E.P. Chalcraft, Seattle Post-Intelligencer.

To these we add the many ladies who helped: Mrs. Fred Niendorff, for secretarial assistance; Miss Betty Woodward, who spent many hours sewing tents and the performance of much detail work; Mrs. Jack Hossack and Mrs. Roy Snyder, who sewed the willow wand flags.

It is impossible to adequately express our deep appreciation for the generous help of all the individuals and organizations mentioned. Their support and cooperation helped to make possible the success of the King Peak-Yukon Expedition.

C O N T E N T S

Personnel	i
Acknowledgments	ii
Introduction	1
Report	2
Equipment	3-29
1. Group Equipment:	
Climbing (Rope, etc.)	4
Snow (Wands, etc.)	4-22
Tents	4-13 to 19
Stoves, Gasoline & Cooking Pots	5-20-24
Camp Supplies	5
Repair Kit	6
Entertainment	6
Emergency	6
Other	6
2. Personal Equipment:	
Boots	8-22
Socks	8-20-25
Pants	8-21
Shirts and Sweaters	9-21
Underwear	9-20
Parkas	9-10-21
Headgear	9-21
Handwear	10-21
Sleeping bags	10-22
Ice Axe	10-24
Crampons	10-23
Snowshoes	10-23
Skis	10-23
Emergency Kit	10
Additional Items	10-25
Recommended Personal Equipment List	26
3. Equipment Comments:	
Tents	13-19
Stoves	20
Clothing	20-22-25
Sleeping Bag	22
Willow wands	22
Sleds	23
Radio Equipment and Communication	27
Aerial Operations	28-29
Food	30 to 53
Total Food	34
Replenisher Supplies-Inventory	38
Inter-Camp Food	41
High-Altitude Food	45
First Aid Supplies	54-57-23
Observations:	
Weather	58
Flowers, Animals, Insects, Rocks	65

INTRODUCTION

One objective of the King Peak-Yukon Expedition was to gain information on this particular section of the St. Elias Range that would be helpful to future climbers. This we hope will encourage other groups to organize adventures into this or other regions similar in nature.

For the most part this report deals with the equipment and food taken on the trip and our combined conclusions at the end of the summer. We naturally get a variety of opinions by the different expedition members and on many topics it is impossible to state a unanimous conclusion. The ideas have been incorporated as much as possible and whenever there have been conflicting opinions an attempt has been made to list the author so interested persons could make direct inquiries.

The accounts of this expedition can be found in the following journals: The Mountaineer (1952), The Mountaineers, Inc., Seattle; The American Alpine Club Journal (1953), New York; and Appalachia, (1953?), Appalachian Mountain Club, Boston.

In addition an extensive group of pictures were taken, both in color and in black and white, which could be made available. A 16mm. color movie also recorded the activities.

Should further information be desired, inquiries may be directed to one or more of the expedition members listed on the personnel sheet.

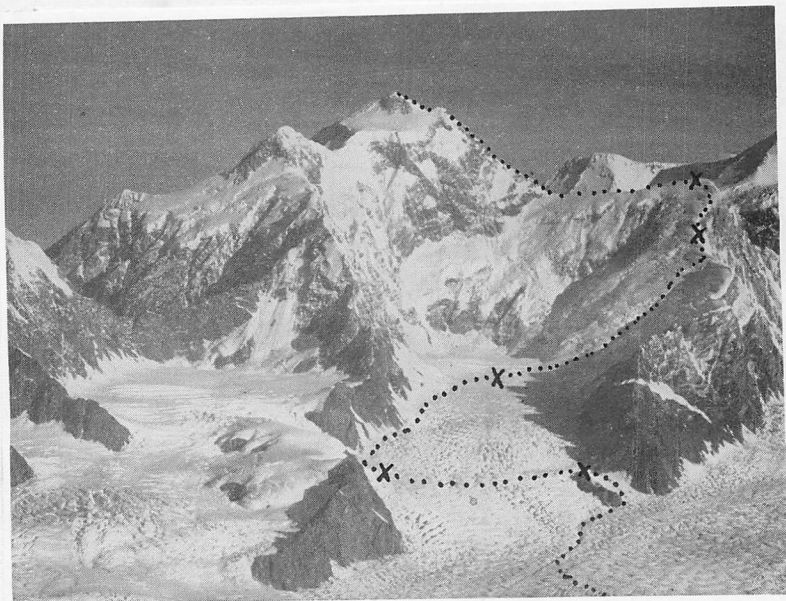


Photo by Walter A. Wood

This aerial photograph of King Peak was taken looking north from above the Seward Glacier. The mountain mass extending up to the right from King leads to the summit of Mt. Logan (19,850 ft.). Mt. Logan is the second highest mountain upon the North American continent and is reported to be one of the largest single mountain masses in the world.

On the south side of the Seward Glacier are the St. Elias border peaks, which include Mt. St. Elias and Mt. Augusta. Farther south are the coastal glaciers and finally the Gulf of Alaska. Yakutat, located on the Gulf of Alaska, is the nearest town.

The climbing route and camps are indicated on the photograph.

Nunatak Camp (King Base Camp) is just out of the picture in the lower right side. The King Peak air drop is about one-half mile farther south near the area, where the King Glacier flows into the main mass of the Seward Glacier.

The first camp marked in the photo is Cache Camp. Hospitality at Cache Camp was enjoyed with a swarm of mosquitoes, none of which could bite. Some vegetation was also present (See text).

The glacier was very broken above Cache Camp, and it was necessary to cross the glacier (camping at Glacier Camp), continuing along the west edge of the glacier to the head of the cirque, where the second King Base Camp was established. Snowshoes were used almost continually to this point.

On two successive cold mornings (hard snow) all members of the party proceeded to establish the next camp on the spur ridge at about 13,000 feet. After one day of storm the camp was moved to the top of the east shoulder at 14,500 feet. Slightly sub-zero temperatures and relatively high winds were encountered. The summit attempts were made from this High Camp.

EQUIPMENT

KING PEAK - YUKON EXPEDITION 1952

GROUP EQUIPMENT LIST

This is a list of total equipment taken to Yakutat. Some of these supplies remained at Yakutat and were not taken in to the glacier.

1. CLIMBING EQUIPMENT ---

- a. Nylon Climbing Rope: Two 80' $3/8$ " dia.
Three 120' $7/16$ " dia.
One 140' $7/16$ " dia.
57' of $5/16$ " dia.
233 ft. $1/4$ " Nylon
- b. Manila rope for use as fixed rope: 600' of $5/16$ " dia.
1200' of $1/4$ " dia.
600' of $7/16$ " dia.
- c. 17 ice pitons. (4 tubular)
- d. 3 wafer & 4 spoon rock pitons.
- e. 5 Carabiners, aluminum (in addition to 2 on each person)
- f. 2 ice piton hammers.
- g. One standard extra ice axe.
- h. One alpenstock.
- i. 4 - 4' Rappel pickets and 4 - $4\frac{1}{2}$ ' Rappel pickets.

2. SNOW EQUIPMENT ---

- a. 500 split bamboo wands, black ends.
- b. 30 bamboo wands with florescent flags.
- c. Two snow saws.
- d. Sled parts.
- e. Two G.I. shovels. One home-made shovel.

3. FIRST AID SUPPLIES - See special list.

4. TENTS ---

- a. One 4-man coated nylon tent.
- b. One 11' wide X 9' long X 7' high nylon and orlon tent.
- c. One 6' wide X 7' long X 7' high nylon Logan tent.
- d. One 3' to 5' wide X 9' long X 5' high nylon tent.
- e. One 2 man nylon tapered "A" climbing tent.
- f. Two army mountain tents.

Each tent equipped with tent poles and stakes suitable for use in light powder snow. Stakes may not be necessary in heavy snow. Also a whisk broom and sponge was furnished by tent owner. Although most tent pegs were light homemade type of aluminum, 16" long, oak pegs were taken for pitching in deep snow.

Group Equipment - page two.

5. STOVES, GASOLINE, & COOKING POTS ----

Extra repair parts should be carried for each stove and all party members should be familiar with the stoves and be able to fix the most common troubles. The following stoves were taken:

- a. Four Svea #123.
- b. One Taylor pocket stove.
- c. Three Borde stoves.
- d. One Primus stove #42.
- e. One Primus stove #43.
- f. One Primus stove #123.
- g. Coleman stove (for base camp).

Each stove owner should provide a small quart or pint gasoline can or polyethylene bottle, and a copper chore ball not containing soap. 9 small funnels and 2 larger funnels equipped with fine mesh or felt filters were provided in a group.

Mark pots at cup levels by a scratch or other means (2 cups equal 1 pint) 4 2-qt. pots taken.

White gasoline was carried in one-gallon small capped cans. (15 cans taken. The total gasoline taken was 25 gallons, of which 15 gallons was packed for air drop. Air drop gasoline should be in stainless steel surplus oxygen tanks. 2 tanks taken.

6. CAMP SUPPLIES ----

- a. Soap (2 bars).
- b. $\frac{1}{2}$ dozen flour sack rags.
- c. 2 butterfly can openers (base camp).
- d. 2 can openers (5 ¢ co-op. army type).
- e. 6 copper chore balls.
- f. 1 qt. Chloro Germicide
- g. 150 ft. of cord.
- h. 2 plastic 5 qt. canteens.
- i. Large and small plastic food bags (large bundle).
- j. 6 large (24" X 36") plastic food bags.
- k. 20 cloth type food bags.
- l. 60 yards of 2" non-waterproof adhesive tape.
- m. 5 pencils and 5 scratch books.
- n. 3 wax pencils (red, black & yellow).
- o. 3 lb. paraffin (also for ski wax).
- p. 5 cans snowseal, 2 cans whale oil paste, & 3 lbs. lanolin (Arky.)
- q. 3 flashlights, 6 extra bats, and 3 extra bulbs.
- r. Lightweight pressure cooker (4 qt.)
- s. Waterproof matches (in addition to those packed with food).
- t. 25 rolls of toilet paper.
- u. 2 thermos bottles.
- v. 9 approx. 6' bamboo poles.
- w. 2 tablespoons.
- x. 4 wood-handled spoons (large).
- y. 2 pkgs. baking soda.

Group Equipment - page three

7. REPAIR KIT --- The following items packed in a marked box:

- a. 200 ft. of various sizes of twine.
- b. Coil of copper wire.
- c. 2 long snowshoe straps.
- d. Misc. leather straps for snowshoe repair.
- e. 5 yards of adhesive tape.
- f. Sew kit & tent repair material.
- g. 100 assorted split steel rivets.
- h. One tube all-purpose cement.
- i. 3 dozen safety pins (assorted).
- j. Pocket knife & sharpening stone.
- k. Wire cutter type pliers.
- l. 1 standard screw driver.
- m. #1 & #2 size Philipps head screwdrivers.
- n. Three-cornered file.
- o. Tire patches for shoe pacs.
- p. 3 candles and matches.

8. ENTERTAINMENT ---

- a. Cribbage set - puzzle.
- b. Small checker & chess sets & bridge and pinochle card decks.
- c. Plastic ball.
- d. Books: 1925 ACC Jr.
La Chapelle avalanche book.
Bible.
Mountain Operations.
Readers Digest (26).

9. EMERGENCY EQUIPMENT ---

- a. Radio receiver-transmitter (3190 KC), 4 extra sets of batteries taken.
- b. 18 U.S.Coast Guard day-nite smoke flares.
- c. Snow dye--red, yellow, blue, and green.
- d. 200 plus candles and matches.
- e. 1 signal mirror.
- f. Complete set of maps, photos, and geographical data.

10. OTHER EQUIPMENT ---

- a. One 24' dia. bright yellow parachute.
- b. Two 7' X 11' blue & yellow nylon tarps.
- c. Four 5' X 6' blue & yellow nylon tarps.
- d. 2 max.-min. thermometer sets.
- e. 2 waterproof paper log books with pencils.
- f. 1 Binoculars.
- g. 2 aneroids.
- h. 1 Windakator.
- i. One extra snowshoe harness.
- j. Two extra pair mittens, outer and inner.
- k. 10 vapor barrier plastic socks.

Group Equipment - page four

- l. Ski cable and metal ski tip.
- m. 5 tubes ski wax: Sohms Blue, Orange, Gold Klister.
(Paraffin listed elsewhere).
- n. 2# 8d nails.
- o. 1 gal. Carbon Tetrachloride.
- p. 1 gal. Protectol.
- q. Hatchet.
- r. 25 Heat Tabs (large size)
- s. 2 pair pliers.
- t. Bailing wire.
- u. 2 pr. inner soles.

KING PEAK - YUKON EXPEDITION 1952

PERSONAL EQUIPMENT LIST
(As distributed to party members)

Wherever possible use the lightest type of equipment. Make sure it is strong and durable.

I. Boots

- A. Shoe paks - either all rubber or rubber bottoms and leather tops are recommended. The size must be sufficient to allow for two pair of innersoles and two to four pair of heavy wool socks.
- B. Felt Boots- weight 4 lbs. 12 oz. This item is being worked on as a group project. Direct any comments on this to Vic Josendal.

It is absolutely essential that crampons can be adopted to all boots. Crampons have been tried and proved successful on both types of shoe paks. Shoe paks also work excellent when skiing, therefore ski boots are definitely not needed.

II. Socks

- A. 8-12 pair or at least 3 changes of long all wool socks.
- B. 6 pair of innersoles for boots - weight 2 oz. per pair. Cowhair felt type of innersole do not shrink whereas wool will. Wool however is the warmer of the two.
- C. Several pair of nylon type dress socks. Can be worn over all other socks to increase life of wool socks as nylon wears well. (optional)
- D. Several pair of boot socks. (Optional)

The socks should be of varied sizes so they can be placed one on top of the other and still not restrict the circulation of the blood in the feet. All socks should be reinforced before leaving with nylon yarn. A good way to mark stocking sizes is to sew into the side of the sock a letter representing the size. Three sizes are recommended. Goathair socks which contain natural oils are good. Indian knit socks are also good and contain natural oils.

