the CROSSLAND Steam Car

CROSSLAND STEAM CAR

"The Car Supreme"

CROSSLAND-ROCK FALLS CORPORATION

FACTORY AT STERLING, ILLINOIS

CROSSLAND STEAM CAR

The object of this little booklet is to present, not a technical treatise on steam, but a comparison of steam power as applied to the CROSSLAND STEAM CAR with the gasoline motor commonly used in the motor vehicle at present.

It is hardly necessary to point out that in the industrial field, every plant which requires quantity of power uses steam. The wheels of our factories, our electric power plants, our ocean liners and locomotives are all steam driven for the simple reason that steam is universally recognized as the logical, the most powerful, the simplest, the cheapest, and most easily controlled source of mechanical energy. It is a common occurrence to see a train of seventy or more loaded freight cars drawn by a single locomotive, an accomplishment impossible to any other than a steam driven vehicle.

Steam has been rightly called "THE PULSE OF THE UNIVERSE."

With this fact in mind the question arises, "Why then is the gasoline motor the motive power of the majority of present day automobiles?"

To answer this question without going into technical details it is only necessary to say that the first motor drawn vehicles to catch the public fancy were propelled by internal combustion engines. The manufacturer has since followed the line of least resistance in developing the gasoline motor instead of turning to the logical power of steam.

Established institutions are not immediately overthrown by new and improved developments. As an illustration, gas lighting and kerosene lamps continued in use long after the introduction of the modern incandescent bulb.

The superiority of steam as compared with the gasoline motor has been no secret to the engineering world, but the difficulty of adapting steam power to the motor vehicle, simplified to the requirements of the inexperienced drivers has been the problem to be solved.

Mr. H. Crossland Pfaff, after years of experience with the leaders in the automobile industry in designing and selling gas cars, realizing the fallacy of both the theory and practice of the internal combustion engine, turned his energies toward steam. He and his corps of engineers have devoted six years to research and experiment and can now present to the automotive world the CROSSLAND STEAM CAR. He has succeeded in adapting the power plant

to the restricted area available in a motor vehicle, in providing an efficient, easily controlled and automatic means of creating steam without objectionable complications, and has designed a generator in which the strength of the metal can be conserved.

The CROSSLAND STEAM CAR, which Mr. Pfaff has produced, is a scientifically designed steam car, conceived and created by experts in steam. In refinement of line and finish and in its mechanical construction it is the equal of any modern gasoline driven vehicle.

The engine in the CROSSLAND is a simple standard steam engine of the locomotive type which has been thoroughly proven and found reliable by many years of service in commercial work. The distinctive features of the CROSSLAND as a steam car are contained in the generator, in the means of creating the power and applying it to the car and in this respect the CROSSLAND is many strides ahead of any other motor vehicle.

Let us consider the essential differences between the types of power represented by the gasoline motor and the steam engine. The gasoline motor or internal combustion engine ignites its fuel inside the cylinder, deriving its power from the explosion of the charge which drives the piston down the cylinder and revolves the crank shaft. The impulse thus

produced is a sharp hammerlike stroke productive of tremendous vibration and a muffler is required to deaden the sound of the explosion. In order to reduce vibration and to distribute the impulse more evenly in the cycle of the revolving crankshaft, multiple cylinders (from four to twelve) are introduced. These cylinders are timed to explode at different points in the revolving cycle, but the vibration and the hammerstroke impulse are far from entirely eliminated.

In order to operate these cylinders, each one of which is really a separate engine, a great deal of complicated apparatus is required. A carburetor must vaporize the fuel and mix it with the proper proportion of air; a starter is furnished which requires a battery and a generator to keep it charged, the electrical ignition system includes a magneto, a distributor, a timer, spark plugs and an elaborate maze of wiring all of which must be in perfect order to permit the engine to operate.

The heat resulting from the explosion of the fuel inside the cylinder runs up to about 3,000 degrees F. necessitating some cooling device and a constant supply of oil on the walls of the cylinder to prevent over heating and excessive wear of the metal. It is the burning of this oil which causes carbon trouble and in spite of all cooling devices and oil, the high internal temperature shortens the life of both piston and cylinder.

When the gasoline motor is new it is very "stiff" and has to be run for several hundred miles before it "limbers up," after which it attains its greatest efficiency. This result is obtained by the wearing of moving parts against each other until excessive friction is reduced. As the car continues to run this wearing process goes on until there is too much play between the moving parts and the efficiency is impaired because a gas engine requires a high degree of precision in the fitting of its parts. A general overhauling is then necessary, consisting of reboring cylinders, replacing piston rings on oversize pistons, replacing bearings and other moving parts that are worn out.

It is because of this expensive and seldom satisfactory operation that many car owners turn in their cars after a year or two. A gasoline motor is continually either wearing in or wearing out and the period of its efficiency is very short. The business of replacing parts runs into tremendous figures in the automobile industry.

In an internal combustion engine there is no means of storing energy to be used later, consequently the engine must be started without its load and an elaborate system of gears and clutches must be provided to connect the power with the wheels to propel the car. The various speeds forward and the reverse are accomplished by connecting the power with the wheels on different sets of gears called the

transmission. Here again we have many moving parts and a considerable waste of power in their operation.

