The Bridger

V.C.B.S. Inc
Vermont Covered Bridge Society
PO Box 97, Jeffersonville, VT 05464-0097
A Non-Profit Organization

The Vermont Covered Bridge Society Newsletter - Winter 2001

VCBS Holds Second Annual Meeting

Berlin, Vt. October 27, 2001 - Sixteen bridgers met in the parking lot beside the VAOT Laboratory at the junction of Routes 62 and 302 for a tour of the Waitsfield and Warren Bridges.

The group set out under a threatening morning sky to visit the Pine Brook, Waitsfield Village Bridge, and Warren's Lincoln Gap bridges. It began to rain as we approached the Pine Brook Bridge and tapered off as we left for Waitsfield Village.

We found the Village Bridge blocked to traffic and the wooden deck removed, exposing massive floor beams, offering our photographers an opportunity to capture the fabric of the bridge. The bridge in Warren was bright and clean after its recent renovation. Traffic was fairly busy there as the group had to make way as other bridge viewers drove through.

The bridge tourers, joined by seven more people, met at VAOT Laboratory Conference Room for the second annual VCBS business meeting, called to order at 2:45 p.m. by Joe Nelson, President. Mr. Nelson introduced three new members who were in attendance: Bob Cassidy, Mary Hyde and Rae Laitres. He also communicated the passing away of four members this past year: Chester Hickok, Pauline Crawford, Alden Bryan and Walter Poesse.

The minutes of the First Annual meeting were read by Secretary Ruth Nelson and approved as read on a motion by Bill McKone, seconded by Don Prideaux.

Vice President Bill McKone reported on three items that had been discussed at last year's Annual Meeting in which he was involved: Directional signs on state highways to direct people to covered bridges; Museum plans in Jeffersonville which have been put on hold when the state grant wasn't approved; and the successful efforts to stabilize and raise the Poland Bridge before the spring high-water by engineer John Weaver and Neil Daniels' construction crew.

Eric Gilbertson, Vt. Deputy Historic Preservation Officer, spoke concerning covered bridge preservation. Mr. Gilbertson cited an article from the Burlington Free Press, dated Aug. 26, 1940. The article stated there were 168 covered bridges left on the Vt. state highway system at that time. (See article.)

Nominations Committee member John Weaver reported that the Candidates up for office for the year 2002 are: Joe Nelson, President; John Weaver, Vice President, and Ruth Nelson, Treasurer, candidates still needed for Secretary. Also, volunteers continue to be sought for the posts of Membership Committee Chair, Events Committee Chair, Staff Writer, and Newsletter Editor. (Note: Irene Barna has since consented to run for the office of Secretary.)

The Treasurer's Report was given by Ruth Nelson who has been filling in for Shirley Hill who was unable to perform those duties due to ill health: Balance brought forward from the year 2000 - $1,651.48; Inflow for 2001 - $2,532.30; Outflow for 2001 - $1,748.08. The Balance on hand as of Oct. 9, 2001 is $2,435.70.

The Treasurer's Report was approved on a motion by Dick Roy and a second by Richard Wilson.

The Membership Committee Report was given by Joe Nelson in absence of Kathy Knight.

135 members are on the rolls as of Oct. 9, 2001. 102 of that number are individual, family or associate members. Three are municipalities, societies or businesses; 13 are life members. Four are honorary life members. Thirteen are directors and staff. A little over half of our membership are Vermont residents. In July, 2001 there were 153 on the membership roll. 24 memberships were dropped from the roll when they didn't respond to personal membership renewal letters.

Second Annual Meeting Bridge Tour at the Lincoln Gap Bridge in Warren. From left; Rae Laitres, Bob Cassidy, Mary Hyde, Wilfred Thompson, Ray Gendron, and John Weaver

John Weaver distributed Bridge Watch manuals to interested people. The manual was designed to help people who would consider being a bridge watch person. Mr. Weaver stated he would eventually like to have a meeting with all people interested in becoming a bridge watch person. At present Jeffersonville and Lyndonville are organized covered bridge watch areas.

Dick Roy suggested that people on bridge watch should make sure that dust and dirt on their bridges be blown out each year. Richard Wilson stated that this takes very dedicated people to make sure this is done. John Weaver pointed out that bridge watch people do not have to do the physical labor required for cleaning, etc. but it is their job to be sure the work is done. Also, many times it's just a case of getting information to the proper people, talking to their Selectboard, and just keeping watch on the condition of their bridges.

Joe Nelson distributed a manual which included info about the VCBS, Board of Director duties, description of standing committees, Constitution and By-laws and the VCBS statement on the preservation policy.

John Dostal gave a presentation on the status of the Covered Bridge Museum at the Art Center in Bennington. (See article)

Joe Nelson proposed that the VCBS offer Bruce Laumeister an Honorary Life Membership in the VCBS. Dick Roy made the motion, seconded by Richard Wilson. Six of the eleven directors were present and those six voted unanimously that this be done.

