

# The AUTOMOBILE

## PROPER CARE OF TIRES.

The most frequent tire abuses, resulting in premature blow-outs in castings, are overload, under-inflation, overspeeding, misalignment of wheels, driving in car tracks and ruts, neglected cuts and improper use of anti-skid devices. A brief detailed discussion of each of these major abuses follows:

All tires have a load limit. Constant slight or occasional heavy overloads shorten tire life. To determine accurately the load carried on a vehicle tire, weigh separately the front and rear wheels and divide each weight by two for the tire load. To this can be added weight figures corresponding to the average front or rear passenger load. The maximum actual tire load should not exceed the maximum load carrying capacity advertised by responsible tire manufacturers.

Proper inflation is as important as proper loads. Tires are not built to take the place of steel springs or of shock absorbers. Under-inflation results in an unnatural flexing on the layers of fabric which causes separation and early destruction of the tire carcass. If easier riding is desired, oversize tires may be used and such tires in addition to furnishing extra resiliency, give more traction on road wheels and supply greater mileage. However, oversizing tires requires a readjustment of the speedometer, otherwise the recorded distance will be less than that actually traveled.

## Keep Same Pressure.

Do not change inflation pressures with changes in atmospheric temperature, since more damage results from endeavoring to compensate for an increase in the tire temperature than is caused by the increase in temperature itself. Avoid running on a flat tire. Such practice ruins the tube and breaks the casing at the bead or sidewall.

If you collect automobile racing statistics, you will find that the average life of a high-grade tire on a racing car is under 500 miles—which is about one twentieth of the life of a tire operated under ordinary conditions. This difference in tire service is due directly to a difference in heat, developed.

Heat exerts a deteriorating effect on vulcanized rubber in proportion to the

intensity and length of time the rubber is exposed to it. The source of heat that does most damage is that produced at high running speed by the internal friction of the tire carcass.

The heat developed by frictional contact with the road when traveling rapidly also has some influence. Tires are so designed as to resist the effects of heat produced by ordinary everyday car operation. But tires cannot long remain intact when highly heated by continuous or even intermittent speeding, and the results of such practice are rapid loss of elasticity and flexibility which leads to complete tire carcass break down. From the standpoint of tire life, mechanical upkeep and gasoline economy, car speeds should be kept within prescribed limits.

## On Wheel Alignment.

Among factors which have an intimate relation to tire mileage is wheel alignment. The free rolling motion of a tire is affected by a small wheel misalignment and the result is excessive tread wear. When the two opposite wheels are not parallel there is a diagonal grind at the point where the tires come in contact with the road surface which wears off the rubber almost as fast as if in contact with an emery wheel.

Front wheels may be out of alignment due to cross rod axle, or steering knuckle becoming bent by contact with a curb or some other obstruction, or the cross rod or knuckle may be improperly adjusted. Also the tire alone or the tire and rim may be improperly mounted on the wheel.

Because of the tendency of front wheels to spread during driving, car manufacturers set the wheels at a toe-in of from three-eighths to one-half inch and when thus adjusted the wheels are properly aligned. The measurements showing these differences should be made between the fellos of the two front wheels at points inside and on a level with the axle. Alignment or the toe-in of the wheels should not be confused with dish, which is setting the wheels further apart at the top than at the bottom. Frequently checking wheel alignment saves tire wear. It is a factor that should not be neglected.

## Why the Sun is Yellow.

All this summer's glorious sunlight is composed of different colors and waves of varying lengths. The longest waves are red, after which come orange, yellow, green, blue, indigo, and violet.

These combined give a white light, such as we see ordinary light to be.

At the sun itself, however, it is certain that large numbers of light-waves are stopped before they can emerge to our sight.

Many of the short-length and weaker ones, for example, are not strong enough to get any farther from the sun's interior than some thousands of miles below the surface. There they are imprisoned, with the result that we do not see them affect the sun's color in the least.

The strong violet and blue are stopped only when they have nearly succeeded in getting out, and they, too, are therefore prevented from entering into the sun's color.

Altogether, so many of the sun's light rays are unable to escape that in the end we find only the very powerful red, orange, and green ones coming our way.

Thus it happens that from the combination of these tints we get a yellow sun. But for all that, we have a narrow escape from having a blue sun.

