

Labor Saving by Automobile Power

Gasoline vs. Perspiration

By Walter Langford

The power plant of an automobile does other useful work besides that of driving the vehicle. In this illustrated article the reader is told how very much cheaper and more efficient the motor is than the

human arm for lifting and hauling. Tractor trucks, pulling one or more loaded vehicles, are increasingly employed. An 8-ton motor truck pulling two trailers and hauling an aggregate load of 25 tons is being em-

ployed in fortification work by the Austrian Army. A crane, operated by the motor of the tractor, facilitates loading and unloading, and a cable and drum outfit is employed to climb stiff grades.

THE usefulness of the automobile as a time and labor-saving machine through its superior speed and carrying capacity as compared with horse-drawn vehicles is now being increased by arranging the regular power plant of the vehicle, or a separate power equipment carried on the vehicle, to perform special work, other than the propulsion of the vehicle. There are two general classes of these labor-saving automobiles, represented in the accompanying views of typical applications: Machines with an equipment designed to replace the human muscle of their drivers or crews in such operations as dumping coal delivered to steam-power plants and private residences, loading and unloading lumber and other materials, the operation of winches for various purposes, and pumping water, and to save time or labor by other special means; and machines in which the power equipment is utilized for mechanical purposes beyond the scope of human or animal labor, such as high-efficiency street sweeping, vacuum cleaning, threshing and other farming operations, and pipe thawing by electricity.

One of the best-established of these auxiliary applications of automobile power is the power-dumping coal cart. A firm of contractors having a city contract for hauling coal, ashes, gravel and other bulk materials, employs a steam truck, having a dumping body of large capacity hinged at about the middle of its length. This remarkable vehicle carries a load of 7 cubic yards of wet ashes, and makes ten to twelve one-mile trips per

day, from a power house to a new street which is being filled in, as compared with half that load carried and half the number of trips per day by the ordinary horse-drawn truck. The coal merchant em-

ploying electric trucks has found it cheaper in labor expenses to tip out his loads of coal by a small motor under the seat, rather than to continue the old hand-crank method. A remarkable application of

portable electric power is a pipe-thawing equipment consisting of a motor generator or transformer carried on the truck for delivering a large current at low voltage through the "frozen-up" pipes between curb side or hydrant and water faucet.

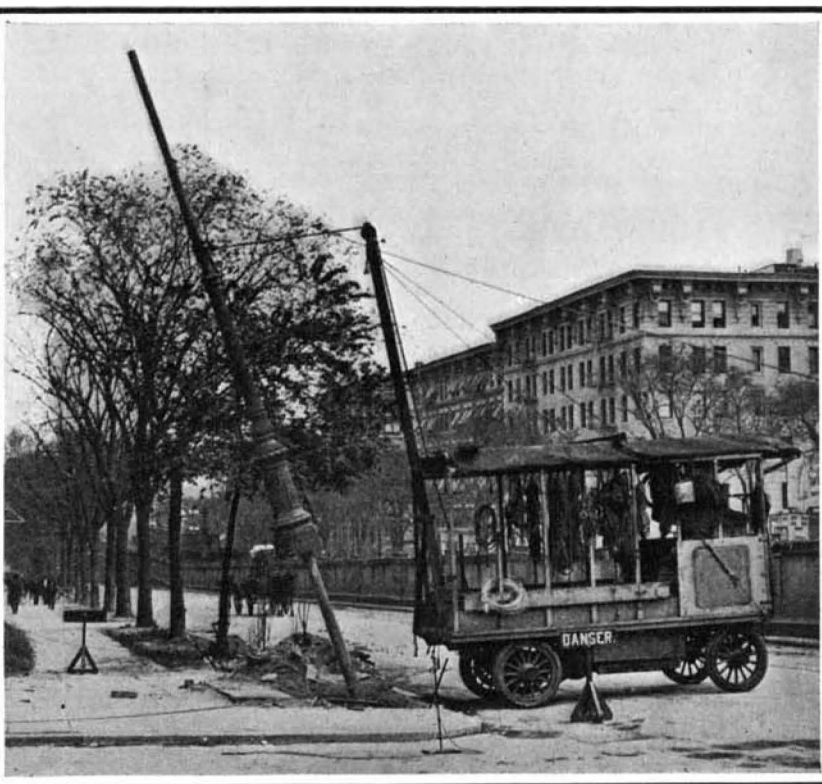
Pumping water out of electric subway manholes—frequently required after heavy rainstorms or on account of breaks in water-mains—is an operation that is being neatly handled by some of the more progressive electric-supply, telephone and telegraph companies by a power-pumping outfit carried on the "emergency wagons." The Boston Electric Co. has improved on the former method, of teaming to the flooded district a clumsy hand pump and two to four men to operate it, by placing a gasoline-driven rotary pump on one of its electric trucks. An electric light company of Providence, R. I., has provided an electric motor-driven pump with starting rheostat and connections, which can be placed on any of the trucks of the company and operated from its storage battery. Another electric outfit has a 225-ampere-hour battery in place of the usual 165-hour battery, and a double-pole switch, so that the pump cannot be thrown in while the vehicle is running, or vice versa.