A raffle was held yielding $18.00 which was turned over to the VCBS.

A covered bridge slide show was shown by Joe Nelson, using slides taken in the 1940s donated to the VCBS by Robert Morton.

Joe Nelson reported that people have been contacting him

(**Meeting** continued on page 2)

Meeting (continued from page 1)
about buying VCBS patches. Selling patches could be a money making project. A design has already been submitted by Francis Converse. The feasibility has been explored but the cost of having the patches made is high. Joe asked for direction on using VCBS money to get patches made. John Weaver suggested that the society wait until "we're richer." Dick Roy thought that perhaps if we made a plea, a sponsor might come forward to finance the initial cost.

It was brought to our attention that Lyndonville is collecting funds for the repair of the Randall Bridge in Lyndonville. John Weaver made a motion the VCBS contribute $200.00 to the Randall Bridge Fund. Seconded by Don Prideaux. Passed unanimously.

Mr. Nelson advised those present that the VCBS had contributed $100.00 toward the plaque for Caroline Brown that will be placed in the Westford Covered Bridge.

The meeting adjourned at 6:10 p.m. on a motion by Dick Roy and a second by Bill McKone. □

"Comments and Concepts" For The Covered Bridge Museum

John Dostal presented the status of the Covered Bridge Museum at the Bennington Center for the Arts on West Road to the VCBS Annual Meeting.

The Center is owned and operated by Bruce Laumeister. A replica of a covered bridge is being added to the existing building. The wing is 120 ft. long, 24 ft. wide, with a slate roof. The grand opening is planned for April, 2002, said John Dostal.

Vermont covered bridge information will be given priority at the museum, then as the museum grows, bridges from other states will be included. The museum organizers are looking for old trusses and bridge timbers for display, old tools and video tapes showing the tools being used.

The plans include an "up-scale" gift shop. Dostal has suggested to Laumeister that there should be an income from the museum and that a portion of that income should be shared with VCBS.

The museum wing at the present time is fully enclosed with sheathing, the roof will be slate to match the roof on the existing art center. The horizontal siding is the same as the siding on the Silk Road Bridge and will be the same dark red. The entrance to the covered bridge museum will be through the main entrance of the arts center.

On the south wall there is space for the eight trusses used in the construction of Vermont's bridges. "We'll have everything about Vermont, history, background and some of the bridges that are adjacent to the [Bennington] battle fields," Dostal said.

"We [want] to come up with [an] audio-visual presentation, not unlike what is done at the Shelburne Museum," said Dostal. "Other things we will relate is the oldest and the longest and the highest [bridges] and the kinds of timbers used. We would like to have cross-sections of the various kinds of trees showing the rings, the things that kids are interested in.

"Bruce Laumeister was intrigued when we visited Westminster a couple of months ago and saw the National Society for the Preservation of Covered Bridges archives, [Richard Sanders Allen collection]. We'll try to use as much of that as we can. We would like to have anything in a videotape or16 mm film that show construction using the old tools. And we want to have a list of frequently asked questions.

"The Governor Robinson Bridge crossed the Walloomsac not far from where a pedestrian bridge now stands. It was demolished in 1922 because of the advancement of technology; the automobile. They put in a steel bridge that was destroyed in the flood of 1927. Then they put in a concrete bridge now at the point where it will have to be repaired. The town is planning a pathway and a [walkway over the river]. I said the only way you can do that is to put in a replica of the old Governor Robinson Bridge. How can we replicate the bridge at a nominal cost [is] a matter of negotiation.

"We will be having receptions, so you'll be able to come see what has been done to date, hear the story and make suggestions."□

Browns River Bridge Dedication. Daniel Jackson cuts the ribbon as Caroline Brown looks on. Photo by Joe Nelson

Browns River Covered Bridge Dedicated

Westford, September 29, 2001 - After fourteen years of fund-raising, grant seeking, and permit signings, the Browns River Bridge (WGN 45-04-05) has been returned to its place over the river.

Some of the hundred or so townspeople and friends of covered bridges attending the dedication thought they might never see this day. Caroline Brown and the Westford Historical Society strived to see that they would.

Speeches and awards were followed by the ribbon cutting by townsman Daniel Jackson and a social gathering in the bridge with cider, excellent Vermont cheese, and a cold buffet.

Speaking for the VCBS, Joe Nelson, president, commended Caroline Brown: "Congratulations to Westford from the Vermont Covered Bridge Society. You have preserved a link to your community's past. Keeping this bridge in its original setting is a celebration of your forebears, your town, and your communal roots. This bridge has been serving your community since 1838, over 160 years. There is history here of the people and families that grew up knowing this great bridge.

