

# Crosscurrents

Vol. 8

No. 2

February 1985



Maj. David (Mike) Nelson Photo by Pam McFaden

## New Deputy Commander Arrives

Maj. David (Mike) Nelson is the St. Paul District's new deputy commander. Nelson arrived at the district office on January 15, from Fort Belvoir, Va. "In the few weeks that I have been here, my opportunities to observe the district have been limited. However from what I have seen, there is a very professional staff in the St. Paul District who have ingenuity and are highly motivated. I am eager and look forward to working with the staff of the district," Nelson said.

Born in Seattle, Wash., Nelson lived in Fairbanks, Alaska from 1951 until he was drafted in 1968. He was commissioned through officer candidate school (OCS) and attended helicopter

flight school before going to Vietnam. He was selected to attend the University of Missouri at Rolla where he earned a bachelor degree in engineering management. His other assignments include Ft. Carson, Colo., Augsburg, Germany and ROTC at Fort Wayne, Ind. Prior to arriving in the St. Paul District, Nelson was stationed at Fort Belvoir, Va., where he was chief, general engineering branch, Department of Training and Doctrine (DOTD).

His wife Carol and their three children — Brian, 12; Bryce, 9; and Rhianon (Annie), 5 — should arrive here in March.

## Flood Exercise Scheduled

A floodfight exercise will be held in mid-March to test the new emergency operation center (EOC) in room 1308. About 20 district personnel will be involved in this exercise.

The primary goal of the exercise will be to review newly developed standard operating procedures (SOP) for floodfight operations. These procedures are guidelines that explain the responsibility of each individual involved. They also explain what procedures should be taken when different events occur.

"We are anticipating that our new computer will be operational for this exercise," said Ben Wopat, chief of the emergency management division. "The automated system will allow several EOC staff members to access a centralized data bank to review pertinent information concerning such things as river levels, forecasts and stages, the number of personnel, equipment and funds available and more."

For the floodfight exercise, a field office will be set-up on the 10th floor and will exchange messages with the district EOC.

After the exercise has been completed, a debriefing session will be held. "This session will give us a chance to review the strong and weak points of the floodfight SOP and automated EOC," Ben said.

# Commander's Viewpoint

by Col. Edward G. Rapp  
District Commander

The deterioration of the Nation's infrastructure — our roads and bridges — have received increased attention in recent years. From coast to coast, many of the systems we, as a Nation, rely upon are old and in need of extensive repair and modernization.

The St. Paul District has its own infrastructure problems — the lock and dam system on the Mississippi River. By any measurement, the most valuable national asset in this region is the upper Mississippi River lock and dam system. As with any valuable asset, we need to keep it in good condition. Most of the locks and dams on the upper Mississippi were constructed about 50 years ago. Since then, routine and minor maintenance has been done to keep the system operating. But now most of the locks and dams require more major repairs and modernization. This process started with our very successful rehabilitation of Locks and Dam No. 1 and must continue on down the system.

This year, we are starting work on Lock and Dam No. 2 in Hastings, Minn., and Lock and Dam No. 10 in Guttenberg, Iowa. These projects are just two more steps in our program to keep the Mississippi River transportation system operating safely and as efficiently as possible. The remaining locks and dams need major rehabilitation as well.

Rehabilitation of our locks and dams will require substantial resources in both time and money. This is a good investment and essential to the continued operation of the lock and dam system. It will help assure that economical transportation continues to be available to the people of this region for generations to come.

To Date, the United States has spent approximately \$1 billion constructing, maintaining and operating his navigation system. That is a lot of money. But the return on this investment has been

nearly \$10 billion in goods and services added to the Gross National Product — a 10 to 1 return on investment. This is probably the best nation-building investment ever made in the region.

My reason for discussing this with you in this issue of Crosscurrents is important. The engineer family understands the value of the Upper Mississippi River lock and dam system but most members of the public do not. You can help this situation.

