

NYLON HIGHWAY 13

...especially for the vertical caver



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Nylon Highway

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Deadline

...for Nylon Highway 14 is around the end of February 1981. If you are planning to submit an article and the Editor doesn't know about it, please advise her so that she can plan accordingly; last-minute surprises may find themselves waiting until June. It is not necessary to be a Vertical Section member to contribute. The sole standard for submitted material, apart from the merit of the content, is that it be decipherable by the Editor.

Opinions

...expressed herein are credited to the author and do not necessarily agree with those of the Vertical Section or its Executive Committee. Unsigned material may be attributed to the Editor. Reprinted material must give credit to the author and source. Letters to the Editor are welcome and, if particularly clever or of general interest, will be published unless the writer requests otherwise.

NYLON HIGHWAY 13

NSS
Vertical
Section

December 1980

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Editor's Notes

Greetings and best wishes from the new Editor of the Nylon Highway! It seemed a little ominous to begin with issue number 13, and sure enough, this thing isn't going out without a fight. Rather than hit you with my fascinating list of excuses for lateness, I think I'll take a more positive approach and tell you my editorial philosophies, which are simple and few.

I believe that my job as Editor is to provide a medium of communication among Vertical Section members, officers, and others interested in vertical caving. Part of that job is to make available to all Section members the minutes and reports that reflect the Section's annual meetings; however, everyone wants Nylon Highway to be more than that. Read what's in this issue; make note of what is not in this issue that you would like to see. Let your thoughts be provoked; I'll make it as easy as possible for you to share them with others.

As Editor, I am the one who is supposed to be able to spell and punctuate and make good sentences. If you can, fine; if you can't, fine. I don't require that material you submit be typed. If you should send in something that we can't use, I shall certainly tell you why, and if I make material changes to your material, I shall clear them with you before going to press. I need artwork, good black-and-white cover photographs with lots of contrast, and the article you have been thinking about writing for the last couple of years. Could it be that the time has finally come? I hope I'll be one of the first to know.

I also welcome letters on any pertinent subject, and I shall feel free to publish any that do not explicitly ask me not to do so.

Until we're in touch again, then, let me wish you good caving, and a happy new year.....

— *Merry*

...reaching the end of your Highway?

If you received this issue in the mail, please have a look at the mailing label. If there isn't a green dot on it, our Secretary-Treasurer believes that you need to pay your dues or subscription. Nylon Highway 14 will not be sent to you unless you remedy this situation.

MINUTES

Vertical Section Meeting, 1980

The 1980 Vertical Section meeting was held at Minneapolis-St. Paul, Minnesota, starting about 4:12 PM, Friday, August 1. Approximately 35 Section members were present, including two of the five Executive Committee members (Allen Padgett and Kirk MacGregor, who chaired the meeting).

The meeting opened with the Treasurer's Report, which is reproduced on page 20 of this Nylon Highway. The Secretary-Treasurer noted that the printing cost for Nylon Highway #12 was unusually high because its late publication date made it necessary for it to be printed commercially (instead of at the vocational school), which is much more expensive in Appalachia than in a big city; that postage costs for Nylon Highway #12 were also higher than normal because it was sent first class in order to get it to people before the Convention; and that the Secretary-Treasurer expenses listed were some dollars low, as not all such expenses were charged to the Section. The Secretary-Treasurer also reported on the number of Section members. This information is reproduced below the Treasurer's report.

Following these reports, new business was considered, starting with a proposal that the Vertical Section Coordinator for the 1981 International Congress of Speleology be elected as such in a separate election this year, rather than being informally selected from among the five Executive Committee members after the elections. The present wholly informal procedure has sometimes caused trouble, and it was felt that we should formally elect a good person for the job this time, thus doing our best to ensure good results at the 1981 Congress. There was no objection to this, and this procedure was temporarily adopted for the 1980 Executive Committee elections.

Joe Domnanovich asked whether the decision to seek non-profit mailer status for the Section that had been made at the 1979 Section meeting had been acted upon yet. It had not been. After a brief discussion, it was reconfirmed that this would save the Section postage, even though the Section presently does not send out quite the minimum 200 items in each mailing. It was noted that the 1979 decision that the Editor should seek non-profit mailer status will still apply to the new Editor.*

Allen Padgett asked about getting an equipment testing grant for buying rope for his rope testing project with the Safety and Techniques Committee. The Secretary-Treasurer noted that getting such a grant would involve submitting a proposal to the Executive Committee for its consideration in the usual way, and that, while grants for less than \$100 were preferred, there had been no grants made so far, and the Section could afford up to \$200 in this case. While the final decision on testing grant applications is made by the Executive Committee, the opinion of the Section members present was sought on the question of whether the Section should give Allen a grant of up to \$200 for his rope testing. About twenty members indicated that they felt that the Section should give such a grant, and only a couple indicated opposition to it (exact counts not taken). It is now up to Allen to plan a testing program within the testing grant guidelines (see Nylon Highway #9) and to circulate the proposal to the Executive Committee.

* Non-profit mailer status has been achieved. -Editor

MINUTES, continued

There being no other new business, the meeting then turned to the question of metricating the prusik contest and specifying some of its standards more definitely. While only nine minutes of the meeting was devoted to these questions, about three quarters of an hour before the meeting had been spent discussing the issues involved. Thus these issues were fairly extensively discussed before the voting, although little mention of this appears in these minutes, which cover only the meeting itself. The voting started when Allen Padgett moved that we convert our contest lengths from feet to meters. A large majority of the Section members present voted in favor of this motion (exact counts not taken).

This much having been decided, there was a brief procedural discussion on choosing the metric lengths. It was decided to vote on the short race and the long race separately. Allen Padgett moved that the short race be 30m long. Twenty-some members (exact count not taken) voted in favor of this motion, and two voted against it. Then a three-way vote was taken on the length of the long race. There were 21 votes for 100m, 12 votes for 120m, and 0 votes for "other lengths".

