PCARA Update

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From Reef to Sheep

The Holiday Dinner at *At The Reef* was a success! Both the company and the food were excellent. Thanks to Ray, W2CH and Marilyn, W2CH-*XYL* for making the arrangements and ensuring that all went well as planned.

'At the Reef' restaurant

For the coming year, I would like for us to remain focused on emergency preparedness and continue to develop and refine our Resource Manual and Emergency and Disaster Response Plan.

There is also the possibility that PCARA will be sponsoring a General Class Course during 2003. If you would be interested in either teaching or enrolling in the class, please contact one of the officers.

I would like to wish everyone and their families a very Happy and Healthy New Year. Hope to see you at the January 5th meeting.

— 73 de Greg, KB2CQE

(2003 is the Chinese year of the **Sheep** – Ed.)

PCARA members enjoying themselves at December's holiday gathering, held December 1, At the Reef *restaurant.*

VE test session

PCARA's first CW Class concluded on Thursday December 12 with a VE Test Session at Hudson Valley Hospital Center. Some class members were unavailable that evening, but we did have one success when Adam, KC2JNW passed the 5 wpm code test and upgraded to "Technician w/HF". Congratulations Adam!

CW Class Instructor Karl, N2KZ presents Adam, KC2JNW with his CSCE for successfully passing the 5 wpm code test.

Incidentally, the ARRL/VEC test fee rises from $10.00 to **$12.00** at the beginning of the New Year. Later, in July 2003 the new question pool for the Technician class license comes into force.

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Vintage military receiver — N2CBH

This past week I was given a little piece of history. George, K2ZLU a fellow ham at work has been busily cleaning out his house anticipating a move and brought in a few goodies that he thought might interest me. One item was a 1942 vintage BC-312 HF receiver. This was one of a number of receivers produced for war use by many manufacturers. RCA, Motorola, Bendix or maybe even the Lionel Corporation could have made this unit! These receivers normally had a model number plate affixed to the front panel, which would have revealed the manufacturer. Alas, the inspection plate from this receiver is missing.

You may be familiar with the R-390 or the BC-348. These came later and were more elaborate than the 312 and probably were made in greater numbers. When war was declared on December 8th, 1941 by President Roosevelt the armed services began a crash course upgrade of facilities and equipment. They would specify a receiver right down to color, shape and type of knobs! The 312 was no exception. Made for the U.S. Army, this receiver was produced in several versions. There were basically two types. The first was an LF receiver with coverage from 150 kHz (KC in those days) to 1.5 MHz. The second had a range from 1.5 MHz to 18 MHz. This is the type that I was recently blessed with.

World War II vintage BC-312 receiver. (Photos by N2CBH)

Other variations included the type of power supply that was included. Typically, these units were used in the field so they were most often equipped for battery operation. This meant a Dynamotor power supply for the B+ (high voltage). Some of these ran from 6 volts, which was the standard auto battery voltage at the time. Others ran from 24 V D.C., which was the standard aviation electrical system voltage. All had vacuum tubes that were 6 volt filamentary. The 312 didn't see much action in planes as it was rather heavy and the case made from ¼-inch steel plate. There were still others that were outfitted with conventional 120-volt power supplies designed to run from house mains. Luckily, the one that was given to me has a 120-volt supply.

The 312 is an AM/CW receiver with continuous coverage from 1.5 to 18 MHz. The unit sports two R.F. amplifiers, a local oscillator, two I.F. stages, beat frequency oscillator, detector and an audio amplifier. There is no internal speaker, which was typical of the time. A massive bandswitch assembly accomplishes bandswitching. The mechanics on this radio were designed to last a hundred years! Well, come to think of it, it's only got forty more to go!

BC-312's large band switch

The I.F. bandwidth is wide so the receiver makes an excellent choice for casual short wave listening. It leaves a bit to be desired for CW or SSB use. One can copy CW signals but there are no filters other than a rudimentary crystal filter located between I.F. stages. I.F. shift and bandwidth controls were decades away when this receiver's design was contemplated. Think of what it must have been like to be a radio operator under fire with a set of headphones clamped to your head trying to copy CW with tons of other signals interfering. Trying to stay alive and receive the message at the same time is hard for me to even imagine.