By mentioning the river transportation system, its value to the region and nation, and the need to help keep it well maintained, when you talk with your friends and acquaintances, you can help spread the word on this valuable national asset. Any brief mention on your part will help make people more aware of the Mississippi River transportation system and of its value to the Nation.

## Mississippi Traffic Decreases

The number of vessels and the amount of goods being locked through the lock and dam system on the upper Mississippi River decreased in 1984 from 1983. For example, at Upper St. Anthony Falls, 4,712 vessels locked through in 1983 compared to 3,621 in 1984. Lock and Dam No. 6 had 8,213 vessels lock through in 1983 compared to 7,377 vessels in 1984.

According to Jim Forsyth, transportation analyst, barge traffic has decreased because of two reasons. First, coal for electric power generation is now being brought in from the west by rail because it is cleaner and cheaper than the coal from the south and west which is more often shipped by barge. Secondly, the Payment In Kind program resulted in farmers shipping large amounts of stored grain in 1983. In 1984, the reduced amounts of stored grain and the strong U.S. dollar

led to a reduction in grain exported.

The only two sites to have more tonnage locked through in 1984 were upper and lower St. Anthony Falls. "More fertilizer from Canada is being shipped through Minneapolis," Jim said. "In addition, cement and steel is being barged into the Minneapolis area for industrial use."

The number of recreation vessels also decreased in 1984 from 1983. According to Frank Star, outdoor recreation planner, there were several reasons for the decrease in recreational vessels. The Mississippi River was unusually high for a long period of time and did not reach normal levels until late in the season. Other reasons included poor fishing, bad weather on the weekends and the July 4th holiday falling in the middle of the week and not on a weekend.

Crosscurrents is an unofficial publication authorized under the provisions of AR 360-81. It is published monthly by offset for the St. Paul District, U.S. Army Corps of Engineers. Editorial views and opinions expressed are not necessarily those of the Corps of Engineers or the Department of the Army. Deadline for submitting articles is the 15th of the month preceding publication.

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## Employees Focus on Weighty Problem

"Flip a kip" or 1,000 pounds. This is the grand total which St. Paul District employees hope to lose during the district's first "weigh-off." Sponsored by the Feds for Fitness committee, the "weigh-off" started with a weigh-in on December 17 for the more than 100 participants. The contest will end 10 weeks later on February 25.

Since the weigh-in was just before Christmas, all weight lost during the "weigh-off" will be true loss, not just pounds gained over the holidays.

To help motivate the "weigh-off" participants, they have been organized into seven-person teams with names like "Rapp's Hammers" and the "Pudgies." Feds for Fitness committee members running the contest admit that the team names may or may not accurately reflect the team's philosophy or approach to the contest.

After the final "weigh-in" on February 25, awards will be presented to teams and individuals for their accomplishments. Awards categories include total team loss, total team loss as a percentage of team weight and greatest individual loss.



Black  
History  
Month  
February

## New Assistant Engineering Chief

Harlen Briggs, the chief of programming and development in the Rock Island District, will be training as assistant chief of the engineering division in the St. Paul District. Harlen, who arrived in the district on February 1, is receiving his training through the executive development program. He will be in the district for approximately four months before returning to the Rock Island District.



Harlen L. Briggs Photo by Pam McFaden

## Who's Moved Where?

Hey, where's everyone going? That has been the question lately in the district office.

It all began in December when the illustrator left the 15th floor and rejoined the design branch on the 13th floor. In order to make room for the illustrator the civil and sanitary team of the design branch moved into the old printing area of reprographics.

The hydrology section will be moving into room 1503 which was the Coast Guard's office. Soon to follow will be the branch chief and clerical staff for the geotechnical, hydraulics and hydrologic engineering branch. They will move into rooms 1515, 1516 and 1517 toward the end of February. To complicate matters even more, the project management branch will move into room 1404 from the 13th floor. The branch will also move the military mission section of their office into room 1416.

In the meantime, the emergency management division plans on moving into rooms 1308 and 1309 from the 15th floor. However, supply and procurement will be expanding their office into part of room 1308 with some modifications being made.