III. Pants - See also special bulletin on fastening trousers around boots to keep out snow.

- A. One pair wind breaker type pants, mountain cloth is good. Weight 1 lb. 8 oz. G.I. mountain pants are good.
- B. Wool pants preferably of the ski type. One pair required and one pair in addition is recommended but optional. Weight 1 lb. 14 oz.

Personal Equipment List - page two

IV. Shirts and Sweaters

- A. Two sweaters with one of these being of the turtle type neck. One wool shirt or substitute another sweater. Weight 3 lb. 3 oz.
- B. Long sleeveless sweater, all wool. (Optional) Weight 8 oz.
- C. One cotton shirt (Optional) 6 oz.

V. Long Underwear

- A. One pair of heavy all wool long underwear.
- B. One pair of light part wool long underwear or substitute another pair of all wool pants or all wool longs.

The long underwear should be of the two piece type with the elastic waist on the pants. Some way of fastening the tops to the bottoms might be considered. If buying long underwear, be sure and get very large sizes since longs shrink horribly. Previous experience has indicated that at least two pair of heavy long wool underwear should be taken; however, by recommendation of Jon Lindbergh a regular pair of wool trousers may be substituted for this additional requirement.

VI. Parkas

- A. One heavy long parka of knee level, army type is fine. Weight 2 lb. 2 oz. Nylon parkas of knee length can be made which are very light and wind proof.
- B. One shorter parka of preferably nylon material in addition to long parka. Weight 10 oz.

All parkas should be adjustably tight around wrist and hood. Mittens must be able to be attached to the parkas and probably to one or more sweaters. Strings attached to the mittens and running up the sleeves to one another will be sufficient. Bright colored parkas recommended for identification.

VII. Headgear

- A. At least one and preferably two wool caps that come down over the ears and down the back of the neck. Stocking caps work fine. Weight 2 oz./cap.
- B. Face mask of chamois skin to wear over wool type face mask.
- C. Woolen helmet, covers entire head and neck with slits at the eyes and a flap that can be tucked under the chin when eating. Very good in cold weather.
- D. Wool ear muffs. (Optional) 1 oz. Any type that covers the ears.
- E. Some type of hat is needed, left to individual taste.
- F. Two pair of goggles with one in emergency kit. Weight 2 oz. One extra pair of optical glasses for those who wear them. Goggles should be of the well ventilated type.

Personal Equipment List - page three

VIII. Handwear

- A. Three pair of all wool mittens, preferably of a loose weave. Get two sizes so as one can fit over the other.
- B. One pair outer mittens, the army mitten with leather face and canvas back is good. An extra pair is optional. Weight 5 oz.
- C. One pair of gauntlets are recommended. They come down only as far as the fingers and are excellent to wear when you need your fingers in cold weather or under mittens.
- D. One pair of finger gloves, all wool. (Optional) 4 oz.

IX. Sleeping bags - two sleeping bags that can be placed inside one another. These should be of the highest down content that is available. The double Arctic bag (Army) of 40% down and 60% feathers is satisfactory. Weights $4\frac{1}{2}$ -6 lb./bag.

X. Mattress - either an air mattress or a foam rubber mat. The short nylon air mattress is recommended. If a foam rubber mat is used the recommended dimensions are 17" x 34" x $\frac{1}{2}$ ". Weight nylon air mattress is 1 lb.

XI. Packs

- A. Heavy load type such as a Trapper Nelson or Yukon style. Weight 5 lb.
- B. Light pack (rucksack or ski pack).
- C. Seabag with shoulder straps for carrying (Optional).
- D. One or two large plastic bags or other waterproof material to fit in the pack sacks to keep the contents dry.

XII. Ice Axe - weight 2 lb. 4 oz.

XIII. Crampons - must be adjustable to all types of foot wear. Weight 3 lb. Recommend 10 or 12 point Eckenstein or Bhend light weight 10 point.

XIV. Snow shoes - both the beaver tail and the Alaskan types are recommended. The Bear paw type is not recommended. Test the bindings before the trip.

XV. Skis - 13 lb. for skis, $1\frac{1}{2}$ lb. for poles. See special bulletin on skis. The skis should be adaptable for making a toboggan with a hole in the tip of each ski for hauling. Cable bindings with a safety strap are recommended. Ski climbers should be taken either of mole skin or seal skin. Only about half the party members will be taking skis.

XVI. Emergency kit

- A. Compass and map.
- B. Pencil and notebook - waterproof paper.

Personal Equipment List - page four

- C. Twine and wire. 25' twine and 5' wire.
- D. Waterproof matches and a candle.
- E. Sun glasses.
- F. Snow dyes.
- G. Zinc Oxide or Clown White, preferably two tubes.
- H. Sunburn lotion (Optional).
- I. Two carabiners (weights 2 oz. for aluminum, 5 oz. for standard, 6 oz. for safety carabiners)
- J. Knife with can opener can be carried on the person.
- K. Adhesive tape.
- L. Piece of flint (Optional).
- M. Safety pins (Optional).
- N. Aluminum foil for cooking, signalling, etc. 10" x 10".

XVII. Additional Items

- A. Watch
- B. Large cup, must be of the Army type that fits on a canteen in order to proportion out the food.
- C. Spoon
- D. Toothbrush and tooth powder or paste
- E. Soap and towel
- F. Heavy Cord, cod line 25 feet.
- G. Waterproof matches
- H. Extra leather straps for snowshoe bindings
- I. Camera and film (Optional)
- J. Extra pairs of boot laces
- K. Canteen, recommend polyethylene
- L. Each person bring a small book

Personal Equipment List - page five

M. Musical instrument desirable. (Optional)

N. Alarm clock watch, if one is available (Optional)

O. Prussik slings - 3

(Avalanche cords are being supplied by the expedition.)

In addition some members decided to take the following:

A. Insulation boots (Korean)

B. Mosquito netting for sunburn prevention.

King Peak - Yukon Expedition, 1952 - Contd

EQUIPMENT COMMENTSTENTS (By P.S.)

Army Tent 52-1--This tent has an impervious floor and a pervious upper of a cotton material. This feature is very valuable in allowing ventilation and yet preventing surface water from passing in through the floor. The roof of the tent is arched and maintains its form by a pair of collapsible arched poles; one at each end. The arched roof facilitates more space inside the tent and allows the occupants to be in the sitting position with reasonable comfort. This is not the case with the present 2 man Army tent. At one end of the tent there is a regular tunnel entrance and ventilator vent, whereas at the opposite end there is a full size zipper door. This zipper door is a very favorable feature since it will allow; 1) plenty of light to enter the tent when open, 2) easy cleaning of the tent, 3) a very convenient exit and entrance, 4) a controllable ventilation system, and 5) a means of making the tent by pitching another tent or a tarp at the entrance. This experimental tent also had a sod cloth which is well worth the extra weight of material. The number of tie-downs or guys is important in tent design and the Army tent could be pitched with a front and back anchor, and an anchor on each side. There are actually 2 guys on each side but these can be tied to a common anchor.

MacGowan's Tent--This tent was used almost entirely for the high altitude operations because of its light weight and low wind resistance. It could have held 6 or even more men but was very comfortable with 4 men and with considerable extra space. Probably this tent could be improved by slight changes in design to eliminate this extra or unused space. The tent was all nylon (pervious) of about 3 ounces per square yard and was quite satisfactory. There was some frosting but nothing serious. It would probably be desirable to include a water-proof or impervious type floor. Also an attempt should be made to eliminate some of the guys in order to decrease the pitching time.

Vic's Logan Tent--This tent also was of the pervious nylon and as with MacGowan's tent was waterproofed, with the lanolin-silicone-carbon tetrachloride mixture. This waterproofing was probably satisfactory but an effort should be made for improvement. At high altitudes the sun's rays will melt the snow that settles on the tent so water-proofing is essential even at below freezing altitudes. Logan type tents have been time tested and was also found quite satisfactory on this expedition. One unique feature was the zipper door which is probably superior to the more conventional tunnel type doors.

Pete's Small Tent--More of a bivouac sized tent and although it is made for 2 men it is just about the right size for one man. The zipper door is slightly small, and the floor should be impervious.

Pete's Large Tent--Because of its size and weight, this tent should be used for a base camp tent only. The design is not altogether perfect and should be cut back about a foot and a half in the rear end. This tent had an extra heavy nylon floor but the extra weight would probably not be worth the extra comfort. Had the floor been impervious, this extra heavy floor may have been more desirable. As with Dick's tent there are far too many guys which make the pitching time quite long.

King Peak - Yukon Expedition, 1952 - Contd

EQUIPMENT COMMENTS

General Comment on Tents--Floors and walls up at least 6 inches should be water-proof for tents that will be used on the snow. Large zipper doors are recommended with a total zipper length of almost 100 inches, and placed in a "C" shape. That is not a "U" or an inverted "U" position. Rappel pickets are handy on reasonable tough climbs and will make excellent anchor poles for the ends of tents. The side pegs can be "V" shaped aluminum about 14" long or slightly longer. Long wooden pegs are not necessary except when rappel pickets are not used. Even then, ice axes can be used for the end anchors. Actually it takes very little tent material to stop the wind sufficiently to make a tent satisfactory for cold country. Ordinarily a person with full clothing and a sleeping bag can withstand quite severe weather without an extremely heavy and wind-proof tent.

EQUIPMENT COMMENTSTENTS (By V.J.)

V. Josendal's small nylon Logan tent--This tent was very satisfactory. Two men were very comfortable in this tent at base camp. Elsewhere it was occupied by three men in comfort and four men with some crowding. Floor area is 42 square ft, and total weight is 9 pounds 10 ounces including stakes and poles. "U" zipper door was good design and door could be unzipped during rain or snow and moisture would not enter tent. Door could be propped open more to provide more ventilation. I think this "U" type door is better than the "C" type for the above reason, although less convenient for entrance and exit. Garbage door in floor of tent at the back worked well as an auxiliary ventilator, when snow was scooped away from it. Tent could be pitched fairly rapidly. Four section tubular aluminum alloy tent pole made from war surplus life boat paddle handles was light, strong, and convenient. Not as good in high wind as a tent with a lower profile such as McGowan's (see general comments elsewhere).

Bates Army Experimental Mountain Tent--I never slept in this tent but I did lift it. With a weight of thirteen and a half pounds without stakes and poles, and a floor area of only 31 square feet, this tent is much too heavy for backpacking. Even though it may have many desirable features, this overall tent design is impractical for general mountaineering use, unless weight can be reduced.

Dick MacGowan's Long & Low Nylon Tent--This is a very good high altitude tent. The total weight of about nine pounds is very reasonable for a tent holding four men with comfort. I don't think that the size should be cut down since there could be very little resultant weight reduction, and yet still be large enough to hold four men. The tent is nine feet long and varies between two and one half and five and one half feet wide so it is not too hard to shovel out a ledge on a sloping snow surface on which to pitch it. Also since floor is long and wide in the middle four men can sleep lengthwise, two at each end and overlapping in the middle. This is a fairly comfortable arrangement. Floor area is approximately thirty-eight square feet.

Since the tent is only five feet high and slopes down in all directions from the center pole, it has good wind resistance. However, the tent roof doesn't slope quite enough for good water drainage, but this could be improved only by increasing tent height or adding another pole. Door is on a sloping surface, so rain and snow come directly in when it is open, but a vertical door could be attained only by decreasing tent slope elsewhere or by adding a pole.

This tent would be more convenient if a small zipper door was added for waste disposal or for taking in clean snow.

Army Surplus Nylon Mountain Tent--We shipped two of these tents to Yakutat but never used them because we felt we had better tents and we did not need these. This tent weighs nine and one-half pounds including stakes and poles. It is made of impervious coated nylon and therefore condensation forms on the inside.

-2-

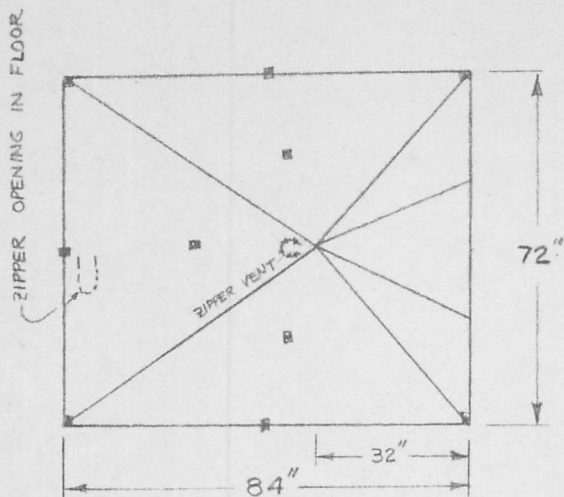
EQUIPMENT COMMENTS - Continued

General Comments--Tents should be designed so that a tarp can be rigged between adjacent tents to form an entrance way, such as used by Wood Mt. Vancouver expedition. Just the right size nylon tarp and method of attachment to form the tent entrance should be planned in advance. Our tents were all different sizes; but we did sometimes use nylon tarps to form entrance ways which joined two tents. This was a very convenient arrangement in bad weather.

