

WORLD'S GREATEST HIGHWAY BUILDING CAMPAIGN NOW ON

The United States is in the midst of the greatest highway building campaign in the history of the world. The aggregate amount to be expended this year on the roads and lanes of the country would build and duplicate another Panama canal. According to figures collected by the B. F. Goodrich Rubber company, combined forces of the federal government, states and counties will spend \$375,000,000 in new construction and maintenance of the nation's network of highways. This is the first complete survey of 1919 good roads expenditures.

Roughly Goodrich officials estimate that the expenditure for highway improvement is approximately \$3.09 per capita; or, to emphasize this, each man, woman and child in the United States would contribute this much for the building and bettering of roads were taxation on such a basis. Were the expense apportioned out on an average basis each state would pay \$7,083,333.

Quit Talking and Build

The era of good roads talk has at last been succeeded by the era of good roads construction. Public sentiment is solidly behind extensive highway building programs now, says one of the Goodrich highway correspondents, but the enthusiasm must not wane. The millions being spent will be spent in vain unless states undertake to repair roads as quickly as they build.

While the amount available for expenditure this year seems staggering it will not be enough to make up for deferred war construction, for normally the amount spent on roads in the United States is well above \$2,500,000 and the war restriction brakes applied brought road building almost to a stop in many localities.

Three great factors have been largely responsible for this year's amazing highway expenditures. First, the incentive for states to match federal aid appropriations; second, the passage of enormous bond issues for good roads in many states; and third, the attention called to the urgent need of good roads by the war.

Reports from state highway commissioners to the Goodrich officials show some interesting individual features.

Construction in Virginia during the next six years of 3,750 miles of highway at a cost of more than \$60,000,000 has been approved.

In the New England states Connecticut, Massachusetts, Rhode Island, Vermont and New Hampshire have been interested in closing up short gaps on their main highways, which are otherwise improved for the entire distance. The same condition has been true in New York, where numerous projects are being linked up with an extensive network of roads which are already hard surfaced.

One of the features of this year's work will be the completion of the Dixie highway, which will be done by the states co-operating with each other and with the government.

For instance, in Illinois the highway will be improved in many spots, one of which is over a distance of 54.5 miles at a cost of \$904,700 and the construction will be of concrete and bituminous macadam. At the same time Georgia will be working on the road from Atlanta through to Macon, a distance of 72 miles and a continuation of the Dixie highway in that state. In Tennessee and Kentucky projects are under way which will further serve to improve this famous old highway, which cuts through the central section of the country from north to south.

Iowa is entitled to the palm for consistent road construction. This state, which has more automobiles per capita than any other state in the union, spent in the neighborhood of \$15,000,000 during both 1917 and 1918, and is spending \$20,498,534 this year.

Texas leads the nation in highway expenditures this year with \$60,480,000 available. Texas also led last year. Within her borders Texas has 126,000 miles of unimproved roads as against 22,000 miles of improved highway.

Grandmothers Vindicated

Our grandmothers used to hang a red flannel petticoat over the window of a smallpox patient's room, asserting that it hastened the cure, and also prevented "pitting." Scientists have now discovered that the red rays do actually exert a bad effect on the bacteria of the disease and a correspondingly good effect on the patient.

The Violin Bow

The shape of the present bow dates from the end of the eighteenth century when F. Tourte changed it from the bow shape as its name indicates. It should be from 27 to 30 inches long and contain from 130 to 150 hairs which are drawn tight by the nut. The stick is generally of

CENTENNIAL NOW OF JAMES WATT'S DEATH

By J. Seymour Currey

One hundred years ago James Watt, inventor of the modern condensing steam engine, died in England at the age of 83 years. Before his day the steam engine, such as it was, consisted of an upright cylinder open at the top under one end of a "beam." Steam at a pressure scarcely greater than that of the atmosphere was admitted to the lower end of the cylinder. This allowed the piston to be forced up by the aid of a counterweight at the other end of the beam. Steam from the boiler was then shut off and the steam in the cylinder was condensed by a dash of cold water; and the vacuum thus created drew the cylinder back again. This form of the steam engine was known as Newcomen's engine and was used merely for pumping water from mines. Watt was engaged in making mathematical instruments for a college in Glasgow, and after making a study of the Newcomen engine he observed that a serious waste of steam power was caused by the slow movements of the engine, which suffered the cylinder to become chilled between each stroke, followed by a pause long enough to enable it to recover sufficient heat to avoid the

condensation of the steam when again admitted.