Meanwhile, the finance and accounting section will move the disbursing section into room 1416a after the Kodak copier is moved into room 1410.

The moving should come to an end by the end of February and with any luck everything should be back to normal for the district office.

## Observing Black History Month

"The Afro-American Family: Historical Strength for the New Century" is the theme for black history month which began on February 1. The Corps will have informative displays in the main lobby, credit union and on the 12th floor. Two movies that will be shown on February 20 and 21 are: Bill Cosby in "On Predjudice" and Lor-

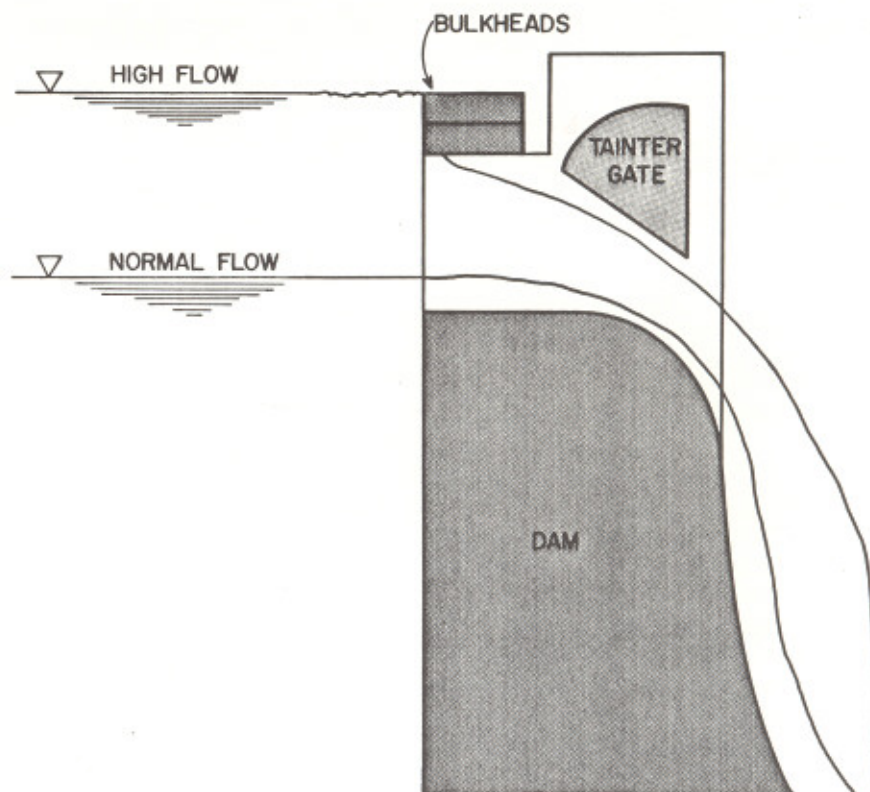
raine Hansberry on "The Black Experience in the Creation of Drama." Free coffee and cake will be served. The films will be shown continuously throughout the noon hours and everyone is encouraged to bring a brown bag lunch. Further information will be posted on the bulletin boards.

## Ice Build-up Raises Water Level

"Ice and debris that builds up behind Lock and Dam No. 2 in the winter and spring is restricting the water flow through the dam. This also increases the surface elevation," said John Bailen, project manager. "This problem is partially caused by the bulkheads that are now stored in front of the tainter gates. The bulkheads partially block the opening of the gate and prevent the ice and debris from passing through."

A bulkhead storage yard is scheduled to be constructed this summer under the major maintenance program. "Once the bulkheads are placed in the storage yard, a full flow area should be available," John said. Bulkheads, when in place, are used to stop water from flowing through the area of the tainter gates, so that maintenance work can be performed.

"However, it is possible that the gates may have to be raised higher to clear the ice and debris," John said. The service bridge above the tainter gates may have to be raised to allow more room for the gates to be opened. A crane would also be installed on top of the service bridge to assist in clearing debris from the dam.



