New York, Feb. 23—Ron Daniel, author of many fast mile races through the years but never quite there in the big one, put it all together this time to capture the Senior National Indoor title in a rapid 6:22.0. Close behind was his New York AC teammate, Ron Kulik, in 6:24.2. These two thus qualify to walk 3 miles against the Russians in Richmond on March 16. Just missing the trip with a 6:25.7 was the Shore AC's Todd Scully, walking his fastest mile ever. In fourth was former champion and indoor record holder, Don DeBoon, now walking for the Blue Angels. Don walked his finest race since coming back from a 3-year layoff last year with a 6:30.1. And in fifth was Larry Young with 6:43.3, apparently not in his best condition at this point. No further details on the race yet.

In the Women's race, held at the same site, Lynn Olson, now attending Ferris State in Michigan, was a walk away winner in 7:39, surely a women's indoor record. Jeanne Bocci crossed the line in second, I know not how close, but was given the old heave-ho. Thus earning second was Bruce Macdonald's protege from Fort Washington H.S., young Ellen Minick, with an 8:06. Close behind her was our fine Ohio representative, Carol Mahone of the Kettering Striders in 8:08.5. Fourth went to Mary Beth Mayford of the Gateway TC in 8:16.5 and a distant fifth was La Jorie Entis, walking unattached, with 9:06.3.

OTHER RESULTS:

ice covered country road going out 2½ and back. Conditions weren't too bad so long as one picked the proper spots to place one's feet and sort of tuck in a few steps when the proper spots weren't available.

However, all-out, side-by-side racing would certainly have been a bit hairy, as Robin and Roxie probably found. These two are great companions and seem content to stay together and then rely on the big kick, which Robin seems to have the better of right now.

**Iowa AAU Indoor 1 Mile, Lomoni, Feb. 17**
1. Stan Smith 6:42.7
2. Dave Eidahl 7:12.3
3. Mike Sullivan 8:12.6

**Iowa AAU Indoor 6 Mile, Richmond, Iowa, Feb. 10**
1. Dave Eidahl 46:27
2. Stan Smith 47:46
3. Tom Carr 54:50
4. Mike Sullivan 58:15
5. Bruce Wambly 61:20
6. Paul Thommen 62:30

**Iowa AAU Indoor 4 Mile, Newton, Iowa, Holiday season sometime**
1. Bruce Adair 25:35
2. Dave Eidahl 31:56
3. Stan Smith 32:43
4. Tom Carr 54:50
5. Mike Sullivan 58:15

**Iowa AAU Indoor 1 Mile, Lomoni, Dec. 7**
1. Dave Eidahl 25:35
2. Stan Smith 27:04
3. Tom Carr 28:47
4. Mike Sullivan 31:16
5. Bruce VanWyk 31:56
6. Paul Thommen 32:43

**Mile, Columbia, Jan. 1**
1. Dave Eidahl 7:12
2. Stan Smith 7:14
3. Tom Carr 8:26
4. Mike Sullivan 8:48
5. Larry Kirschen 7:12
6. Mike Sullivan 7:24

**5 Mile, Columbia, Feb. 4**
1. Art Fleming 25:35
2. Dave Eidahl 25:42
3. Stan Smith 25:56
4. Tom Carr 26:48
5. Mike Sullivan 27:20
6. Larry Kirschen 27:34
7. Philip Schulte 28:45
8. John Kelly 31:29

**1 Mile, Los Angeles, Jan. 20**
1. Dick Ortiz 6:51.9
2. Larry Walker 6:55.3
3. Bob Kitchen 6:58.4
4. John Kelly 6:59.6
5. Marty Lipstein 7:00.0
6. Paul Roosevelt 7:05.0
7. Jim Bentley 7:10.0
8. Jim Pentley 7:15.0
9. Jim Bentley 7:20.0
10. Jim Bentley 7:25.0