"Because of the caring people of Westford and the good work done here by the Westford Historical Society past and present, the Town leaders, and Bridgers Mike Renaud, Phil Pierce, Milton Graton, and the team of skilled craftsmen, many more generations will have the opportunity to know and love this bridge.

"Caroline, in recognition of the work done here, please accept this donation to the Westford Historical Society library, a copy of Spanning Time, Vermont's Covered Bridges.

"Also, in recognition of your leadership of this project over the past 14 years, please do us the honor of accepting this Honorary Life membership in the Vermont Covered Bridge Society."

(**Browns River** continued on page 3)

Browns River (continued from page 2)

Phil Pierce, the engineer on the project, made the final presentation of the day: "My involvement with the Brown's River Covered Bridge is due to a fortuitous inquiry of Gil Newbury . . . I saw the announcement on the [vermontbridges] web site that Gil was going to provide engineering assistance for this worthy and long-delayed project. So, [I e-mailed]: Gil, do you want or need any help? One thing led to another and I became the engineer . . . .

"Funding was limited and I enjoyed the challenge of attempting to do some quite expensive engineering investigation without the time normally available. Gil continued to offer behind the scenes support.

"Fortunately, Caroline Brown became my boss for the project - she has been a real trooper and I have admired her tenacious and enduring commitment to making the project work and seeing it to its successful conclusion.

"I must recognize and applaud the extra efforts of Mike Renaud and his fine team of skilled craftsmen. They have performed admirably under very unusual circumstances and managed to restore the bridge to good health without the engineering guidance that they deserved. Yet, their experience and persistence has been rewarded with this wonderful monument to early American bridge building.

"I also wish to commend . . . Norman Messier and his crew for their skill in carefully transporting the bridge back to its rightful resting place over the Brown's River.

"Now, back to Caroline Brown. I volunteered to serve as spokesman to provide a small token of our appreciation for Caroline's hard work on this project. While it has obviously taken the support of countless individuals to make this project happen, in our opinion, the success of this project was not assured without her leadership and commitment. Accordingly, several of us directly involved in the project and three covered bridge societies; Vermont, New York, and National, have pooled our contributions to enable the casting of a bronze plaque on her behalf. A plaque that is to be mounted here at the bridge. Its inscription reads:

"In grateful recognition to Caroline Brown for her determination and tireless efforts from 1987 to 2001 in the rehabilitation of the Brown's River Covered Bridge. From her friends in the Covered Bridge Community."

The following text was adapted from the dedication booklet, written by Caroline Brown.

*The Browns River Bridge is a 97 foot multiple kingpost truss with Burr arch, built 1837/8. It is the second oldest in the state of this truss type.

On November 22, 1836, Westford voters resolved to build ". . . a single arch bridge where the old one stands near Halbert's Store (now the Westford Market), calculated to be fourteen feet wide and built on the old abutments." This new bridge was originally to be constructed by July 1, 1837, at the cost not exceeding $600.

The covered bridge was used until 1965 when a steel and concrete bridge bypassed it. By 1975, the then 137 year old bridge had been greatly neglected. The first Westford Historical Society was formed in July of '75 and with the help and of the U.S. Navy Seabees Reserve in Burlington, the necessary repair work was done.

By 1987 the bridge was again in need of major restoration work. The Westford Historical Society, regrouped that year, contracted with Milton Graton. In October the bridge was moved up the hill to the Town Garage property, awaiting its restoration work.

Years of applying for grants and holding fund-raisers went by. In 1991, federal grant money became available (Intermodal Surface Transportation Efficiency Act of 1991 - "ISTEA"). Kathlyn Robie wrote the grant, which was received in 1995, she also obtained the needed permits, part of the process before we could go out to bid.

In 1999, a second ISTEA grant was applied for to cover the estimated project cost. The bidding process were handled by Caroline Brown as project manager. In June of 2000, Phil Pierce, PE., was hired. The project was awarded to Renaud Bros., Inc. from Vernon, Vt. the following November. Renovations started in March of 2001, abutment work was done in June.

Friday, July 20th finally came after almost 14 years off the river site! Renaud Bros. along with help from Messier House Movers from East Montpelier and Richard Mathieu of Westford rolled the bridge back to the river. On Saturday the bridge was lowered into the abutments. The final boards were installed on July 30th.

Some of the restoration work included the replacement of seven kingposts, the whole south side top chord, all bottom check braces, and eight kingpost braces. Approval was given to install a standing seam roof to replace the wood shingles which were rotting. Eighty-three yards of concrete went into the abutment repairs.

Now, back in place, the 163 year old bridge is being used for pedestrians and bicyclists to cross the river. □

JOHNSON COVERED BRIDGE BID WON BY BLOW & COTE

November 26, 2001 - The Johnson Select Board was presented with the recommendations of the Power House Bridge Committee, to accept the bid of Blow & Cote to rebuild the Covered Bridge at a bid of $139,855 and a completion date of July 1, 2002.