A thumb lost through an accident has been replaced by the patient's big toe, through the skill of a French surgeon.

Built of concrete in the middle of a lake, a huge relief map of the world is used to teach geography in a Californian school.

## Canada's Industrial Centres

Revenue in Canada is derived mainly from the exploitation of natural resources with agriculture, the products of the farm, accounting for the largest item in Dominion income. Industrial progress is, however, a necessary corollary to any national growth, and agricultural settlement in Canada has seen manufacturing activity striding side by side with it as towns have sprung up over the breadth of the land to meet the extensive demands of the farmer. In the older eastern provinces there are many cities and towns where industry has come to be the main factor in development and which have an assured future of great importance in manufacturing. In the newer western provinces, where towns are periodically springing into being with the invasion of the agriculturalist, industries are as rapidly brought into existence to meet their multifarious wants.

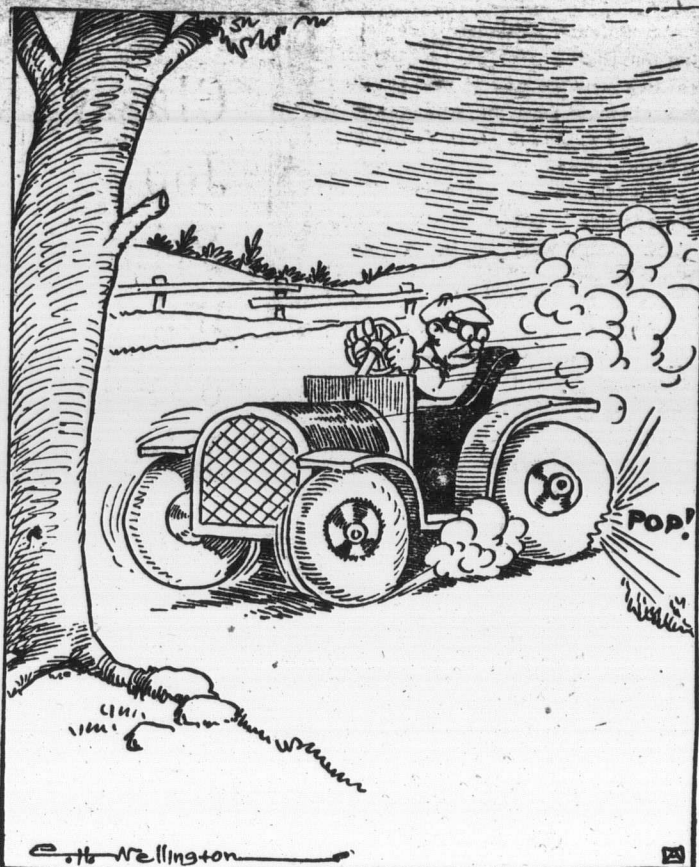
Owing to the time taken in compiling and publishing industrial statistics, these are at all times considerably out of date and the latest available cover only the year 1918, since which time, in the fever of post-war activity, there has been a considerable expansion, a feature of which has been the remarkable introduction of so many foreign firms into the home field. At the end of 1918, there were 35,797 manufacturing establishments in Canada with a capitalization of \$3,034,301,915. These gave employment to 677,787 persons who received the sum of \$692,460,863 in salaries and wages. The cost of materials used was \$1,900,252,214 and the year's production \$3,458,036,975. Some idea of the rapidity of expansion in Canada may be gleaned from a comparison of these figures with those of 1915, at which time there were 21,806 establishments; a capitalization of \$1,994,103,272; 514,883 employees; salaries and wages amounting to \$289,764,508; cost of materials, \$802,128,862; and a production of \$1,407,128,146.

A survey of the forty-four principal municipal cities and towns in Canada for the year 1918 shows that there were 12,796 manufacturing establishments with a capital investment of \$2,070,916,944. A total of 514,747 people found employment at wages and salaries of \$450,609,582. These plants used \$1,291,751,860 worth of materials and had a production of \$2,346,589,994. The city of Montreal leads the Dominion, followed fairly closely by Toronto, and then at some little distance by Hamilton, Ontario, and Sydney, Nova Scotia, these cities being the only ones over the hundred million dollars in capitalization. Montreal had \$468,401,480 invested and Toronto \$392,945,178. These four cities maintain their respective positions also in regard to production.

