

LINCOLN HIGHWAY CONSTRUCTION GIVES

TRANSPORTATION OF GASOLINE AND OIL TO PORTLAND DISTRICT SEES EFFICIENCY BROUGHT TO HIGH DEGREE.

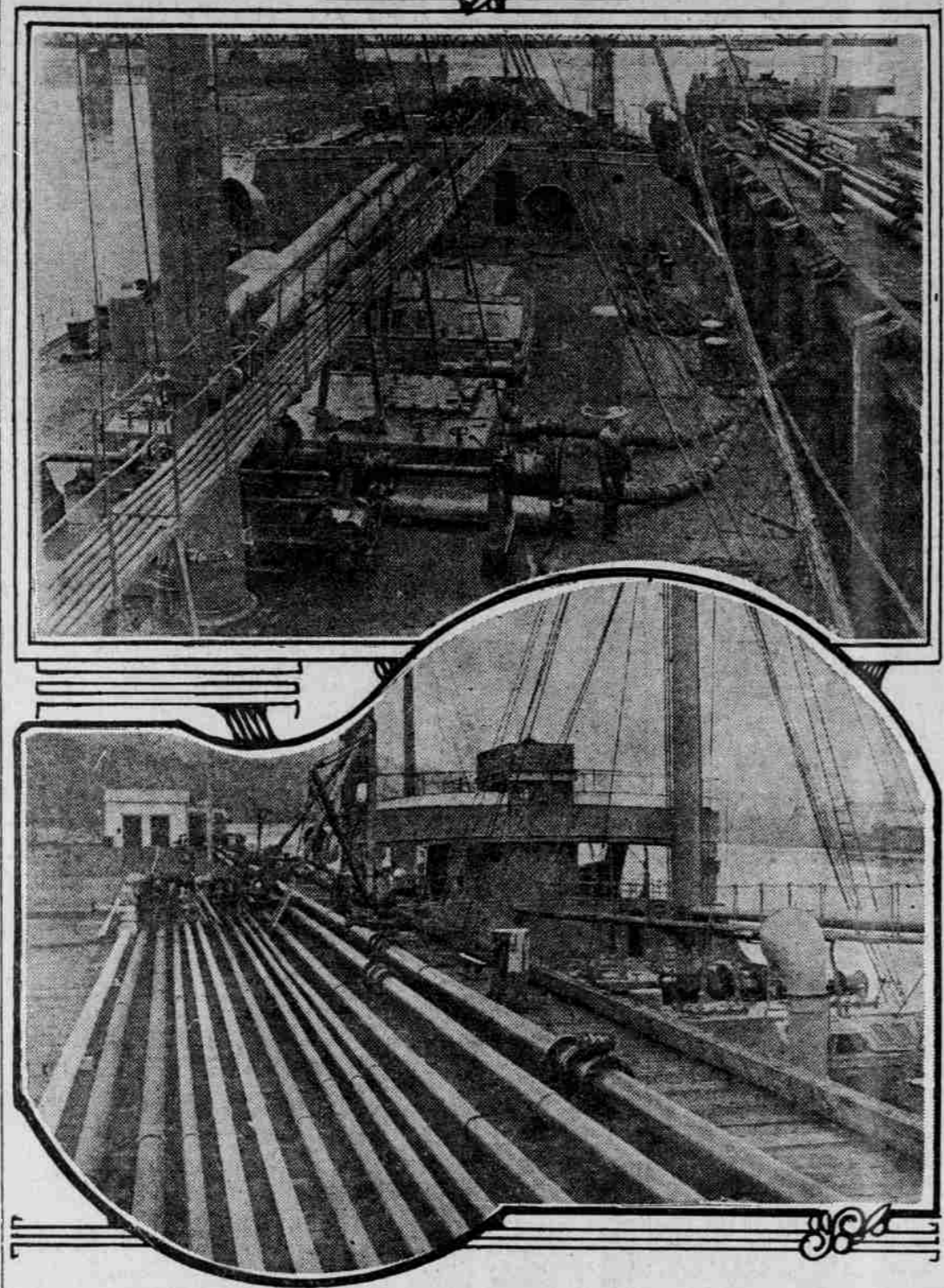
Data Cover New York to San Francisco.

OREGON ROADS ARE GOOD

Motorists Branching Off to Come to Northwest Will Find Stretches Pleading.

CHICAGO, June 24.—The following report of the Lincoln Highway association gives a complete picture of the present condition of the Lincoln highway from New York to San Francisco.

