



# Shop Manual

www.badgoat.net/ptcaths

September 2015

## President's Message

*John Ellingwood*

Hello Everyone! Never thought I'd be sitting by a campfire on my laptop but that's where I'm at in the valley of apples. Apple Valley Campground in Acton is home for one more month until I return to downtown Higgins Beach in Scarborough for the winter. There's worse places to be, that's for sure.

I never know what I'm going to write about when it's newsletter time. Sometimes it all leaps off my fingers and onto the screen and other times I struggle. Right now I'm struggling....

I guess something that's been on my mind lately concerns politics and legislation. I've always avoided politics. Most likely because I avoid confrontation and debate which goes hand in hand with any political issues. We as a chapter attempt to avoid political discussion but it is a necessary evil in our lives. I realize that fact as I get older.

What we probably should pay attention to, however is pending legislation. There are some issues pending that may affect our hobby if passed. You may read about them in this edition of the Shop Manual. I have mixed feelings about all of them as I'm sure all 200 of you do.

I personally feel we do have an obligation as a chapter of the AHS to inform our members of pending legislation. Jon Doyle is very much on top of all legislation and lets me know when there is something in the works that may affect our hobby. For that I am grateful. In the last Shop Manual you learned of our newly formed legislative committee. This committee was put in place to discuss any issues and how the chapter should respond to them. I've never been to Augusta to speak on any issue and I cringe at the thought. What

troubles me most however is my likely difference in opinion to the majority of the group which I represent.

I think we all believe that any vehicle on the road should be safe and driven by a competent driver. I also would say we agree that there are too many laws in the books now that aren't being enforced. Some of which might make new laws a non-issue. I'm personally not against some sort of inspection rules for antique autos. This is likely to be one area where the disagreement starts. Possibly the definition of Antique Auto needs to be changed. I know I've heard countless theories on what exactly dictates an antique. I'm a little more concerned with the fact that an antique plate allows a driver with a Class C License to drive a vehicle that commercially would require a Class A license.

We can argue about this stuff in person or email or facebook or whatever you're preferred method of discussion may be. You can call me to argue if you'd like, but there's this long tunnel in Acton that I'll probably lose my cellphone signal in.

The point is this, Like most truck drivers (or people in general), we will probably never all agree on what we could do or should do about things like this. What we can do is inform the members when something comes our way. You can choose to use this information as you see fit. When the committee decides we need to take action as a group to be heard, we will let you know. The important part in all of this is knowing that the discussions are being had. That is healthy no matter what. With more heads thinking, we may not be able to stop new laws affecting hobbyists but maybe we can help to provide some guidance towards a reasonable resolution.

Above All Stay Safe,

*John*

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## FALL TOUR TO AROOSTOOK COUNTY FRIDAY OCT 2 - SUNDAY OCT 4

This Just In - *Schedule on Back Page*

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### Our Fall Auction will be at Daryl Gushee's on Sunday the 18th of October

This years Fall Gathering and Auction will be held at Gushee's Rigging and Heavy Hauling in New Gloucester on Sunday October 18th. Daryl always has a lot to see and this year should be no different. This is a great opportunity to bring along a friend or two or three. As usual we will have a potluck luncheon beginning around 11:00 with an auction taking place immediately afterwards. Clean out your garage, kitchen cupboard or junk drawer and donate your items to be auctioned off. Proceeds go to the PTC treasury. If you'd like to commission an item we can accommodate that as well. The important part is to have fun and fill your belly. See you there!

# Getting Stuck Stuff Unstuck

*Jon Doyle*

We talked previously about the basic things we all do, which is getting stuck stuff unstuck. Here are some additional thoughts and methodologies.

## Penetrants

The best remains Open and Shut by Drummond obtainable at Lawson Industries – [www.lawsonproducts.com](http://www.lawsonproducts.com). This is not cheap. It's about \$90.00 for three 20+ ounce cans. It's worth every cent. The next best is the good old fashioned standby Kroil ([www.kanolabs.com](http://www.kanolabs.com)) which you can get, usually two cans for \$18.00 in one of their deals. There are others – PB Blaster is much favored. Even the old fashioned Liquid Wrench is not bad. WD 40 is a great water dispersant, which was its original function. It doesn't do very well on anything else unless one is truly delusional.

## Battery Terminals

Use the military type which is a rectangular looking object sized for negative and sized for positive. They are obtainable at NAPA. Remember, positive post is bigger than the negative. They have two bolts that run through them – I've never seen one come undone, nor do they have a tendency to grow fuzz. Strangely enough, the other ones that don't ever grow fuzz are the side terminals and tin terminals that Ford uses which are execrably cheap, but that seem to work – at least on the two Ford pickups that we have. Spray some Corrosion Block on the terminals and you won't have any problems.

