A Reprise:

The Words and Wisdom of **Henry Miller**

Henry Miller – May 1984

RESTORATION WIRING

Last month I got kind of off the subject of restoration, but I figured it probably didn't hurt any, and now, before I start in on wiring, I want to hit something else again. One reason I mentioned in a previous "Viewpoint" the books that Ron Bishop and Orest Lazarowich wrote is that they are pretty specific about the engine jobs that you can do yourself and those that take a machine shop. If they say that the average TOAD can do a job, don't hesitate, go ahead and try it. But check out your shop manual first.

But I didn't mean to get into engine work right now. The electrical wiring is what I thought might need help. Offhand I don't recall anything much in the way of informational material on rewiring old iron. Except that Paul Moller had some good articles on electricals a couple of months back covering both basics and specifics, with a little special attention to Model A. Bill has been giving the dope on Electrolocks too, so if you've got one of them on your car, I s'pect you'll know all about it. Also, one basic premise for these articles is that-you're gonna do the whole job and the battery is disconnected and out of the car. That's important and don't forget it as we go along.

First off, you really should have a wiring diagram for your car. There are lots of places to find the wiring diagram for pretty near any antique car, and a bunch of them as well as the more modern ones even give the color coding of the wires. This is a lot of help when you're trying to trace out a wire that just dived into a taped or loom covered harness an inch and a half in diameter. Just follow down the line until the hot pink wire with the purple tracer pops out again. Or whatever the color code may be. Only problem is that lots of times there's several wires with the same color code. What's to do then? Run amok? Or retire to a monastery? If you haven't already figured it out for yourself, keep on reading this and I'll tell you what worked for me.

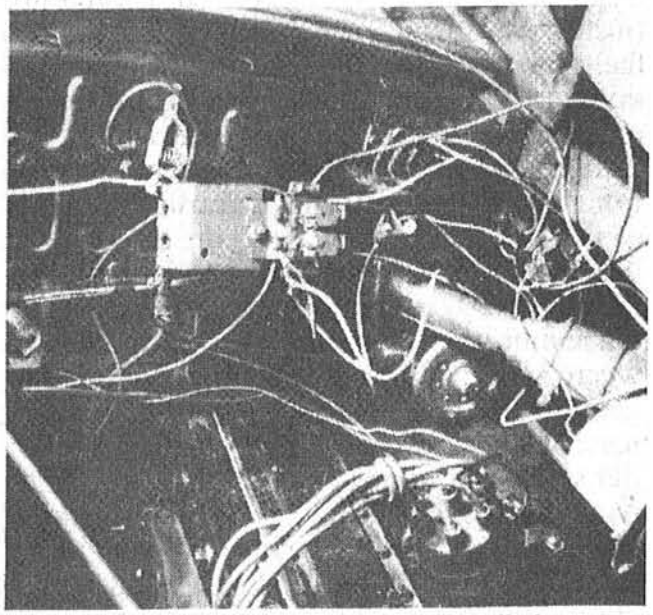
Study the wiring diagram carefully so you can be sure you will actually isolate each wire that may be causing the problem. Several times on this modern stuff I've had to actually separate the problem circuit from the wiring diagram and redraw it on a separate sheet to make sure . Then go ahead and disconnect the suspicious wires at both ends, and feed juice into one end of one of them with a jumper. Then go down the line with a test light and touch it to each of the hot pink/purple terminals that come out of the harness - the one that lights the test light is your victim. If none of the other terminals lights the test light, you've probably got a broken wire. On modern circuits you do have to be real cautious 'cause they've got all these crazy diodes and electronic circuits that may make you think that a circuit is complete when it ain't, or vice versa, that there's something wrong when actually it's acting the way the diode (or whatever) is s'posed to do. A prime example of this new style circuitry is the alternator circuits that are fed thru the ignition switch. So that's another good reason for checking out the wiring diagram as carefully as they do to make sure the Pope is Catholic. This isolation method of checking circuits has worked fine for me. If any other TOAD has a better and simpler way to do the job, I'd sure like to hear about it since there is a lot of messing around involved, especially on postwar iron.