Division 1—New York City to Philadelphia, Pa., 96 miles; Westchester Ferry to Princeton, 32 miles, excellent; Princeton to Lawrenceville, 2 miles, poor, worn out macadam; Lawrenceville to Trenton, 6 miles, excellent; Trenton to Philadelphia, 42 miles, excellent. One detour (3.5 miles), excellent and well-marked Elizabethtown, N. J., west.



Above—One of huge Standard Oil company tankers discharging its cargo at Linton. Note the hose which is lowered into the tank compartments. Pumps on the mainland provide the power by which the gasoline or oil is pumped from the hold of the ship over a sally to the company's big reservoirs. Below—View along the top of the oil company docks, showing the maze of pipes used to handle gasoline, kerosene, fuel oil and the various grades of lubricating oils.

John Smith and His Car by Frederick Russell

No. 12.—Profiting by Trouble. Smith's recent trouble with his clutch led to some very important discoveries. Like all new car owners, he was inclined to be a little suspicious of the car as something serious in itself, whereas the little things that go wrong about a car are invariably merely warnings. For example, he became so interested in the mechanism under the floor boards that he found him several days later refilling the large grease cup which lubricates the clutch shift bearing. "There's the point," I said, "pointing to the particular grease cup. It wasn't for the trouble you had, but the clutch on the road, the chances are you would have forgotten to grease this bearing. Smith seemed to doubt that opportunity to grease this part would occasion any serious breakdown. "No," I admitted. "Failure to grease a part like this would hardly be a warning to you, but it would be the first of all start squeaking. But that is the last warning. If you do not heed it you are in for real trouble."

ernment at a cost of \$130,000 completed approximately ten miles of graded road through the Sitkiyou national forest to the entrance of the caves. This road is a wonderful piece of engineering, according to those who have gone over it, climbing the steep and then will lead to the state of Oregon and Josephine county have been at work constructing a link from the Grants Pass-Crescent City highway. The new work at last opens up the caves to motorists via Grants Pass. To the caves from the Josephine county metropolis is about 52 miles and the trip is said to take about three hours. A camp has been established at the caves and facilities are provided for visiting the several lakes and other beauty spots in this neighborhood. With the opening of the new road it is expected this section will become one of the most important recreation points in southern Oregon.

State Has \$8,000,000 for Roads. The state of Tennessee has inaugurated a new federal aid road building programme involving the expenditure of \$8,000,000 for 281 miles of road in 20 counties. While this programme is being carried out a campaign is under way to increase the state's gasoline tax and a bond issue. This movement has the support of the automobile clubs of the state and the Tennessee Good Roads association. The highway department of the state recently let contracts for 138.86 miles of bituminous macadam roads in the vicinity of Altamont, Ashland City, Elizabeth, Erwin, Greeneville, Huntington, Kingston, Dandridge, the cost of which will be \$4,584,500.

OREGON CAVES OPENED GRANTS PASS PLANNING BIG CELEBRATION TOMORROW. Government, State and County Unite to Provide Road to Little-Known Scenic Wonder.

Tomorrow will be a red letter day in the highway history of southern Oregon. For it will mark the official opening of the new road to the Marble caves of Oregon. The celebration signalling the opening of the new road has been planned under the auspices of the Grants Pass Chamber of Commerce and all Oregon has been asked to participate. For several years the Grants Pass chamber, assisted by the Portland Chamber of Commerce, the Oregon state chamber of commerce and other associations and individuals, has been working strenuously for a road to open up this extraordinary and comparatively unknown natural wonder. More than a year ago an appropriation was made by the government in connection with the forest road programme, and the state and Josephine county took similar action. As a result work was begun and only recently the road was completed into the region of the caves. As the Oregon marble caves, or the Josephine caves as they are better known, may well be considered a scenic attraction belonging to the entire state, the celebration Monday to mark the opening of the road is considered of statewide significance.

"That proves that you are profiting by the trouble you had last week," I retorted. "To understand the function of the universal joint is necessary only to picture what would happen if the power from the engine were transmitted to the rear axle by a rigid propeller shaft. When the car would strike a hole in the road the shaft would break. Since the engine and the transmission are bolted rigidly to the front of the frame and as the rear axle follows the uneven surface of the road, the propeller shaft must be joined to the transmission shaft by a joint which will allow free movement of the propeller shaft while the power is being transmitted. And in cars of long wheel-base another joint is placed just in front of the pinion gear. In metal joints the principle of flexibility is similar to that of two links of an ordinary chain. Some makes of cars are now equipped with fabric universals, which are nothing more than heavy fabric disks to which the ends of the transmission and propeller shafts are bolted. The strain is taken up by the bending of the fabric. This type is very simple and, of course, requires no lubrication."