There followed a period of discussion in which it was noted that, under the Section Constitution, it was possible for the Executive Committee to make its own decisions on the races for the next year, subject to its possibly being outvoted by the membership at the 1981 meeting, and thus that there was some possibility that some of the above decisions might be modified by the Executive Committee if strong arguments for doing so were to arise. No definite statements were made on this possibility, but it was concluded that the new contest rules should be finalized in time for the Third Circular for the 1981 Congress (by about the end of October). This part of the meeting ended with a unanimous vote to refer all the remaining questions about the new races to a "prusik contest rules committee", to consist of the Executive Committee plus other interested Section members.*

Then the elections were held, starting with the election of the new Editor for Nylon Highway. Three people volunteered or were nominated, an unprecedented number. Following the practice started in 1979, the candidates gave short speeches so that the voters would know something about them. This year the speech time limit was raised to three minutes per candidate for important positions such as that of Editor. This worked well, and each candidate spoke for about two minutes, including answering some questions from the audience. Then the vote was taken, and Sherry Graham was elected Editor.

After Sherry wrote her address on the blackboard and said a little about how to submit material for publication, the election for Secretary-Treasurer was held. No one volunteered to run against the incumbent, and he did not resign, so Kirk MacGregor was automatically re-elected.

Next came the election for the Vertical Section Coordinator for the 1981 Congress. It was noted that anyone running for this one-year position was making a commitment to put out the money, time and effort to visit the facilities in Kentucky at least once, and perhaps twice; and to communicate with the Congress enough to make the vertical events work out well, which could be plenty of communicating. Five people were more or less nominated for the position, but three declined because of their being too busy or too far from Kentucky. When the vote on the remaining two was taken, Allen Padgett was elected Coordinator.

MINUTES, continued

The last of the elections was for the three remaining Executive Committee members. Seven people volunteered or were nominated. The speeches for these candidates were limited to only one minute each, but were still quite informative. When the votes were tallied, the new Executive Committee members were Bill Foot, Jocie Hooper, and Bob Thrun.

Bob Thrun noted that International Speleological Congresses normally give a number of honorary positions to notable speleologists and the like, and that perhaps it was appropriate for Bill Cuddington to be given such a position on the 1981 Congress. After some discussion, in which it was noted that the actual decision on this would be made by the Congress organizers, not the Vertical Section, Darrel Tomer moved that the Vertical Section seek an honorary position for Bill Cuddington in the 1981 Congress. The vote in favor of this was unanimous.

The meeting ended about 5:23 PM. After the banquet that evening, the Executive Committee met and selected Allen Padgett as Chairman, thus making him both Chairman and 1981 Congress Coordinator.

Kirk MacGregor
Secretary-Treasurer

More Minutes?

A fairly impromptu meeting of some of the Vertical Section members present at Old Timers' Reunion (held near Elkins, West Virginia) occurred from 10 AM to 12:20 PM, Saturday, August 30, 1980. Those present included: Bill Cuddington, Miriam Cuddington, Joe Domnanovich, Bill Foot, Dick Graham, Sherry Graham, Kyle Isenhardt, Kirk MacGregor, Karen Padgett, Roberta Swicegood, and Bob Thrun.

The major topic discussed was whether the Prusik Contest at the NSS Convention is under the control of the Section Executive Committee, like any other section event; or is controlled by an independent contest committee chaired by Bill Cuddington. Also considered were some technical questions, such as the relative merits of various lengths for races; and some practical questions, such as organizing the people helping to run the races so that each has to spend only certain pre-arranged times in the gym, instead of all day, every day of the races.

The discussion on control of the Prusik Contest continued for some time before the matter was resolved to the satisfaction of all those present. When this happened, the three Section Executive Committee members present stated that they would support the passage of the following bylaw by the Executive Committee:

The Vertical Section will establish a Vertical Contest Committee, which will have complete authority over and responsibility for the annual NSS Convention vertical contests, subject to the conditions stated here:

The Vertical Section Executive Committee will appoint the Contest Committee Chairman yearly

The Contest Committee Chairman will appoint the other members of the Contest Committee yearly

MORE MINUTES, contd.

All procedures developed by the Vertical Contest Committee are subject to approval by the Executive Committee of the Vertical Section.

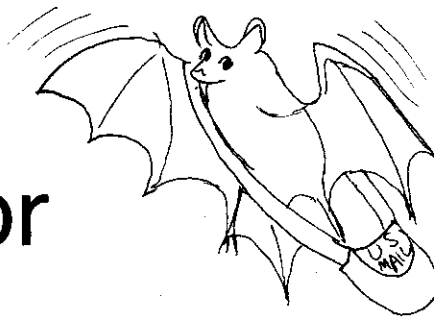
The functions of the Vertical Contest Committee will include: establishing and publishing the rules of the contest, organizing and running each annual contest, publishing the results of each contest, and maintaining complete contest records.

The three Executive Committee members present also said that they supported the appointment of Bill Cuddington as Contest Committee Chairman for the year up to and including the 1981 contest. Bill Cuddington said that the 1981 contest would be run over distances of 30 meters and 120 meters, these being the same for both sexes. *

Kirk MacGregor
Secretary-Treasurer

* When the formal Executive Committee vote on the new bylaw was taken, early in October, all five Executive Committee members voted for it, and for Bill Cuddington as Contest Committee chairman. Thus the bylaw is now in effect, and Bill Cuddington is Contest Committee chairman for the 1981 Contest. -Editor

A Letter to the Editor



Dear Sherry:

Our Vertical Section is planning the first international speleo-rope climbing contests to be held in 1981. What do we want these contests to prove? In the past we have emphasized the 100 and 400 foot climbs. Most cavers assume the 400 is an endurance event and the 100 is a speed event. How good are these assumptions?

Since most of our climbers are relatively inexperienced at rope racing, I will compare our rope events with high school track events. The most popular speed event in high school is the 100 yard dash and the traditional endurance event is the mile run. I believe these two events are more important and interesting than the intermediate sprints because the basic ideas of speed and endurance are more clearly separated.

