

POSSIBILITIES OF STEAM POWERED AUTOMOBILES.

Remarkable progress has been made in the field of industry by free India within a very short space of time and with the big development programmes in hand, backed by U.S. help, are being hurried up to make India self-sufficient and at level with other countries of the world today.

Transport is the very life of trade and it has received due consideration. Attempts are being made at manufacture of automobiles, huge factories are looming up, imports have been restricted and protection granted for the benefit of the enterprise. Most modern designs are being attempted at the instance of pioneer manufacturers of the West, while the trend of development is drifting.

It has been ultimately established that it is paying to revert to "steam power" propulsion for road transport work. Interest in steam is going up. Scores of inventors, designers and engineers in England, Germany, Australia and other countries are vigorously working to make the steam car better.

Sentinel Steam Waggon Company's (of England) latest development in speedy, cheap and reliable road transport has proved eminently suitable in practice by the popularity expressed in numbers in use today. The Sentinel Steam Waggon sets a very high standard for economy, simplicity of design, ease of maintenance and reliability. The fuel is low grade coal.

The firm of Dias-Fahrzeugbau of Berlin are manufacturing six ton steam lorries. Low volatile bituminous coal being used for fuel. The performance achieved is of maximum speed 46.5 m.p.h., coal consumption 2.75 lbs. per mile, distance on one filling of water 621.4 miles, distance on one filling of coal 746 miles, is remarkable.

The firm of Lenz and Butenuth of Berlin have successfully converted a number of internal combustion

lorries to steam operation. The conversion involves a minimum of alteration and the low fuel cost of 2.2 pfg per k.m. compared to 17.3 pfg per k.m. when petrol driven is stupendous.

India is entirely dependent for fuel oil and the heavy cost of importing internal combustion engined vehicles and accessories is draining - and not a small amount - of hard currency, ought to make one stop look listen of a country mostly depending on agricultural and mineral resources.

Steam power is cheap, dependable and simple. Steam driven vehicles were the pioneers of mechanical road transport; notwithstanding the remarkable progress of the internal combustion engines, there never has been any question about the smooth running qualities of steam car operation.

The advantages derived by adapting the steam power unit to road vehicle are many.

(i) The power is fed by a hand throttle direct to the rear wheels, without flywheel, clutch, gear box, propeller shaft, universal joints, bevel crown and tail pinions which are indispensable to the internal combustion engine driven vehicles. The elimination of gear changing alone is an important consideration when it is realised that the drivers of internal combustion engined motor buses may have to change gears about 4,000 times a day in city service. From transport standpoint, however, the claim that 30 per cent higher journey speeds can be maintained by steam vehicles is probably by far the most important consideration. The superiority of the steam vehicle in this respect is due to its smoother and more rapid acceleration and excellent hill-climbing qualities.

(ii) The steam engine by virtue of its own characteristics develops a high torque, thereby it is capable of starting right away without any outside help; full power is applied to the rear wheels directly. It is

possible to obtain a ratio of $1\frac{1}{2}$ to 1 engine to road wheels. The engine is reversible.

(iii) The steam engine develops more power to weight as compared with an internal combustion engine, and being low speed in operation, a road speed of 60 m.p.h. can be achieved at a maximum r.p.m. of 900, and at 1250 it hits the top speed of 90. The simplicity of the engine may be realised by the fact that a steam engine contains only 35 moving parts, while the internal combustion engine has hundreds. It is trouble free and needs very little attention. Most petrol vehicles need overhauls after they have done 20,000 miles : that distance only means a lubricating oil change to the steam vehicle. As far as durability is concerned, a 1925 steam car, which has travelled ~~at~~ 3,40,000 miles today runs as smoothly as a gasoline car which has less than 40,000 miles on its speedometer.

(iv) With the steam powered vehicle it is possible to make use of elliptic springs, the torque of the drive can be taken up by the springs and the engine itself acting as torque arm, thereby making it extremely comfortable to ride in.

(v) By the smoothness and flexible pressure of steam engine, tire life is extended beyond imagination. There are several instances where a set of tires have done more than 60,000 miles. It is the internal strains on the tire which causes them to give out; violent strain, especially, when starting, shifting gears, and braking.

(vi) On a steam vehicle as soon as the throttle is released the engine comes to a standstill and itself acts as a brake when desired, thus relieving the wheel brakes when stopping.

(vii) Elimination of the obnoxious gases which is the production of petrol vehicles on the streets; by replacing those with steam vehicles is in itself a wholesome boon.

An automobile is a variable speed, variable power device, because it should run smoothly and efficiently at any speed from 1 to 60 m.p.h. and it requires variable power even without variable speed, because it needs more power on a grade, or for acceleration in traffic than it does on a smooth level road.

The internal combustion engine is a constant speed, constant power device, that operates efficiently only at a certain speed, that is, in order to get its rated power it must run at a certain constant speed.

Much of the development of the petrol car has been in the direction of approximating in performance the inherent advantages of steam. Thus came self-starters, 8, 12 and 16 cylinders, over drives, fluid flywheels and automatic gear shift devices. The one great advantage of steam stored power and flexibility has yet to be equalled by the internal combustion engine which still depends chiefly on speed of rotation of the non-reversible engine to develop its maximum power.

Steam power has the inherent qualities of tremendous acceleration, constant power, smoothness and lack of vibration which make it fundamentally suited to propulsion of road vehicles.