There is one other feature that this radio has that I think is interesting. There are two antenna connections. One is fed directly to the first R.F. stage through a series of bandpass filters. The second antenna connection is fed to a transformer, which couples it to the first antenna connection. There is a control that allows the operator to adjust the amount of coupling. This second antenna connection is referred to as a "noise antenna". Its purpose is to couple QRN back into the main antenna in such a way so as to cancel it. Unfortunately, this particular unit has had this provision removed. I would have really been interested to see how effective this is. According to George, he remembers that a noise antenna connection would have been made via a cable connected inside the engine compartment of a vehicle. This enabled the noise antenna to pick up ignition noise that would have plagued reception on the main antenna. The noise control could then be adjusted to inject just enough interference back in to cancel the noise presented to the front end of the receiver. These are features that were years ahead of their time in a consumer model. The military brass spared no expense.

Considering the cause, I think you would agree that it was worth it.

The first photo on the previous page is a front view of the receiver. The only thing non-stock is the meter mounted at the upper right. This was a K2ZLU mod to add an S-meter to the receiver. As you can see, this is quite a spartan front panel by today's standards. The bandswitch is large, as there is quite a bit of torque necessary to select bands. Notice the number of jacks on the lower right of the receiver front panel. There is provision for a key for a companion transmitter in addition to jacks for an external speaker and headphones. At the time that this radio was built it was typical for a receiver not to be equipped with an internal speaker. There is also a multi-pin connector under the shield at lower right meant to accept a cable from the transmitter to be used with this receiver. I don't know what the companion transmitter would have been so if anyone out there does know, please send me an email and I'll include it in next month's column. There is a switch to control the transmitter on this panel too. This switch mutes the receiver at the same time.

Plenty of jacks on the right front panel.

The photo below is an inside shot of the receiver. The entire chassis is self-contained and is removed from the case by unscrewing the captive screws on the front panel. As you can see, there is quite a bit of shielding used. The local oscillator is contained in a completely shielded enclosure. The same goes for the CW beat frequency oscillator.

I performed only one mod on this unit. I found the BFO to be inadequate for SSB reception. In all fairness, SSB was not contempated for use at the time this receiver was in use. While known about, SSB would not see widespread use by the military until the 1950s. Extremely loose coupling of the BFO to the last I.F. stage was used and was quite a common design practice at the time. While the amount of coupling used is fine for CW, more BFO injection is needed for proper SSB reception. I increased the size of the BFO coupling capacitor by a factor of 10 and this did the trick. While not a stellar SSB receiver, it hears signals just fine.


Inside view of the BC-312

There is no filtering in this receiver. So, when receiving SSB, you hear both sides of the carrier. When listening to CW, things can be a little rough too. You have to filter out signals in your head by homing in on the pitch of the desired CW signal while ignoring the rest. This sounds difficult doesn't it? Well, this is what a miltary radio operator or ham at the time was up against. The only other thing it needed was a tweak of the local oscillator on a few of the bands. 5, 10, 15 MHz WWV signals were handy for this. On the 40-meter section, I used CHU, Canada at 7.335 MHz. I simply set the dial position for 5, 10, 15 and 7.335 MHz and adjusted the respective tuning cap until the expected ticks from WWV or CHU could be heard. These stations use an atomic standard to derive very precise carrier frequencies for just this purpose. The GPS system, which we are becoming inceasingly reliant on, uses this same standard. Atomic standards and WWV could be subject matter for an upcoming article!

On the air the BC-312 is actually pleasing to operate and to listen to. I'm not sure I would want to use it for contesting or DX but it is fun to operate and is surprisingly stable. I thought that it would drift all over the place but it really doesn't. AM shortwave reception is excellent owing to the radio's wide I.F. bandwidth. There is another attribute to a receiver like this that has nothing to do with the way it tunes, filters, or sounds. There is a pungent odor of old radio in the shack when this thing is on. If you haven't experienced this smell, you have missed something. Part electrical, part musty old radio is the best I can do to describe it. It has an odor that brings back memories for me. As a kid, I was always tinkering with old radios that were given to me or that I found. When I finally would get one of these old gems running, the room would be filled with that now familiar smell.

