# Smoke Signals

**Monthly Newsletter of the Meroke RC Club May 2008**

**AMA Gold Leader Club #458 - established 1963**

## Pylon Racing

Last month we had the first of our lectures for this year. Lewis Schwab, a fellow Long Islander, mesmerized the audience with lecture on pylon racing.

As Vice President of the North East Pylon Racing Organization (NEPRO), Lewis is a great spokesman for his organization and for pylon racing in general.

With over 40 years of experience in radio control airplane building and flying, Lewis turned to pylon racing a number of years ago. This aspect of our hobby seems to be very similar to the tether track hobbyists at Cedar Creek. Minute modifications to the airframe, engine, fuel system, etc. means small increases in speed and maneuverability, and could be the difference between winning a heat or losing it. Lewis spoke about the engines that are used in detail as well as well as the unique fuel tank configuration using baby bottle liners.

Of great interest was how Lewis fabricates his own hinge material, especially when he sandwiches the material between two sheets of glass with 500 pounds of weigh on top.

By simply swapping engines, he is able to increase the top speed of his plane from 120 to over 170 miles per hour. With these speeds, very small diversions from the planned flight path during a heat means a tremendous lose in time and probably – last place.

The pylon race course consists of three pylons formed as a triangle with two "long" legs and one shorter "base" leg. The pilots, along with their spotters are located inside the pylons and the spectators a safe distance on the outside of the pylons.

When the field at Calverton is finally opened, there is a good chance we will see some pylon racing there – right on Long Island. Otherwise, the closet venue is in Connecticut. First race of the season is in Hadley, Massachusetts on Sunday – May 4th. To see directions to this event as well as the NEPRO pylon racing schedule for 2008, go to their website at www.nepro.org. Also on their website you will find a lot more information about pylon racing, it's rules and regulations, as well as how to get started in this interesting aspect of RC airplane flying.

*Many thanks to Lewis Schwab for a great lecture, and Phil Friedensohn for putting the lecture together.*

## Meroke Calendar

| | |
|---|---|
| May 1st | Club Meeting 8 PM – Meroke Lecture Series – Ed Anderson of the Long Island Silent Flyers |
| May 15th | Club Meeting 8 PM – Show & Tell |
| May 18th | Fun Flys at Aerodrome |
| June 5th | Club Meeting 8 PM – Show & Tell |
| June 8th | Open Fun Fly |
| June 19th | Club Meeting 8 PM – Tom Hunt from FLY RC Magazine |
| June 21st | Club Picnic (tentative date) |
| June 22nd | Fun Flys at Aerodrome |
| | Some Important Future Dates |
| July 17th | Club Meeting 8 PM – Gary Fitch AMA District II Vice President |
| August 3rd | Come Fly with Us |
| December 4th | Awards Dinner |

Meetings are held the first and third Thursday of each month at 8:00 PM at the First Presbyterian Church of Levittown located at 474 Wantagh Avenue. The church is about 1 mile north of Exit 28N on the Southern State Parkway. Additional information can be found on the club website – www.meroke.com.

# Club Officers & Volunteers

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| **Programs** | To be named | |
| **Education** | Charlie Lando | |
| **Friends of Cedar Creek** | George Carley | |
| **Building Program** | Charlie Lando | Ernie Schack |
| **Archivists** | Ron Berg | Stan Blum |
| **Webmaster** | Ted Evangelatos | |
| **Social (Coffee)** | Irv Kreutel | Al Hammer |
| **Raffles** | Nick Guiffre | Curtis Underdue |
| **Show and Tell** | Ben Corbett | |
| **Video Librarian** | Bob Cook | |
| **Come Fly With Me** | Mark Klein | Dave Bell |
| **Open Fly-In** | Ernie Schack | Tony Pollio |
| **Monthly Fun Fly** | Bob Reynolds | Gene Kolakowski |
| **One Fly** | Ted Evangelatos | |
| **Picnic/Dinner** | Al Weiner<br>Nick Guiffre | Chris Mantzaris |
| **Contest Directors** | Allen Berg | Tony Pollio |
| | Ernie Schack | Tom Scotto |
| **Flight Instructors** | Allen Berg | Ted Evangelatos |
| | Douglas Frie | Dan Gramenga |
| | Mark Klein | Gene Kolakowski |
| | Ken Mandel | Tim Murphy |
| | Tony Pollio | Rick Porqueddu |
| | Bob Reynolds | Bill Streb |
| | Ernie Schack | Al Weiner |

# President's Message

The flying season is now in full swing. We had our first Top Gun and Monthly Fun Fly April 20th. The weather was a bit overcast with some winds aloft, but special friends tell me that the wind is "Your Friend." As of this writing I am not sure who took top honors, as I was not there. From what I heard there were a few mishaps, but for the most part it all went as planned.