That's all kind of beside the point tho, 'cause in most of the old cars I've seen that still had the original wiring, it was pretty sick. It doesn't seem to make any difference whether the

This is what most old-time auto wires look like as they're removed from the car.

loom or wrapping was tape or if it was regular braided loom. At the end of the loom the individual wires generally have badly damaged insulation. The same thing is true where individual wires come out of the loom, and at pigtails to instruments, light sockets and so forth. Generally, in that case, the insulation has completely disappeared just at the point where it leaves the loom or enters the socket.

I'd better stop at this point and specify that I'm talking about the old-time rubber and fabric insulated wire. The insulation on the plastic insulated wire on later cars doesn't break up like the old-time rubber insulation, but some of it does get so stiff that it's got to be handled as careful as your grandchild, or it and the wire inside it will break right off at the loom. This is a very upsetting occurrence. At least I always thought so. Anyway, to get back to the earlier fabric and rubber covered wiring, if the wiring isn't original, it has generally been replaced in a real haphazard way. The picture on this page shows what I mean. I know it doesn't seem real likely, but the car that had the wiring that's shown in this picture was working just fine. All the lights, including the high and low beam headlights, worked, it started and ran (adequately). Even the stop light and interior lights worked. But it was sure a mess to figure out what was feeding juice to what.



If the wiring isn't original, it generally has been replaced in a very haphazard manner.

Headlight Switches

This car, by the way, was the earliest one I know of to have a foot switch to change from high beam to low beam headlights. The old-time headlight switch was a real pain in the caboose. You had to reach over to the dash and turn the handle to the dim or low beam position, and it was about a three to five shot that you'd turn the lights off completely. Now there was a thrill no one could ever forget, especially if the other guy had the same misfortune: head-on with another car on a road that, if paved, was generally barely wide enough for two cars; and if not paved was high crowned and slippery with mud when wet or filled with dust and unexpected ruts and chuckholes when dry. In both cases no life insurance company would have accepted either driver at that moment. I don't think many drivers of my generation ever played chicken for fun. They'd already got into it too often for real.

Another type of headlight switch that was a real abomination was the one that was incorporated into the horn button together with the horn and starter switch. I don't mean a headlight switch only, operated by a lever like a spark and choke lever alongside the horn button such as some of the old Packards had, tho that was no picnic either. This article I've got in mind was the actual horn button. It was pushed down to sound the horn, had a wide rim on it so it could be pulled up to run the starter, and was rotated to turn the lights on and off. If I remember right, Willys and Willys-Knight called it "Finger-Tip Control." The old ads had a picture of a female model caressing this ridiculous article with the ends of her fingers (naturally with inch long nails) as if it really worked that way. Nonsense! The spring on the starter switch was so strong that it took a real hefty pull up on the button to get the device to work at all. In fact I don't recall any of the ladies of my acquaintance who were even able to operate the contrivance. And none of them had long fingernails either, 'cause the weekly wash had a very baleful influence on such things. Many of these ladies (mamas of other neighbor hoods) were still doing the wash by hand in the set tub on the back porch. I don't remember any who were still using a galvanized

washtub put up on bricks in the backyard, but that wasn't too far back from the time I'm thinking of. Even the ladies who had washing machines still had hand wringers which exercised the same effect of eliminating long fingernails. Unless used with extreme caution.