**Van Nuys, Calif., Jan. 17**
1. Jim Bentley 6:57.5
2. Marty Lipstein 7:00.0
3. Mike O'Rourke 7:02.9
4. Paul Roosevelt 7:05.0
5. Larry Walker 7:07.3
6. Jim Bentley 7:11.0
7. Jim Bentley 7:15.0
8. Jim Bentley 7:20.0
9. Jim Bentley 7:25.0
10. Jim Bentley 7:30.0

**Van Nuys, Calif., Jan. 1**
1. Dick Ortiz 57:15
2. Jim Bentley 57:16
3. Mike O'Rourke 57:20
4. Jim Bentley 57:30
5. Jim Bentley 57:40
6. Jim Bentley 57:50
7. Jim Bentley 1:00.0
8. Jim Bentley 1:05.0
9. Jim Bentley 1:10.0
10. Jim Bentley 1:15.0

**Van Nuys, Calif., Jan. 6**
1. Anne Darrow (14), Lanita TC 6:48.4
2. Anne Darrow (14), Lanita TC 6:48.4
3. April Hickey (10) Blue Angels 10:19.8
4. Charlene McGinley (10) Lanita 10:24.4
5. Dena
February, 1973

Wow! I just moved up ahead 10,000 years. Will they still have race walking in 1173? Will they still have a world in 1173? Of greatest importance, will the Ohio Race Walker be wrapping up Volume 10,008?

Young Hooked on Diet, Efficiency

By Bob Bowman

The following is excerpted from an article that appeared in the II February issue of Track & Field News. I hope they don't get mad at my plagiarism. I do have a letter from Dick Drake apologizing for using my rankings without first checking with me (which bothered me not a bit Dick, and I apologize for not acknowledging your letter until now) and giving me permission to use any of your "data" so long as I gave proper credit. Well, entire articles aren't data, but I am giving them proper credit. On with the article.

Larry credits many factors for his big improvement. Two of these factors which are often overlooked by the average athlete, but not by Larry, are body nutrition/diet for maximum performance and technique improvement for efficiency of performance. Larry sought to build up a greater energy capacity before his performances and at the same time develop an efficient technique so that greater speeds could be maintained throughout a long race.

Much attention has been focused in recent medical journals by research physiologists on the subject of diet prior to a athletic performances. Most of these physiologists seem to agree with the findings of Bergstrom and Hultman, who summarized their findings in the Aug. 28, 1972 issue of the Journal of the American Medical Association as follows: "In considering the nutrition for maximal sports performance, only the carbohydrate stores are relevant to energy expenditure. During training periods, adequate supply of protein is a prerequisite. In competition periods of less than 20 min. duration, normal glycogen stores (important energy-storing compound) in muscle tissue seem to be adequate, but liver glycogen deficiency can limit the performance via a hypoglycemic effect on the central nervous system. Thus a carbohydrate-rich diet should be given during the days before and between competition events. With heavy exercise of longer duration, it can be of value to increase the glycogen store in muscle groups performing the heaviest work. This is achieved by first depleting muscles of glycogen through exercise and then after taking a diet rich in carbohydrate. The regimen also increases the liver glycogen store."

Larry took advantage of this physiological phenomenon at Munich by walking a hard 20 km for glycogen depletion, then followed a carbohydrate rich diet for the three in between days as preparation for the 50.

Jack Daniels, research physiologist at the University of Hawaii who worked closely with and other long-distance runners and walkers in 1968 at the US Olympic altitude training sites, also agrees with these findings. According to Daniels, "Mary think the big effort must come about three days after glycogen depletion, but actually once the muscles are depleted they will hold a low value as long as carbohydrate is withheld from the diet. Then about three days prior to the important race, carbohydrate can be put back in the diet and the same desirable result will be noticed."