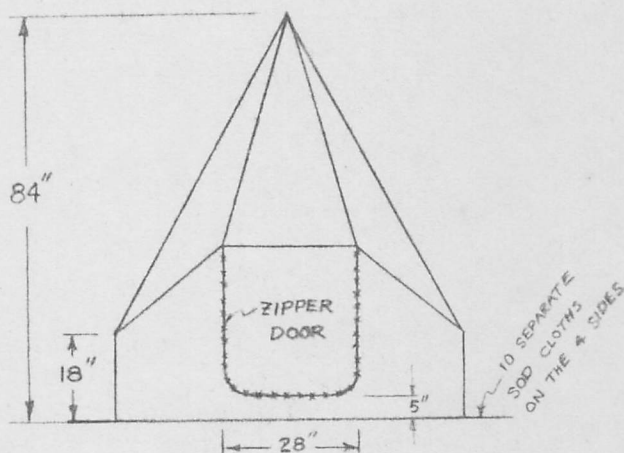
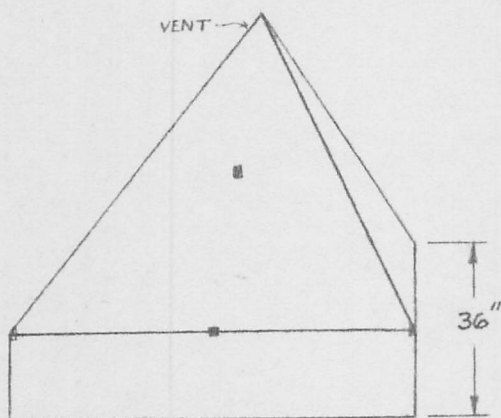
Nylon and Orlon material is desirable from a strength and weight standpoint. We never had a material failure, although we had high winds.

General Comments - Tent Waterproofing--Floors and sidewalls should be made from impervious coated nylon fabric. Efforts should be continued to find a satisfactory waterproofing for close weave uncoated nylon material. The lanolin-silicone treatment we used was less than satisfactory, since tents leaked some in rain and at times there was a fair amount of condensation on the inside. Protectol waterproofing (probably with a wax base) made by the Price Fire and Waterproofing Co., of Poughkeepsie, New York, was a better waterproofing for nylon than lanolin-silicone according to our tests on small pieces of material, but we never used it on tents because it greatly increases the inflammability of nylon material. Lanolin decreases nylon inflammability. Many other standard waterproofing compounds were tested and found to be less satisfactory than the two compounds mentioned above.

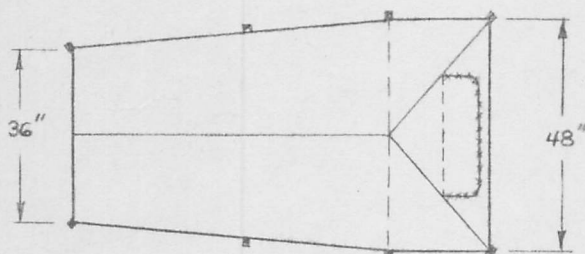
LOGAN TENT (Vic's)



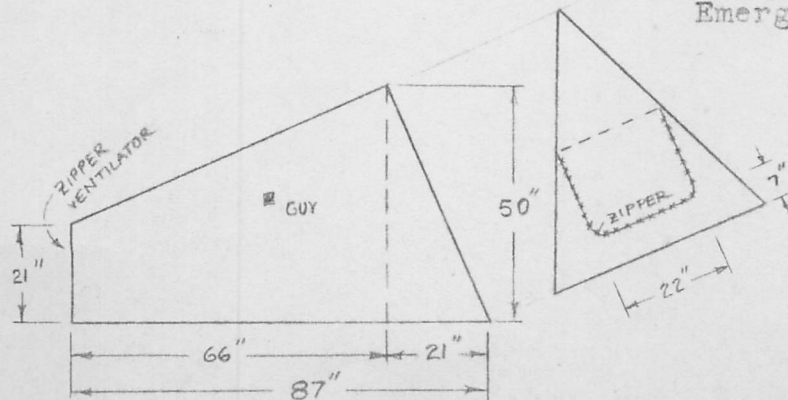
Material -- 3 oz. nylon, 85 count weave each way. Water-proofed with lanolin-silicone.
Weight -- 7 lb. 10 oz. without pole and stakes. 9 lb. 10 oz. with dural pole & stakes.
Floor area -- 42 square feet.
Capacity -- 2 men with comfort
 3 men o.k.
 4 men crowded

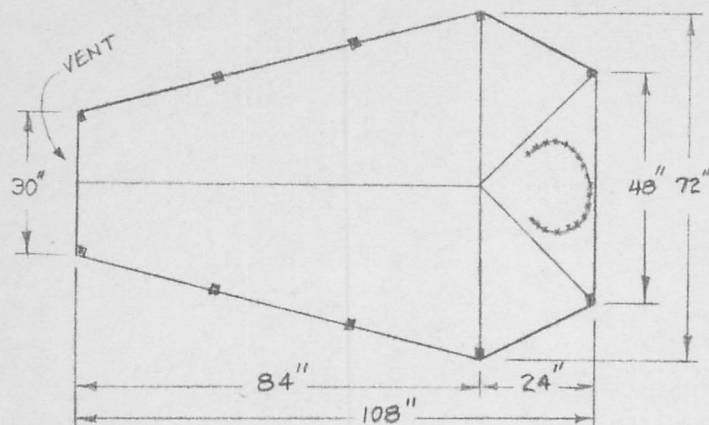


SMALL BIVOUCAC TENT (Pete's)

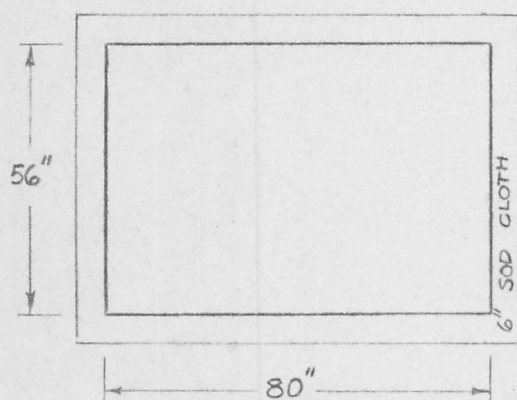
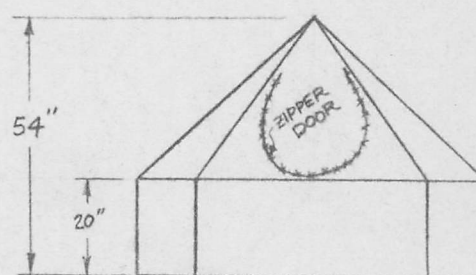
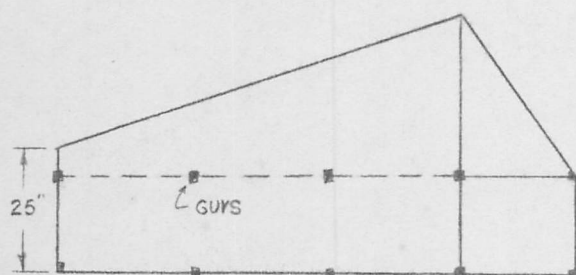


Material -- 3 oz. nylon, approx. 85 count weave each way. Water-proofed with lanolin-silicone.
Weight -- 3 1/4 lb. without pole and pegs. 5 lb. with aluminum pegs & bamboo pole.
Floor Area -- 26.25 square feet.
Capacity -- 2 man maximum but best for one man and equipment.
 Emergency or bivouac type tent.

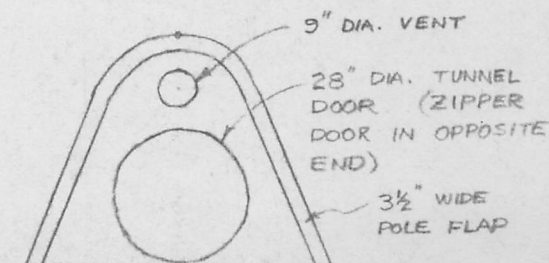
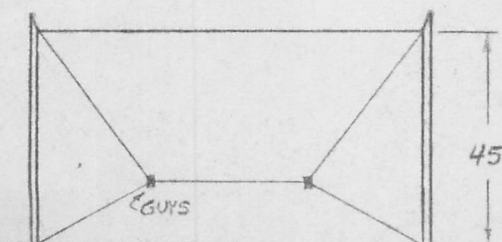


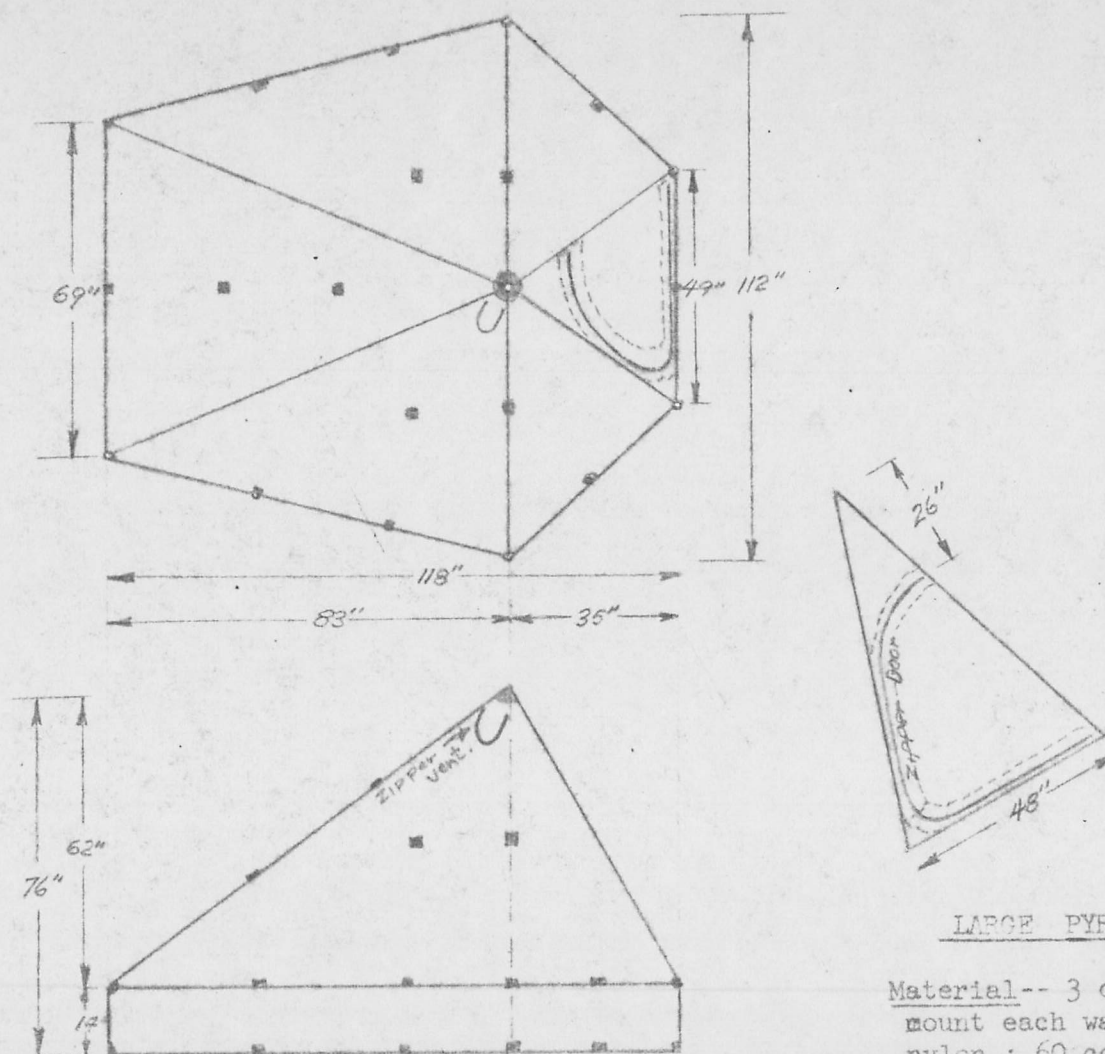
HI-ALTITUDE TENT (Dick's)

Material -- 3 oz. nylon, 85 count weave each way. Water-proofed with lanolin-silicone.
Weight -- 9 lb. incl. bamboo pole and stakes.
Floor area -- 39.7 square feet.
Capacity -- 4 men with fair comfort.

U. S. ARMY EXPERIMENTAL TENT

Material -- 5 oz. (approx.) pervious cotton. Floor of impervious material.
Weight -- 13½ lb. without pegs & mosquito net.
Floor area -- 31 square feet.
Capacity -- comfortable with 2 men, o.k. for 3, crowded with 4.





LARGE PYRAMIDAL TENT (Pete's)

Material-- 3 oz. orlon roof, approx. 80
mount each way. Floor and wall are 5 oz.
nylon ; 60 count by 230 count.

Construction-- all field seams triple
stitched . Floor and wall seams were
stitched with heavy canvas stitching.
Pole socket reinforced with heavy nylon.

Weight-- 9 # without pole and pegs.

Floor Area-- 71.44 square feet.

Capacity-- very comfortable with 3 to 4
men but will hold 6 to 8 members.

EQUIPMENT COMMENTS

King Peak - Yukon Expedition, 1952

STOVES

1. Coleman--Much too heavy and therefore was used only in base camp. This stove is reliable, heavily constructed, has a large gasoline supply, and produces a very hot flame. The flame cannot be regulated and this is a definite disadvantage.
2. Taylor Pocket Stove--A very light stove that has to be primed and is some times difficult to start. The nozzle often gets clogged. The flame is not very hot and the intensity cannot be regulated.
3. Svea No. 123--This was probably our best stove, being light, has a large gasoline supply, a flame that can be regulated, and fairly easy to start. It is not too good in wind and has to be insulated from the snow.
4. Radius No. 42--Second best to the Svea and has all the advantages of the Svea except for a smaller gasoline capacity and the difficulty encountered in filling. Both these features are minor. It has better wind resistance than the Svea. Although we did not have a Radius 71, this stove does look quite good in having both the advantages of the Svea and the Radius 42.
5. Borde--Quite light and has a very hot flame and a controllable flame. However, it is a little touchy to operate. It has an extremely short burning time, and a limited pot capacity. The pots in the set must be used and they are far too small except for one person and maybe two persons. We melted one Borde stove when it got too hot after removing the pot.
6. Radius No. 123--Much too heavy and thus used in base camp as with the Coleman. It has a more controllable flame than the Coleman but it doesn't seem to be quite as fool-proof.