For those members who attended our last meeting, we were honored to have Lewis Schwab from NEPRO (Northeast Pylon Racing Organization) as our Guest speaker. It was very informative and he also shared some stories of pylon racing at Cedar Creek in the early 1970's, which involved some of our long time members participating. If any of you are interested as I am in being a spectator at a Pylon Racing event, you can visit the website for their upcoming events.

At the April 3rd meeting we had Dennis Dunne, County Legislator for District 15 present to talk about the Guard Booth at Cedar Creek. He shared his position on this topic with us and offered some suggestions by recommending we contact the County Executive's Office via telephone along with the letter writing campaign. He felt this would have a stronger impact.

Our May 1st meeting we will have Ed Anderson from the Long Island Silent Flyers and Eastern Soaring League to speak about Gliders and Sail Planes. It will be interesting to learn how they launch and fly engine less and motor less aircraft.

I have received numerous EMAILS from the general public, some of who are interested in joining our Club, and others interested in finding out if they would enjoy our hobby. I have given a list of names to the Intro Pilots to contact these people and set up appointments with them. All of these people were at the Cradle of Aviation and were approached by our members present, so thanks to the members who promoted our Club. We may have some new persons joining in the near future.

(continued on page 3)

## Top Gun – April 20th

The weather was a lot colder than the day before, but a brave group of fliers battled extremely gusty wind conditions for the first Top Gun event of the season. Competitors flew in 4 events, some of which had to be modified because of the wind conditions. A few planes were lost for the day before and during the day's competition.

Gene Kolakowski, assisted by judges Russell Rhine and Tom Cott, ran a great event. Top Gun (the original name is back again) was run concurrently with the One Fly – run very successfully by Ted Evangelatos. Everyone in both events was treated to some great hot dogs cooked by our perennial BBQ chef – Al Weiner.

A total of 11 fliers signed up for the event, with a few deciding at the last moment to not jeopardize their airplanes. The scoring system for this year is as follows: First through sixth place receives a score of 1 through 6 respectively. Seventh place and above receives a score of 6, a DQ receives a score of 7 and if the competitor elects to not fly in the event, he receives a score of 8. Scores are totaled up for all the events on the day of a Top Gun Competition and compiled through the end of the flying season. For fairness, there will be a decision by Gene at some time over the next month or so as to write-off some low scores to compensate for fliers who can not participate in every Top Gun competition during the flying season.

After our first Top Gun competition, the standings are as follows (remember, like golf, the lower the score, the better):

| | | |
|---|---|---|
| 1 | Ted Evangelatos | 11 points |
| 2 | Allen Berg | 12 points |
| 3 | Chris Mantzaris | 14 points |
| 4 | Ed Daus | 19 points |
| 5 | Gene Kolakowski | 20 points |
| 6 | Patrick Boll | 23 points |
| 7 | Bob Albano and Bob Reynolds (tied) | 31 points |
| 9 | Richard Boll, Nelson Ramos & Curtis Underdue (tied) | 32 points |

The next Top Gun competition is scheduled for Sunday – 18th.

**President's Message** (continued from page 2)

On the same topic, I have also received Emails from other Clubs inviting us to their Open Fun Fly. As I receive them, I will try to get the information out to our membership so anyone interested in participating can contact that Club for the information. I have also reciprocated the invitation and invited them to our events. If we can keep these lines of communication open, we will hopefully have members from other Clubs joining us and we joining them. This was an idea I had and wanted to get involved with, and it appears it may come to fruition. I have also taken the liberty to invite them to our Lecture Meetings.

Once again, I want to thank all the volunteers who are giving so much of their time and effort in keeping our Club active and growing. It takes all of us to maintain our Club status in the Community and within the AMA. Please volunteer when asked, or at the least, offer to help any of the Committees as your time permits. With our upcoming events, we will need all the help we can get, please get involved.