CROSS SECTION

The bulkheads, which are now stored in front of the tainter gates (as shown above), partially restrict the flow of water during high flow periods. This causes the water elevation to raise. It also restricts the opening so that ice and debris cannot pass through through the dam.

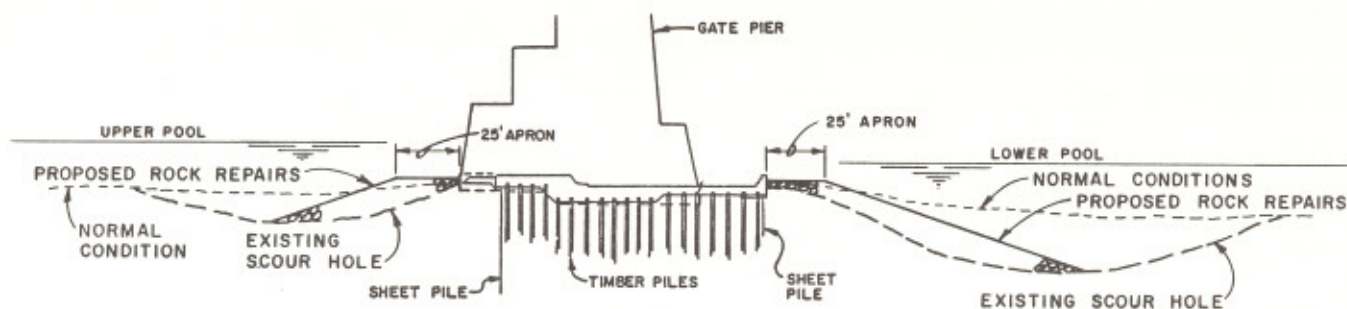


John Bailen (ED-M) points to where the new bulkhead storage yard will be constructed this summer at Lock and Dam No. 2. Photo by Pam McFaden

Lock and Dam No. 2 also has problems similar to the other locks and dams on the upper Mississippi River and will require the replacement or rehabilitation of lock machinery, control systems and gate chains. (See Major Maintenance Program article.)

With the construction of the bulkhead storage yard, gate 20 will be closed permanently. "Gate 20 has not been operated since the 1965 flood, because the fast current through the gate began to erode the shoreline. This threatened the safety of the Northern Burlington railroad lines that are situated on the shoreline nearby," explained John.

After closing gate 20, only 19 gates will be operational. Eleven gates are motorized while the remaining eight gates must be raised individually by a hoist car that is located on top of the service bridge. "It is intended that in a couple of years, some or all of the gates will be motorized to provide a safe and more efficient operation," John said.



A drawing of a typical section of a lock and dam, shown above, shows approximately where the scour holes are located. It also shows the normal ground level and where the proposed rock fill will be placed to provide protection from further scouring. Drawn by Bill Vennemann

## Scour Holes Threaten Locks & Dams

Scour holes deep enough to hold a five-story building have developed below the gates at Lock and Dam No. 2. These 45-to-50-foot-deep scour holes will be filled with approximately 100,000 tons of rock fill. Construction is scheduled this summer to repair the scour at the lock, dam and along the shoreline.

Since the construction of the lock and dam system, scouring has continued to occur over the years. "In recent years, the scour holes have reached a point that something needs to be done

to protect the structures," said John Bailen, project manager.

Scour is erosion that occurs on the river bottom caused by the powerful current of water that flows through the lock and dam. This current washes away the soil and leaves holes above and below the lock and dam.

In order to provide protection from the scour, rock is used to replace the existing rock aprons and to flatten the slopes of the scour holes. Barges are used to unload the rock into the water.

At Lock and Dam No. 10 scour repair is needed below the concrete spillway

(unlike the other sites where scouring is below or above the lock and dam). Construction to repair the scour at the spillway, which is located at the end of the lock and dam, will begin this summer. The concrete spillway is used to discharge excess water to avoid over topping the dam. Construction to repair the spillway, itself, is scheduled for later this summer.

Scour protection projects have been completed at locks and dams 3 through 9. Total costs for scour repair to date have been about \$10 million.