## Hex Nuts or Square Nuts That Won't Come Off

First, do not attempt to remove a nut with a 12 point socket – too little bearing area, you'll round it off. Always use a 6 point socket and, if you've got square nuts, get some square sockets. They are available or it makes a nice trip to Liberty Tool to pick up some old fashioned square ones. I have suggested before that the way to loosen those nuts, if you can't break them loose with a long breaker bar and perhaps a piece of pipe, (Harbor Freight has a keen 25" breaker bar which works really good.) drill three holes in one of the flats on the hex in a vertical kind of a way. Unless you're a better drill sharpener than I am, go buy a couple of new 1/8" cobalt bits to size your favorite drill and bore those holes to just touch the threads. That forbidden area you can recognize when there is a little puff of gray smoke that comes up the drill hole and, seriously, you will find that sweet spot finally. Then you bang it with a chisel and it either distorts or breaks and you've solved your problem. Yes you can do it with heat – maybe; yes you can do it with candle wax and heat; yes you can do it with Oil of Wintergreen; but you may be a while. Half acetone and half ATF works pretty good. It seems scary to work with though.

## Batteries

Before you buy a battery, find out who made it. There are only three or four battery manufacturers in the country – EXIDE, Johnson Controls, DEKA, Interstate, and one or two others. NAPA batteries recently have been made by Johnson Controls. In the past, they've also been made by EXIDE, not so good quality. When

EXIDE is making NAPA's batteries, I don't buy them, because they don't last. If you're buying batteries for collector trucks, buy as good as you can, because they are sitting and they are not being regularly charged. You need quality, if it's going to last more than two or three years. Get as many cold cranking amps as you can afford. There are certain things that you can't cheap out on and batteries is one of them. If you've got to add water, add distilled water. Keep the tops clean and put some protectant on the terminals. Whether it's Corrosion Block or grease, I don't care if one has a favorite.

## Battery Cables

Here's another place that you don't want to cheap out. Buy heavy duty cables with copper terminal ends or something decent and do not use those bolt on pieces of junk that are really emergency ends for battery cables. A good battery cable for a typical truck ought to be almost as big around as your little finger – copper, not aluminum.

## Wire Connectors

We all have our own style of wiring some good and some so bad that they are tough to look at. Whatever you do, buy some good basic wiring. That doesn't mean that you get it Marden's and I'm not certain about Harbor Freight. I buy a good copper wire from a supplier like Waytek – [www.waytekwire.com](http://www.waytekwire.com). Use good crimp on connectors of a known brand rather than picking them up wherever. Do not use those blue Scotch Lock connectors. They don't hold and I've had so many connections come undone, because of those things, that I took my entire supply (If you know me, it was substantial.) and I threw it away. They just don't work. They are handy; they promise a lot; and deliver nothing. Do it the right way the first time. You can buy special pliers to crimp the connectors, but I find that just a simple pair of pliers which have a diagonal end and a crimper just behind that diagonal, set to crimp connectors, work best. The special pliers sometimes fail and one never wants to leave a connection as finished until one tugs at it to make sure it isn't going to come apart.

## Discs For Your Air Cutting Tool

I've found that Harbor Freight's cutting discs work as well as anyone's and they are sure a lot cheaper. I just used one on the night before I dictated this and it did just fine cutting a bolt off the big old Autocar that was part of a brake stuck exercise. By the way, I've had good luck with most, not all, Harbor Freight stuff, particularly their wrenches. They've got some long breaker bars that are dirt cheap that work really well and I now use them all the time; they've got needle nosed pliers in various lengths, 11", 14", 15" and you need one of each. It is really handy to get at stuff that you can't reach. They also have a long slim pair 13"/15" of vise grips. They wouldn't get any prizes for build quality, but they do the job. If you've got to put something into a distant slot or a hole up overhead, they are simply marvelous. I keep a couple pair and use them frequently. Irwin, who now makes vise grips, quality isn't the best anyway – it ain't like the old days when old Mr. Peterson was making those vise grips. I have some of the old ones and they are wonderfully made.

*continued next page*

## Air Tools

Don't be afraid to buy a small compressor and some air tools. You will shortly graduate into a bigger compressor, probably a tank type vertical with a twin cylinder compressor which is preferable. If you want to use air, you need capacity and you won't get it with a little one with the wheels on it at 20 or 30 gallons. You need 60, 75, or 80. They are obtainable now for \$800 to \$1000 in fairly decent quality. Everyone has a preference, but I went around and talked to one of the old time garage operators and got his views of life in general and followed them. I've got a Quincy twin cylinder with plenty of capacity and it has served me well and you can run some serious distance of air lines. In my set up, it's not unusual that I've got 150' of air hose out, 3/8" is plenty big enough for what we do, with air tools on the end and they seem to be getting plenty of air. Cut off tools are great. The best thing since sliced bread. They are cheap and cut off discs are pretty inexpensive as well, particularly at Harbor Freight. You can buy air tools, if you want, at Lowe's or Home Depot, but what you're getting is a fairly ordinary quality. You will get better at Harbor Freight, probably for less money. Pay attention to the connectors. There are many many many variants, but get the standards and stay with them. There's no need to wander all over the landscape getting different styles of ends, because they won't fit together, that is the male won't fit into the female fitting and there you have life's very story! Buy decent hose - rubber. Some of the poly will be okay, but you'll have to experiment with it. There is no substitute for decent air hose. Use the air tools and don't forget to look around and find an air chisel

or an air cutting tool. Air drills don't seem to work too well, but air scalers get rust off. You need to use it, try it, experiment with it, and then decide what it that you want. Start small and then don't linger long there and get something bigger.