Electricity can be adapted to the work, but in an automobile it limits the radius of operation.

For immediate purposes the existing internal combustion commercial vehicles in the country may be converted for steam operation with ease, with the internal combustion engine removed ample space is available under the bonnet for installing the steam generator and accessories, the engine can be mounted on the rear axle housing and fixed horizontally to the chassis, so that the entire assembly is accommodated under the floor board. Outward appearance, carrying space and weight of the vehicle is not affected in any way.

There is a possibility of mass-producing such units

at a low cost in India. It will not involve importation of gigantic plants at huge cost; the average Indian craftsman could be employed and raw materials required found in the country.

The entire structure could be brought into being and finished units taken off the production lines within a very short period.

There is a vast scope of using such compact small power steam units for agricultural farms, small industries, heating and refrigeration.

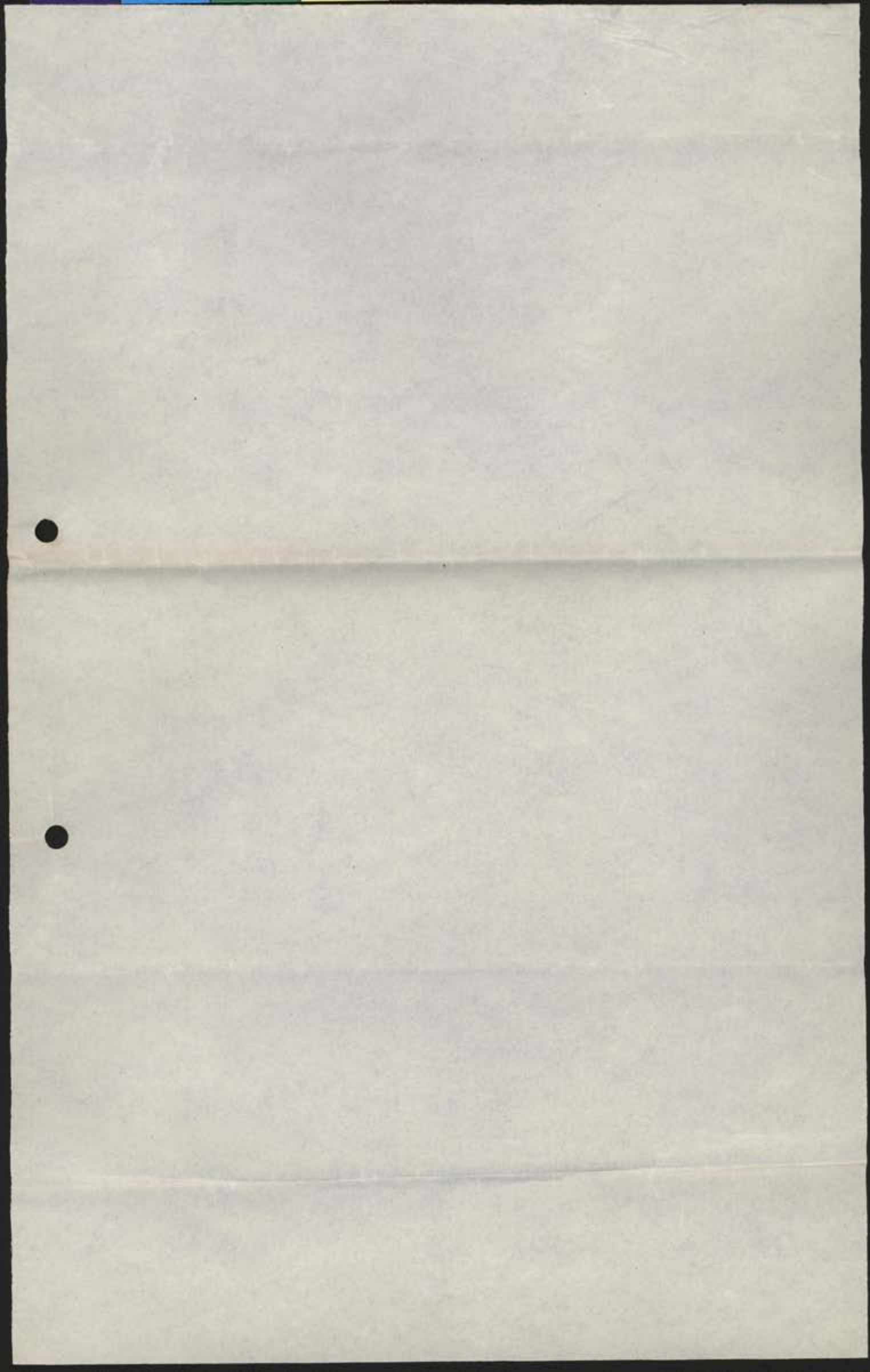
Apart from low grade coal of which there are heavy deposits in Bihar and Bengal, there are possibilities of producing tar oil, power alcohol and wood alcohol in huge quantities and such products could be used with advantage as fuel for generating steam.

[References : (i) Floyd Clymer's Motor Scrap Book and (ii) Journal of the British Light Steam Power Society.]

Aloka Kutir,)
Line Tank, West,)
RANCHI, B.N.R.)
(Bihar),)

(D.C.GHOSH).

*With compliments to
Mr. Floyd Clymer
Los Angeles
D.C. Ghosh*



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