Whoa! Get back on the subject, which is the "Finger-Tip Control" switch. If the car was used a lot in dusty country, the dust would filter down and make things stick together so that you'd make a right (or maybe it was left) turn into utter darkness. It gave a chilling sensation like one of Edgar Allan Poe's stories, or "The Golden Arm" does the first time (if it's told right). After that first time you kept one hand ready to turn that switch back on. Also, the location of the switch itself down at the bottom of the steering column caused the switches to get messed up real quick. It seemed like it was impossible to keep from dripping grease on the switch when filling the steering gear box. Also it was very plain that one of the most logical places for the grease from the steering gear box to leak into was that dog-bitten switch, and the combination of grease and dirt down in that location was really hard on those switches. The first part to go was generally the starter switch. That's when most mechanics just changed the battery and starter cables and put in a regular old-time foot starter switch. When the longevity of one of these "Finger-Tip Control" starter switches was greater than usual and it lasted into the time when starter solenoid switches were readily available, this was also a real popular Substitution. So this is something to watch for when rewiring any car that had this combination type switch. Personally, I think that if I was gonna rewire one of these I'd try to dummy the starter wires and hide a solenoid somewhere so that just the control current for the solenoid went thru the original starter switch, 'cause the heavy current flow for the starter itself makes them go out faster.

Removing Headlight Switches

A lot of other cars had switches at the bottom of the steering column which were not as complicated as this "Finger-Tip Control." As an example, that Packard headlight switch I mentioned. All of them had the same problem with grease and dirt, which in turn caused trouble I didn't think to mention before. On nearly every one of these switches, the oil and grease getting down into them had just about dissolved the insulation on the wiring. That old-time rubber and fabric covered wire sometimes seems to be sort of melted into one great big cable. Boy, is it a mess to get out! Some of the switches are put together like a Chinese puzzle so it seems impossible to get them apart. But if you can figure out how to do it, the best way to handle this melted insulation situation is to take the switch as a unit off the bottom of the steering column with the wires still attached. Then you can sit down on the running board and give the whole assembly a glassy stare, like I do. So far, tho, I've always been able to eventually figure out something that gets them apart without using dynamite. Generally they have a cap right at the bottom which may have a couple of small bolts holding it on, or a partial thread that comes apart with a quarter or half turn. Some of them just snap on, I'm told. The Packard has a combination of the first two. Loosen a couple of hex-head cap screws and give about an eighth of a turn and the cap comes off. Then, inside the switch, there's two other nuts at the end of spacer bolts that actually hold the switch on the bottom of the steering column. Get the cap off first, then you can see what I'm trying to talk about. With these off, it's possible (just barely) to move the switch enough to get at the screws that hold the wires to the switch terminals and then to go ahead and get the wires off. Here's a good place to be real careful, as if the wires are all stiffened up and fused together from oil, old age, heat and general debility (and sometimes even if they ain't), the switch block itself will break, instead of the wires bending. Believe me, to quote from an old TV show, that is a revolting development! I know, 'cause somewhere in this world is a Packard with a glued together switch block resulting from my first personal experience with this situation. Packard did seem to have made an effort to get all the wire connections lined up so they could be reached without being double-jointed or having some kind of a flexible screwdriver, but there is always one screw (or more) hidden down in be-

hind everything else that makes it easier to dismantle the switch than it is to just remove the wires. Also, the switch itself is gonna need cleaning and maybe some repair, so if it can be removed that's generally the best way to go about it. Anyway, I think so.

One other thing, on a lot of these bottom of the steering column switches, the cap or cover, whatever it's called, has in the past been removed and lost so the innards of the switch are obscenely exposed to the public gaze. In a case like that, the only thing I can think of is to try to find a replacement. Either a complete new switch if you're real lucky, or just the cap if you're only middling lucky. Failing that, try to find another car like the one you're working on, and work up one of your own. If it's impossible to locate another car of your make, try to find another make that used the same make of headlight switch. This is where the National Automotive Service Manual that I told you to get will come in handy 'cause you can check the make and model of your switch and if you can't .find a car with the exact same make and model of switch, it should raise your chances to find one by the same switch maker which would, at the very worst, give an idea of what the original cap was like. I sure hope some of this will help some TOAD who is about to open up one of these switches, or at least alert him to some of the things he might be getting into.