## Clean Up

You've got to clean up yourself and the shop as well. There are all sorts of hand cleaners and so forth. NAPA has got some fairly decent hand cleaner in a pump one gallon container, reasonably priced, which works well. Stuff like Goop or Fast Orange works well. Brak-Leen or its equivalent works great and you need wipes. You can buy those wipes that exist in Home Depot or Lowe's, but you get what you pay for. They don't always tear off straight. If you want some really nice wipes at a decent price, get a brochure from these people: Iroquois Products. These wipes are irregulars; they come by the case; they are absorbent; and really do work well - better than those shop rags which are red/pink colored and are expensive. They are better than the blue ones. There are some red ones, paper types, which don't absorb anything. If you order the wipes from Iroquois, get the irregular ones, but do not get the ones reinforced with nylon fiber. They are hard to use; they don't seem to pick up much; and the nylon is no great shakes to add to anything. I bought them and paid for them and they are more expensive than the cheaper ones. Although they are irregularly cut sometimes, they work very well.

That's it for this time. You're on your own.

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## Ramblings

*Lars Ohman*

RAMBLINGS of an informative nature. Many of us in this chapter are still driving on a DOT Commercial license, and fall under Federal Rules and Regulations Title 49 Part CFR 391.41 (b), if you are required to drive from state to state in a Commercial capacity, and your Medical Certificate is due for renewal, START the process long before your expiration date, don't wait 'till the last day to walk into your local Physicians office, and expect to walk out with your card. Due to recently enacted "additional" regulations, many Doctors no longer do DOT Physicals due to the never ending / changing regulations, additional training, and small returns on time investment. Now, thanks to Uncle Sam, you have to go to a DOT "Physical Specialist," most often a Walk In Band Aid type facility. I Called, and was told it is "walk in," come on down, and I did @ 8:45 AM, filled out some simple three page forms, and waited along with 12 or 13 other "walk ins." 11:45 AM I was taken to a room, asked more questions, gave a liquid sample, blood pressure tested (quite high due to my displeasure of waiting so long) and told to "wait right here." I waited, again, and at about 12:35 or so, Dr. Whitejacket appears, looks at my paperwork and announces.....without asking me any questions...." You do not qualify for a Medical Card...you have had a Heart Attack ( 2003 ) and have no verification of an annual check up each year for 12

years....first I've heard of that Regulation, although I've had a 10 year check up and stress test ( passed with flying colors.. but could not produce PROOF to this Dufus ) so that means a visit to my Cardiologist for another Stress test and another \$100.00 or so, and bring this data back to Dr. Whitejacket with a sign off as to my general heart issues. Next issue, my honesty in reporting a limited restriction due to my back surgery (screwed up) I have to get a visit from my Neurosurgeon, and get him to sign off on my limitations only effect my walking, and not driving or controlling a Commercial Vehicle, and there is another \$100.00 or so, and I still don't know if either of them will "sign off" on my minor limitations to the satisfaction of Dr. Whitejacket after another "walk in" episode. My personal advice to anyone thinking of renewing their Medical Card, and you have any suspicions of "glitches" that might delay your application in a timely manner (IE: Hearing, Vision; anything to do with Cardiovascular issues, epilepsy; hypertension...11 items in all can cause rejection IF not Documented.....don't let your permit EXPIRE, as that puts you back to square one, and technically you can not drive out of state without the Card. NEW Renewal applications are "pages long" and ask everything from your shoe size to the diameter of your neck, and that is no BS. I'll let you know next month how I make out. I have a call into " American's With Disabilities" hot line . I drive because I like it, and it keeps me in gas money. Don't loose your Permit, apply EARLY ! Lars

# Duck

*E. Davis Allan*

In 1969, a year after I started my business in Westhampton, NY, the Army Corps of Engineers were surveying along the shore of the barrier beach. They used two WWII DUCW trucks – aka “Ducks”. One was kept in standby, while the other would run ranges from the water’s edge, out through the surf, to a point 2 miles out, with a paper graph fathometer recording water depths.

These ranges were 1000 feet apart, and began at Rockaway, and ended in East Hampton – a distance of 60 miles. Thus over 300 ranges were required.

The Corps obtained a new “Lark” – an aluminum amphibious truck with earthmover tires and a Cummins 903 V-8 diesel. They set aside the two ducks in their NJ Cavens Point yard and put the Lark into service.

There came a time when the Lark became stuck in “porridge” sand at the waters edge, broadside to the rising surf. I was working with my bulldozer nearby, and two guys in a jeep came to me and asked that I immediately go to the Lark and pull it out of the soft sand. (Apparently the Lark was an experimental vehicle and there would be hell to pay if it rolled over in the surf.)

I obliged.

Three months later a gentleman came to my house at the end of a work day, and said he was with the Corps. They had decided to dispose of the two ducks, and wanted to know if I would buy them – for \$50.

When I replied in the affirmative, he gave me a bid form to fill out. It was for “miscellaneous scrap” located at Cavens Point, NJ. He suggested I bid \$50, because the two ducks would be included. Two weeks later I received a letter from the government directing me to send in a check for \$50 as my bid was accepted. I would receive notice when the “scrap” was available for pickup.

