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NO. 16

CONTENTS

GOING DOWN? SYSTEMS

FIGURE EIGHT DESCENDERS. PAGE 1
 BY JAMES A. FRANK AND JERRY SMITH
 USING THE RAPPEL RACK PAGE 5
 BY STEVE HUDSON AND TONI WILLIAMS

GOING UP? SYSTEMS

THE PORTLY PRUSICK. PAGE 15
 BY BRUCE SMITH

ADMINISTRATIVE*

1981 MINUTES. PAGE 17
 1981 TREASURER'S REPORT PAGE 20
 1982 MINUTES. PAGE 19
 1982 SECRETARY'S REPORT PAGE 20
 1982 TREASURER'S REPORT PAGE 20
 MISCELLANEOUS IMPORTANT STUFF PAGE 20

GREAT VERTICAL EVENTS

EL CAPITAN. PAGE 21
 BY TONI WILLIAMS

NYLON HIGHWAY # 16 JUNE 1983
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DUES ARE DUE

MOST ALL SUBSCRIPTIONS AND MEMBERSHIPS WILL EXPIRE AS OF THIS ISSUE. IF YOURS HAVE EXPIRED, DUES ARE DUE AS OF THE 1983 NSS CONVENTION. PLEASE SEND \$3.00 TO KIRK MACGREGOR OR GIVE HIM YOUR DUES AT CONVENTION. THIS PAYMENT WILL COVER ANY AND ALL ISSUES PUBLISHED BETWEEN NOW AND NEXT YEAR'S CONVENTION.

THE COVER: "THE DREADED LIP" BY NINA SAVAR AND THE EDITOR.

FIGURE EIGHT DESCENDERS

By JAMES A. FRANK AND JERRY SMITH

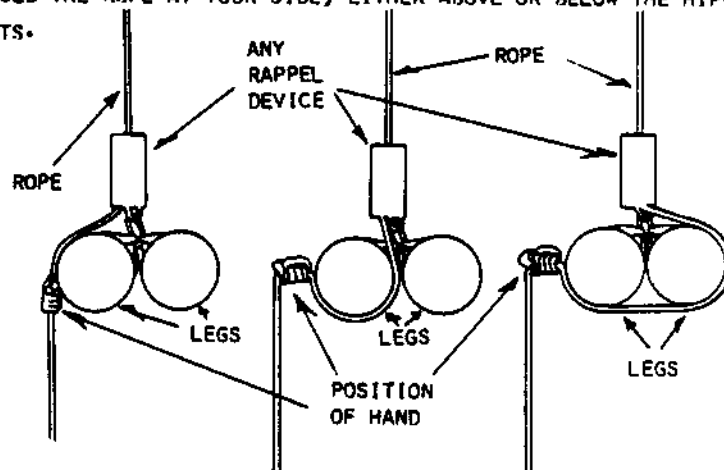
FIGURE 8 DESCENDERS ARE FAST GAINING POPULARITY FOR SHORT RAPPELS. ROCK CLIMBERS HAVE BEEN USING 8'S FOR YEARS; AN EXTRA PIECE OF GEAR BUT EASIER AND SAFER THAN A CARABINER BRAKE OR A BRAKE BAR ON A CARABINER. LARGE 8'S HAVE BEEN THE MAINSTAY OF MOUNTAIN RESCUE TEAMS.

ADVANTAGES

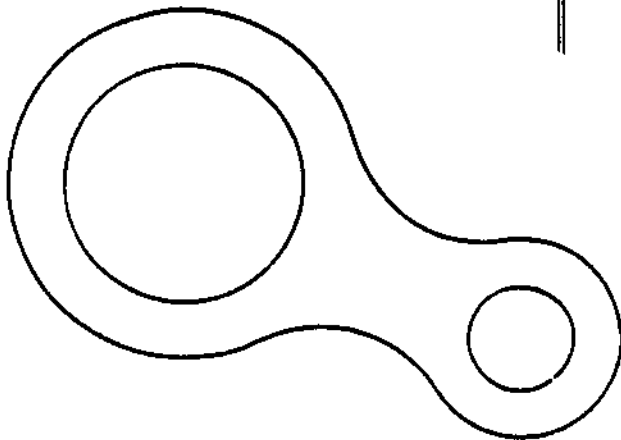
STRENGTH AND SIMPLICITY ARE THE PRIMARY ADVANTAGES OF THE FIGURE 8. THE DESCENT IS CONTROLLED WITH ONE HAND. IT IS EASY TO LEARN HOW TO USE, AND ALMOST IMPOSSIBLE TO RIG WRONG. MOST BRANDS ON THE MARKET ARE DROP FORGED OR MACHINED OUT OF ALUMINUM PLATE, AND WILL NOT BE THE WEAK LINK IN YOUR SYSTEM. DEPENDING ON WHERE YOU BUY, AN 8 MAY BE LESS EXPENSIVE THAN SOME OF THE OTHER RAPPEL DEVICES.

MANY NON-USERS FAIL TO APPRECIATE HOW VERSATILE THE FIGURE 8 CAN BE. BASIC FRICTION VARIATION DEPENDS ON THE ANGLE OF THE ROPE COMING OUT OF THE 8 AND THE AMOUNT OF ROPE CONTACTING YOUR BODY. MAXIMUM BRAKING IS WITH THE ROPE WRAPPED UNDER THE BUTTOCKS AND HELD IN THE OPPOSITE HAND. MINIMUM WOULD BE HOLDING THE ROPE STRAIGHT UP AFTER IT COMES OUT OF THE 8. THE FIRST SYSTEM IS OFTEN USED BY CLIMBERS. ANOTHER COMMON STYLE IS TO HOLD THE ROPE AT YOUR SIDE, EITHER ABOVE OR BELOW THE HIP. THIS GIVES A WIDE RANGE OF BRAKING ADJUSTMENTS.

A HALF LOCK-OFF CAN BE USED TO INCREASE THE FRICTION. THIS IS BEST DONE BEFORE STARTING THE RAPPEL, BUT CAN BE ADDED DURING THE DROP. THIS WILL CAUSE THE ROPE TO RUN ACROSS ITSELF, BUT BOTH ROPES WILL BE MOVING AVOIDING HEAT BUILDUP.



(ED.) VARIOUS AMOUNTS OF BODY FRICTION THAT CAN BE ACHIEVED DURING A RAPPEL WITH A MECHANICAL DEVICE.



RUSS ANDERSON STANDARD FIGURE 8 DESCENDER

A DOUBLE WRAP CAN BE USED TO ADD A LOT OF EXTRA FRICTION. THIS IS TAUGHT TO SOME FIRE RESCUE PERSONNEL. I HAVE YET TO SEE THE NEED FOR IT UNLESS YOU ARE USING A SOFT ROPE OF 3/8 INCH OR SMALLER.

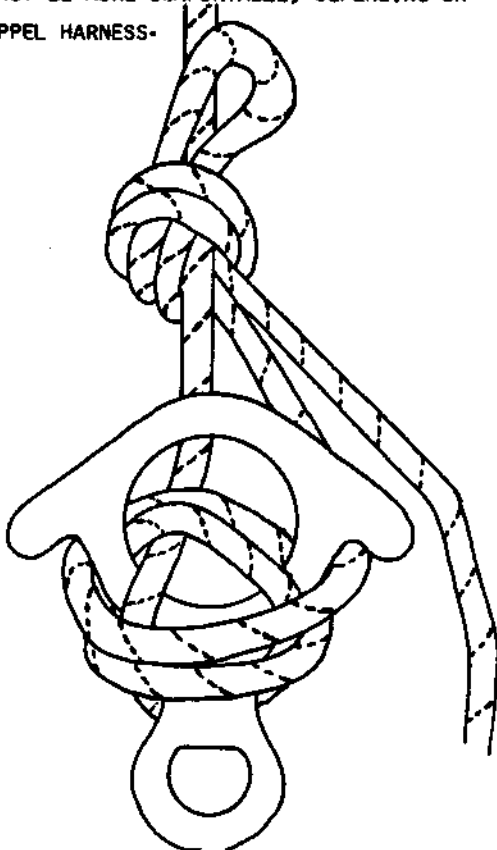
FIGURE EIGHT DESCENDERS

STOPPING AND LOCKING-OFF

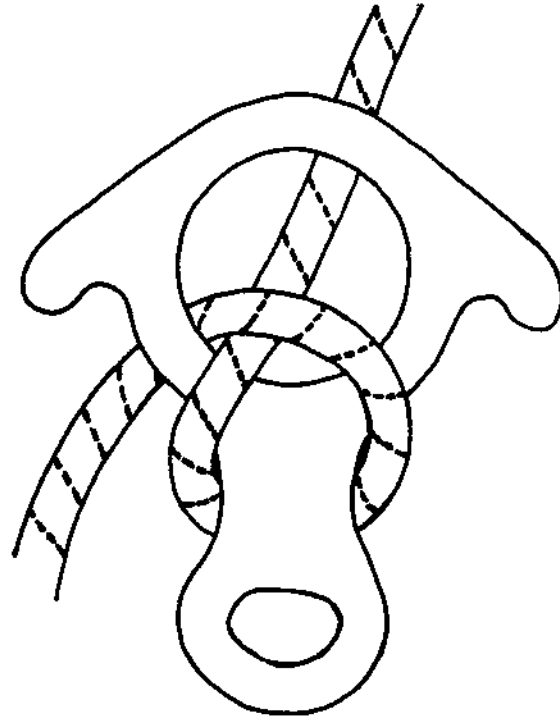
THE FIGURE 8 CAN BE LOCKED-OFF VERY SECURELY. THREE DIFFERENT METHODS ARE IN USE. THE FIRST BRINGS THE ROPE ACROSS THE TOP, BINDING IT BETWEEN THE STANDING LINE AND THE 8. ADD A COUPLE MORE WRAPS FOR SECURITY. AN OVERHAND KNOT TIED ABOVE THE 8, USING A LOOP MADE FROM THE RUNNING END OF THE ROPE, MAKES A GOOD BACKUP IF YOU ARE GOING TO BE STOPPED AWHILE.

THE ROPE CAN ALSO BE PULLED AROUND THE BOTTOM OF THE 8, TOWARDS YOU, AND UP THE OTHER SIDE BEFORE BEING PULLED BETWEEN THE ROPE AND THE 8. THIS REQUIRES LESS STRENGTH THAN THE FIRST METHOD, BUT IS A LITTLE LESS SECURE. ADD EXTRA WRAPS AND AN OVERHAND KNOT AS NEEDED.

IF YOU ARE RAPPELLING WITH THE ROPE WRAPPED UNDER YOUR BUTTOCKS YOU CAN STILL BRING THE RUNNING END OVER THE TOP OF THE 8 AND PULL IT BETWEEN THE 8 AND THE ROPE. AGAIN, ADD EXTRA WRAPS AND AN OVERHAND KNOT AS NEEDED. THIS METHOD WILL LEAVE YOU SITTING WITH YOUR WEIGHT ON THE ROPE, (ED. LIKE IN A SWING) WHICH MAY OR MAY NOT BE MORE COMFORTABLE, DEPENDING ON YOUR RAPPEL HARNESS.



LOCKED-OFF WITH TWO WRAPS AND BACKED UP WITH AN OVERHAND KNOT.



NORMAL RAPPEL CONFIGURATION WITH A HALF LOCK-OFF. ADDS A LOT MORE FRICTION. CAN BE PUT ON BEFORE OR DURING A RAPPEL.

BELAYING WITH THE 8

RAPPELS OR DOWN CLIMBS CAN BE COMFORTABLY AND SECURELY BELAYED USING THE FIGURE 8. CLIP THE 8 INTO YOUR BELAY ANCHOR INSTEAD OF ONTO YOURSELF. WEIGHT IS EASY TO HOLD AND YOU CAN LOWER THE PERSON JUST LIKE HE/SHE WAS RAPPELLING BUT WITH THE BELAYER CONTROLLING THE RATE. BOTTOM BELAYS OF A RAPPELLER ARE VERY EFFECTIVE.

SOME FIGURE 8'S HAVE BELAY SLOTS WHICH WERE DESIGNED FOR USE AS A BELAY PLATE. THIS IS A USEFUL BELAY WHEN ROPE MUST BE TAKEN IN QUICKLY, SUCH AS A CLIMBER MOVING QUICKLY UP TO THE BELAYER. AGAIN, MY PREFERENCE IS TO ATTACH THE BELAY TO AN ANCHOR INSTEAD OF THE BELAYER.

FIGURE EIGHT DESCENDERS

SOME DRAWBACKS OF THE 8

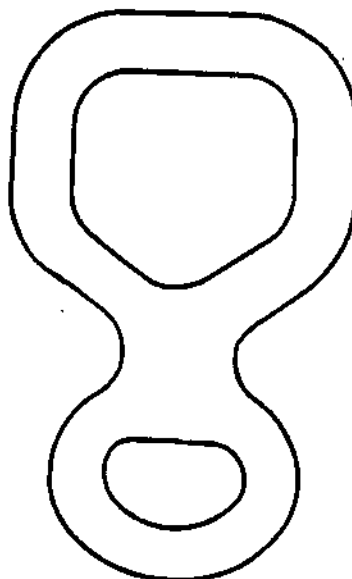
THE DISADVANTAGES OF THE FIGURE 8 BECOME MORE OF A CONCERN AS THE RAPPELS BECOME LONGER. THE FRICTION INHERENT IN THE 8 CANNOT BE REDUCED AS MUCH AS IN A RACK. THUS WITH A LOT OF ROPE WEIGHT BELOW, YOU HAVE TO KEEP LIFTING THE ROPE. I CALL 200 TO 250 FEET LONG, BUT SOME PEOPLE CLAIM THAT "LONG" IS ANYTHING OVER 150 FEET. IT DEPENDS A LOT ON ROPE WEIGHT, STIFFNESS, DIAMETER, ROPE "SPEED", BODY WEIGHT, AND THE TYPE OF FIGURE 8 BEING USED.

BECAUSE OF THE WAY THE ROPE BENDS AROUND THE 8, THE ROPE WILL TWIST. THIS CAUSES MORE SPINNING ON A FREE RAPPEL. IF A LOT OF ROPE IS LAYING ON THE BOTTOM, THE TWISTING CAN SNARL THE ROPE INTO A RUTABAGA KNOT. (ED. I'VE DISCOVERED THAT LAYED ROPE PASSES THROUGH AN 8 EASIER BECAUSE ITS NATURAL TENDENCY IS TO TWIST AND SNARL. KERNMANTLE ROPE RESISTS THE TWISTING THAT THE WRAP RAPPEL REQUIRES.)

TYPES OF FIGURE EIGHTS

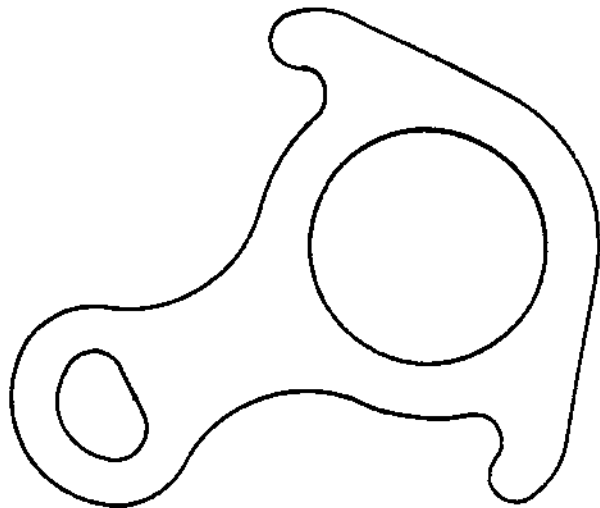
THE NAME COMES FROM THE NUMBER 8 SHAPE OF THE CLASSIC TYPE FIGURE 8. (SHOWN ON PAGE 1) THESE COME IN A VARIETY OF SIZES. THE SMALLER ONES HAVE MORE FRICTION (TIGHTER BENDS IN THE ROPE) AND WEIGH LESS. THE LARGE 8'S ARE EASIER TO USE WITH STIFF ROPES, LARGE DIAMETER ROPES, AND DOUBLE ROPES, AS WELL AS BEING EASIER AND MORE SECURE TO LOCK-OFF. COMMON BRANDS ARE CMI, CLOG, AND RUSS ANDERSON.