The push-pull headlight switches mounted on the dash are generally (please mentally underscore the word generally) a piece of cake compared with the steering column switches. This is mainly because if worse comes to worst, since several kinds of push-pull headlight switches are still generally available, it's always possible to adapt a modern switch to fit the location and handle all the functions of the original. Since the body of the switch is under the dash, no nosey judge can be absolutely sure that it isn't completely original - it's too hard to get back up underneath there, unless you're Billy Barty. It just sort of seems to me that the main thing to watch out for is the type of connections to the switch. If they are screw-on type connections, stick to screw-type on your replacement; or if bullet or spade type, hunt up a switch with bullet or spade connectors.

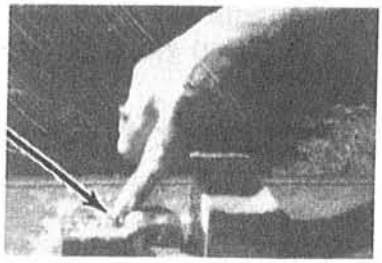
Now, then, since I think I've used up about all the space I'm entitled to for this issue, and since I also think I've got a lot more to say about wiring, I'll keep going on this stuff next month.

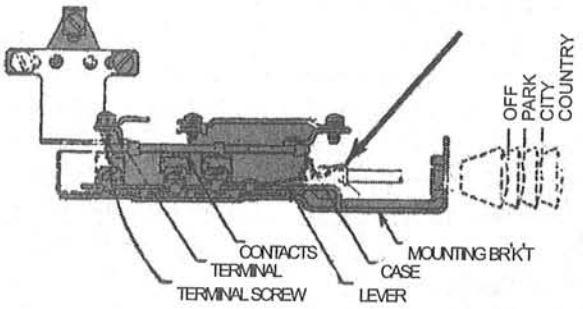
June 1984

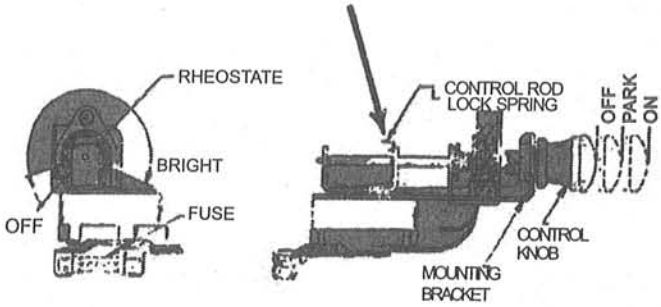
WIRING ANTIQUE CARS

Last month I got kind of a start on this wiring business by going thru the headlite switches, but I see I forgot something on them, and that is how to take the control knob off on the thru-the-dash type. Some of them are pretty straightforward. Just unscrew the knob, it's generally a regular right-hand thread, and then it's not too big a deal to unscrew the decorative mounting nut, escutcheon or bezel that holds the switch in the dash - except that for some of them a special wrench or screwdriver type of tool has to be made up. That could pose a problem, and they're so different that I can't come up with anything specific that'll cover them. In other words, if a regular open end wrench or a screwdriver won't handle the job, you're on your own. With the further exception that on a few of them the mounting nut has what would be like a screwdriver slot in it, except it is real wide, and the switch control rod coming up thru the middle of it makes it impossible to use a screwdriver on it. On this type, take a piece of flat stock the right thickness to fit solid in the slot and cut it as wide as the diameter of the mounting nut. Then cut a slot out of the middle of one end wide enough and long enough to clear the switch control shaft (or rod). Most of these mounting nuts are not so awful tight, so this homemade tool won't need to be hardened - at least I never had to. I guess I don't need to say be careful not to scratch the chromed finish on these things. Ford made a special tool (No. 1747 ON) for removing these mounting nuts. If you can find one of these you have it made. A variation of the screw-on knob is the type where the knob is held on by a setscrew - but that shouldn't pose a problem ordinarily.