Upon receipt of that, we went to Cavens Point with a pickup and a dump truck. The corps personnel loaded the scrap, and gave us directions to the nearest yard. We sold the scrap for \$150.00.

With new batteries & brake fluid, we got both ducks running. Since they were equipped with tire inflation systems, in short order we had all six tires on each vehicle aired up.

The corps had left the US COE insignias on both

vehicles, as well as the US Government license plates. Off we went – over the Goethels Bridges, eventually on to the Long Island Expressway.

I was driving one duck, and noticed that a tire was real low on the other one, so I signaled to the driver to inflate that particular tire – which you can do while driving. He opened the particular valve, but failed to notice the gauge when it reached 80 PSI. The tire blew out with a huge noise.

Off to the shoulder of the LIE we went – two army ducks and two civilian trucks. Although we had the required tools, getting the tires switched took two hours. An enormous traffic jam occurred, what with everyone rubbernecking.

Dusk was upon us as we got within 20 miles of our shop. The lead duck (the one I was driving) had one headlight. The one behind me had one tail light.

A state trooper pulled us over, clearly puzzled by what was on display. “Just what’s going on here, and where are your papers?” he demanded.

I quickly replied “we are on special assignment; we need to be on the ocean in Westhampton, where there is a possible breach occurring as we speak. We have been delayed by a flat tire, and time is of the essence.”

“Standby” he said. He then got on his radio and told the dispatcher he had a code 24. (Which meant he was leaving his regular assignment to deal with a matter of great urgency.)

“Follow me” he demanded, and with his siren screeching and lights flashing, he escorted us to the limit of his jurisdiction.

Little did he know how lacking in credentials we were.

I subsequently became the owner of 12 more ducks, always having at least two operational. We have worked on Lighthouses with them from Nantucket to Delaware, with great success. 20 years ago I acquired two Larks, and sold all my ducks to the Boston Duck Tour folks.

A side note: returning from Lewes Delaware, going over the Outer Bridge Crossing in my F-750 towing a flatbed trailer with a duck on it, a cop put his lights on behind us and, over his loud speaker, directed us to pull over after the bridge. The man driving did not have a CDL, so while maintaining traffic speed, we managed to switch drivers just prior to the end of the bridge.

He came up to me and said he’d never seen a duck

## Tackaberry Trip

By Charlie Huntington

Thanks to the connection between Lenny Adler and George Tackaberry, the members of the Pine Tree Chapter have been invited to tour the Tackaberry Truck Collection in Athens Ontario, Canada on Sat Oct 24. For anyone not familiar with the collection, it consists of over 250 fully restored trucks housed in 13 buildings as well as many others outside.

To make the trek, members are "truck pooling" from Portland, Gardiner. and the Bangor area on Fri Oct 23. Arrangements for the trip are informal but you can get in touch with Charlie Huntington at [HYPERLINK "mailto:badgoat@tidewater.net"](mailto:badgoat@tidewater.net) badgoat@tidewater.net or 563-5824 and I'll do my best to connect you with a group leaving from your area. Hotel arrangements are on your own. Hotels are located in near by Brockville, Ontario. So far groups are in the Travel Lodge, Days Inn, and Super 8. I recommend checking Expedia for hotels near Brockville, Ontario and then booking directly with the hotel you pick. This eliminates the chance of Expedia messing up the reservation (it's happened to me!). As we get closer we'll set up Dinner arrangements for Friday and Saturday nights in Brckville as well as the trip to the collection Sat AM.

As you can see this is a very simple informal trip. While not an "official" PTCATH tour, it's a great opportunity to see an amazing collection. If you're interested in going, contact Charlie at the e-mail or tel # above and I'll get you set up. Thanks a million to George Tackaberry for inviting us and to Lenny Adler for having the connection that allowed this to happen. See you in Canada!

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### Allen W. Milbury, 84

AURORA, Utah - Allen Wendell Milbury, 84, died on Aug. 11, 2015, at his home in Aurora. He will be remembered as someone who filled his life with a passion for learning.

He was born on May 5, 1931, in Beverly, the oldest son of Arthur Rupert and Elinor Frances Hawes Milbury. As a New Englander, he valued self-reliance and common sense. He founded and directed the Instructional Technology program at the University of Southern Maine and as an Associate Professor, encouraged thousands of students to pursue advanced degrees and diverse careers across the globe.

A graduate of Hampton High School (Class of 1950) in Hampton, N.H., he went on to serve in the US Army during the Korean War. After his Army service he attended the General Motors Institute in Michigan and became a service manager for the Hampton, N.H. Pontiac dealership. He then attended the University of New Hampshire, earning a BS in Geology in 1960 and an MS, Ed.S and Ph.D in Education from Indiana University (IU), finishing in 1969. He was most proud of his "Order of the Grinding Gears" degree, awarded by professors and peers at IU.

He married Mary Chapman on Jan. 30, 1960, in Exeter, N.H., and together they raised two daughters. After retirement, he was a recreation guard on Boulder Mountain for the Dixie National Forest and an EMT for 13 years in Gorham. One of his many interests was restoring antique trucks, resurrecting them from rusty junk to beautiful and reliable working vehicles. His

## Thank You

John Ellingwood

Consistent with the last several years at our Owls Head Luncheon, Hannaford Trucking provided a generous donation to keep our bellies full. Gift cards to purchase our supplies as well as all of our soda and water came from the crew at Hannaford. Utz Snack foods provided us with our potato chips, and the Stackpole family brought in a surprise dessert in the form of the world's biggest whoopee pie.