Comparing average performances, as I remember them:

SPORT	SPEED	ENDURANCE	S/E RATIO
Track	100yd/11 sec	1760yd/300 sec	1-18 / 1-17
Speleo-Rope	100ft/60 sec	400ft/420 sec	1-4 / 1-7

Obviously, in track the ratios between the pure speed contest and the pure endurance contest are much greater than in speleo-rope climbing.

LETTER, continued

Our rope races are really one endurance climb and one intermediate climb comparing to the mile and quarter-mile in track. Thus many of our first-time contestants, thinking the 100 foot is a speed contest, pace themselves much too fast at first and have difficulty finding the strength to finish. The characteristic of a pure speed contest is that pacing is not necessary, the contestant does best by going "all out" all the way.

Our 400 foot event tells us which climber has the most endurance, but our 100 foot event does not tell us who has the greatest speed, nor what that speed is. If we are to have only two distances, it seems that they should each get at different basic abilities.

At the recent NSS Convention in St. Paul, our vertical climbers showed their tradition and authority questioning mood by such things as having women climb the 400 along with the men, and voting to convert to metric distances for future contests. However, the metric distances decided upon were 30 and 120 metres. The feeling was that since these metric distances are close to our traditional 100 and 400 foot distances, the contest records of our past outstanding climbers would somehow be preserved. It was a most considerate gesture, but when we go 100% metric, the old records will be cast into limbo regardless of approximations. Nothing will be lost by changing the 30 metres to 7 metres, or at least adding a 7 metre contest. Seven, 30, and 120 metres would be in about the same distance and time ratios as the 100, 440, and 1760 (mile run) yards in track.

When our foreign counterparts arrive from Europe and Australia, they are going to be a bit disturbed that there is not a speed contest and an endurance contest. Since our climbing contest rules are in a state of flux anyway, why not re-examine the whole procedure and get the international traditions started off right?

If any other members feel this is important, they should make their wishes known soon so our executive committee can have time to act on it.

/s/ D. W. Tomer

A Climbing Practice System

- Dick Graham

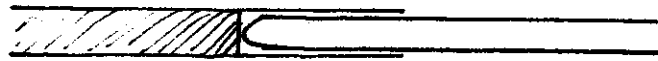
Since the nearest pit I can rig is five hours away, I have for the last two years been keeping in shape with an endless loop climbing system inspired by Darrel Tomer (see Nylon Highway #10). The essential differences between his system and mine are:

1. a friction device to absorb energy rather than a piston machine;
2. an unsafe but very thin and flexible splice in the loop of rope.

A weight is adjusted to hold the climber stationary; when the climber stops, the rope stops. As the climber climbs faster, he moves upward, pulling the weight up; as the weight moves up, it allows the rope to move faster. Thus the climber can climb at any speed. This system maintains the climber at a constant height rather than maintaining a constant rope speed as the original Tomer system does. (I understand that Darrel has modified his system to incorporate an automatic variable speed control.)