The construction departments of the various electric service

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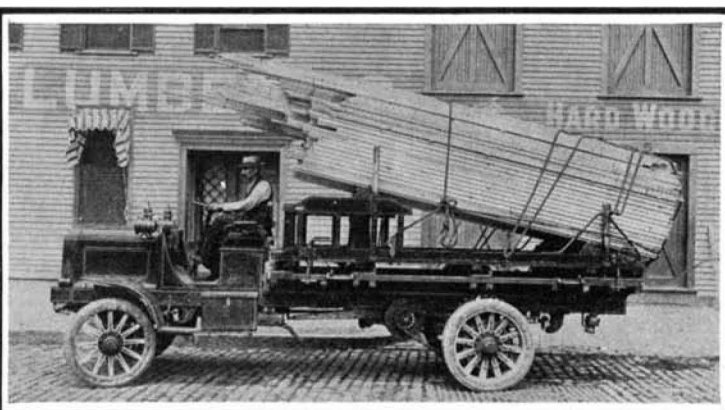
Trimming arc lamps from a tower wagon.



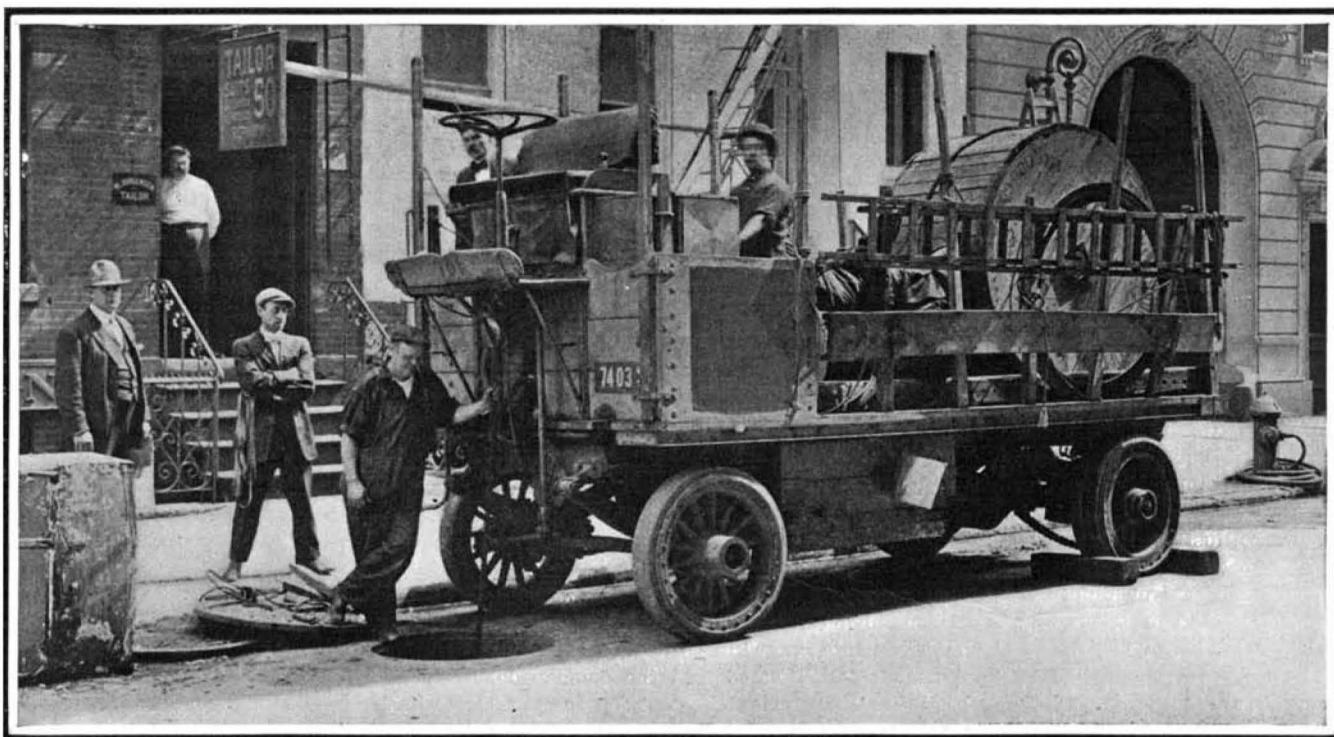
Setting a city arc lamp post.



