Automobile Notes and Suggestions.

An automobile accessory in the form of a combination six-volt cigar lighter, acetylene lamp lighter, and incandescent repair lamp, made by the Metal Specialties Mfg. Co., of Chicago, Ill., has now been on the market for two years, and has proven itself to be a most useful article for automobile and electric vehicles. The lamp is six inches in length, and always at your elbow. A cigar, cigarette, or acetylene lamp is easily lighted going 60 miles an hour. The repair lamp is very handy for purposes of inspection. The ten feet of cord attached is sufficient for exploring any part of the machine. Its use leaves the hands free.

A 45 actual H.P. motor, 4¾" x 5", and a seven-passenger touring car with 120-inch wheel base, weighing 3,000 pounds, gives 1½ H.P. for each 100 pounds of car weight; 34 x 4½-inch tires all around is the equipment, and costs more money than the 36 x 4½-inch in the rear and 36 x 4-inch in the front. They are more convenient, and any tire manufacturer will tell you that they are more than ample to carry the load. These remarkable characteristics of the Glide car must arouse some interest. A car that is about the same in weight as the actual weight of the widely advertised, especially light cars (2,100 pounds), with a more powerful water-cooled motor, and is from 1,000 pounds to 2,000 pounds lighter than other high grade touring cars of about the same wheel base (120 inches). The motors of Glide cars have the five-bearing principle. The cylinders of the car are cast separately, so that the expansion and contraction of each cylinder is entirely separate from the others. The motor is water cooled and is provided with a simple apparatus, by means of which the carbon can be removed from the cylinders, without tearing the motor down. The universal joint is located between the motor and the transmission, and is called upon to transmit only the initial H.P. of the engine. It is housed oil-tight and dust-proof. The transmission is of the sliding gear selective type and has three speeds forward and a reverse drives direct on the low speed with all gears cut out and running idle. The Glide rear axle overcomes the flimsy, faulty construction common with bevel-gear-drive cars. The gears are large enough in proportion, and are made of the best material. The bearings are strong enough and made adjustable, and the shafts are large enough to do their work without overtaxing the rear system.

The power plant of the Rapid five-ton truck, appearing on another page, comprises an engine of the 4-cylinder, 4-cycle, vertical type, with a bore of 5½ inches and stroke of 6½ inches. It develops 60 horsepower. The cylinders are cast in pairs. The cylinder heads are cast integrally with the cylinders, as are also the valve chambers. The water-jacket head is separate. This permits of the cylinder cores and water-jacket cores being uniform, and allows the thorough removal of the core sand. The valves are of large diameter, the inlet and exhaust valves being interchangeable and located on the left-hand side of the motor, thereby necessitating only one camshaft. The valve heads are nickel steel, electrically welded to a carbon-steel stem of large diameter. Lubrication is by force-feed oiler to each bearing and cylinder. The oiler is attached directly to the upper half of crankshaft, and is positively driven by gears. The circulating water pump is of the centrifugal type, gear driven, and of such construction that it will not impede the natural circulation of the water in case of accident to the pump. The clutch is of the multiple-disk type, and is inclosed in the flywheel. Connecting the clutch with the transmission is a short propeller shaft provided with a specially designed universal joint at each end. The transmission is of the selective sliding-gear type, giving three speeds forward and one reverse. The driving spindle is forged integral with the driving gear, and is mounted on two large Timken roller bearings. The direct-drive shaft has three keyways milled from the solid shaft, thereby doing away with the square broached hole in the gears, as in the usual construction. The countershaft has flanges forged integral with the shaft for bolting the various gears thereto. The reverse gear runs in a pocket, and is mounted on a hardened and ground shaft, where it can be thoroughly lubricated. The bevel gear is bolted direct to a Hedgeland equalizer, which acts as a differential and gives a positive drive, no matter what the condition of the roads, and one which does not have the inherent faults of the ordinary differential in this respect.

The Holsman Automobile Company, of Chicago, Ill., have introduced a decided novelty in the way of a four-cylinder high-wheel automobile that deserves more space than we are unfortunately able to give it. The company has succeeded in building a motor in which there is not a single plain bearing, and in which every bearing is either a ball or roller bearing. It has dispensed with connecting rods and all unnecessary bearings. The motor is an air-cooled, four-cylinder, four-cycle type, 26 horse-power by standard rating, with twin mufflers, oiling device, carbureter, sparking apparatus, and transmission for both low and high gear all in one piece. It has three 5-inch radial ball bearings of best silent type, two 5-inch roller bearings of best frictionless type, and two Hyatt flexible roller bearings at the ends of the shaft near the sheaves. It has no plain bearings or journals whatsoever—not even a piston wrist-pin bearing. The ball and roller bearings, besides being the best that can be had, are fully twice as large as have ever been used on any motor of the same capacity, and are intended to be practically non-wearable. There are several other features that are new. For instance, power is transmitted directly from the motor shaft to the wheels without any intermediate gearing whatever by the use of a friction chain, thus making a real direct drive.

Some day the farmer will use the automobile more generally than now. The nearest approach to that day is represented by runabouts of the buggy type, which have large wheels, solid tires, and simple transmission. In this field a great success in automobile manufacture is being achieved. The force of this suggestion cannot be appreciated by anyone not intimately acquainted with the roads of our undeveloped districts, which make up the great area of this country. One of the first to follow the principle that an automobile can be made to go wherever a horse and buggy can, was W. H. McIntyre, of the W. H. McIntyre Company, Auburn, Ind. To-day the McIntyre Company has four immense factories with half a million feet of floor space and a combined capacity of twenty-five cars per day. It is building one, two, and three-seated pleasure cars, telephone and express wagons, rural mail wagons, laundry wagons, open and covered delivery, and in fact a complete line of commercial and pleasure cars. The McIntyre Company is the actual manufacturer of the car complete, building engines, transmission, chassis, body, etc. Several patented features make the McIntyre car distinct from any other on the market. Both two-cylinder and four-cylinder engines are used. The double-cylinder motors are of the half offset type. The planetary transmission used gives two speeds forward and one reverse. Both chain and shaft drive cars are built. All motors are air-cooled, and the McIntyre patented flywheel is claimed to have a blowing power of over 33 1-3 per cent above that of an ordinary fan of the same diameter. The spokes of the flywheel are cast in the form of fan blades, doing away with the use of fans, belts, etc.