## Major Maintenance Program

"With the majority of the locks and dams on the upper Mississippi River nearing 50 years of age, major rehabilitation and modernization is badly needed," said John Bailen, project manager. Through the major maintenance program, which began in 1983, evaluations are being done to determine what work must be completed for locks and dams 2 through 10.

"In the last two years, we have completed five preliminary studies and we intend to complete five more studies this winter for locks and dams 5A, 6, 7, 8 and 9," John said. "The completed studies for locks and dams 2, 3, 4, 5 and 10 indicate that many of the problems are similar at each of the sites."

Some of the major work at each site

will consist of replacing lock machinery and control systems. "Our intention is to standardize the mechanical and electrical systems as much as possible," John said. "Once these systems are standardized, maintenance costs will be reduced and the system will become more efficient. For example, if a lock and dam operator wanted to transfer to another site, he would be familiar with the equipment."

Another common work item at each of the sites involves refurbishing of the gate chains to prevent binding. "These are chains that raise or lower the gates on the dam to control the water flow," explained John.

Facilities at each site will be mod-

ernized. For example, mooring bitts will be installed to provide people with a place to tie their boats while waiting to be locked through. Also, structural repairs will be completed on the locks.

Lock and Dam No. 2 is one of the first sites that was selected under the major maintenance program. This lock and dam was constructed in 1930 and is one of the oldest sites on the upper Mississippi.

"We expect the maintenance program to continue for several years. Rehab and maintenance are necessary to ensure that the lock and dam system on the upper Mississippi River operates smoothly and safely," John said.

# HEC Software Being Adapted to People Microcomputers

**Note from editor:** The following article was taken from the *Water Resources Planners Bulletin* published by the Board of Engineers for Rivers and Harbors.

The Hydrologic Engineering Center (HEC) has converted several of its more popular computer programs for use on microcomputers. Readily available and highly capable microcomputers prompted many Corps offices and the profession in general to request microcomputer versions of HEC software. Substantial computational power is now available in many small office which heretofore had only limited (or maybe just difficult and costly) access to mainframe computer sites.

The following programs have been converted to the IBM PC (or compatible) microcomputers: HEC-1 flood hydrograph package; HEC-2 water surface profiles; EDIT2 HEC-2 data edit program; EAD expected annual damage; HMR52 probable maximum storm - eastern United States; and HECST small-scale hydroelectric power cost

estimate. The structure inventory for damage analysis (SID) program and other programs are being converted by HEC and also by other Corps offices.

HEC has also procured a Hewlett Packard (HP) 9000 32-bit computer which will share common memory and other peripherals with four engineering work stations. The 9000 uses the UNIX operating system. The 32-bit microcomputer with the UNIX-type operating system is believed to have good potential for many hydrologic/hydraulic engineering applications that require significant computational resources. Thus, HEC is investigating the utility of 32-bit UNIX-based systems with this HP machine.

The HEC anticipates the demand for its software on microcomputers to continue to increase in the future. The use of microcomputers as professional and as compatible secretarial work stations is anticipated to also increase due to the flexibility and ever-increasing capabilities of these machines.

## People

**Career Conditional Appointments:** Alfio Santo, engineering draftsman (ED-D); and Kenton Spading, hydraulic engineer (ED-GHH).

**Excepted Appointments:** Denise Ricci, clerk-typist (DC-FD); and Steven St. George, engineering draftsman (ED-D).

**Retirements:** Starkey Grove, supervisory civil engineer (CO-PO); Irvin Muench, lock and dam operator (L/D #10); Virgil Sherwood, lock and dam operator (St. Anthony Falls); and Michael Shoen, lock and dam mechanical foreman (L/D #2).

**Resignations:** John Cartwright, painter (Spring Valley); Sheila Maurer, clerk-typist (EP); Kathleen McQuaid, student trainee/personnel (EP); David Schaffner, leverman (Dredge Thompson); and Deneen Vignalo, clerk-typist (CO-RF).