Stay well and continue safe flying.

## Tips for Spark Plug Replacement

Before you install any spark plug, compare the old and new plugs to make sure that the replacement has the same thread diameter, pitch, thread length and seat configuration as the original plug. Let the engine cool before you attempt to loosen and remove the plugs. This will reduce the risk of damaging the threads in the cylinder head. Always inspect the old plugs after they have been removed, and note the condition of the fuel mix that would indicate whether the engine runs rich or lean. Inspect the plug lead and cap and replace them if the insulation is damaged.

## Ask Dr. Phil

Question: What is this tool called a model "engine"?

Okay answer: It is an air-and fuel-cooled, fuel-lubricated, venturi-fed, catalytically enhanced (the glow plug) combustion-ignition machine constructed from aluminum, with some steel in high-stress areas. It is designed to convert a fuel's chemical energy into something that will turn a propeller.

Considering each aspect of that boring description helps you understand and avoid some of the most common model-engine problems – like having a machine convert fuel into mechanical energy releases heat. This heat has to be removed, or the machine will literally begin to melt and fuse its moving parts.

Our engines remove this heat by directing the propeller's airflow over most of the engine; they are air-cooled. But airflow is a poor means of engine cooling. Unlike water or glycol (antifreeze), air is not the best "heat exchanger" and does not reach all parts of the engine equally. The parts in the propeller's slipstream receive more airflow than parts that are not. Plus the air does not remain in contact with the engine for long and therefore does not have time to absorb much heat.

Unlike water-cooling, the cooling air cannot reach deep into the engine to cool the moving parts directly. Our engines use "fins" to increase the surface area contacted by the cooling air, but air-cooling remains a surface-contact process and is thus inherently inefficient.

To help remove heat the air can't, our engines use fuel cooling as well. The lubricating oil in the fuel acts as a heat exchanger while the fuel's methanol cools the lower internal engine parts by refrigeration.

Refrigeration, you ask? Methanol cools our engines' lower areas because it has a high heat of evaporation. During carburetor air intake, methanol in the fuel is transformed into a gas requiring a great deal of heat. The refrigeration process removes heat from the surrounding lower engine sections to have the energy to transform the methanol. But I don't suggest you try using this "refrigerator" to keep your iced tea cold.

The fuel also helps cool the engine's combustion chamber. Some of the fuel's oil content is not burned during combustion but does absorb heat. As the heated oil is exhausted, it removes that absorbed heat. The important point to remember is that the fuel cools the engine as it powers it.

Equally important, our model fuel is the engine's sole lubrication source. The fuel contains oil that keeps the moving parts separated from each other, reducing friction and lowering the engine's temperature.

Unlike most car engines which have an independent oil source, the amount of oil applied to a model engine's moving parts depends entirely on the engine's rate of fuel supply, or "mixture setting." The mixture setting adjusts the amount of fuel that is mixed with engine's incoming air supply.

An engine's maximum air supply is fixed by the diameter of the carburetor opening and adjusted by the area opened by the throttle barrel. But the pilot adjusts the amount of fuel mixed with that incoming air supply using high- and low-speed fuel-metering devices known as "needle valves" and/or "air bleed" adjustment screws.

By properly adjusting these fuel-metering devices, the pilot is responsible for the engine's operating temperature and therefore its reliability and durability. This is true no matter what type of engine is used--a two-stroke or a four-stroke. There are several other types of model engines, such as gas ignition or true diesel, but the two- and four-stroke alcohol-fueled types comprise the majority of the engines that new pilots use.

## From the Editor

I didn't leave myself much space this month for my article. No update on the progress being made on renaming the Aerodrome after Major Raoul Lufbery. Need some more documentation, but it's been hard to come by. Hope to have a further update next month.

# Engine Myths Busted

*The power event in a 2-stroke engine occurs during every revolution of the crankshaft; in a 4-stroke engine, it occurs in every two revolutions. Therefore, a 2-stroke is about twice as powerful as a 4-stroke of similar displacement.*

Pilots seem to be divided in their preference for powerplants. It would appear logical that a 2- stroke is more powerful than a 4-stroke, but is it twice as powerful? Let's take a look at the basic operation of each engine type. Both 2- and 4-stroke engines have five events: intake, compression, ignition, power and exhaust.