"Smith seemed to understand all this. "In other words, universal joints are a means of transmitting power around corners," he said. "That is the rough idea of it," I replied. "It is a long way from the transmission to the rear axle, so when the car flies up or sinks down in a ditch, power has to be transmitted in anything but a straight line. Smith had been filling his grease

2,000,000 STEERS USED IN AIRSHIP

Tough Intestinal Skin Is to Form Part of Flier.

TREATMENT IS DELICATE

Goodyear Concern Handling Products of Packing Companies for Government.

AKRON, O., June 24.—Close to 2,000,000 cattle will contribute to the making of the ZR-1, the huge airship now being built by the United States navy.

A cow may not fly over the moon, except in a fairy story, but cattle from 1890 hills may take quite a venture into the air when the big ship is ready for launching. The part that they take in the construction of the most modern form of transportation through furnishing "gold beater skin" for the airship forms a new chapter in the romance of industry.

While the metal frame work for the ZR-1 is being manufactured at the naval aircraft factory and assembled at the hangar at Lakehurst, N. J., the gas bags or cells are being made at the aeronautical shops of the Goodyear Tire & Rubber company at Akron.

Where in an ordinary non-rigid dirigible the car with its engines and propellers is suspended by cables from the sturdily built rubber-impregnated gas bag or envelope itself, this is not the case in the rigid ZR-1. Here the cars are suspended from the metal framework, which contain the gas bags. Consequently the gas bags are made of much lighter material due to the fact that they are so surrounded by framework and netting and do not carry any of the load.

Steer Intestines to Be Used. One other difference is that in the big rigid airships the cigar-shaped structure is built in compartments. In number, each one the shape of a slice—let's say Bologna—each "slice" being about 30 feet wide and with a diameter of 30 feet. These compartments or gas cells are made of the lightest fabric, cemented and covered with "gold beater skin," then varnished.

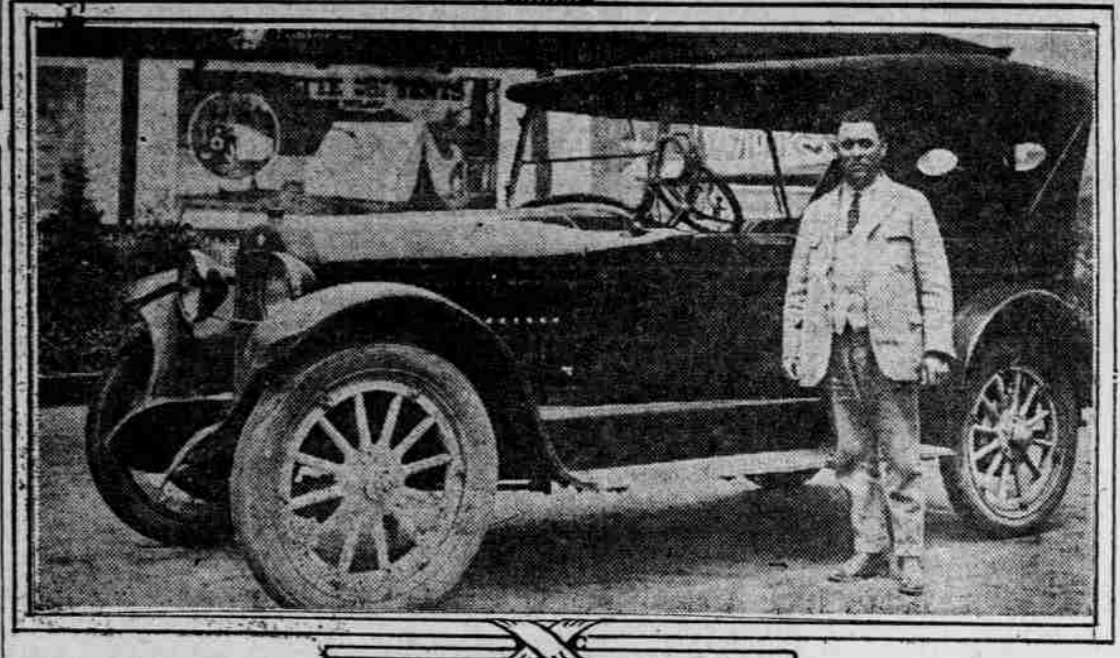
Now "gold beater skin" is nothing more or less than a small tough section of the intestine of a steer. It got its name from the middle ages when goldsmiths used to clean the gutting gold between two strips of this skin, they could hammer it for