Perhaps I will bring the 312 in to an upcoming meeting for a little show and tell. I think that I will hold on to this rig for a long time. Chances are that someone, maybe even me will be using it when it celebrates its centennial. If you see an old boat anchor like this at a hamfest, buy it! You'll be buying a piece of history that is fast disappearing and the darned thing will probably work when you get it home.

— 73 de N2CBH, Bob

Life in the Fast Lane

— NM9J

Your editor has been living life in the fast lane this past month – thanks to a high speed Internet connection.

As long as I can remember, I've been connecting to bulletin boards and to the Internet at a relatively low speed. Even after modems increased to 33.6 kbps and then to 56 kbps, I've been strolling down the Information Highway at a leisurely top speed of 26.4 kbps. Apparently this is because my phone line doesn't have a copper wire running all the way to the central office – instead there is a "slick" or "SLC" (subscriber line card), which multiplexes a number of analog phone lines onto a single digital circuit.

While various people in my neighborhood have been enjoying high speed "DSL" Internet connections over their existing phone lines, Verizon's web site keeps telling me "Verizon Online DSL Is Not Available" for my line – presumably thanks to the "slick". DSL never struck me as a very sound technology anyway… you have to place filters on all your phone jacks to stop the high frequency goodness leaking out, the top speed is highly dependent on your distance from the central office, and beyond 2 to 3 cable miles there is no service at all. (Sour grapes warning over.)

So — I was quite pleased when I heard that local cable company Cablevision had begun offering high speed Internet access in the Peekskill-Cortlandt area in November. I ran down to the Wiz store in Scarsdale and signed up immediately! The Wiz offers a self-installation kit and a Motorola SURFboard® SB4200 cable modem, which is "free" while you continue your subscription to the OptimumOnline® Internet service.

"Free" Motorola cable modem and OptimumOnline self-installation kit available from the Wiz.

The self-installation kit contains a two-way splitter, two lengths of good quality 75 ohm coaxial cable with F-connectors and a CD-ROM. You are instructed to install the splitter where the cable line first enters the residence – or as close as possible. From one side of the splitter, the cable continues to your TV set(s) as before, while the other side of the splitter is connected by coax to the F-jack on the back of the Motorola cable modem. As soon as I plugged the cable modem in and connected the power supply, all four LEDs lit solid green – a good sign!

Two-way cable splitter provided in the OptimumOnline self-installation kit. Frequency range is 5-1000 MHz with each output port down 3.5dB compared to the input.

You have a choice of USB or Ethernet connection to your computer. My PC already had an Ethernet adapter built-in, so that's the option I chose. You simply configure the adapter for DHCP (where the IP address is issued by a server on the network) and connect to the cable modem's 10/100 Base-T jack with a Category 5 RJ-45 twisted pair cable. As an alternative, the software on the CD-ROM will configure the PC for you, then take you to the OptimumOnline web site to activate your account and set up e-mail. If you don't register within 9 days, the cable modem is deactivated. The friendly people at the Wiz had already made a note of my cable modem's MAC ID so all I had to do was select it.

So far the connection to the Internet has been excellent. There is no more waiting for the modem to connect – and my phone line is no longer busy for hours on end. Speed is also excellent – the web site http://www.dslreports.com reported download speeds up to 2600 kbps. Now I can receive junk mail at the speed of light. How this holds up after more neighbors get connected remains to be seen.

Here's where the radio frequency aspect of a cable modem makes an appearance. The cable company employs separate channels for transmit and receive – the "downstream" data from the cable company to the PC is carried over an unused cable TV channel. Each channel has a data capacity of up to 36 Mbps.

The cable modem has built-in web pages reporting frequencies and signal strengths etc. For details see: http://homepage.ntlworld.com/robin.d.h.walker/cmtips/surfboard.html. According to my cable modem's "Configuration Manager", the downstream frequency is **603 MHz**, around TV channel 36, cable channel 87.

The reverse direction or "upstream" data – from PC to cable company – is carried on a separate channel in the range 5-42 MHz – mine shows **25.008 MHz**. In other words, the cable modem is transmitting back to the cable company on HF without a license – fortunately the signals are kept well within the coaxial cable. Let's just hope the neighbors aren't extending their cable-TV wiring with 300 ohm ribbon!