Thank You Hannaford Trucking, Utz Snack Foods, and the Stackpoles for your donations. A big Thank you as well to the cook and cleanup staff. We couldn't do it without you all.

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## Remembering Allen Milbury

My condolences to the Milbury family on the recent passing of Allen. Many years of friendship, advice, parts locating from the dry Western Lands, and contributions in writing to our Pine Tree Chapter SHOP MANUAL will be missed greatly. One never knew where or when he would show up at a gathering, but he always found time to visit and update us on his adventures of life, and he had many. Where ever he is, I'll bet it is at warp speed and well aware of what is around him. Rest in Peace, but ride with a good tail wind.

Lars & Terry Ohman

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1941 International pickup was a welcome sight across the nation at American Truck Historical Society shows. He was unsurpassed in his ability to remember people, places and names, often making connections among complete strangers at a truck stop, restaurant or gas station. He had at least one friend in every state and never missed an opportunity to pay a visit, even if it meant driving 400 or more miles out of the way. Known for an incredible array of talents, skills and knowledge, perhaps his most welcome challenge was to be handed anything broken and return it repaired and better than new. From precision machine work to welding to engine repair, Allen never met a mechanical problem he couldn't solve.

He is survived by his wife of 55 years, Mary Milbury of Aurora, Utah; daughters Linda Milbury Chappell (George) of Aurora, Utah, and Janet Milbury Borg (Bob Palin) of Cedar City, Utah; sisters Barbara Waldron (John) of Ashford, Conn., Carol Milbury of Newmarket, N.H., brother Donald Milbury (Mertie) of Chestnut Hill, Mass., sister Elinor Bailey (Harold) of Hyde Park, Vt., brother Frank Milbury (Kathleen) of Ashford, Conn., sister Gayle Szydlo (Steve) of Hampton Falls, N.H.; and grandchildren, Kate Chappell (Dustin Oyler) and Wade Chappell. He was preceded in death by his parents; his brother-in-law, John Waldron, and sister-in-law, Mertie Milbury.

At his request, no services will be held. Online guest book at [www.springerturner.com](http://www.springerturner.com) Cards and remembrances of Allen may be sent to Mary Milbury, PO Box 461, Aurora, Utah 84620.

# Dealing with Diesels

*George Barrett*

I'm going to take off in another direction for this issue. Clayton had a nice article for the July issue reminding us about the Diesel engine in the prewar Dodge trucks that used the Lanova combustion technology. We've seen the name before, probably when reviewing the earlier Mack diesels and I thought to myself what made the Lanova design different, was it a sales gimmick or was it creditable. Who designed it, where did it come from. I've got enough old books and magazines around that should tell the story so I've spent the last few weeks digging out the facts.

As usual, the things that I'm interested in are not usually what the text books and monthly publications of the 1930s are talking about. My old Diesel Progress collection turned up very little other than some advertisements. I did find a enough information to sufficiently tell how the design worked and one very good well written and illustrated explanation which I have re-drawn for this article. So give it a try, if you stop before you get to the end I'll understand.

The name Lanova comes from the last name of Franz Lang and the Latin word novum meaning new. Lang was one of many machinists who had worked with Rudolf Diesel at Augsburg and had developed diesel models of his own, focusing on small engines. The object of his many designs was to create controlled turbulence to mix the fuel with the air for more efficient combustion.

The next player in the game was Buda, a company established in 1881 to manufacturer railroad equipment, parts for tracks, car pullers and loading equipment. Named for the town in Illinois where it first started it soon moved to Harvey, IL closer to Chicago. Rising gasoline costs prompted Buda add diesels to their line of engines. They acquired rights to M.A.N. patents in 1926 and soon had a diesel, a four cylinder, 1000 rpm, 6 x 8, 905 cubic inch model. In 1929 a smaller 2000 rpm engine appeared using the Lanova combustion chamber design which really established Buda as a diesel engine manufacturer.

It should be realized that large stationary and marine slow turning diesels were becoming common and worked well. The challenge was the automotive and tractor engine with a higher rpm and the ability to to easily control that rpm. To put things in perspective this was about the time Clessie Cummins put his diesel in the Packard car and drove it to New York. Caterpillar was working its series of six tractor and power unit diesels.

The marine diesels Buda had developed by 1934 had a very reasonable power-to-weight ratio, were smooth and attracted the attention of the U.S. Navy. In the history of diesel engine never forget the motivation to sell to the Navy, they needed them badly for submarines. Surface vessels could be propelled by steam but subs had to have diesels (although for the first ten years, before 1910, gasoline engines were used in subs).

There were many different designs of combustion chambers, more specifically the configuration of the top of the piston and the head of the cylinder. Cat had the precombustion chamber as part of the injector,

there was a simple open chamber, the Allis-Chalmers "Squish" rotation, DeLaval-Enterprise, Hispano-Suiza, Deutz swirl chamber, Ricardo turbulence, air cells, energy cells, and many others.