**Conversions to Career Conditional Appointments:** Bryan Peterson, deckhand to surveying technician (CO-M).

**Promotions:** Patrick Duval, lock and dam operator (L/D #7); David Hawkenson, lock and dam equipment mechanical foreman (L/D #1); Judy Hutton, lock and dam operator (L/D #3); and Mary Rivett, support services supervisor (OAS).

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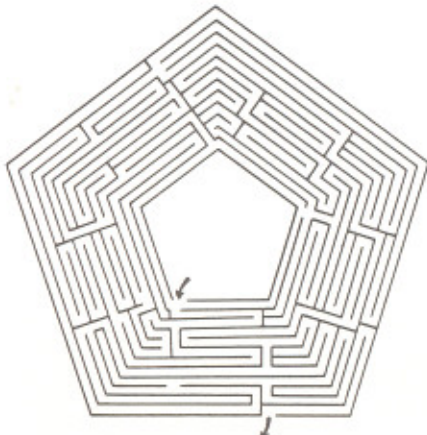
"You're never too young or too old if you've got talent." United Technologies ad.

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Pentagon Maze  
Created by the author

This is not an actual floor diagram of the Pentagon in Washington. But the Pentagon could seem this tricky if you were not familiar with the building and had only a few minutes to find an obscure meeting room. In this exercise, you have five minutes to get from the courtyard to the helicopter pad outside the building.



Answer on page 8

## Eat Breakfast Without Getting Out of Shape U.S. Department of Agriculture

What's good for other people might not be so good for you. People who sit in an office all day don't burn up a woodchopper's calories, so they don't have to eat the same kind of food or as much.

And you know what happens to calories you don't burn up. They turn in to F-A-T fat! But sometimes being calorie-wise can be pound foolish. You've seen how often people who skip breakfast overeat at other meals because they're out-of-their-minds hungry.

So, you may be asking just how many calories do you need for breakfast if

you're dieting. Well, breakfast doesn't need to provide a fixed number of calories. It depends on the total number of calories allowed in your diet and how much you are used to eating. People who have large energy — or calorie needs — probably will want a heavy breakfast. Some people with lower calorie needs may still like a larger breakfast, preferring to eat less at some other meal. Others with a smaller calorie quota will want to be careful in selecting foods for breakfast so that they don't use up a major share of their quota at the beginning of the day.

## People Behind the Corps



**Glenn Duren** Photo by Pam McFaden

Have you ever wondered what the lock and dam operators do during the winter months? According to Glenn be in perfect running condition by the Boller, from Lock and Dam No. 2, winter is the time to repair equipment and receive training because once the navigation seasons begins, there is no time.

"First of all, every time it snows the lock and dam must be cleaned off so we can get to the machinery and so that things won't ice up," Gerald said. "The machinery must be repaired and in perfect running condition by the time the next navigation season begins."

Also during the winter months, the lock must be operated every few days in order to release water. But before any gate can be opened, the operators

must manually chip the ice away. "Sometimes it takes us about three to four hours to clear the ice away from the gate," John said.

The winter months also provide a good time for field personnel to receive training. "Training not only helps me but also improves my work," John said.

Most lock and dam operators have something in common. They all love the outdoors but most importantly, they enjoy meeting people. For instance, Glenn has been at Lock and



**John Boller** Photo by Pam McFaden



**Gerald Dohmen** Photo by Pam McFaden

Dam No. 2 since 1966. "There are so many people that come through the lock, that it is very enjoyable to work here," Glenn said. He also enjoys fishing, traveling and music.

Gerald has been with the Corps since 1978. "I really have some good people to work with, and they make the job easier," he said. Gerald, too, is a fisherman. When he gets off work, he goes home and gets his wife and then goes fishing.

John says that he really enjoys working at the lock and dam because he grew up along the river. "I guess you could say it's in my blood," he said. John is an avid outdoorsman. He cross-country skis in the winter and during the other seasons he roller skis to keep in shape. He also enjoys hunting, fishing, camping, running, biking and canoeing.