It's relatively easy to separate the UHF and HF signals in the cable modem with RF filtering. The lower frequency return path also explains why a (unidirectional) cable preamplifier is not recommended in the circuit to the cable modem. Cable companies are more concerned than the DSL providers with people cluttering the relatively vulnerable "upstream" HF data channel – to the extent that "bandwidth abuse" by personal web servers and peer-to-peer file sharing software is seriously frowned upon.

One final word of warning about cable modems – while your PC is connected continuously to the Internet, it is wide open to unfriendly advances from hackers and might even be visible to your neighbors. Use of a **firewall** is strongly recommended – you can install a software firewall or a hardware firewall – some people recommend both! The firewall protects your PC from data packets not requested by you.

—73 de Malcolm, NM9J

Yaesu FT-897 review

– W2CH

The Yaesu FT-897 is a new transceiver, which can operate as a base or portable. It covers 160-10 meters on HF, and VHF-UHF on 2m/6m/70cm. It includes SSB, CW, AM, FM and digital modes. The FT-897 can operate from several power sources: (1) External DC Power, (2) Internal Batteries, or (3) AC Power. Please note that the internal batteries and internal AC power supply are optional items. I chose to use the two NiMH internal batteries over the AC supply, as I plan to operate portable and have a DC supply for base use. The batteries are about $120 each and one needs to purchase the Charger and AC Adapter for battery use. With AC power or internal AC Supply, the FT-897 will provide up to 100 Watts output. With the batteries, output is 20 watts (70cm 10 watts). The full output power is 100 watts on HF and 6m, 50 watts on 2m, and 20 watts on 70cm.

There are many features available in the FT-897. The LCD display is backlit, which can be turned off while operating with battery power. The LCD displays many different functions, with some features of operation similar to the smaller Yaesu FT-817. The FT-897

Yaesu FT-897 HF/VHF/UHF transceiver with FC-30 tuner attached and blue dial lights selected. (Photo by W2CH)

has dual VFOs, split frequency operation, digital signal processing (DSP), IF Shift and IF noise blanker, clarifier (R.I.T.), VOX, electronic keyer, CTCSS encoder/decoder, 200 memories, computer interface, "ARTS" (auto range transponder system), and spectrum scope as some of its features. This transceiver also receives AM Aircraft, Medium, Shortwave, FM broadcasting, along with the weather band.

Other options are the Collins SSB and CW Filters, high stability reference oscillator, antenna tuners, interface cables, in addition to the power supply items.

The LCD display can be set for many different colors, such as for each band of operation, memory group, mode of operation, meter functions and VFOs. There are various modes of operation and performance available in the FT-897, through the menu system, as I have briefly mentioned previously.

The "CAT" (computer aided transceiver) operation lets the user control the transceiver with a personal computer. This requires the optional "CAT" interface cable to establish connection between the FT-897 and the computer. Applications, such as contest logging software, are available from third party software providers, though I am not aware of any specific company. I have not seen any information about programming memories with a computer.

My FT-897 has the optional YF-122S Collins filter (2.3 Khz/4.7 Khz: -6dB/-66dB), which is helpful for improving SSB reception. There is the YF-122C Collins filter (500 Hz/2Khz: -6dB/-60dB), to assist with CW receiving. I have installed the SSB, but not the CW filter. There is room for both filters. Each one is available for about $150. There is a TCXO-9 high stability reference oscillator available for about $90, which has a figure of ±0.5ppm. The

YF-122S 2.3 kHz Collins mechanical filter for FT-897

built-in DSP system operates in different modes and does reduce noise and interference.

Here's a publicity shot of the Yaesu FT-897, this time showing off the amber dial lighting. Green and white choices of backlighting are also available.

Additionally, there is a CT-39A Packet Cable, for packet at 1200/9600 bps FM, using a TNC. The data rate is selected via a menu mode. The FT-897 will perform other digital mode operations (SSB-Based AFSK), such as RTTY and PSK-31.

The optional FC-30 Automatic Antenna tuner, for about $230, which attaches to the left side of the FT-897, operates on HF and 6 meters. It does not operate for the 144/440 MHz bands, which have a separate antenna input to the transceiver. It will operate with up to 3:1 SWR on HF, and 2:1 on 6 meters. There is another option of using the ATAS 100/120 Active-Tuning Antenna System for 7/14/21/28 Mhz HF bands, plus 50/144/440 MHz. I do not have any experience with this system, which I believe is intended for mobile operation.