CLOTHING

1. Sox--The Indian knit sox seem to be superior because of better wearing qualities, dry quicker, don't feel cold even when they are wet, and allow plenty of foot ventilation. They are somewhat coarse in weave and thus will give tender feet a bad time. The goat hair sox were taken because of their reported wearing qualities but nothing amazing was reported. Major trouble with the goat hair sox was their short length. All sox should have long uppers. Light sox are not necessary.
2. Underwear--Preference as to one or two piece varied. One suit of each is a good combination. They should be all wool and loose fit. Several disposable pairs of under-shorts were used by some members.

3. Pants--Use of both windbreaker and woolen pants recommended. The wool pants should be protected if possible from dirt as this will decrease the insulation value considerably. Use of suspenders is debatable.

(D.M.-- I water-proofed the pants with a solution of carbon-tet. and lanolin. I found this very unwise, for they become heavier, and do not allow enough ventilation. I found that no waterproofing is needed at elevations above 5000'. Waterproofing should be avoided, especially on wool items, for reasons stated.)

Baggy pants will catch crampons. All pants should have the thongs or straps around the ankles.

Trouser Cuffs

One of the requirements of the trousers taken on the expedition was that they be securely fastened on the outside of the boot. This is to prevent snow from getting down in the boot to melt and facilitate freezing the feet in cold weather. The following procedure is recommended to enable fastening the trousers on the outside of the boot:

The trouser is adapted with a drawstring that is tied on the outside of the leg and the boot is adapted with a welt of leather at the top. The pants are then pulled down over the boot and the string pulled tight below the welt so it cannot be pushed up above the boot. It is suggested that the leather welt be sewn or riveted only along the upper edge so the lower edge flares out and aids in preventing the pants from sliding upward. This procedure is highly recommended.

Gaiters or leggings can be used to prevent snow from getting inside the boot but are not especially recommended because of the inconvenience of putting them on and taking them off unless they are attached directly to the boot.

4. Shirts--Should have at least one shirt and a total of three or four shirts or sweaters. The Indian knit sweater, although quite heavy was warm (with no wind or a good parka) even when in wet weather. All shirts should fit loosely, and be 100% wool. If weight is not important, one cotton shirt is good for base camp.
5. Hand wear--Heartily recommend the wristlets and/or woolen gloves with the finger tips removed. In bad weather a pair of wool mittens were used, and canvas mitts should be taken. An extra pair of wool mitts in the emergency kit would be wise. Indian knit wool mitts should be investigated. Gloves should be tied together with cord, which runs behind neck. This prevents loss on steep slopes.
6. Head wear--Wool ear muffs we used almost continuously and prove satisfactory in any weather with the aid of a parka. Would suggest a light wool helmet in addition for future trips. Face masks were not necessary but should be taken.
- (D.M.-- I used a stocking cap for cold weather and a "wool felt floppy" in warmer weather or on top of the stocking cap. I used a "fast cap" at times, under the stocking cap. I carried a light wool helmet or balaclava and wore it high on King. They are excellent when the going is slow or for bivouacking, however with a moderate pace they were not needed.)
7. Parkas--The nylon parkas seem O.K. below 10,000'. The long Army parkas are the best at higher elevations, but the lower section (about waist level and below) can be of a lighter material. The hood should fit well around the face. The use of fur hood lining is debatable.

(D.M.-- The nylon has its particular advantage in weight. The army parka is warmer and I believe able to cope with stronger winds. Two parkas, one of nylon and one of army style, I believe, are the ideal combination.)

8. Boots--The Korean boots were superior because they were warm and held their shape with crampons. The felt boots were pinched by the crampons and could allow the feet to get cold. The felt is very weak and will tear in any stressed areas, which seemed to be at the heel. Also, crampons forced the felt boots out of shape. The shoe-paks are quite good and probably can be used at any altitude if there is sufficient room and enough socks worn. An excellent innersole is $\frac{1}{2}$ " rubberized horsehair covered with buck skin.

A Korean type boot with a stiff Brammani type sole is needed for mountaineering use.

A complete change of clean clothes is highly desirable upon returning to civilization, unless one doesn't mind being an outcast.

MISCELLANEOUS EQUIPMENT COMMENTS

Sleeping Bag:

(D.M.- I used a 7# army mummy bag. I did however change it greatly from the standard army type. I removed all the 40-60% contents and placed 100% down in its place. I never once came near being cold in that bag even with sub zero temperatures. It had about 4 pounds of down in it. I also had a 2 pound down skier bag that I used only on occasion. In the future I would take one bag only. It is desirable to add more down to areas where it is most needed, around the feet and under the buttock. I also used a light wool face cover that was attached to the area around the head. By placing this over the face one has less tendency to get his head into the bag and exhale the moist breath. Breathing into a sleeping bag will get one cold. The best insulation I found for sleeping was placing the pack under your back, your legs and feet on a rope and your head and shoulders on your parka that is on top of pots, boots, or any other free equipment.

Willow Wands--Willow wands have a tendency to melt out and will usually fall over in 3 to 7 days depending on the air temperature and the amount of sun. Also the effective life of a wand can be extended by sinking it well into the snow with only 8 or 10 inches showing above the snow level. The hollow bamboo wands were painted a light green color and in some cases seemed to resist melting a little more than the split bamboo wands. The green color was not intentional since these were purchased from a garden store. It would probably be best to have the wands a lighter color. Both flagged and plain wands were used and although the flagged wands did show up much better in stormy weather, they are not essential. About one-half flagged and one-half plain wands would be satisfactory; using them alternately. The orange colored flags were very good.

In the case where two teams of two men on a rope are climbing, the lead on the second rope should put in the wands. The rear man would yell when he passes a wand, thus signaling his rope partner to put in another marker. In this manner the wands would be accurately spaced, no more than one rope length apart. Under conditions of very poor visibility and fog it is a good idea not to have the wands farther than one rope length apart.

Crampons--Either the 10 or 12 point crampons are satisfactory with advantages and disadvantages to each. The major advantage of the 12 point crampons seem to be their ability to toe up steep ice or hard packed snow slopes. Their disadvantage is that special care must be taken to avoid catching the two points that stick out rather precariously in front. Also, 12 point crampons cannot be kicked as far into the step as the 10 point variety. Two members had short pointed crampons (about 1") and these didn't seem to be very desirable. The longer points were able to penetrate the upper and softer layers of ice and bite into the harder ice beneath. Recommend that the pants legs below the knees be wrapped to reduce the possibilities of catching with a crampon point.

(D.M.- I used Eckenstein 10 point with no trouble whatsoever. The 12 point in places would have been better, perhaps, but it seemed that on any slopes that 12 points would have been useful we chopped steps for we would be going up and down a number of times. I used the 12 point on one occasion on King and found the front points got in the way on descending, a fact that could prove rather troublesome. Niendorff, it may be pointed out, did not care for the extra points though he had to wear them all summer.)

Snow-shoes--The long trapper type were used almost exclusively and found satisfactory. During the latter stages of the summer the thongs below the foot position would wear and break. Our repair material, nylon cord, was quite satisfactory. Reinforcing them before they broke saved much time later. The snow-shoes with turned up toes were more desirable in loose and deep snow but we did not run into this condition very often. It is important when picking out a snowshoe to make sure that the heel of the boot does not ride up on the cross board of the snowshoe. Such was the case with several of the members. The continual friction caused by the rubbing of the boot on this cross bar tends to wear out the rawhide.

There always seems to be a controversy between the use of snow-shoes as compared with skis. All in all the snow-shoes seemed more desirable than skis, but we of course did not use the skis very often. The upper glaciers where crevasses and ice-falls are prominent would probably be quite difficult to negotiate with skis. Also heavy packs on skis are harder to handle than heavy packs on snow-shoes.

Sleds--The skis were invaluable in making sleds for hauling supplies and so forth. Sleds are an absolute necessity in this area where there is considerable glacier travel. Due to ignorance, during the first part of the expedition we made a toboggan type sled; that is with the skis side by side. In some sleds there was a metal shield across and around the ski tips to allow the skis to glide up on the snow easier. This arrangement was satisfactory in very hard snow surfaces but was impossible when the snow had softened due to thawing. Later a sled was made whereby two pair of skis were used. One pair acted as the sled runners and was separated about 2 feet. The other pair was inverted and placed directly above the runner skis. This arrangement allowed the baggage to be placed well above the snow and thus no piling up of snow under or in front of the sled. We had an extra pair of snow-shoes and these made an excellent platform for placing the load onto. A good wax job on the skis is helpful. (B.N.-Strongly recommend Glazite brand of base wax for skis used as sled runners).

First Aid Equipment--Plenty good as is. Except for peanut can containers used for personal first aid kits. The containers should be about the size of a peanut can but more solidly constructed. (B.N.- A large bandaid can might be satisfactory).

Equipment Comments - page 9.

Ice Hatchet--Very handy as a piton hammer and can if necessary be substituted for an ice axe. However, one or two per party is plenty and it can never compare with the good old ice axe. As with the ice axe, the handle should be carefully oiled with linseed oil before embarking on an expedition. (My ice hatchet handle started to separate from the metal, which was probably due to no oiling.--P.S.) It should be modified in such a manner as to allow the wrist loop to slide closer to the point of the shaft. In our ice hatchets the wrist loop would slide down only far enough to allow the hatchet to be held in the middle of the shaft, a rather awkward position for chopping.

Sun Glasses--Army type plenty good.

(D.M.-- For those normally wearing glasses a better combination would be sunglasses ground to prescription. Two pairs of glasses seem hopeless when they fog up.)

Cooking Utensils-- Suggest one gallon pot if there are about four members. Three such pots with 2 stoves seem to be ideal.

Gasoline--About one gallon per week per four men is enough gasoline but it is necessary to use it conservatively. Two gallons per week per four men should allow liberal usage. Polyethylene bottles make good gasoline containers, but don't get the gasoline and water containers mixed up or else -----.

Skin Lotions (Sunburn)-- Zinc oxide seemed to be most popular and can certainly prevent sunburn. Clown white is o.k. but is hard to wipe off which at times makes it more valuable than straight zinc oxide and sometimes less valuable. The sunburn creams just don't have it when it comes to preventing sunburn, except possibly with some dark-complexioned persons. We used Borofax, Tanasol, and Army sunburn cream. The use of mosquito nets, along with zinc oxide, is recommended in preventing sunburn at the beginning of the trip before a tan is acquired, although the net is sometimes a bit annoying. Be sure to wrap the tubes of zinc oxide (etc) with tape to protect the tube from bursting.

Packboard--(I used an army Yukon frame pack with good success. I carried extra rope for strapping equipment on with. A good string board would probably give better circulation on the back, and keep your clothes drier, as the full canvas soaks up water. For sleeping on the full frame pack is very good.-- D.M.)

(B.N.-- Trapper Nelson, medium size, worked o.k. both for packing and sleeping on. A large size would be better for packing but might be more cumbersome in difficult spots. The medium size Trapper was carried to the summit in lieu of a rucksack).

Rucksack-- (D.M.--I used a small rucksack and kept all my personal belongings in it. It is vital on the higher climbing when the larger packs can't be carried. If a Trapper Nelson is carried the rucksack may be left out.)

Watch--We carried one pocket alarm watch, which was very useful, and a number of other pocket & wrist watches. It is a good idea to have at least two watches, especially if radio contact is to be made at a certain time, and one watch has stopped, or become broken.

Canteen Cup and Spoon--These are the only eating utensils needed. A large spoon is best. (B.N.-- Essential). All members of the party should have the same size and type of eating cup, which makes the food serving much easier.

Double Vapor Barrier Sox (DVB)-- (D.M.-Comment)

We bought from Gerry Mountaineering a number of DVB sox. They are of polyethylene material and constructed in the shape of round bottom sacks; to better make their description clear we could say they look like big Santa Claus stockings.

The purpose of such a stocking is to allow full insulation in several layers. This is accomplished in such a way: (1) an all wool sock is placed next to the feet, (2) one polyethylene "sack" is placed over the sox, (3) another sock is placed over the polyethylene sack, (4) the second polyethylene sack is placed over the sock. Thus we have, from the skin outward: a sock, a sack, a sock, a sack, then the boot.

The inner sock will hold all the moisture coming from the feet. The first polyethylene sack will hold all that moisture inside of it. The middle sock will remain dry as the outer sack will keep the water from outside the boot from getting to it. Therefore the middle sock acts as the insulator.

The system was tried on the expedition and found to work. We did, however, often not wear the sox next to the feet but would place the polyethylene sack next to the feet. This worked well and cut down on drying out that wet sock. Two pairs of sox can be worn between the polyethylene sacks for greater insulation. Also the inner-soles, should there be some, could be placed inside the polyethylene sacks. to give greater insulation.

They have fault in that they are not extremely durable, though they do last a week with care. They weigh very little and a number of them can be taken. They prove worth while with shoe-paks and though we didn't try them, they would probably work with regular leather boots.

Additional Items:

- Extra boot laces. Boot laces of nylon (Gerry Mountaineering)
- Canteen, metal as it can be heated. Put initial or identification mark on.
- Film, in waterproof bag.
- Pliers, to make easier putting on and taking off crampons.
- Adhesive tape.
- Notebook, pencils, Waterproof paper for notebooks.
- Some extra strong cod line.
- Some type of map holder.
- Handkerchiefs.
- A mirror of metal will not break.
- Reinforce sox before trip with nylon yarn to increase life.
- Winterize camera
- The knife could be put on leather or nylon thong and hung from the belt on a clip thus making it easier to get to and to take off in using.
- Do not use waterproof tape. Will not stick.
- Mittens- On the outer mittens (that is the leather face type or similar) a piece of muskrat fur should be sewn. In cold and in wind the nose runs continually and within several days it would be raw, therefore this is used as a snuffer.