The complete cycle of a 4-stroke may be summarized as follows:

Intake stroke: the intake valve is open, the exhaust valve is closed, the piston draws in the fuel/air mixture, and the intake valve then closes. Compression stroke: both valves are closed, and the piston moves upwards and compresses the air/fuel mixture. Ignition: the air/fuel is ignited near the top of the stroke. Power stroke: both valves are closed, and the expanding gases force the piston towards the bottom of the cylinder. Exhaust stroke: the exhaust valve is open, the intake valve is closed, and the burnt gases are expelled through the exhaust valve. The 2-stroke engine is mechanically simpler; there are no valve-train components. Rather, there are induction and exhaust ports and, most of the time, a rotary-induction valve. As we will see in the following description of the 2-cycle engine, there are five events, but at one point, two (or more) of them occur very nearly simultaneously.

The 2-stroke operation can be summarized as follows:

As the piston is forced towards BDC during the previous cycle's power event, the cylinder's exhaust port is uncovered by the top edge of the piston, ending the power event and initiating the exhaust process; exhaust gases begin to surge from the cylinder to the atmosphere. Shortly thereafter, the cylinder's intake port(s) opens by the action of the piston as it approaches BDC.

Simultaneously, in the engine's crankcase (below the piston), the piston's motion from TDC to BDC compresses the trapped, fresh air/fuel mixture. As the cylinder's intake port opens, the pressurized crankcase mixture rushes up bypass channels to the intake port where they surge into the combustion zone above the piston; as this is happening, exhaust gases are still exiting the cylinder through the exhaust port.

As the piston begins its return to TDC from BDC, the intake and exhaust ports are closed by the top edge of the piston, and the recently transferred air/fuel charge is trapped above the piston where it is then compressed in preparation for ignition and the beginning of the power operation. Simultaneously, as the piston moves towards TDC, a low-pressure zone is produced within the crankcase because of its expanding volume. As the induction valve is opened (as with crankshaft rotary induction), atmospheric pressure forces air through the carburetor where it mixes with fuel and then rushes into the crankcase—in preparation for the next cycle of operation.

A close examination of the 2-stroke cycle reveals some in-efficiencies. First, there is some mixing of the fuel/air charge with the exhaust gases, and this results in lower cylinder pressure and the expulsion of some of the fuel/air charge through the exhaust. The other primary disadvantage is that the 2-stroke requires more cooling because the power event occurs during every revolution of the crankshaft. The 2-stroke engine flows more fuel (and lube) per revolution than the 4-stroke engine, thereby providing the additional "liquid cooling" necessary to maintain satisfactory cylinder-head temperatures. Perhaps the ultimate test of an engine is in competition. As Dave Gierke notes in a recent article, "At the 2003 AMA Nationals, participants in several classes of RC aerobatics predominantly used O.S. 1.40 2-stroke engines or the YS 140 4-stroke. Both use propellers of similar sizes and operate at about the same flight rpm; this indicates that the shaft power is about the same for both types."

**May Birthdays**

| | |
|---|---|
| 3 | *Sal Richichi* |
| 3 | *Alex Shapiro* |
| 6 | *Henry Ortiz* |
| 6 | *Ron Berg* |
| 6 | *Tom Cott* |
| 13 | *Ed Smith* |
| 16 | *Len Schroeder* |
| 17 | *Jose Giraldo* |
| 20 | *John Monti* |
| 22 | *Thomas Lang Sr.* |
| 31 | *Robert Henken* |

# Flying with Flaps

Sooner or later, many RC modelers try their hand at a scale subject, and since most full-size aircraft use flaps, their scale model should include them as well. A scale model with the flaps fully deployed is an impressive sight. This will most likely be the pilot's first exposure to flaps since most of our sport models don't use them. Flaps are terrific; they can transform that hot P-51 from a bear to a pussycat on landing. They can, on the other hand, present problems if misused.

Next time you fly in a large commercial airliner, take note of the transformation of the wing prior to takeoff and landing. Airliners or other fast aircraft achieve their eye-popping performance through the use of small, thin wings. The problem with this type of wing is that they stall at high speeds and consequently the takeoff and landing speeds are also very high. When flaps are lowered they change the wing's lift and drag characteristics and lower the stall speed.

By changing the camber of the wing, the lift and drag are increased for a given airspeed. As a result of these changes the aircraft can land at a slower airspeed, fly a steeper landing approach and use more power on landing, which is a good thing if you have to "go-around" with your model.