Thawing frozen water mains.

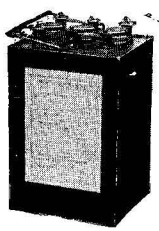


Three-ton truck with lumber hoist.



An electric truck pulling a cable.

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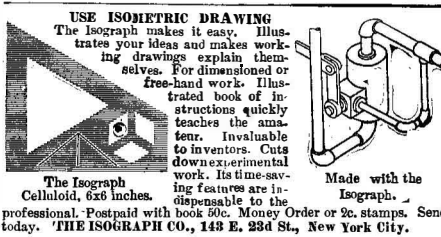


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Curtiss's Single Hydroplane Float for Aeroplanes

(Continued from page 196.)

a single and entirely different pontoon from those with which he made his first successful water experiments the preceding week.

It was the first time Mr. Curtiss tried the new pontoon. In fact, the paint was not dry on it when his assistants, including three army and one navy officer detailed to study aeronautics under him at the San Diego aviation school, launched the apparatus for the initial test.

After making a run of about a half mile to test the balancing quality of his machine on the water's surface, and when he had attained a speed of approximately forty miles an hour, Curtiss ascended easily from the water to a height of 100 feet. He remained aloft two minutes and ten seconds, describing a complete circle about three-quarters of a mile in diameter, and alighted on the water at the starting point without the semblance of a splash. He glided to within a few feet of the water with his motor at half speed, and then, opening the throttle, he flew about 100 yards before settling to the surface of the bay.

The new pontoon is a simple, compact affair. Instead of two floats, a water shield, and a small hydroplane with which the first successful experiments were made, the apparatus consists of a single pontoon substantially attached to the under supports of the ordinary type of Curtiss biplane. It resembles a flat-bottomed boat covered with canvas to make it waterproof. It is twelve feet long, two feet wide and twelve inches deep. At a distance of three feet from the front end the bottom curves upward, forming a sharp bow the full width of the float and on a level with its top. The same distance from the rear end the top bends downward, both ends being so near the same proportions that either could be used as the bow of the pontoon.

The pontoon is fixed beneath the planes in such a manner that the weight of the aeroplane with the aviator in his seat is carried slightly to the rear of the center of the float, giving the bow an upward tilt which materially assists the craft in rising from and alighting upon the water. The new pontoon weighs fifty pounds, or less than half as much as the apparatus with which the former flights were made. A stick four feet long and three inches wide, to which is attached an inflated rubber tube, is fixed beneath the extreme end of each lower plane, the purpose being to support it from contact with the water in turning the machine at full speed before ascending.