Equipment Comments - page 11.

Total Recommended Personal Equipment List (By Dick McGowan)
 For 1½ months use on an Expedition of this nature and
 to a similar area. (Additional comment by Bill Niendorff)

Sox	4 pr. Indian knit 3 pr. Heavy all wool	(B.N.-4 med.wool also)
Underwear	1 pr.longs two-piece, or one-piece.	(B.N.-2 pr.,one of each).
Pants	1 pr.med.or heavy all wool ski type. 1 pr.nylon wind breaker	
Shirts	2 all wool shirts 1 turtle neck sweater	
Hand wear	2 pr.guantlets 1"heavy wool mittens 1"light wool mittens 1 pr. outer mittens	
Headwear	1 floppy felt job or its like 1 stocking cap	(B.N.-and 1 balaclava)
Parkas	1 nylon,(white) 1 army type (knee level)	
Boots	Korea boots	
Crampons	10-point Eckenstein with cold weather binding	
Snowshoes	Alaskan runner	
Sunglasses	2 pair	
Sunburn preventive	2 or 3 zinc oxide tubes	(B.N.-in clown white type container;replen- isher jar at base camp).
Sleeping Bag	All down;added down in vital spots.	
Packboard	Yukon string board	(B.N.-or Trapper Nelson).
Rucksack	Any light weight type	
Compass	Any good one	
Watch		
Canteen Cup and spoon		
First aid kit		
Personal Items.		

RADIO EQUIPMENT and COMMUNICATION

Radio contact is a near necessity on an expedition of this nature, especially in case of injury or sickness. It is also useful in directing air drops and informing the outside support of the party's location and anticipated activities.

The Expedition radio, prepared by Irving Herrigstad of Seattle, was a Forest Service Unit SPF, Model AF, which weighs 12 pounds without batteries. The batteries weigh an additional 12 pounds and the antenna of No. 14 wire about 4 more pounds. (Total 28#). The antenna should have been made of lighter wire, preferably stranded.

The set transmitted at 3190 K.C. and is supposed to have a recommended range of 30-40 miles. With the proper antenna and tuning Irv Herrigstad was able to obtain a much longer range and justified taking the radio on the expedition, where a range of around 100 miles is required.

Radio contact was arranged with three receiver sources. A scheduled time was made with Yakutat Radio Range station for once a day. This contact was partially successful. The Bellingham Cannery at Yakutat has been authorized to use the 3190 K.C. and has a receiver tuned to this frequency continually. This was very desirable since contact with them could be made at any time. The third contact was with the Expedition plane, made feasible by a converter attachment in the airplane. Airplane contact was valuable in directing air drops and ordering additional supplies.

We anticipated placing the aerial and counterpoise directly on the surface of the glacier (hundreds of feet above ground), but found it impossible to make contact. Snowshoes made satisfactory antenna poles and the set operated superbly. The importance of the proper antenna was evident.

This set, although reliable, is quite outdated and heavy, and undoubtedly not the most desirable for an expedition where weight is a big factor.

Aside from radio contact, communication was made by standard body signals, by notes stamped and/or marked in the snow with dyes (water soluble), and by mail pickup.

The mail pick-up apparatus consisted of two poles about 10 feet high positioned approximately 20 feet apart, between which a loop of cod line was hung. Mail was securely fastened to the codline not in excess of $\frac{1}{2}$ pound. The pickup hook lowered from the airplane was three pronged and weighted with $1\frac{1}{2}$ or more pounds of metal (3 pounds recommended) to prevent sailing behind the plane. There was a breakable cord between the hook and the plane as a safety factor. Pickups were not entirely reliable. Nylon cord should be used in place of the cod line pickup loop.

AERIAL OPERATIONS

The Expedition planned on using a small ski-wheel equipped airplane to land on the surface of the glacier close in by the objectives and thus eliminate many miles of hiking in to the Range.

Fred Melberg, of Seattle, purchased a three-place Piper Super Cruiser (105 h.p.) for this operation and then designed and constructed a set of skis that were attached by brackets to extended wheel axles.

These skis were made by Mr. Wallace Burr of Seattle, from laminated hickory and weighed a total of 81 pounds. They were 16" wide and had a large hole in the middle, through which the regular rubber tire of the airplane protruded about 3-4 inches.

Thus, theoretically, the plane could land on the snow, using the skis, with the protruding wheels burrowing the 3 inches into the snow, or at the airfield on the wheels. Of course when landing at the airfield the skis would scrape, so small metal skegs were fastened on the tail end of the skis. A safety cable was attached at both ends of the skegs, in addition to the shock cord at the front.

A trial landing was made on the Juneau Ice Cap near Camp #10 (elev. 3800) in the late afternoon of a sunny day. The snow was soft and mushy (ankle-deep) so the plane came to an abrupt stop in 150 ft. after first touching the snow. It was like stopping in thick mud, and at full power the engine was unable to even get the craft moving again.

The following morning the glacier froze quite hard; yet with deflated tires, Fred was unable to gain sufficient takeoff speed. The tires extending into the breakable crust produced too much drag.

On the second morning, after snowshoeing a runway on the day before, we were able to get off in about 1,000 feet. The runway had an unbreakable crust. Wheels were inflated and the metal skegs removed.

With this test, Fred felt it impossible to make landings on the glaciers near King Peak and Mt. Augusta where the elevation was higher (5,000 feet and over).

Had retractable skis been used, landings - or more important, the takeoff - would probably have been possible. Successful landings might have been made with modifications to this fixed-ski setup which would eliminate the drag. Later, when on the glacier, we felt that on cold mornings (about twice a week) after the snow had frozen very hard, that regular wheel landings (without skis) could be made, using a light plane. This was verified (and suggested) by a pilot, Mr. C. Kirk. Heavy duty landing wheels (tandem) would be recommended. It would be desirable to have someone on the snow before attempting the landing to check the surface and if possible snowshoe off the rough spots the day before when the snow is soft. This may be an emergency operation only.

Aerial Operations - page two

Without the planned landings on the glacier we recruited Mr. C. Kirk of Yakutat who offered to make the glacier landing, using his Grumman Duck airplane (1050 H.P.). This, a surplus Navy plane, is highly overpowered and has a long pontoon extending out in front which would prevent nosing over. This plane has a blower.

Loaded with over 1300 pounds of cargo the plane made a successful landing early in the morning at 5500 feet elevation on the Seward Glacier, but was unable to take off (unloaded) even after a two-mile run down glacier. (Since the visibility from the airplane is poor there is a chance of going into a crevasse when attempting takeoff or landings, so precautions must be taken).

The heavy plane squashed the pontoon into the frozen snow about 10 inches. (This was the morning Mr. Kirk felt it would be possible to land a small plane directly on wheels). The airplane was in poor shape (it burned over 5 gallons of oil per hour) and Mr. Kirk felt that had it been developing full power (1050 H.P.) he would have gotten off the glacier. Without full power he decided to wait for a wind to assist the takeoff.

He did not try the takeoff by getting into the old pontoon ruts, which would probably have lessened the drag. The necessary wind blew from the southeast four days later and the takeoff was accomplished. Yet with the wind were clouds and the return to Yakutat was made, in part, by the use of instruments. The snow was just walkable.

Both of our means for operating on and off the glacier were unsuccessful because of excess drag during takeoff and far too little power. This type of operation is of course feasible, but in the case of small planes the skis should be retractable and a high takeoff propeller on the plane.

A pertinent factor in landing and taking off of glaciers is the condition of the snow. On clear days the surface of the Seward Glacier would melt soft in the afternoon to from ankle to knee depth, whereas at night it would freeze hard, depending upon the altitude and air currents. (In overcast weather the temperature was more stable and the temperature usually slightly above freezing, rising slightly higher in the afternoons). It would seem that landings under these conditions would be best in the morning and likewise with the takeoffs. Also, operations when the glacier surface is hard would decrease the danger of falling into hidden crevasses.

The converse is true with air drops; that is, the food and equipment. Afternoon drops in the soft snow are desirable to prevent damage to supplies. However, these drops should be made in waterproof containers unless the drops will be picked up in a matter of a few days. The items will sink deep into the snow and subsequent thawing may be detrimental. If they are not to be reached for several days after the drop, it may be well to drop on a hard surface. A light snow fall could easily hide bundles that have been imbedded into the snow, whereas this is not as likely if the cans are exposed and on the surface. Bundles arranged for drops on hard snow must be packed and tied securely.

FOOD

ORGANIZATION OF FOOD

A relatively new type of organization was used in planning the food for the expedition. After studying methods used by other expeditions the following plans were drawn up and carried through for the packaging and dividing up of food,

I. Inter-Camp Food:-- This was planned for use between base camp and the point where weight became a deciding factor. There were three different menus, ten five-gallon cans of each menu. A five-gallon can of Inter-camp food weighed about 23 pounds net and contained food for the most part in store packages. Each can was designed for eight man-days; however, in practice they lasted only six.

II. High-Altitude Food-- High-Altitude food was designed for use where weight was a major factor. This food was re-packaged into polyethylene bags, each containing two man-meals. All the re-packaging was done in Seattle. A five-gallon can of high-altitude food weighed about 17 pounds net and was designed to last for six man-days; in practice they lasted only four.

III. Replenisher Food-- Replenisher food was simply food in bulk (case and half-case quantities) as bought from the grocery store. It was for use at base camp and Yakutat headquarters.

Comments on the Three Types of Food

Inter-Camp Food--

We had not anticipated that almost all the food was to be dropped to us by plane. We had been depending on the plane to land most of our food supplies. When the plane was unable to operate off of the glacier it meant that all the food would have to be dropped from the plane while in flight. It is fortunate that we had taken steps to package the food in such good containers (the five-gallon tin cans). They were dropped with fair success. Occasionally their seven-inch lids would pop off but outside of that the cans were perfect. The cans weigh $2\frac{1}{2}$ pounds and cost 40¢ each.

When weight became important the cans were discarded in place of duffle bags. It would be desirable to package part of this food in polyethylene containers. Often some valuable food was lost because the cardboard store containers got wet or broke open in the air drop (sugar, etc.). Some of the heavier types of food, mainly beef stew, could be taken out, depending upon the amount of back-packing.

The Inter-Camp food supplied a wide variety, although there was a slight tendency to have excessive amounts of some items and not enough of others. Something new in the way of a meal was always to be found.

The following changes are suggested in Inter-Camp Food:

- a. Eliminate some of the dried fruit, especially apricots. Figs and dates were never in excess.
- b. Increase the protein to 3 ounces per man meal. Spam, etc. was not nearly as good as beef.
- c. Increase the dinner starch slightly. Potatoes, etc.
- d. Increase the sugar to one-third pound per man day.

2.

- e. Instant Ralston and Grapenuts were the favorite breakfast foods. Could have used more of each. One package of grapenuts per 2 or 3 man meals is about the proper amount.
- f. In addition to Grapenuts and Ralston the best cereals would be cream of wheat, instant wheat, and Roman Meal.
- g. All Bran and Gerbers baby cereal are not good. They need too much doctoring up to be made palatable.
- h. Hemo by far is the best cocoa, Cocomalt next. Hershey's needs too much doctoring up.
- i. Dried milk was in demand most of the time. Whole dried milk is better than dried skim milk.
- j. Jello and packaged puddings were very good. Tapioca pudding was good but we had the type that required extra food materials (powdered eggs, which we had not taken). A 36-serving package of tapioca was good for 6 servings. It would be desirable to have puddings in 1# packages. One small box of pudding per man is about right. We could have used more puddings.
- k. Pilot Bread was a "luxury item". It was continually in demand. With butter or jam it was a terrific food. Eighty-five pounds was not enough. Figure on about 12-15 biscuits per man day; at times more.
- l. Jams were another delicious food item. There was a slight shortage, as much of the jam was left in Yakutat and never dropped. All types of jams are good, but the favorite was strawberry.
- m. We used processed cheese entirely. It worked out satisfactorily but was slightly tainted by the polyethylene bags.
- n. Butter was extremely good and we had just the right amount. We also used butter in cooking.
- o. Powdered eggs should be included, at least in Replenisher food and possibly in Inter-Camp food.
- p. The absence of pure chocolate on an expedition is rather unusual. The chocolate was supplemented by the use of cube sugar and fudge. The sugar leaves your mouth much cleaner than flavored candies. This is especially true when above 10,000' where water is at a minimum. Some chocolate would be advisable in Replenisher food.
- q. Mincement (Borden's Nonesuch) was used as a pemican. It is too spicy for use on such a trip. Only a small quantity could be eaten at a time.
- r. Old English Plum Pudding was much in excess. It was much like pemican. (D.M.- A better brand would be Heinz).
- s. Lipton's frostee was a good drink. Use dried milk with it.
- t. Some tea was used - no coffee. (We had both). Quantities depend on individual tastes. Some tea should be taken, however.

- u. Fudge was extremely good. Occasionally one could eat 1½ # at one time. It was always in demand; however, much was left in Yakutat and not dropped.
- v. Honey was very good. It was used in much of the cooking as we were short on sugar. 35 # was a little too much.
- w. Nuts were also very good. Ninety pounds, however, was too much.

High-Altitude Food--

We estimated 144 man days' food would be needed for the time spent at the higher elevations. As it turned out much of the Inter-Camp food was used instead, owing to the fact that it was much more flexible. When planning an expedition it is rather hard to predict how many days are to be spent at a given height. (D.M.- In the future I would recommend that high altitude food, as a separate type of food, be omitted; that is, if the climbing is under 20,000'.) (P.S. and B.N.- The desirability of high altitude food, as prepared for this trip, would depend on the type of climbing and the supply problems).