"I really enjoy working outside," said Judy Hutton, head lock and dam operator at Lock and Dam No. 3. "I keep a journal to see when different types of plants bloom or when certain birds come and go in the spring and fall."

Judy was in the Air Force for over two years in the electrical and mechanical program and was an active reservist for 7 years. She began working for the Corps in 1980 at Lock and Dam No. 5A. "I have been at Lock and Dam No. 3 for almost 3 years now," said Judy.

"I want to help women who are interested in working in the field by offering them moral support and someone to talk to," remarked Judy. "My advice to women who are entering a non-traditional field is to never become discouraged."

Sometimes it is difficult for Judy to schedule her personal life around the rotating shifts of a lock and dam operator but she takes it in stride as part of the job. In order to unwind, Judy enjoys raising flowers and doing needle point work.



**Judy Hutton** Photo by Pam McFaden

# Exciting Year for S.A.M.E.

1985 promises to be another exciting year for the Minneapolis-St. Paul Post, Society of American Military Engineers (SAME). Not a group to rest on its laurels following its hosting of the 1984 national SAME meeting, the post is busily planning the 1985 Great Lakes Regional Meeting. This meeting, which is scheduled to be held September 12-13 in Duluth, will draw SAME members from throughout the region.

In addition to the regional meeting, program chair Terry Pfitzenreuter has a full agenda of interesting monthly programs scheduled for the first half of

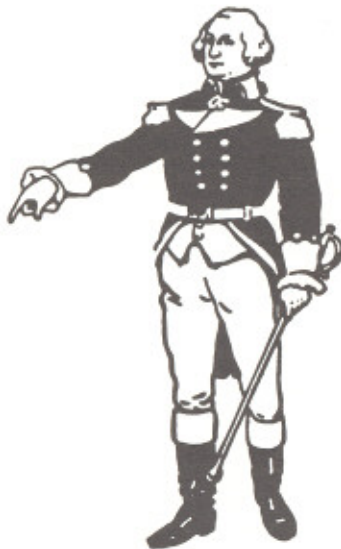
1985. On January 17 Dr. Ted Galambos, a professor of engineering at the University of Minnesota, talked on "Dynamic Structural Stability."

Colonel Rapp is scheduled to speak at the February 21 meeting. He will be discussing future construction projects in the St. Paul District.

The March 21 program will feature Brig. Gen. Jerome B. Hilmes, Division Commander for North Central Division. General Hilmes is scheduled to talk on the new "Green Ribbon Panel on Army Facility Engineering," of which he is chairman.

Then, on April 18, the post will conduct another program in its series on A/E contracting. This program, put on by Pete Fisher chief of the engineering division, will focus on the policies and procedures associated with government contracting for A/E work.

The May 16 meeting will be a dinner meeting and the last meeting arranged by this year's post leadership, Terry said. While she couldn't reveal the program for the May meeting, she did promise that it would be something special. Elections for 1985-86 officers will also be held in May.



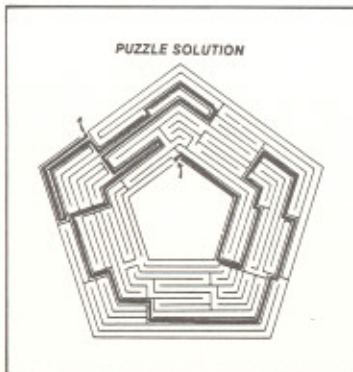
Washington's Birthday  
18 February 1985

## New Regional Economist


Gary Green, chief of the surveillance enforcement section in regulatory functions, has been selected to work in the economics - social - recreation branch on a workload sharing and development program. Gary, who has a degree in economics, began training as a regional economist on January 7. Part of his training will include assisting in the preparation of a \$20,000 contract for the Devils Lake flood control project. He will be on detail for 90-days before returning to his old position.



Gary Green Photo by Pam McFaden



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## Award

Jan Graham's name was inadvertently left off the exceptional performance ratings award during 1984 that were listed in the January issue of Crosscurrents.