The Lanova product was indeed very good and played a big part bringing diesels from the rough running smoking hard to start heavy beast to a money making power source for the manufacturer as well as the customer. The Lanova Corporation with an address of 27-01 Bridge Plaza, Long Island City 1, N.Y. listed eight Lanova Licensees in alphabetical order: Atlas Imperial, Buda, Chrysler, Continental, Electric Boat, Kohler, Mack, and the U. S. Navy. A later book has a drawing of a Lanova system as used in White Farm Equipment. Lanova claimed to be "the heart of the high speed diesel engine." Features were lower peak pressures, lighter engine, lower maintenance costs, lower operating costs, cleaner exhaust, and easier cold starting. Most Lanova engines had a glow plug to assist in cold starts.

Before reading the description of the combustion process keep in mind we're looking for a small portion of the fuel to start burning at top dead center (TDC). This spreads and all the injected fuel keeps burning as the piston travels down. The challenge in the late twenties and early 30s was to inject the correct amount of fuel in a fine mist at the right time. The inability to manufacture precise injection systems could be offset to a certain extent by having the best combustion chamber possible and the Lanova seemed to be a very big help in the early days of high speed diesels.

The Lanova design of an energy cell as it is sometimes called, is relatively smaller as a percentage of total compression volume than other similar systems. Lanova's is 20% compared to a previous design of Franz Lang known as the Acro which was 70%. The second fundamental difference is that it has restricted openings to the air chambers which control the time and rate of the injection of the turbulence-creating blast of air into the main combustion chamber. This seems to have a lot to do with the desirable results that come with the license from Lanova.

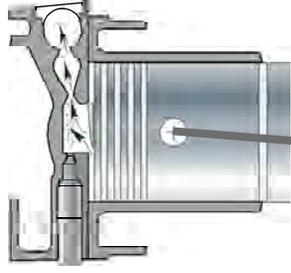
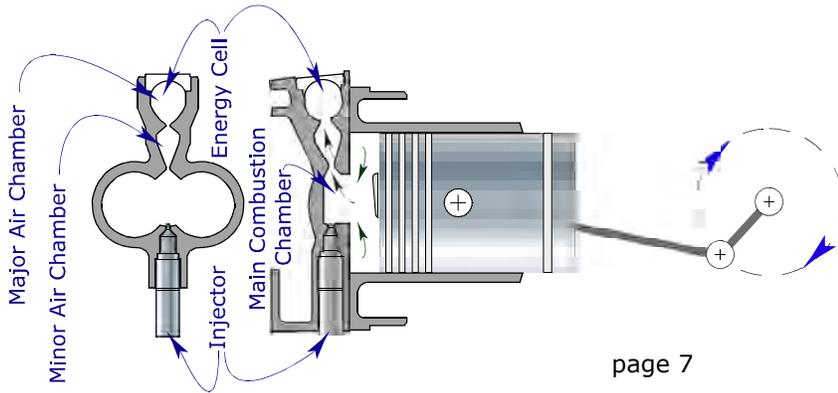
After eleven years of manufacturing their own engines Mack, in a three page 1949 article in Diesel Engine Catalog, gave a complete description of the three models offered. The first one available in 1938 was the 4.375 x 5.75 519 cubic inch 131 hp at 2000 rpm. A smaller 4.25 x 5.375 457 cubic inch 110 hp at 2200 rpm is on the list for 1949 as well as the popular 672 cubic inch 4.875 x 6 150 hp at 2000 rpm.

The two smaller retained the the "twin lobed" combustion chamber as explained in the following drawing. The 672 engine uses the Lanova system but it is the single lobe type.

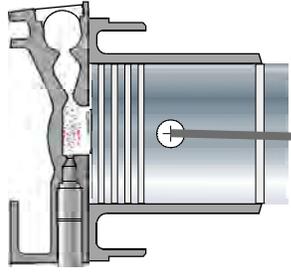
By now, if I've kept your interest, you probably know more than you care to about what happens in the hot area of the engine. I hope the following drawings solidify your understanding. My guess is that all you really care about is will the thing start. I enjoy the history of diesel engines so the research was a pleasure for me as I dusted off old books and magazines looking in the indexes for Lanova, Buda, and Mack. Thanks, Clayton, for peaking my interest and now I'm much better acquainted with my library.

# LANOVA COMBUSTION SYSTEM

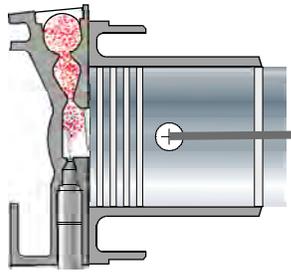
Information from: *Diesel Engineering Handbook* printed 1946-47, by L. H. Morrison published by Diesel Publications, Inc. 1935 & 1947, 954 pages, hard cover, pages 9A, 92, 93



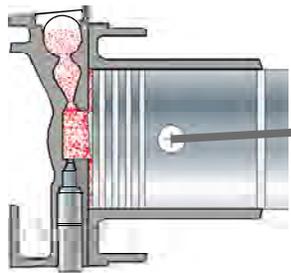
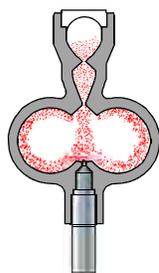
17°