The following comments may serve to improve the method:

Breakfast-- Three types-- 23 packages of two man meals, for each of the three varieties. It would be best not to mix the apricots and oatmeal. Increase the cereal by one-half the present quantity; Grapenuts and oatmeal are the best cereals. Hemo and Cocomalt are the best drinks. Add some type of protein to the breakfast. (D.M.- Butter should be used instead of margarine). Place a 1# can of butter in each 5-gallon can of food. It would be best to place each of the different foods in separate polyethylene bags, which are put in the two-man-meal bags.

Lunches-- It would be best to revise the lunches entirely, keeping in mind the following when doing so. Based on the type of lunches we used: Cut down on apricots, add more dates, figs, and other dried fruits. The sugar is excellent, use more of it, since it doesn't leave a bad taste in the mouth. Add more protein; that is, nuts, meat, cheese, dried beef, roast beef and maybe smoked fish, sardines, etc. Have two full lunches per day, as they can be eaten any time. Leave out mincemeat and canned Plum Pudding. Use a different type of Cheese; ours molded slightly and became tainted by the plastic bags.

Dinners-- For the most part very good. Increase the starch somewhat, also the fat food, such as butter. Cocoa would be best as the main drink, not jello. There were three types of dinners. Though more work we would suggest four or five, if the time at high altitude is considerable.

General Comments-- One 2# can of jam was placed in each 5 gallon can. This was satisfactory, though the lids popped off frequently in the air drops. As a result the entire contents of the 5 gallon can was often covered with jam. The lids should either be permanently attached or the jam can placed inside a plastic bag.

(B.N. and D.M.- Instead of putting salt in each two-man-meal, place so much in each 5 gallon can.) Vitamin pills, amino acids, matches, etc. should be placed so many to the 5 gallon can. Ascorbic acid might be desirable. (B.N.- One can of juice base per 5 gallon can would be a good idea.)

(P.S.- Removing the food from the metal cans and carrying in coated-cloth bags would be desirable where weight becomes a factor).

TOTAL FOOD

TOTAL FOOD

	<u>Item and Brand</u>	<u>Containers and Container size</u>	<u>(Pounds) Total Net Wt.</u>
<u>MEAT</u>	Spam (Hormel)	24/12	18
	(Rath)	24/12	18
	Corned Beef (Libby's)	24/12	18
	" " (Anglo)	24/12	18
	Beef Stew (Nalley's)	43/30	
	Beef with Juice (Anglo)	24/12	18
	Dried Beef (Rath)	2 x 24/2½	7½
	Veal (Gerber's)	2 x 24/2½	10½
	Boned Chicken (Swansons)	3 x 12/6	13½
	Kipperd Snack (Spirit of Norway)	50/4	12½
	" " (Connors)	50/4	12½
	Tuna (Japan, Agate Isle)	48/7	21
	Sardines (North Star)	2 x 50/4	25
<u>CHEESE</u>	Process Cheese (Darigold)	3½ x 10/2#	70
<u>MILK</u>	Skim Milk (Darigold)	1½ x 24/1#(minus 1#)	35
	(Canned) Whole Milk (Darigold)	1½ x 24/1#(minus 1#)	35
<u>BUTTER</u>	Butter, Canned (Darigold)	40/1#	40
<u>COOKIES, etc.</u>	Assorted Cookies (Grandmas)	100 doz.-8 oz.box	50
	Fig Newtons (NBC)	7 x 3/1#	21
	Triscuit (NBC)	14 x 6/5	26¼
	Pilot Bread (Superior)	5 x 16-3/4#	34
	Graham Crackers (Nabisco)	3 x 6/1#	18
	" "	1 x 6/6-3/4	2½
	Wheat thins (Nabisco)	6/1½	4
	Rye Crisp	12/9	6-3/4
	Flat Bread	11/1#	11
<u>BREAKFAST CEREALS</u>	Grape Nuts (Posts)	2 x 24/10½	31½ (-)
	All Bran (Kellogg's)	12/1	12
	Gerbers Cereal	12/8	3
	Gerbers Barley Cereal	12/8	3
	Instant Ralston	9/18	30
	Quick Oats (Quaker)	6/3#	16
	Roman Meal	12/1#	12
	Wheatena	12/22 oz.	13-3/4

TOTAL FOOD - 2

	<u>Item and Brand</u>	<u>Containers and Container Size</u>	(Pounds) <u>Total NetWt.</u>	
<u>BEVERAGES:</u>	Lemon Powder	2 cans	1 1/2	
	Real Gold Orange Base	24/6 oz.	9	
	Real Gold Grapefruit	24/6 oz.	9	
	M.C.P. Lemon Juice	24/7-3/4 oz.	11 1/2	
	Kool Aid	2/48 Ass't. package	--	
	Lipton Tea	6/100 bags	--	
	George Washington Instant Coffee	9/2 (?)	1	
	Cocomalt	12/1# cans	12	
	Bordens Instant Hot Chocolate	12/1# cans	6	
	Bordens Hemo	1 1/2 x 18/1#	27	
	Nestles Cocoa	12/1#	12	
	Hersheys Cocoa	12/1#	12	
	<u>DESSERTS:</u>	Jello, butterscotch pudding	24/4 oz.	8
		" chocolate pudding	24/4 oz.	8
		" assorted	12/1 1/2 #	18
" "		2 - 48/3 1/2 oz.	19 1/2	
Lipton's Frostees		3 - 12/4 oz.	9	
Minute Tapioca		36/ 8 oz.	18	
Knox gelatin		24 packages	--	
Bordens NoneSuch Mincemeat		24/9	13 1/2	
Bakers Coconut		3 x 24/4	18	
Old English Plum Pudding		3 x 24/14 (plus 8)	70	
<u>FRUITS</u>	Dried Fruit: Empire evaporated apples	25# box	25	
	Del Monte apricots	2 - 24/11 oz.	35	
	Sunsweet prunes	2 - 24/1#	48	
	Dromedary dates, pitted	2 - 24/7 1/4 oz.	21-3/4	
	Naturalpak figs	24/12 oz.	18	
	Del Monte raisins	24/15 oz.	22 1/2	
	Sugarripe Raisins -seedless	24/15	22 1/2	
	Apricots (Iris brand)	2 x 30# boxes	60	
	Apple Nuggets	12# box	12	
	Peaches (Ensign brand)	30# box	30	
	<u>SOUPS, DEHY. VEG., ETC.</u>	Lipton noodle soup	1 1/2 - 32.3s	--
		" tomato veg. sou.	2 - 32/3s.	--
		Dehydrated veg.	15#	15
Bouillon (Steero Brand)		3 boxes x 12/1 1/2 oz. (432 cubes) 3-1/3		
(Phoenix Chicken)		8 tubes-40 cubes		
Tomato Sauce (Del Monte)		72/6	30	

TOTAL FOOD - 3

	<u>Item and Brand</u>	<u>Containers and Container Size</u>	(Pounds) <u>Total Net Wt.</u>
<u>DINNER:</u>			
<u>STARCH</u>	French's instant potatoes	10 - 12/8 oz.	60
	Precooked Minute Rice	24/15 oz. 1½x36/5	38½
	Mission Macaroni-elbow	10#	10
	" egg noodles	10#	10
	" Jiffies, 6½ min.	12/1#	12
	Egg noodles	12/1#	12
<u>SUGARS</u>	Fudge (Dick McGowan)	23/3#	79
	Societe hard candy	3/20#	60
	C&H Sugar - granulated	2-2/3 x 24/1#	64
	C&H Sugar - cane - cubed	12/2#	24
	<u>Gum</u>		
	2 wild cherry	2 box	
	1 Beemans	1 box	
	2 doublemint	2 box	
	2 spearmint	2 box	
	2 juicy fruit	2 box	
	1 dentyne	1 box	
	Purity Strawberry Jam	20/2#	40
	Sunny Jim Preserve:		
	Orange Marmalade	6/24	9
Grape	18/24	27	
Honey (B.Niendorff)	1 can (35#)	35	
<u>NUTS</u>	Peanuts		
	Walnuts		
	Pecan		
	Almond		
	Brazil Nuts		
			(Total) 90
<u>OTHERS:</u>	Pemican	50 cans	
	Multipurpose Food	15/1#	15
	Salt	6/1#	6
	Bakers Chocolate (Bar)	10/1#	10

REPLENISHES SUPPLIES

REPLENISHER SUPPLIES

Inventory, King Peak-Yukon Expedition, Food

Box #1	9 triscuits (boxes)	Box #14	14 packages (4 oz.) coconut
	1 flat bread (box)		12# fudge
	2 graham crackers (#1 box)		bouillion
Box #2	24# sugar	Box #15	2 boxes prunes (1# box)
Box #3	2# sugar		24 boxes potatoes (8 oz. box)
	7 dozen cookies		2 boxes gum
	9 fig newtons (1# boxes)	Box #16	6 boxes rice (5 oz. box)
Box #4	20 doz. cookies		15 skim milk (1# each)
Box #5	22 triscuits (boxes)		8 boxes cube sugar (2# box)
	3 wheat thins (1# boxes)		1 carton soup
	3 graham crackers (1# boxes)	Box #17	11 dozen cookies
Box #6	18 minute rice (5 oz.)		7 graham crackers (1# box)
	4 potatoes (8 oz. instant)	Box #18	12 boxes Grape-Nuts
	4 noodles (14 oz.)		(10½ oz. box)
Box #7	20# Societe candy		4 boxes Gerbers (8 oz. box)
Box #8	14 boxes figs (12 oz. box)		2 boxes All-Bran (1# boxes)
	8 boxes raisins (15 oz. box)	Box #19	30# dried peaches
Box #9	17# pilot bread	Box #20	30# dried apricots
Box #10	17# pilot bread	Box #21	18 boxes apricots (11 oz. box)
Box #11	20 doz. cookies		6 prunes (1# boxes)
Box #12	96 packages soup	Box #22	10 packages dates (7½ oz. box)
Box #13	24 packages jello		3 boxes raisins (15 oz. box)
	3 cartons of 3 each - soup		2 boxes prunes (1# boxes)
	4 Rice (5 oz. box)		2# chocolate
	4# Macaroni	Box #23	25# evaporated apples
	5# Cheese	Box #24	31 cartons soup (3 each)
	Gum		12 packages bouillion
			(12 cubes each)

Inventory - Food - 2.

Box #25	7 $\frac{1}{2}$ # nuts (pkgs.)	Box #39	35 Kipper Snacks (4 oz.can)
	1# Societe candy		4 Spam (12 oz.can)
			4 Corned Beef (12 oz.can)
Box #26	18 cans lemon juice	Box #40	48 cans pemmican
	6 cans instant coffee		
Box #27	10# apricots	Box #41	10 Butter (1# each)
	8# apple nuggets		5 cans Sunny Jim jam
	10 packages cool aid		(24 oz.can)
	1 box tapioca (8 oz.box)		4 plum pudding (14 oz.can)
	6# fudge		6 cans pemmican
			18 whole milk (1# each)
Box #28	6# oatmeal	Box #42	15 M.P.F.
	8# fudge		31 Pemmican
	10 boxes tapioca (8 oz.box)	Box #43	3# can Karo Syrup
	10 packages cool aid		6 plum pudding (14 oz.can)
Box #29	10 beef stew (30 oz.can)		4 coffee
	7 sardines (4 oz.can)		1 corn beef (12 oz.can)
	4 chicken (6 oz.can)		1# Hemo
			13 pemmican
Box #30	14 dried beef (2 $\frac{1}{2}$ oz.glass)	Box #44	30 pieces pilot bread
	5 Kipper Snacks (4 oz.can)		1 Soup
	5 instant cocoa (1 $\frac{1}{2}$ # cans)		1# candy (hard)
Box #31	6 doz.cans tomato sauce		4- 1 $\frac{1}{2}$ # package nuts
			$\frac{1}{2}$ package tea
Box #32	2 doz.cans orange base		1 coconut (4 oz.pkg).
			3 cans pemmican
Box #33	1 doz. chicken (6 oz.each)	Box #46	1# salt
			35 candles
Box #34	10 loaves cheese (2# each)	Box #47	Roman Meal (12-1#)
			Egg Noodles (12-1#)
Box #35	24 cans grapefruit base	Box #48	2 cases Instant Potatoes
			(24-8 oz.)
Box #36	38 cans tuna (7 oz.can)	Box #49	Wheatena (12-22)
	33 cans sardines (4 oz.can)		Nestles Cocoa (11-1#)
Box #37	24 cans Spam (12 oz.can)	Box #50	Nalley's Beef Stew (12-30)
Box #38	24 cans corned beef (12 oz.can)		Nalley's Beef Stew (11-30)
		Box #51	Strawberry Jam (1-2#)
Honey - (1 can-35#)			Strawberry (2-2#)
Nuts, etc.-2 cans, approx.45#.			Nestles Cocoa (1-1#)

INTER-CAMP FOOD

INTER-CAMP FOOD

(10 cans taken)

Can #1:

	<u>Total Net Weight</u>	<u>Container</u>
Beef Stew	30 oz.	1 can
Chicken	6 oz.	1 can
Dried beef	2½ oz.	1 jar
Sardines	8 oz.	2 cans
Kipper Snack	8 oz.	2 cans
Cheese	1#	1 pkg.
Butter	1#	1 can
Cereal	8 oz.	1 pkg.
Grapenuts	10½ oz.	1 pkg.
Instant potatoes	16 oz.	2 pkg.
Noodles	1#	1 pkg.
Tom.Noodle Soup	--	4 pkg.
Dehy.Veg.	4 oz.	2 pkg.
Bouillon	--	12 cubes
Pilot bread	½#	
Flat bread	1#	1 pkg.
Raisins	15 oz.	1 pkg.
Figs	12 oz.	1 pkg.
Apricots	11 oz.	1 pkg.
Whole Milk	1#	1 can
Jello pudding	8 oz.	2 pkg.
Frostee		2 pkg.
Plum pudding	14 oz.	1 can
Pemican		2 cans
Tea	--	16 bags
Cool aid	--	2 pkg.
Gum		2 pkg.
Fudge	3 #	1 pkg.
Hard candy	--	50 pieces
Sugar	1 #	1 pkg.