After the experiment Mr. Curtiss stated that he had solved the problem of flying from and alighting upon the water to his entire satisfaction, and with the exception of making some provision for baling water from the pontoon in case of leakage, the apparatus will remain the same as the present model, so far as the hydro-aeroplanes now in use are concerned.

Labor Saving by Automobile Power

(Continued from page 197.)

companies have found other uses for the auxiliary power carried by their motor vehicles. In setting poles, pulling wires on pole lines and pulling cables in subway ducts, time is saved and about one-quarter the number of helpers are required as compared with the old methods employing the main strength of human labor. Winch trucks are also used by safe builders and movers, for raising safes to the upper floors of office buildings.

Another application minimizing idle time during the working day is in loading and unloading by automobile power. The commercial motor vehicle is expensive in first cost, and requires, in order to realize its superior capacity and efficiency, to be utilized with minimum delay, the economy and success of the vehicle depending on the extent to which

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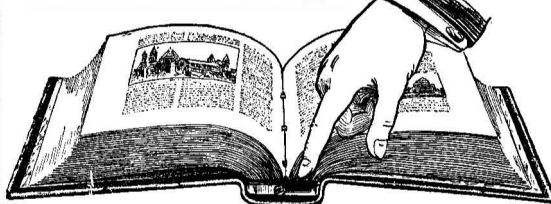
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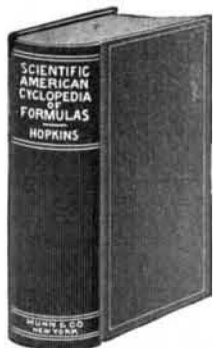
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¶ 1713. **The Wright Aeroplane.** This is a thorough description of the old type of Wright biplane with the horizontal elevation rudder in the front of the machine. Excellent diagrams and photographic views accompany the paper.

¶ 1756. **Louis Blériot and His Aeroplanes.** Few people realize that Blériot's successful monoplane is the result of ten years of daring and perilous experiment. In this paper will be found an instructive description of the evolution of the present successful Blériot monoplane, illustrated with diagrams and photographs.

¶ 1768. **The Farman Biplane.** A complete description of the Farman biplane, with detail drawings of the box tail and vertical rudders, the manner of working the four ailerons, hand and foot levers which control the machine, plan view and side elevation of the entire machine.

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it can be kept in motion carrying a paying load. A 3-ton gasoline truck employed by a lumber company to make its deliveries, consists of the truck proper with two removable bodies and two tending yard wagons. The loading work is performed by means of the removable body, the chassis being equipped with a special framework and with a pair of shafts running the length of the vehicle on each side. Loading and unloading of lumber up to 41 feet in length is accomplished by means of a pair of drums on each of the shafts with a winch on one end of the same and ropes passing over rollers; saving from 45 to 90 minutes for each load and enabling the truck to get in and out of the yard very quickly, in its 12 miles-per-hour delivery service. In the operation of this scheme, requiring one man only, one of the bodies is always being loaded while the other is in transit on the truck, and the latter is thus kept busy most of the time during the working day.

Street sweeping and sprinkling automobile vehicles are being introduced to replace the ordinary cumbersome horse-drawn vehicles. One motor sweeper, claimed to effect a saving of 25 per cent, has wide steel tires and a 12-horse-power two-cylinder engine, giving enough power to sweep uphill on any ordinary grade. The speed of this machine is 4¼ miles per hour, as compared with 2 to 2½ miles per hour with the best horse-sweeper. It is operated by one man, and sprinkles a little water on the pavement ahead to lay the dust and then sweeps with a rotary brush and picks up the sweepings, leaving a space only a few inches wide at the curb-side to be cleaned up by the hand method. In the general hauling incident to farm work a three-ton tractor of American make can carry a good-sized load on its own bed and haul ordinary farm wagons hitched on behind at the same time. Plowing is also done quickly and cheaply, and more easily at the right time (a highly important matter in farm work) with a machine operating three 14-inch plows, which can cover eight to ten acres per day on two gallons of gasoline per acre. The mechanical plow is always ready for work, and makes the farmer independent of "soft" or galled teams of horses. Fitted with extension wheel-rims, the machine can be driven over plowed ground, pulling harrows, etc., and doing a surprising amount of work per day. The rim extensions are fitted with pins which come into action automatically and which prevents slipping when the wheel strikes soft ground. The engine is of 36 horsepower, giving a speed of 4 to 15 miles per hour, and the wheel base is 140 inches.