CUT 15" OF CORE OUT OF EACH END



MELT COVER OF ONE END AND INSERT INTO OTHER END

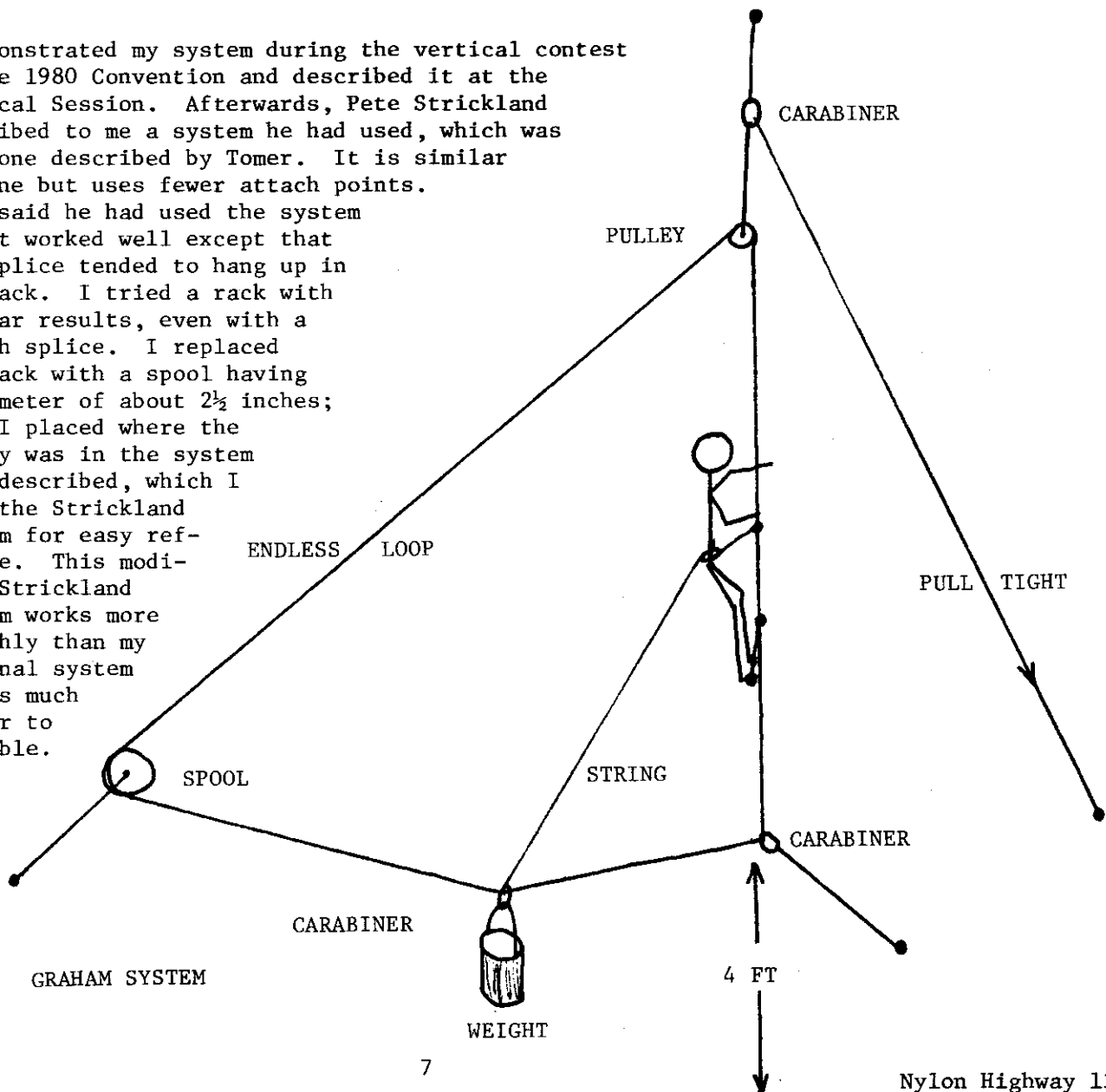


WHIP WITH NYLON THREAD. COVER THREAD WITH FABRIC GLUE

← (DIRECTION OF ROPE MOVEMENT)

ENDLESS LOOP SPLICE

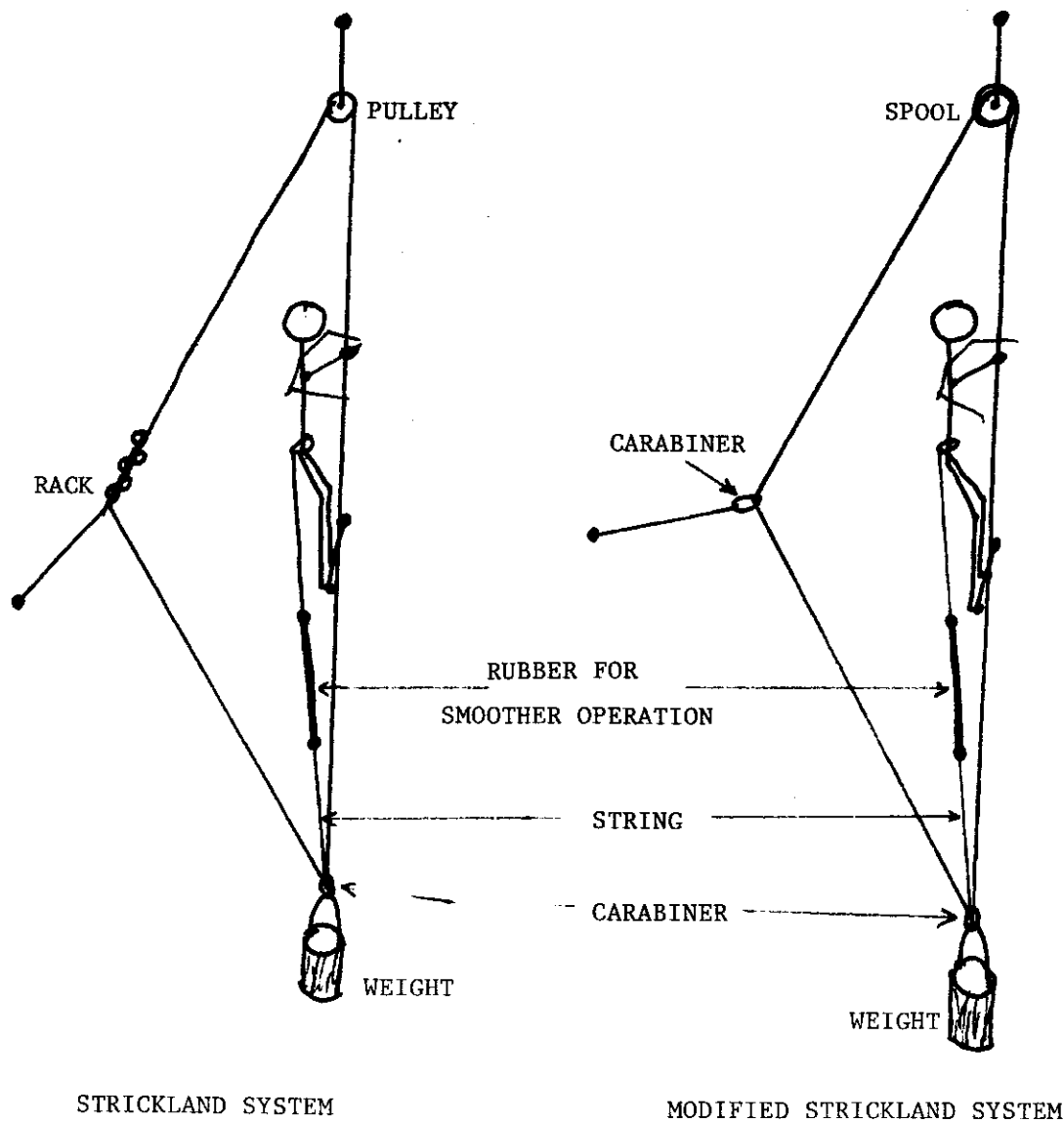
I demonstrated my system during the vertical contest at the 1980 Convention and described it at the Vertical Session. Afterwards, Pete Strickland described to me a system he had used, which was like one described by Tomer. It is similar to mine but uses fewer attach points. Pete said he had used the system and it worked well except that the splice tended to hang up in the rack. I tried a rack with similar results, even with a smooth splice. I replaced the rack with a spool having a diameter of about 2½ inches; this I placed where the pulley was in the system Pete described, which I call the Strickland system for easy reference. This modified Strickland system works more smoothly than my original system and is much easier to assemble.