INTER-CAMP FOOD

(10 cans taken)

Can # 2

	<u>Total Net Weight</u>	<u>Container</u>
Spam	12 oz.	1 can
Corned beef	12 oz.	1 can
Sardines	8 oz.	2 cans
Kipper Snack	8 oz.	2 cans
Tuna	7 oz.	1 can
Butter	1 #	1 can
Cheese	1 #	1 pkg.
Barley cereal	8 oz.	1 pkg.
All Bran	1 #	1 pkg.
Minute Rice	15 oz.	1 pkg.
Spaghetti	3/4 #	1 pkg.
Tom.Noodle Soup	--	4 pkg.
Bouillon	--	12 cubes
Dehy.Veg.	4 oz.	2 pkg.
Pilot Bread	1/2 #	16 pieces
Rye Crisp	9 oz.	1 pkg.
Raisins	15 oz.	1 pkg.
Prunes	1 #	1 pkg.
Dates	7 1/2 oz.	1 pkg.
Jello	1 1/2 #	1 pkg.
Pemican		1 can
Skim Milk	1 #	1 pkg.
Coconut	4 oz.	1 pkg.
Cocomalt	1 #	1 can
Tea		8 bags
Cool aid		2 pkg.
Gum	--	2 pkg.
Sugar	1 #	1 pkg.
Hard candy	1/4 #	100 pieces
Salt		
20 matches		

INTER-CAMP FOOD

(10 cans taken)

Can # 3

	<u>Total Net Weight</u>	<u>Container</u>
Corned beef	12 oz.	1 can
Spam	12 oz.	1 can
Boned Chicken	6 oz.	1 can
Sardines	8 oz.	2 cans
Kipper Snack	8 oz.	2 cans
Butter	1 #	1 can
Cheese	1 #	1 pkg.
Instant Ralston		1 pkg.
Macaroni	3/4 #	1 pkg.
Minute Rice	10 oz.	2 pkg.
Lipton Noodle Soup		4 pkg.
Dehy.Veg.	4 oz.	2 pkg.
Bouillon		12 cubes
Pilot Bread	1/2 #	16 pieces
Raisins	15 oz.	1 pkg.
Prunes	1 #	1 pkg.
Apples (nuggets)	1/2 #	1 pkg.
Skim Milk	1 #	1 pkg.
Jello pudding	8 oz.	2 pkg.
Baker Coconut	4 oz.	1 pkg.
Pemican	--	2 cans
Tea		3 bags
Hershey Cocoa	1 #	1 can
Cool aid		2 pkg.
Gum		2 pkg.
Cookies		1 doz.
Sugar	1 #	1 pkg.
Fig Newtons	1 #	1 pkg.
Hard Candy (approx)	4 oz.	100 pieces

Salt

20 Matches

HI ALTITUDE FOOD USED BY
EXPEDITION

KING PEAK-YUKON EXPEDITION

ST.ELIAS RANGE, ALASKA

High Altitude Food -----King Peak-Yukon Expedition 1952

Quantity List For All Items

cheese	17.50 #
instant deyd. soup	23 packages mixed variety
pilot bread	932 pieces
Bordens None-Such mim.	21 / 8 oz. packages
dried beef	23 / 2 $\frac{1}{2}$ oz. cans
jello	69 / 3 $\frac{1}{4}$ oz. packages
gelatin	69 / packages
cashews	6 #
Frenches Instant pot.	23 / 8 oz. packages
dried whole milk	12 #
oleomargarine	6 #
Veal junior baby food	46 cans
strawberry jam	58 cups 26#
minute rice	23 5 oz. packages
brown sugar	8 $\frac{1}{2}$ #
canned beef	23 12 oz. cans
dates pitted (dromed.)	23 packages @ 32 / package
dried apricots	5600 or 70#
cube sugar	2240 cubes
triscuits	840 pieces
chocolate	8.75 #
plum pudding fruit cake	35 / 1# cans
Quick cooking oatmeal	140 cups
dried peaches	1400 halves
cocoa	23 #
bleached raisens	9 packages @ 4 cups / package
grapenuts	46 cups
dried prunes	11 packages / 52/package

High Altitude Food -----King Peak-Yukon Expedition 1932

Breakfast type 1-Hot

70 man day meals of this type packed in two man day packs equaling 35 packages.

Item	one man serving	one man calories	2 man quan.
Quick cooking oatmeal	1 cup (3 $\frac{1}{2}$ oz.)	400	7 oz.
dried whole milk	1 cup	187	2 oz.
chopped peaches	10 halves	210	6 oz.
white sugar	4 Tbl.	206	4 oz.
cocoa	8 cups 4 oz./cup	340	8 oz.
$\frac{1}{4}$ bleached raisins	$\frac{1}{4}$ cup	100	2 oz.
Total		1437 /1 man	29 oz. 2 men

Amounts needed for this type.

Quick cooking oatmeal	140 cups (cooked) 3 #
dried whole milk	3 #
dried peaches	1400/
white sugar	7 $\frac{1}{2}$ #
cocoa (chocolate)	11 $\frac{1}{2}$ #
bleached raisins	35 cups @ 4 cups / package = 9 packages

High Altitude Food -----King Peak-Yukon Expedition 1952

Breakfast type 2-Cold

70 man day meals of this type packed in two man day meals equaling 35 packages.

Item	one man serving	one man calories	2 man quan.
grapenuts	1 cup	405	8 oz.
dried whole milk	1 cup	187	2 oz.
white sugar	4 Tbl.	200	4 oz.
dried prunes	12 pieces (3 $\frac{1}{4}$ oz.)	346	6 $\frac{1}{2}$ oz.
dried dates	6 pieces	149	2 $\frac{1}{4}$ oz.
cocoa	2 cups	340	8 oz.
Total			30 oz.
			2 men

Amounts needed for this type.

grapenuts	46 cups
dried whole milk	3#
white sugar	7 $\frac{1}{2}$ #
dried prunes	552 pieces or approx. 11 packages@52 /pack.
dried dates	276 @32 / package 9 packages
cocoa	11 $\frac{1}{2}$ #

High Altitude Food ----- King Peak-Yukon Expedition 1952

Lunch type 1-Cold

70 man day meals of this type packed in two man day packs equaling 35 packages.

Item	one man serving	one man calories	2 man quantity
Bordens None-Such mincemeat	1 oz.	100	2 oz.
dried apricots	20 halves	375	6 oz.
cube sugar	8 cubes	400	4 oz.
pilot bread	4 pieces	400	8 oz.
strawberry jam	$\frac{1}{2}$ cup/ person	352	8 oz.
Total		1627	30 oz. 2 men

Amounts needed for this type.

Bordens None-Such mincemeat
dried apricots
cube sugar
pilot bread
strawberry jam

9 oz./package = 9 packages
2800 halves
1120 cubes
560 pieces
35 cups, 17#

High Altitude Food ----- King Peak-Yukon Expedition 1952

Lunch type 2-cold

70 man day meals of this type packed in two man day packs equaling 35 packages.

Item	one man serving	one man calories	2 man quan.
CHEESE	1 piece -1 oz.	125	2 oz.
dried apricots	20 halves	375	6 oz.
triscuits	6 pieces	240	(12 p.) 6 oz.
chocolate	1 oz.	170	2 oz.
plum pudding fruit cake	4 oz.	200	8 oz.
cube sugar	8 cubes	400	4 oz.
Total		1510	28 oz. 2 men

Amounts needed for this type.

cheese	8.75 #
dried apricots	2880 halves (@ 11 oz. / package 35 packages.)
triscuits	840 pieces
chocolate	8.75 #
plum pudding fruit cake	35 cans 1# / can
cube sugar	1120 cubes

High Altitude Food ----- King Peak-Yukon Expedition 1952

Dinner type 1- Hot

46 man day meals of this type packed in two man day packs equaling 23 packages.

Item	one man serving	one man calories	2 man quan.
minute rice	1 cup	186	5 oz.
brown sugar	3 teas.	150	3 oz.
dried whole milk	1 cup	187	2 oz.
oleomargarine	1 piece	261	2 oz.
canned beef	$\frac{1}{2}$ can	363	12 oz.
dates-pitted	16	232	4 oz.
hot jello	2 cups	296	$3\frac{1}{4}$ oz.
gelatin	1 tb.	34	.6 oz.
pilot bread	2 pieces	160	3 oz.
Total 1863			33 oz./
			2 men

Amounts needed for this type.

minute rice	23 / 5 oz. packages
brown sugar	$8\frac{1}{2}$ #
dried whole milk	3 #
margarine	3 #
canned beef	23 / 12 oz. cans
pilot bread	96 pieces
jello	23 packages / @ $3\frac{1}{4}$
Knox gelatin	23 packages
dates-pitted	460 dates @ 2 / package \rightarrow 14 packages
	Dromedary

High Altitude Food -----King Peak-Yukon Expedition 1952

Dinner type 2 - Hot

46 man day meals of this type packed in two man day packages equaling 23 packages.

Item	one man serving	one man calories	2 man quan.
Instant potatoes	$\frac{1}{4}$ pack. (1 cup)	180	4 oz. $\frac{1}{2}$ pack.
dried whole milk	1 cup	187	2 oz.
oleomargerine	1 piece	261	2 oz.
Veal baby food	1 can / person	185	6 $\frac{1}{2}$ oz.
jello	2 cups	296	3 $\frac{1}{4}$ oz.
gelatin	1 tbl.	34	.6 oz.
strawberry jam	$\frac{1}{2}$ cup	352	8 oz.
pilot bread	2 pieces	200	4 oz.
Total		1695	26 plus oz. 2 men

Amounts needed for this type.

Frenches Instant potatoes	23/ 8 oz. packages
dried whole milk	46 cups -46 T. @1*/ T. = 3#
oleomargerine	3#
Veal (junior baby food)	46 cans
jello	23 packages @3 $\frac{1}{4}$ oz. / pack.
Knox gelatin	23 packages
strawberry jam	23 cups
pilot bread	92 pieces

*1 oz.

High Altitude Food ----- King Peak-Yukon Expedition 1952

Dinner type 3- Cold or Hot

46 man day meals of this type packed in two man day packs equaling 23 packages.

Item	one man serving	one man calories	2 man quan.
Cheese	1 oz.	110	2 oz.
instant deyd. soup	1 cup	75	1 oz.
pilot bread	4 biscuits	400	8 oz.
Bordens None-such mincemeat	2 $\frac{1}{4}$ oz.	200	4 $\frac{1}{2}$ oz.
sliced dried beef	1 $\frac{1}{4}$ oz.	200	2 $\frac{1}{4}$ oz.
jello	2 cups	296	3 $\frac{1}{2}$ oz.
gelatin	1 tbl.	34	.0 oz.
cashews	2 oz.	800	4 oz.
Total		2115 /person	26 oz. (2 men)

Amounts needed for this type.

cheese	8.75 #
instant dehy.soup	23 packages mixed (around 2 oz. packs)
pilot bread	184 pieces
Bordens None-such mincemeat	12/9 oz. packages
sliced dried beef	23 cans @ 2 $\frac{1}{4}$ oz. / can
jello	23 packages
gelatin	23/1 oz. packages
cashews	6#

FIRST AID

SUPPLIES USED

BY THE

EXPEDITION

FIRST AID SUPPLIES

KING PEAK-YUKON EXPEDITION, 1952

The first aid kits will be divided into three types; these being the individual kits which each party member will carry at all times, the large base camp replenisher kit, and the advance camp specialty kit. This first aid system, which has been specially developed for the type of travel contemplated on the King Peak-Yukon Expedition, 1952, allows each person to not only have the standard type of mountaineer's first aid kit, but also to be supported by a specialty kit containing those items that are only very occasionally used but extremely valuable when the situation arises. The specialty kit will be carried by the party to even the high camps. The replenisher kit will remain in base camp and besides being support to the other two types of kits, it will contain materials that are not essential enough to warrant carrying to the uppercamps.

The individual kits are contained in small round metal cans, $3\frac{1}{2}$ " in diameter and 3" high painted silver with a small red cross on the top. The specialty kit is made of plastic, $4\frac{1}{2}$ " square and $1\frac{1}{2}$ " high and wrapped with masking tape to prevent breaking. The replenisher kit is in a light sheet metal box, 10" by 7" by $4\frac{1}{2}$ " and has a sliding metal top. It is also painted silver with a red cross.

All items in the kits are labeled. In some cases as in the individual kits, there are several kinds of pills in one container, in which case the container is labeled and the pills color-coded.