SEVERAL YEARS AGO, SMC SQUARED THE SHAPE OF THE LARGE HOLE IN A SMALL SIZE FIGURE 8 AND NAMED IT THE STRAIGHT 8. THE SHAPE PROVIDED EXTRA FRICTION. THE SMALL HOLE IN THE 8 WAS ELONGAGED SO IT COULD BE USED FOR A BELAY SLOT. THIS CREATED A VERSATILE, YET LIGHTWEIGHT DEVICE.



SMC'S STRAIGHT EIGHT

RUSS ANDERSON DEVELOPED THE FIGURE 8 WITH EARS TO ELIMINATE PROBLEMS SOME USERS WERE HAVING WITH THE ROPE SLIPPING UP THE BACK AND TIEING A GIRTH HITCH AT THE TOP OF THE 8. THIS IS A RISK WHEN STARTING A RAPPEL OVER A SHARP LIP DUE TO DRAGGING THE 8 ON THE EDGE WITH A LOW LOAD ON THE ROPE. I FOUND THAT USING THE EARS FOR LEVERAGE MADE LOCKING-OFF THE 8 EASIER.



RUSS ANDERSON 8 WITH EARS

THE RUSS ANDERSON 8'S USED TO HAVE A BELAY SLOT IN THE WAIST AS AN OPTION. (THIS DID NOT DECREASE THE STRENGTH). SMC IS NOW THE MANUFACTURER OF THE RUSS ANDERSON 8'S AND IS MAKING THE SMALL HOLE INTO A BELAY SLOT AS ON THE SMC STRAIGHT 8.

FIGURE EIGHT DESCENDERS

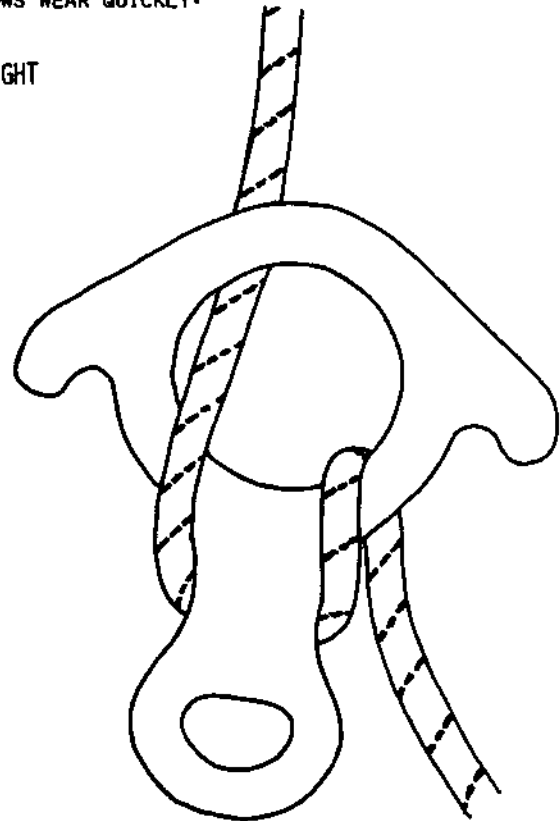
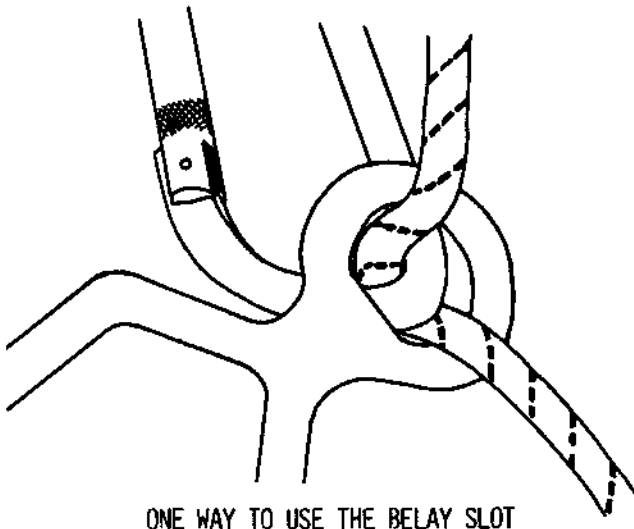
ANOTHER FIGURE 8 WITH EARS THAT RECENTLY CAME ON THE MARKET HAS TWO BUMPS ON THE INSIDE OF THE LARGE HOLE. THE CLAIM IS THAT THEY ARE AN ADVANTAGE WHEN DOUBLE WRAPPING THE 8. I HAVE BEEN TOLD THAT THIS FIGURE 8 IS MADE OF A SOFTER ALUMINUM AND SHOWS WEAR QUICKLY.

USING THE EIGHT

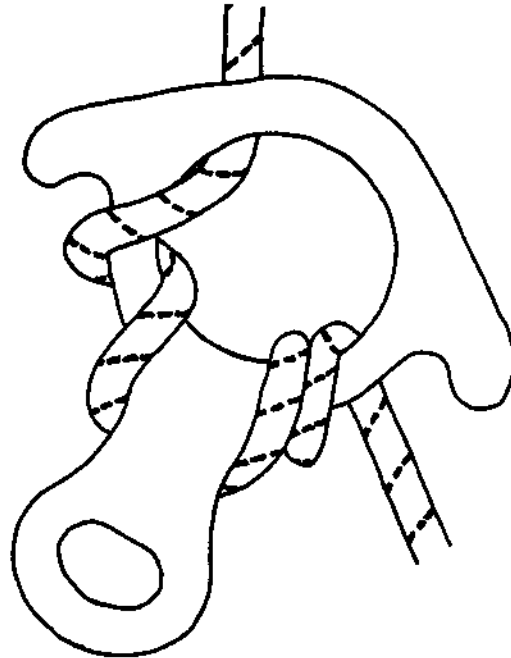
IF YOU ARE RIGHT HANDED, STAND WITH THE ROPE ON YOUR RIGHT SIDE. HOLD THE 8 WITH THE LARGER HOLE AWAY FROM YOU. DOUBLE THE ROPE, PUSH IT UP THROUGH THE LARGE HOLE FROM THE BOTTOM. PUT THE SMALL END OF THE 8 THROUGH THE LOOP AND PULL TIGHT. CLIP THE SMALL HOLE INTO THE CARABINER ON YOUR HARNESS. TAKE THE SLACK OUT BY PULLING IT THROUGH THE 8. YOU WILL BE BRAKING WITH YOUR RIGHT HAND.

IF YOU WANT TO WRAP THE ROPE UNDER THE BUTTOCKS AND STILL BELAY WITH THE RIGHT HAND, START WITH THE ROPE ON YOUR LEFT SIDE AND RIG AS DESCRIBED ABOVE. AFTER CLIPPING THE 8 INTO YOUR HARNESS CARABINER AND TAKING OUT THE SLACK, RUN THE FREE END OF THE ROPE PAST YOUR LEFT HIP, AROUND YOUR MOST PADDED PARTS, AND HOLD IN YOUR RIGHT HAND.

BRAKING IS THE SAME FOR ANY STYLE. TO INCREASE, DO ANY COMBINATION OF THE FOLLOWING DEPENDING ON THE NEEDS OF COMFORT AND DESCENT RATE: HOLD TIGHTER WITH YOUR HAND, PUSH AGAINST THE BODY MORE, WRAP THE ROPE AROUND MORE BODY SURFACE. GLOVES HELP. BE CAREFUL OF ROPE RUNNING ACROSS THE WEB OF YOUR HARNESS, YOU CAN BURN THROUGH IT IF YOU KEEP IT IN ONE PLACE TOO LONG.



NORMAL RAPPEL CONFIGURATION



DOUBLE WRAP FOR EXTRA FRICTION WHEN USING SMALL DIAMETER OR FAST ROPE.

USING THE RAPPEL RACK

BY STEVE HUDSON AND TONI WILLIAMS

ILLUSTRATIONS BY TONI WILLIAMS

INTRODUCTION THIS ARTICLE WAS WRITTEN WITH TWO USES IN MIND: TO BE SENT WITH RAPPEL RACKS SOLD BY PMI, MANY OF WHICH WERE GOING TO RESCUE GROUPS AND OTHERS WHO MIGHT NEVER HAVE SEEN A RACK BEFORE, AND FOR POSSIBLE USE IN THE "CAVER INFORMATION SERIES." MANY NYLON HIGHWAY READERS WILL FIND PORTIONS OVERLY ELEMENTARY (THOUGH SOME OF THE INFORMATION WILL BE NEW EVEN TO THEM). BUT NH ARTICLES HAVE A WAY OF BEING REPRINTED AND USED BY LESS EXPERIENCED PEOPLE THAN THE AVERAGE VERTICAL SECTION MEMBER, SO IT WAS DECIDED TO PRINT IT WITH MINOR DELETIONS OF BACKGROUND MATERIAL AND THE ADDITION OF INFORMATION ON NEW TECHNOLOGICAL DEVELOPMENTS. ANY COMMENTS WILL BE APPRECIATED BY THE AUTHORS.

BY ITSELF, THIS ARTICLE WILL NOT MAKE YOU A SAFE OR EFFICIENT USER OF THE RAPPEL RACK. THERE ARE TOO MANY FINE POINTS WHICH CAN'T BE COVERED HERE. AND THOUGH WE HAVE TRIED TO WRITE CLEARLY, THERE IS ALWAYS THE POSSIBILITY OF MISUNDERSTANDING WHICH CAN ONLY BE CORRECTED BY AN EXPERIENCED PERSON WHO SEES THE ERROR. THIS ARTICLE MUST BE SUPPLEMENTED BY ACTUAL RAPPELLING PRACTICE WITH SOMEONE HIGHLY EXPERIENCED AND COMPETENT AT USING A RAPPEL RACK. (DETERMINING YOUR TRAINER'S COMPETENCE MAY BE A PROBLEM. SOME PEOPLE ARE EXPERIENCED BUT NOT VERY COMPETENT.) THE INFORMATION HERE WILL, HOWEVER, PREPARE YOU FOR SUCH PRACTICE. IT MAY ALSO GIVE EXPERIENCED RACK USERS SOME IDEAS ON IMPROVING THEIR EFFICIENCY.

THIS ARTICLE ASSUMES A BASIC FAMILIARITY WITH RAPPELLING TECHNIQUES. IF YOU ARE NOT AN EXPERIENCED RAPPELLER, READ SOME ARTICLES ABOUT THE SUBJECT AS A BARE MINIMUM BEFORE CONTINUING WITH THIS ONE. SOME SUGGESTED REFERENCES ARE LISTED AT THE END OF THIS ARTICLE.

WHY?

MANY SITUATIONS REQUIRE SOME DEVICE WITH WHICH THE FRICTION ON THE ROPE--WHICH CONTROLS THE RAPPELLER'S RATE OF DESCENT--MAY BE VARIED WITHOUT DETACHING THE DEVICE FROM THE ROPE. SEVERAL VARIABLE FRICTION DEVICES HAVE BEEN DEVELOPED SINCE THE 1960'S. ONE WHICH BECAME POPULAR ENOUGH TO BE COMMERCIALLY ATTRACTIVE WAS THE RAPPEL RACK (OR SIMPLY THE "RACK") DEVELOPED BY JOHN COLE. VERSIONS OF THE RACK ARE NOW MADE BY PMI (PIGEON MOUNTAIN INDUSTRIES), BLUE WATER LTD., AND OTHERS.

BESIDES OFFERING VARIABLE FRICTION, THE RAPPEL RACK CAN BE SECURELY LOCKED OFF, LEAVING BOTH THE RAPPELLER'S HANDS FREE FOR TAKING PICTURES, TENDING A RESCUE LITTER OR ITS OCCUPANT, RIGGING IN VERTICAL GEAR, ETC. THE RAPPEL RACK IS ALSO EASY TO OPERATE; ONCE PROPERLY SET UP, IN MOST CASES, IT CAN BE OPERATED BY FINGERTIP PRESSURE.

THE FLEXIBILITY AND EASE OF OPERATION OF THE RACK, IN THE OPINION OF MOST USERS, MAKE UP FOR ITS BEING SLIGHTLY HEAVIER, BULKIER, AND SLOWER TO RIG THAN, FOR EXAMPLE, A FIGURE 8 DESCENDER.

WHAT?

THE RAPPEL RACK, STRIPPED TO ITS BASICS, IS A STEEL BAR BENT INTO A U SHAPE ON WHICH BRAKE BARS MOVE FREELY UP AND DOWN, AND WHICH HAS SOME MEANS OF ATTACHMENT TO THE SEAT HARNESS OR OTHER ANCHOR. VARIOUS STYLES CONSIST OF THE FOLLOWING PARTS:

THE RACK FRAME, THAT IS, THE SHAFT WITHOUT THE BRAKE BARS, IS USUALLY MADE OF 3/8" DIAMETER STAINLESS STEEL BENT INTO THE SHAPE OF A U WITH ONE SHORT LEG (FIG. 1). THE MOST COMMON LENGTH IS ABOUT 14 INCHES, DESIGNED FOR USE WITH SIX BRAKE BARS. A SHORTER VERSION, ABOUT 10-12 INCHES LONG, USES FIVE BRAKE BARS AND IS INTENDED FOR LIGHTWEIGHT RAPELLERS. LONGER RACKS ARE NECESSARY ONLY FOR DROPS SIGNIFICANTLY IN EXCESS OF 1000 FEET.

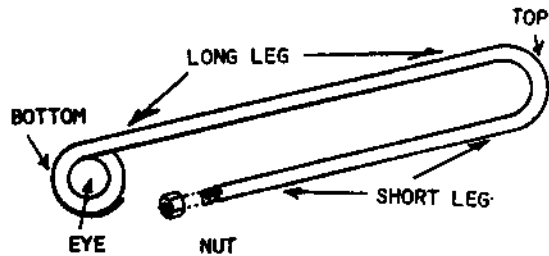


FIGURE 1. RAPPEL RACK FRAME.

THE SHORT LEG OF THE RACK ENDS IN A THREADED SECTION FOR THE NUT WHICH KEEPS THE BARS ON THE RACK. THIS MAY BE A SELF-LOCKING NUT WITH NYLON IN THE GROOVES OF THE LAST FEW THREADS, OR STANDARD NON-LOCKING THREADS.

THE LONGER LEG ENDS IN THE EYE, THROUGH WHICH A CARABINER IS PASSED TO ATTACH THE RACK TO A SEAT HARNESS OR OTHER ANCHOR. THE CENTER OF THIS EYE SHOULD BE AT THE CENTER OF THE SHORT AXIS OF THE RACK. BECAUSE A RACK IS MOST LIKELY TO FAIL BY SLOW UNWRAPPING OF THE EYE UNDER HEAVY LOAD, YOU SHOULD FIND THAT EYE HAS BEEN SECURED BY CONTINUING THE WRAP

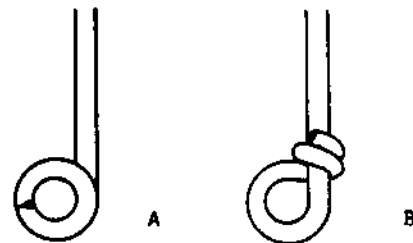


FIGURE 2. METHODS OF SECURING THE EYE.

AROUND THE CIRCLE (FIG. 2A), BY WRAPPING THE TAIL AROUND THE SHAFT (FIG. 2B) OR BY WELDING. WELDING STAINLESS STEEL MAY MAKE IT EITHER STRONGER OR WEAKER, AND IT IS VIRTUALLY IMPOSSIBLE TO TELL WHICH WITHOUT TESTING EACH WELD. SMC HAS RECENTLY BEGUN PRODUCING 5 AND 6 BAR WELDED-EYE RACKS (AVAILABLE FROM PMI). THESE INDIVIDUALLY TESTED RACKS RESIST DEFORMATION AT MUCH HIGHER LOADS (TESTED STRENGTH IN EXCESS OF 7000 POUNDS), MAKING THEM VALUABLE FOR RESCUE WORK.