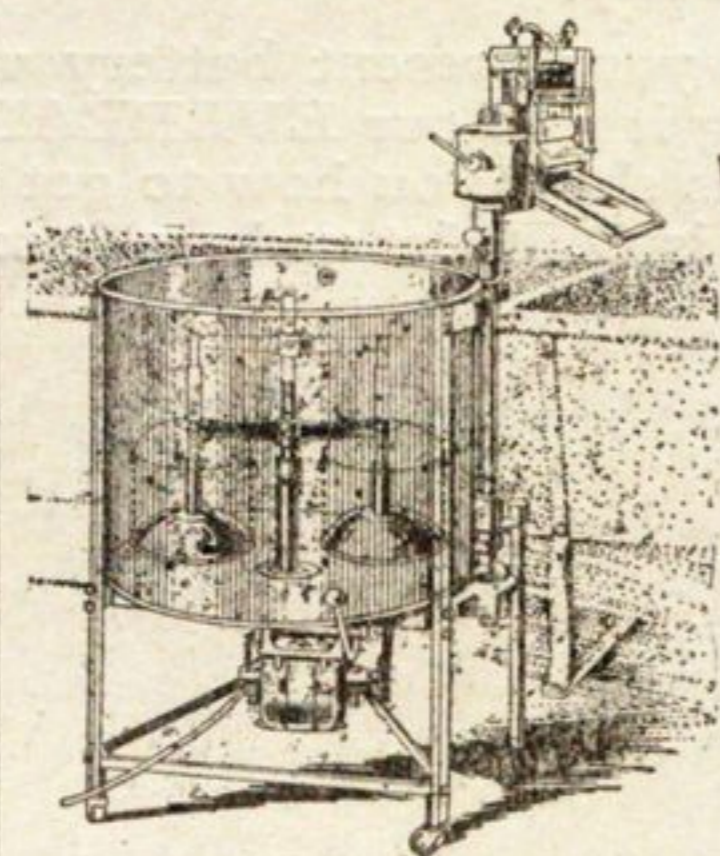
Watt worked on the principle that the cylinder should be always as hot as the steam which entered it. The idea came to him that if the steam were condensed in a vessel distinct from the cylinder it could be kept hot all the time. Without delay Watt put his idea to the test and found that the separate condenser did act as he had anticipated. Other improvements were added, especially that of the fly-wheel which, however, had been patented by another, and instead he devised the "sun and planets wheel." Up to this time the engine had been single acting, often coming to a dead stop while in the course of one stroke, but now he contrived to use both ends of the cylinder working in succession. At length he devised an automatic control of the valves connecting the cylinder with the boiler, and thus insured a steady motion heretofore lacking in the engines of previous designs.

So important were these improvements that the engines built by Watt in time displaced the older models and as he had now become wholly engaged in their manufacture he was regarded as the largest and best engine builder of his time. Before his time the steam engine was a slow working steam pump exclusively, cumbersome and extremely wasteful in fuel. His invention and improvements adapted it to driving machinery of all kinds, and paved the way for later inventors to apply the principle of steam propulsion to vehicles and boats.

A volume of absorbing interest may be readily obtained at the library, written by the late Andrew Carnegie, giving an account of the many inventions of this remarkable man whose centennial is being observed in many places all over the civilized world.

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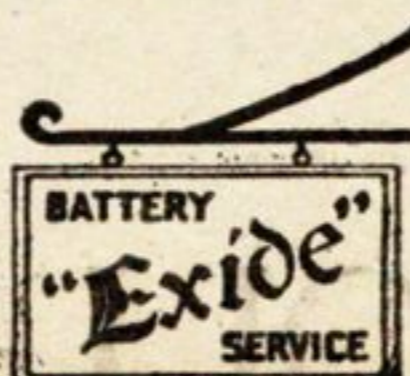
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Less Sugar Cane This Year

The United States has 509,000 acres of sugar cane this year, as compared with 527,000, the revised estimate for last year, according to reports from field agents of the Bureau of Crop

of Agriculture. The 1919 acreage, however, is still well above the acreage of 10 years ago. This acreage does not include sorghum or other seeded cane, but does include all varieties grown by planting stalks or joints.

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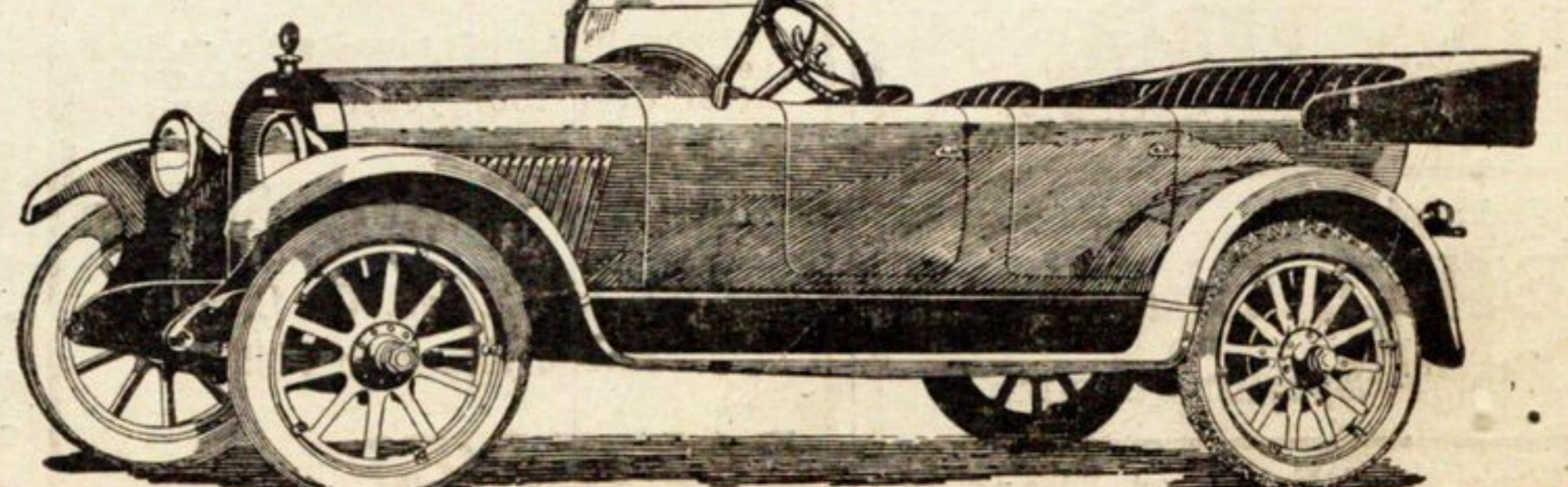
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