

# ASPHALT CONTRIBUTING MUCH TO PROGRESS OF CIVILIZATION, HISTORY OF INDUSTRY SHOWS

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Back in the days when Nebuchadnezzar was restoring Babylon to its former glory, he used asphalt to pave the streets.

Centuries later, America's oil industry began where the king of the Chaldeans left off and has developed a product that has now paved 80 per cent of American city streets and 64 per cent of the modern surfaces on our state highways.

The Lion Oil Refining Company is playing an important part in its contribution to American progress through the distribution of its many types of asphalt, Col. T. H. Barton, president, points out.

The history of the asphalt industry is the story of constantly increasing research to bring about an improved product at lower cost. Recognition of this fact is found in the records which reflect that in 1927 there were only about 20,000 miles in state highway systems built of asphalt; a third of the total improved roads. In 10 years mileage improved with asphalt had increased to 160,000 miles, or more than 64 per cent of the total roads better than plain water-bound macadam or gravel. This is an increase in use of more than 700 per cent.

Growth of the industry is realized when it is considered that in 1913 only 436,500 tons of petroleum asphalt were produced, while 25 years later, in 1937, more than 5,640,000 tons, an increase of more than 1,300 per cent, were produced. From 1929 to 1937 the use of asphalt in construction and upkeep of highways increased from 56 per cent of the total materials consumed to 69.6 per cent.

#### Price Trend Downward.

The asphalt market has always been highly competitive, but the price trend has been downward. Paradoxical as it may seem while the average value per ton of petroleum asphalt in 1927 with the comparatively low consumption for state highway work was \$14.14 per ton (this figure being arrived at by dividing the total value by the total tons) in 1936 the value figured in the same way was only \$10.10 per ton in spite of the enormous increase in the demand.

Not only has the value of the product itself curved downward in the past decade, but the cost of asphalt pavements of the highest type has likewise been decreased. In a tabulation presented by Thomas H. McDonald, chief of the United States Bureau of Public Roads, at the recent hearing before the Committee on Roads of the House of Representatives, it was shown that while the cost per mile of bituminous concrete top was \$12,085 in 1933 it dropped to \$8,213 in 1937.

Asphalt has been a tremendous factor in the rapid development of more than 100,000 miles of a vast farm-to-market highway system, providing the farmer with all-weather, dustless, mudless roads at low cost. This has been made possible by the fact that asphalt is itself not a type of pavement but is a binding medium which can readily be used with any local materials available and provide a surface or a base of any thickness. Consequently the pavement may be anything from a surface treated macadam or gravel road through various designs until we arrive at the highest type such as is constructed for the Fifth avenues of America.

One of the most important contributions of the asphalt industry to highway development and to lowering the cost of highways has been in the production of a range of products which could be used by means of solvents without requiring the application of heat. These solvents known as cutbacks thin the asphalt to the proper consistency and when the stone or gravel aggregate is coated the more or less volatile solvents evaporate, leaving the powerful cement in place. The industry has classified these liquid products into slow-curing, medium-curing and rapid-curing groups, and has standardized their use according to the type of mineral aggregate to be used.

#### Equipment Aids.

There has been a remarkable development in asphalt highway equipment for applying the product in either hot or cold form to the roadway. New plants now take the stone or gravel from the roadway mechanically and, after mixing it thoroughly with the asphalt, lay it down in a finished pavement more quickly and cheaply than formerly.

The hot mix asphalt pavements, which require hot asphalt and heated stone, sand or gravel, have also been improved in quality and lowered in cost by reason of the development in asphalt equipment and through the application of research to produce and proportion asphalt to serve the variety of needs.

One of the contributions to economy and speed in the road building program has been provided through what is known as "stage" construction whereby the initial improvement satisfactorily serves light traffic needs for a time,

and then as traffic increases, becomes a base for the next increment of paving, until a pavement of the highest type is ultimately achieved while utilizing the pavement stage by stage.

Such "stage" construction is only possible with the use of asphalt materials and has two great advantages. First, it means that each stage can be accurately designed to carry the traffic that is operating at the time of construction, and second, it obviates the high interest charges involved when an expensive, rigid type pavement is put down in anticipation of future traffic. "Stage construction" means that the road is built up to its traffic, rather than waiting for traffic to be built up to the road.

One of the most far-reaching highway developments within the last few years has been the "stabilizing" of soils—more popularly known as the "upside down" method of road construction. This simply means that soils under all kinds of pavements can be specially treated so as to prevent their being weakened by capillary water moving upwards through the soil.