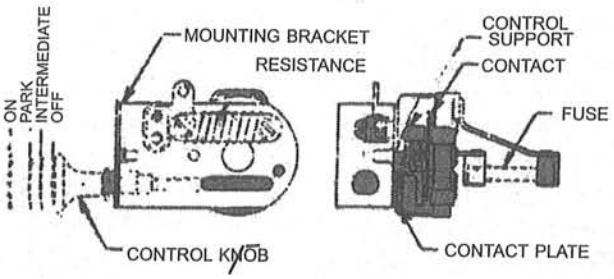
DIFFERENT TYPES OF LIGHT SWITCHES
ARROWS POINT TO CONTROL ROD RELEASES







LIGHTING SWITCH WITH RHEOSTATE



DASH MOUNTED LIGHTING SWITCH
WITH GENERATOR FIELD RESISTANCE

The headlite switches that don't have a screw-on or setscrew retained type knob are generally the real bearcats to get apart, mainly because they've generally been assembled for so long that dust, crud, corrosion and just plain habit have sort of welded them together. Also the designers hide the gadget that holds the switch operating rod (or control rod - every book I look into so's to find out what it is uses a different name) in place. This retaining gadget is generally a little spring loaded metal release button about the middle of the top, side or bottom of the switch, or it could be a flat spring clip located on the operating-control rod-shaft, or on a part of the switch contacting the control rod. The pictures accompanying this article show some of these locations, and may help you by showing you what to look for. To make this situation even more amusing, each switch, when you're removing the control rod, has a different position for the switch. Some car manuals say pull the knob all the way out before pushing the release button, some say all the way in, others in parking lite position; or in any of these locations, or maybe rotate the control rod knob while pushing the release button. The only thing I haven't found is one that says to pull out on the release button. But I'll bet there's one around.

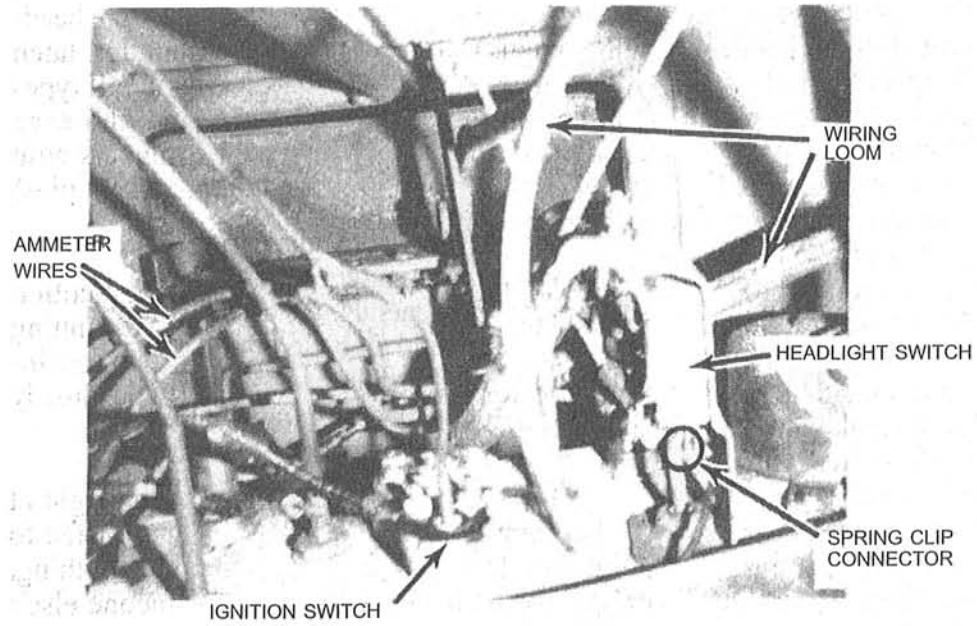
Anyway, try all of the above, remove the control knob and proceed with removing the headlight switch. By the way, these pushbutton latch type switches are mostly postwar. Pre-WWII types are generally the straightforward kind, tho even those have some pretty tricky little stinkers with spring clips or maybe small cotter pins (split pins) holding the control rod in place.