As the internal combustion engine has developed it has become more and more intricate and with its many hundreds of moving parts, some of which are subject to tremendous heat, its life is short and its efficiency seriously impaired by slight wear of parts or imperfect adjustments.

Now let us take steam power. A steam generator first creates a store of energy in the form of steam under pressure, which steam is then turned at will into the cylinder, pushes the piston down the cylinder and by this operation revolves the wheels of the car to which the mechanism is directly connected. It is most simple! The impulse is positive, powerful and delivered in the form of an expansive push instead of the sharp hammerstoke of the gas engine, making a vast degree of difference in vibration and strain on the parts of the engine and car. The internal temperature of the cylinder of the steam engine is not to exceed 500 degrees F. as compared with 3000 degrees in the case of the gas engine, which simplifies lubrication, reduces contraction and expansion and vastly prolongs the life of the metal in the engine.

The fact of having in the steam plant a store of energy available for use and thereby being able to

connect the power directly with the wheels of the car makes it possible to eliminate the expensive and troublesome transmission of the gas car with its gears and clutches and its attendant loss of power. You can imagine the simplicity of driving without gears to shift or clutches to operate.

In the Crossland Car the steam generator is located under the hood and the five kerosene burners are placed in the extreme front end. These burners are a distinctive feature of the Crossland, so effective in their operation that they will produce a head of steam in 90 seconds from a cold start. They are ignited chemically, turning off when the maximum pressure is reached and going on again when pressure falls below the minimum, without the attention of the driver. The fuel comes to the burners without being preheated, is drawn out of the nozzle in a raw state by a two pound air pressure, is atomized (not vaporized) and produces combustion as near perfect as human means can contrive. There are no obnoxious fumes resulting as a product of this combustion.

The chemical ignition of the Crossland burners deserves more than passing comment. This process is another distinctive Crossland feature, another ingenious conception of its inventor. It is absolutely positive in its ignition of the spray of fuel as it issues from the nozzle of the burner, is guaranteed, and can be renewed when necessary at a nominal cost in a few minutes.

The flame from the burners is directed downward into a clay lined firebox and does not come in direct contact with the tubes of the boiler. The hot gases are deflected by baffle plates so that they are evenly distributed throughout the banks of tubes heating them evenly throughout. The tubes are kept constantly full of water which is circulating, thus insuring against overheating and weakening the metal, and all sediment is carried to the mud drums below the tubes from where it can easily be washed out by the steam pressure. The generator is tested to withstand a pressure of 1200 pounds although the maximum pressure of operation is 600 lbs.

Every precaution has been taken to insure a long life to the boiler. The fact that no flame comes in contact with the tubes, that they are uniformly heated and that they are always full of water reduces expansion and contraction to the minimum and the possibility of a boiler leak is remote. However, should a leak occur, it is easily located and can be repaired without difficulty even on the road.

After steam is generated in the tubes it is carried to the steam drums above the generator where it is held in reserve to be used as needed. At maximum pressure a reserve is on hand sufficient to run the car over five miles.

The CROSSLAND has no pilot light and uses no gasoline so there is absolutely no possibility of

fire or explosion. It operates at about one-half the cost of a gas car for fuel, uses about a gallon of cylinder oil in a year and will consume a gallon of water in thirty miles. There is also considerable saving in the wear on tires due to the absence of vibration and the character of the mechanical impulse of the engine.

The flexibility of steam power enables the CROSSLAND to run slower than any gas car, go faster than any man will drive it and all controlled by the throttle with both hands on the steering wheel all the time.

The CROSSLAND has only twenty-nine moving parts in the whole car including the wheels, and of these, nineteen are in the engine. A steam engine is operated at a much lower rate of speed than the gasoline motor for automobiles and, as has been pointed out, at a much lower internal temperature permitting better and more effective lubrication. It can easily be seen therefore, why the life of a steam engine is infinitely greater than that of a gas engine and the cost of upkeep almost nil.

Let us summarize now the essential differences between the gas and steam cars.

The CROSSLAND steam car is much more simple in construction in that it has no radiator, no

clutches, gears or transmission, no muffler, no carburetor, no starter and no electric ignition system with its maze of wiring, magneto, distributor, timer, spark plugs, etc. The number of moving parts is infinitely less in a steam car.

Steam is simpler in operation because the driver has no gears or clutches to operate and has only to open or close the throttle to start or regulate the speed.

Steam is more powerful because it will pull a greater load and go faster.

Steam is more flexible because it permits greater range of speed both fast and slow.

Steam drives more comfortably because of the lack of vibration.

Steam is cheaper in fuel, in lubrication, in tires and in upkeep.

The CROSSLAND is safer because no gasoline is used and there is no danger of fire or explosion. No obnoxious fumes are generated in its combustion.

The CROSSLAND will prove more reliable, more dependable, more satisfactory, will require less attention and less repairs than any other car. This is the car for YOU.

CROSSLAND - ROCK FALLS CORPORATION

Incorporated under the laws of the State of Illinois

Factory at Sterling, Illinois

the
CROSSLAND
Steam Car