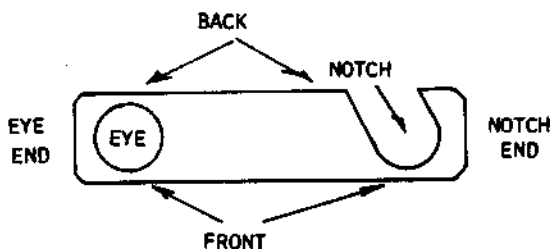


FIGURE 3. STANDARD BRAKE BAR

THE TERM "RACK" USUALLY REFERS NOT TO THE BARE FRAME BUT TO THE ENTIRE DEVICE, READY FOR RAPPELLING. TO THE FRAME MUST BE ADDED SEVERAL BRAKE BARS, 3/4" DIAMETER CYLINDRICAL BARS ABOUT THREE INCHES LONG (FIG. 3). PASSING THE ROPE OVER AND UNDER SUCCESSIVE BARS CREATES THE FRICTION WHICH CONTROLS THE RAPPELLER'S RATE OF DESCENT. ONE END OF EACH BAR HAS A ROUND HOLE, THE EYE, COMPLETELY SURROUNDED BY METAL. THE OPPOSITE END HAS A NOTCH, OPEN ON ONE SIDE. THE EYE END REMAINS ATTACHED TO THE RACK AT ALL TIMES WHEN IN USE. THE NOTCH ALLOWS THE END OF THE BAR TO BE EASILY SLIPPED ONTO OR OFF THE RACK WHEN THE TWO LEGS OF THE RACK ARE PINCHED TOGETHER.

USING THE RAPPEL RACK

IT IS OF UTMOST IMPORTANCE THAT THE ROPE BE THREADED SO THAT IT TOUCHES THE SIDE OF THE BAR OPPOSITE THE OPEN NOTCH (FIG. 4). (THIS SIDE WILL BE REFERRED TO AS THE FRONT AND THE SIDE WITH THE OPEN PART OF THE NOTCH AS THE BACK. SEE FIG. 3.) THIS ENSURES THAT THE FORCE OF THE ROPE UNDER TENSION WILL TEND TO KEEP THE BAR ON THE RACK RATHER THAN FORCING IT OFF. USING STRAIGHT-NOTCHED (RATHER THAN SLANTED) BARS FOR THE SECOND AND THIRD BARS HELPS PREVENT RIGGING THE RACK BACKWARDS.

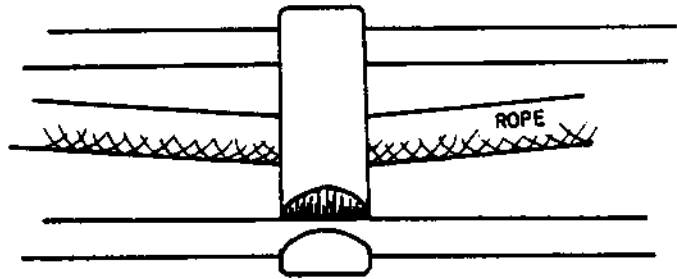


FIGURE 4. SEGMENT OF THE RAPPEL RACK SHOWING THE CORRECT PLACEMENT OF THE ROPE, TOUCHING FRONT SIDE OF THE BAR (OPPOSITE SIDE FROM THE NOTCH OPENING).

BOTH SOLID ALUMINUM AND HOLLOW (TUBULAR) STEEL BRAKE BARS ARE COMMERCIALY AVAILABLE. (NOTE: BLUE WATER RACKS REQUIRE BLUE WATER BARS, WHICH ARE SLIGHTLY LARGER THAN STANDARD, WITH EYES SIZED ESPECIALLY FOR THE 3/8" RACK FRAME. PMI RACKS ACCEPT MANY STANDARD ALUMINUM BRAKE BARS. PMI AND SMC MANUFACTURE STEEL BARS.) YOUR CHOICE OF BARS DEPENDS ON YOUR WEIGHT AND THE TYPE OF CONDITIONS YOU EXPECT. ALUMINUM BARS DISSIPATE HEAT FASTER, AND THUS ARE PREFERABLE FOR LONG RAPPELS. THEY ARE ALSO LIGHTER AND CHEAPER. STEEL, ON THE OTHER HAND, IS MORE RESISTANT TO WEAR AND GIVES A FASTER RAPPEL, SO IT MAY BE PREFERRED FOR SHORT DROPS USING MUDDY ROPES AND/OR FOR VERY LIGHT RAPPELLERS. STEEL AND ALUMINUM BARS MAY BE INTERMIXED. FOR EXAMPLE, A LIGHT RAPPELLER DOING LONG DROPS MAY WISH TO USE STEEL FOR THE TOP ONE OR TWO BARS (PROVIDED HE/SHE DOESN'T RAPPEL TOO FAST, WHICH HEATS THE BARS) AND ALUMINUM FOR THE REST. ONE CAUTION: IF YOU ARE USED TO ALUMINUM BARS AND SWITCH TO STEEL, BE VERY CAREFUL ON YOUR FIRST DROP, ESPECIALLY IF IT'S ON A NEW SLICK ROPE.

HOW?

PREPARATION AND ASSEMBLY. WHEN YOU HAVE DECIDED WHICH RACK(S) AND BRAKE BARS TO BUY, AND HAVE THEM BEFORE, YOU ARE STILL NOT QUITE READY TO RAPPEL.

FIRST, EXAMINE THE RACK. THE SIDES SHOULD BE SMOOTH, PARALLEL, AND IN THE SAME PLANE. SLIGHT PROBLEMS HERE MAY BE CORRECTED BY BENDING THE FRAME WITH YOUR HANDS TO THE PROPER SHAPE. QUALITY CONTROL OF MOST COMMERCIAL VERTICAL GEAR IS EXCELLENT, BUT SHOULD YOU SOMEHOW END UP WITH A RACK SERIOUSLY OUT OF ALIGNMENT OR WITH VISIBLE DEFECTS, RETURN IT TO THE SUPPLIER FOR EXCHANGE.

YOU MAY WISH TO SMOOTH THE RACK FURTHER WITH FINE EMERY CLOTH AND STEEL WOOL. EXAMINE THE EYES OF THE BARS (TAKING THEM OFF THE RACK IF THEY CAME ASSEMBLED). IF NECESSARY, SMOOTH THESE ALSO WITH A ROUND FILE AND EMERY CLOTH. THERE SHOULD BE NO ROUGH EDGES ON THE RACK OR OTHER PARTS WHICH CAN ABRABE THE ROPE, AND THE BARS SHOULD SLIDE FREELY AND EASILY ON THE FRAME WHEN IT IS HELD BY THE EYE AND TILTED UP AND DOWN.

THE NEXT STEP IS TO TAKE OFF THE NUT AND PUT ON THE BARS, BUT FIRST YOU MUST MAKE SEVERAL DECISIONS. UNFORTUNATELY, SOME OF THESE REQUIRE EXPERIENCE WITH THE RACK AND A KNOWLEDGE OF YOUR OWN RAPPELLING STYLE. SO YOU WILL PROBABLY HAVE TO TRY THINGS A COUPLE OF WAYS BEFORE YOU DISCOVER WHAT'S MOST COMFORTABLE AND EFFICIENT FOR YOU.

USING THE RAPPEL RACK

THE DECISIONS TO BE MADE ARE:

1. WHICH WAY YOU WANT THE RACK TO RIDE. ATTACH THE RACK TO THE CARABINER SO THAT (ASSUMING THE CARABINER LIES FLAT AGAINST YOUR BODY) THE RACK RIDES WITH THE LONG LEG UP. A FEW MINUTES PLAYING AROUND WITH THE RACK WILL CONVINCING YOU THAT EACH TIME YOU ENGAGE OR DISENGAGE A BAR YOU WILL HAVE TO SWITCH THE ROPE TO THE OPPOSITE SIDE OF THE RACK TO KEEP THE ROPE IN THE SAME POSITION RELATIVE TO THE BOTTOM BAR. (SEE "ATTACHMENT TO THE ROPE" FOR FURTHER CLARIFICATION.) SWITCHING SIDES IS VERY DIFFICULT UNLESS THE SHORT LEG IS ON THE BOTTOM.

IF FOR SOME REASON YOU WANT THE RACK TO RIDE HORIZONTALLY, YOU CAN ADD A SECOND CARABINER BETWEEN YOUR SEAT 'BINER AND THE RACK EYE. (WITH SOME HARNESS DESIGNS, THE CONFIGURATION IS REVERSED; THE BASIC POSITION IS HORIZONTAL.) IN THIS CASE, THE RACK WILL RIDE FURTHER FROM YOUR BODY. THE INCREASED DISTANCE NOT ONLY MAKES IT EASIER FOR YOUR CLOTHING OR HAIR TO BE CAUGHT IN THE RACK, BUT ALSO MAKES YOUR BODY POSITION SLIGHTLY LESS STABLE. THE HORIZONTAL PLACEMENT IS SLIGHTLY MORE CONVENIENT FOR WORKING THE ROPE, ALTHOUGH RAPPELLERS USED TO THE VERTICAL RACK POSITION SEEM TO FIND ROPE MANIPULATION NO PROBLEM.

2. WHICH SIDE TO PLACE THE BARS ON. THE EYES MAY BE THREADED ONTO THE LONG OR THE SHORT LEG, AS SHOWN BELOW. WE RECOMMEND PLACING THEM ON THE LONG SIDE. THAT WAY A DISENGAGED BAR CAN BE MOVED MORE COMPLETELY OUT OF THE WAY, WHICH ALSO ALLOWS THE ENGAGED BARS TO BE SPREAD APART FURTHER.



FIGURE 5. ALTERNATIVES FOR THREADING A BAR ONTO THE RACK FRAME--WITH EYE ON LONG OR SHORT LEG.

3. HOW MANY BARS TO USE. MOST PEOPLE, FOR MOST APPLICATIONS, USE SIX BARS. IF YOU ARE LIGHT (SAY, 120 POUNDS OR LESS) AND NEVER CARRY MUCH EXTRA GEAR, YOU MIGHT WANT TO STICK WITH FIVE BARS; IN THE CASE, YOU MIGHT AS WELL SAVE A FEW MORE OUNCES AND USE A SHORT RACK. REMEMBER, THOUGH, THAT YOU WILL NEED MORE FRICTION WHEN CARRYING LONG ROPES, LOTS OF GEAR AND/OR SEVERAL POUNDS OF MUD, OR ARE PRESSING YOUR RACK INTO USE FOR RESCUE WORK. A COMPROMISE FOR LIGHT PERSONS IS A SIX BAR RACK WITH FIVE BARS ON OR ENGAGED. AN EXCEPTIONALLY HEAVY PERSON CARRYING HEAVY GEAR MAY NEED AN EXTRA BAR.

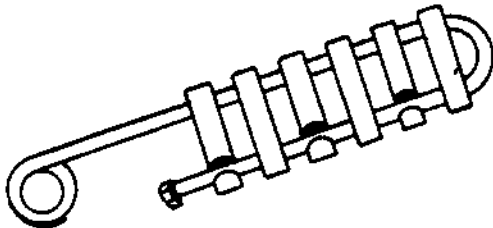
SOME NON-MECHANICALLY INCLINED BEGINNERS ASSUME THAT SHORT DROPS REQUIRE FEWER BARS. ACTUALLY YOU WILL NEED JUST AS MANY BARS FOR THE SHORTEST DROP AS YOU WILL AT THE BOTTOM OF THE LONGEST (OTHER FACTORS BEING EQUAL). ONLY NEAR THE TOP OF LONG DROPS WILL YOU NEED FEWER BARS. IT'S LOGICAL IF YOU THINK IT THROUGH.

4. ON WHICH SIDE YOU PREFER TO KEEP THE FREE END OF THE ROPE (IN YOUR CONTROL HAND). MOST PEOPLE CONTROL THE ROPE WITH THEIR PREFERRED HAND (RIGHT, IF THEY ARE RIGHT-HANDED) AND CRADLE THE RACK WITH THEIR OFF HAND. DO WHATEVER SEEMS MOST COMFORTABLE TO YOU.

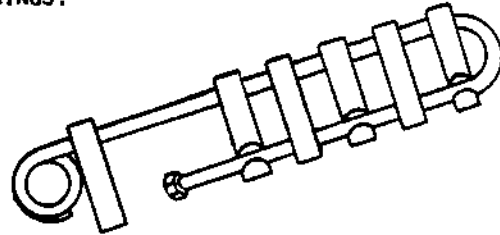
YOUR RACK SHOULD BE SET UP SO THAT THE ROPE COMES OFF THE BOTTOM BAR ON THE PREFERRED SIDE WHEN ALL THE BARS (OR THE MAXIMUM NUMBER YOU EXPECT TO USE) ARE ENGAGED. THREADING OF THE ROPE IS COVERED IN THE NEXT SECTION. SUFFICE IT FOR NOW TO SAY THAT THE ROPE GOES OVER THE TOP BAR AND THE BEND OF THE RACK, NOT BETWEEN THE TWO, AND THAT PASSES OVER THE FRONT OF EACH BAR. SINCE THE ROPE IS "WOVEN" THROUGH THE RACK AND THEREFORE PASSES ALTERNATELY OVER AND UNDER SUCCESSIVE BARS, YOU CAN SEE THAT THE BARS MUST BE PUT ON THE RACK WITH THE NOTCHES FACING ALTERNATE DIRECTIONS.

USING THE RAPPEL RACK

PUT THE LOWEST BAR ON FIRST, IF YOU INTEND TO USE THE RACK WITH EYES ON THE LONG SIDE AS SUGGESTED. SLIDE IT AROUND THE BEND AND SLIP IT ON. AS EXPLAINED ABOVE, THE NOTCH ON THIS BAR (OR THE NEXT ONE UP IF YOU EXPECT TO USUALLY USE ONE LESS BAR THAN YOU HAVE ON THE RACK) SHOULD FACE IN THE DIRECTION OF YOUR PREFERRED CONTROL HAND. PUT THE NEXT ONE ON WITH THE NOTCH FACING YOUR OTHER HAND, AND SO ON UP TO THE TOP BAR. A FEW EXAMPLES MAY CLARIFY THINGS:



EXAMPLE 1. STEVE IS A LARGE RIGHT-HANDED CAVER. HIS RACK WOULD BE SET UP LIKE THIS.



EXAMPLE 2. TONI IS ALSO RIGHT-HANDED BUT WEIGHS 100 POUNDS, SO SHE USUALLY USES FIVE BARS OR LESS

(INCIDENTALLY, THE CONFIGURATION IN EX. 2, BUT WITH THE SIXTH BAR ENGAGED, WOULD WORK FOR A NORMAL-SIZE SOUTHPAW—OR FOR A RIGHT-HANDER WHO PREFERS TO CONTROL WITH THE LEFT HAND.)

ONCE YOU HAVE PUT ON THE BARS IN THE PREFERRED ARRANGEMENT, REPLACE THE NUT. IF IT IS THE SELF-LOCKING TYPE, USE A WRENCH TO TURN IT A FULL TURN PAST FINGER TIGHT. IF NOT, ADD A SECOND NUT SCREWED TIGHTLY AGAINST THE FIRST TO LOCK IT IN PLACE.

FILING A SHALLOW GROOVE IN THE MIDDLE OF THE TOP ONE OR TWO BARS (FRONT SIDE; SEE FIG. 6) WILL HELP KEEP THE ROPE RUNNING PROPERLY DOWN THE CENTER OF ALL THE BARS.

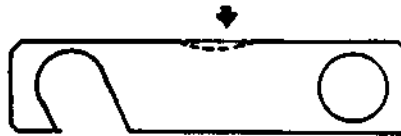


FIGURE 6. PLACEMENT FOR SHALLOW GROOVE TO BE FILED INTO TOP BAR(S) IF DESIRED FOR BETTER ROPE GUIDANCE.

ATTACHMENT TO ROPE. PREPARE TO RIG IN BY DISENGAGING ALL BUT THE TOP BAR. IF YOU HAVEN'T FIGURED IT OUT BY NOW, YOU DO THIS BY SLIDING THE BARS TOWARD THE BOTTOM AND PINCHING THE SHORT LEG OF THE RACK TOWARD THE LONG LEG SO THE NOTCHED ENDS OF THE BARS CAN BE EASILY FLIPPED BACK OFF THE RACK WITH YOUR THUMB OR FINGERTIP.