Asphalt, an entirely waterproof binding material, has been used recently in various methods of mixing with the sub-grade soil, thus serving as an insulating blanket to stop the menace of the water coming up from below. So successful has this revolutionary method of road building become, that many of our lightly traveled country roads are being made entirely suitable for traffic with only this "stabilizing" process, and without the addition of an actual pavement surface.

#### Many Other Uses.

Asphalt today provides about two-thirds of America's roofing requirements, the surfacing of about 90 per cent of the modern airports and is very widely used for playgrounds, tennis courts, sidewalks and many industrial uses.

Another comparatively new use for asphalt has been a reinforcement for stone jetties. Army engineers have completed a successful experiment at Galveston, where a five-mile jetty extending into the Gulf of Mexico has been rendered non-porous by the use of asphalt cement to hold stones together. This has prevented the harbor from filling up with sand and also protects the harbor from excessive wave action that formerly leaked right through the old jetty.

Even when the engineers on the Mississippi proved the possibility of molding asphalt sheets and placing them hot for underwater revetments, the experience was not considered conclusive because the molding of the hot material was still a dry operation. But at Galveston the full step was taken of depositing the hot material under water in bulk to settle, take form and solidify under its own weight—and a new construction method was added to those available for underwater work.

#### Adaptability Valuable.

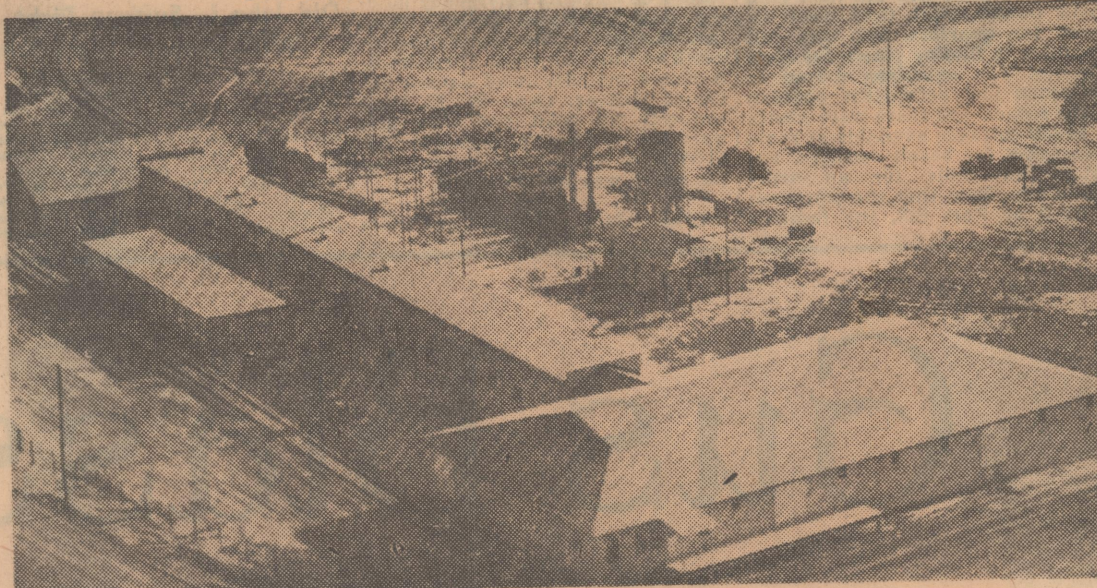
This remarkable product of petroleum is curiously immune to practically all of the destructive forces which obliterate the works of man. Thus it is acid proof and is highly fire resistant; it is proof against destruction by abrasion and by impact; it is scarcely susceptible to weathering or oxidation, and it preserves its tremendous cementing strength for thousands of years.

Its adaptability to so many uses, its availability in any form from liquid to solid, its wide occurrence and its low cost will give to it a future of almost incalculable extent.

It has been a sort of "ugly duckling" among the petroleum products but it is not unlikely that there will come a time when intrinsically it will have a higher value per unit than the major products of the industry.

## NEW CAMDEN INDUSTRY

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Special to the Gazette.

Camden, May 17.—This \$30,000 plant of the Williams Roofing Company at White City, on the site of the old Houston Oil Company's refinery, three miles south of Camden, will be in operation soon. Open house was held Thursday. J. M. Williams of Little Rock is owner.

This plant replaced the one which burned at Waterloo several months ago.

The large L-shaped buildings cover a large plot, and at the right of the buildings are the boilers and stills. Two railroad spurs were laid.

More than 100 men will be employed at this plant, and all types of asphalt roofing and shingles will be manufactured.