The automobile serves a unique purpose in the quick transportation of labor on emergency jobs. The fire departments of several cities employ a roomy gasoline car to hurry firemen from one point in the city to another in order to reinforce any district needing assistance. The car is equipped with fire extinguishers and other light apparatus, and has a seat for the Chief, in front beside the driver, and two lengthwise benches behind for the men. The same idea is carried out by a Lynn, Mass., gas and electric company in a repair and general line service wagon employed to convey a gang of ten or twelve linemen from point to point and also fitted to haul poles on trailers hitched on behind. Another time-saving proposition is in trimming arc lamps in cities. Much of the time formerly consumed by lamp trimmers in covering their routes on foot, and either climbing the posts (which were stepped for the purpose) or lowering the lamps to the street by a tackle, is saved by the tower-wagon shown herewith. In an arrangement used on some routes in New York city, two men constitute the crew of this vehicle: The driver, who jumps out at each lamp-post to open the switch

at the base of the post with a key, and the trimmer, who remains on the swivelled, overhanging top of the tower.

Fuel from Nile Sudd By Our London Correspondent

AS is well known, one of the great difficulties relative to navigation on the Nile, is the obstruction offered by large masses of dense waterweed or grass, generally known as sudd. For a distance of 300 miles the river runs through a very swampy country, estimated to cover 35,000 square miles and known as the Sudd District. A great drawback to this territory is the complete absence of fuel of any description, there being no timber, while coal has to be imported, and the price of these two commodities averages about \$13 per ton. The existence of this weed offered a severe obstruction to the development of the Soudan, since at this point the Nile could not be safely navigated, owing to dense clumps of the grass, detached by floods, gales, and so forth, drifting into and blocking the main channel. The task of clearing the river and keeping the waterway open is thus expensive and difficult.

A German diplomatist, however, conceived the idea that this grass must possess a certain calorific value, and suggested that it might be harvested and converted into a fuel very cheaply, so as to meet the local deficiencies in this direction. Lord Cromer and Sir Reginald Wingate were approached, and the assistance of the Soudanese government being secured, a small commission was dispatched to the Sudd District to study the feasibility of the idea on the spot. Large quantities of the grass were secured and dispatched to Merseburg, in Germany, where experiments were at once undertaken to determine how its conversion into fuel might be effected, together with the determination of the calorific value.

As a result, a very simple and inexpensive process has been evolved. The sudd is first dried and then submitted to treatment in a disintegrator, which reduces it almost to the form of powder. The mass is then briquetted. Recently Lord Cromer, Sir Reginald Wingate and a representative of the German and Soudanese governments witnessed a demonstration of the process. The manufacture into briquettes occupies only a few minutes, and in the calorific tests that were carried out, it was ascertained that the heating value of the disintegrated sudd is about 60 per cent that of coal, while the density of the briquette is 80 per cent of coal. The cost of manufacture was found to be so satisfactory as to enable the product to be manufactured on the spot in Egypt, to be sold for about 50 per cent of the local price of imported coal.

The Soudanese have now granted a concession for the installation of a manufacturing plant in the Soudan, and are assisting the development in a tangible financial manner. The success of the experiments has provided economical and efficient means of disposing of the river obstruction, and will solve the local fuel problem to a unique degree. Owing to the expanse of the Sudd District, and the immediate availability of unlimited supplies of the raw material, it is anticipated that an important industry in the Soudan may be developed.

THE total of live stock of all kinds which used the national forest ranges during the year under pay permits fell off 2.75 per cent in comparison with the previous year. This is the first year since regulated grazing began that there has not been an increase. The cause of the drop is to be found in the reduction of the available range through eliminations of land found to be better suited to other uses than to forest purposes.

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