The contractor was selected based on a number of factors including price, experience, design, and willingness to allow community involvement.

The Board so moved and accepted the recommendations of the Committee. The Select Board appreciates all the time and effort put into this project by the committee members, and the work accomplished by the Chairman Daryl West. - Eric T. Osgood, Select Board chair. □

PLANS MADE FOR WEATHERSFIELD'S UPPER FALLS COVERED BRIDGE (WGN 45-14-08)

Town of Weathersfield, Vt. - The Town of Weathersfield Selectmen held a public hearing November 6 to invite public comment about the restoration of the Upper Falls Covered Bridge in Perkinsville.

Among the issues discussed were the proposed closure of the covered bridge during the restoration project, weight limitations after the restoration, and other project parameters.

The meeting was attended by most of the town government, VAOT Project Manager Roger Whitcomb, VCBS Bridge-watch Chair Neil Daniels and concerned residents.

Consensus of participants of the November 6 meeting estimated the total cost to be near $450,000. The earliest date for construction to begin is 2003 according to Whitcomb.

At the Selectboard meeting held November 19, the town manager proposed to establish a 24,000-pound design load on the bridge. Neil Daniels, who is also a South Windsor County Transportation committee member, had been invited to speak to the issue. Daniels convinced the Selectboard to adopt a 12,000-pound design load a plan which will allow most chord, lattice and floor beam members to remain, said Daniels.

The last major work was done in 1973 by Milton Graton, part of which was the addition of a fifth lower-lower chord member inside. New structural work will eliminate decayed sections of chord and lattice members and remove the fifth chord. □

WAITSFIELD'S VILLAGE BRIDGE REPAIRS COMPLETED

Waitsfield, Vt., November, 2001 - The Village Bridge has been undergoing repairs for the last few weeks. Traffic resumed flowing across the old span after the first phase of the work was completed when eight floor beams and the deck planking were replaced.

"The work was completed with the replacement of some broken timbers in the Burr-arch on the down-stream side," said Jan Lewandoski, owner of Restoration and Traditional Building. There was a delay in the work on the arch while the right timber was found.

"We replaced several joists that had become rotten, mostly from moisture condensing or traveling down the spikes and lags," Lewandoski said. "To replace the broken arch segments I had to find a large spruce timber with the right natural curvature for the task. I blame the failure [of the arch] on the cantilevered snow loads applied by the walkway added in the 1940's." The problem with the walkway can be solved by building a truss into it, he said.

The current work included jacking the joists and truss slightly to reduce impact loading at the floor and roadway at the east end.

"This is a remarkable bridge considering the heavy traffic, relatively long span, great age, and largely unaltered form," Lewandoski said.

[Editor's note: The Village Bridge (WGN 45-12-14) was built in 1833 to span the Mad River using a multiple-kingpost truss with Burr-arch.]

Jan Lewandoski (right) and Mike Cotroneo remove broken Burr-arch segment from the Waitsfield Village Bridge. Photo by Joe Nelson

BROWNSVILLE'S SMITH BRIDGE GONE (WGN 45-14-17)

Brownsville, Vt. November - The Twig-Smith Covered Bridge in Brownsville is no more.

Robert Allen, Brownsville resident championing the preservation of the bridge wrote November 5: ". . . unfortunately, no funds were available immediately to replace the covered bridge; so we had to proceed with a poured concrete bridge that is currently under construction and should be in use by Thanksgiving. Thanks for all your help - we're sorry that Vermont has one less covered bridge!"

Mr. Allen had been working with the Vermont Covered Bridge Society in finding funds to preserve the bridge when the span was felled by a wind storm October 6.

Allen, VCBS Life Member reported that the Smith Covered Bridge in Brownsville was taken down by a micro-burst. The bridge collapsed in three sections; the two trusses, and the roof. The wreckage blocked the roadway, a self-supporting bridge-deck rated for 30 tons, and spilled into the stream.

A crane was used to clear the road. The downed bridge was sole access to 17 households for emergency vehicles, said Allen. The residents opened an abandoned trail to the highway.