6°



2° After TDC



10°

## COMPRESSION

The first illustration shows the various features of the Lanova patent and air movement during the compression stroke. The next drawing labeled Fuel Injection shows the piston at 17° BTDC when fuel injection starts. Air is being forced into the energy cell by the advancing piston, but because of the pressure drop caused by the restricted throat, the air reaching the energy cell is at a lower pressure than the air in the main combustion chamber. The relatively coarse spray of oil travels across the combustion space, toward the throat leading to the energy cell. Since the piston is still moving upward and some air is still being forced into the energy cell, this air carries also part of the oil charge into the energy cell; the

## FUEL INJECTION

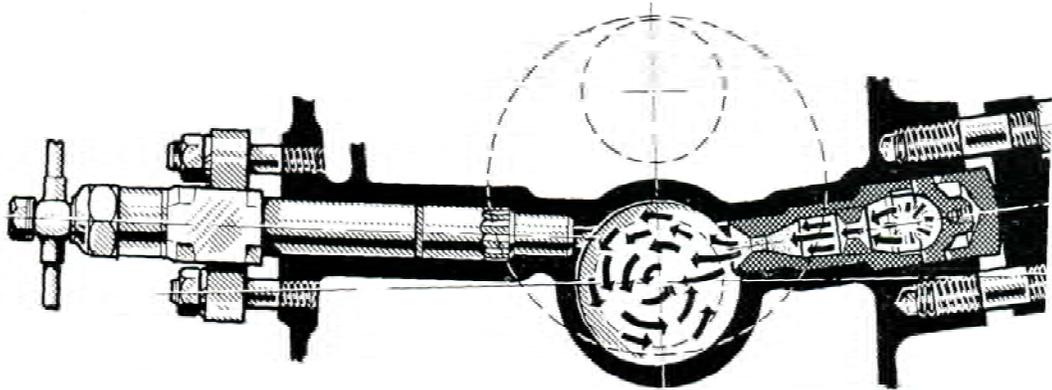
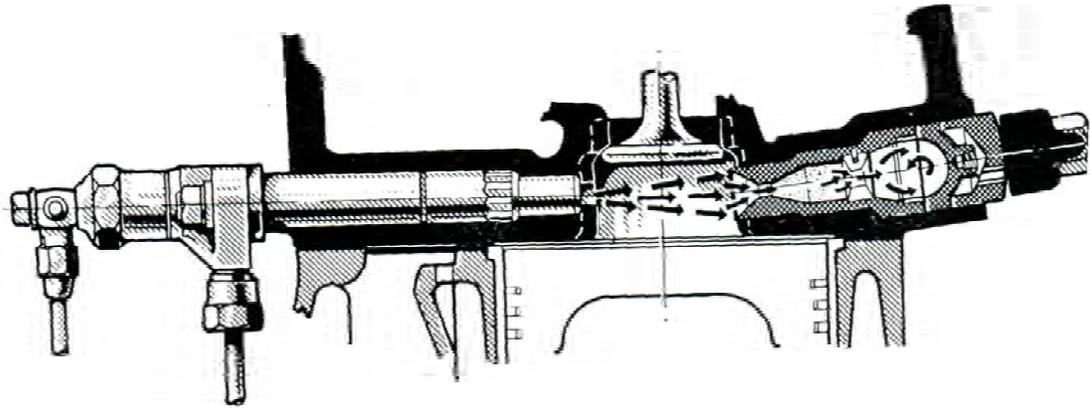
pressure in the energy cell is still lower than that of the main combustion chamber. Ignition of the fuel air mixture occurs in the main combustion space, the first flame appearing on the surface of the relatively coarse spray, at a point approximately midway between the spray orifice and the throat of the energy cell. The flame in the main combustion chamber has now been propagated into the energy cell, igniting the fuel-air mixture in the cell. This fuel-air mixture is of the correct proportion to be highly inflammable, and, consequently, it burns very rapidly, and almost instantaneously builds up pressure within the energy cell that is the neighborhood of 1400 psi. The pressure in the main combustion space, by reason of the

## IGNITION

## FORCED TURBULENCE

limited amount of burning taking place, is but slightly higher than the final compression pressure of about 600 psi. The difference of energy cell pressure and combustion chamber pressure is large, consequently a very violent blast of burnt products is ejected from the energy cell. The blast from the energy cell strikes the nose between the two lobes of the main combustion chamber and is deflected in both directions. The swirling motion of this rotary turbulence causes a thorough mixing of the fuel and air in the combustion chamber causing it to burn rapidly.

## COMBUSTION



Single-Lobe Lanova combustion system as used in the Mack END672 Diesel introduced in 1949  
*from Diesel Engine Catalog (Diesel Progress Magazine) Volume Fourteen 1949*



This year at Owls Head, Pine Tree Chapter Richard Foss was awarded the ATHS Golden Achievement award. The Golden Achievement Award recognizes men and women who have been involved in the trucking industry for 50 or more consecutive years. Congratulations to Richard and all of the Foss family for this prestigious award. Richard's hard work, long hours and time away from home is what many drivers and their family's deal with to keep this country's economy moving.