OPERATION:

1. Set up loop in a triangle, as shown (10m is a good length).
2. Apply proper friction in friction device (this requires experimentation).
3. Pull on rope supporting pulley (about 100 lbs force) to tighten loop. This step applies only to the Graham system and is essential to it.
4. Put weight on rope. A bucket of stones is convenient and easy to adjust.
5. Attach string from weight to climber.
6. Climber begins to climb.
7. Adjust amount of weight (10-25 pounds) so that climber just barely remains stationary.
8. Adjust length of string to maintain climber at desired height from ground.

I am not providing any information on the design of my spool, because I am far from satisfied with it. I would be interested in hearing from anyone with a good design for a spool that is not too difficult to make.



Prusik Contest Records

100 ft.

- Bill Cuddington

CLASS AGE GROUP	MECHANICAL			CLASSIC 3-KNOT		
	TIME	NAME	YEAR	TIME	NAME	YEAR
0-12	1:09.2	Mick Foot	1979			
13-16	0:54.9	Mick Foot	1980	4:15.0	Peter Southam	1979
17-19	0:33.8	Peter Sprouse	1973	1:34.7	Peter Sirucek	1976
20-29	0:28.1	Bill Stone	1977	1:18.5	Mike Van Note	1975
30-39	0:36.0	Kirk MacGregor	1979	2:18.9	Richard Schreiber	1979
40-49	0:48.0	Ed Sira	1974	2:57.1	Bill Cuddington	1979
50-59	1:12.2	Chuck Wilkinson	1979	9:14.0	Chuck Wilkinson	1979
60-up	5:22.4	Bill Stephenson	1969			
over- all	0:28.1	Bill Stone	1977	1:18.5	Mike Van Note	1975
0-12	1:46.2	Brenda Gossett	1973			
13-16						
17-19	0:50.6	Nora White	1972	2:42.2	Dena Hawes	1973
20-29	0:46.1	Patty Mothes	1979	2:50.0	Nancy Bridges	1973
30-39	1:01.2	Nadine Bojarra	1979			
40-49	8:14.2	Louise Varnedoe	1973			
50-59	3:25.0	Sara Corrie	1974			
60-up						
over- all	0:46.1	Patty Mothes	1979	2:42.2	Dena Hawes	1973

M E N

W O M E N

400/300 ft.

CLASS AGE GROUP	MECHANICAL			CLASSIC 3-KNOT		
	TIME	NAME	YEAR	TIME	NAME	YEAR
0-12	10:46.2	Mick Foot	1979			
13-16	7:28.8	Mick Foot	1980			
17-19	5:55.4	Peter Sprouse	1973	10:51.9	John Bassett	1970
20-29	5:51.0	Ron Simmons	1980	10:01.6	Mike Van Note	1975
30-39	6:25.5	Dick Graham	1980	10:16.6	Marion O. Smith	1979
40-49	6:37.7	Bill Cuddington	1977			
50-59	9:30.6	Chuck Wilkinson	1979			
60-up	7:27.1	Darrel Tomer	1978			
over- all	5:51.0	Ron Simmons	1980	10:01.6	Mike Van Note	1975
0-12						
13-16						
17-19	5:59.6	Cindy Kane	1973	13:25.2	Dena Hawes	1973
20-29	5:36.0	Louise Hose	1979	12:27.5	Nancy Bridges	1973
30-39	5:43.3	Miriam Cuddington	1974			
40-49						
50-59						
60-up						
over- all	5:36.0	Louise Hose	1979	12:27.5	Nancy Bridges	1973

WOMEN (300 ft.)

MEN (400 ft.)

1980 Prusik Contest Results

- Bill Cuddington

MEN'S COMPETITION:		Name	Age	Time
100' Mechanical				
Age 13-16	1.	Mick Foot	13	0:54.9*
	2.	Frank Hackerman	16	1:33.1
Age 20-29	1.	Peter Sprouse	26	0:37.9
	2.	Brian Judge	28	0:42.3
	3.	Brian Thorndyke	28	0:46.3
Age 30-39	1.	Dick Graham	36	0:38.8
	2.	Bill Foot	33	0:54.3
	3.	Allen Padgett	30	1:01.3
Age 40-49	1.	Jim Hall	41	0:50.6
Age 50-59	1.	Bill Hardman	56	1:33.7
	2.	Chuck Wilkinson	53	1:37.2
100' Knots				
Age 16-19	1.	James Wells	16	9:14.6
Age 20-29	1.	Larry Cohen	25	6:48.1
	2.	Steve Clark	28	7:17.1
Age 30-39	1.	Ralph Earlandson	36	4:19.4
	2.	Jim Rodemaker	32	5:17.2
	3.	Bob Liebman	"30+"	19:01.6
Age 50-59	1.	Chuck Wilkinson	53	2:16.6*
400' Mechanical				
Age 13-16	1.	Mick Foot	13	7:28.8*
Age 20-29	1.	Ron Simmons	26	5:51.0**
	2.	Clark Dailey	24	9:23.7
	3.	Doug Soroka	26	10:09.2
Age 30-39	1.	Dick Graham	36	6:25.5*
	2.	Bob Addis	34	8:35.0
	3.	Bill Stevener	36	9:44.7
Age 40-49	1.	Jim Hall	41	8:15.5
400' Knots				
Age 30-39	1.	Bruce Bannerman	31	32:53.0
Age 50-59	1.	Chuck Wilkinson	53	22:20.8*

* Age Group Record

** World Record

RESULTS, continued

WOMEN'S COMPETITION

100' Mechanical	Name	Age	Time
Age 12 & under	1. Susan Medville	7	13:19.6
Age 20-29	1. Pam Burns	27	0:48.5
	2. Patty Mothes	23	0:50.1
	3. Louise Hose	28	0:55.5
Age 30-39	1. Jocie Hooper	31	1:04.1
	2. Laurie Foot	32	1:38.5
	3. Toni Williams	34	1:46.1
400' Mechanical			
Age 20-29	1. Patty Mothes	23	6:08.8
	2. Louise Hose	28	7:23.2
	3. Karen Witte	21	10:02.8
Age 30-39	1. Toni Williams	34	14:44.3*
100' Knots			
Age 20-29	1. Karen Witte	21	4:42.6
	2. Nancy Hamm	29	9:40.4

