History of Major Automotive Developments

1920-1940 - The main components of the cars were well designed and efficient, and a variety of accessories were introduced, such as reversing lights, radios, automatic chokes, windshield wipers, and chrome-plated trim.

Since World War II, most commercial vehicles are fitted with the magnetic speedometer, which was originally developed in the 1920s.

Tires, until the 1920s, were of narrow cross-section and ran at relatively high air pressures. As technology improved tires and they were made wider, they operated at lower pressures. The tire alone would not provide much comfort, however. Between the wheel and the body of the car it is necessary to have springs. Some carriages had had the body suspended by straps from the chassis ends, but the semi-elliptical multi-leaf spring was an early development. Leaf springs are still widely used on cars, especially on the rear axles. Early "shocks" were of the friction type, often consisting of a simple pivoted arm attached to the axle so that its movement turned friction discs like a clutch.

Between WWI and WWII, several very high quality cars were built, and some of these represented such an exceptionally high standard of craftsmanship and durability that, owing to changing economic circumstances, it is unlikely that cars of comparable quality will ever be built again. These include such classics as the Bugatti "Royale," Hispano-Suiza, Rolls-Royce "Phantom III," Bentley 8 litre, and the Delage.
In America the trend was to power and luxury, while European manufacturers concentrated on small, low-priced cars like the Austin 7 in England, and the Italian Fiat 500.

In Germany the KDF, which was to become better known as the Volkswagen, was designed by Ferinand Porsche with the backing of Adolf Hitler. KDF stands for "Kraft durch Freude," that is, "strength through joy". Its basic shape still remains today and over 12 million have been sold.

In 1939, Connecticut instituted "vanity tags" for a premium fee.

1940-1960 - During WWII the production of private cars was severely restricted as raw materials were diverted to military uses. Factories were used to make military vehicles, ammunition and air-craft components. When car production began again, the first models were almost the same as pre-war designs, and it took a few years for the plants to re-tool enough to produce any really new designs.

Power brakes were gradually introduced on road vehicles from the 1940s on.

Shock absorbers became hydraulic and telescopic, consisting of a piston inside a sealed cylinder, one attached to the chassis and the other to the axle.

Many new models had powerful high compression engines, along with independent front suspension. In styling, they became much longer, lower and more elaborate. Lightweight chassis-less bodies were adopted, and the use of curved glass for the windshields and rear windows improved driving visibility a great deal.

Development of transistors during the 1950s led to the introduction of semiconductor ignition systems, which use electronic switching systems to control the ignition coil.
There was a large, sometimes excessive, use of chrome plating, and styling became one of the major preoccupations of the industry, with newer models being introduced yearly that were often mechanical images of those they replaced.

The tubeless tire was introduced by the Goodrich Company in 1948.

Power steering, air conditioning, twin headlamps, and wrap-around windshields were originated in the States during the early 1950s.

Glass fiber reinforced resins, light and corrosion free, were used on the bodywork of the 1953 Chevrolet Corvette, and for the roof panel of the 1955 Citroen DS19.

Advances in technology allowed the use of higher compression ratios in fuel. Overhead valve and overhead camshaft designs, with improved fuel systems (including fuel injection) along with better ignition system performance contributed to engine power outputs for a given cubic capacity being increased. The resultant increase in power to weight ratio that was possible improved the acceleration, speed, road holding and braking of cars of that time.

Disc brakes, less prone to failure from overheating than drum brakes, at last became widely accepted, over half a century after Lanchester's original design was patented.
Further improvements in roadholding and braking resulted from the introduction of radial-ply tires in 1953. Due to their higher cost, these tires were at first used only on expensive high performance cars, but they are now widely used on all kinds of cars.
The introduction of new plastic materials for interior trim was a great asset for the stylists, and a wide range of color

schemes became available to match the body colors.
The once universal oil pressure gauges and ammeters were often replaced by simple warning lights, which are cheaper and less complicated; they are also less informative.

1960 - Car design in the 1960s was greatly influenced by the new interest in safety and pollution control. Mechanical improvements brought higher speeds, better road-holding, braking and acceleration, but many countries began to introduce laws which restricted the maximum speed of vehicles. Cars had to be built to comply with the strict new safety and anti-pollution laws of the United States, which were gradually adopted by many other countries.
In addition to improved performance, cars became even more comfortable and easier to drive.
Heating and ventilating equipment became standard on even the small cheap cars where it had previously been available, if at all, as an extra.

Automatic transmission, power brakes and power steering gained widespread acceptance. The electrical system, which had a more and more heavy load to handle, was improved by the introduction of the alternator to replace the dynamo, and the use of circuit breakers instead of fuses.

One important development in engine design was the invention of the wankel engine, which has a single three-lobed driving rotor instead of the conventional pistons and crankshaft. The first one was made in 1957 by Felix Wankel of Germany, and in 1964, the NSU company brought out the Wankel-engined "Spyder," and a few years later, the R080. The prototype Mercedes C111 and several Japanese Mazda cars also have had Wankel engines, that are light, compact, powerful and smooth running.

1973 - The United Stated passed the Clean Air Act (which was amended several times since), with the immediate result of forcing cars to install positive crankcase ventilation.

1974 - The nation-wide 55-mph speed-limit became "permanent" in America.

1975 - The catalytic converter was adopted for most 1975 American cars and many imports as a means to fight fuel consumption.
Computers play an important role in car construction now, as in everything else. The purchasing department is in charge of making sure that the glass, rubber, steel and everything else is on hand in the required amounts, and computers keep track of it all. The computer also schedules the construction of each car, and prints a sticker which goes on it, specifying the trim, optional accessories, and even where the car is to be shipped when it is finished.

In this age of the computer, it is only natural for automobile

manufacturers to install on-board computers into the cars. It is, after all, the only practical method of monitoring all the engine variables at once. The on-board computer receives its information from the various sensors located near or on the engine and processes the signals to adjust the fuel mixture, timing and other elements. The process is continuous as long as the engine is running.

The modern electro-mechanical carburetor is controlled by the computer as well. The fuel mixture is controlled by an oxygen feedback solenoid, located within the carburetor. The computer can control the speed of the car and determine when something is wrong. When the engine is cold, the computer operates from some predetermined values and the fuel mixture is fixed at full rich.

The car will let us know about any unacceptable feedback, from the seat belts being unfastened to the key being left in the lock.