**Do's**

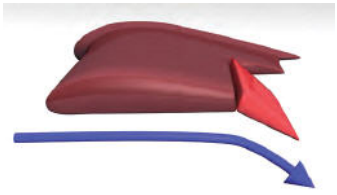
- Learn how your plane reacts to flaps at a safe altitude before attempting the first landing.
- Reduce the throttle to around 1/ 3 and let the plane slow before dropping the flaps.
- If used for takeoff, use only partial flaps.
- Adjust the power to maintain the approach path. Flaps add drag and require more power.
- Add power on a go-around and begin a climb-out before retracting flaps.

**Don'ts**

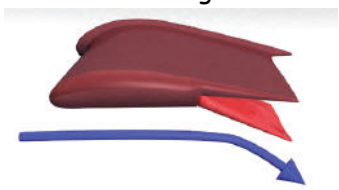
- Deploy flaps at high speed. The flaps may depart the wings or cause serious structural or servo damage.
- Use flaps on the first takeoff and test flight. You must first determine how much deflection is correct for your model.
- Use full flaps on takeoff. This adds a lot of drag.
- Let the plane balloon and lose its airspeed. Adjust the elevator to keep the proper approach path.
- Retract flaps when low and slow or you could settle onto the runway

FLAP VARIETIES

There are four basic types of flaps: plain, split, Fowler and slotted. The plain flap is simply a hinged portion of the trailing edge. Split type flaps are hinged at the bottom of the wing and create much more drag than plain flaps. The slotted flap is similar to a plain flap, but has a slot between the wing's trailing edge and the flap. The air passing through the slot delays the airflow separation and creates a greater increase in lift with a smaller increase in drag than a plain or split flap. Fowler flaps extend aft and down increasing the wings area and provide large increases in lift with a minimum of drag. Deflecting flaps will cause a twisting action to the airplanes' wing. The type of flap as well as the wing's design will determine the amount of twisting action, with the split flap generating the least amount. Deploying the flaps may result in the plane pitching up or pitching down. The elevator must be used to compensate and keep the plane on the desired approach path. Another characteristic of flaps is that the first half of the flap's deflection results in a greater increase in lift while the second half results in a greater increase in drag. Flaps also impart a large structural load on the plane and should only be used at a lower airspeed. Full-size planes have their airspeed indicators marked for safe flap operating range.



Plain flaps lower the wing's trailing edge increasing its curvature and, therefore, its lift.



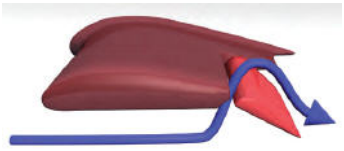
Split flaps generate a lot of drag by disturbing the airflow on the underside of the wing.

Fowler flaps move rearward and downward increasing the wing area and curvature.

FLYING WITH FLAPS

Since every aircraft reacts differently to flaps, it's important to learn how yours reacts before committing to landing. The safest way is to do a no-flap takeoff and fly your model around to get comfortable with it. At a safe height, reduce the throttle to about 1/ 3 and let the plane slow down. Next, add 1/ 2 flaps and see what your

plane does. If it balloons (pitches nose-up), apply some down-elevator to help maintain the airspeed. Once the plane is under control again, add full flaps and be prepared to adjust the elevator pressure on the stick. You may be surprised how much elevator it takes to compensate for full flap deflection and how much the plane will slow down. With today's radio systems, it's easy to program a mix for the proper amount of elevator trim when the flaps are dropped. This will greatly ease the pilot's workload. Once you are comfortable with flying the plane with the flaps down, it's time for the landing. If you have your flaps set up to drop in increments, such as a dial or slider switch, add about 10 degrees on downwind after the plane passes your position and then add about 1/ 2 (20 to 25 degrees) on base leg. After turning, add full flaps and use power to adjust the flight path. Remember, you will need more power with flaps and the approach descent rate will be steeper. With a little practice, you will be rewarded with picture-perfect landings. Since flaps provide more lift at slower airspeeds, you must be aware that when you retract them in-flight you will lose the lift and the plane could sink. For this reason, if you must do a go-around, make sure you increase power before retracting the flaps. Failure to do so could place your plane very close to stall speed before you can accelerate to a safe speed. This also applies to take-offs with flaps. In most cases it is safer to take off with the flaps retracted or deflected no more than about 20 degrees. Larger deflections add more drag and can cause the plane to become airborne at too low of an airspeed. Flying a scale model with operational flaps is a very rewarding experience. Not only do they look neat, but they also provide the same benefits as the full-size version. They take the Anxiety out of landing your lead-sled WW II fighter or similar high-performance aircraft and provide a safer and more enjoyable RC experience.