MEN'S MECHANICAL - ALL AGES - 100 FEET

1. Peter Sprouse, 26	0:37.9
2. Dick Graham, 36	0:38.8
3. Brian Judge, 28	0:42.3

MEN'S MECHANICAL - ALL AGES - 400 FEET

1. Ron Simmons, 26	5:51.0	World Record, Age Group Record
2. Dick Graham, 36	6:25.5	Age Group Record
3. Mick Foot, 13	7:28.8	Age Group Record

WOMEN'S MECHANICAL - ALL AGES - 100 FEET

1. Pam Burns, 27	0:48.5
2. Patty Mothes, 23	0:50.1
3. Louise Hose, 28	0:55.5

WOMEN'S MECHANICAL - ALL AGES - 400 FEET

1. Patty Mothes, 23	6:08.8	World Record
2. Louise Hose, 28	7:23.2	
3. Karen Witte, 21	10:02.8	

RESULTS, continued

MEN'S KNOTS - ALL AGES - 100 FEET

1. Chuck Wilkinson, 53 2:16.6
2. Ralph Earlandson, 36 4:19.4
3. Jim Rodemaker, 32 5:17.2

MEN'S KNOTS - ALL AGES - 400 FEET

1. Chuck Wilkinson, 53 22:20.8
2. Bruce Bannerman, 31 32:53.0

WOMEN'S KNOTS - ALL AGES - 100 FEET

1. Karen Witte, 21 4:42.6
2. Nancy Hamm, 29 9:40.4

*

*

*

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and Manufacture of Specialty Ropes
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An Interview with Charles Gibbs

(Editor's Note: Charles Gibbs, a long-time member of the Cleveland Grotto, was the primary developer of the cam-type rope ascender now used world-wide for caving and climbing. Charlie granted Bill Foot and Tom Johnson an interview for publication in the Cleveland Grotto News. A tape recording of the interview was played at the Vertical Session of the 1980 NSS Convention. Thanks to the Cleveland Grotto and to Bill Foot for providing the transcript, from which the following was excerpted.)

Foot/Johnson: As vertical instructors for the Cleveland Grotto, we'd like to ask you a few questions about caving, and how you became interested in it.

Charles Gibbs: I'd like to start back in Utah, where I spent most of my time hunting and fishing. My brother Peter did some caving, and I tagged along visiting some caves in Utah. Peter is three years younger than me and was the one most interested in caving and mountain climbing. When I moved from Utah to Cleveland in 1964, I was looking for a hobby to substitute for hunting and fishing and somehow got linked up with the Cleveland Grotto.

Foot/Johnson: When and how did you become interested in vertical caving?

Charles Gibbs: At the Cleveland Grotto, Myron Kenyon, along with Warwick Doll and Tom Mortimer, took me under their wing and they took us on some rope climbs. The first time I can remember being terrified was at Whipp's Ledges, where I did my first rappel and first climb...although it was very cold, I primarily remember being frightened. We used prusik knots and had trouble using them.

Foot/Johnson: What problems existed with vertical gear that led you to the development of the Gibbs ascender?

Charles Gibbs: I guess Myron Kenyon was really the promoter to me about caves and talked a lot about West Virginia and particularly Germany Valley. He always talked about Schoolhouse Cave as being the real tough one. Finally, Myron took us to Schoolhouse, but we didn't go all the way back in, just a ways past the jumping off point. On the way out of the cave, Myron was first and he went out and I was second. I remember prusiking up with a heavy pack on my back and with a poor rig with narrow shoulder straps, and the rope (main line) fell in a crack. It was about a fifteen-foot vertical drop, and I came to the point where the rope was in the crack and I couldn't get up over the top of the lip. So I had to go back down, and I almost couldn't back down because I had almost lost the circulation in my arms, and it was frightening to me, with the North Well on the one side and the Big Room on the back side. I was just barely able to get down and obtain enough slack so that Myron could re-rig the rope away from the crack. It was really

a frightening experience, since I thought I was trapped on the rope with no way to go up or down. It was this experience that led me to believe that better vertical equipment was necessary. The main problem with the prusik knots was getting up over the lip; you couldn't step up to get your weight away from the lip to get the rope out of the crack.

Foot/Johnson: What gave you the idea for the cam-type ascender?

Charles Gibbs: Another essential element to the development of the ascender was the remoteness of Cleveland from the Alabama Grotto and Bill Cuddington, where they were ahead of us using Jumars and had developed their techniques far beyond the Cleveland Grotto's. Not knowing about them, we were quite isolated. On one trip, and I believe it was in Germany Valley, I met a caver... (who) had a homemade cam ascender. So the cam-type clamp was not new to me. I had seen it, he had one, and I was able to buy it from him. It was very small, lightweight, and not very strong. I learned later that other cavers had made cam-type devices, but they weren't popular, I guess, because no one manufactured them. Anyway, I took his cam and... climbed with it and saw that it worked well. This early development probably started in 1965. I started making some ascenders on my own, and I redesigned the cam to make it much stronger. I thought a thousand pounds was a nice round number and that should be the minimum strength. So we beefed up the shell and made it wider so it would take half-inch rope and I adjusted the involute, the shape of the increasing radius of the cam. The model I had bought had a very rapidly changing radius and sharp teeth. If the teeth wore smooth, the cam would slip. I was really concerned about safety, so I reduced the rate of increase of the involute so the cam would not slip even if all the teeth were worn out. The disadvantage of that is you have a longer stroke on your ascender and they are not as fast-working, but they're safe. The other problem, though, is they are not as good on smaller ropes, because the cam has to close up farther and it doesn't have the gripping force. So the designs are real trade-offs; it isn't anything we calculated, we just experimented with the shape of the involute. Even after beginning manufacture, we changed the design twice. The way they are now is the optimum design, I feel, after changing it a number of times.