AT A SAFE DISTANCE FROM THE LIP OF THE DROP, TURN AWAY FROM THE DROP SO THE STANDING (ANCHORED) END OF THE ROPE IS IN FRONT OF YOU AND THE ROPE PASSES BESIDE YOU (ON THE SAME SIDE AS THE FRONT OF THE TOP BAR), THEN BEHIND YOU AND OVER THE LIP. PICK UP THE ROPE.

WHAT YOU'RE GOING TO DO NOW IS WEAVE THE ROPE THROUGH THE BARS, BETWEEN THE TWO LEGS OF THE RACK. YOU CAN'T LITERALLY WEAVE THE ROPE OVER AND UNDER THE BARS, BECAUSE YOU DON'T HAVE AN END TO WORK WITH. SO YOU ACCOMPLISH THE SAME THING BY CLIPPING IN THE BARS ON ALTERNATING SIDES OF THE ROPE. TO MAKE IT EASIER, PULL UP ENOUGH ROPE TO GIVE YOU A LITTLE SLACK. (SAFETY NOTE: IF THE ROPE IS VERY LONG AND YOU HAPPEN TO DROP IT, ITS WEIGHT APPLIED SUDDENLY TO THE PARTIALLY RIGGED-IN RACK CAN THROW YOU OFF BALANCE. MAKE SURE YOU'RE FAR ENOUGH FROM THE LIP THAT THIS WON'T BE FATAL, OR ATTACH YOURSELF TO THE ROPE WITH SOME OTHER FORM OF SAFETY SUCH AS A JUMAR ASCENDER. REMOVE THIS WHEN YOU'RE COMPLETELY RIGGED IN AND STABLE.)

PASS THE ROPE BETWEEN THE LEGS OF THE RACK SO THAT IT TOUCHES THE FRONT AND BOTTOM OF THE TOP BAR. DO NOT PASS IT BETWEEN THE TOP BAR AND THE BEND OF THE RACK, AS THIS WILL PINCH THE ROPE AND

USING THE RAPPEL RACK

CAUSE EXCESSIVE WEAR ON THE RACK. NOW, WITH THE ROPE ON THE OPPOSITE SIDE OF THE RACK FROM WHERE IT STARTED, CLIP IN THE SECOND BAR AND SLIDE IT UP TO PINCH THE ROPE BETWEEN THE TOP AND SECOND BAR. BRING THE FREE END OF THE ROPE BACK TOWARD THE SIDE IT STARTED ON. CLIP IN THE THIRD BAR BELOW THE ROPE AND SLIDE IT UP. CONTINUE UNTIL ALL BARS ARE ENGAGED (FIG. 7) YOU HAVE JUST WOVEN YOURSELF ONTO A ROPE!

IF YOU HAVE SET UP YOUR RACK PROPERLY, THE ROPE, WHEN HELD IN YOUR PREFERRED CONTROL HAND, WILL NOW BE COMING FROM THE BOTTOM OF THE BOTTOM (OR LOWEST ENGAGED) BAR. (THE FIRST TIME YOU ATTACH YOUR RACK TO THE ROPE, DO THE FOLLOWING DEMONSTRATION FOR YOURSELF: WITHOUT CHANGING THE BARS, BRING THE ROPE BACK TO THE OPPOSITE SIDE, HOLDING IT IN THE HAND ON THE SIDE. YOU WILL NOTICE THAT YOU HAVE TO PASS THE ROPE BELOW THE RACK, THROUGH THE GAP BETWEEN THE NUT AND THE EYE. YOU WILL ALSO NOTICE THAT THE ROPE IS NOW COMING OFF THE TOP OF THE BOTTOM BAR. THIS MEANS THERE IS LESS FRICTIONAL SURFACE FOR THE ROPE, WHICH MEANS LESS FRICTION TO HELP SLOW YOU DOWN. IT ALSO MEANS THAT IF YOU HAVE TO PULL UP THE ROPE FOR AN EMERGENCY STOP OR TO LOCK OFF, THE BOTTOM BAR IS TOTALLY DISENGAGED. THERE ARE TIMES WHEN THIS CONFIGURATION IS USEFUL-- BUT YOU SHOULD BE AWARE OF ITS IMPLICATIONS. NOW MOVE THE ROPE BACK TO THE OTHER SIDE AND HAND.)

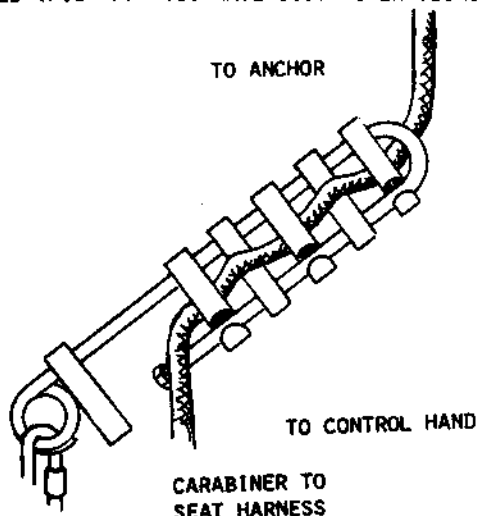


FIGURE 7. RAPPEL RACK READY FOR DESCENT. (NOTE THAT IN THIS EXAMPLE, ONLY FIVE OF THE SIX BARS ARE ENGAGED, WITH THE SIXTH BAR READY TO BE CLIPPED IN AS NEEDED.)

AFTER YOU GET SOME PRACTICE AND CAN JUDGE THE AMOUNT OF FRICTION YOU WILL NEED FOR VARIOUS DROPS, YOU MAY DECIDE NOT TO CLIP IN ALL THE BARS AT THE TOP OF LONGER DROPS. ALWAYS, HOWEVER, START WITH AT LEAST ONE MORE BAR THAN YOU THINK YOU'LL NEED. IT'S FAR BETTER TO HAVE TOO MUCH THAN TOO LITTLE FRICTION AT THE TOP OF A DROP. (YOUR FIRST FEW PRACTICE DROPS WITH A RACK SHOULD BE SHORT ONES ANYWAY, AND WILL REQUIRE ALL BARS.)

THE NUMBER OF BARS YOU WILL NEED DEPENDS ON SEVERAL FACTORS, SOME WHICH WE'VE ALREADY MENTIONED:

1. YOUR WEIGHT--THE HEAVIER YOU ARE, THE MORE BARS YOU WILL NEED.
2. THE WEIGHT OF YOUR GEAR--AGAIN, THE HEAVIER, THE MORE BARS NEEDED.
3. THE LENGTH OF THE DROP--LONGER DROPS REQUIRE FEWER BARS AT THE TOP.
4. THE CHARACTER OF THE DROP--FREE RAPPELS ARE FASTER THAN THOSE AGAINST A WALL, SO YOU MAY NEED MORE BARS FOR A FREE DROP.
5. THE BAR MATERIAL--A RAPPEL ON STEEL BARS IS FASTER THAN ONE ON ALUMINUM BARS, SO YOU MAY NEED MORE STEEL BARS.
6. THE TYPE OF ROPE--KERNMANTEL ROPES GIVE FASTER RAPPELS THAN LAID ROPES (OF A GIVEN DIAMETER) AND EVEN DIFFER SLIGHTLY AMONG THEMSELVES. THE SLICKER THE ROPE, THE FASTER A RAPPEL YOU CAN EXPECT.
7. THE CONDITION OF THE ROPE, ESPECIALLY THE FOLLOWING:
 - A. AGE--NEW ROPES GIVE FASTER RAPPELS THAN OLD ROPES.
 - B. CLEANLINESS--A DIRTY OR MUDDY ROPE SLOWS A RAPPEL, SOMETIMES CONSIDERABLY.
 - C. WETNESS--DRY ROPES ARE "FASTER" THAN WET ONES, ALTHOUGH A RAPPEL THROUGH WATER SUCH AS A WATERFALL, MAY BE FASTER BECAUSE THERE IS ENOUGH WATER TO "LUBRICATE" THE ROPE/BAR CONTACTS.

USING THE RAPPEL RACK

8. THE SIZE OF THE ROPE--STANDARD RACKS ARE DESIGNED FOR USE WITH ROPES ABOUT 7/16" DIAMETER. WHILE THEY WON'T OPERATE WELL WITH ROPES GREATLY DIFFERENT FROM THAT SIZE, YOU CAN GET AWAY WITH ROPES SLIGHTLY DIFFERENT; SMALLER ROPES GIVE FASTER RAPPELS. LONGER RACKS OFFER MORE FLEXIBILITY FOR THOSE USING 1/2" OR LARGER ROPE.

THIS MAY SEEM LIKE A LOT TO REMEMBER, BUT YOU WILL QUICKLY FIND YOURSELF EVALUATING THESE AND PROBABLY OTHER FACTORS ALMOST AUTOMATICALLY.

BACK TO YOUR PREPARATIONS FOR DESCENT. YOU ARE RIGGED IN, BUT STILL SAFELY AWAY FROM THE LIP. NOW, IF YOU WANT TO LIVE LONG AND RETAIN ALL YOUR LIMBS AND FACULTIES, DOUBLE CHECK YOUR RIG. MAKE SURE YOUR SEAT CARABINER IS LOCKED AND THE ROPE IS THREADED ON THE CORRECT SIDE OF EACH BAR. GET IN THE HABIT OF MAKING THIS CHECK AND NEVER FORGET IT. EXCITEMENT, FATIGUE, DISTRACTIONS AND ANY NUMBER OF OTHER FACTORS CAN CAUSE EVEN AN EXPERIENCED PERSON TO RIG IN BACKWARDS.

INEXPERIENCED PERSONS MUST ALSO HAVE THEIR RIGS CHECKED BY AN INSTRUCTOR BEFORE RAPPELLING. EVEN EXPERIENCED RAPPELLERS GLANCE AT EACH OTHER'S RIGS TO MAKE SURE EVERYTHING'S RIGHT. ANYONE WITH AN EGO SO INSECURE HE OR SHE RESENTS THIS CHECKING BELONGS IN A LESS DANGEROUS ACTIVITY. NOW, PUT ON YOUR GLOVES, PREFERABLY ONES WITH LEATHER PALMS. A RACK CAN GET PAINFULLY HOT FOR BARE FINGERS.

RAPPELLING WITH THE RACK. AS MENTIONED ABOVE, YOU SHOULD BEGIN WITH AT LEAST ONE MORE BAR THAN YOU THINK YOU'LL NEED. YOU WILL PROBABLY HAVE A HARD TIME MOVING BACK TO AND OVER THE LIP; IF YOU DON'T, PUT ON ANOTHER BAR, BECAUSE YOUR FULL WEIGHT ISN'T EVEN ON THE ROPE YET.

RAPPEL STANCE WITH THE RACK IS THE SAME AS WITH OTHER DEVICES. WHETHER THE ROPE DROPS BETWEEN YOUR LEGS OR TO ONE SIDE IS A MATTER OF PERSONAL PREFERENCE, BUT THE FOLLOWING DESCRIPTION IS BASED ON THE ROPE DROPPING TO THE SIDE. THE FREE END OF THE ROPE WILL BE IN YOUR CONTROL HAND SLIGHTLY BELOW YOUR HIP. THE OTHER HAND MOVES BARS UP AND DOWN, ENGAGES/DISENGAGES THEM, AND MAINTAINS THE SPACING BETWEEN THE LOWER BARS. SINCE IT IS USUALLY HELD WITH THE THUMB ON THE UPPER LEG OF THE RACK AND THE FINGERS CURVED AROUND THE LOWER LEG, IT IS OFTEN REFERRED TO AS THE CRADLING HAND. IT SHOULD ALWAYS BE ON OR NEAR THE RACK. YOU WILL PROBABLY USE THIS HAND EASILY AND CONFIDENTLY ONLY AFTER SOME EXPERIENCE.

IF YOU ARE DOING A FREE DROP (I.E., YOUR FEET ARE NOT TOUCHING THE WALL AND ALL YOUR WEIGHT IS ON THE ROPE) WAIT UNTIL YOU ARE HANGING FREE TO ADJUST THE BARS ON YOUR RACK, BECAUSE THAT IS THE POINT AT WHICH YOU WILL NEED THE MAXIMUM FRICTION.

FRICTION CAN BE ADJUSTED IN TWO MAJOR WAYS ON A RAPPEL RACK: BY CHANGING THE NUMBER OF BARS ENGAGED, AND BY CHANGING THE DISTANCE BETWEEN BARS. THE SECOND CAN BE VIEWED AS A SORT OF FINE TUNING OF THE FIRST, AND ON SHORTER DROPS WILL PROBABLY BE THE ONLY METHOD NECESSARY. FRICTION CAN ALSO BE ADJUSTED IN THE SAME WAYS AS WITH OTHER DEVICES; BY THE TIGHTNESS OF THE CONTROL HAND GRIP, AND BY THE POSITION OF THE CONTROL HAND IN RELATION TO THE RAPPELLER'S BODY.

ADDING OR SUBTRACTING--THAT IS, ENGAGING OR DISENGAGING--BARS HAS BEEN COVERED UNDER "ATTACHMENT TO THE ROPE." PRACTICE DOING IT ON LEVEL GROUND UNTIL YOU FEEL CONFIDENT WITH THE MOVES, THEN DO IT A LOT OF TIMES ON THE ROPE UNTIL YOU FEEL CONFIDENT WITH IT THERE. THERE IS NO WAY TO BECOME PROFICIENT WITH THE RACK EXCEPT BY USING IT AGAIN AND AGAIN AND AGAIN. PEOPLE HAVE SURVIVED LONG RAPPELS

USING A RAPPEL RACK

WITH LITTLE PREVIOUS RACK EXPERIENCE, BUT ONLY BECAUSE EVERYTHING WENT SMOOTHLY. YOU MUST FEEL CONFIDENT ENOUGH TO HANDLE PROBLEMS IF THEY SHOULD ARISE. WHEN BOTH THE BOTTOM AND THE TOP ARE 500 FEET AWAY, YOU HAVE ONLY YOURSELF TO DEPEND ON, AND YOU'D BETTER KNOW HOW TO GET YOURSELF OUT OF A JAM IF YOU HAVE TO.

DON'T WAIT UNTIL THE LAST MINUTE TO ADD ANOTHER BAR. THE LAST MINUTE, IN THIS CASE, IS WHEN ALL THE ENGAGED BARS MUST BE JAMMED UP TIGHT TO KEEP YOU FROM DESCENDING TOO FAST. THERE WILL BE A MOMENT OR TWO WHILE YOU ARE CHANGING BARS WHEN THE TENSION WILL BE LESS. YOU COULD LOSE CONTROL AT THIS POINT IF YOU'RE ALREADY AT THE EDGE OF CONTROL.

WHEN YOU'RE ABOUT READY TO ENGAGE OR DISENGAGE A BAR DURING A RAPPEL, JAM THE BARS ABOVE IT TOWARDS THE TOP OF THE RACK. IN SOME CASES THIS WILL STOP YOU; AT THE VERY LEAST IT WILL SLOW YOU DOWN.

AN ALTERNATIVE TO COMPLETELY DISENGAGING THE BAR IS TO SWITCH HANDS AND USE THE NEW CRADLING HAND TO HOLD THE BOTTOM BAR AT THE APPROPRIATE PLACE FOR THE FRICTION YOU WANT. IF YOU GO TOO FAST AFTER TAKING THE ROPE OFF THE BOTTOM BAR, YOU CAN PUSH THAT BAR BACK UP AGAINST THE ROPE TO SLOW DOWN. SOME PEOPLE USE THIS TECHNIQUE FREQUENTLY; OTHERS, ONLY IF THEY ARE WORKING ON FEW BARS. REMEMBER THAT THE POSITION OF THIS BAR DEPENDS PRIMARILY ON YOUR HAND; IF YOU SHOULD LET GO OF THE RACK FOR ANY REASON (NOT RECOMMENDED!), THIS BAR WILL PROBABLY DROP BACK DOWN TO THE NUT, PROVIDING LESS FRICTION. IF YOU ARE EXPECTING THIS, YOU CAN COMPENSATE FOR IT.