Four cities of the Dominion have a capitalization in excess of fifty million dollars. Vancouver with \$98,434,309; Winnipeg with \$82,709,029; Sault Ste. Marie with \$69,234,987; and Niagara Falls with \$51,199,485. A total of ten cities have a capitalization between twenty and fifty millions; Lachine and Quebec, in Quebec; Welland, Galt, Peterborough, Brantford, Kitchener, London and Ottawa, in Ontario; and Calgary in Alberta. Seven centres, Sherbrooke, Hull, Halifax, Port William, Port Arthur, Oshawa and Ford, have industries in which capital between twenty and twenty millions is invested. The remainder of the forty-four centres have an industrial investment between five and ten million dollars.

Both Montreal and Toronto have an annual industrial production of more than five hundred million dollars. Hamilton and Winnipeg have productions of over a hundred millions. Vancouver and Sydney exceed fifty million dollars in their output. Seventeen cities exceed twenty millions and are under fifty millions in production. Only four of the remaining cities cited are under the ten million dollar figure in their annual industrial output.

—and the worst is yet to come



## Canadian News Items.

Alberta is a favorite location with emigrating Hollanders, according to indications, and mixed farming, to which the province is so adapted, attracts them. They have been arriving in some numbers since the spring and settling on the land, whilst many more are due to arrive this summer. A recent party of arrivals numbered sixty-five, practically all being in possession of sufficient capital to make an immediate start on farming operations.

The experiment of assisting industries by government loans has been successful commercially, according to D. B. Martyn, Deputy Minister of Industries for British Columbia, who states that there has only been one failure. Two industries made possible by government assistance, a woollen mill and a paper roofing company, he cites as outstanding proof of the advantages of provincial government aid.

A chain of three look-out stations is to be started in Northumberland and Gloucester counties on the North Shore of New Brunswick, under the direction of their geometric survey of the Dominion. The New Brunswick government will also use these towers to make observations in order to prevent forest fires.

In 1920 forty-seven creameries operated in Saskatchewan produced seven million pounds of butter. Five new creameries are in course of erection at Yorkton, Assinabota, Weyburn, Shaunavon and Empress. There is only one cheese factory in the province, which produced 28,367 pounds of cheese last year.

There is a well organized effort this year to revive the growing of flax in New Brunswick, especially in the northern portion of the province. Farmers who have previously been content with a small patch are putting in a considerable acreage this year. Government assistance has been promised in the establishment of flax growing in the province.

Great interest is being exhibited this summer in oil investigation and search in Northern Manitoba. R. C. Wallace, Commissioner for this territory, as the result of preliminary investigations into the possibilities of oil supplies speaks optimistically of prospects for development. An official of the Dominion Geological Survey is spending all summer in that region with a party of men. The Norton, McMillan Syndicate is taking a drill into the district, whilst the Pas Development and Exploration Company, with a capital of \$2,000,000 and leases of 3,200 acres, is also to drill there.

## England's Eyes of the Sea.

Without the lighthouses erected around British coasts, and maintained by the corporation called Trinity House, ships would be in far greater danger while on the sea than they are now.

These lighthouses warn vessels of sunken rocks and jutting headlands, which are a danger to navigation at night time.

The Lizard Light, which is the last link between England and vessels sailing in a westerly direction, is visible for twenty miles, and gives warning of many cruel reefs, with which the coast of Cornwall abounds.

The Eddystone, which is, perhaps, the best known of the English lighthouses, stands on a rock off Plymouth, and has a range of seventeen and a half miles. The light on Lundy Island carries thirty miles. Next in point of carrying distance is the light on the Needles, those sharp-pointed rocks off the Isle of Wight. This has a range of twenty-seven miles.

The South Foreland light is visible for twenty-five miles, and that on Beachy Head twenty-two miles.

Married men are more trustworthy than single men, in the ratio of 6 to 1, probably because of their increased sense of responsibility.

## HOW FRANCE PAID HER HUGE RANSOM

### CONTRAST WITH GERMANY'S INDEMNITY.

#### 50 Years Ago French Nation Completed An Undertaking Unprecedented in History.

Germany's payment of the first instalment of the indemnity by interest-free loan was made at a date close to the fiftieth anniversary of France's payment of the first part of the ransom which Germany extorted from her in the "Terrible Year"; and which Bismarck and his colleague Bleichroeder designed, in their own phrase, to "bleed France white" and permanently cripple her economically.