Foot/Johnson: What role did members of the Cleveland Grotto have in the development of the ascender?

Charles Gibbs: What we really did at Cleveland was to take the ascender and put it into our ropewalking system so you could walk up the rope, so you could turn it into a ladder so you wouldn't need a (cable) ladder. Cavers at that time were using cable ladders and used a second rope as a safety line. That's typically how we were climbing if we didn't use prusiks. We developed what we called our ropewalking method, and the key to it was putting one ascender right on the foot, way down, and that was the initial driving force so you could step up and get over the lip as in Schoolhouse Cave. I guess my whole design and work on that thing was to make it safe as possible. I wasn't interested

in speed, although the faster the better, of course. The main concern was safety. To me, the most dangerous point was getting over the ledge, getting over the overhang. So that's how the whole system was designed, getting over that one overhang in that one cave in West Virginia. By putting the second ascender on the rope at the knee, the legs could walk in a normal fashion, so you wouldn't have to lead with one leg. And then the third ascender; we felt three ascenders were essential because two ascenders weren't enough safety factor; we thought we should be tied into the body (harness) with at least two ascenders. So the ascender at the knee and the one at the shoulder were tied directly to the body harness to make it a safe system.

So we had one on the shoulder, one on the knee, and one on the foot. The reason the shoulder strap was able to slide off the shoulder was so that you could push away from the rope and climb up over an overhang. So again the whole harness was designed around getting over the lip. That ropewalker system was really our contribution to the whole thing at Cleveland. A number of people worked on it with me. Warwick Doll...(and) Lee Watson worked on it. We published the article "Vertical Caving and the New Cam Ascender" in the NSS News in February, 1969...The largest part of the development effort went into the harness itself and the arrangement of the ascenders rather than the mechanical part of the ascender itself. I bought a used industrial sewing machine and sewed harnesses. The guys we were all going caving with made these, and then people in the Grotto wanted them, so we made a batch of 25...It was really a lot of work. It took a long time.

Foot/Johnson: How did you get started in manufacturing the ascender?

Charles Gibbs: My father and brother came out to visit when we were working on them and off the top of my head I suggested, "Why don't you manufacture these things? I'm getting tired of making these, and although you probably wouldn't sell more than two or three hundred of them, it would be a lot of fun and we'd get all we needed for the Cleveland Grotto." I was just sort of half-joking when I said it. My father was just a year from retirement, and I said, "This is just what you need to keep yourself busy." So anyway they went back (to Utah) and talked about it and got started. To help promote it after some units were made up, we took 50 to 100 of them to the NSS Convention...(Editor's Note: Lovell, Wyoming, 1969.) We had a sign on our tent, "Ascenders for Sale," nobody knew them, and of course we didn't sell any until they had the rope climbing contest. The record at that time was about 80 seconds by Jumars. As I remember, I climbed the rope in 43 seconds, which almost cut the time in half, and quite a few people saw the climb and it really opened their eyes. They all wanted to get something new, and we sold them all and we were flabbergasted...That was the start of the ascender commercially. The start was very slow from then on.

A few cavers...bought them and then it was all word of mouth. They talked to their friends about them and showed them how to use them.

My Mom, Dad, and brother were involved with the company. I was just a free consultant to them. A 20% discount was offered on bulk orders. However, most ascenders are sold through shops now, even though the discount is still offered. About half the ascenders are sold to mountain climbers. Sales started very slowly in 1969 and went slowly up for a year or two; then sales increased exponentially for a while and leveled off in the last four or five years, selling about 4000 units a year. Total units sold now are about 30 to 40 thousand.

Foot/Johnson: The ascender has seen a number of modifications since it was first introduced. Can you discuss some of the major ones?

Charles Gibbs: My father is the one who had the idea of the flexible wire used to hold the pin in. The quick-release pin: I got those when I was in Cleveland. The new spring-loaded ascender is my brother's idea. He has perfected it and it is now sort of taking over. They will probably all be spring-loaded in the future. You can use them either spring-loaded or not...(by disengaging the spring). The old ones which the cavers often preferred, the flexible wire type, are possibly a little more durable in the mud, but will probably be phased out.

The first ascenders were made from a casting, the cam part, that required a lot of hand finishing. They were pretty crude. It wasn't until later when things got going better that they could afford some better tooling. Now they use a pressurized mold which improves the cam by making it more dense. They're using Tenzalloy, which is a copper-beryllium alloy, that has a lot of shock resistance and is not nearly as brittle as the original ascenders. All ascenders are still physically tested to 1000 pounds. I don't believe they have ever broken any at that load since they started using the Tenzalloy material.

Foot/Johnson: What about the maximum strength?

Charles Gibbs: The maximum strength of the ascender is about 3000 pounds. The rope will fail first, though. The ascender reduces the rope strength to about a third of its maximum strength. If you had a 7000-pound Bluewater rope, for example, the rope would cut in half at about one-third or 2200-2300 pounds. The ascender will fail at about 2800 pounds, so the whole system is good for about 2200 pounds. The design is pretty optimized, and you can see it really wouldn't pay to make the ascender any stronger because the rope wouldn't take it.

Another interesting development came along: the Chicago Bridge and Iron Company saw the ascenders being used and needed something to be used as a safety for their workmen on construction projects. They had bought a number of units for safety line attachments, and they asked us how they worked on metal cables. We said, "Gee, we don't guarantee them for

that, don't recommend it, never tried it," but anyway they bought a few, tried it, and one day ordered a thousand of them, which was really quite a shock. They still use them, and a company in Canada has bought them for the same purpose, but it really hasn't caught on. I believe my brother is making a stainless steel model which is much stronger for Chicago Bridge and Iron. The cam has a hard plating which wears longer on the metal cables. They are heavier but stronger.

Foot/Johnson: Are your parents still running the business?