NEVER TAKE BOTH HANDS OFF THE ROPE AT THE SAME TIME UNLESS THE RACK IS LOCKED OFF. IF YOU'RE CHANGING FROM RIGHT TO LEFT, MOVE THE ROPE TO THE LEFT SIDE WITH YOUR RIGHT HAND, GRAB THE ROPE WITH YOUR LEFT HAND, AND THEN LET GO WITH YOUR RIGHT HAND, MOVING IT UP TO CRADLE THE RACK.

NOW BEGIN SPREADING THE BARS AGAIN UNTIL YOU GET THE RIGHT AMOUNT OF FRICTION. THE PRINCIPLE IS EXTREMELY SIMPLE: THE CLOSER TOGETHER THE BARS ARE, THE TIGHTER WILL BE THE BENDS IN THE ROPE, THE GREATER THE SURFACE CONTACT BETWEEN ROPE AND BARS, AND THE MORE FRICTION WILL BE CREATED. AND VICE VERSA. SO WHEN YOU WANT TO SLOW DOWN, YOU MOVE THE BARS CLOSER TOGETHER; WHEN YOU WANT TO SPEED UP, YOU MOVE THEM APART. SIMPLE. USE THE CRADLING HAND TO DO THIS.

STOPPING. THERE ARE FOUR WAYS TO STOP...WELL, FOUR AND A HALF. ALL DEPEND ON ADDING ENOUGH FRICTION TO OVERCOME THE WEIGHT OF YOUR BODY AND GEAR. THE FIRST AND SIMPLEST METHODS USE YOUR CONTROL HAND. YOU MAY BE ABLE TO STOP BY JUST GRIPPING THE ROPE MORE TIGHTLY, WHICH ADDS MORE LOAD TO THE ROPE PASSING THROUGH THE RACK. THIS ADDS MORE FRICTION TO THE ROPE/BAR FRICTION ALREADY PRESENT. IF YOU WERE IN CONTROL (THAT IS, HAD ABOUT THE RIGHT AMOUNT OF FRICTION) BEFORE DECIDING TO STOP, JUST A FEW POUNDS OF ADDED PRESSURE ON THE ROPE WILL STOP YOU.

HOWEVER, IF THIS ISN'T SUFFICIENT, PULL THE ROPE TIGHT AGAINST YOUR HIP. THIS METHOD ADDS FRICTION IN THE MANNER JUST DESCRIBED, PLUS THE FRICTION OF THE ROPE ACROSS YOUR PANTS. IF YOU ARE WEARING A NYLON SEAT HARNESS (WHICH YOU SHOULD BE), MAKE SURE THAT THE ROPE DOES NOT RIDE ACROSS YOUR HARNESS; NYLON-NYLON FRICTION CAN CAUSE GLAZING OR FUSING.

THE THIRD METHOD USES THE CRADLING HAND TO JAM ALL BARS UP TIGHT AGAINST THE TOP OF THE RACK. THEN YOU WILL PROBABLY NEED TO KEEP YOUR CRADLING HAND AROUND THE RACK BELOW THE BARS TO KEEP THEM FROM WORKING BACK DOWN.

USING A RAPPEL RACK

THE "HALF" METHOD, WHICH WILL ONLY WORK WHEN YOU HAVE A SUFFICIENT AMOUNT OF FRICTION ALREADY, IS TO PINCH THE ROPE AGAINST THE LONG LEG OF THE RACK WITH YOUR CRADLING HAND.

THE IMPORTANT THING TO REMEMBER IS THAT IF YOU START OFF IN CONTROL, YOU CAN STAY IN CONTROL AND STOP WITH ONLY SLIGHT EFFORT. YOU WON'T NEED THE STRENGTH OF A CHARLES ATLAS TO REGULATE YOUR RATE OF DESCENT. ANY ADDED FRICTION WILL BE AMPLIFIED BY THE RACK.

ALL THE ABOVE METHODS ARE FOR SHORT-TERM STOPS, AND REQUIRE KEEPING YOUR HANDS IN APPROXIMATELY THEIR NORMAL POSITIONS ON THE RACK AND ROPE.

IF YOU MUST STOP FOR LONGER PERIODS, OR NEED TO USE YOUR HANDS FOR OTHER THINGS LOCK OFF THE RACK. TO DO THIS JAM THE BARS TOGETHER AT THE TOP AND BRING THE ROPE IN YOUR CONTROL TOWARD THE TOP OF THE RACK. SLIP IT IN BETWEEN THE BEND OF THE RACK AND STAND PORTION OF ROPE (FIG. 8). MAKE SURE IT'S FIRMLY NESTLED, SO THE FREE END OF THE ROPE IS PINCHED BETWEEN THE RACK AND THE STAND ROPE. IN ESSENCE, YOU HAVE CREATED A SHORT LOOP WITH YOUR RACK ATTACHED INSIDE THE LOOP. (DO NOT LEAVE ANY SLACK IN THE LOOP BELOW THE RACK.) ONCE YOU ARE "LOCKED OFF" AS SHOWN IN THE DIAGRAM, YOU CAN TAKE BOTH HANDS OFF THE ROPE AND YOU WILL NOT MOVE.

TO CONTINUE RAPPELLING, REVERSE THE PROCEDURE. REMEMBER TO GRASP THE FREE END OF THE ROPE WITH YOUR CONTROL HAND IN THE FIRST PLACE TO ELIMINATE AWKWARD SHIFTING. KEEP THE BARS JAMMED TOGETHER UNTIL YOUR CONTROL HAND HAS RETURNED TO ITS NORMAL POSITION.

GETTING OFF THE RACK. WHEN YOU REACH THE BOTTOM OF THE DROP, BEND OR SIT DOWN TO GET ENOUGH SLACK SO YOU CAN DISENGAGE ALL OF THE BARS. IF THE DROP IS ESPECIALLY LONG, YOU MIGHT HAVE TO PULL ROPE THROUGH THE TOP OF THE RACK TO GET ENOUGH SLACK, AND THE RACK MAY BE HOT ENOUGH TO GLAZE THE ROPE. BE CAREFUL NOT TO BURN YOURSELF. THIS AND OTHER PROBLEMS WILL BE MINIMIZED IF YOU DON'T "HOT DOG" DOWN THE ROPE. A FAST DESCENT MAY DAMAGE THE ROPE AND THE RAPPELLER.

REMOVE ALL BARS FROM THE RACK, AND GET OUT OF THE ROCKFALL ZONE BEFORE YOU YELL "OFF ROPE" OR "OFF RAPPEL." (EDITOR'S NOTE: I'VE FOUND IT ADVANTAGEOUS TO SNAP MY BARS BACK ON THE LEGS OF THE RACK IMMEDIATELY AFTER A RAPPEL. THE BARS DON'T CATCH ON UNWANTED CAVE PROTRUSIONS WHEN THIS IS DONE.)

SPECIAL PROBLEMS.

LOSS OF CONTROL. IF YOU SHOULD BE ABOUT TO GO OUT OF CONTROL ON YOUR RAPPEL, YOU CAN USE MOST OF THE SAME EMERGENCY MEASURES YOU WOULD USE WITH OTHER RAPPEL DEVICES. STICK YOUR LEG DOWN AND SWING IT AROUND THE FREE END OF THE ROPE SO THAT THE ROPE IS WRAPPED AROUND YOUR LEG. IF NECESSARY, TAKE ANOTHER WRAP AND, IF THE DROP IS FREE, STICK YOUR LEG OUT. USE YOUR GLOVED FINGERS TO PINCH THE ROPE

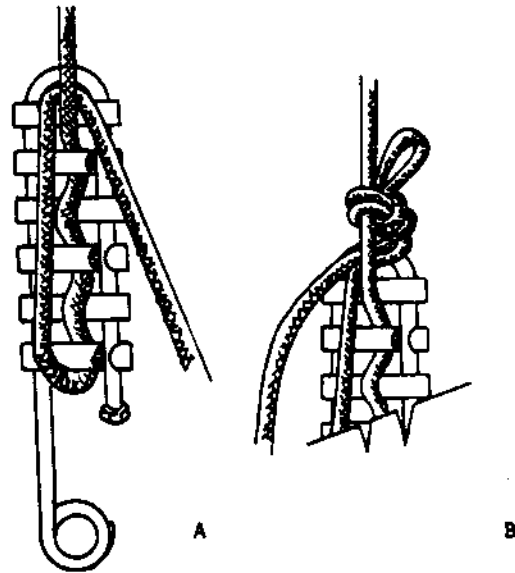


FIGURE 8- ROPE IN LOCKED-OFF POSITION. THE SIMPLEST POSITION IS SHOWN IN A, A MORE SECURE CONFIGURATION IN B. A BIGHT OF ROPE FROM THE FREE END (2-3 FEET) HAS BEEN BROUGHT UP AND KNOTTED AROUND THE STANDING ROPE.

USING THE RAPPEL RACK

TIGHT AGAINST THE BARS OR A LEG OF THE RACK. DO NOT, HOWEVER, PINCH THE SIDES OF THE RACK TOGETHER. AT ANY RATE, DON'T PANIC. IF YOU KEEP YOUR HEAD, YOU CAN GET YOURSELF OUT OF SOME FAIRLY UNPLEASANT SITUATIONS. THE MORE YOU KNOW ABOUT YOUR EQUIPMENT, AND THE MORE YOU'VE PRACTICED WITH IT, THE MORE LIKELY YOU WILL BE TO KEEP YOUR WITS IN SUCH SITUATIONS. (NOTE: SUCH LAST-DITCH TECHNIQUES ARE NOT ENTIRELY SAFE AND SHOULD BE RESORTED TO ONLY IN EMERGENCIES.)

A BOTTOM BELAY IS MANDATORY FOR TRAINING SESSIONS. SOMEONE AT THE BOTTOM, OUT OF THE ROCKFALL ZONE INSOFAR AS POSSIBLE, SHOULD BE IN A STANDING HIP BELAY STANCE; IF THE RAPPELLER LOSES CONTROL THE BOTTOM BELAYER SIMPLY PUTS HIS OR HER WEIGHT ON THE ROPE. THIS ADDS TENSION TO THE ROPE, CREATING MORE FRICTION ON THE RACK AND SLOWING OR STOPPING THE DESCENT. THE TECHNIQUE IS DESCRIBED MORE FULLY IN MONTGOMERY(1977) AND McCLURG(1980).

THE BOTTOM BELAY WILL, OF COURSE, BE USELESS IF LACK OF CONTROL RESULTS FROM HAVING THREADED THE ROPE THROUGH THE RACK BACKWARDS(THAT IS, WITH THE ROPE PASSING OVER THE BACK SIDES OF THE BARS). THAT IS WHY WE HAVE STRESSED SO STRONGLY THAT YOU MUST NOT MAKE THIS ERROR.

HAIR OR CLOTHING IN RACK. THIS IS BEST SOLVED BY PREVENTING IT. IF YOU HAVE MEDIUM-LENGTH OR LONG HAIR, TIE IT BACK AND PREFERABLY STUFF IT UP INTO YOUR HELMET. DON'T WEAR LOOSE CLOTHING. TUCK YOUR SHIRT FIRMLY INTO YOUR PANTS. AND SO ON. IF YOU DO GET SOMETHING STUCK, TRY TO WORK IT OUT IF YOU CAN WITHOUT LETTING GO OF THE ROPE. IF YOU CAN'T WORK IT OUT, LOCK OFF THE RACK AND CAREFULLY CUT THE OFFENDING MATERIAL WITH THE POCKET KNIFE WHICH YOU WILL ALWAYS BE CARRYING WHEN DOING VERTICAL WORK. BECAUSE ROPE UNDER TENSION CAN BE VERY EASILY CUT IF THE KNIFE BLADE EVEN TOUCHES IT, WORK WITH THE CUTTING EDGE POINTING AWAY FROM THE ROPE.

HEAT BUILDUP. ON VERY LONG DROPS. ENOUGH HEAT MAY BUILD UP IN THE RACK TO BURN SKIN AND TO GLAZE ROPE. TAKE THESE DROPS AT A REASONABLE SPEED AND DON'T STOP ONCE THE RACK GETS HOT. SOME RAPPELLERS CARRY WATER TO POUR ONTO THEIR RACKS, BUT THIS SHOULD NOT BE NECESSARY.

ROPE TOO SHORT. ALWAYS TIE A GOOD KNOT IN THE END OF A ROPE BEFORE RAPPELLING ON IT. IF THE ROPE IS TOO SHORT, THIS WILL KEEP YOU FROM RAPPELLING OFF THE END OF IT BECAUSE IT WILL NOT PASS THROUGH THE RACK.

CARE OF THE RACK.

1. KEEP YOUR RACK CLEAN, FOR THE SAKE OF THE RACK AND THE ROPE.
2. AS A RULE OF THUMB, REPLACE ALUMINUM BARS WHEN THEY ARE WORN ABOUT ONE-THIRD OF THE WAY THROUGH. IF YOU FEEL YOUR'RE NOT GETTING ENOUGH FRICTION, OR JUST FEEL INSECURE, REPLACE THEM SOONER. REPLACE STEEL BARS BEFORE THEY ARE WORN THROUGH ONE-HALF THE THICKNESS OF THE STEEL. HOLES IN THE STEEL CREATE SHARP EDGES WHICH CAN CUT ROPE.
3. CHECK ALIGNMENT OF YOUR RACK OCCASIONALLY. THE EASIEST WAY TO DO THIS IS TO ENGAGE ALL THE BARS (NO ROPE) AND TILT THE RACK UP AND DOWN TO SEE IF THE BARS SLIDE FREELY.
4. IF YOUR RACK HAS RECEIVED A SHARP IMPACT (FROM BEING DROPPED DOWN A PIT, FOR EXAMPLE), WE SUGGEST HAVING IT INSPECTED BY A METALURGIST.
5. IF YOU HAVE ANY DOUBT, REPLACE THE RACK JUST AS YOU WOULD A ROPE WHICH HAD RECEIVED A SEVERE BLOW.

THE PORTLY PRUSICK

OR
GETTING THE BIG GUYS OUT

By BRUCE W. SMITH

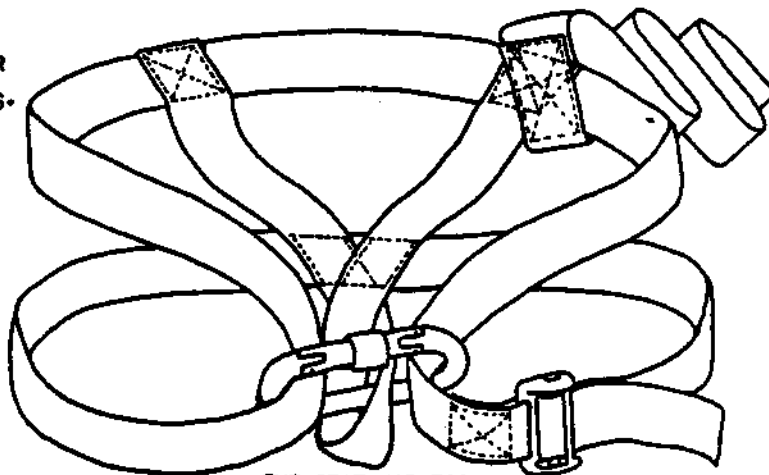
A CHALLENGE THAT TAXED MANY ASPECTS OF MY VERTICAL KNOWLEDGE AND EXPERIENCE PRESENTED ITSELF TO ME SEVERAL MONTHS BACK AND THE SUCCESS OF THAT STORY IS WORTH PASSING ON.

A PORTLY GENTLEMAN...LARGE IN EVERY DIMENSION (TIPPING THE SCALES AT OVER 300 POUNDS APPROACHED ME AND EXPRESSED AN UNSATISFIED DESIRE TO SEE SOME OF THE DEEP ONES. "DESIGN ME A CLIMBING SYSTEM THAT WILL WORK FOR ME."