The second consideration in Larry's two-phase performance improvement plan involves the expenditure of this increased body energy in the
most efficient manner possible. This involved a great deal of time and effort on Larry's part in perfecting his walking style to the impeccable form he now displays. Larry strives for such things as an erect body, shoulders and arms held at right angles and carried close to the body, and legs straight in the supporting phase of each stride to ensure maximum pulling power. No hours studying走路 styles and working closely with his father went into the most important effort. Daniels also comments on this phase of Larry's success formula, "As far as the greatest improvement in walking times, I think this is partly due to the greater skill factor in walking than in running." Improvements in walking might be expected to parallel those noted in swimming where skill is also a much greater factor. I also think it is fair to assume that the greater the skill factor the more improvement in efficiency can be expected with practice."

(Ed. So long as we are questioning the right things in the right way, this can be a real danger since so much walking training is done alone.) Daniels cautions one additional point: "It may well be that how efficiently a person performs any endurance event might be greatly dependent on genetic factors. A certain percentage of improvement can be expected with training, but not everyone is equally gifted a birth." (Ed. Amen. Wherein lies the fallacy of people preaching to kids that all they have to do is be willing to work hard and they can be a champion. I ain't so. You have to work hard to excel, for sure, but you still need innate gift for whatever it is you are trying to do.)

That then is the significant parts of the article stolen from RKF News. Of particular interest is the part on glycogen stores. So while we are stealing articles, the following paper on the subject (glycogen stores, not skiing articles) first appeared in the June 1972 issue of Track Technique, also published by Track & Field News and from whom I am lifting it in part.

GLYCOGEN STORES AND INCREASED STANOIA
by Martin Hyman

In the late 60's, a Swedish team of world-famous exercise physiologists investigated the role of glycogen in endurance. Glycogen—sometimes called "animal starch"—is formed from sugar and other carbohydrate foods and is stored in the liver and in the muscles where it is used to provide the energy for muscular contraction.

The Swedish studies were carried out in the laboratory using a bicycle ergometer. This is a fixed bicycle, which can be adjusted so that the effort required to pedal it varies from nil to impossible. The tests were carried out on both trained athletes—mainly skiers—and on untrained subjects recruited from national servicemen. The tests were designed, first, to find what happened to the muscles' glycogen stores during prolonged continuous exercise and then to see if it was possible to find a means of attaining an unusually high muscle-glycogen store.

The amount of stored glycogen was measured by muscle biopsy. This involves using a hollow needle to extract a very small sample of tissue from the thigh muscle. The sample is then microanalyzed. It was found that in a normal person about 1½ percent of the weight of the muscle before exercise was made up of glycogen. It seems likely that endurance training may cause that more carbohydrate may store about 2 percent.

(continued on page 8)
DAYS OF YORE IN YE OLDE RACE WALKING WORLD:

10 Years Ago (Take from the Feb. 1963 Race Walker)—Ron Zimm captured his third consecutive Indoor 1 Mile title, leaving the pack with a 6:42.0 effort, a bit pedestrian for him. With something close to 20 walkers on the 11-lap Madison Square Garden track, Ron Zimm got tied up in early traffic and by the time he got clear had to settle for second with a 6:47.2. 22mz. Also won at the NY K of C meet with a 6:36.2 and had a 6:41.8 in the New York AC handicap where Zinn Szekely, with a 35 yard start, beat him in 6:38.2. Walking was very much in the national news at this time, but not race walking. President Kennedy's fitness program had people all over the country on 50-mile hikes. Unfortunately, there was never any apparent carry over to race walking and the fad itself died out rather quickly. Out on the West Coast, young Mike Brodie turned in a 6:38, with 19-year-old Walt Hauk ninth second in 6:53.5. Some guy by the name of Ron Laird was profiled as Pedestrian of the Month.