beater skin in position, each one overlapping the next by an inch and a quarter. As the skins are only 15 to 20 inches long by 6 or 8 in width, the task requires a great deal of painstaking work. All dust is excluded from the room where the work is done, windows being hermetically sealed, and ventilation being secured by artificial means, all the air entering the room being carefully filtered so that no particle of dust may work its way between the fabric and the gold beater skin.

All visitors to the department enter an ante-room first, where they put on cloth sandals over their shoes. Every possible precaution is being taken to render the ship as safe as it is humanly possible to make it. The ZR-1 is expected to be completed next spring.

Air Freight Service Probable. NEW YORK, June 24.—An air freight service between New York and Chicago is now a probability. The United States war department has requested the Merchants' Association of New York to ascertain and make trouble

PORTLANDER WITH NASH CAR MAKES FAST TIME IN RUN FROM SPOKANE.



Charles Z. Edleson of the United Manufacturing company of this city and Nash car, in which he recently made run from the Falls city in 14 1/2 hours' driving time.

Good roads are gradually closing in the gaps which formerly existed between northwest points before the construction of the thousands of miles of hard-surfaced pavements which are now linking the northwest cities. The completion of the Columbia River highway has brought Spokane to within a few hours' drive of Portland, and what used to be a hard two days' trip is now made in daylight between suns. When Ray McNamara, the stunt driver, a few years ago drove his out-down speed car between Portland and Spokane in 15 hours and 30 minutes it was heralded as a record which would stand for years to come. And it did stand until more pavement was laid and the rough spots ironed out. Now comes Mr. Average Driver and makes the trip in 14 1/2, and without pushing his car to the limit, either. This time was made last week by Charles Z. Edleson of the United Manufacturing company, 211 Sandy boulevard, in his Nash six. The condition of the roads and the ease with which the Nash was handled is indicated by Edleson's statement to S. V. W. Peters of the Portland Motor Car company, the Nash distributor, that "after I arrived in Portland I was able to start out on a drive for pleasure without the least sense of fatigue." He started away from Spokane in the early morning, arriving in Portland at 7:30 o'clock. The Palouse highway was taken to Colfax, where the Central ferry was taken across the Snake river. Several detours were encountered which lengthened the distance traveled to 450 miles.

At the bottom of vacuum tanks which are now used on so many cars to secure proper fuel feed, there is located a drain cock. Many owners seem to think this is some sort of ornament, but it should be opened at intervals, once a week or so. Generally a little water and possibly some rust will flow out before gasoline begins to come in many cases it will be necessary to insert a bit of wire to clean out the drain cock of an accumulation of foreign matter. If this latter is permitted to remain long enough, it will work its way back into the carburetor and make trouble.

Drain the Vacuum Tank. At the bottom of vacuum tanks which are now used on so many cars to secure proper fuel feed, there is located a drain cock. Many owners seem to think this is some sort of ornament, but it should be opened at intervals, once a week or so. Generally a little water and possibly some rust will flow out before gasoline begins to come in many cases it will be necessary to insert a bit of wire to clean out the drain cock of an accumulation of foreign matter. If this latter is permitted to remain long enough, it will work its way back into the carburetor and make trouble.

Skins Carefully Handled. Here they are washed and carefully inspected and then held in a glycerine solution until they are ready to be cemented to the balloon fabric. Several hundred girls, working in three shifts, place the gold