IT SEEMED EASY ENOUGH. REFER TO THE REFERENCE MATERIAL AND PUT TOGETHER A STANDARD HARNESS AND SYSTEM. THE TWO MONTHS OF SEWING AND HANGING THAT FOLLOWED WERE DEFEATING TO SAY THE LEAST. THE STANDARD 3 KNOT SYSTEM RESTRICTED THE NECESSARY CHEST EXPANSION AND CUT DEEP INTO THE ARM PITS. ONE LEG WAS UNABLE TO LIFT THE TORSO ELIMINATING THE TEXAS PRUSICK SYSTEM. THE INCH WORM REQUIRED BALANCING AND BENDING THAT WERE UNNATURAL. MITCHELL AND GIBBS ROPEWALKER SYSTEMS LEFT TOO MUCH TORSO HANGING OUT, UNBALANCED, AND UNCLIMBABLE. AGAIN, EACH LEG ON ITS OWN COULD NOT CLIMB STAIRS/WALK UP A ROPE FOR ANY EXTENDED PERIODS. PERHAPS 10 TO 20 STEPS BEFORE FATIGUE AND EXHAUSTION TOOK OVER. EVEN A STANDARD DIAPER SEAT FOR RAPPELLING CUT AND DUG DEEP INTO THE FLESH AFFORDING POOR SUPPORT.

THE SEAT HARNESS HAD TO BE CONTOUR FITTED AND INCLUDED CENTER BUN SUPPORTS. OBVIOUSLY, 2" WEBBING WAS THE MINIMUM WIDTH OF THE MATERIAL NEEDED. (3" WAS CONSIDERED, BUT I WAS UNABLE TO FIND 3" CINCH BUCKLES)

A ROPEWALKER SYSTEM WOULD HAVE OBVIOUSLY BEEN DESIRED, BUT DID NOT PROVE TO BE PRACTICAL, THEREFORE A "STAND-UP SIT-DOWN" METHOD WAS THE RESULTANT APPROACH.



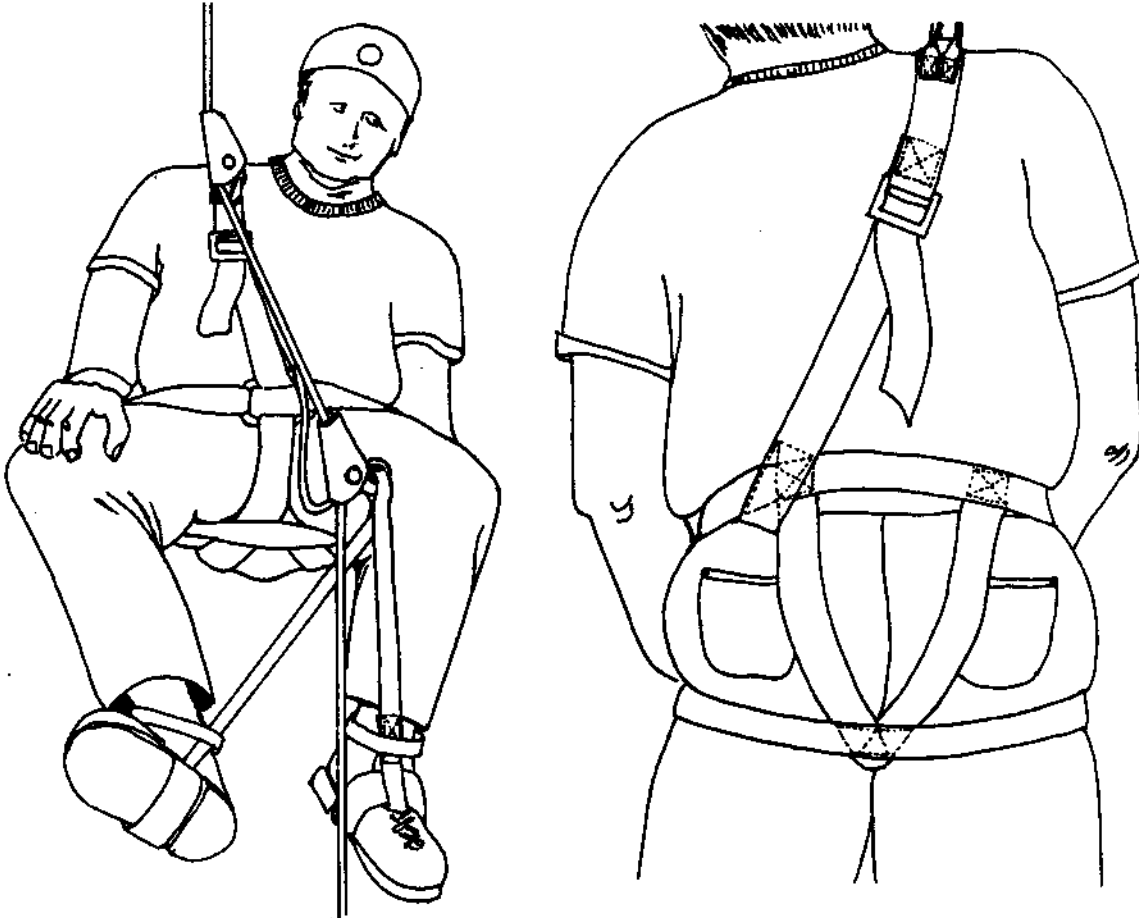
THE SEAT HARNESS

.....
FOR FURTHER READING ON BASIC RAPPELLING TECHNIQUES AND DEVICES:

1. HALLIDAY, W. R. 1974. AMERICAN CAVES AND CAVING, HARPER & ROW, N.Y. 348 pp.
2. HUGHES, D. 1981. "AN INTERVIEW WITH JOHN COLE." NSS NEWS. 39(7): 145-147, 158.
3. McCLURG, D.R. 1980. EXPLORING CAVES: A GUIDE TO THE UNDERGROUND WILDERNESS. STACKPOLE BOOKS, HARRISBURG, PA. 287 pp.
4. MONTGOMERY, N.R. 1977. SINGLE ROPE TECHNIQUES: A GUIDE FOR VERTICAL CAVERS. SYDNEY SPELEOLOGICAL SOCIETY, AYDNEY, AUSTRALIA. 122 pp.
5. PETERS, E. ED. 1982. MOUNTAINEERING: THE FREEDOM OF THE HILLS (4TH EDITION) THE MOUNTAINEERS, SEATTLE. 496 pp.
6. SETNICKA, T.J. 1980 WILDERNESS SEARCH AND RESCUE. APPALACHIAN Mt. CLUB, BOSTON. 640 pp.

THE PORTLY PRUSIK

THE FOOT ASCENDER PROVED SIMPLE ENOUGH. TWO STRAPS, ONE LEADING FROM EACH FOOT TO A COMMON GIBBS ASCENDER (MAXIMUM BREAKING STRENGTH ASCENDER AVAILABLE ON THE 7/16" ROPE WALKER MARKET). THE ONE INCH WEBBING WAS ATTACHED TO 2" STRAP AROUND EACH FOOT. ONE INCH WEBBING CUT INTO THE BOTTOM OF THE BOOTS. CHICKEN LOOPS WERE USED AS THEY SHOULD ALWAYS BE. THE TWO STRAPS TO THE COMMON ASCENDER ALLOWED THE CLIMBER TO STAND UP USING ALL HIS RAISING POWER, BOTH LEGS, AS WELL AS PROVIDING THE BALANCE BY HAVING THE LEGS SPREAD APART. ONE CRITICAL FACTOR THAT EMERGED WAS THE EQUAL LENGTH OF THE TWO FOOT STRAPS...THESE AFFORDED BALANCE AND MAXIMUM PROGRESS UP THE ROPE FOR THE EFFORT EXPENDED. THE FOOT GIBBS INCORPORATED A TETHER TO THE SEAT HARNESS CARABINER.



THE UPPER ASCENDER PROVED BEST POSITIONED ON THE SHOULDER. HERE, THE CLIMBER DIDN'T/DOESN'T HAVE TO PUSH THE UPPER ASCENDER UP EVERY TIME HE/SHE STANDS UP. OFTEN TIMES IT IS ALL A PORTLY PRUSICKER CAN DO TO JUST STAND UP...PUSHING UP AN ASCENDER ONLY COMPLICATES THE PROCESS RESULTING IN LOSS OF BALANCE AND LACK OF PROGRESS FOR EFFORT EXPENDED. THE SHOULDER ASCENDER WORKED AS EXPECTED. IT AFFORDED THE BEST PROGRESS FOR THE EFFORT EXPENDED.

THE ACID TEST TOOK PLACE AFTER A COUPLE OF THOUSAND FEET OF PRATICE IN A GARAGE. ON A BUSINESS TRIP WE FOUND OURSELVES WITH A DAY AND A HALF TO SPARE IN TAG COUNTRY (STRANGELY ENOUGH WITH ALL THE APPROPRIATE GEAR). STEPHEN'S GAP WAS OUR WARM UP. WE THEN MARCHED UP TO THE NEVERSINK, DROPPED AND ASCENDED IN A MANNER THAT WAS NOT ONLY TIME EFFECIENT, BUT ENJOYABLE. THE NEXT DAY WE FOUND OURSELVES AT VALHALLA WITH ANOTHER TESTIMONIAL TO THE EFFECIENCY OF THE PORTLY PRUSICK SYSTEM.

SO WHEN THAT TIME COMES WHEN IT BECOMES NECESSARY TO GET THE BIG GUY OUT HERE'S ANOTHER AND VERY WORKABLE ALTERNATIVE.

1981 MINUTES

By Kirk MacGregor

THE 1981 VERTICAL SECTION MEETING WAS HELD AT THE INTERNATIONAL SPELEOLOGICAL CONGRESS IN BOWLING GREEN, KENTUCKY, STARTING ABOUT 12:35, WEDNESDAY, JULY 22. APPROXIMATELY 25 SECTION MEMBERS WERE PRESENT, INCLUDING ALL FIVE EXECUTIVE COMMITTEE MEMBERS (BILL FOOT, JOE HOOPER, KIRK MACGREGOR, BOB THRUN, AND ALLEN PADGETT, WHO CHAIRED THE MEETING).

KIRK MACGREGOR READ THE TREASURER'S REPORT (SEE PAGE 20 OF THIS NYLON HIGHWAY) AND STATED THAT THE SECTION HAS APPROXIMATELY 160 MEMBERS.

ALLEN PADGETT THEN CALLED FOR NEW BUSINESS. BILL CUDDINGTON SPOKE ON THE IDEALS OF THE SECTION, PROGRESS IN PRODUCING WRITTEN RULES FOR THE PRUSIK CONTEST, AND SOME OTHER ASPECTS OF THE CONTEST. ALLEN COMMENDED BILL AND EVERYBODY ELSE WHO HELPED DO A FINE JOB THIS YEAR IN THE VERTICAL CONTEST. HE NOTED THAT IT WAS DIFFICULT TO EXPLAIN THE STARTING PROCEDURE TO PEOPLE WHO DIDN'T SPEAK ENGLISH. "USUALLY, IT WAS PRETTY EASY TO GET THEM TO STOP. THE STARTING WAS THE HARD PART."

AFTER OUTLINING ONE OF THE PROBLEMS THAT OCCURRED AT THE 1980 CONVENTION BECAUSE NO ONE WAS GIVING THE STAFF OF THAT CONVENTION ANY ADVICE ON WHAT THE VERTICAL SECTION NEEDS, AND POINTING OUT THAT SEVERAL EARLIER CONVENTIONS HAD BENEFITTED FROM AN EXECUTIVE COMMITTEE MEMBER INFORMALLY TAKING ON THIS ADVISING JOB, KIRK MACGREGOR MOVED THAT:

THE FIRST ELECTION IN THESE EXECUTIVE COMMITTEE ELECTIONS WILL BE FOR A "CONVENTION COORDINATOR" FOR THE 1982 NSS CONVENTION. THE CONVENTION COORDINATOR WILL SERVE AS THE CONTACT-PERSON BETWEEN THE CONVENTION AND THE SECTION, AND WILL WORK WITH THE CONVENTION STAFF AND THE VARIOUS VERTICAL EVENT ORGANIZERS IN THE SECTION TO ENSURE THAT SUITABLE ROOMS AND EQUIPMENT ARE MADE AVAILABLE FOR ALL VERTICAL EVENTS AND THAT FORSEEABLE PROBLEMS ARE SOLVED BEFORE THE CONVENTION. THE COORDINATOR WILL VISIT THE CONVENTION SITE AT LEAST ONCE BEFORE THE CONVENTION TO INSPECT THE FACILITIES PROPOSED FOR THE VERTICAL EVENTS. THE CONVENTION COORDINATOR IS ALSO ALLOWED TO BE EITHER THE SECRETARY-TREASURER OR THE CHAIRMAN. OTHERWISE, THE COORDINATOR BECOMES ONE OF THE OTHER THREE EXECUTIVE COMMITTEE MEMBERS.

KYLE ISENHART POINTED OUT THAT A PERSON ELECTED AS CONVENTION COORDINATOR NOW MAY NOT STILL BE ABLE TO DO THE WORK WHEN THE TIME COMES, AS WAS THE CASE FOR THE INTERNATIONAL CONGRESS ITSELF. HE AGREED THAT THE SECTION NEEDS SOME DEFINITE PERSON TO DO THIS JOB, BUT SUGGESTED THAT IT WOULD BE BETTER FOR THE EXECUTIVE COMMITTEE TO APPOINT SOMEONE (WHO THEY COULD REPLACE QUICKLY IF NECESSARY), INSTEAD OF HAVING THIS PERSON ELECTED.

AFTER A BIT MORE DISCUSSION, THE VOTE WAS HELD, AND THE MOTION WAS CARRIED WITH 13 FOR AND 11 AGAINST.

NOTING THAT SECTION MEMBERSHIP AND INCOME ARE DOWN SOMEWHAT, AND THAT ONLY A FRACTION OF NSS VERTICAL CAVERS ARE SECTION MEMBERS, KIRK MACGREGOR SUGGESTED THAT SECTION MEMBERSHIP, INCOME, AND INFLUENCE COULD BE INCREASED BY SETTING UP A SYSTEM OF VERTICAL SECTION REPRESENTATIVES TO PROVIDE LOCAL SECTION CONTACT WITH CAVERS IN AREAS WHICH LACK EXECUTIVE COMMITTEE MEMBERS. HE MOVED THAT:

THE EXECUTIVE COMMITTEE MAY APPOINT INTERESTED SECTION MEMBERS IN GOOD STANDING AS VERTICAL SECTION REPRESENTATIVES. SECTION REPRESENTATIVES WILL BE APPOINTED TO SIGNIFICANT CAVING AREAS IN SUCH A WAY AS TO PROVIDE REASONABLE COVERAGE OF THE COUNTRY WITH A MINIMUM NUMBER OF REPRESENTATIVES. REPRESENTATIVES ARE EXPECTED TO ATTEND REGIONAL MEETINGS AND OTHER LOCAL EVENTS TO TALK TO VERTICAL CAVERS AND TO SELL SECTION MEMBERSHIPS AND BACK ISSUES OF NYLON HIGHWAY. REPRESENTATIVES ARE APPOINTED AND DISMISSED BY THE EXECUTIVE COMMITTEE ACTING AS A WHOLE, AND MAY RESIGN AT ANY TIME BY NOTIFYING THE COMMITTEE.

IN THE DISCUSSION, IT WAS SUGGESTED THAT REDUCING DUES WAS THE WAY TO GET MORE MEMBERS, BUT SHERRY GRAHAM POINTED OUT THAT THIS COULD ONLY BE DONE BY GREATLY REDUCING THE QUALITY OF THE PRINTING IN NYLON HIGHWAY. DAVE ALLURED NOTED THE LACK OF SECTION ADVERTISING IN THE NSS NEWS. AND SUGGESTED THAT MORE ADVERTISING WOULD GET MORE MEMBERS. HOWEVER, THE NEWS HAS BEEN PUBLISHED IRREGULARLY FOR OVER A YEAR, MAKING THIS DIFFICULT.

IN THE VOTE, THIS MOTION WAS CARRIED WITH 17 FOR AND 4 AGAINST.