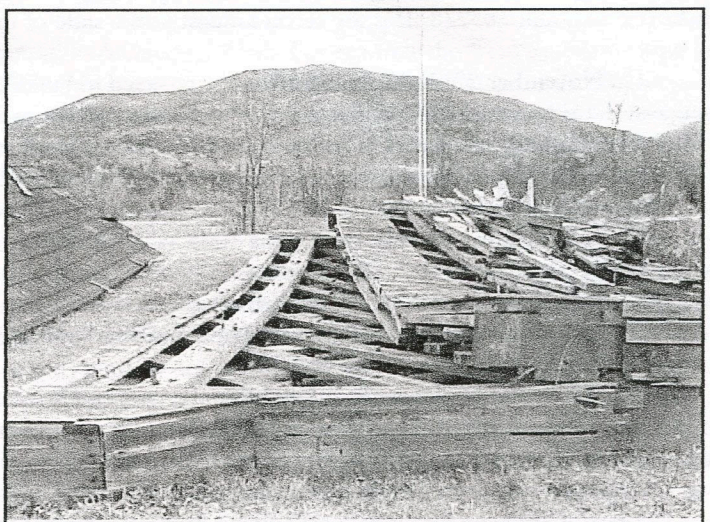
Several in the community served by the bridge would still like to have the covered bridge, Allen said. It may have helped that cause if the trusses could have been salvaged intact, however they were found to be too far gone with rot for salvaging. John Dostal, who is working with Bruce Laumeister of the *Bennington Center for the Arts* to establish a covered bridge museum, took part of a truss for preservation.

Brownsville's Smith Bridge. Photo by Joe Nelson, 1997

The trusses belonged to the Garfield Bridge (45-08-05) built in 1870 over the Green River in Hyde Park, Vt. Thurston Twigg-Smith Jr., of ASA Properties Vermont, Inc., a real estate development company based in Hawaii, bought the Garfield Bridge to provide access to two of the corporation's properties. The trusses were taken down, cut in half, and trucked to the building sites; one span in Pomfret (45-14-18), the other in Brownsville. The developer referred to them as the Pomfret Bridge and the Ascutney Bridge. The two forty-foot "Smith" bridges were assembled in 1973 by the Cummings Construction Company.

The Garfield Bridge was abandoned in 1965 when the Town of Hyde Park bypassed it with a culvert. J.P. Rich, president of a local surveying firm, purchased it in 1971 to ensure it would be preserved.

The Smith Bridge in Brownsville stood over Mill Brook in the valley below Mount Ascutney where it crossed Mill Brook south of Route 44 and two miles west of Brownsville. It was similar in appearance to the half in Pomfret differing in that large rectangular pieces of the portals were cut out and the upper bracing system changed to increase passage height. This action undoubtedly contributed to the bridge's collapse.□



Twigg-Smith Bridge at Brownsville. Photo by David Guay

NORTH HARTLAND CELEBRATES BRIDGE OPENING!

North Hartland - Saturday, October 13, 2001 - The as yet unnamed new covered bridge was officially opened to traffic after the ceremony. Nearly one-hundred spectators, mostly townspeople attended.

Addressing the gathering were: Robert Stacey, Town Manager; Gordon Richardson, Legislature; Warren Tripp, VAOT retired; William Patnode, Alpine Construction, builder of the abutments; Jan Lewandoski, Restoration and Traditional Building, Inc., builder of the bridge.

The new bridge joins the Willard Bridge in spanning the Ottauquechee River Dam causeway restoring the twosome interrupted by the 1938 hurricane. The lost covered bridge was replaced by a concrete and steel span. The two covered bridges are referred to as the North Hartland twin bridges.

Warren Tripp, retired chief of VAOT Structures was one of six who addressed the gathering. Mr. Tripp was in charge when the issue of repairing or replacing the causeway concrete bridge came up. Some of his remarks, paraphrased: This bridge adds one to the number of covered bridges in Vermont--it is the only new covered bridge to replace a bridge of another type. In 1994, Tripp said, the Agency and the Town signed an agreement to repair the old bridge. In 1995, the Town asked why not replace the bridge with a covered bridge? The VAOT agreed that it could fund part of the cost of the covered bridge. The Town contacted Jan Lewandoski for the bridge and the State contracted for the abutments and the temporary bridge.

North Hartland Covered Bridge Dedication
Long time resident Jim Bowley cuts the ceremonial ribbon. Kibitzing, from right front are Jan Lewandoski and Robert Stacey. Bowley says he was graduating from highschool about the time the first covered bridge was lost. Photo by Joe Nelson

The new bridge uses the Town truss and is similar in construction to the Willard Bridge, which was built in 1919.* Jan Lewandoski remarked that the trusses in his bridge are 16 feet high from bottom to top, v.s. the State's average 14 feet. He also noted that 16 of the 18 ship's knees used to brace the trusses were cut from the stumps of tamarack trees—two were cut from spruce. The bridge features a camber of seven inches, the truss members are 3" x 11" spruce timbers secured with 700 treenails, and the deck is constructed of oak and hickory.

*Unconfirmed date used by the VAOT. □

The first car to officially cross the new N. Hartland Bridge is Bruce Dowd's 1936 Studebaker. Photo by Joe Nelson

ARSONISTS TARGET NEW BRUNSWICK'S HARTLAND BRIDGE

Canada's Maritime Provinces appear to be under siege by arsonists.