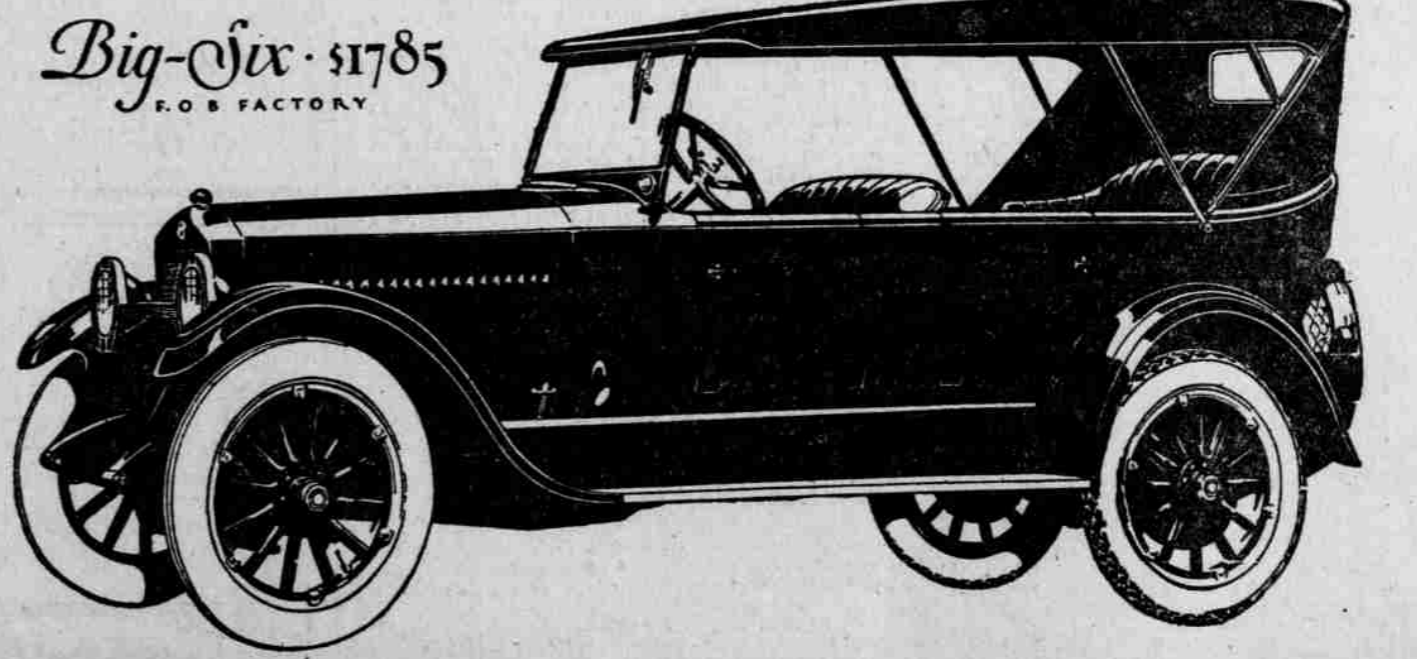
THIS IS A STUDEBAKER YEAR



If Studebaker built nothing but the Big-Six, you would never be able to buy one of these extraordinary cars for \$1785 at the factory. The expense of manufacturing and marketing Studebaker cars is shared by three distinct models, the Light-Six, the Special-Six and the Big-Six. That means one executive management, one manufacturing organization, one purchasing unit and one selling cost—instead of three separate organizations. Consider the Big-Six as an investment—how much you get for your money, plus the amount you actually save. We know of no car, even at twice its price, that will give you greater satisfaction in the matters of endurance, appearance, comfort, serviceability and the refinements. In everything that goes to make up your appreciation of a car, the Big-Six ranks with the finest built. But it distinctly does not rank with them in price! The theory that high prices necessarily mean fine cars is fallacious, simply because prices are not based upon intrinsic values but upon production costs of individual makers, which vary widely according to their ability and manufacturing facilities. Obviously, high costs of production, inevitably arising from incompetence or inadequate manufacturing facilities, mean not only high prices but actually inferior cars. The materials and workmanship in Studebaker Cars measure up to the highest standards known to the automobile industry. With \$70,000,000 of actual net assets, including \$36,000,000 of plant facilities, and seventy years' manufacturing experience, Studebaker stands unsurpassed in ability and resources to manufacture economically and give the greatest intrinsic value possible for a given price.

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Advertisement for Alemite Graphite Penetrating Oil. Includes an image of the oil bottle and text: "Stops Spring Squeaks. Stops Body Squeaks. Loosens rust-frozen bolts and nuts." "At your Dealer. Alemite Lubricator Co. 10th and Oak Sts."

Advertisement for Gene the Topman. Includes text: "'TOPS 'EM ALL' GENE THE TOPMAN" "My prices so cheap you cheat yourself if you don't have that top re-covered or repaired NOW. Just think—tops re-covered for \$12.50 to \$45.00" "OREGON AUTO TOP CO. 14th and Couch Sts."