THE MEETING CONCLUDED WITH THE EXECUTIVE COMMITTEE ELECTIONS. THOSE ELECTED WERE:

DAVE McCLURG	1982 CONVENTION COORDINATOR
KIRK MACGREGOR	SECRETARY-TREASURER
BILL CUDDINGTON	COMMITTEE MEMBER AT LARGE
BILL FOOT	COMMITTEE MEMBER AT LARGE
ALLEN PADGETT	COMMITTEE MEMBER AT LARGE

THE MEETING ENDED ABOUT 1:15 PM. LATER IN THE CONGRESS, THE EXECUTIVE COMMITTEE SELECTED ALLEN PADGETT AS CHAIRMAN.

AFTER THE CONGRESS, WE NOTICED THAT THE ELECTION FOR EDITOR OF NYLON HIGHWAY HAD BEEN OMITTED FROM THE MEETING! SHERRY GRAHAM STILL WANTED TO BE EDITOR, AND NO ONE ELSE HAD INDICATED ANY INTEREST IN THE JOB, SO THE EXECUTIVE COMMITTEE UNANIMOUSLY CONFIRMED SHERRY AS EDITOR FOR 1981-1982.

Kirk MacGregor

AN INTERESTING TID BIT

UNDER THE TITLE "FATIGUE FAILURE IN NYLON ROPE," KEN BITTING OF THE COAST GUARD R & D CTR. IN GROTON CONNECTICUT REPORTED IN THE LATEST MARINE TECHNOLOGY SOCIETY JOURNAL OF A RELATIVELY UNSTUDIED FAILURE MODE IN NYLON ROPES. HE FOUND THAT IT IS NOT THE MAXIMUM LOAD THAT CAUSES FAILURE AS MUCH AS THE COMBINATION OF THE MINIMUM LOAD AND THE MAXIMUM LOAD. DURING CYCLIC LOADING IF THE MINIMUM TENSION IS ZERO, THE ROPE WILL FAIL AT A MUCH LOWER TENSION THAN IT WOULD IF THE MINIMUM TENSION IS ABOVE ZERO.

BEFORE YOU DECIDE TO RETIRE YOUR CAVING ROPES BECAUSE OF THE CYCLIC STRESSES PLACED ON THEM DURING RAPPELLING, A CLOSE READING OF HIS EXPERIMENTAL RESULTS INDICATES THAT WITH A MAXIMUM TENSION OF 1000 LBS. (SURELY MORE THAN MOST OF US WEIGH) ONE WOULD NEED ABOUT 10,000 CYCLES OF LOADING BEFORE MOST CAVING ROPES WOULD BREAK. IF A SMALL MINIMUM TENSION IS KEPT ON THE ROPE AT ALL TIMES, A ROPE LOADED THROUGH 10,000 CYCLES HAS ABOUT 90% OF ITS ORIGINAL STRENGTH.

1982 MINUTES

By Kirk MacGregor

THE 1982 VERTICAL SECTION MEETING WAS HELD IN BEND, OREGON, STARTING ABOUT 11:40 AM, THURSDAY, JULY 1. APPROXIMATELY 30 SECTION MEMBERS WERE PRESENT. EXECUTIVE COMMITTEE MEMBERS PRESENT WERE BILL CUDDINGTON, KIRK MACGREGOR, AND DAVID McCLURG, WHO CHAIRED THE MEETING.

THE MEETING STARTED WITH AN ANNOUNCEMENT ABOUT NYLON HIGHWAY. NUMBERS 15 AND 16 WERE NOT PRODUCED, AND FEW, IF ANY, PEOPLE HAD RECEIVED NUMBER 14. THEN KIRK MACGREGOR READ THE TREASURER'S REPORT AND THE SECRETARY'S REPORT, WHICH ARE REPRODUCED ON PAGE 20 OF THIS NYLON HIGHWAY.

SOME DISCUSSION ON NYLON HIGHWAY FOLLOWED. DAVID McCLURG ASKED WHETHER ANYONE AT THE MEETING WAS INTERESTED IN BECOMING EDITOR. BILL CUDDINGTON SAID THAT KYLE ISENHART SAID BRUCE SMITH WANTED TO BECOME EDITOR AGAIN, BUT THERE WAS NO WAY TO CONTACT BRUCE THEN TO MAKE SURE. GREG VALENT AND NOEL SLOAN BOTH SUGGESTED THAT THEIR GROTTOS (WCG AND CIG, RESPECTIVELY) MIGHT BE ABLE TO PROVIDE SOME HELP WITH PRINTING NYLON HIGHWAY. GREG ALSO SUGGESTED MAKING SECTION MEMBERSHIPS LAST AS LONG AS IT TAKES TO PRODUCE TWO ISSUES OF NYLON HIGHWAY, INSTEAD OF ONE YEAR. THIS IDEA WAS CRITICIZED ON THE GROUNDS THAT IT WAS COMPLICATED AND THAT ALLOWING THE FREQUENCY OF NYLON HIGHWAY TO DECREASE WOULD BE BAD FOR THE SECTION.

KIRK MACGREGOR NOTED THAT NYLON HIGHWAY WAS EXACTLY ONE YEAR BEHIND, AND MOVED THAT ALL SECTION MEMBERSHIPS AND NYLON HIGHWAY SUBSCRIPTIONS BE EXTENDED BY ONE YEAR TO COMPENSATE FOR THIS. JOCIE HOOPER SECONDED THE MOTION, AND THE VOTE IN FAVOR WAS UNANIMOUS.

SEVERAL DIFFERENT MATTERS WERE THEN DISCUSSED BRIEFLY, INCLUDING THE STRUCTURE OF THE VERTICAL SECTION, EQUIPMENT EVALUATIONS GARY STORRICK IS TRYING TO ORGANIZE, AND: "DID ANYBODY GET A NYLON HIGHWAY 14?" "ONE MEMBER OF WINDY CITY GOT IT, I BELIEVE."

NEXT CAME THE EXECUTIVE COMMITTEE ELECTIONS. KIRK MACGREGOR WAS ELECTED AS SECRETARY-TREASURER. GARY STORRICK WAS ELECTED AS 1983 CONVENTION COORDINATOR. DAVID McCLURG, BILL CUDDINGTON, AND KYLE ISENHART WERE ELECTED AS THE REMAINING THREE COMMITTEE MEMBERS.

AFTER SOME DISCUSSION OF WHAT TO DO IN THE ABSENCE OF ANY DEFINITE CANDIDATES FOR ELECTION AS NYLON HIGHWAY EDITOR, IT WAS MOVED THAT THE EXECUTIVE COMMITTEE APPOINT AN ACCEPTABLE EDITOR. THE VOTE IN FAVOR OF THIS WAS UNANIMOUS. THE MEETING ENDED ABOUT 12:20 PM.

IMMEDIATELY AFTER THE MEETING, THE EXECUTIVE COMMITTEE MET AND SELECTED DAVID McCLURG AS CHAIRMAN

AFTER THE CONVENTION, THE COMMITTEE CONTACTED SHERRY GRAHAM AND BRUCE SMITH. SHERRY WANTED TO RESIGN, AND BRUCE WANTED TO BECOME EDITOR. IN SEPTEMBER 1982, THE COMMITTEE UNANIMOUSLY APPOINTED BRUCE SMITH AS NYLON HIGHWAY EDITOR.

ADMINISTRATIVE

TREASURER'S REPORT
JULY 15, 1981

INCOME:

MEMBERSHIPS	\$384.00
SUBSCRIPTIONS	58.00
BACK ISSUE SALES	147.20
ADVERTISEMENTS	56.00
BANK INTEREST	18.02
PAYMENTS FOR PHOTOCOPIES	9.48
OTHER	6.50
TOTAL	\$679.20

EXPENSES:

EDITOR:

MAILING PERMITS	\$70.00
OTHER NH #13 MAILING	17.00
NH #13 PRINTING	433.00
NH #14 PRINTING	285.00
MATERIALS	42.00

SECRETARY-TREASURER:

POSTAGE	28.23
PULLEY FOR PRUSICK CONTEST	22.36
ADVERTISEMENTS FOR NH	11.11
SUPPLIES, PHOTOCOPIES, ETC	7.04
OTHER	4.25
TOTAL	\$919.99

NET EXPENSES \$240.79

BALANCE AS OF 1980 JULY 23 \$662.53

BALANCE AS OF 1981 JULY 15 \$421.74

SECRETARY'S REPORT

NUMBER OF VERTICAL SECTION MEMBERS, NYLON HIGHWAY
AS OF 1982 JUNE 22.

MEMBERS (SINGLE)	116
MEMBERS (FAMILY-NUMBER OF PEOPLE)	16
SUBSCRIBERS (FULL RATE)	16
PAID GROTTO SUBSCRIPTIONS	5
SENT FREE & EXCHANGED (APPROXIMATELY)	70

GREAT VERTICAL EVENTS IS A NEW NYLON HIGHWAY FEATURE. FROM TIME TO TIME GREAT VERTICAL ACHIEVEMENTS TAKE PLACE UTILIZING ROPE TECHNIQUES COMMONLY USED IN A CAVE. OFTEN TIMES THESE EVENTS REQUIRE SPECIAL TALENT, EQUIPMENT, MONEY AND SACRIFICE. IT IS OUR INTENT TO BRING YOU THOSE STORIES AS THEY HAPPEN WITH ALL THE SIGNIFICANT DETAILS.

TREASURER'S REPORT
JUNE 22, 1982

INCOME:

MEMBERSHIPS	\$558.00
SUBSCRIPTIONS	98.00
BACK ISSUE SALES	303.00
BANK INTEREST	23.69
OTHER	1.00
TOTAL	\$983.69

EXPENSES:

EDITOR:

REPRINTING PART OF N.H. # 14	\$95.68
POSTAGE	18.52
OTHER	13.48

SECRETARY-TREASURER:

POSTAGE	\$32.91
30 METER TAPE FOR PRUSICK CONTEST	22.00
SUPPLIES, ETC	2.60
OTHER	3.00
TOTAL	\$188.19

NET INCOME \$795.50

BALANCE AS OF 1981 JULY 15 \$421.74

BALANCE AS OF 1982 JUNE 22 \$1217.24

NYLON HIGHWAY: IS PUBLISHED BY THE NSS VERTICAL SECTION, AND IS AVAILABLE TO SUBSCRIBERS AND VERTICAL SECTION MEMBERS FOR \$3.00 PER YEAR. FOR DELIVERY OUTSIDE NORTH AMERICA ADD THE FOLLOWING EXTRA POSTAGE CHARGES:

SURFACE MAIL --- \$1.00
AIR MAIL ----- \$4.00

PLEASE INSURE THAT THESE PAYMENTS ARE IN U.S. DOLLARS. FREQUENCY OF THE PUBLICATION IS BASED ON THE AVAILABILITY OF MATERIAL. ALL MATERIAL THAT IS SUBMITTED MUST BE READABLE. THE EDITOR IS ABLE TO ARRANGE, UPON REQUEST, PROFESSIONAL QUALITY DRAWINGS EXPLAINING YOUR TOPIC. CHECKS MADE PAYABLE TO THE NSS VERTICAL SECTION.

HAVE WE GOT A DEAL FOR YOU

SUPPLIERS: THE NYLON HIGHWAY IS AN EXCELLENT VEHICLE TO EXPLAIN THE SPECIFIC DEVELOPMENT, USE, AND/OR FEATURES OF A PRODUCT IN YOUR PRODUCT LINE... PARTICULARLY IF IT IS NEW. (AT NO CHARGE). GENERAL ADVERTISING, AS ALWAYS, IS FOR SALE. CONTACT THE EDITOR FOR SPECIFIC RATES.

EL CAPITAN, 1981

....AND YET ANOTHER "SUPERDROP"

By TONI LEWIS WILLIAMS
(ASSISTED BY A CAST OF MANY)

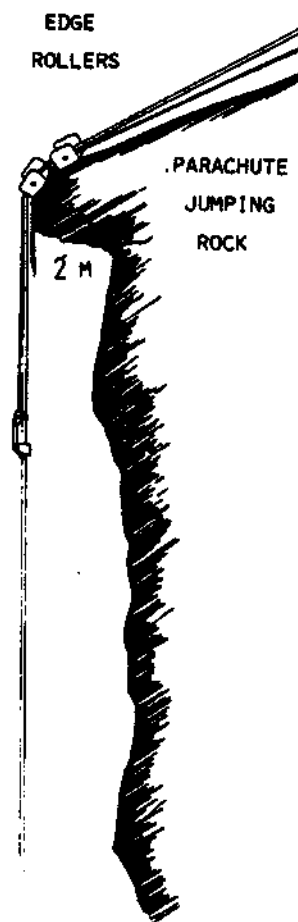
THE LAST ISSUE OF NYLON HIGHWAY INCLUDED ARTICLES ON THE 1982 MT. THOR AND 1980 EL CAPITAN EXPEDITIONS. TO ASSIST IN COMPLETING THE BIG DROP RECORDS, I WAS ASKED TO DESCRIBE THE SEPT. 26 - OCT. 4, 1981, EL CAPITAN DROP ORGANIZED BY KATHY WILLIAMS OF CALIFORNIA. AT 787 M (OR 813, OR 815), IT WAS A BIT LONGER THAN THE 1980 DROP*, AND WAS COMPLETELY FREE UNTIL THE 80° SLOPE APRON AT THE CLIFF BOTTOM.

BEFORE ANYONE GETS PSYCHED TO REPEAT OUR EXPERIENCE, I SHOULD POINT OUT THAT IT REQUIRED A SPECIAL USE PERMIT FROM THE NATIONAL PARK SERVICE, WHICH IS UNLIKELY TO BE GRANTED AGAIN IN THE NEAR FUTURE. THE FIRST RAPPEL/ASCENT WAS PERMITTED AS A MEANS OF GENERATING TECHNICAL INFORMATION, AND THE SECOND ONLY AS TRAINING FOR A PLANNED RAPPEL/ASCENT OF ANGEL FALLS. THE PARK VIEWS THIS AS A "STUNT" OR SPECTATOR ACTIVITY" (LETTER FROM PARK SUPERINTENDENT R. O. BINNEWEIS)—WHICH OF COURSE IS NOT AT ALL THE WAY WE APPROACHED OR PERCEIVED IT.

THE CAVERS INVOLVED ON THE CLIFF WERE KATHY WILLIAMS (RAPPEL AND ASCENT), PETER BOSTED (R), CHARMAINE LEGGE (A), DAVE MELE (R) AND GARY MELE (A), ALL FROM CALIFORNIA; PAULA CASALE (R) AND DOUG MOLYNEAUX (R), BOTH FROM VIRGINIA AND TONI WILLIAMS (R & A), FROM FLORIDA. SUPPORT PERSONS AND COMPANIES, TO WHOM WE ALL GIVE OUR THANKS, ARE LISTED AT THE END OF THIS ACCOUNT.

A 20 PAGE ARTICLE COULD EASILY BE WRITTEN ABOUT THIS TRIP, WHICH INCLUDED SUCH AMUSEMENTS AS TWO EARTHQUAKES, SEVERAL ROCKFALLS, THE RESCUE OF AN INJURED ROCK CLIMBER, A DAMAGED ROPE, A BROKEN HAUL CORD, A RAINSTORM WHILE TWO CAVERS WERE ASCENDING, AND A MOUSE IN MY TENT. HOWEVER, ONLY THE MOST INSTRUCTIVE INCIDENTS ARE MENTIONED HERE.

OUR RIGGING DIFFERED FROM THE PREVIOUS YEAR'S. (INFORMATION ON THE 1980 EXPEDITION IS FROM THE N.H. ARTICLE; K. WILLIAMS, WHO WAS ON THE TRIP BUT NOT PERMITTED TO DO THE DROP; DON BELLING, WHO RAPPELLED AND ASCENDED; AND FROM



PROFILE OF DROP

*MEASURING THE EXACT LENGTH OF SUCH A DROP IS DIFFICULT. THERE IS TOO MUCH STRETCH IN THE ROPE AS RIGGED TO SIMPLY MARK TOP AND BOTTOM AND MEASURE IT LATER, UNLOADED. HOWEVER, THIS TECHNIQUE HAS BEEN USED ON SEVERAL PREVIOUS LONG DROPS. KATHY EXTRAPOLATED OUT DROP LENGTH BY ADDING TO THE UNLOADED LENGTH A CORRECTION FOR STRETCH (2% AT 200 POUNDS LOAD, PER M1, TIMES THE AVERAGE WEIGHT OF A RAPPELLER PLUS THE WEIGHT OF THE ROPE AT MID-ROPE). THIS YIELDED A FIGURE OF 2582 FEET. THE PREVIOUS YEARS'S DROP WAS REPORTED TO BE 2650 FEET (OR 2660 FEET, VERBALLY TO KATHY), BUT SINCE WE RIGGED HIGHER AND GOT OFF ROPE LOWER THAN THAT GROUP, THE DROP AS WE RIGGED IT WAS CERTAINLY AT LEAST 3-4 M LONGER. THE EXACT LENGTH IS ANYONE'S GUESS!