The latest in a wave of set fires took place over the November 3 weekend with an attempt to torch the worlds longest covered bridge in Hartland, NB, when arsonists burned several farm buildings. The damage to the bridge is said to be minor.

"Outraged" townspeople are asking for tougher sentences for perpetrators. There is similar anger in Stanley, NB where arsonists set fire to two buildings on the fairgrounds, and in Lunenburg, NS which received "destructive arson attacks," in both areas during this year's Halloween celebrations.

The RCMP have set up a toll-free line to help their investigation into the Lunenburg fire that destroyed 250-year-Old St. John's Anglican Church, the second-oldest Anglican church in Canada. No arrests have been made.

In Hartland. a 33 year-old was charged with four counts of arson Monday and sent for a psychiatric assessment. Police say others may be charged. Security was stepped up in the summer after arson destroyed another New Brunswick covered bridge.

The 1,283-foot Hartland Covered Bridge (WGN 55-02-07) crosses the St. Johns River in seven spans.

[Ed.- This report is based on a clipping from the Gazette, Montreal, Tuesday, November 6, 2001, forwarded by Gerald Arbour through Dick Roy, NSPCB.] □

Bridge Talk

EXTENDING THE LIFE OF BRIDGES

by Jan Lewandoski

The Cornish-Windsor Bridge, between Vermont and New Hampshire

The Cornish-Windsor Bridge is a Town Timber Lattice built in 1867. 468 ft. in length, it is the longest two span wooden bridge in the world. A timber lattice is a variation of the more common plank lattice, using 6" x 8" timbers for the web rather than 3" x 11" plank, and depending upon shouldered lap joints with a keeper bolt at all lattice and chord crossings, rather than transfixion with hardwood pins, to resist flexure in the truss. (**Bridge Talk** continued on page 6)

Bridge Talk (continued from page 5)

Within 30 years of its construction this bridge, a heavily used major crossing, displayed several inches of negative camber and disturbing vibration under live loads, leading to a succession of studies and recommendations by professional engineers. Repairs were effected several times in the 20th century, mostly the addition of timber or steel plates to the chords in high tension areas, but the increasing deflection was not arrested.

Finally, in 1987, the bridge was closed and plans made for its rehabilitation. The historic importance of this National Civil Engineering Landmark made it imperative that any repairs allow the bridge to retain its historic form and structural system. It's large size, heavy traffic load, substantial distance from alternative bridges, and the great expense required for its repair, eventually over $4 million, necessitated that it meet modern engineering standards, and provide an AASHTO HS 15 load rating.

Engineering and historic concerns eliminated the alternative of adding arches to the truss. Among other reasons, the abutments. built of large granite blocks and of historic import themselves, were designed for vertical dead load only, not the partially horizontal thrust of an arch. Because of the great spans the arches would have to spring from below and rise above the truss of the bridge, changing its appearance, and making them unacceptable to the two state Historic Preservation offices involved, in spite of historic precedent for their addition elsewhere in northern New England. The addition of more piers to the river was rejected because of a serious ice jam problem that already exists at the site of this bridge.

The structure's history of problems, engineering analysis, and experienced observation of the bridge indicated that it was over stressed by its own dead load and that merely repairing damaged members and restoring the bridge to as-built condition would not be a remedy.

Adequate resistance to tension could not be developed in the chords, which were composed of 32 ft. lengths of 5" x 11" and 3" x 11" spruce timber bolt laminated to each other with hard maple (Acer. saccharum) shear blocks, breaking joints, on either side of the lattice. Consequently, the entirety of both bottom chords and 80 ft. sections of the top chords where they were in tension over the central pier, were replaced with glulaminated timbers 8" x 11" in section and 66 to 116 feet long, eliminating a great many butt joints.

The glulams also have considerably higher design values in bending and tension than natural spruce timber. The glulams in the bottom chords were joined to each other at their butts by steel plates with bolts and shear rings. The junction between top chord glulams and the original chord material was effected by long lap joints and wooden shear blocks. The use of traditional joinery in the top chord repairs was instigated by the unsightliness of steel plates in more visible locations (the lower chords are mostly below the floor) and the confidence developed between the engineer and framing contractor during the long process of repairing this bridge. The framing contractor (the author) had demonstrated that his forces could develop full and tight bearing surfaces over dozens of wooden joints in sequence. The engineer, in turn, was willing to develop a model of shear block resistance to tension in laminated chords and was pleased with the quantitative results.

Lattice in the Cornish-Windsor were treated as tension and compression members. The web was analyzed and lattice were sistered where loads were found to exceed the capacity of a single spruce member to sustain them. Lattice sisters were of Douglas Fir. Based upon visual analysis the high quality old growth eastern spruce composing the original material of the bridge was, for the purposes of analysis, given the highest design values associated with the species.