If you would like to nominate a suitable candidate for this award please visit the ATHS website at [www.aths.org](http://www.aths.org) and click on the awards tab or contact one of your board directors for assistance.

*John Ellingwood*

Mr. Foss had some great looking trucks at the Owls Head Show this year. I enjoy staying to the bitter end so I can do some photography without too many people in the way. I hope he makes the trip down the coast to visit us again, add a lot to the show.

When you see all the work involved in moving antique trucks to and from shows it makes me think we ought to send some thank you notes.

*George Barrett*

# Classified Ads

**Wanted:** Spicer auxiliary transmissions- 8031 or 8341 but interested in whatever you might have laying around. Contact Evan Grass in Mars Hill at (207) 227-3568

**For Sale:** 1977 International Transtar II 4070B single axle (4.44 ratio), Cummins NTC 300 Magnum, Roadranger RTO 9513, sleeper cab with rare rear window option, equipped with "Link Cab Mate" cab air ride, recently repainted in bright red with white stripes, sharp looking nice driving truck. \$15,000 contact Bill Mullin (207) 799-0846.

**For Sale:** 1954/ 55 First Series Chevrolet 6800 with restorable Wayne bus body. Cowl and front end sheet metal rough; running gear unknown. Former L.F. Martin school bus used in North Raymond. Truck is in New Gloucester. Owner asking scrap value for vehicle. Would prefer it not be scrapped. Contact C Hoak (207-522-7088) for pictures. Contact Eric Dacy at 207-926-3752 to view/ purchase.

**For Sale:** 1945 ? Chevrolet 1-? ton truck. Truck is in Windsor. Asking \$3500. Call 207-549-3541for more information.

**For Sale:** 1947 KB-5 International w/working potato barrel hoist and 8 wooden barrels. Contact John Ellingwood Sr. 207-651-7436

**For Sale:** 1997 GMC Diesel Dump Truck, 3500 series, 5 speed OD, PTO HD hoist, 68 K , 8'-0" Warren HD dump body with new floor, and GVW is 10,000# Price : First \$5,500,00 owns it, many new parts, FOB Sabattus, ME. Lars Ohman ( CELL 207-376-7993 or 207-375-6515 leave a message )

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**President - John Ellingwood Jr.** Cell (207) 590-2298; email: jellin@sacoriver.net

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**Director - Cheryl Billings** 1031 Pinkham Brook Rd; (207) 353-7209; email:cherylbillings55@gmail.com

**Director - Clayton Hoak** 299 East Stage Road, Pittston, ME 04345; (207) 582-3224; email: 1948reo@roadrunner.com

**Director - Peter Mullin** 200 Stanford Street, South Portland, ME; 04106 (207) 767-6080; email: wfd44@maine.rr.com

**Director - Bob Stackpole** RR 1 Box 2000, Cushing, ME 04563 email: stack123@roadrunner.com

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***DUES NOTICE - Membership Renewal & Update Form***  
Please sign me up for another years worth of membership in the Pine Tree Chapter, ATHS.  
Membership in the American Truck Historical Society is required.

Name \_\_\_\_\_ Date \_\_\_\_\_

Street \_\_\_\_\_ Phone (     ) \_\_\_\_\_

City \_\_\_\_\_ E-Mail \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

**Pine Tree Chapter Dues of \$10.00 run from January to December.**

**Mail to: Pine Tree Chapter ATHS**  
C/O Jamie Mason  
104 Falmouth Road  
Falmouth, Maine 04105

# FALL TOUR TO AROOSTOOK COUNTY

## Pine Tree Chapter Fall Tour *Bob Stackpole*

Friday October 2

9:00 Coles Land transportation Museum  
10:30 Leave for Patten/ alternate Oakfield Railroad Museum 267 -5882  
box lunch on route  
2:30 Patten Museum/ alternate Oakfield Railroad Museum 267 -5882  
4:00 to Houlton  
5:30 check in  
6:30 those interested gather for supper ; meals on own

Sat – Houlton

9:00 Depart for Easton – McCain Foods  
alternate Ashland Logging Museum –  
ashlandloggingmuseum@gmail.com

40 miles – 1.5 hours  
10:30 McCain Foods tour/ alternate Ashland Logging Museum  
12:30 lunch stop  
1:30 travel to Littleton  
pickers stop ? – 1hr  
travel to Agricultural Museum  
3:30 Ag museum – tour

5:30 Ag Museum group supper (tbd)  
7:00 travel back to Houlton for night

Sun – Houlton

7:30 group breakfast for those interested  
8:30 leave for Dyer Brook  
9:15 Scotty Nevers Dyer Brook  
11:00 to Bangor/ home  
1:00-1:30 Bangor – optional stop

Rooms –

Iveys – 15 rooms – 8/14/15 207-532-4206/ 1-800-244-4206 \$112 and up/ cont breakfast

Stardust Motel – a couple available 8/14/15 207-532-6538/ 1-800-437-8406 \$80 plus – no breakfast

Shiretown Inn & Suite – many rooms available 8/14/15 - 207-532-9421/ 1-800-441-9421 \$92 - \$119/ small continental breakfast

Pine Tree Chapter ATHS  
c/o George Barrett  
2 Country Charm Rd.  
Cumberland, ME 04021