Between the two indemnities there is a vast and radical difference. In the first place, it is recognized that the whole sum which Germany is asked to pay is only a fraction of what might justly be demanded of her, since it is only a fraction of the actual loss which she inflicted upon the countries which she attacked.

But the sum extorted by Germany from France was, according to Germany's own confession and boasting, several times larger than the entire cost of the war to Germany. For it was officially reported to the Reichstag that the total cost of the war to Germany, taking every conceivable item into account, was only \$278,000,000. Of the billion dollars extorted from France, then, \$722,000,000 was clear profit to Germany.

This was in addition to the extortion of many millions from the invaded provinces during the war and of \$40,000,000 from the city of Paris to the paying of the cost of maintaining a German army of occupation in France until the last franc was paid, and, of course, the seizure of two of the richest provinces in France. Deducting the \$65,000,000 allowed to Germany for the railroads of Alsace-Lorraine, it is calculated that France was compelled to pay to Germany, all told, fully \$1,100,000,000 in gold coin, and it was required that it should be paid within two years.

#### Hoped to Ruin France.

The other point of difference was this, that while now the Allies have shaped their whole policy with respect to the indemnity, to the end that Germany shall not be crippled or prostrated, but rather shall be assisted to get upon her economic feet again, it was the deliberate purpose of Germany in 1871 to impoverish and crush France beyond hope of recovery.

That former Treaty of Versailles was signed on February 26, 1871, and on March 1 it was ratified by the National Assembly at Bordeaux. Never in history had so heavy a forfeit been imposed upon a beaten power. After Waterloo, in 1815, the indemnity demanded from France was only \$140,000,000, and the maintenance of the army of occupation and all other costs did not bring it above \$220,000,000, for payment of which the time of five years was granted.

The financiers and statesmen of France promptly set about devising ways and means to pay the ransom, but it was not until June 26, 1871, that definite action was taken. On that date the government authorized the opening of subscriptions to a loan of \$400,000,000, half of which would be applied to the payment of Germany's claims. The subscription lists were opened the next day, June 27. Germany was expectant of an appeal to her, at least of an invitation to her bankers to subscribe to the loan. All day long Bismarck, the Chancellor, and Baron Bleichroeder, the millionaire banker, waited eagerly for some

## The Whale That Wrecked a Ship

### An Amazing Adventure With a Sea Monster

The Danish schooner *Anna*, on a voyage between Iceland and New Brunswick, had been twenty days at sea.

Several sailors lounged idly on her deck.

Suddenly the attention of the men was attracted by a spout of water that rose high in the air about three hundred feet away.

"A whale!" observed a seaman. The sailors over the bulwarks and staring at the place where the spout had risen, in the hope of seeing a repetition of the display.

"Seems pretty lively," said another man, as the whale came to the surface. "Look, the thing is swimming round and round, as if it had gone suddenly mad!"

#### A Mad Attack.

The sailors watched the strange gyrations of the monster with keen interest. The *Anna* was sailing at about four knots and a half an hour, quite close to the leviathan, so that her crew could distinguish every movement of the enormous creature as it rushed hither and thither through the waves, lashing the water with its tail, hurling glittering masses of foam high up in the air, and playing pranks for all the world like a sportive kitten.

The movements of that colossal body, twisting this way and that, diving and reappearing, seemed to fascinate the men, and they laughed at its curious antics.

He laughs best who laughs last! As if the whale understood that all this laughter was at its expense, its movements became more and more erratic, until they were terrible to behold. The waves were churned into milky-white foam by the furious rushes of the great creature and the passionate lashing of its tail.

Meanwhile the sailors laughed and chatted about the eccentricities of the whale, which showed not the slightest signs of exhaustion. Suddenly, however, anxiety came into their weather-beaten faces, for without warning the huge mammal, with a mighty rush, came straight for the ship, only sheering off when quite close. It repeated this disconcerting manoeuvre several times.

#### The Terrible Charge.

Presently the captain of the *Anna*, alarmed at the threatening attitude of the whale, gave an order which sent the men hurrying to their stations, and the schooner soon began to draw away from the scene of the monster's gambols.