The Lambert drive system, embodied in the Buckeye Manufacturing Company's automobiles and trucks illustrated elsewhere, embraces but two elements—a friction disk and a friction wheel, the former mounted on the rear end of a continuation of the crankshaft, and the latter on a transverse shaft lying to the rear of the disk face and from which a chain drives the rear axle. The friction wheel can be slid by a lever along the jack shaft, so that it contacts with the face of the friction disk at its center, or at any point from the center to the periphery of the right side for forward speeds, and on the opposite side of the disk for reverse speeds. Once the friction wheel is positioned for the desired speed, the friction disk has to be carried rearward, in order to press firmly against the paper ring on the rim of the friction wheel. This is accomplished by sliding rearward the longitudinal shaft with the disk—a movement made possible by the keying of a three-arm spider on the forward end of the longitudinal shaft, and the inserting of three studs in the rear face of the flywheel, so that all ball and socket joints in the spider arm may slip back and forward on these studs. The construction of the babbitt ball, which is used in the three-point spider connecting the extension shaft with the flywheel on the motor, is novel. This babbitt ball is cast around a copper gauze cover with small pyramids of graphite, so that when the ball slides back and forth on the driving pin, the graphite points make it self-lubricating. The ball and socket connection of the spider is such that by loosening the cap screw one can turn the adjusting nut, and take up the wear on the ball.

One of the most notable lines along which automobile construction is developing is the tendency toward a reversal to the earlier structural forms, made possible by refinement in detail and the greater skill and experience of designers and manufacturers. For instance, the earlier automobiles were built with but one cylinder. In order primarily to obtain more power, and secondarily to reduce vibration, multiple-cylinder engines were resorted to. Two or three years ago it seemed as if the single-cylinder automobile motor, if not the two-cylinder as well, was to be entirely superseded by fours and sixes. However, a variety of considerations, such as cost, weight, and expense of operation, have brought the single-cylinder back into favor, and luckily the greater skill of designers and producers has made this form of car perfectly practical and satisfactory. Those accustomed to the large motors can hardly believe the results of the small car races in France for the past two years, in which single-cylinder engines with a bore of barely four inches traveled for hundreds of miles, carrying two people, at an average rate of around fifty miles an hour. One of the first cars, if not the first, to cross the American continent was a single-cylinder; and so fraught with extraordinary difficulties, hardships, and dangers is the route from Denver to the Coast, that but a small number of even the most powerful cars have succeeded in making this trip. The latest transcontinental run has just been completed by the Brush Runabout, which is a single-cylinder car with a four-inch bore and four-inch stroke, and which from Denver to San Francisco carried Mr. F. A. Trinkle and his wife. This trip illustrates the unexpected results that may be obtained from apparently small means when the design is harmonious and correct, coupled with the proper materials, properly worked. The car itself, covered with mud and carrying the spade and tackle block used by Trinkle in the trackless wilds of the West, was one of the features of the New York Automobile Show.

A glance at the Premier cars readily indicates the rapid progress made toward the standardization of the modern motor car. The motors of the four and six-cylinder types have cylinders cast in pairs, with intake and exhaust valves on opposite sides. Lubrication is by force feed direct to the cylinders, and also by splash. The engines are fitted with low-tension ignition regularly, this being the make-and-break with Bosch magneto, and in addition they have a high-tension system, with battery, coil, and plugs, as an auxiliary. A Weston type multiple-disk clutch is inclosed in an oil-tight housing attached to the flywheel, and the drive from this to the transmission is through a floating member, whose forward end is squared well up within the clutch, and whose rear end consists of a three-jaw coupling with jaws slightly spherical, making it practically a universal joint. The transmission affords three speeds forward and a reverse. The drive is by propeller shaft. The rear axle is unique in several respects. The housing consists of two bell-shaped steel castings thoroughly ribbed on the inside to preserve alignment, and without truss rods. The driving pinion is located centrally, both it and its spindle being cut from one piece of metal, and is carried on two annular ball bearings suspended in saucer-like castings, dished diversely, the circular flanges registering together. The squared inner end of the live axle is carried in the hub extension of the differential, and on the outer end is a three-jaw clutch, which engages with a corresponding clutch in rear wheel hub.

The electric vehicle does not compete with the gasoline car for touring, but has a large field of its own in city and suburban needs. The limitations in the radius of action on one charge are not apparent in this use, since the radius is much greater than the requirements. The advantages of the electric are economy of operation, safety, freedom from noise, smoke, and dirt. The electric motor used to-day is fifty per cent better than it was. The storage battery has been improved in many ways. The materials and construction have improved in the electric class just as much as in the gasoline cars. Five years ago the average ability of an electric was 25 miles on a battery charge. Now it does 50 to 80 miles at less expense. The general idea is that electrics are expensive to maintain, but the cost of keeping them is about the same as that of horse buggies, while they do at least three times the work. The electric is not intended for high speeds, but is capable of traveling much above the speed laws, and when charged for a distance of say 50 miles per day, it costs often less than mentioned above. It is simple and easily kept in perfect condition. No other vehicle is so easily controlled and guided, or so safe and dependable.