ITEM	REPLENISHER KIT	SPECIALTY KIT	INDIVIDUAL KITS
RAZOR BLADES	3	-	1
NEEDLES	3	1	-
TWEEZERS	1	-	-
SAFETY PINS	20	-	6
MATCHES (waxed)	50	-	20
PENCIL	1	-	1
2# TAPE (non-waterproof)	16 yds.	-	2 yds.
$1\frac{1}{2}$ " GAUZE	20 yds.	-	-

ITEM	REPLENISHER	SPECIALTY	INDIVIDUAL
3" by 3" COMPRESSES	34	-	2
BANDAIDS			
Standard Size	43	-	6
Small Size	28	-	4
TONGUE DEPRESSORS	8	-	-
COTTON TIPPED			
APPLICATORS	12	-	-
SOAP	1 small bar	-	-
 VASOLINE	1 oz.	-	-
MENTHOLATUM	1 oz.	-	2 1/5 oz.
NUPERCAINAL	1 oz.	-	-
HOLOCAINE (eyes)	2 small tubes	1 tube	-
TANNIPASTE (burns)	4 oz.	-	-
BURNALAY (burns)	2 oz.	-	-
UNIT #7 (burns)	-	2 sm. tubes	1 sm. tube
 TINCT. BENZOIN	3/4 oz.	1 oz.	-
MERTHIOLATE	1 oz.	-	1/5 oz.
 MORPHINE (Ampins)	3	2	-
 <u>AS TABLETS OR PILLS</u>			
<u>SALT TABLETS</u>			
Plain	80	-	-
Anterlic Coated	100 plus	-	8 to 12
LAPACTIC (laxative)	110	90	-
UNICAPS (Multivit.)	220	30	-
GELUSIL (anti-acid)	35	-	12
EMPIRIN	25	-	9
DEXIDRINE	16	-	4
<u>SLEEPING PILLS</u>			
TUINAL	4	-	2
DORMISON	6	-	-
<u>ANTI HISTAMINE</u>			
THEPHORIN	14	-	2
BENADRYL	11	0	-
RONIACOL (frostbite)	6	8	2
CODEINE	20 1/2 gr.	-	4
PENICILLIN	8	8	-
CHLOROMYCETIN	8	8	-
 FIRST AID LITERATURE			
A.R.C. FIRST AID TEXT	1	-	-
SPECIAL F.A. OUTLINE	1	2	1
USE OF PILLS, CARD	1 both types	1	1
BANDAGING & SPLINTING	1	-	-

Directions For Use Of First Aid Supplies

<u>Codeine</u>	Take every 4 hours as needed. Two per dose for severe injury for relief from shock. One for cough or diarrhea
<u>Morphine</u>	Ampins. One shot only for first 4 hours. Second shot if needed after that time. Use only for severe injury when codeine cannot be taken.
<u>Penicillin</u>	Dose three per day. Use for upper respiratory infections. Take with empty stomach.
<u>Chloromycetin</u>	Dose 4 per day. Use more for infections than penicillin. Take with something in stomach.
<u>Dexedrine</u>	Dose one at a time until effect wears off. About 4 hours. A stimulant.
<u>Holocaine</u>	Eye salve. Apply under eye lid. Effect wears off in 4 hours. This salve makes eye insensitive. Keep eye clean by wearing goggles. Use for snow blindness.
<u>Tuinal</u>	Sleeping tablet. Effect will last 4-6 hours. Don't take more than two nights in a row.
<u>Thephrin</u>	Anti-histamine. For use during day. Don't take at night or it will keep you awake. Also for stuffy nose, bee stings, allergy and colds.
<u>Benedryll</u>	Anti-histamine. For use at night. Help you go to sleep.
<u>Roniacol</u>	Take by mouth for frostbite every 4 hours. Increases circulation at surface of body. Use in sleeping bag or at a place where you can get warm.
<u>La Pactic</u>	A laxative.
<u>Unicaps</u>	Multi-purpose vitamin pill.
<u>Empirin</u>	A stronger aspirin.
<u>Sucrets</u>	Mild sore throat pill.
<u>Tyrozets</u>	Good sore throat tablet. Don't take more than 3 per day.
<u>Gelusic</u>	An anti-acid pill. Works well for mild stomach ache.

OBSERVATIONS

REPORT

WEATHER OBSERVATIONS
(By B.N.)

The weather in this region gets progressively better as one proceeds inland. The route to the interior is across the Malaspina Glacier, which is liable to give a misleading impression of the weather conditions in the region as a whole.

The winds, warmed by the Japanese Current, blow in across the Glacier where they are cooled, the result being an almost continual low-hanging fog during the day and a drizzling rain during the night. Frequently the fog will burn off during the forenoon and the sun will shine for a few hours, offering an excellent opportunity to dry wet clothing and gear. Equipment dries very fast in this region and in a few hours things will be back to their normal dry state, ready for the next rain the following evening.

As we proceed up the Seward Glacier the weather begins to look better. The fog will be seen hanging low over the Malaspina and only occasionally will it creep onto the upper Seward. At these times it will sneak around back of Mt. Cook, past Mt. Vancouver, and then head down toward the Columbus Glacier.

If you are unfortunate enough to be on the Seward when the fog comes in, and you haven't marked out your path with willow wands prepare for a rest of from one to four days. This fog condition does not necessarily indicate approaching bad weather. It was observed several times from higher on the mountain, where the weather was excellent.

We found a rule of thumb which predicted the weather fairly accurately: If the clouds are coming in at one level (Glacier fog or high clouds) the weather will continue to be good; if the clouds are coming in at two levels (Glacier fog and high clouds) count on a storm within a day or two; if the clouds are coming in at three levels, count on a storm within an hour or two.

Most of the storms came from the south, and were not too severe, if one was prepared for them. They consisted of brisk winds, light to medium snowfall, and temperatures (depending on the elevation) from 10° F. on up. One afternoon at 14,000 feet the outside temperature was in the low fifties, and a wet snow was falling. The sun shone through the fog, however, and raised the temperature in the tent to 105°. That night the mercury dropped to zero and we had clear weather for a week. It might be noted that during this week the wind was consistently from the north. Minimum temperatures at 15,000 were always below zero.

During the early part of the summer it is possible to climb throughout the night, when the snow is frozen, there being only three to four hours of semi-darkness. By August the period of darkness will increase to about 6 hours. This means that good route-finding is not possible during the night and in places it will be necessary to wait for daylight. About this time the stars will start to come out and the northern lights will become visible.

2.

Suncups started to form about the middle of July, but were not of such size by the middle of August as to cause us any trouble whatsoever.

We observed several unusual conditions which might be of interest to the reader.

The first of these was the Spector of the Brocken. Several members of our group observed the Spector while on the upper ridge of Mt. Augusta. This was caused by a late afternoon sun focusing the greatly enlarged shadow of the observer on a fog bank. A rainbow surrounded the Spector, which followed perfectly all the movements of the observer. (Pete said later he waived to the Spector and the Spector waved back).

Second, seen under the same condition as the Spector, was a phenomenon we called "the Sun Spot." There seemed to be a large fireball suspended in mid-air over the glacier in the fog. We figured it was probably caused by the concave shape of the glacier focusing the sun's rays to a point in the ice crystals and fog.

Third, was glacier lassitude. This was noticed only on days when the sun was shining and no wind was blowing. The sun, shining on the surface of the glacier, evaporated the snow; this formed a moisture-layer above the glacier, which was of high humidity. Traveling in this blanket of wet air was next to impossible. All desire to move was lost, the only wish being to stop and rest. It was only by a very strong application of will power that any progress was made under such conditions. Staying on the ridges and sidehills, if possible, seemed to be the best procedure on such days.

Last are the mirages, seen in mid-August on the Malaspina. The sun shining on the glacier would produce a refraction in the air, which would place such landmarks as Yakutat Bay and the Brabazon Hills in the middle of the glacier. They provide good points to steer by when crossing the Malaspina, though they will disappear most unexpectedly at times.

We believe that the summer of 1952 was very mild, compared to what this region has been known to offer previously. We would heartily recommend that any group going in to the area prepare for much more severe conditions than we describe here, though we hope their summer will be as mild as ours was.

TABLE OF WEATHER
OBSERVATIONS

Weather Observations Taken By Richard E. McGowan

King Peak-Yukon Expedition 1952

St. Elias Range, Alaska

Date	Place	Weather Condition	Minimum overnight temp.
June 10	Yakutat	clear-warm	33
11	"	clear-warm	36
12	"	fog-clear-warm	44
13	"	fog-rain	45
14	"	rain-ptly. cl.	33
15	"	clear-warm	33
16	"	clear-warm	40
17	"	clear-warm	37
18	"	clear-warm	43
19	"	ptly.cl.-clear	41
20	"	ptly.cl.-fog	43
21	Yak.Camp 1 Mal.	fog-ptly.cl.-rain	41
22	Camp 2 Mal.	rain-fog	32
23	Camp 3 Mal.	rain-fog	32
24	Camp 4 Seward	ptly.cl.-rain	31
25	Camp 5 Seward	ptly.cl.-fog-snow	29
26	Base Camp Sew.	clear-windy	16
27	Base Camp Sew.	clear	11 (?)
28	Base Camp Sew.	clear	9
29	Augusta Camp 3	clear-ptly.cl.	20
30	Augusta Camp 4	ptly.cl.-clear-snow	--
July 1	Base Camp Sew.	clo.-snow-wind	25
2	Augusta Camp 4	snow-fog-clo.	--

2.

Date	Place	Weather Condition	Minimum overnight
July 3	Augusta Camp 4	snow-fog-clo.	-
4	Augusta Camp 4	clear-windy-ptly.clo.-snow	
5	Augusta Camp 3	clear-(fog on Seward)	14
6	Augusta-Base Cp.	fog-snow-windy	10 (?)
7	Base Camp Seward	snow-fog-wind	-
8	Base Camp Seward	snow-fog-wind	-
9	Base Camp Seward	fog-clear	28
10	Base Camp Seward	clear-ptly.clo.	18
11	Base Camp Seward	clear	-
12	King Camp 1	ptly.clo.-	25
13	King Camp 1	ptly.clo.	31
14	King Camp 1	ptly.clo.-clear	36
15	King Camp 2	clo.-fog-snow	16
16	King Camp 3	clear	24
17	King Camp 3	fog-snow-clo.	16
18	King Camp 4	snow-fog-clo.	6
19	King Camp 4	wind-snow-fog-clear	0
20	King Camp 5	clear-wind	2
21	King Camp 5	clear-wind	-2
22	King Camp 5	clear-wind	-1
23	King Camp 5	clear-wind-ptly.clo.	-*
24	King Camp 5	ptly.clo.-wind-clo.	-
25	King Camp 5	clo.-snow-wind	-
26	King Camp 1	ptly.clo.-clear	-

*Thermometer lost at 17,000 feet

3.

Date	Place	Weather Condition	Minimum overnight
July 27	King Camp 1	clear-cold	-
28	Base Camp Seward	clear-fog	minimum during absence 6
29	Base Camp Seward	clo.-fog	-
30	Base Camp Seward	clo.-fog	-
31	Base Camp Seward	clo.-fog	-
August 1	Camp 1 Seward	fog-ptly.clo.	-
2	Camp 2 Pt.Glorious	clear-ptly.clo.	-
3	Camp 3 Seward Rock	fog-ptly.clo.-rain	-
4	Camp 4 Mal.	ptly.clo.	-
5	Camp 5 Mal.	ptly.clo.	-
6	Yakutat	fog-rain	52
7	Yakutat	fog-rain	54
8	Yakutat	fog-rain-ptly.clo.	52

Approximately the Elevations of the Different Camps

Base Camp Seward	5500'		
Augusta Camp 1	6000'		
Augusta Camp 2	8000'		
Augusta Camp 3	9500'		
Augusta Camp 4	11,500'		
Augusta Summit	14,070'		
King Camp 1	7200'		
King Camp 2	7800'	King Camp 4	14,400'
King Camp 3	8200'	King Camp 5	15,500'
		King Summit	17,130'

A WORD ON THE PLANT LIFE,

ANIMALS, INSECTS AND

ROCKS IN THE AREA

KING PEAK-YUKON EXPEDITION

ST.ELIAS RANGE, ALASKA

Insects Flowers Rocks -Found By the King Peak-Yukon Expedition 1952

Prepared by Richard E. McGowan

It was unfortunate indeed that no-one with a knowledge of rocks, flowers, plants and insects accompanied the expedition.

The botanist would however be very disappointed in the area, at least on the upper reaches of the Seward and on the Logan massif.

As for the zoologist, he too would be disappointed. To spend a summer studying iceworms would indeed be rather boring. The only other insect that we noticed in the area was the midge belonging to the Chiromidae specie.

The lower reaches of the Malaspina did support some plant life. Especially along the lower flanks of the Hitchcock Hills.

Marmots were seen in the area of the junction of the Seward and Malaspina Glaciers. In the Seward trough animal tracks were seen. They were not identified, though were similar to the tracks of the Bob Cat. Bear tracks were seen in the Seward Rock area where the marmots were seen. The elevation here is around 1500-2000'. Huge bear tracks were followed from the entrance of the Seward back to where the Seward trough breaks out onto the Upper Seward. Perhaps the bear travel into the interior in this matter. The trek would however involve a hundred miles or more on glacier. There would be little food for them.

A few birds were noticed in the higher areas. Often they would be chasing each other. Feathers on the glacier were found several times. Near the summit of King an unidentified bird was seen. In the ten miles or more of moraine on the Malaspina Glacier seagulls were quite abundant, apparently nesting. They become quite upset when bothered. On the trip into base camp they attacked us at one

time. An ice axe brigade saved the day.

To the geologist the area is indeed a mecca. Books could be written on a single tributary glacier.

For the most part the mountains are metamorphic in origin. Schist was the main form found. Sedimentary rock was found at Pt. Glorious in the trough. The area is about 3500'. Fossils of clams were found in a sedimentary deposit at Pt. Glorious. Crustal movement is very evident on the south sides of the St. Elias Range.

A very large earth slide was seen on the trip out. It started about half way up one of the many peaks in the Hitchcock Hills. The slide flowed out onto the Seward Glacier. It was perhaps three miles long and one mile wide. We crossed within a few hundred feet of the lower end. The material was for the most part ice, mud, and covered with rock debris. It was indeed very impressive.

Glacier mills are very prominent on the Malaspina.

The lower reaches of the Malaspina have been studied in recent years by Dr. Robert Sharp, geologist, from California. The Arctic Institute of North America, under the direction of Col. Walter Wood, has been active in the general area for some years. Israel Cook Russell visited the area in 1890 and 1891 and carried on geological work. His reports were published in the National Geographic Magazine.*

For the most part climbing has been the main objective of the visitors to the area.

*Israel Cook Russell, "An Expedition To Mount Elias, Alaska," the National Geographic Magazine, Vol. III., pp. 53-200, plates 2-20 (I); Washington, 1891; id., "Second Expedition to Mt. St. Elias", Thirteenth Annual Report of the U.S. Geological Survey, 1891-92; Part II., "Geology", pp. 7-91, plates 3-21 (II); Washington 1893.