The ability of this bridge to carry the large live loads that can accumulate upon its extensive length, while allowing the truss to largely retain its original form, was assisted by the cantilevering of large bolster beams out from the abutments and across the central pier. The bolsters were gangs of glulaminated timbers each measuring 11" x 35" in section and extending 15 feet into the clear span. At the bolster ends a beam was carried that crossed under the bottom chords at such a distance that with several inches of deflection, presumably an unusual live load, they would help support the truss. This cantilever system is entirely below the floor, and under typical loading conditions, has no contact with the bridge.

The Cornish-Windsor Bridge, re-cambered and rehabilitated within its historic form, though using some modern manufactured timber and metal timber connectors, and with a cantilever system to help the most heavily loaded areas of the truss deal with live loads, was reopened in December of 1989.

Next time: Extending the service life of wooden bridges. This article was taken from a paper given by Jan Lewandoski at the proceedings of the Fifth National Conference on Structural Faults and Repair, held June 29, 1993 at the University of Edinburgh, Scotland.□

COVERED BRIDGES AND HISTORIC PRESERVATION IN VERMONT
by Eric Gilbertson, Deputy State Historic Preservation Officer

A Burlington Free Press article from August 26, 1940 stated that since 1927, 432 covered bridges were removed from the State highways in Vermont. A lot of them went out in the '27 flood, but the rest of them disappeared in the years following. This only counts the bridges on state highways and does not include those lost on town roads. In 1940 there were 168 covered bridges left on the State highway system. At that time the writer was very proud that only 12 covered bridges came down in that year. Vermont has lost 168 covered bridges from the State highway system in the last 60 years. Some of those bridges are not gone but are now on town roads that were at the time state roads.

I've been working for the state of Vermont in historic preservation for almost twenty-six years, and we have not, in that time, lost a covered bridge through demolition in order to make way for a new bridge. That is an excellent record and shows that in those years issue was not about whether or not to preserve covered bridges. The issue now is how to best to do it. All those working on the covered bridges recognize that some past repairs have been made that only marginally met preservation and engineering standards for a variety of reasons.

Not having accurate or complete information makes good preservation decisions difficult. For example the "real" strength or actual condition of components may not be known when we make decisions on bridges. There is also an "engineering gap," with covered bridges that often leads to a much lower load rating than the bridge carries on a regular basis. This may come from using low strength estimates for the wood in the bridge rather than more accurate values based on observation and analysis of the actual wood species and quality found in the bridge. It may be because wooden bridges are very complicated structures where loads are transferred from one member to another in unexpected ways because of the resiliency of the wood or the way the pieces are joined to one another.

Therefore a traditional engineering analysis may show a capacity far lower than the actual capacity. Potentially inaccurate information that underrates a bridge impacts preservation decisions because it results in far more work being recommended than is needed to make the bridge functional. Good preservation calls for as little work and change as possible to get the job done. Engineering decisions and

(**Historic** continued on page 7)

Historic (continued from page 6)
preservation decisions can only be as good as the information available to make them.

The Agency of Transportation is testing bridge components as integrated units rather than as individual pieces to help reduce the "gap" and there is a growing advocacy for more non-destructive testing of bridge components in place. In addition more care and consideration is being given to all repairs.

Now and in the future the Covered Bridge Committee organized by the Agency of Transportation assures that a broad scope of ideas coming from engineers, preservationists, The Vermont Covered Bridge Society and the towns are taken into consideration when work is being planned on a covered bridge. The Covered Bridge Committee reviews all work on covered bridges based on a Covered Bridge Plan that establishes priorities and best practices for covered bridge work.

We are setting a national example in our approach to covered bridges. I am looking forward to the best possible preservation decisions being made about the preservation of covered bridges in Vermont because of the cooperation of two state agencies, the public and the towns owning the bridges in searching for innovative solutions. □

Dear Bridger:

I saw my first covered bridges, as a child, after moving to Vermont from Massachusetts in the early 1940's. My first experience was going through the twin bridges in Pleasant Valley, Cambridge. The thrill of going through a bridge with a top and sides was everlasting. Sometime later, as an adult, I spent my Saturday afternoons driving around Chittenden, Franklin, Lamoille, Washington, Orange, Addison and Rutland counties photographing the bridges. All trips through Vermont were planned to take in as many bridges as possible. At some point I joined the NSPCB, of which I'm a life member, as I am with the VCBS.

On one of my many trips throughout Vermont, I had the thrill of my life when, camera in hand, I headed down from the main road to photograph the Downers Bridge in Weathersfield. To my disappointment, it was blocked off and was in the process of being repaired. To my surprise, who should approach me but Milton Graton himself. He was so nice to talk to. We talked about the middle bridge in Woodstock, which is my favorite because of its overall appearance. That made my day.