By the way, I s'pose I ought to mention again that all this is meant for the beginning TOAD, so he won't be left to find out all this information for himself the way I did. If you already know all this,

I'm sorry I wasted your time, but right at the beginning of this series of articles I tried to point out that if you already know anything, maybe it'd be better to start with someone else's articles.

Locating Wiring

So back to the actual wire. While you're underneath the dash, looking at the headlite switch, also check out the actual location of the original wiring loom or harness and all the individual connections and wires under there as best you can. If you've got a camera that will function adequately in that cramped space, take a picture too. This is one place where there's generally enough left of the original wiring so it's possible to make out where it was actually located in the beginning. The wiring diagram will tell which wires went from here to there, but very few show the route they actually follow. I've reproduced one of these that I found, just to show how complicated such a diagram is with only very basic wiring. Just think what it would be like on a modern car! I believe that the wiring diagrams for some antique cars show the length of the wire runs, but I haven't found any that were like that. This Bour-Davis diagram doesn't show lengths, but the way the parts are shown in it should make it fairly easy to work them out, even if the wiring harness had vanished completely. However, on most old cars, the best bet is to photograph as much of the layout as you can, or draw some pictures - real rough pencil sketches or even notes will do, since the shape of the harness itself will help to give an indication of where it went. Just to show how little is really needed, look at the picture of the stuff under the cowl and behind the dash of my daughter's '30 Series S Hupmobile. We're using this picture in the rewiring. of the car, so it's easy to see that the pictures you make needn't really be all that good.



While you're underneath the dash, take a picture of the original wiring. We're using this picture as an aid in the rewiring of a 1930 Series S Hupp.

I just found something out that will kind of shake up all of us TOADs. Since I think it's maybe more important than sticking to one subject at a time, which I never do anyway in "Viewpoint," I'm gonna lay it on you now instead of waiting 'till I get to ignition wiring. Which considered as part of the wiring system ain't so complicated anyway. I went to a lecture by a gent who is a research man for a big ignition parts manufacturer. He said that the coil is now the weakest part of the ignition system. According to his story, on what he called "conventional point type systems," the modern points and condensers have been improved so much that they could outlast the coil. Condensers used to be made of material which could absorb moisture, which in turn caused them to fail. Modern ones use a non-moisture absorbing plastic (I think) material which should let them go on and on. The points, too, have been improved, by putting the fixed and stationary point in one assembly so they can't be misaligned by some spastic amateur (like me, I guess). Also, those two little points have always been the hardest and most refractory pieces of metal on the car and now, by alloying and some other kinds of tinkering that I didn't think to put down in my notes, they've been made even more so; so that properly gapped and not overly mistreated, they should last a long time, tho maybe not as long as the new style of condensers. According to this gent, if after 30-45,000 miles the formerly reliable jalopy won't start like she did, and stumbles and kicks from time to time, try a new coil instead of replacing the points and condenser like I always do. He gave some

very good reasons for this coil replacement recommendation, too, which I'm not gonna go into now as I hope in another 'Viewpoint' to give a real thorough story on this and some other similar stuff I picked up lately.

I asked this man why, if the condensers his company makes could last almost forever, they packed points, condenser and rotor in tune-up kits. He said it was because nearly everybody learned tune-up from some old geezer who grew up in the days when it was really necessary to replace the condenser, and who is gonna fight a custom that sells a half million extra condensers every year? The prestige of the old is a wonderful thing. I guess everybody thinks that if a guy survived, he must have been doing something right ~ but maybe this ain't it.

Ignition Coils

Now, back to coils. Since this gent worked for an ignition manufacturer, and since a coil costs more than twice as much as a tune-up kit, I kind of took this coil replacement story with a grain of salt, as the saying goes. However, because I'm always willing to sacrifice for the benefit of my fellow TOADs, I thought I might try the coil idea out sometime. So since the '40 Chevy truck has been a trifle reluctant to start first thing in the morning for quite a while, and especially since it's easier to replace the coil on it than to put in a tune-up kit, I figured I might as well try putting in a coil. Imagine my shock and surprise when the coil replacement worked!