Seeing the vessel moving off, the whale ceased its circling, and, like a warship intent on ramming, came straight at the schooner, throwing masses of foam to right and left of its massive head.

Spurred on by their captain, the excited crew tried in vain to get the *Anna* out of the way of that terrible charge. In spite of every effort, however, they failed. With a crash, the monster struck the ship, hurling the men off their feet.

A sound of rending timbers could be

heard, and the deck of the schooner quivered as she heeled right over until her port bulwarks almost touched the water. Then, like a sorely-stricken animal, she righted herself.

"We're stove in somewhere!" roared the captain. "Carpenter, get down below and find out the extent of the damage."

When he came on deck again the carpenter's face was grave. A huge rent had been made in the ship's bows, through which the water was gouting in a veritable flood. Quickly the skipper ordered the men to the pumps.

#### The Victor's Wounds.

The whale had suffered as badly as the ship. It lay on the surface of the sea its great body rising and falling with the waves. Blood was pouring in volumes from two red gashes, one in the head and the other in its side. The water was dyed with red, and the tell-tale stain on the surface of the sea grew larger every moment, showing that the whale was paying with its life-blood for its extraordinary act.

Meanwhile the water rose steadily in the well. The whole afternoon passed in futile attempts to repair the gaping rent in the ship's bows, and night came on with the pumps still working steadily.

"The water's still rising, sir," said the carpenter, gloomily.

The captain, by voice and example, urged his men to greater exertions, and they responded gallantly. By this time a gale was howling on all sides of them, whistling weirdly through the rigging.

The night passed in a superhuman struggle to keep the vessel afloat—that grim battle between man and the elements which is so often fought at sea.

Towards daybreak, however, the officers, after a consultation, agreed that nothing more could be done. The water was gaining fast, and the ship might founder at any moment. Sorrowfully and reluctantly the captain gave the order for abandonment.

#### Timely Rescue.

Under the first mate's supervision the lifeboat was provisioned and swung out. It was about to be launched when, through the misty light of early morning, they saw the huge bulk of a big vessel. Eagerly the men on board the sinking ship began to shout, and soon their cries were answered.

"Ahoy there! Who are you?"

"The *Anna*," cried the Danish captain. "We've a hole stove in our bows by a whale, and are sinking. Can you take us aboard?"

"Right," came the reply. "We're the *Quenmore*, of the Johnson Line, Liverpool."

With eager eyes the shipwrecked men saw a lifeboat leave the side of the big liner.

At last the boat reached the side of the sinking ship, now rolling sluggishly, deep in the water. In an exhausted state the schooner's crew climbed over the side.

As they reached the deck of the big steamer an exclamation made them turn round in time to see their own unfortunate vessel disappear.

## Shocks for Ships.

Even in stormy weather the average height of waves in mid-ocean does not as a rule exceed thirty or forty feet. Sometimes, however, one enormous wave makes its appearance, amidst the rest.

Why this should happen no one can say. All we know is that a mighty mass of water rushes suddenly towards a ship at the appalling speed of over one hundred miles an hour.

If the ship can meet such a wave with her bows she will ride over it, though thousands of tons of water may be swept over her decks. But if the wave is following her and rushes at her from the stern, she may fail to rise. Many a good ship has gone to her doom in this way.

These vast mountains of water rise sometimes to a height of more than a hundred feet—as high as the spire of a church. They have been known to extinguish the mast-head lights of sailing ships.

Sometimes on a perfectly calm day there will be a sudden troubling of the surface of the sea, and without the slightest warning a wave 150 feet high will appear.

## "Mind Your P's and Q's."

The expression "Mind your P's and Q's," arose in the printing house, where the small "p" and "q" in Roman type have always confused the printer's apprentice on account of their similarity in appearance when the type is mixed or "tied."

For this reason, one of the first instructions given to the apprentice who aspired to become a printer was to "mind his 'p's and 'q's"—or, in other words, not to get them mixed so that they would be interchanged in printing.

Additional emphasis was placed upon the phrase through the custom in taverns in the Old Land of keeping account of purchases of beer and ale throughout the week by writing a "p" in the credit book for each pint of liquor sold but not paid for, and a "q" for each quart.

On Saturday, when men had received their pay, they would be greeted with the cry, "Mind your P's and Q's"—a gentle method of informing them that no more drinks would be served until their accounts were settled.