5 Years Ago (From the Feb. 1968 Ohio Race Walker)—The AAU Indoor Mile was won for the first time by the time he got clear had to settle for second with a 6:19.5, but was Kud as was Gotz Klopper. Two weeks earlier Laird had failed in a shot at a World 30 Km record, dropping out after covering 15 miles in 1:54:51. However, Tom Dooley did right, running the 30 K in 2:28:47 and going on to 20 miles in 2:10:38. Gotz Klopper has been a prime reason for the lack of him. Mike Brodie in New York and Laird had mile times of 6:22.2, 6:26.3, and 6:36.5 in other races... Dave Runyan was turned in a quick 7 mile in Philly, 52:00.2 with John Endotn just 11 seconds and Ron Daniel 32 seconds back. The most fantastic performance reported was one by Chris Hohne's 6:15:57.4 in the Swiss 100 Km held back in October or November but late in reaching the GO. He covered the first 50 in 1:43:47 and then held on well until the last 10 K, which took him 61:20. Hohne also led the 50 Km in Munich with a 2:50:33.4, with Russians Agapont, Delia Poesa, and Scherthis the only under 5:40... At 20, the Russian Sergiy Bondarenko led the 1st at 1:27:35 with Ron Laird third.

GLYCOGEN STORES (cont.)

Next each subject was asked to pedal the ergometer for as long as possible while it was set at about 70 percent of the maximum load which he had been able to keep up for a short period. Further muscle biopses were performed on the subject at 10-minute intervals until the subject became exhausted. It was found that the glycogen content decreased steadily until it was almost zero and that at that point the subject suddenly became unable to continue (though he could continue at a lower work rate). In general, the subjects lasted 18-24 hours and it was usually the ones who started with the highest glycogen reserves who lasted longer. In trying to find how to increase a person's glycogen reserves, the scientists tried a number of ideas. The most obvious method was to feed the subject on a high carbohydrate diet, since glycogen is made from carbohydrates. This increased the glycogen stores from about 17 to 2 percent and this then allowed the subject to continue pedaling the ergometer for a longer period in proportion to the increase.

But the most important finding was that if the subjects first used up their glycogen stores and were then deprived of carbohydrate for a period before being put on a high carbohydrate diet, the muscles stored a lot more extra glycogen. The exact reason for this is not clear but it is a common human experience that a person who has been deprived of something he wants may tend to hoard it when he finally gets hold of it. Whatever the reason, the scientists found that the method which gave the highest muscle glycogen store was as follows: (1) Exercise on ergometer until glycogen reserves used up; (2) Low carbohydrate diet; (3) More exercise to insure absence of glycogen; (4) High carbohydrate diet.

Applied to distance running or walking, the athlete would take a long workout (2-3 days to cover 5 miles) 5 days before competition to exhaust the glycogen reserves. For the next two days the diet would be high protein/fat, low carbohydrate. Then 3 days before the event he would take a rather long and hard workout (like Larry's 20 km race in Munich) to insure that there was no glycogen left. From there to the race, the diet would be high carbohydrate and the athlete would avoid exercise to build up the glycogen stores.

The high fat/protein diet would consist of meat, poultry, fish, eggs, cheese, and butter with green vegetables and tea or coffee with saccharin as harmless additions, and milk, unsweetened fruit juice, a low starch-reduced bread acceptable in moderation. The high-carbohydrate diet would include sugar, glucose, dextrose, energy drinks, bread, toast, potatoes (not fried), cereals, fruit, jam, honey, spaghetti, rice, fruit juices, and squash. Again green vegetables and tea or coffee would be harmless. During a workout he would eat eggs, milk, and butter would be taken only in very small amounts.

Early in 1968 the International Athletes Club (of Britain) organized an experiment under the direction of Dr. Griffith Fugh of the Medical Research Council. Ten top-class athletes walked 30 km on two occasions. On the first, half of them had been on a normal diet while the other half had the "special diet". In the second, the two halves had exchanged. The "special diet" athletes walked significantly faster and at a lower heart rate and with much less discomfort. The "special diet" athletes also gained significantly faster muscle glycogen stores. The experiment was successful in all respects. The standard diet was used successfully by a number of athletes, notably Ron Hill in the 1969 European marathon championship. During a later series of field experiments, Bruce Tulloh ran for 3 hours around a man-made lap on a disused airfield. The initial pace was similar in all trials but on a normal diet Bruce slowed drastically and progressively whereas on the special diet he kept going at the initial pace and felt good all the time. On the special diet, he completed 14 laps in 3 hours, one more than ever before.