I did absolutely nothing to the truck other than replace the coil, and it started first kick of the starter. Before the new coil, I'd had to grind quite a while. Now I'm afraid to go ahead and complete the tune-up in case the old truck should get in the habit of starting off by herself and I'll wake up in the night and hear her muttering away out there in the backyard. Anyway, this coil trick does work and makes another thing I can paste in my hat, alongside of one about, "If you have carburetor trouble, check your point gap first."

The way the truck started after I changed the coil was the second surprise of this operation. The first one was the price of the coil, and it was not near as pleasant a surprise - in fact, shock was more like it. I had figured on maybe eight or ten bucks for an ordinary coil, and for the "Super" or "Hi-Speed" like I actually got, maybe 15 shading up to 20. Not at all! Thirty bucks! Maybe this just shows how long it's been since I bought a coil, but I sure did think it was outrageous. But since I couldn't figure out anybody who was gonna give me a coil and wasn't able to make one for myself, I went ahead and done it. At the same time, tho, I thought I'd better warn every other TOAD that I told about this coil thing so nobody else would come as near a heart attack as I did when I looked at the price tag on that coil.

One other point on ignition (that pun was intentional) that I think I'd better mention before going back into wiring. No matter what this ignition engineer says, I've seen too many old cars start right up after the condenser has been replaced to want to accept this coil proposition one hundred per cent. So if I was trying to start a real old car, I think I'd try the condenser first. Tho maybe that's because I got a couple of big boxes full of condensers - probably a thousand or so of them in there, so it don't cost me anything to try that. But thirty bucks - I'd rather take a shot at something else first!

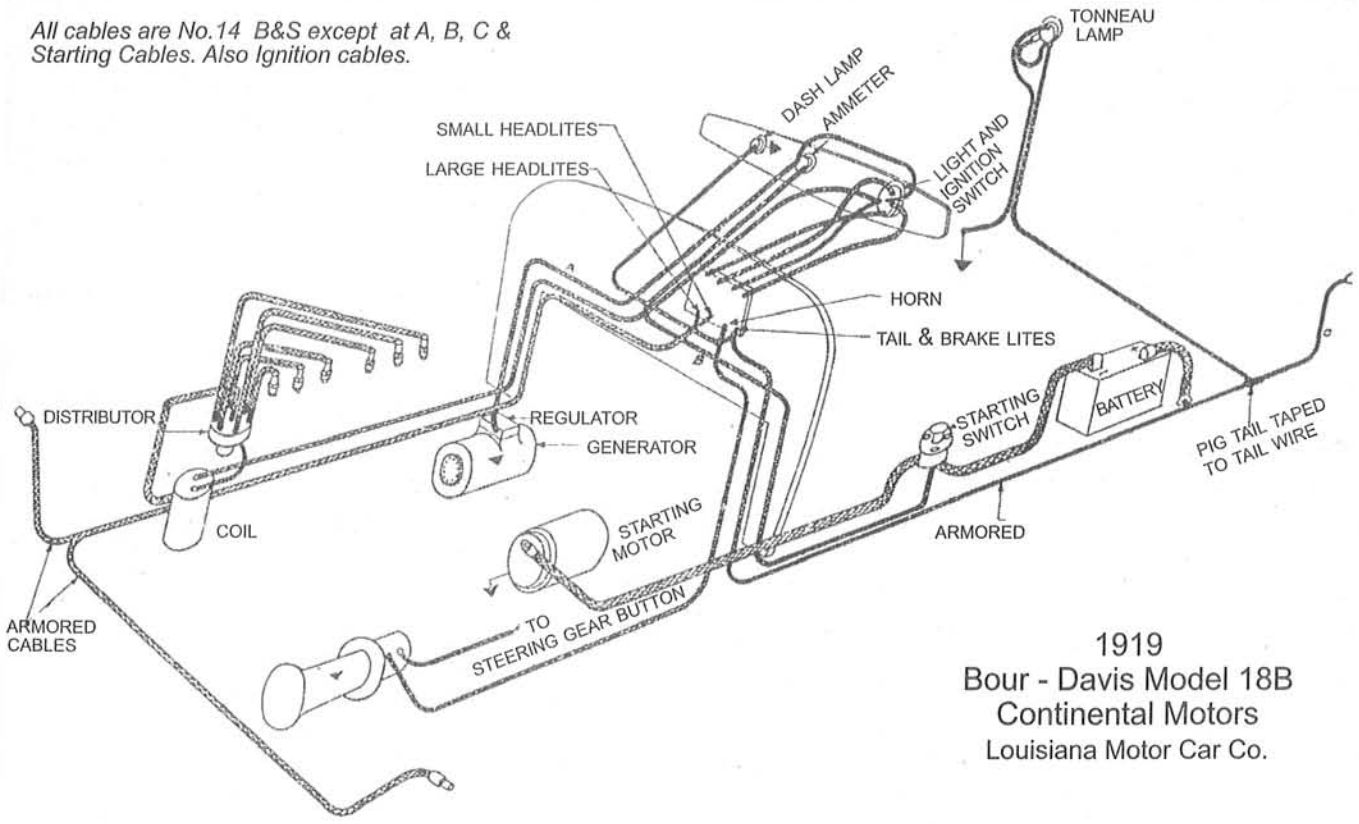
Let's get back again to wiring. Since I got inside the car to look at the headlite switches and the wiring under the cowl and behind the dash (or fascia board, if it's a foreign car), I might as well go on with some of the other wiring in there. Naturally everybody would expect to find the dome light and other interior light wiring there. Also if there's a cigarette lighter or maybe two in the back seat, which was generally the case in all the big luxury cars, you would all be looking for that too. Besides this wiring, tho, in a lot of cars all the wiring for the tail lights, back-up lights and license plate lights (if they're fitted), or any other wiring like the gas gauge at the rear of the car, goes up the windshield post (the "A" pillar it's called, I'm told) and back over the top of the door frames to the rear of the car. From there it goes down and out under the rear of the rear seat or thru the trunk in later cars to the gas gauge and rear lights, whatever they may be, or any other electrical gadget back there.