Ellen Everitz, VCBS Life Member
eerever32@aol.com

[Send your letter to: Bridger Editor, 2 Sugar Hill Rd., Underhill, VT 05489, or jcnelson@together.net]

PRESIDENT'S COLUMN

Hello Bridgers. Here we are, the start of another year just around the corner. We've had our Annual Meeting. A roomful of fun people met and enjoyed our favorite subject—covered bridges!

We thank Eric Gilbertson for his talk on Covered Bridge Preservation, and John Dostal for his presentation of the plans for the covered bridge museum at the Bennington Center for the Arts. We thank Secretary/Treasurer Ruth Nelson for all her work over the year and for an outstanding refreshment table for the meeting. Last but not least, many thanks to John Weaver for getting us the use of the VAOT Laboratory conference room for our meeting place.

We've had our **annual elections**. Of the 134 ballots mailed out we got 52 back. Thirteen checked a box to volunteer for a post. One of the volunteers forgot to reveal their identity with a return address. One volunteered her boyfriend. Robert Coburn and Euclid Farnham volunteered for Adopt-a-bridge; Kathryn Ramsey volunteered for Adopt-a-bridge and Legislation Watch; Ray Gendron, Ed Rhodes, and Wilfred Thompson volunteered for Bridge Watch Chair; Marge Converse and George Costes volunteered for Events Committee; and Steve Miyamoto volunteered for Assistant Staff Writer for the newsletter. Thank you all.

The results of the election was not a surprise considering that there were no opposing candidates. Joe Nelson will continue as president for another year; John Weaver will serve as Vice President; Ruth Nelson will be Treasurer; Irene Barna consented to serve as Secretary. Thank you, John, Ruth, and Irene. There were no write-ins. The officer's terms will begin January 1.

Also on January 1, many of our **memberships** will have expired. Look at the mailing label on your newsletter. If it has a tag like this: (01), it is time to renew. There is a handy membership application in this issue. Please renew and continue to support our mission to preserve our covered bridges.

One highlight of our last Annual Meeting was the debut of our VCBS covered bridge memento sales-table. All of the merchandise, pins, stationery, bumper stickers, etc. was contributed by Bob and Trish Kane. In future we hope to offer post cards, greeting cards, calendars, books, and whatever fertile imaginations can dream up. Please send in your ideas. Kathryn Ramsey suggests covered bridge Christmas ornaments, which we certainly will look into. All of this is to help fund the VCBS mission.

I have been getting numerous requests from the covered bridge community for a VCBS patch, and a lot of advice on where to have them made. Francis Converse has designed a patch for us and I have been sending his drawing to various vendors for pricing. The only thing holding us up is "front money." We are reluctant to tap the treasury for a venture like this at this time. Is there anyone reading this of an entrepreneurial proclivity who would like to sponsor a patch? Please contact me for the details; jcnelson@together.net or 802.899.2093.□

Yours in Bridging, Joe Nelson

Newsletter deadlines
Spring Issue - February 28
Summer Issue - May 31
Fall Issue - August 31

MARK YOUR CALENDARS!

The North Troy Summerfest will be held again this year with a special invitation to all of the covered bridge societies.

Host Jim McKimm writes that everyone had such a good time last time that it will be expanded to a two day event - Saturday and Sunday, August 10 and 11, 2002.

"We will hopefully have our scaled down covered bridge built by then (we have this ditch that's crying for a small covered bridge) The Societies would be placed near it."

Bridgers are invited to bring their covered bridge displays and memorabilia to the show.

The Societies were represented last year by Don and Pauline Prideaux who described the event and their accommodations with glowing terms. Check out the Summerfest website for details: www.jaypeakvermont.com/summerfest.html.

Please sign me up or renew my membership in the VCBS:
(Business or Society please provide name of contact person)
☐New member ☐Renewing member

Name_____

Street_____

City_____State/Zip_____

Telephone_____ E-mail_____

Check type of membership:
(Memberships valid to end of current calendar year)

☐ Individual	$10	☐ Family	$15	☐ Business	$25
☐ Life	$100	☐ Associate	$8	☐ Junior	$5

Check type of donation:

☐Palladio	$2	☐Palmer	$5	☐Hale	$10
☐Powers	$50	☐Town	$75	☐Tasker	$100
☐Paddleford	$200	☐Whipple	$250		

(Dues and Donations will be used to promote preservation of Vermont's covered bridges.)
I volunteer to participate in the following preservation program(s):
☐Bridge-watch Area Chair ☐Adopt-a-bridge ☐Newsletter staff
☐Correspondent ☐Events Committee ☐Crafts Committee ☐Membership. Committee
Make all checks for dues and donations payable to the Vermont Covered Bridge Society. Mail to: The V.C.B.S., Inc., Attn: Treasurer, P.O Box 97, Jeffersonville, VT 05464-0097

A NON-PROFIT ORGANIZATION

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