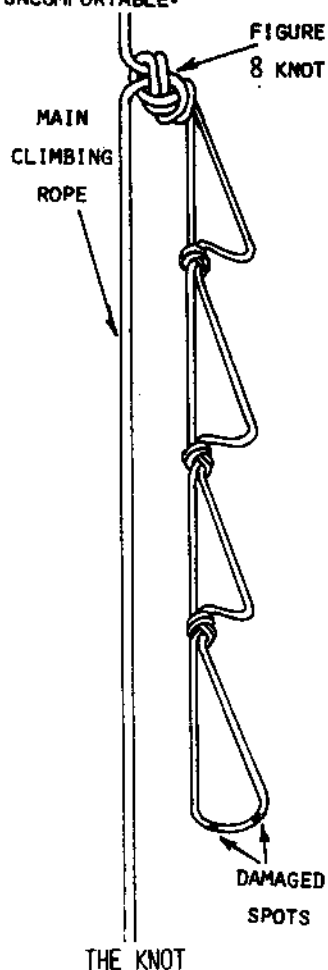
EL CAPITAN

SEVERAL INFORMAL CONVERSATIONS WITH 1980 PARTICIPANTS.) THE TWO MAJOR DIFFERENCES WERE THE USE OF EDGE ROLLERS RATHER THAN A TRIPOD, AND THE USE OF A 2+ METER OVERHANG TO PERMIT A COMPLETELY FREE RAPPEL. WE RIGGED FROM A PAIR OF TREES, WITH THE ROPE PASSING OVER SEVERAL EDGE ROLLERS AND EIGHT LAYERS OF DENIM ON THE PARACHUTE JUMPING ROCK; THIS NOT ONLY GAVE US A FEW EXTRA METERS OF DROP, BUT A TOTALLY FREE RAPPEL. OUR ROPE NEVER TOUCHED ROCK ABOVE THE APRON, BEING USUALLY 3-10 M AWAY FROM THE FACE, AND SHOWED NO EVIDENCE OF ABRASION DESPITE BEING BLOWN ACROSS THE FACE ALMOST CONSTANTLY DURING THE DAYS. A 4" TO 1 HAULING SYSTEM ATTACHED TO A JUMAR 4-5 M BELOW THE LIP ALLOWED THE HEAVY (APPROX. 73 KILOGRAMS) ROPE TO BE HOISTED TO PROVIDE SLACK FOR RIGGING IN.

WE USED A SINGLE LENGTH OF SPECIAL PMI 7/16" NYLON KERNMANTEL ROPE WITH AN EXTRA STRAND IN THE CORE, GIVING A RATED BREAKING STRENGTH OF 7000 POUNDS. THE ROPE WAS SLIGHTLY OVER 1000 M LONG, AND THE SPECIAL "EXPEDITION" PMI RACKS WERE 44 CM LONG, WITH 3 CM COPPER SPACERS BETWEEN THE TWO TOP BARS.

WE HAD PREVIOUSLY PRACTICED ON THE NEARBY ROSTRUM (230 M) WITH A PERSON SUSPENDED FROM THE ROPE BELOW TO SIMULATE THE ROPE WEIGHT WE WOULD EXPERIENCE ON EL CAP.

RAPPELS WERE GENERALLY SLOWER THAN THE PREVIOUS YEAR'S, AT THE BEHEST OF THE HOSTING CALIFORNIANS --ONE OF WHOM (DAVE) DREW MANY WITTY REMARKS WITH THE USE OF HIS MOLDED FIBERGLASS "BUN SEAT" ON THE RAPPEL. ASCENT TIMES RANGED FROM 3 1/2 - 6 HOURS. WE CLIMBED IN TANDEM, WHICH MEANS THE SPEED WAS THAT OF THE SLOWER MEMBER OF EACH PAIR. CHARMATINE AND GARY WERE SLOWED TO THE 6-HOUR TIME BY A RAIN-STORM WHICH BEGAN WHILE THEY WERE ON ROPE, MAKING THEIR ALREADY CHILLY NIGHTTIME ASCENT QUITE UNCOMFORTABLE.

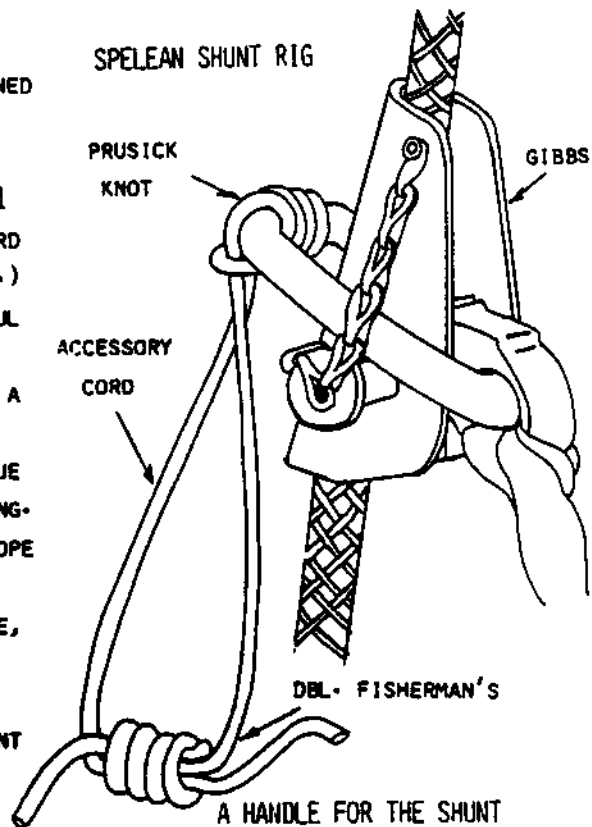


ALTHOUGH WE HAD A SINGLE ROPE, TWO EVENTS FORCED US EVENTUALLY TO TIE A KNOT WHICH WE HAD TO PASS ABOUT 250 M FROM THE BOTTOM. FIRST, DUE TO A GARBLED ORDER SOMEWHERE ALONG THE LINE, THE 3/16" HAUL CORD WHICH KATHY ORDERED SIX MONTHS IN ADVANCE DIDN'T ARRIVE. BECAUSE OF THE LIMITED TIME WINDOW WE WERE PERMITTED, WE HAD TO ABORT OR USE THE NEXT-BEST CORD, WHICH WAS 1/8" CORD SIMILAR TO PARACHUTE CORD. WHEN THE ROPE WAS ABOUT 30 M FROM THE THE TOP, THIS CORD BROKE AT THE EDGE ROLLER, LETTING THE ROPE FALL FOR 25 SECONDS IN GRACEFUL 30 M LOOPS. THE EERIE WHISTLING SOUND DISCONCERTED SOME CLIMBERS WHO WERE ABOUT 100 M AWAY ON THE FACE. THE FALLEN ROPE SHOWED NO EVIDENCE OF DAMAGE, AND MIRACULOUSLY DID NOT TANGLE. HOWEVER, KATHY AND CHARMATINE HAD TO RETURN TO THE CITY TO HARASS THE CORD COMPANY INTO SENDING THE PROPER HAUL CORD BY FEDERAL EXPRESS; KATHY PICKED IT UP AT THE AIRPORT AND HIKED IT BACK TO EL CAP'S SUMMIT BY THE BACK ROUTE. MEANWHILE WE SINGLE-CHAINED AND CAUTIOUSLY RECOILED THE ROPE BACK ONTO THE SPOOL AND COVERED IT WITH CARDBOARD. TOO HEAVY FOR BRUCE AND ME TO MOVE, IT WAS LEFT AT THE BASE OF THE CLIFF. AN EARTHQUAKE-GENERATED ROCKFALL CAUSED A B-F-R. TO HIT THE SPOOL/TRIPOD SETUP, SPLINTERING PART OF THE SPOOL AND RESULTING IN TWO MUSHY PLACES IN THE ROPE 10-15 CM APART. RATHER THAN ABORT THE TRIP OR RISK MY FRIENDS' LIVES ON A ROPE SEGMENT OF UNKNOWN STRENGTH, I CHOSE TO BYPASS THE QUESTIONABLE SEGMENT WITH A LOOP KNOT. KATHY SUGGESTED MAKING THE LONG LOOP OF THE FIGURE 8 INTO A FOUR STEP ETRIER TO MAKE KNOT PASSING EASIER.

EL CAPITAN

IN ADDITION TO THE POINTS MENTIONED IN THE N.H. # 15 ARTICLE, A FEW OF THE THINGS WE LEARNED WERE:

- YOU REALLY DO NEED THE RECOMMENDED 5 TO 1 SAFETY FACTOR FOR GEAR HAULING. (THE CORD WHICH BROKE HAD A 2.5 TO 1 SAFETY FACTOR.)
- WHILE THE WALKIE-TALKIES WERE MOST HELPFUL (AND ALLOWED US TO ASSIST IN THE EARLY STAGES OF THE INJURED CLIMBER'S RESCUE), A VOICE-ACTIVATED HEADSET WOULD HAVE BEEN EVEN BETTER, ALLOWING A PERSON TO CONTINUE CLIMBING OR RAPPELLING WHILE COMMUNICATING.
- WIND CAN BE A SIGNIFICANT FACTOR. OUR ROPE AT TIMES WAS BLOWN UP TO 50 OR 60 M OUT FROM THE FACE; HAD THE DROP NOT BEEN FREE, STRONG LATERAL WINDS WOULD PROBABLY HAVE CAUSED SERIOUS ABRASION.
- WHEN USING A GIBBS/CARABINER SPELEAN SHUNT SAFETY DURING A RAPPEL, IT IS EXTREMELY USEFUL TO PROVIDE AN ACCESSORY CORD LOOP HANDLE FOR BETTER LEVERAGE IN RELEASING IT.
- THESE 750+ M DROPS, PRIMARILY DUE TO ROPE WEIGHT, REQUIRE SPECIAL EQUIPMENT AND TECHNIQUES. THEY ARE QUALITATIVELY AS WELL AS QUANTITATIVELY DIFFERENT EVEN FROM 300 M DROPS, AND SHOULD NOT BE ATTEMPTED WITHOUT SOME PRACTICE WITH THE SAME EQUIPMENT, TECHNIQUES, AND BOTTOM WEIGHT TO BE ENCOUNTERED ON THE DROP.



THIS WAS A MOST EDUCATIONAL ADVENTURE. KATHY'S WRITEUP FOR THE PARK SERVICE INCLUDED MANY POINTS NOT MENTIONED HERE, WHICH WOULD BE USEFUL FOR SOMEONE CONTEMPLATING A SIMILAR-LENGTH DROP.

DESPITE THE PROBELMS ENCOUNTERED (AND SOLVED), WE THOROUGHLY ENJOYED RAPPELLING AND ASCENDING EL CAPITAN. AND WOW...WHAT A PLACE TO VIEW A SUNRISE FROM, SUSPEND ON THAT ROPE THOUSANDS OF FEET ABOVE YOSEMITE VALLEY!

EL CAP'S SUPPORTING PERSONS AND COMPANIES

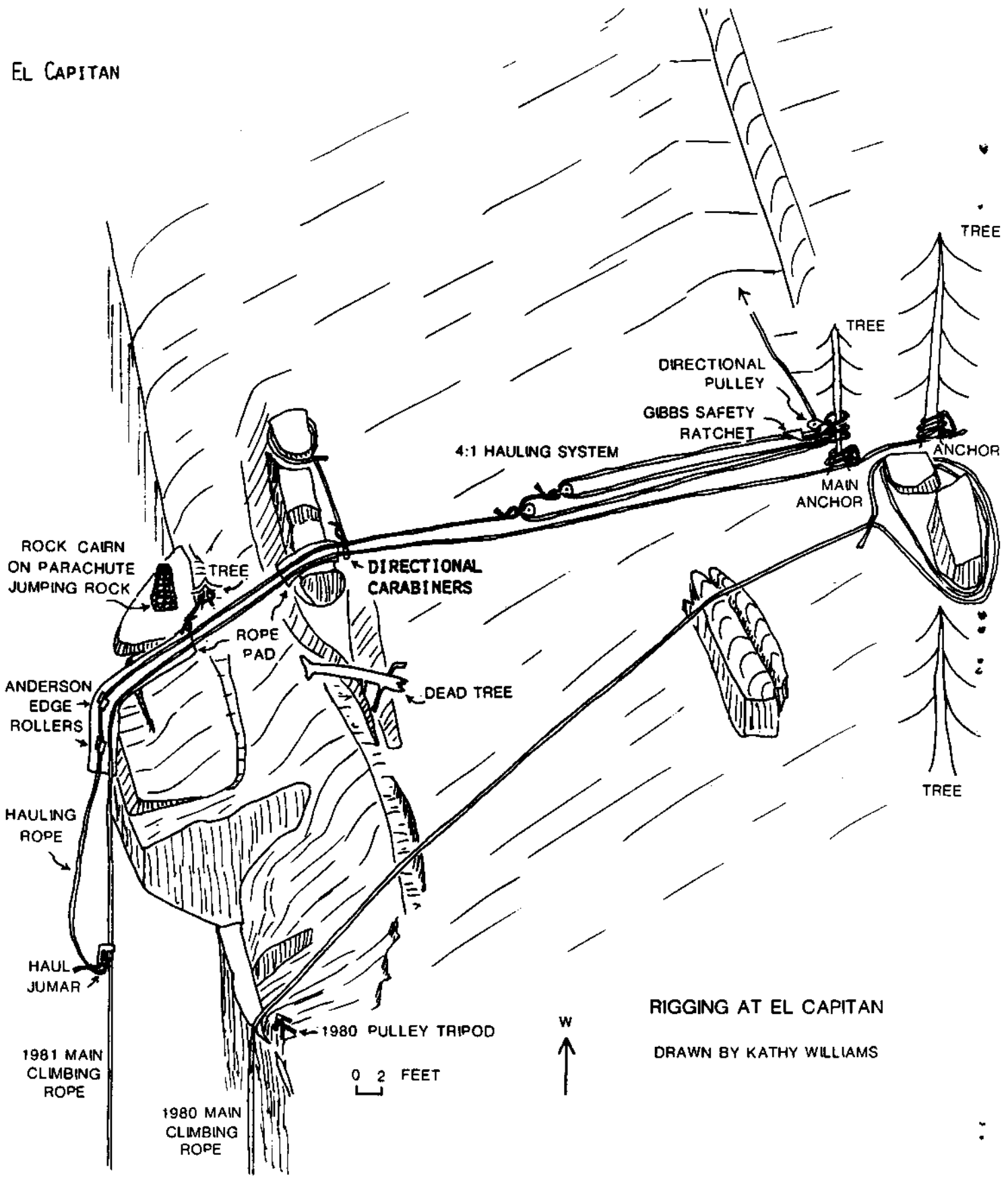
BRUCE ROGERS
WES WESTHAFFER
BILL AUSTIN
JOHN HAMARI (NORTH FACE)
JEFF ? (NORTH FACE)
KEN MILEY (NORTH FACE)
BRIAN MOLYNEAUX
PETE MOORE
OLIVE ROHRER

TOM ROHRER
GRAHAM WISEMAN

COMPANIES

RUSS ANDERSON
CALIFORNIA MOUNTAIN Co.
DOC HOLIDAY'S COMMUNICATIONS
PIGEON MOUNTAIN INDUSTRIES, INC. (PMI)
THE NORTH FACE

EL CAPITAN



RIGGING AT EL CAPITAN

DRAWN BY KATHY WILLIAMS