Naturally, this stuff can't be got at unless the headliner is pulled down so as to be able to get at it. In fact, some times most of the upholstery has got to be taken off, 'cause the dome light switch is on the opposite side of the car from where the main run of the wiring was placed, and the cigarette lighters (if there are two) are on opposite sides of the car. Or if there are lighted vanity cases in the car, the wiring for one of them has to cross the car. Also, if there are courtesy light switches in the door pillars to make the interior lights come on when the door is opened, the wiring for the switches has to cross the car as well as come down the door pillars, on the hinge side, so any upholstery there has got to come off, besides the headliner. What all this is leading up to, of course, is that when the car is being reupholstered, then is the time to do all your interior wiring.

If your upholstery has been redone without fixing this interior wiring, or if your upholstery is so good that you'd rather not take it out (and maybe not get it back in so nice), but the rear wiring to the tail lights, gas gauge and so forth is sick, you can cheat like I've done quite a few times and run replacement wires along the frame and up to the rear lights. It's a lot safer than using the old wire, which may have bad insulation from being chafed or even just rotted away if it's rubber. Also, if it's neatly done with old style wire, I doubt if anyone would ever question it. If you don't like that idea, if you're careful it can actually be hidden so no one can even find it. I've hid the wiring by going down the inside of a box frame, or behind a gas or hydraulic brake line. Most cars have a space between the top of the frame and the bottom of the body, and it can easily be hidden there. As I've just said, this is a lot safer than using the old wire, or even than putting new wire in the old location. Also, it's a lot easier to get at, if that ever becomes necessary.

There's more on interior wiring that I'd like to go into, but I'll save it for next month.

S.K.



Penned by Henry Miller, TOAD is an ancryonym for **T**he **O**lympic **A**utomobile **D**river - See the August 2016 isse of *Skinned Knuckles* for a complete explanation.