Slotted flaps allow high-energy air to flow from underneath the wing up and over the flap to help prevent airflow separation.

FLAP ACTION

Flaps impart a tremendous load on the wing and require attention during their installation. Make sure you use enough heavy-duty hinges on each flap and a heavy-duty control horn. There are many ways to actuate the flaps, including torque tubes and bell cranks. For large, fast or heavily-loaded models, the best way is to use a servo for each flap. These planes will also benefit from the flaps being locked in the down position preventing the airstream from blowing the flap back to the up position. This basically means that the servo arm is directly in line with the flap horn at full deflection and this takes the strain away from the servo. This is accomplished by turning on the radio and selecting full down flaps and choosing a servo horn position that is in line with the horn. Now, retract the flaps and make up the linkage from the servo to the horn. The amount of flap deflection is determined by the length of the servo arm; for more flap deflection, place the linkage farther out on the arm. The use of ball links may be required for smooth action and to eliminate binding. The modeler has several options for the transmitter flap actuation method. The least desirable is to use a two-way switch, which only results in flaps up or full down. This is not very scale-like and could result in large pitch changes when the flaps are actuated. A three-position switch will allow the use of half-flaps for more scale-like flight. A knob or slider switch is another way to go and allows an infinite number of flap settings. The only drawback is that it is sometimes difficult to tell how much flap deflection is selected.

The Top Flite B-25 Mitchell bomber has inboard and outboard flaps because of its twin wing-mounted engine nacelles. With the flaps deployed, this impressive warbird ARF lands like a trainer.

## New Meroke Member

Thomas Maddaloni

## One Fly – April 20th

The first club "One-Fly" event took place on April 20th, with 12 members participating. The gusty 15-mile crosswind proved very challenging for our club trainer plane, but the daring Merokes gave it their best shot.

There were two individual events and one team competition:

- First event (3 loops in 20 seconds): winner was Ed Daus with the perfect time of 20 seconds
- Second event (5 loops/ 5 rolls): won by Patrick Boll in 14 seconds
- Team event (3 loops - pass the radio): won by Team 2 in 124 seconds (*)

* Note: Team 1 could have faired better if its members were not distracted by the freshly cooked hot dogs by Al Weiner and Nick Giuffre! One cannot easily control the sticks while holding a hot dog bun. Our club members enjoyed the competition, had lots of fun, and the proud winners received their token prizes gracefully. We look forward to the May event, with more members participating and better weather conditions.

*This has been a great club event for the past few years, opening up competition to flyers of all abilities. Ted, Al & Nick have gotten this event on to a great start for the 2008 flying season. Come down to the field on May 18th and join in on the fun.*

## Show & Tell

We had 8 participants in the March Show and Tell:

- Nelson Ramos showed his Kyosho Super Stearman ARF with an OS 52 four-stroke.
- Ron Berg spoke about his Great Planes F4U Corsair ARF which he said was not an easy ARF to complete.
- Charlie Meyer wit another electric. This one made from EPP foam with carbon rods used for support and weighing in at 6 and 1/2 ounces.
- Richard Boll displayed his "Spads to the Bone" plane made from a political campaign sign. He also won the prize for the evening – a gallon of fuel.
- And then Patrick Boll displayed his flying skills with his birthday gift – a Blade CX-2 electric helicopter.
- Tim Murphy with his conversion of an electric E-Flite to glow power with an OS 25.
- Lenny Schroeder showed his Great Planes Decathlon with floats that he flies at his estate up North.
- And then Lenny showed the progress of his Sig Kit J3 Cub which he modified to the clipped wing version.

## Important Meeting

There will be a meeting at the Waste Treatment plant on Tuesday night – May 6th at 7:00 PM. You will need to reserve a place at the meeting by calling 516-571-7347, no later than May 2nd. Since seating is limited, it's best to call as soon as possible.