As a note to the article, a caution is added that it would seem sensible to advise athletes against trying out the system in preparation for a major competition without first having performed it prior to an unimportant run. Whereas there have been no reports of major difficulties, it is possible that the usual diet might be unacceptable to some individuals and might cause nausea or diarrhea.

My first reaction to this might be, "Wow! If I had only been involved in this before those aborted 50 km attempts described last month I might have solved the energy crisis experienced then. Doubtful though, since I have never been one to dabble too much in diet adjustment despite what good it might do my walking since I like to eat the things I like. Now, before the rest of you hop on the bandwagon wait for next month's issue in
which I will allow Dr. Blackburn to comment on this. He has been aware of this through the medical journals and has no argument with the results that can be achieved. He does have some rather strong reservations, however, regarding the medical advisibility of complete glycogen depletion which we will allow him to report next month.

**CODES AND ENDS**

Late result: Ontario Senior 3 Km, Toronto, Feb. 24 -- 1. Neville Conway, Upland Harriers 13:42.6 2. Pat Farrelly, Hamilton OC 13:55 3. Roman Olszewski, Toronto Striders 13:56.8 4. Karl Herschenz, Gladstone AC 15:05.4 5. Joe Levy, GAC 15:27.8 6. Ron Wambolt, HOC 15:38.6 7. Joe Monaco, HOC 17:14.8......URGENT NOTE: The 30 Km scheduled for Rider College on Apr 18 (see schedule on p. 7) is in reality a 25 Km, the Eastern Regional 25 Km no less, and will be held at the Lawrenceville School, Lawrenceville, N.J. (Route 206 between Trenton and Princeton). The race starts at 11 a.m. and entries can be obtained from Ron Daniel, 10 Caken Lane, Trenton, N.J. 08619. This is just two days after the US-ISSR Indoor Meet and Ron has contacted the AAU suggesting that the Soviet walkers be invited. So this could be your big chance to beat a big, tough Russian bear......Also regarding the schedule, I inadvertently omitted the Southeastern US Masters Track & Field Championships, which will include a 5 km and a 20 km walk this year. This event is held in Raleigh, N.C and I got the information from a friend who ran down there last year. Great meet, he says. It will be on April 7 and 8 with the 5 km at 12:30 the first day and the 20 at 7 the next morning. Age groups are 30-34, 35-39, 40-49, 50-59, and 60 up. Lots of running and field events, too. They are putting the walks in for the first time and hope to continue if they get a good field this year. They do note that there are no competent judges there, which is to be expected in that area, so walkers will either be on their honor or can furnish their own judges. Cheaters stay home. I would urge all of you who are eligible to give this serious consideration as it could make a nice annual trip if we give it some support. Unfortunately, I will not be able to make it this time but old Jack Blackburn hopes to and we might get a few others down there. Write Halford Flughum, Parks and Recreation Department, Box 590, Raleigh, N.C. 27602 or phone 919-735-5640 for entries or further information......Gary Bywaters, now down at Western Kentucky U, adds a footnote to Augie Hirt's letter in last month's ORT: "Others I would add to his list of dedicated individuals who help the younger walkers are Mr. Elliott Dorman, who has been so helpful to me and whose good wishes have helped motivate me in the long distance N.J. races, and Mr. Charlie Silcock. I met Mr. Silcock at the Junior National 20 Km at Cornwells Heights, Pa. and had a nice talk with him there. Then about 6 months later at the Sr. 40 Km in Long Branch while I was walking down the middle of the street at about 20 km a car pulled up behind me. I expected to get run over at any second, but I heard a voice come from that car and he said, "You're doing fine Gary." Mr. Silcock remembered me over that long period of time. To have the then National Chairman remember me was very encouraging."