Charles Gibbs: Through 1979 my parents did the bulk of the work, my father assembling the ascenders and my mother taking care of the bookkeeping and mailing. At the end of 1979 it's all been transferred over to my brother, who is now doing it all. My parents have finally really retired, tired of the work although they did enjoy it. Now it's all run by my brother. I have an interest in it; my parents gave me an interest in the company, which I'm selling to my brother Peter, so he'll have the whole thing and can run it the way he likes. He's hoping more commercial companies will use the ascender, to get sales up. When you consider the labor involved, and if you figure your time per hour, the income isn't really that great. But, still, it's been a good income for my family.

Foot/Johnson: Are any ascenders sold outside the US?

Charles Gibbs: About a third of the ascenders are sold outside the United States, especially in Europe. There are some buyers in Australia and South Africa. They go everywhere except Japan, and we don't understand why the Japanese haven't picked up on it, because they certainly are mountain climbers...

Foot/Johnson: What are your current plans?

Charles Gibbs: ...(Dave) Beiter wrote me about a cave for sale down in Wayne County (Kentucky) - Blowing Cave, which we had tried to get into once before but it was flooded shut. So, I never really thought about buying a cave before and he said if you're interested, now's the chance. So he and I went to the place...and met the owner. The owner wouldn't discuss the price because he wouldn't do any business on Sunday, we had to wait until Monday. Anyway, Beiter and I went in the cave and we got back to the siphon, which had only about a foot of airspace since the water was up. I didn't know anything about the cave and was just following along. The water was actually coming up and I didn't realize that and was ready to go in...I realized then that when Beiter asked me if I'd buy the cave even if I hadn't seen it, that he was afraid and really didn't want to go through the rising water... if he was reluctant, I really didn't want to go, so I bought the cave sight unseen. So, much of my time since has been spent surveying the land I now own...I'm still hopeful of doing a lot more caving. I know a number of entrances in the area that look pretty interesting to check out.

I've never done the big pits in Mexico and I'd still like to do that. The ascenders kind of opened up a lot of pits and

made them accessible to people, and I haven't had the time to see them for myself. I've had a lot of enjoyment out of it and the people contact in the ascender thing, especially conventions, has really been fun.

I always considered the harness design unfinished and I hope that Dan Molter will finish it up, put it into production, and start selling them. It was just never developed to my satisfaction and it seemed like unfinished business to me...

(The interview closed with comments directed to Cleveland Grotto members. From now on, when we strap on our Gibbs ascenders or watch somebody set another world record climbing with them, we'll know a lot more about how it all came to be! Thanks to Charles Gibbs, and thanks again to the Cleveland Grotto for this interview. - Editor)

COMING UP IN NYLON HIGHWAY 14.....

A Section membership list!

An Index to NH1-14!

An invention.....

Some testing of equipment.....

And other wondrous things. Don't miss it!

Treasurer's Report



NSS VERTICAL SECTION

July 23, 1980

INCOME:

Memberships.....	\$425.35
Subscriptions.....	64.00
Back Issues.....	149.12
Advertisements.....	0.00
Bank Interest.....	4.48
Other.....	11.45
 Total Income	 \$654.40

EXPENSES:

Editor:

NH#12 Postage.....	\$82.01
NH#12 Printing.....	483.88
Other.....	31.20

Secretary-Treasurer:

Postage.....	\$34.16
Advertisements for NH.....	4.71
Other.....	7.20

Total Expenses	\$643.16
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NET INCOME.....\$11.24

BALANCE AS OF 1979 AUG. 6..\$651.29

BALANCE AS OF 1980 JUL 23..\$662.53

TWO APPROXIMATE TOTAL COSTS:

NH#12.....	\$577.00
Sending Dues Reminders.....	23.88

NUMBER OF MEMBERS, SUBSCRIBERS,

ETC. AS OF JULY 23, 1980

Members (single).....	134
Members (family - number of people).....	14
Subscribers (full rate).....	17
Subscribers (I/O rate).....	19
Free subscriptions.....	5

In case you haven't ventured out of your cave for the last couple of years to hear the news, you should be informed that the Eighth International Congress of Speleology will occur in Bowling Green, Kentucky, July 18-24, 1981. This will be the first such Congress in the United States; sport cavers and speleologists from many countries will gather to attend the sessions, exhibitions, film and slide programs, and Commission meetings. The Congress will be sponsored by the National Speleological Society, in cooperation with Western Kentucky University. Excursions, caving camps, and symposia in various parts of the country will precede and follow the week of the Congress itself.

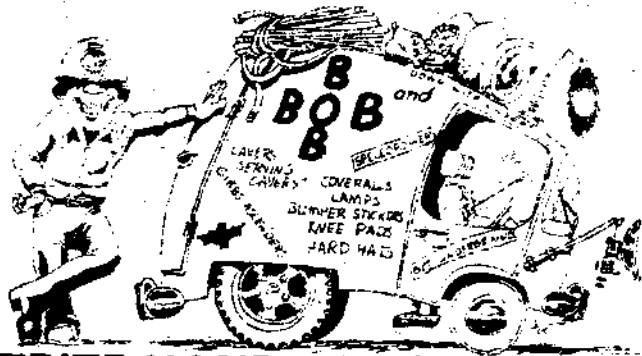
An abbreviated NSS Convention, consisting largely of the essential meetings of the Board of Governors and the Sections, will be held at the end of the Congress. Many of the events normally associated with the NSS Convention will be held as Congress events instead. One of these which concerns Vertical Section members is the Prusik Contest; the latest word from the Congress powers-that-be is that it will be necessary to be a registered Congress participant in order to take part in the Contest. People not wishing to spring for full membership will be able to purchase day passes in order to attend events of particular interest to them, but this will apparently not apply to the Prusik Contest.

If you need more information about the Eighth International Congress, the Second Circular may be obtained by writing to:

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Western Kentucky University
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Money for testing grants is still available to individuals or groups wishing to do research on equipment used in vertical caving. For further information, see Nylon Highway 10 or write to Kirk MacGregor, 78 King High Avenue, Downsview, Ontario, Canada M3H 3B1.