I have received good audio reports with the stock hand-mike, and have made some distant contacts during several recent contests on HF. I was able to work Somalia during the recent 10 meter ARRL contest, running 20 watts with the batteries, and an indoor 10 meter dipole. By the way, each battery requires up to 4 hours to be recharged. I have also operated on 15 and 20 meters with the same set-up and a dipole for each of these bands, at up to 100 watts output, which can be reduced to 5 watts for "QRP" operation.

This review has highlighted some of the features and operations which have made the new Yaesu FT-897 a versatile and useful addition to my HF equipment. I look forward to "outdoor" operation with it soon.

– 73 de Ray W2CH

(Ray tells me he may be bringing his new transceiver to the January meeting at HVHC for "show and tell". –*Ed*.)

One-way Radio Favorites — N2KZ

Long before I knew what two-way radio was all about, I was passionate about one-way radio. Broadcasting can still be entertaining, if you know where to look. Let me show you the way to a few of my favorites.

If you happen to be up in the middle of the night, check out what's happening in Beantown. Talk radio takes a fresh spin on "The Steve Levielle Broadcast" heard on WBZ 1030 kHz AM from Boston. It's on the air from midnight until 5 a.m. Monday through Friday mornings with a wide variety of topics and fun. You'll hear chat regarding current events, challenging trivia contests and even campaigns to revive interest in Marshmallow Fluff or Spam. It's a little bit different and very eclectic.

Steve LeVielle of WBZ, *Boston*

Down home in Wheeling, West Virginia, a wonderful thing has been happening every Saturday night since 1933. It's the "WWVA Jamboree" from the Capitol Music Hall in the heart of Wheeling heard on clear channel WWVA 1170 AM. The Jamboree is where local talent and the big stars of Country and Bluegrass music come together on the big stage and home brew a show better than mountain whiskey. You'll get to know the regulars, like the house band "1170" singing covers of all the current hits and standards along with full-length songs promoting Kroger's food stores or 84 Lumber. Huge acts like Willie Nelson, Johnny Cash and Loretta Lynn come to visit. Their unique Christmas show is a remarkable combination of choral and solo talents from all over the mountain region. Any time of year, the Jamboree is a welcome treat for your ears. The show starts up at about 7 p.m. and runs all evening sometimes as late as 11 p.m. You'll know the show is done when they play the Roy Rogers and Dale Evans standard "Happy Trails." Cow-

Here's an old picture of the WWVA Jamboree cast.

boy or not, you'll love this show. I've been listening every Saturday night for about 45 years!

All of these shows can be heard in our area with any reasonable AM radio or especially a good car radio. If broadcast band DXing is not your strong suit, there are other places you can find unordinary entertainment.

Plate modulation and adventures with the FCC are common topics on "Al Weiner Worldwide" heard Friday nights at 8 p.m. on WBCQ shortwave 7415 kHZ AM on the 41 meter band. From Monticello, Maine, Al runs one of America's few independent shortwave radio stations powered by a modified old 50 kilowatt broadcast transmitter and a huge log periodic antenna on a farm that used to be the centerpiece of a potato field. His wife Elaine, and his cat Alice, join in for an hour of tales of vacuum tubes, oil capacitors and tower arrays. Al's station also hosts dozens of do-it-yourself amateur broadcasters who pay to get on the air and reruns of Jean Shepherd's old WOR radio shows. If the name sounds familiar, you might remember Al as a legendary pirate broadcaster on AM, FM, shortwave and even longwave from inside the hull of the good ship Sarah parked off the coast of Long Island. If you like stories filled with RF radiation and adventure, this is the place to be.

Alice, mascot of SW broadcast station WBCQ.

WFMU 91.1 MHz FM in East Orange, New Jersey can be heard widely throughout PCARAland or over the Internet at http://www.wfmu.org. This station is the industry standard for imaginative, specialized programming. If you like to hear ancient recordings from Edison cylinders and wax pressings; or archival music of third world folk songs from 78-rpm records, this is the place. Its cornerstone program is "JM in the AM" weekdays from 6 to 9 am. "JM" are not the initials of a dee-jay. It stands for "Jewish Music" and features a carefully selected array of prominent figures and performers from the world of Orthodox Judaism. Punk, hip-hop, classical, jazz, and spoken-word performances are all represented well at WFMU. A must for the radio listening experimenter.

For a select few, you can find another spin on this idea when listening to WDFH 90.3 FM from Ossining, New York. Owner and General Manager Marc Sophos is well-known in our area as the die-hard radio enthusiast who tried for decades to secure an operating frequency in Westchester and finally succeeded. This station operates with a handful of watts from atop an AT&T microwave relay tower above Ossining broadcasting a potpourri of rock music and public service shows to a very thin slice of the population lucky to hear this gem. WDFH was built from scratch from donated equipment and talent and serves as a modern-day miracle: a community station unfettered by commercialism.

WDST 100.1 MHz FM Woodstock, New York is another place to look for a break from Mariah, Britney and the boy-bands. For decades, this station has been a breath of fresh air. When FM radio was in its infancy, many stations used block programming to fill their day. WDST still depends on personality dee-jays to produce their random and wildly diverse mix of alternative rock and folk. Some day parts are dominated by classical music, local talk shows and live performances. Here's an independent station that still thrives on being a reflection of their surroundings. You may need a good radio and Yagi antenna to hear WDST, but it's worth the effort.

Any fan of public radio should be familiar with "Car Talk" produced in Boston by hosts Ray and Tom Magliozzi heard Saturdays on WNYC 93.9 FM at 11 a.m. and WNYC 820 AM at noon. Here you will find tales of spark plugs, rust, women, in-laws and toothless transmissions. You'll even hear folklore about the dreaded Dodge Colt Vista. It's informative, entertaining and really silly. I hope you'll love it as much as I do.

It doesn't stop here. I'm sure you have favorites too, and we'd love to hear about them. Of course, for some of us, there is always 40 meter CW. But I'll have to get back to you later. There's something great on the radio!

— 73 de N2KZ Karl "The Old Goat"

PCARA Election

The PCARA Annual Election held at the holiday gathering on December 1st voted in the following officers:

President :	Greg, KB2CQE
Vice President:	Bob, N2CBH
Secretary/Treasurer:	Mike, N2HTT

Peekskill / Cortlandt Amateur Radio Association

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Newsletter contributions are always very welcome!

PCARA Information
PCARA is a **Non-Profit Community Service Organization.** PCARA meetings take place the first Sunday of each month at 3:00 p.m. in Dining Room B of the Hudson Valley Hospital Center, Route 202, Cortlandt Manor, NY 10567. Drive round behind the main hospital building and enter from the rear (look for the oxygen tanks). Talk-in is available on the 146.67 repeater.

PCARA Repeaters

W2NYW:	146.67 MHz -0.6, PL 156.7Hz
KB2CQE:	449.925MHz -5.0, PL 179.9Hz
N2CBH:	448.725MHz -5.0, PL 107.2Hz

PCARA Calendar
Sun Jan 5: January meeting, 3:00 P.M. HVHC.

Hamfests
Sun Jan 19: NYC/Long Island Section Convention and Ham Radio University, Long Island Mobile ARC, 8:00 a.m. East Woods School, 31 Yellow Cote Rd., Oyster Bay, NY.
Sun Feb 23: Long Island Mobile ARC, Indoor Hamfair, 9:00 A.M., Levittown Hall, 201 Levittown Parkway, Hicksville NY.
Sat Mar 1: Splitrock Amateur Radio Association Hamfest, 8:00 A.M., Parsippany Police Athletic League Bldg, Rt 46 & Baldwin Rd, Parsippany NJ.

VE Test Sessions
Jan 5, Feb 2: Yonkers ARC, Yonkers Police Dept., 1st Precinct, East Grassy Sprain Rd, 9:00 A.M. Contact: Daniel Calabrese, 914 667-0587.
Jan 13: Split Rock ARA, Hopatcong, NJ. 7:00 P.M. Contact K2GG@ARRL.NET.
Jan 17: Bergen ARA & Fairlawn RC, Fair Lawn Cultural Center, 12-56 River Rd, Fair Lawn NJ, 7:30 p.m. Contact Donald C Younger, 201 265-6583.
Jan 27: Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY 10025, 6:30 P.M. Contact Alan Crosswell, 212 854-3754.

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